

Syllabus

Course Overview

The use of statistics has become increasingly important in health care. Technology-driven processes, technical tools, modern storage methods, and other innovations require data and statistics to be used for making solid decisions. The application of statistics also provides alternatives to assess patient care and to optimize performance for providers. In this course, you will study basic statistical strategies and tools used to analyze and interpret health care data, including pattern recognition, data classification; and data mining, modeling, and sampling. You also will evaluate the resources that provide health care information and support the delivery of health care.

Course Competencies

(Read Only)

To successfully complete this course, you will be expected to:

- 1 Interpret health care data.
- 2 Explain the data resources used in health information management.
- 3 Use data analysis tools to support health information integrity and data quality.
- 4 Apply statistical strategies to analyze health care data.
- 5 Communicate in a professional manner to support health care data analytics.

Course Prerequisites

Prerequisite(s): HIM4610.

Syllabus >> Course Materials

Required

The materials listed below are required to complete the learning activities in this course.

Integrated Materials

Many of your required books are available via the VitalSource Bookshelf link in the courseroom, located in your Course Tools. Registered learners in a Resource Kit program can access these materials using the courseroom link on the Friday before the course start date. Some materials are available only in hard-copy format or by using an access code. For these materials, you will receive an email with further instructions for access. Visit the [Course Materials](#) page on Campus for more information.

Book

Please follow the instructions provided to you by the bookstore to download your e-books. Once procured, you may access your e-books via the VitalSource Bookshelf. A link to your Bookshelf is provided in the left Course Tools menu. The [Capella University Bookstore](#) shows any materials that may involve shipping.

Horton, L. A. (2017). *Calculating and reporting healthcare statistics* (5th Rev. ed.). Chicago, IL: AHIMA Press. ISBN: 9781584265955.

eBook

Oachs, P. K., & Watters, A. L. (Eds.). (2016). *Health information management: Concepts, principles, and practice* (5th ed.). Chicago, IL: AHIMA Press. ISBN: 9781584265146.

Library

The following required readings are provided in the Capella University Library or linked directly in this course. To find specific readings by journal or book title, use [Journal and Book Locator](#). Refer to the [Journal and Book Locator library guide](#) to learn how to use this tool.

- Anonymous. (1994). [Experts discuss how benchmarking improves the healthcare industry](#). *Healthcare Financial Management*, 48(9), 90.
- Buffone, P. N. (2016). [The 'cure'-all for 21st century data sharing](#). *Pharmaceutical Executive*, 36(8), 39,50.
- Chilton, M. A. (2006). [Data modeling using entity relationship diagrams: A step-wise method](#). *Journal of Information Systems Education*, 17(4), 385–394.
- Cleary, M., Horsfall, J., & Hayter, M. (2014). [Data collection and sampling in qualitative research: Does size matter?](#) *Journal of Advanced Nursing*, 70(3), 473–475.
- Conn, J. (2007). [State loses data-mining case](#). *Modern Healthcare*, 37(20), 32.
- Conz, N. (2007). [Mining your own business – Data mining technologies can help insurers access and leverage the institutional knowledge vital to fraud mitigation efforts that is locked inside their current and historical claims data](#). *Insurance & Technology*, 32(10), 24–29.
- Dowell, M. A. (2012). [HIPAA privacy and security HITECH act enforcement actions begin](#). *Employee Benefit Plan Review*, 66(12), 9–11.
- Fibuch, E., & Van Way, C. W. (2013). [Bench marking's role in driving performance](#). *Physician Executive*, 39(1), 28–32.
- Glaeser, E. L. (2001). [Census sampling is dangerous](#). *Wall Street Journal*, A. 18.
- Grantham, D. (2012). [Seeing synergy: Aligning meaningful use measures with accreditation standards](#). *Behavioral Healthcare*, 32(6), 17–18.
- Hammond, W. E., Jaffe, C., & Kush, R. D. (2009). [Healthcare standards development: The value of nurturing collaboration](#). *Journal of AHIMA*, 80(7), 44–50; quiz 51–52.
- Johnson, K. M., Kirby, A., Kadlec, L., Noreen, N. I., Taylor, L. B., Updegrove, J. L., & Warner, D. (2013). [Data standards, data quality, and interoperability \(updated\)](#). *Journal of AHIMA*, 84(11), 64–69.
- Kadlec, L. (2014). [Coming soon to your healthcare facility: Information governance. A look at healthcare information governance trends through practical case studies](#). *Journal of AHIMA*, 85(8), 26–32.

- Kandola, D., Banner, D., O'Keefe-McCarthy, S., & Jassal, D. (2014). [Sampling methods in cardiovascular nursing research: An overview](#). *Canadian Journal of Cardiovascular Nursing*, 24(3), 15–18.
- Kersten, S. (2013). [Moving the needle toward a data-driven health care system: Optimizing the EHR through information governance](#). *Journal of Health Care Compliance*, 15(3), 45–46,62.
- Kostick, K. (2012). [SNOMED CT integral part of quality EHR documentation](#). *Journal of AHIMA*, 83(10), 72–75.
- Lopez, A. D., AbouZahr, C., Shibuya, K., & Gollogly, L. (2007). [Keeping count: Births, deaths, and causes of death](#). *The Lancet*, 370(9601), 1744–1746.
- Marbury, D. (2016). [Interoperability: Dream vs. reality](#). *Managed Healthcare Executive*, 26(10), 29–31.
- McNickle, M. (2012). [National Library of Medicine sets meaningful use standards](#). *Informationweek - Online*.
- Page, L. (2007). [Health, productivity efforts rest on quality of statistics](#). *Business Insurance*, 41(50), 14.
- Patton, G. E. (2009). [Functional requirements for authority data](#). Warsaw, POL: De Gruyter.
- Pigott, D. J., & Hobbs, V. J. (2011). [Complex knowledge modelling with functional entity relationship diagrams](#). *Vine*, 41(2), 192–211.
- Reed, B. (2007). [Data classification best practices](#). *Network World*, 24(3), 18.
- Reeves, M. G., & Bowen, R. (2013). [Developing a data governance model in health care](#). *Healthcare Financial Management*, 67(2), 82–86.
- Roberts, P. (2015). [Data sampling for the right reasons](#). *Business Intelligence Journal*, 20(1), 33–38.
- Simon, N. (2016). [The dread of data sharing](#). *Health Management Technology*, 37(8), 25.
- Sower, V. E. (2007). [Benchmarking in hospitals: More than a scorecard](#). *Quality Progress*, 40(8), 58–60.
- Tomes, J. P. (2012). [Keeping it private](#). *Journal of AHIMA*, 83(3), 32–35.
- Trembly, A. C. (2007). [Standards are important, but are they critical?](#) *National Underwriter / Life & Health Financial Services*, 111(20), 26–29.
- Valdes-Perez, R. (2015). [Smart benchmarking starts with knowing whom to compare yourself to](#). *Harvard Business Review Digital Articles*, 2–5.
- Weinstock, M. (2010). [The new privacy norm](#). *Hospitals & Health Networks*, 84(2), 20.
- Welton, T. (n.d.). [Creating and managing diagrams in Visio 2016 \[Video\]](#). Skillssoft.
- Welton, T. (n.d.). [Getting started with Visio 2016 \[Video\]](#). Skillssoft.

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL.

Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Agile Data. (n.d.). [Data modeling 101](#). Retrieved from <http://www.agiledata.org/essays/dataModeling101.html>
- AHIMA. (n.d.). [Information governance \(IG\)](#) Retrieved from <http://www.ahima.org/topics/infogovernance>
- Al-Aidaros, K. M., Bakar, A. A., & Othman, Z. (2012). [Medical data classification with Naïve Bayes approach](#). *Information Technology Journal*, 11(9), 1166–1174.
- [ASTM International](#). (n.d.). Retrieved from <https://www.astm.org/>

- Brossette, S. E., Sprague, A. P., Hardin, J. M., Waites, K. B., & Moser, S. A. (1998). [Association rules and data mining in hospital infection control and public health surveillance \[PDF\]](#). *The Journal of the American Medical Informatics Association*, 5(4), 373–381.
- Centers for Disease Control and Prevention. (n.d.). [Data & statistics](#). Retrieved from <https://www.cdc.gov/datastatistics/>
- Centers for Disease Control and Prevention. (n.d.). [Emergency department visits](#). Retrieved from <https://www.cdc.gov/nchs/fastats/emergency-department.htm>
- [Data classification](#). (n.d.). Retrieved from http://www.yourwindow.to/information-security/gl_dataclassification.htm
- [Data mining](#). (n.d.). In *Wikipedia*. Retrieved from http://en.wikipedia.org/wiki/Data_mining
- [DICOM](#). (n.d.). Retrieved from <http://dicom.nema.org/>
- Fenton, S. H., Giannangelo, K., Kalle, C., & Scichilone, R. (2007). [Data standards, data quality, and interoperability \[PDF\]](#). *Journal of AHIMA*, 78(2).
- [Health Level Seven International](#). (n.d.). Retrieved from <http://www.hl7.org/>
- [IEEE](#). (n.d.). Retrieved from <http://www.ieee.org/index.html>
- [International Organization for Standardization \(ISO\)](#). (n.d.). Retrieved from <http://www.iso.org/iso/home.htm>
- Medicare.gov. (n.d.). [Hospital compare](#). Retrieved from <https://www.medicare.gov/hospitalcompare/search.html>
- [NCPDP](#). (n.d.). Retrieved from <http://www.ncpdp.org/>
- [NEMA](#). (n.d.). Retrieved from <http://www.nema.org/pages/default.aspx>
- Stephens, R. K., & Plew, R. R. (2001). [Logical versus physical database modeling](#). Retrieved from <http://www.developer.com/tech/article.php/641521>
- The Office of the National Coordinator for Health Information Technology. (n.d.). [Hospitals that have demonstrated meaningful use through the Medicare EHR incentive program](#). Retrieved from <https://dashboard.healthit.gov/dashboards/hospitals-medicare-meaningful-use.php>
- U.S. Department of Commerce. (n.d.). [United States Census Bureau](#). Retrieved from <http://www.census.gov/>
- U.S. Department of Health & Human Services. (n.d.). [Health information privacy](#). Retrieved from <https://www.hhs.gov/hipaa/index.html>
- United States Department of Health and Human Services. (n.d.). [Centers for Medicare and Medicaid Services](#). Retrieved from <http://www.cms.hhs.gov/>
- United States Department of Health and Human Services. (n.d.). [HMO revises process to obtain valid authorizations](#). In *All case examples*. Retrieved from <https://www.hhs.gov/hipaa/for-professionals/compliance-enforcement/examples/all-cases/index.html#case25>
- United States Department of Labor. (n.d.). [Bureau of Labor Statistics](#). Retrieved from <https://www.bls.gov/>
- United States Department of Labor. (n.d.). [Find it! In DOL](#). Retrieved from <https://www.dol.gov/general/findit>
- [X12](#). (n.d.). Retrieved from <http://www.x12.org/>

Suggested

The following materials are recommended to provide you with a better understanding of the topics in this course. These materials are not required to complete the course, but they are aligned to course activities and

assessments and are highly recommended for your use.

Optional

The following optional materials are offered to provide you with a better understanding of the topics in this course. These materials are not required to complete the course.

Integrated Materials

Software

Capella University requires learners to meet certain minimum [computer requirements](#). The following software may go beyond those minimums and is required to complete learning activities in this course. Visit the [Course Materials](#) page on Campus for more information.

Microsoft. Visio 2016. [Computer software]. Available from <https://campustools.capella.edu/redirect.aspx?linkid=4541>

Unit 1 >> Using and Understanding Statistics

Introduction

Statistics are a major part of our everyday lives. They play a role in our decision-making processes professionally and personally, as we make decisions based on the data and information we have. Statistics are used in an organized economic activity that is connected with the development, production, and manufacture of a particular product or service. In this unit, you will become familiar with the fundamentals of statistics and the importance of statistical data, as well as the common use of statistical data on various topics.

Learning Activities

u01s1 - Software Preparation and Technology Access

In this course, you will be using software and technology that is needed to complete designated activities and assignments. There is no additional cost for this software and technology. Some software packages will be made available to you at no additional cost through Capella's subscription with Microsoft, while other software packages are available for free download through open-source licensing.

The software and technologies below are strongly recommended to support you in completing the course objectives. If you have access to other tools that you believe may meet the requirements of this course, please discuss your selected alternatives with your instructor.

Note: If you use assistive technology or any alternative communication methods to access course content, please contact DisabilityServices@Capella.edu with any access-related questions or to request accommodations.

Microsoft Software

For this course, follow the instructions provided through the links below to download and install software or register for an account, as required.

Step 1:

If you have a Capella MS Imagine account, go to Step 2 given below. Otherwise, see the instructions for registering an account at [Microsoft Imagine – Registration](#).

Step 2:

Log into the [Capella Microsoft Imagine WebStore](#).

Step 3:

Identify the version of Microsoft Visio that is compatible with your operating system. Refer to [Courseroom Software Resources](#) for the same.

Step 4:

Download and install.

u01s2 - Studies

Readings

Use your *Calculating and Reporting Healthcare Statistics* text to read the following:

- Chapter 1, "Introduction to Healthcare Statistics," pages 1–11.

Use your *Health Information Management: Concepts, Principles and Practices* text to read the following:

- Chapter 16, "Healthcare Statistics," pages 481–507.

Use the Internet to complete the following:

- United States Department of Labor. (n.d.). [Bureau of Labor Statistics](https://www.bls.gov/). Retrieved from <https://www.bls.gov/>

- Access several of the links provided on the home page and review several of the reports available on the website.
- United States Department of Labor. (n.d.). [Find it! In DOL](https://www.dol.gov/general/findit). Retrieved from <https://www.dol.gov/general/findit>
 - Learn more about the statistics collected by federal agencies from the above website.
- United States Department of Health and Human Services. (n.d.). [Centers for Medicare and Medicaid Services](http://www.cms.hhs.gov/Services). Retrieved from <http://www.cms.hhs.gov/>
 - Access the Research, Statistics, Data, and Systems link from the above website. Review each of the links provided on this page, select several of the reports, and review the data available.
- U.S. Department of Commerce. (n.d.). [United States Census Bureau](http://www.census.gov/). Retrieved from <http://www.census.gov/>
 - Access the Poverty and Health Insurance links located under the heading People & Households on the home page. Review the links provided on these pages. Read the overview and review the data available on these topics.

u01d1 - Relevance of Statistics

This unit has emphasized that statistics are used in almost every aspect of our lives. Based on your readings, explain how relevant you think statistics are. Provide an example of how statistics may be applied or used in a common daily activity.

Your initial post should be at least 150 words and must include at least one in-text citation and its related reference, both following APA style.

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Do you find the examples in the post credible or not? Explain your comments, highlighting the common areas and differences between the post you choose, your post, and the posts of other colleagues.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

u01d2 - Understanding Statistics

Using statistics in the health care industry requires a foundational understanding of the statistics and their users. In this discussion, you will apply your understanding of statistics to solve a problem faced by a data analyst in a health care setting.

Imagine that you are a new data analyst. You have replaced analysts who did not organize their office or resources, nor did they leave any written notes or procedures. Nevertheless, you must discover each employee's productivity and accuracy rates. Explain how you would collect data and calculate statistics and rates to ensure that each employee meets productivity and quality standards.

Your initial post should be at least 150 words and must include at least one in-text citation and its related reference, both following APA style.

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Do you agree with the approach suggested? Provide specific explanations that support the approach. Do you disagree with the recommendations? Provide explanations (citing resources, if needed) for your disagreement.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

u01s3 - Vila Health Challenge Preparation

Vila Health is a virtual environment that simulates a real-world health care system. In the various Vila Health scenarios, you will apply professional strategies, practice skills, and build competencies that you can apply to your coursework and in your career.

During this unit, complete the Vila Health: Using Health Care Statistics challenge. You will use the information you gather in this scenario to complete upcoming coursework.

- Click **Vila Health: Using Health Care Statistics** to complete this multimedia challenge.

Unit 2 >> Statistics in Health Care

Introduction

As health care organizations become more data-rich, the information collected during day-to-day operations grows in value. The use of technology to improve operations and patient care has become more prevalent. As a result, informatics has become an integral part of the executive, upper-level, and mid-level management in health care organizations.

In this unit, you will use statistical measures and perform a variety of statistical calculations that support operations and health information management related functions. You will also have an opportunity to define statistics used in health care and develop an appreciation for health care statistics from both local and national perspectives.

Learning Activities

u02s1 - Studies

Readings

Use your *Calculating and Reporting Healthcare Statistics* text to read about the definitions and calculations related to common health care statistics in the following chapters:

- Chapter 2, "Mathematics Review," pages 13–30.
- Chapter 6, "Death (Mortality) Rates," pages 91–120.
- Chapter 7, "Hospital Autopsies and Autopsy Rates," pages 121–143.
- Chapter 8, "Morbidity and Other Miscellaneous Rates," pages 145–171.

Use the Capella University Library to read the following:

- Lopez, A. D., AbouZahr, C., Shibuya, K., & Gollogly, L. (2007). [Keeping count: Births, deaths, and causes of death](#). *The Lancet*, 370(9601), 1744–1746.
 - This 2007 article remains relevant to understanding problems associated with data collection.

Use the Internet to complete the following:

- Centers for Disease Control and Prevention. (n.d.). [Data & statistics](https://www.cdc.gov/datastatistics/). Retrieved from <https://www.cdc.gov/datastatistics/>
 - This website is a valuable source of information about America's health. The CDC is a chief health statistics agency; they are involved in the compilation of statistical information that is used to guide actions and policies to improve public health. Select several of the links presented on the home page and use the search tool to view the wealth of information contained on this website.

u02a1 - Data and Statistics in Health Care

Statistics can be used at any level within an organization or in the health care industry. The use of data to improve patient care along with the ability to access health data resources are commonly required skills in a health care workplace.

In this assignment, you will continue to explore the use of statistics in health care and develop an appreciation for health care statistics from both local and national perspectives.

Instructions

Refer to the Vila Health: Using Health Care Statistics media piece for the successful completion of this assignment.

In your new role as a data analyst for Vila Health, complete a report on using the Centers for Disease Control and Prevention's (CDC) data repositories for collecting statistics. Visit the Data & Statistics page of the CDC website linked in the Resources and complete the following steps:

1. Select a topic under the heading Data & Statistics by Topic on the web page.
2. Explore the page for your selected topic and review the information presented under the different subheadings.
3. Create a two-page report that meets the following requirements:
 - Describe statistical information used in health care, including examples found on your topic.
 - Describe the use of statistics in relation to health information management, such as registries, hospital statistics, and vital statistics.
 - Describe several users of this data in health care.
 - Explain who the users of the information might be, including specific use by a health care data analyst.
 - Describe the statistical resource used for this assignment, as well as several others you have explored in the course.

Submission Requirements

- **Written communication:** Written communication should be clear and generally free of grammatical errors.
- **APA formatting:** Use APA style and format for the paper, references, and citations.
- **Length of paper:** Two pages.
- **Font and font size:** Times New Roman, 12 point.

Course Resources

[Data & Statistics](#)

[Vila Health: Using Health Care Statistics](#) | [Transcript](#)

[APA Style and Format](#)

u02d1 - Data Collection Methods

The article, "Keeping Count: Births, Deaths, and Causes of Death" linked in the Resources discusses why keeping accurate, complete, and consistent statistics is important. Review these reasons and devise a recommendation for standardizing data collection methods.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Respond to the post of at least one other learner, comparing your recommendation to an opposing or differing point of view. Offer ideas on how and why your posts are different.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[Keeping Count: Births, Deaths, and Causes of Death](#)

[APA Style and Format](#)

Introduction

Data classification is the grouping of different sets of data into logical categories. Data can be classified into categories (personal, demographic, and clinical), as well as by control level (low, medium, and high). Data classification must be considered carefully so that data is accurately classified according to the appropriate level.

Misclassifying data could compromise data integrity. Data integrity refers to the accuracy and reliability of data. If data is not properly classified, it is not reliable. For example, if the age of patients is misclassified as financial data, the integrity of the data related to age is compromised. Data classification also has a direct relationship with data accessibility. Classifying data will determine how quickly it can be accessed. For example, data classified at a high level of control, such as social security numbers, would require a higher level of system security. User access to health information will depend on their job role and level of security clearance.

In this unit, you will learn to recognize classification and apply appropriate levels of control based on classification. You will have an opportunity to analyze the techniques that are used to develop data classification systems.

Learning Activities

u03s1 - Studies

Readings

Use your *Calculating and Reporting Healthcare Statistics* text to read the following:

- Chapter 9, "Statistics Computed within the Health Information Management Department," pages 173–212.
- Chapter 10, "Descriptive Statistics in Healthcare," pages 213–243.

Use the Capella University Library to read the following:

- Kostick, K. (2012). [SNOMED CT integral part of quality EHR documentation](#). *Journal of AHIMA*, 83(10), 72–75.
 - This article explains a data classification system that is seeing an increased use in health care as part of meaningful use standards development.
- Reed, B. (2007). [Data classification best practices](#). *Network World*, 24(3), 18.
 - This article discusses the efforts to secure data and the steps involved in implementing a good data classification method.

Read the following articles in preparation for the second unit discussion:

- Fenton, S. H., Giannangelo, K., Kalle, C., & Scichilone, R. A. (2007). [Data standards, data quality, and interoperability \[PDF\]](#). *Journal of AHIMA*, 78(2).
- Johnson, K. M., Kirby, A., Kadlec, L., Noreen, N. I., Taylor, L. B., Updegrove, J. L., & Warner, D. (2013). [Data standards, data quality, and interoperability \(updated\)](#). *Journal of AHIMA*, 84(11), 64–69.

Use the Internet to complete the following:

- Al-Aidaros, K. M., Bakar, A. A., & Othman, Z. (2012). [Medical data classification with Naïve Bayes approach](#). *Information Technology Journal*, 11(9), 1166–1174.
 - This article covers the use of data classification in the analysis of large volumes of electronic health care data.
- [Data classification](#). (n.d.). Retrieved from http://www.yourwindow.to/information-security/gl_dataclassification.htm
 - Review the definition of data classification and interpret the example of a classification system provided.

u03d1 - Classifying Data as Health Care Evolves

The article, "Data Standards, Data Quality, and Interoperability (Updated)" linked in the Resources was originally published in 2007. It was updated in 2013. Review both versions of the article, looking for similarities and differences. Write a post in which you will explain why you think it was necessary to update the content, relying upon what you have learned about data classification and the evolving health care industry. Refer specifically to the articles to support your discussion.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner, comparing and contrasting your ideas on the articles' revisions.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[Data Standards, Data Quality, and Interoperability \(Updated\)](#)

u03d2 - Data Classification

Health care organizations manage large volumes of personally identifiable information (PII), also known as personal health information (PHI), which is subject to special requirements for privacy and security. Data classification is a practice that can help health care organizations meet the challenges of access and security of PII. Explain how data classification can assist with access and security challenges, particularly in relation to the use of data for health information management functions. Provide at least one example from readings and research.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Respond to a learner with differing or contrasting ideas, noting common areas and areas of difference between your posts.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

u03s2 - Vila Health Challenge Preparation

Vila Health is a virtual environment that simulates a real-world health care system. In the various Vila Health scenarios, you will apply professional strategies, practice skills, and build competencies that you can apply to your coursework and in your career.

During this unit, complete the Vila Health: Standards Development Organizations challenge. You will use the information you gather in this scenario to complete upcoming coursework.

This content will prepare you for the next unit assignment.

- Click **Vila Health: Standards Development Organizations** to complete this multimedia challenge.

Course Resources

Vila Health: Standards Development Organizations

Unit 4 >> Data Standards

Introduction

In today's world of technologically savvy organizations, data and information are transmitted continuously as an integral part of business operations. Data standards, which sets guidelines for gathering, retaining, regulating, and conveying information between computer systems, must be developed to ensure that different systems can speak to one another. These computers may be part of a local area network (LAN) that allows data and information to be shared among individual computers or a wide area network (WAN) that allows data and information to be shared globally.

Data standardization is needed not only between organizations but also within them. Some organizations produce and distribute data and information on multiple systems, and in order to operate efficiently and effectively, these systems must integrate the data. Commonly, integration is done through data standards. Standards are developed and coordinated by standards development organizations (SDOs). The development process begins when SDOs, users, or producers of data recognize the need for a standard, collaborate on the content of the standard, and then draft the standard.

In this unit, you will learn to identify the importance of data standards, evaluate standards information, and discuss the development of SDOs and also the standards development work they do.

Learning Activities

u04s1 - Studies

Readings

Use the Capella University Library to read the following:

- Hammond, W. E., Jaffe, C., & Kush, R. D. (2009). [Healthcare standards development: The value of nurturing collaboration](#). *Journal of AHIMA*, 80(7), 44–50; quiz 51–52.
 - This article emphasizes the importance of standards in improving health care. As you read, be sure to check out the diagram included on page 47 of the PDF version.
- Trembly, A. C. (2007). [Standards are important, but are they critical?](#) *National Underwriter / Life & Health Financial Services*, 111(20), 26–29.
 - This article discusses the importance of data standards in the health care industry and examines how the absence of data standards affects business operations.
- McNickle, M. (2012). [National Library of Medicine sets meaningful use standards](#). *Informationweek - Online*.
 - This article explains the role of the NLM in the creation of meaningful use standards.
- Grantham, D. (2012). [Seeing synergy: Aligning meaningful use measures with accreditation standards](#). *Behavioral Healthcare*, 32(6), 17–18.
 - This article discusses the connection between meaningful use and existing accreditation standards.

Research

Use the following websites of some organizations in preparation for this unit's assignment. You will need to determine the name and location of each organization, the type of standard each organization develops, a description of each organization, and the data to which the standard applies.

- [X12](http://www.x12.org/). (n.d.). Retrieved from <http://www.x12.org/>
- [ASTM International](https://www.astm.org/). (n.d.). Retrieved from <https://www.astm.org/>
- [DICOM](http://dicom.nema.org/). (n.d.). Retrieved from <http://dicom.nema.org/>
- [Health Level Seven International](http://www.hl7.org/). (n.d.). Retrieved from <http://www.hl7.org/>
- [IEEE](http://www.ieee.org/index.html). (n.d.). Retrieved from <http://www.ieee.org/index.html>
- [International Organization for Standardization \(ISO\)](http://www.iso.org/iso/home.htm). (n.d.). Retrieved from <http://www.iso.org/iso/home.htm>
- [NCPDP](http://www.ncpdp.org/). (n.d.). Retrieved from <http://www.ncpdp.org/>
- [NEMA](http://www.nema.org/pages/default.aspx). (n.d.). Retrieved from <http://www.nema.org/pages/default.aspx>
 - Visit the Standards and Publications page on this website.

u04a1 - Data Standardization

Data must go through a process of collection, measurement, analysis, and reporting before it becomes useful information. To accomplish this process, data has to be defined and classified (structured); often, data points must be established. The latter is particularly common in relation to data collected and retrieved from electronic

health systems. Standards development organizations (SDOs) help set guidelines to standardize the use of health care data points.

In this assignment, you will classify data points and review the use of data standards for classification.

Instructions

Review the Vila Health: Standards Development Organizations media piece. After you review it, create a table to compile information on standards development organizations (SDOs) and classify data points most commonly used to capture patient information in health information systems. Links to SDOs are provided in the Resources. Complete the following in your table:

- List the type of standards developed by the SDOs.
- Describe the data to which the standard applies.
- Explain why data standards are important in interpreting health care data.
- Describe how the standards can be used as data standardization strategies for quality improvement initiatives.
- Provide one example of a quality improvement initiative for each SDO.
- List the type of data points and classification that may apply to the SDO, based on the description of the data to which the standard applies. (For example, The National Council for Prescription and Drug Programs would likely set standards for the data point of medications.) You may choose from the following data points:
 - Identification number.
 - Name.
 - Address.
 - Telephone number.
 - Date of birth.
 - Gender.
 - Height.
 - Weight.
 - Date of admission.
 - Diagnoses.
 - Medications.
 - Medication dosage.
 - Medication frequency.
- Conclude with a one-page report summarizing your findings and comparing information from the SDO that compares to the data points.

Submission Requirements

- **Written communication:** Written communication should be clear and generally free of grammatical errors.
- **Format:** Document with table and summary.
- **APA formatting:** Use APA style and format for the paper, references, and citations.

- **Font and font size:** Times New Roman, 12 point.

Course Resources

[ASTM International](#)

[Vila Health: Standards Development Organizations](#) | [Transcript](#)

[DICOM](#)

[Health Level Seven International](#)

[International Organization for Standardization \(ISO\)](#)

[IEEE](#)

[NEMA](#)

[NCPDP](#)

[X12](#)

[APA Style and Format](#)

u04d1 - Data Standards and Data Integration

Assume the role of data analyst for Vila Health, which just acquired a health care system consisting of 21 small hospitals. These hospitals are in different geographical locations. Collect data on different systems and use different platforms. Write a post in which you discuss how the development of data standards can help Vila Health integrate data systems at its newly acquired institutions.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Look for opportunities to develop ideas offered by other learners, see relationships with ideas in your post, or discover the root of differences

between posts.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

Unit 5 >> Benchmarking

Introduction

Evaluating health care services and identifying opportunities for improvement are often derived from the use of benchmarking or comparative data. In order to create a baseline for comparative data, it is important to understand key statistical measures and calculations. This unit will review how statistics relate to benchmarking and comparative data, as well as its use in interpretation and performance evaluation.

Learning Activities

u05s1 - Studies

Readings

Use your *Calculating and Reporting Healthcare Statistics* text to read the following:

- Chapter 3, "Patient Census," pages 31–52.
- Chapter 4, "Percentage of Occupancy," pages 53–69.
- Chapter 5, "Length of Stay," pages 71–90.

Use the Capella University Library to read the following:

- Sower, V. E. (2007). [Benchmarking in hospitals: More than a scorecard](#). *Quality Progress*, 40(8), 58–60.
- Fibuch, E., & Van Way, C. W. (2013). [Bench marking's role in driving performance](#). *Physician Executive*, 39(1), 28–32.
- Valdes-Perez, R. (2015). [Smart benchmarking starts with knowing whom to compare yourself to](#). *Harvard Business Review Digital Articles*, 2–5.
- Anonymous. (1994). [Experts discuss how benchmarking improves the healthcare industry](#). *Healthcare Financial Management*, 48(9), 90.

Multimedia

- Click **Mean, Median, and Mode** to view the multimedia piece.
- Click **Summary and Descriptive Statistics** to view the animation.

Course Resources

Summary and Descriptive Statistics

Mean, Median, and Mode

u05a1 - Benchmarking With Hospital Data

Benchmarking is a tool used not only for measurement but also for quality improvement. Benchmarking is a process of comparing performance as a strategy to identify opportunities for improvement. The first step in applying health information to benchmarking is to access it, analyze it, and use it for comparisons.

In this assignment, you will summarize your findings from the application of an online tool called Hospital Compare listed in the Resources. This tool will show you where facilities fall compared to national benchmarks.

Instructions

Imagine that Vila Health is interested in comparing its performance to facilities in the surrounding area. As a Vila Health analyst, you will perform benchmarking comparisons and then evaluate the data source to be used for benchmarking purposes. Use the Hospital Compare feature on the U.S. Department of Health and Human Services website to access benchmarking data for local hospitals to represent Vila Health facilities. After you perform the comparisons, you will summarize your findings on the data source in a memo to the HIM director.

1. Under the heading Find a Hospital, select at least two facilities to compare by selecting Add to Compare.
2. When you have selected at least two facilities, select Compare Now.
3. Select one of the categories or tabs at the top (for example, Survey, Complications).
4. Select a category from the drop-down arrows.
5. Select Show Graphs if you cannot see the graphs already.
6. Read the resulting output to understand what this data source provides.

Include the following in your memo:

- Describe the use of benchmarking data and comparative data.

- Discuss statistical data that allows comparative measures, such as mean and median. Provide examples based on your Hospital Compare results.
- Interpret the results to understand what types of information can be provided by the comparative measures. Provide examples or graphs based on your Hospital Compare results.
- Describe who would use the benchmarking data and also provide the implications of the data.

You can refer to the Summary and Descriptive Statistics media piece for additional help.

Submission Requirements

- **Written communication:** Written communication should be clear and generally free of grammatical errors.
- **APA formatting:** Use APA style and format for the paper, references, and citations.
- **Length of paper:** Two pages.
- **Font and font size:** Times New Roman, 12 point.

Course Resources

[Hospital Compare](#)

[Summary and Descriptive Statistics](#) | [Transcript](#)

[APA Style and Format](#)

u05d1 - Benchmarking in Health Care

Benchmarking in health care is a fairly new concept, compared to its historical use in other industries. Review the article, "Benchmarking in Hospitals: More Than a Scorecard," linked in the Resources. Pay particular attention to the discussion of how benchmarking can be used to support performance in a health care organization.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Do you agree or disagree with the discussion of the other learner? Refer to the article or other resources to support your views.

Undergraduate Discussion Participation Scoring Guide

[Benchmarking in Hospitals: More Than a Scorecard](#)

[APA Style and Format](#)

Unit 6 >> Data Sharing

Introduction

Data sharing must take place in order for organizations and individuals to perform daily business operations. Data is shared via computer, on paper, and verbally. As noted in Unit 4, one means of facilitating data sharing is the creation of data standards. Another requirement is the establishment of standardized communication protocols that provide for electronic data sharing.

A key consideration when sharing health data is privacy and confidentiality. Privacy means an individual's right to be protected from unauthorized sharing of personal data and confidentiality means the ability to control access to confidential data. Without privacy and confidentiality rules, there would be unlimited access to information that could cause harm or danger to an individual or organization.

Every industry has laws, rules, and procedures that govern how information can be used and who has a right to view, amend, and share this information. The health care industry strives to protect the right to privacy and confidentiality but faces some challenges because of the nature of the information that is collected.

In this unit, you will learn the importance of privacy and confidentiality in data sharing and investigate the challenges in data sharing. You will also learn about the significance of information governance in sharing and protecting health care data.

Learning Activities

u06s1 - Studies

Readings

Use your *Health Information Management: Concepts, Principles, and Practice* text to read the following:

- Chapter 3, "Data Governance and Stewardship," pages 77–96.

Use the Capella University Library to read the following:

- Buffone, P. N. (2016). [The 'cure'-all for 21st century data sharing](#). *Pharmaceutical Executive*, 36(8), 39,50.
- Dowell, M. A. (2012). [HIPAA privacy and security HITECH act enforcement actions begin](#). *Employee Benefit Plan Review*, 66(12), 9–11.
 - This article discusses enforcement actions related to failure to comply with the HIPAA and HITECH Act security and privacy rules.
- Kadlec, L. (2014). [Coming soon to your healthcare facility: Information governance. A look at healthcare information governance trends through practical case studies](#). *Journal of AHIMA*, 85(8), 26–32.
- Kersten, S. (2013). [Moving the needle toward a data-driven health care system: Optimizing the EHR through information governance](#). *Journal of Health Care Compliance*, 15(3), 45–46,62.
- Marbury, D. (2016). [Interoperability: Dream vs. reality](#). *Managed Healthcare Executive*, 26(10), 29–31.
- Reeves, M. G., & Bowen, R. (2013). [Developing a data governance model in health care](#). *Healthcare Financial Management*, 67(2), 82–86.
- Simon, N. (2016). [The dread of data sharing](#). *Health Management Technology*, 37(8), 25.
- Tomes, J. P. (2012). [Keeping it private](#). *Journal of AHIMA*, 83(3), 32–35.
 - This article discusses activities that will help organizations comply with HIPAA and HITECH Act privacy and security rules.
- Weinstock, M. (2010). [The new privacy norm](#). *Hospitals & Health Networks*, 84(2), 20.

Research

Use the Internet to complete the following:

- AHIMA. (n.d.). [Information governance \(IG\)](#) Retrieved from <http://www.ahima.org/topics/infogovernance>
 - Learn more about information governance related to health information management (HIM) from this website. Be sure to look at IG Basics and IG In the News.

u06d1 - Data Sharing Policies

Technology has afforded many improvements in the health care industry, primarily in the access to data and information, also known as data sharing. At the same time, the industry is confronted with the important issue of protecting patient privacy. One way to address patient privacy issues is with the implementation of policies and procedures.

Imagine that the Vila Health system is continuing to grow and has opened four new offices located across the United States, in addition to the 21 facilities acquired earlier in the year. Each office uses a different a computer system. There is currently no interoperability between systems. The executive management team realizes how

inefficiently and ineffectively the network operates. You have been asked to provide a summary of recommendations to implement a cohesive data-sharing process, specifically related to workstation use.

Describe at least two recommendations that can be implemented for a cohesive data-sharing process and offer a type of policy or procedure that could support the recommendations.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Look for opportunities to further develop the recommendations of other learners, relate them to your post, or identify common themes. You may also compare your findings to an opposing or different view.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

u06d2 - Protecting Patient Privacy

The health care industry is consistently confronted with the important issue of protecting patient privacy. Read the case example, "HMO Revises Process to Obtain Valid Authorizations," linked in the Resources. In reference to the case, discuss why data and information sharing can be difficult in relation to protecting patient information. Include some solutions that are used to resolve these difficulties.

A complaint alleged that a health maintenance organization (HMO) impermissibly disclosed a member's PHI when it sent her entire medical record to a disability insurance company without her authorization. An Office for Civil Rights (OCR) investigation indicated that the form the HMO relied on to make the disclosure was not a valid authorization under the Privacy Rule. Among other corrective actions to resolve the specific issues in the case, the HMO created a new HIPAA-compliant authorization form and implemented a new policy that directs staff to obtain patient signatures on these forms before responding to any disclosure requests, even if patients bring in their own authorization form. The new authorization specifies what records or portions of the files will be disclosed; the respective authorization will be kept in the patient's record, together with the disclosed information.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Compare your findings to an opposing or different view of a fellow classmate.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[HMO Revises Process to Obtain Valid Authorizations](#)

[Health Information Privacy](#)

[APA Style and Format](#)

u06s2 - Unit 7 Assignment Preparation

Use these resources to prepare for your Unit 7 assignment. In the assignment, you will use Visio to create a data model. You may also use [Courseroom Software Resources](#) for Visio.

- Welton, T. (n.d.). [Creating and managing diagrams in Visio 2016 \[Video\]](#). Skillsoft.
 - Complete all the topics available in the video.
- Welton, T. (n.d.). [Getting started with Visio 2016 \[Video\]](#). Skillsoft.
 - Complete all the topics available in the video.

Unit 7 >> Data Modeling

Introduction

Data modeling is a process that is used to determine data needs and to recognize relationships between data. It is a diagram or pictorial used to present data sources, users of data, and flow of data. Data modeling can also be used to help standardize the way in which data is used. Data modeling requires a comprehensive analysis of data, seeking an understanding of what data is needed, by whom, and how data items are related to each other. Data modeling is also used as a method of communication between information technology staff and end users because it outlines the users and use of data.

In this unit, you will examine the types of data models and the three levels of data modeling. You will also have an opportunity to explore how data models expose data redundancies and inconsistencies, as a way to implement improvement initiatives. You will be required to construct a data model for your assignment in this unit.

Learning Activities

u07s1 - Studies

Readings

Use the Capella University Library to read the following:

- Pigott, D. J., & Hobbs, V. J. (2011). [Complex knowledge modelling with functional entity relationship diagrams](#). *Vine*, 41(2), 192–211.

Use the Internet to complete the following:

- Agile Data. (n.d.). [Data modeling 101](#). Retrieved from <http://www.agiledata.org/essays/dataModeling101.html>
 - This article discusses the fundamentals of data modeling and how data modeling is used. You can examine the sample data models available.
- Stephens, R. K., & Plew, R. R. (2001). [Logical versus physical database modeling](#). Retrieved from <http://www.developer.com/tech/article.php/641521>
 - This article discusses the purpose of logical and physical database models.

For additional information, review the following as they are about entity-relationship models:

- Patton, G. E. (2009). [Functional requirements for authority data](#). Warsaw, POL: De Gruyter.
- Chilton, M. A. (2006). [Data modeling using entity relationship diagrams: A step-wise method](#). *Journal of Information Systems Education*, 17(4), 385–394.

Multimedia

- Click **Creating an ERD** to prepare for your assignment.
- Click **Three Levels of Data Modeling** to help prepare for your assignment.

Research

Conduct an Internet and Capella library search on the following keywords:

- Entity relationship diagrams.
- Conceptual data models.
- Logical data models.
- Physical data models.

This research will provide foundational information to assist with the completion of the unit assignment and discussions on data modeling.

Course Resources

Creating an ERD

Three Levels of Data Modeling

u07a1 - Data Model

A data model provides a user's view of how the data should be structured and displayed. It also provides an understanding of how information is acquired and required to support business practices within an organization.

In this assignment, you will use Visio to develop a data model for a specific scenario.

Instructions

You have been provided the following data points from a Vila Health clinic. Using the data points provided, develop a data model for the Vila Health clinic; apply your knowledge of data modeling concepts. Your data model should structure the data to support the business practices of a health care organization. The data points should be grouped together under a category heading. Each category should have a title that is short but descriptive. Develop your data model using the symbols and notations found in entity-relationship diagrams. Use Visio to create your model. You may also use Courseroom Software Resources linked in the Resources for Visio.

- Consumer ID.
- Last name.
- First name.
- Date of birth.

- Sex or gender.
- Street address.
- City.
- State.
- Zip code.
- Telephone number.
- Social security number.
- Type of radiological test.
- Date ordered.
- Physician's last name.
- Physician's first name.
- Physician's specialty.
- Physician's ID.
- Physician's telephone number.
- Insurance name.
- Insurance group number.
- Insurance type.
- Effective date.
- Expiration date.
- Diagnosis.
- Signs and symptoms.
- Presenting problem.
- Time of arrival.
- Time of discharge.

Submission Requirements

- **Written communication:** Written communication should be clear and generally free of grammatical errors.
- **Format:** Word and Visio documents.
- **APA formatting:** Use APA style and format for the paper, references, and citations.
- **Length of paper:** Diagram plus two pages of text.
- **Font and font size:** Times New Roman, 12 point.

Course Resources

[Courseroom Software Resources](#)

Microsoft Visio 2016

[APA Style and Format](#)

u07d1 - Data Model

Search the web for the job description of a data analyst and a database administrator. Compare the roles and responsibilities of each and provide an example of how and why they may use data models. Attach a copy of each job description.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Compare the reasons provided for why the roles would use data models.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

Unit 8 >> Data Sampling

Introduction

Data sampling is the method of selecting a set of units, known as samples or representatives, from a larger group. However, data professionals must be careful not to contaminate data and compromise data integrity when sampling.

Collecting samples can be done through random and nonrandom selection. Nonrandom samples can diminish the credibility of research because they may not be true representatives of a population. Data sampling is often used by researchers and other health information professionals. In this unit, you will review the use of data sampling methods and its importance in evaluating health care data.

Learning Activities

Readings

Use your *Calculating and Reporting Health Statistics* text to read the following:

- Chapter 12, Basic Research Principles, pages 283–307.
- Chapter 13, Inferential Statistics in Healthcare, pages 309–320.

Use your *Health Information Management: Concepts, Principles, and Practice* text to read the following:

- Chapter 9, "Research Methods," pages 265–290.

Use the Capella University Library to read the following:

- Glaeser, E. L. (2001). [Census sampling is dangerous](#). *Wall Street Journal*, A. 18.
 - This article discusses the inaccuracies in the U.S. census data sampling process.
- Cleary, M., Horsfall, J., & Hayter, M. (2014). [Data collection and sampling in qualitative research: Does size matter?](#) *Journal of Advanced Nursing*, 70(3), 473–475.
- Kandola, D., Banner, D., O'Keefe-McCarthy, S., & Jassal, D. (2014). [Sampling methods in cardiovascular nursing research: An overview](#). *Canadian Journal of Cardiovascular Nursing*, 24(3), 15–18.
- Roberts, P. (2015). [Data sampling for the right reasons](#). *Business Intelligence Journal*, 20(1), 33–38.

u08d1 - Data Sampling

Data sampling is a common strategy used to assess and draw conclusions about a larger group of data. However, the process should be approached with caution. Review the CDC's sample statistics on the "Emergency Department Visits," linked in the Resources. Discuss the key elements or guidelines for accurately sampling data, as well as associated risks and benefits of sampling. Provide an example from the CDC data.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Find and comment on a post that helps you understand the importance of sampling. How does it build your understanding? Does it agree with your post or any other posts by your fellow learners?

Undergraduate Discussion Participation Scoring Guide

[Emergency Department Visits](#)

[APA Style and Format](#)

u08d2 - Data Surveys

Vila Health conducted a survey on the time patients had to wait in the emergency room (ER) before being seen by a triage nurse. The survey questions were mailed to patients after discharge. After receiving completed surveys from 100 patients, the researchers decided to delete several of the questions and only survey patients seen in the ER during the early morning hours. Discuss how changing the survey tool and restricting the data collection or sample time could compromise the research.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Compare your findings to an opposing or different view.

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)

Data mining is the analytical process of extracting data from a data warehouse to produce information that was not previously known. Data mining turns data into information. Once the data becomes information, it can be transformed into knowledge.

Data mining is a key factor in knowledge management. Imagine having the ability to house current and past data in the same location and use it to benefit present and future business operations. Data mining technology and techniques are used to make strategic decisions. In this unit, you will define data mining, perform data mining activities, and study how critical data mining is important in the management and use of health care data.

Learning Activities

u09s1 - Studies

Readings

Use the Capella University Library to read the following:

- Page, L. (2007). [Health, productivity efforts rest on quality of statistics](#). *Business Insurance*, 41(50), 14.
 - This article discusses how data is becoming an essential tool for employers to improve employee health and productivity. It also discusses the legal issues surrounding the sale of prescription drug information by drug stores to data miners.
- Conz, N. (2007). [Mining your own business – Data mining technologies can help insurers access and leverage the institutional knowledge vital to fraud mitigation efforts that is locked inside their current and historical claims data](#). *Insurance & Technology*, 32(10), 24–29.
 - This article discusses how data mining techniques can unlock information vital to fraud mitigation.

Use the Internet to complete the following:

- Brossette, S. E., Sprague, A. P., Hardin, J. M., Waites, K. B., & Moser, S. A. (1998). [Association rules and data mining in hospital infection control and public health surveillance \[PDF\]](#). *The Journal of the American Medical Informatics Association*, 5(4), 373–381.
 - This article addresses the difficulty in pattern identification in public health information.
- [Data mining](#). (n.d.). In *Wikipedia*. Retrieved from http://en.wikipedia.org/wiki/Data_mining
 - Explore some of the resources listed on this website.

Multimedia

These two media pieces will help to prepare you for your assignment in this unit:

- Click **Data Mining** to view the interactive media piece.
- Click **Presentation of Data** to view the video.

u09a1 - Data Mining

Data mining is an analytical process used to extract data for the purpose of providing information.

In this assignment, you will perform data mining activities and apply the results to different uses in health care information settings.

Instructions

Complete the data mining tutorial in the media piece Data Mining. In addition, watch the video titled Presentation of Data. For this assignment, you will be working with data sets provided as Excel spreadsheets linked in the Resources. Download and review the data sets.

As a data analyst for Vila Health, you have been asked to work on a project related to customer satisfaction and nursing staff performance. You will analyze two data sets and compose a report for the clinic's physicians based on your analysis. In your closing report, draw conclusions about how the information from the data sets can be connected. For example, can the physician's performance impact nursing tasks? Or, is there an association between customer satisfaction and nursing task performance?

- Data set 1: Clinic Performance linked in the Resources, contains raw data about performance at your clinic from a customer service perspective.
 - Organize and analyze the raw data.
 - Draw conclusions about clinic physicians and customer service.
 - Explain if the sample can provide an accurate depiction of clinic performance, noting variations and patterns.
 - Describe how to use data sampling methods in strategic decision-making.
 - Create two recommendations for improving patient service based on the results of your analysis.
- Data set 2: Nursing Data Worksheet linked in the Resources, provides information on nursing staff performance on two tasks. The data shows that there has been a decrease in productivity for the nursing staff at one of the Vila Health clinics in the past few months. Using the Nursing Data Worksheet and the pivot table report, complete the following:
 - Perform data mining techniques to determine how the nursing staff performed when completing Task 1 and Task 2.

- Discuss data mining tools. Provide a brief summary of data mining techniques that can be used to evaluate the nursing staff tasks. Include a description of how each technique can be used to help determine or detect in health care, including an example of the use of each data mining technique in relation to the nursing data.
 - Genetic algorithms.
 - Neural networks.
 - Predictive modeling.
 - Rule induction.
 - Fuzzy logic.
 - Decision trees.
 - K-nearest neighbor.
- Describe the use of data mining in strategic decision-making.

Submission Requirements

- **Written communication:** Written communication should be clear and generally free of grammatical errors.
- **Format:** Word document including data analysis tables from Excel.
- **APA formatting:** Use APA style and format for the paper, references, and citations.
- **Length of paper:** Five pages.
- **Font and font size:** Times New Roman, 12 point.

Course Resources

[Presentation of Data](#) | [Transcript](#)

[Data Mining](#) | [Transcript](#)

Clinic performance [XLS]

Nursing Data Worksheet [XLS]

[APA Style and Format](#)

u09d1 - Data Mining Issues

Review the article, "State Loses Data-Mining Case," linked in the Resources. Present at least two perspectives on the following question:

- Is the sale of information by data miners to drug companies a legal or ethical issue?

Explain both perspectives, making strong arguments that do not reveal your personal opinion on the issue.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Explain why you agree or disagree with the learner's reason for supporting this as a legal issue.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[State Loses Data-Mining Case](#)

[APA Style and Format](#)

Unit 10 >> Data Presentation

Introduction

Deciding how to present data is a very important part of the data analysis process because data presentation identifies patterns, trends, and behaviors. Data presentation provides a graphical representation of the data collected. Choosing the appropriate method to display data depends on the type of data collected. It is also important to consider who will review the data—your audience must be able to read and interpret the data through the method of presentation. In this unit, you will explore the use of data presentations and data visualization as effective strategies in the decision-making process.

Learning Activities

u10s1 - Studies

Readings

Use your *Calculating and Reporting Healthcare Statistics* text to read the following:

- Chapter 11, Presentation of Data, pages 245–281.

Use your *Health Information Management: Concepts, Principles and Practices* text to read the following:

- Chapter 17, Descriptive versus Inferential Statistics, pages 509–537.
- Chapter 18, Data Visualization, pages 539–561.

u10d1 - Patterns and Trends in Data

There are many ways in which data can be presented to identify trends or patterns. One way is through the use of a dashboard. Work through "Hospitals that have Demonstrated Meaningful Use through the Medicare EHR Incentive Program," linked in the Resources. Explain why certain states may have a smaller percentage of hospitals that demonstrated meaningful use when compared to other states. Support your explanation with thoughts on identifying trends, patterns, and comparative information.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Respond to a post that identifies a pattern, trend, or behavior different from what you have identified. Explain why you consider it as important or unimportant.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[Hospitals That Have Demonstrated Meaningful Use Through the Medicare EHR Incentive Program](#)

[APA Style and Format](#)

u10d2 - More on Dashboards

Graphical perception is a critical element in presenting data. The graph should best represent the data and information intended. Certain graphs are more effective at displaying information for a fast and accurate interpretation while others are most effective to display a specific statistical outlook.

Search online for a bad graph. Provide the link to the graph, a description of the graph, and an explanation regarding why you think the graph is bad. Finally, using graphical perception as a foundation, describe a method that would be better suited to present the information.

Your initial post should be at least 150 words and must include at least one reference (both an in-text citation and a full bibliographic citation at the end, both following APA style).

Response Guidelines

Review the posts of other learners and respond to at least one other learner. Share your views about how the graph might be improved. You can also offer suggestions about a graph type which would have been more appropriate and why.

Course Resources

Undergraduate Discussion Participation Scoring Guide

[APA Style and Format](#)