Syllabus

Course Overview

At every level of health care administration, data are used to make decisions—decisions about value-based reimbursement, decisions about operations and outcomes, and decisions about quality and patient safety. This course will help you not only understand the need for data, but also understand how to use data analysis tools and techniques in the pursuit of value, quality, and safety.

In this course, you will focus on a particular foundational statistical concept and related practical application. That focus will include readings from the textbook and health literature, step-by-step guidance in the computation practice with user-friendly Excel software and interactive courseroom discussions, along with media presentations and real-world examples.

Data Analysis Software

To complete the assignments in this course, you will need to use data analysis software to complete statistical calculations, create graphs and tabular summaries, and share your results in Microsoft Word documents. You will use Microsoft Excel and Microsoft Excel Analysis ToolPak add-in. Be aware that not all statistical calculations, graphs, and tabular summaries can be completed in this software, so you may need to do some work outside of the software.

If you do not own Microsoft Excel, Capella arranges for a significant discount for Microsoft Office for Capella learners.

Kaltura

As part of this course, you are required to record a presentation in Unit 9 and participate in a discussion in Unit 1 using Kaltura or similar software. Refer to Using Kaltura for more information about this courseroom tool.

Note: If you require the use of assistive technology or alternative communication methods to participate in these activities, please contact DisabilityServices@Capella.edu to request accommodations.

Course Competencies (Read Only)

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

1. Plan for data collection, measurement, and analysis.

2. Analyze data using computer-based programming and software.

3. Interpret results of data analysis for value-based health care decisions, policy, or practice.

4. Present results of data analysis to support a decision or recommendation.

5. Communicate audience-appropriate health management content in a logically structured and concise manner, writing clearly with correct use of grammar, punctuation, spelling, and APA style.

Course Prerequisites

There are no prerequisites for this course.

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.

Hardware

Capella University requires learners to meet certain minimum computer requirements. The following hardware may go beyond those minimums and is required to complete learning activities in this course. **Note:** If you already have the following hardware, you do not need to purchase it. Visit the Course Materials page on Campus for more information.
Hardware for Recording Audio
> Headset with microphone
> Broadband Internet connection

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.

- Amarasingham, R., Patzer, R. E., Huesch, M., Nguyen, N. Q., & Xie, B. (2014). Implementing electronic health care predictive analytics: Considerations and challenges. *Health Affairs, 33*(7), 1148–1154.
- Bates, D. W., Saria, S., Ohno-Machado, L., Shah, A., & Escobar, G. (2014). Big data in health care: Using analytics to identify and manage high-risk and high-cost patients. *Health Affairs, 33*(7), 1123–1131.
- Berinato, S. (2019). Data science and the art of persuasion. *Harvard Business Review, 97*(1), 126–137.
- Casson, R. J., & Farmer, L. D. M. (2014). Understanding and checking the assumptions of linear regression: A primer for medical researchers. *Clinical & Experimental Ophthalmology, 42*(6), 590–596.
- Connelly, M. D., & Sykes, R. (2016). Big data: Central to the population health journey. *Frontiers of Health Services Management, 32*(4), 40–45.
- DalleMule, L., & Davenport, T. H. (2017, May). What's your data strategy? *Harvard Business Review, 95*(3), 112–121.
- Davenport, T. H. (2013, June 18). Data is worthless if you don't communicate it. *Harvard Business Review Digital Articles*, 2–3.
- Davenport, T. H. (2014, September 02). A predictive analytics primer. *Harvard Business Review Digital Articles*, 2–4.
- Davenport, T. H. (2015, October 21). 5 essential principles for understanding analytics. *Harvard Business Review Digital Articles*, 2–4.
- Di Paola, G., Bertani, A., De Monte, L., & Tuzzolino, F. (2018). A brief introduction to probability. *Journal of Thoracic Disease, 10*(2), 1129–1132.

- Divisi, D., Di Leonardo, G., Zaccagna, G., & Crisci, R. (2017). Basic statistics with Microsoft Excel: A review. *Journal of Thoracic Disease, 9*(6), 1734–1740.
- Dulin, M. F., Lovin, C. A., & Wright, J. A. (2016). Bringing big data to the forefront of healthcare delivery: The experience of Carolinas HealthCare System. *Frontiers of Health Services Management, 32*(4), 3–14.
- Faroult, S. (2016). *Getting the message across: Using Slideware effectively in technical presentations.* New York, NY: Apress.
- Fitzgerald, M. (2015). When health care gets a healthy dose of data [PDF]. *MIT Sloan Management Review, 57*(1), 3–17.
- Frey, B. B. (Ed.). (2018). Confidence interval. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Descriptive statistics. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Histogram. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Hypothesis testing. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Inferential statistics. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Multiple linear regression. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Significance. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frick, W. (2014, May 19). An introduction to data-driven decisions for managers who don't like math. *Harvard Business Review Digital Articles*, 2–5.
- Gallo, A. (2015, November 04). A refresher on regression analysis. *Harvard Business Review Digital Articles*, 2–9.
- Gallo, A. (2016, February 16). A refresher on statistical significance. *Harvard Business Review Digital Articles*, 2–9.
- Katz, M. H. (2003). Multivariable analysis: A primer for readers of medical research. *Annals of Internal Medicine, 138*(8), 644–650.
- Kern, H. P., Reagin, M. J., & Reese, B. S. (2016). Priming the pump for big data at Sentara Healthcare. *Frontiers of Health Services Management, 32*(4), 15–26.
- Kros, J. F., & Rosenthal, D. A. (2016). *Statistics for health care management and administration: Working with Excel* (3rd ed.). San Francisco, CA: Jossey-Bass.
- Larose, D. T., & Larose, C. D. (2015). Multiple regression and model building. In *Data mining and predictive analytics*. Hoboken, NJ: John Wiley & Sons.
- Li, M. (2015, October 27). The two questions you need to ask your data analysts. *Harvard Business Review Digital Articles*, 2–4.

- Lim, E. (2014). Basic statistics (the fundamental concepts). *Journal of Thoracic Disease, 6*(12), 1875–1878.
- Martin, R. L., & Golsby-Smith, T. (2017). Management is much more than a science: The limits of data-driven decision making. *Harvard Business Review, 95*(5), 128–135.
- Palmer, P. B., & O'Connell, D. G. (2009). Regression analysis for prediction: Understanding the process. *Cardiopulmonary Physical Therapy Journal, 20*(3), 23–26.
- Roski, J., Bo-Linn, G. W., & Andrews, T. A. (2014). Creating value in health care through big data: Opportunities and policy implications. *Health Affairs, 33*(7), 1115–1122.
- Rumsfeld, J. S., Joynt, K. E., & Maddox, T. M. (2016). Big data analytics to improve cardiovascular care: Promise and challenges [PDF]. *Nature Reviews – Cardiology, 13*(6), 350–359.
- Sahni, N. R., Huckman, R. S., Chigurupati, A., & Cutler, D. M. (2017). The IT transformation health care needs. *Harvard Business Review, 95*(6), 128–138.
- Shah, N. D., Steyerberg, E., & Kent, D. M. (2018). Big data and predictive analytics: Recalibrating expectations. *JAMA, 320*(1), 27–28.
- Simpson, S. H. (2015). Creating a data analysis plan: What to consider when choosing statistics for a study. *Canadian Journal of Hospital Pharmacy, 68*(4), 311–317.
- Spencer, G. A. (2016). Big data: More than just big and more than just data. *Frontiers of Health Services Management, 32*(4), 27–33.
- Strome, T. L. (2013). Advanced analytics in healthcare. In *Healthcare analytics for quality and performance improvement* (pp. 183–203). Hoboken, NJ: John Wiley & Sons.
- Strome, T. L. (2013). Basic statistical methods and control chart principles. In *Healthcare analytics for quality and performance improvement* (pp. 145–226). Hoboken, NJ: John Wiley & Sons.
- Strome, T. L. (2013). Developing an analytics strategy to drive change. In *Healthcare analytics for quality and performance improvement* (pp. 29–50). Hoboken, NJ: John Wiley & Sons.
- Strome, T. L. (2013). Fundamentals of healthcare analytics. In *Healthcare analytics for quality and performance improvement* (pp. 15–27). Hoboken, NJ: John Wiley & Sons.
- Strome, T. L. (2013). Usability and presentation of information. In *Healthcare analytics for quality and performance improvement* (pp. 165–181). Hoboken, NJ: John Wiley & Sons.
- Strome, T. L. (2013). Working with data. In *Healthcare analytics for quality and performance improvement* (pp. 91–113). Hoboken, NJ: John Wiley & Sons.
- Waljee, A. K., Higgins, P. D., & Singal, A. G. (2013). A primer on predictive models [PDF]. *Clinical and Translational Gastroenterology, 5*(1), e44.
- Wang, Y., Kung, L., & Byrd, T. A. (2018). Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations. *Technological Forecasting and Social Change, 126*, 3–13.
- Wills, M. J. (2014). Decisions through data: Analytics in healthcare. *Journal of Healthcare Management, 59*(4), 254–262.

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.

- Derrington, D. (2017). *Artificial intelligence for health and health care* [PDF]. Retrieved from https://www.healthit.gov/sites/default/files/jsr-17-task-002_aiforhealthandhealthcare12122017.pdf
- Ginsburg, P. B., de Loera-Brust, A., Brandt, C., & Durak, A. (2018). The opportunities and challenges of data analytics in health care. Retrieved from https://www.brookings.edu/research/the-opportunities-and-challenges-of-data-analytics-in-health-care/
- Microsoft Virtual Academy. (2016). *Data analysis with Excel: Descriptive statistics with data analysis add-in* [Video]. Retrieved from https://mva.microsoft.com/en-us/training-courses/data-analysis-with-excel-16654?l=Glk9CQ8sC_5506573942
- Microsoft Virtual Academy. (2016). *Data analysis with Excel: Histograms in Excel 2016* [Video]. | Transcript Retrieved from https://mva.microsoft.com/en-us/training-courses/data-analysis-with-excel-16654?l=yD5KWP8sC_3406573942
- Microsoft. (n.d.). Copy from Excel to another Office program. Retrieved from https://support.office.com/en-ie/article/copy-from-excel-to-another-office-program-4ba759cc-62f3-422c-bd75-3fc83b06bb6b
- Microsoft. (n.d.). Load the analysis ToolPak in Excel. Retrieved from https://support.office.com/en-us/article/load-the-analysis-toolpak-in-excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4?redirectSourcePath=%252fen-US%252fArticle%252fLoad-the-Analysis-ToolPak-305c260e-224f-4739-9777-2d86f1a5bd89&ui=en-US&rs=en-US&ad=US
- Microsoft. (n.d.). Use the Analysis ToolPak to perform complex data analysis. Retrieved from https://support.office.com/en-us/article/Use-the-Analysis-ToolPak-to-perform-complex-data-analysis-6C67CCF0-F4A9-487C-8DEC-BDB5A2CEFAB6
- ProfTDub. (2010, November 12). *How to make predictions from a multiple regression analysis* [Video]. | Transcript Retrieved from https://www.youtube.com/watch?v=E73AJ73-S6g
- SCSUEcon. (2011, August 20). *Linear regression in Excel* [Video]. | Transcript Retrieved from https://www.youtube.com/watch?v=TkiB1xBnjn4

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.

Library

The following optional readings may be available in the Capella University Library. 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. If the full text is not available, you may be able to request a copy through the [Interlibrary Loan](#) service.

- Frey, B. B. (Ed.). (2018). [Excel.](#) In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Sue, V. M., & Griffin, M. T. (2016). *[Data visualization & presentation with Microsoft Office.](#)* Thousand Oaks, CA: Sage.
- Theobald, T. (2016). *[Develop your presentation skills.](#)* London, UK: Kogan Page.

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.

- Darling, N. (2017). [Reporting statistics in APA style.](#) Retrieved from https://www.psychologytoday.com/us/blog/thinking-about-kids/201704/reporting-statistics-in-apa-style
- Microsoft. (n.d.). [Create a presentation in PowerPoint.](#) Retrieved from https://support.office.com/en-gb/article/create-a-presentation-in-powerpoint-422250f8-5721-4cea-92cc-202fa7b89617

Unit 1 ≫ Getting Started With Data Analysis Techniques and Tools

Introduction

This unit provides an introduction to data analysis and its potential to improve decision making. You will install the Microsoft Excel Data Analysis Pak for use in this course and review the challenges and opportunities for big data analytics to support health care decisions.

Learning Activities

u01s1 - Studies

Readings

Use the Capella University Library to read the following:

- Use your *Statistics for Health Care Management and Administration* text to read:
    - Chapter 1, "Statistics and Excel," pages 3–31.
    - Chapter 2, "Excel As a Statistical Tool: The Data Analysis Pak," pages 61–63.

- Frick, W. (2014, May 19). An introduction to data-driven decisions for managers who don't like math. *Harvard Business Review Digital Articles*, 2–5.
- Strome, T. L. (2013). Fundamentals of healthcare analytics. In *Healthcare analytics for quality and performance improvement* (pp. 15–27). Hoboken, NJ: John Wiley & Sons.
- Strome, T. L. (2013). Working with data. In *Healthcare analytics for quality and performance improvement* (pp. 91–113). Hoboken, NJ: John Wiley & Sons.
- Wang, Y., Kung, L., & Byrd, T. A. (2018). Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations. *Technological Forecasting and Social Change, 126*, 3–13.

Optional Readings

You may choose to read the following:

- Frey, B. B. (Ed.). (2018). Excel. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.

u01s1 - Learning Components

- Describe sources of data.
- Define big data.
- Identify the benefits of data analytics in health care.

- Explain application of data analysis techniques.

To complete the assignments in this course, you will need to use data analysis software to complete statistical calculations, create graphs and tabular summaries, and share your results in Microsoft Word documents. You will use Microsoft Excel and Microsoft Excel Analysis ToolPak add-in. Refer to the following for instructions.

- Microsoft. (n.d.). Load the analysis ToolPak in Excel. Retrieved from https://support.office.com/en-us/article/load-the-analysis-toolpak-in-excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4?redirectSourcePath=%252fen-US%252fArticle%252fLoad-the-Analysis-ToolPak-305c260e-224f-4739-9777-2d86f1a5bd89&ui=en-US&rs=en-US&ad=US
    - Be aware that not all statistical calculations, graphs, and tabular summaries can be completed in this software, so you may need to do some work outside of the software.

Microsoft Excel Data Analysis ToolPak Add-In for PC and Mac

Microsoft Excel Analysis ToolPak Activation for PC Users: The Microsoft Excel Analysis ToolPak is a specialized Excel add-in included in the standard Microsoft Office suite. If your Excel software meets the standard Capella University Computer Requirements, you will not need to purchase this software. However, you may need to activate the application before you can use it. If you do not own Microsoft Excel, Capella arranges for a significant discount for Microsoft Office for Capella learners.

The following provides an overview of the Analysis ToolPak, instructions for loading and activation, and instructions on using the ToolPak to perform data analysis. Note that these instructions are for 2016 and older versions of Microsoft Excel for PC and for the 2016 version only for Mac. If you are using a different version, you may need to search Microsoft's website for the appropriate instructions.

- Microsoft. (n.d.). Use the Analysis ToolPak to perform complex data analysis. Retrieved from https://support.office.com/en-us/article/Use-the-Analysis-ToolPak-to-perform-complex-data-analysis-6C67CCF0-F4A9-487C-8DEC-BDB5A2CEFAB6
- Microsoft Office Software.

For this discussion, you should choose the method you will be using to deliver the audio portion of your Unit 9 assignment (Kaltura or similar software), and post the following short self-introduction as an audio file:

- Your name and location.
- Your prior and current experience with data analysis or statistics.
- One or two things that you would like to learn about data analysis that will facilitate your career development.

Refer to Using Kaltura for directions on recording and/or uploading your audio file in the courseroom.

Note: If you require the use of assistive technology or alternative communication methods to participate in these activities, please contact DisabilityServices@Capella.edu to request accommodations.

Post the link to your recording to the discussion area.

Response Guidelines

It is not necessary to post responses to your peers for this discussion.

Course Resources
Graduate Discussion Participation Scoring Guide
DisabilityServices@Capella.edu
[Using Kaltura](#)

u01d2 - Data Analytics and Health Care Decisions

Data analysis using statistical techniques can help answer questions and improve decision making in health care. Briefly discuss and give two examples of how data and analytics can support a health care decision.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u01d2 - Learning Components

- Describe sources of data.
- Determine the nature of data.
- Identify the benefits of data analytics in health care.
- Explain application of data analysis techniques.

Unit 2 ≫ Data Collection and Measurement

Introduction

The amount of data in health care is increasing rapidly—both big data and small data. Data can be collected from a variety of sources, and datasets can include numerous measurements in the form of variables. In this unit, you will learn about the different types and sources of data and how variables can be used to support a health care decision.

Learning Activities

Readings

Use the Capella library to read the following:

- Use your *[Statistics for Health Care Management and Administration](#)* text to read:
    - Chapter 3, "Data Acquisition: Sampling and Data Preparation," pages 71–93.

- Wills, M. J. (2014). [Decisions through data: Analytics in healthcare](#). *Journal of Healthcare Management, 59*(4), 254–262.
- Rumsfeld, J. S., Joynt, K. E., & Maddox, T. M. (2016). [Big data analytics to improve cardiovascular care: Promise and challenges [PDF]](#). *Nature Reviews – Cardiology, 13*(6), 350–359.
- Spencer, G. A. (2016). [Big data: More than just big and more than just data](#). *Frontiers of Health Services Management, 32*(4), 27–33.

Campus Tutorials

Following Campus resources will help you with using Microsoft Excel in this course:

- [Microsoft Office Software](#).
    - Visit this page for general help with Microsoft Excel. It offers tip sheets and in-depth tutorials.

- [Statistics in Excel](#).

u02s1 - Learning Components

- Describe data collection.
- Determine the nature of data.
- Identify the benefits of data analytics in health care.
- Explain application of data analysis techniques.

u02s2 - Assignment Preparation

Your first assignment is due in Unit 3. You will perform descriptive statistics and create a histogram for selected variables in a dataset. You are encouraged to take time in this unit to prepare for the assignment by reviewing the guidelines and the scoring guide to ensure you understand the criteria

and grading requirements. You may also want to start reviewing the [Assignment 1 Dataset [XLSX]](#) and begin your work. Contact your instructor with any questions or concerns.

u02d1 - Types of Data and Data Sources

Explain the difference between *small data* and *big data* in health care. Discuss two examples of big data applications and describe the strengths and limitations of their data sources.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u02d1 - Learning Components

- Describe data collection.
- Determine the nature of data.
- Identify the benefits of data analytics in health care.
- Explain application of data analysis techniques.

u02d2 - Types of Variables and Random Sample

Statistics is used to study the relationship between variables and to make inferences about populations from samples. For this discussion:

- Summarize your understanding of the statistical concepts of *independent* versus *dependent variables* and *random sample from a population*.
- Give two examples of these concepts applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u02d2 - Learning Components

- Explain practical, administration-related implications of data science.
- Explain practical, administration-related implications of descriptive statistics.
- Explain data-driven decision making.

Unit 3 ⟫ Describing and Visualizing Data

Introduction

Descriptive statistics can help decision makers to summarize data in a meaningful way and to allow a simpler interpretation of the data. In this unit, you will learn to calculate and interpret statistical measures of central tendency and dispersion and to construct a data visualization, such as the histogram, to graphically represent the distribution of numerical data.

Learning Activities

u03s1 - Studies

Readings

Use the Capella library to read the following:

- Use your *Statistics for Health Care Management and Administration* text to read:
    - Chapter 4, "Data Display: Descriptive Presentation, Excel Graphing Capability," pages 111–119.
    - Chapter 6, "Measures of Central Tendency and Dispersion: Data Distributions," pages 183–233.

- Divisi, D., Di Leonardo, G., Zaccagna, G., & Crisci, R. (2017). Basic statistics with Microsoft Excel: A review. *Journal of Thoracic Disease, 9*(6), 1734–1740.
- Frey, B. B. (Ed.). (2018). Descriptive statistics. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Histogram. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Lim, E. (2014). Basic statistics (the fundamental concepts). *Journal of Thoracic Disease, 6*(12), 1875–1878.
- Simpson, S. H. (2015). Creating a data analysis plan: What to consider when choosing statistics for a study. *Canadian Journal of Hospital Pharmacy, 68*(4), 311–317.
- Strome, T. L. (2013). Basic statistical methods and control chart principles. In *Healthcare analytics for quality and performance improvement* (pp. 145–226). Hoboken, NJ: John Wiley & Sons.

Use the Internet to view or read the following:

- Microsoft Virtual Academy. (2016). *Data analysis with Excel: Descriptive statistics with data analysis add-in* [Video] | Transcript. Retrieved from https://mva.microsoft.com/en-us/training-

courses/data-analysis-with-excel-16654?l=Glk9CQ8sC_5506573942

- Microsoft Virtual Academy. (2016). *Data analysis with Excel: Histograms in Excel 2016* [Video] | Transcript. Retrieved from https://mva.microsoft.com/en-us/training-courses/data-analysis-with-excel-16654?l=yD5KWP8sC_3406573942
- Microsoft. (n.d.). Copy from Excel to another Office program. Retrieved from https://support.office.com/en-ie/article/copy-from-excel-to-another-office-program-4ba759cc-62f3-422c-bd75-3fc83b06bb6b

Multimedia

Complete the following Capella multimedia presentation:

- Descriptive Statistics With Excel.

u03s1 - Learning Components

- Identify the basic concepts of descriptive statistics.
- Explain practical, administration-related implications of descriptive statistics.
- Explain purpose and function of histograms.
- Interpret results of descriptive statistics from Excel output.

u03a1 - Descriptive Statistics and Data Visualizations

Introduction

Descriptive statistics play an important role in analyzing data. It numerically summarizes key characteristics of variables. Measures of central tendency (mean, median, and mode) and dispersion (variance, standard deviation, and range) characterize the probability distribution. A histogram visualizes the distribution of numerical data, indicating the number of data points that lie within a range of values. For this assignment, you will perform descriptive statistics and create a histogram for selected variables in a dataset.

Preparation

Download Assignment 1 Dataset.

The dataset contains the following variables:

- Utilization (average number of patient days per month).

- Satisfaction (patient satisfaction scores percentile rank).
- Readmissions (readmission rate per month).

Instructions

Nursing home administration has the objectives of higher utilization, higher patient satisfaction, and lower readmissions, and they need to make a decision on whether to retain the department manager based on average performance over the past 70 months.

For this assignment, create a descriptive statistics table and histogram based on the Assignment 1 Dataset. Write a narrative summary in a Word document and insert the table and histogram graphic into this document. See the "Copy From Excel to Another Office Program" resource for instructions. Submit both the Word document and the Excel file that shows the descriptive statistics output.

Grading Criteria

The numbered assignment instructions outlined below correspond to the grading criteria in the Descriptive Statistics and Data Visualizations Scoring Guide, so be sure to address each point. You may also want to review the performance-level descriptions for each criterion to see how your work will be assessed.

1. Perform the appropriate descriptive statistics for selected variables in a dataset.
    - Report descriptive statistics table with measures of central tendency and dispersion.

2. Create a histogram that visually depicts the distribution of selected variables in a dataset.
3. Interpret statistical results of a data analysis.
4. Write a narrative summary of the practical, administration-related implications of the descriptive statistics.
    - Write a separate summary for the histogram.

5. Write clearly and concisely, using correct grammar, mechanics, and APA formatting.

Additional Requirements

Your assignment should also meet the following requirements:

- **Written communication**: Write clearly, accurately, and professionally, incorporating sources appropriately.
- **Length:** 2–3 pages.
- **APA format**: Cite your sources using current APA format.
- **Font and font size**: Times Roman, 12 point.

u03d1 - Measures of Central Tendency and Dispersion

For this discussion:

- Summarize your understanding of the statistical concepts of *measures of central tendency* and *measures of dispersion*, including the meaning and interpretation.
- Give two examples of these concepts applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

u03d1 - Learning Components

- Explain practical, administration-related implications of data science.
- Explain practical, administration-related implications of descriptive statistics.
- Explain data-driven decision making.

Unit 4 ≫ Basics of Statistical Inference

Introduction

Decision makers often need to make decisions about the population based on an observed sample of data. In Unit 3, you learned how to apply descriptive statistics to describe and summarize the distribution of a sample. In this unit, you will learn about probability distributions (such as the normal distribution) and how to apply inferential statistics (such as the confidence interval) to infer the properties of a larger population based on the sampling distribution.

Learning Activities

u04s1 - Studies

Readings

Use the Capella library to read the following:

- Use your *Statistics for Health Care Management and Administration* text to read the following:
    - Chapter 5, "Basic Concepts of Probability":
        - "Some Initial Concepts and Definitions," pages 141–150.
        - "The Normal Distribution," pages 178–181.
    - Chapter 7, "Confidence Limits and Hypothesis Testing":
        - "What Is a Confidence Interval?" pages 237–244.
- Di Paola, G., Bertani, A., De Monte, L., & Tuzzolino, F. (2018). A brief introduction to probability. *Journal of Thoracic Disease*, *10*(2), 1129–1132.

- Frey, B. B. (Ed.). (2018). Confidence interval. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). Inferential statistics. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.

u04s1 - Learning Components

- Differentiate types of statistical tests.
- Explain application of data analysis techniques.
- Identify the basic concepts of hypothesis testing.
- Define the statistical concepts of probability and sampling distribution.

u04s2 - Assignment Preparation

Your second assignment is due in Unit 5. For this assignment, you will perform hypothesis testing on the differences between two groups. You are encouraged to take time in this unit to prepare for the assignment by reviewing the guidelines and the scoring guide to ensure you understand the criteria and grading requirements. You may also want to start reviewing the Assignment 2 Dataset [XLSX] and begin your work. Contact your instructor with any questions or concerns.

u04d1 - Probability and Sampling Distributions

The probability distribution of a sample is important for statistical inference. For this discussion:

- Summarize your understanding of the statistical concepts of *probability distribution* and *sampling distribution,* including the meaning and interpretation of the normal distribution.
- Give two examples of these concepts applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u04d1 - Learning Components

- Identify key statistical concepts and procedures.
- Explain practical, administration-related implications of data analysis.
- Define the statistical concepts of probability and sampling distribution.

u04d2 - Confidence Intervals

A confidence interval is one of the most common and widely accepted inferential statistic. For this discussion:

- Summarize your understanding of the statistical concept of a *confidence interval,* including the meaning and interpretation of a 95%-confidence interval.
- Give two examples of this concept applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources

Graduate Discussion Participation Scoring Guide

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u04d2 - Learning Components

- Identify key statistical concepts and procedures.
- Explain application of data analysis techniques.
- Identify the benefits of data analytics in health care.

Unit 5 ❯❯ Using Data Analysis to Test Hypotheses

Introduction

A hypothesis is an assumption about a population parameter. Hypothesis testing uses statistical techniques to make a decision about whether the hypothesis is true. In this unit, you will learn how to interpret statistical significance using the p-value and to perform hypothesis testing of the difference between groups to make a health care decision.

Learning Activities

u05s1 - Studies

Readings

Use the Capella library to read the following:

- Use your *[Statistics for Health Care Management and Administration](#)* text to read the following:
    - Chapter 7, "Confidence Limits and Hypothesis Testing," pages 247–270.
    - Chapter 9, "*t* Tests for Related and Unrelated Data," pages 295–321.
- Frey, B. B. (Ed.). (2018). [Significance](#). In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Frey, B. B. (Ed.). (2018). [Hypothesis testing](#). In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Gallo, A. (2016, February 16). [A refresher on statistical significance](#). *Harvard Business Review Digital Articles*, 2–9.

Multimedia

Complete the following Capella multimedia presentation:

- [Hypothesis Tester](#).

u05s1 - Learning Components

- Explain application of data analysis techniques.
- Identify the basic concepts of hypothesis testing.
- Explain practical, administration-related implications of hypothesis testing.
- Interpret results of hypothesis testing from Excel output.

u05a1 - Hypothesis Testing for Differences Between Groups

Introduction

Hypothesis testing is a foundational statistical technique used to make decisions about a hypothesis. A hypothesis test compares two mutually exclusive statements (null hypothesis and alternative hypothesis) where only one is true. Hypothesis testing can determine statistical significance by examining the probability that a given result would occur under the null hypothesis. For this assignment, you will perform hypothesis testing on the differences between the two groups.

Preparation

Download Assignment 2 Dataset.

The dataset contains the following variables:

- Clinic1 (total number of visits per month for clinic 1).
- Clinic2 (total number of visits per month for clinic 2).

Instructions

An investor needs to make a decision on whether to acquire one of two medical clinics based on their productivity, as measured by the total number of visits per month. You have been asked whether there is a significant difference in the total number of visits per month between clinic 1 and clinic 2.

For this assignment, perform hypothesis testing on the differences between two groups in the Assignment 2 Dataset. Create an appropriately labeled Excel document with your results. Also, write an analysis of the results in a Word document. Insert the test results into this document (copied from the output file and pasted into a Word document). Refer to the "Copy From Excel to Another Office Program" resource for instructions.

Grading Criteria

The numbered assignment instructions outlined below correspond to the grading criteria in the Hypothesis Testing for Differences Between Groups Scoring Guide, so be sure to address each point. You may also want to review the performance-level descriptions for each criterion to see how your work will be assessed:

1. Generate a hypothesis about the difference between the two groups in a dataset.
    - State null hypothesis and alternative hypothesis as an explanation and math equation.

2. Identify the appropriate statistical test of the difference between the two groups in a dataset.
    - Provide your statistical rationale.

3. Perform an appropriate statistical test of the difference between two groups in a dataset.
4. Interpret statistical results of data analysis and state whether to accept or reject the null hypothesis based on the p-value and an alpha of .05.
    - Interpret p-value and statistical significance.

5. Write a narrative summary that includes practical, administration-related implications of the hypothesis test.

Additional Requirements

Your assignment should also meet the following requirements:

- **Written communication**: Write clearly, accurately, and professionally, incorporating sources appropriately.
- **Length**: 2–3 pages.
- **APA format**: Cite your sources using the current APA format.
- **Font and font size**: Times Roman, 12 point.

Course Resources
Assignment 2 Dataset [XLSX]
[APA Style and Format](#)
[Copy From Excel to Another Office Program](#)

u05d1 - Statistical Significance and p-Value

Decision makers need to know whether results are due to chance or some factor of interest. For this discussion:

- Summarize your understanding of the statistical concepts of *statistical significance* and *p-value*, including the meaning and interpretation.
- Give two examples of these concepts applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u05d1 - Learning Components

- Explain practical, administration-related implications of statistical significance.
- Explain practical, administration-related implications of the p-value.
- Identify the benefits of data analytics in health care.

Unit 6 ≫ Using Data Analysis to Make Decisions

Introduction

In this unit, you will learn about how regression analysis can be applied to predictive analytics. You will perform a simple linear regression to estimate the relationship between a predictor variable and an outcome, and then use the regression line for prediction to make a health care decision.

Learning Activities

u06s1 - Studies

Readings

Use the Capella library to read the following:

- Use your *Statistics for Health Care Management and Administration* text to read the following:
  - Chapter 11, "Simple Linear Regression":
    - Meaning and Calculation of Linear Regression," pages 365–373.

- Amarasingham, R., Patzer, R. E., Huesch, M., Nguyen, N. Q., & Xie, B. (2014). Implementing electronic health care predictive analytics: Considerations and challenges. *Health Affairs, 33*(7), 1148–1154.
- Davenport, T. H. (2014, September 02). A predictive analytics primer. *Harvard Business Review Digital Articles*, 2–4.
- Gallo, A. (2015, November 04). A refresher on regression analysis. *Harvard Business Review Digital Articles*, 2–9.
- Katz, M. H. (2003). Multivariable analysis: A primer for readers of medical research. *Annals of Internal Medicine, 138*(8), 644–650.
- Shah, N. D., Steyerberg, E., & Kent, D. M. (2018). Big data and predictive analytics: Recalibrating expectations. *JAMA, 320*(1), 27–28.

Use the Internet to view the following:

- SCSUEcon. (2011, August 20). *Linear regression in Excel* [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=TkiB1xBnjn4

u06s1 - Learning Components

- Identify key statistical concepts and procedures.
- Explain application of data analysis techniques.
- Evaluate a regression model for prediction.

u06s2 - Assignment Preparation

Your third assignment is due in Unit 7. For this assignment, you will perform multiple regression and generate a prediction to support a health care decision. You are encouraged to take time in this unit to prepare for the assignment by reviewing the guidelines and the scoring guide to ensure you understand the criteria and grading requirements. You may also want to start reviewing the Assignment 3 Dataset [XLSX] and begin your work. Contact your instructor with any questions or concerns.

u06d1 - Regression Analysis

Regression analysis can estimate the relationship between variables and is widely used in predictive analytics. For this discussion:

- Summarize your understanding of the statistical concept of *regression analysis*, including the meaning and interpretation of the regression line.
- Give two examples of this concept applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u06d1 - Learning Components

- Identify key statistical concepts and procedures.
- Explain practical, administration-related implications of data analysis.
- Evaluate a regression model for prediction.

u06d2 - Simple Linear Regression

Complete Excel Exercise

Use Assignment 3 Dataset to do the following:

- Perform a simple linear regression with dependent variable (cost) and independent variable (age).
- Interpret the statistical significance and effect size of the regression coefficients.
- Discuss what the regression means in practical terms.

File Submissions

Upload the following:

- The output file (.xlsx file) for the exercise that includes appropriate tables and graphics.
- A separate Word document that summarizes your results and interpretation in properly formatted APA style.

Discussion Post

No interactive post is required for this discussion.

Course Resources
Graduate Discussion Participation Scoring Guide
Assignment 3 Dataset [XLSX]

u06d2 - Learning Components

- Interpret results of multiple regression from Excel output.
- Explain application of data analysis techniques.
- Explain the practical implications of statistical tests.

Unit 7 ≫ Using Data Analysis to Make Predictions

Introduction

In this unit, you will build on the concepts of simple linear regression you learned in Unit 6. The focus of this unit will be on predicting an outcome using multiple linear regression. Multiple regression techniques can estimate the relationship between several independent variables and a dependent

variable. You will learn how to interpret the fit of the regression model and use the regression equation to make a prediction of an outcome.

Readings

Use the Capella library to read the following:

- Use your *Statistics for Health Care Management and Administration* text to read the following:
    - Chapter 12, "Multiple Regression: Concepts and Calculation," pages 395–402.
    - Chapter 13, "Extensions of Multiple Regression," pages 410–411.

- Casson, R. J., & Farmer, L. D. M. (2014). Understanding and checking the assumptions of linear regression: A primer for medical researchers. *Clinical & Experimental Ophthalmology, 42*(6), 590–596.
- Frey, B. B. (Ed.). (2018). Multiple linear regression. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vols. 1–4). Thousand Oaks, CA: Sage.
- Larose, D. T., & Larose, C. D. (2015). Multiple regression and model building. In *Data mining and predictive analytics*. Hoboken, NJ: John Wiley & Sons.
- Palmer, P. B., & O'Connell, D. G. (2009). Regression analysis for prediction: Understanding the process. *Cardiopulmonary Physical Therapy Journal, 20*(3), 23–26.
- Waljee, A. K., Higgins, P. D., & Singal, A. G. (2013). A primer on predictive models [PDF]. *Clinical and Translational Gastroenterology, 5*(1), e44.

Use the Internet to view the following:

- ProfTDub. (2010, November 12). *How to make predictions from a multiple regression analysis* [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=E73AJ73-S6g
- SCSUEcon. (2011, August 20). *Linear regression in Excel* [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=TkiB1xBnjn4

Multimedia

Complete the following Capella multimedia presentation:

- Multiple Regression in Microsoft Excel.

- Define multiple regression.
- Interpret results of multiple regression from Excel output.
- Explain practical, administration-related implications of regression analysis.
- Evaluate a regression model for prediction.

u07a1 - Predicting an Outcome Using Regression Models

Introduction

Regression is an important statistical technique for determining the relationship between an outcome (dependent variable) and predictors (independent variables). Multiple regression evaluates the relative predictive contribution of each independent variable on a dependent variable. The regression model can then be used for predicting an outcome at various levels of the independent variables. For this assignment, you will perform multiple regression and generate a prediction to support a health care decision.

Preparation

Download Assignment 3 Dataset.

The dataset contains the following variables:

- Cost (hospital cost in dollars).
- Age (patient age in years).
- Risk (count of patient risk factors).
- Satisfaction (patient satisfaction score percentile rank).

Walkthrough: You may view the Predicting an Outcome Using Regression Models Walkthrough, linked in the Resources, to help you prepare for your assignment.

Instructions

Hospital administration needs to make a decision on the amount of reimbursement required to cover expected costs for next year. For this assignment, using the information on hospital discharges from last year, perform multiple regression on the relationship between hospital costs and patient age, risk factors, and patient satisfaction scores, and then generate a prediction to support this health care decision. Write a 3–4-page analysis of the results in a Word document and insert the test results into

this document (copied from the output file and pasted into a Word document). Refer to the "Copy From Excel to Another Office Program" resource for instructions.

Grading Criteria

The numbered assignment instructions outlined below correspond to the grading criteria in Predicting an Outcome Using Regression Models Scoring Guide, so be sure to address each point. You may also want to review the performance-level descriptions for each criterion to see how your work will be assessed

1. Perform the appropriate multiple regression using a dataset.
2. Interpret the statistical significance and effect size of the regression coefficients of data analysis.
   - Interpret p-value and beta values.

3. Interpret the fit of the regression model for the prediction of data analysis.
   - Interpret R-squared and goodness of fit.

4. Apply the statistical results of the multiple regression of data analysis to support a health care decision.
   - Generate a prediction with the regression equation.

5. Write a narrative summary that includes practical, administration-related implications of the multiple regression.
6. Write clearly and concisely, using correct grammar, mechanics, and APA formatting.

Additional Requirements

Your assignment should also meet the following requirements:

- **Written communication**: Write clearly, accurately, and professionally, incorporating sources appropriately.
- **Length**: 3–4 pages.
- **APA format**: Cite your sources using the current APA format.
- **Font and font size**: Times Roman, 12 point.

Course Resources
Assignment 3 Dataset [XLSX]
[APA Style and Format](#)
[Copy From Excel to Another Office Program](#)

u07d1 - Predicted Values and R-Squared in Regression

Regression models are commonly used to generate predicted values of an outcome. For this discussion:

- Summarize your understanding of the statistical concepts of *predicted value* and *R-squared* for a linear regression model, including the meaning and interpretation.
- Give two examples of these concepts applied to a health care decision in a professional setting, and discuss practical, administration-related implications.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources

Graduate Discussion Participation Scoring Guide

u07d1 - Learning Components

- Define practical, administration-related implications of statistical methods.

- Explain the practical implications of statistical tests.
- Identify the benefits of data analysis in health care.

Unit 8 ›› Leveraging Data Analysis to Improve Performance

Introduction

Leading health care systems are making strategic investments in big data analytics to improve value, quality, and safety. To realize potential benefits, health care organizations need to align their data and analytics strategy with the overall strategic plan. In this unit, you will explore the strategies and experiences of health care systems in leveraging data analysis to improve organizational performance.

Learning Activities

u08s1 - Studies

Readings

Use the Capella library to read the following:

- Connelly, M. D., & Sykes, R. (2016). Big data: Central to the population health journey. *Frontiers of Health Services Management, 32*(4), 40–45.
- DalleMule, L., & Davenport, T. H. (2017). What's your data strategy? *Harvard Business Review, 95*(3), 112–121.
- Dulin, M. F., Lovin, C. A., & Wright, J. A. (2016). Bringing big data to the forefront of healthcare delivery: The experience of Carolinas HealthCare System. *Frontiers of Health Services Management, 32*(4), 3–14.
- Fitzgerald, M. (2015). When health care gets a healthy dose of data [PDF]. *MIT Sloan Management Review, 57*(1), 3–17.
- Kern, H. P., Reagin, M. J., & Reese, B. S. (2016). Priming the pump for big data at Sentara Healthcare. *Frontiers of Health Services Management, 32*(4), 15–26.
- Strome, T. L. (2013). Developing an analytics strategy to drive change. In *Healthcare analytics for quality and performance improvement* (pp. 29–50). Hoboken, NJ: John Wiley & Sons.

u08s1 - Learning Components

- Define practical, administration-related implications of statistical methods.
- Describe data collection.
- Explain practical, administration-related implications of data analysis.

u08s2 - Assignment Preparation

Your fourth assignment is due in Unit 9. For this assignment, you will evaluate the approach of an analytics team and interpret and present statistical results to support a health care recommendation. You are encouraged to take time in this unit to prepare for the assignment by reviewing the guidelines and the scoring guide to ensure you understand the criteria and grading requirements. You may also want to start preparing your presentation. Contact your instructor with any questions or concerns.

Vila Health

Complete the following Vila Health simulation:

- Click **Vila Health: Presenting Statistical Results for Decision Making** to evaluate, interpret, and present statistical results to support a health care recommendation. Begin collecting the information you will need to complete the Unit 9 assignment.

Using Kaltura

In preparation for the Unit 9 assignment, complete the following:

- If you have not already done so, set up and test your headset, using the installation instructions provided by the manufacturer.
- Practice using the headset to ensure the audio quality is sufficient.
- Refer to Using Kaltura for directions on recording and/or uploading your presentation in the courseroom.

Note: If you require the use of assistive technology or alternative communication methods to participate in this activity, please contact DisabilityServices@Capella.edu to request accommodations.

Optional Resources

You may review the following for help with your PowerPoint presentation and report:

- Capella University Library: PowerPoint Presentations.

- Microsoft. (n.d.). [Create a presentation in PowerPoint](#). Retrieved from https://support.office.com/en-gb/article/create-a-presentation-in-powerpoint-422250f8-5721-4cea-92cc-202fa7b89617
- Darling, N. (2017). [Reporting statistics in APA style](#). Retrieved from https://www.psychologytoday.com/us/blog/thinking-about-kids/201704/reporting-statistics-in-apa-style
- Sue, V. M., & Griffin, M. T. (2016). *Data visualization & presentation with Microsoft Office*. Thousand Oaks, CA: Sage.
    - Chapter 10, "Creating Presentations," pages 255–288.

- Faroult, S. (2016). *Getting the message across: Using Slideware effectively in technical presentations*. New York, NY: Apress.
- Theobald, T. (2016). *Develop your presentation skills*. London, UK: Kogan Page.

Course Resources

Vila Health: Presenting Statistical Results for Decision Making

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u08d1 - Data and Analytics Strategy

To be effective, an organization's data and analytics strategy should be aligned with the overall strategic plan. Discuss three recommendations for a health care organization in developing an effective data and analytics strategy.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources
Graduate Discussion Participation Scoring Guide

u08d1 - Learning Components

- Describe plan for data analysis.
- Explain application of data analysis techniques.
- Explain practical, administration-related implications of data analysis.

u08d2 - Big Data Analytic Tools and Performance

Some health care systems have made strategic investments in big data analytics to meet their organization's quality and performance goals. Select two health care systems described in the unit readings. For each of the two health care systems, briefly discuss the following:

- What problems were being addressed with big data?
- What big data analytic tools were developed for these problems?
- How did big data analytics affect organizational performance?

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the

ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

u08d2 - Learning Components

- Describe sources of data.
- Identify data analysis techniques.
- Analyze data to form a conclusion.

Unit 9 ›› Effective Presentation of Statistical Results

Introduction

Data analysis and statistical results are worthless unless they are communicated effectively and understood by decision makers. Presentation and communication can benefit from appropriate data visualizations that capture the right narrative. In this unit, you will review challenges that organizations have with communication of data and best practices for presenting statistical results for decision making.

Learning Activities

u09s1 - Studies

Readings

Use the Capella library to read the following:

- Berinato, S. (2019). Data science and the art of persuasion. *Harvard Business Review, 97*(1), 126–137.
- Davenport, T. H. (2015, October 21). 5 essential principles for understanding analytics. *Harvard Business Review Digital Articles*, 2–4.

- Davenport, T. H. (2013, June 18). [Data is worthless if you don't communicate it](#). *Harvard Business Review Digital Articles*, 2–3.
- Li, M. (2015, October 27). [The two questions you need to ask your data analysts](#). *Harvard Business Review Digital Articles*, 2–4.
- Martin, R. L., & Golsby-Smith, T. (2017). [Management is much more than a science: The limits of data-driven decision making](#). *Harvard Business Review, 95*(5), 128–135.
- Strome, T. L. (2013). [Usability and presentation of information](#). In *Healthcare analytics for quality and performance improvement* (pp. 165–181). Hoboken, NJ: John Wiley & Sons.

Multimedia

Complete the following Capella multimedia presentations:

- [Presenting Analytics Results](#) .

Vila Health

Complete the following Vila Health simulation, if you have not done so already:

- Click **Vila Health: Presenting Statistical Results for Decision Making** to evaluate, interpret, and present statistical results to support a health care recommendation.

Optional Readings

You may choose to review the following for help with your PowerPoint presentation and report in Unit 10:

- [Capella University Library: PowerPoint Presentations](#).
- Microsoft. (n.d.). [Create a presentation in PowerPoint](#). Retrieved from https://support.office.com/en-gb/article/create-a-presentation-in-powerpoint-422250f8-5721-4cea-92cc-202fa7b89617
- Darling, N. (2017). [Reporting statistics in APA style](#). Retrieved from https://www.psychologytoday.com/us/blog/thinking-about-kids/201704/reporting-statistics-in-apa-style
- Sue, V. M., & Griffin, M. T. (2016). [*Data visualization & presentation with Microsoft Office*](#). Thousand Oaks, CA: Sage.
   - Chapter 10, "Creating Presentations," pages 255–288.

- Faroult, S. (2016). [*Getting the message across: Using Slideware effectively in technical presentations*](#). New York, NY: Apress.
- Theobald, T. (2016). [*Develop your presentation skills*](#). London, UK: Kogan Page.

u09s1 - Learning Components

- Describe plan for data analysis.
- Explain application of data analysis techniques.
- Interpret results of data analysis from Excel output.
- Analyze data to form a conclusion.

u09a1 - Presenting Statistical Results for Decision Making

Introduction

The ability to translate analytic results into clear, concise, and actionable results is a vital skill for health care administrators. Because decision making is increasingly data-driven and evidence-based, managers are frequently required to formally present statistical results to leadership. Sometimes, decision makers differ as to how well they comprehend the information being delivered. Your job as a health care professional is to know how to distill and synthesize data analytics and present complex concepts in the pursuit of value, quality, and safety. You must be able to clearly communicate the results of your team's data analysis and it should be both insightful and informative. How much your work is valued can depend heavily on how well the results of that analysis are articulated. Effectively communicating the results so the issues and recommendations are clear and explicit can greatly enhance the value of your analytic work.

For this assignment, you will evaluate the approach of an analytics team and interpret and present statistical results to support a health care recommendation.

Preparation

Review the Vila Health: Presenting Statistical Results for Decision Making simulation to evaluate, interpret, and present statistical results to support a health care recommendation.

Instructions

This assignment has two deliverables:

1. Prepare an 8–10-slide PowerPoint presentation about the statistical results with recommendations to health system leadership.
    - Ensure the slides graphically communicate the findings.
    - Ensure your presentation is relevant to and easily understood by everyone in the audience.
        - Include an APA-formatted references slide at the end of the presentation.
        - Be sure your written communication is free of errors that detract from the overall message.

    - Use Kaltura or similar software to record your PowerPoint presentation. The presentation should last no more than 3 minutes, and it should contain audio of you speaking. You may use alternative programs or technology, provided you can still create a presentation with visuals and recorded audio.
        - Before you begin recording, create a script, speaker notes, or a detailed outline that you can refer to as you record. This professional best practice will help you prepare for your presentation and serve to clarify any insufficient or unclear audio in your recording.

2. Write a 2–4-page executive summary to accompany the PowerPoint presentation that provides additional context to the results of data analysis.
    - Include APA-formatted in-text citations where appropriate.

Submit the recording of your presentation and the executive summary in the assignment area.

Grading Criteria

The numbered assignment instructions outlined below correspond to the grading criteria in the scoring guide. Presenting Statistical Results for Decision Making Scoring Guide, so be sure to address each point. You may also want to review the performance-level descriptions for each criterion to see how your work will be assessed.

1. Evaluate the data collection, measurement, and analysis tools and techniques used in the data analysis.
2. Interpret statistical results used in the data analysis.
3. Present statistical results used in the data analysis to support a health care recommendation.
4. Recommend a solution based on results of the data analysis.
5. Use media and technology to convey ideas and information.
6. Write clearly and concisely, using correct grammar, mechanics, and APA formatting.

Additional Requirements

Your executive summary should also meet the following requirements:

- **Written communication**: Write clearly, accurately, and professionally, incorporating sources appropriately.
- **Length**: 2–4 pages.
- **Resources**: Include sources where appropriate within the template, adding reference list on the last page.
- **APA format**: Cite your sources using current APA format.
- **Font and font size:** Times Roman, 12 point

Course Resources
[Vila Health: Presenting Statistical Results for Decision Making](#)	Transcript
[APA Style and Format](#)
[DisabilityServices@Capella.edu](#)
[Using Kaltura](#)

u09d1 - Communicating Statistical Results

Executives believe that data should be central to decision making. Yet, data analysis can be worthless unless statistical results are understood by decision makers. For this discussion:

- Discuss two challenges with communicating data.
- Provide two recommendations for presentation and data visualization to support a health care decision.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.

- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources

Graduate Discussion Participation Scoring Guide

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u09d1 - Learning Components

- Differentiate types of statistical tests.
- Explain practical, administration-related implications of data analysis.
- Identify challenges with communicating data.

Unit 10 ≫ Leveraging Data Analysis to Transform Health Care

Introduction

Data analysis is evolving with the multi-disciplinary field of data science and the proliferation of big data. Data science combines statistics, mathematics, and computer science techniques and tools to analyze structured and unstructured data. Data science applications, such as big data analytics and artificial intelligence, can greatly enhance human decision making using computer-based systems. Policymakers and practitioners believe that widespread adoption and use of big data analytics can transform health care. However, health care organizations face significant barriers that may require policy changes. In this unit, you will review the opportunities, challenges, and policy implications of leveraging data analysis to transform health care.

Learning Activities

u10s1 - Studies

Readings

Use the Capella library to read the following:

- Bates, D. W., Saria, S., Ohno-Machado, L., Shah, A., & Escobar, G. (2014). [Big data in health care: Using analytics to identify and manage high-risk and high-cost patients](#). *Health Affairs, 33*(7), 1123–1131.
- Roski, J., Bo-Linn, G. W., & Andrews, T. A. (2014). [Creating value in health care through big data: Opportunities and policy implications](#). *Health Affairs, 33*(7), 1115–1122.
- Sahni, N. R., Huckman, R. S., Chigurupati, A., & Cutler, D. M. (2017). [The IT transformation health care needs](#). *Harvard Business Review, 95*(6), 128–138.
- Strome, T. L. (2013). [Advanced analytics in healthcare](#). In *Healthcare analytics for quality and performance improvement* (pp. 183–203). Hoboken, NJ: John Wiley & Sons.

Use the Internet to read the following:

- Derrington, D. (2017). [*Artificial intelligence for health and health care* [PDF]](#). Retrieved from https://www.healthit.gov/sites/default/files/jsr-17-task-002_aiforhealthandhealthcare12122017.pdf
- Ginsburg, P. B., de Loera-Brust, A., Brandt, C., & Durak, A. (2018). [The opportunities and challenges of data analytics in health care](#). Retrieved from https://www.brookings.edu/research/the-opportunities-and-challenges-of-data-analytics-in-health-care/

u10d1 - Data Science Applications in Health Care

Data science is the multi-disciplinary field that combines statistics, mathematics, and computer science to analyze structured and unstructured data. Although data science applications, such as big data analytics and artificial intelligence, have the potential to transform health care, health care organizations face significant challenges to widespread benefits.

For this discussion, briefly discuss one example of a data science application in health care, including benefits, barriers, and recommendations for policy changes to address the barriers.

Response Guidelines

Review the posts of your fellow learners and respond according to the Faculty Expectations Response Guidelines, using one of the following approaches:

- Identify knowledge gaps or unknowns that were not considered in your peer's post.
- Identify an assumption on which the post seems to be based, and pose a useful alternative or contrasting approach, based on a different assumption.
- Ask a probing question.
- Elaborate on a particular point.

If you are responding with a personal perspective or an example from your workplace experience, you are not required to cite a source. However, if you offer an alternative viewpoint, or refer to the ideas or work of others in your response, it must be supported with an outside source, which you must cite using current APA style.

Course Resources

Graduate Discussion Participation Scoring Guide

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u10d1 - Learning Components

- Define data science.
- Explain application of data analysis techniques.
- Explain practical, administration-related implications of data analysis.
- Identify the benefits of data analysis in health care.

u10d2 - Reflections on Data Analysis

Write a short reflection regarding your journey through this course, in which you:

- Reflect on any assumptions or prejudices you had as you entered the course.
- Discuss the primary challenges you encountered.
- Reflect on which particular aspects of the course you found most interesting.
- Reflect on how this course will be most useful to you in your current (or anticipated future) professional work situation.