

**Health Services
Administration**

***University of Wyoming
PHCY 5042
Statistics for Health
Service Administration
Summer 2025
July 7 to August 15***



College of Health Sciences
School of Pharmacy

**Statistics for Health Services
Administration**

Summer 2025

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Instructor contact information: Dr. Paul Carnes Email: pcarnes@uwyo.edu

Live Sessions: Live class sessions will be held each **Wednesday from 6-7pm MST**. We will use WyoCourses for these live sessions. You do not need to show yourself on video but Dr. Carnes may use video and may also use screen-share to display information.

Course prerequisites, co-requisites, enrollment restrictions: Enrollment in the Master of Science in Health Services Administration program, or by permission.

Course Description: The inexorable rise of computing and large-scale data storage has impacted all our lives, sometimes in profound ways. Medicine, for example, has become an information science where the tools of data analysis are as commonplace as the microscope. In the Business arena, financial markets generate rivers of intensely scrutinized data and all major global-scale retailers store and analyze vast quantities of customer and transaction data. In the Social Sciences, the collection and analysis of data enables researchers to make more informed decisions about best practices. The trend is universal and unstoppable.

Statistics, as a discipline, provides us with the tools for analyzing data. The aim of a Statistician is to reason with what the data can tell us about what is happening in large populations of interest. In this course, we will learn how to reason with the inherent variation in data by creating data visualizations and by calculating summary statistics, enabling us to find the story in the data. Our sample statistics are simply estimates of what are known as population parameters. In the second half of the course, we will reason with our sample statistics to make inferences about the values of population parameters. For example, we ask what the average treatment effect of a drug found in a sample of patients tells us about how effective the drug would be on the entire population of patients with the disease or condition.

One of the aims of this course is for you to access the quality of the statistical information you consume through the news media. We begin the course by going beyond the news headlines to the source of the research to assess the quality of the research for ourselves. Throughout the course, you will develop your statistical thinking skills through media, journal, and real-world data examples. This approach helps to engrain statistical concepts and make them more palatable, engaging, and relevant to you and the world around you.

Student Learning Outcomes: This course will focus on applying the statistics learned to healthcare settings.

Required text: Donoghue, Anthony. Statistical Thinking Through Media Examples, 3rd Edition, Cognella Publishing 2022. ISBN-13: 978-1793541963.

General requirements and expectations for the course: Students should obtain the required textbook and complete assigned readings before class each week. It is acceptable for students to communicate with each other about assignments. Students are encouraged to participate in live class sessions; however, attendance will not count towards your grade.

You are encouraged to begin reading the assigned book chapters prior to the live class session on Wednesday. During the Wednesday session, Dr. Carnes will highlight key items related to the assigned readings for that week and will answer questions. An assignment on the assigned material for that week will open on Monday (before class) and must be completed before Saturday at midnight MST.

Assignments/Exams: There will be six assignments (one per week). The assignments will open on Monday and close on Saturday at midnight MST. You can complete the assignment any time within that window from Monday through Saturday. Exams will be "open book" and you will be allowed up to 90 minutes to complete each exam. Exams will open on Thursday at noon MST and must be completed by midnight on Saturday of weeks 3 and 6.

Assessment & Grading:

ASSIGNMENTS: There will be six weekly assignments including real-world exercises and mini projects to help ingrain the statistical concepts covered in class and in the textbook. The lowest graded assignment will be dropped. Assignments will be due on Saturday at midnight MST each week

EXAMS: There will be a midterm (Week 3) and final (Week 6) exam. The exams will not be cumulative. They will focus on assessing your understanding of the statistical thinking concepts you learn in class and in the textbook. There will be a minimum of calculations in the exams. The main purpose of the exams is to assess your conceptual understanding of the material.

GRADING: Assignments: 30% Midterm: 30% Final: 40%

A: 90-100 B: 80-89 C: 70-79 D: 60-69 F: Below 60

Attendance and Absence policies. You are encouraged to participate in all live sessions.

Classroom Behavior Policy:

"At all times, treat your presence in the classroom and your enrollment in this course as you would a job. Act professionally, arrive on time, pay attention, complete your work in a timely and professional manner, and treat all deadlines seriously. You will be respectful towards you classmates and instructor. Spirited debate and disagreement are to be expected in any classroom and all views will be heard fully, but at all times we will behave civilly and with respect towards one another. Personal attacks, offensive language, name-calling, and dismissive gestures are not warranted in a learning atmosphere. As the instructor, I have the right to dismiss you from the classroom, study sessions, electronic forums, and other areas where disruptive behavior occurs.

Classroom Statement on Diversity: The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning.

Disability Support:

The University of Wyoming is committed to providing equitable access to learning opportunities for all students. If you have a disability, including but not limited to physical, learning, sensory or psychological disabilities, and would like to request accommodations in this course due to your disability, . please register with and provide documentation of your disability as soon as possible to Disability Support Services (DSS), Room 128 Knight Hall. You may also contact DSS at (307) 766-3073 or udss@uwyo.edu. It is in the student's best interest to request accommodations within the first week of classes, understanding that accommodations are not retroactive. Visit the DSS website for more information at: www.uwyo.edu/udss

Academic Dishonesty Policies:

Academic dishonesty will not be tolerated in this class. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include, at my discretion, an "F" on an exam, an "F" on the class component exercise, and/or an "F" in the entire course. Academic dishonesty means anything that represents someone else's ideas as your own without attribution. It is intellectual theft – stealing - and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person's writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person's academic dishonesty is also considered academic dishonesty and will be treated identically.

Duty to Report:

While I want you to feel comfortable coming to me with issues you may be struggling with or concerns you may be having, please be aware that I have some reporting requirements that are part of my job requirements at UW.

For example, if you inform me of an issue of sexual harassment, sexual assault, or discrimination I will keep the information as private as I can, but I am required to bring it to the attention of the institution's Title IX Coordinator. If you would like to talk to those offices directly, you can contact Equal Opportunity Report and Response (Bureau of Mines Room 319, 766-5200, report-it@uwyo.edu, www.uwyo.edu/reportit). Additionally, you can also report incidents or complaints to the UW Police Department. You can also get support at the STOP Violence program (stopviolence@uwyo.edu, www.uwyo.edu/stop, 766-3296) (or SAFE Project (www.safeproject.org, campus@safeproject.org, 766-3434, 24-Hour hotline: 745-3556).

Another common example is if you are struggling with an issue that may be traumatic or unusual stress. I will likely inform the Dean of Students Office or Counseling Center. If you would like to reach out directly to them for assistance, you can contact them using the info below or going to www.uwyo.edu/dos/uwyocares.

Finally, know that if, for some reason, our interaction involves a disruptive behavior or potential violation of policy, I inform the Dean of Students, even when you and I may have reached an informal resolution to the incident. The purpose of this is to keep the Dean apprised of any behaviors and what was done to resolve them.

Substantive changes to syllabus:

All deadlines, requirements, and course structure are subject to change if deemed necessary by the instructor. Students will be notified verbally in class, on our WyoCourses page announcement, and via email of these changes.

Student Resources:

DISABILITY SUPPORT SERVICES: udss@uwyo.edu, 766-3073, 128 Knight Hall, www.uwyo.edu/udss
COUNSELING CENTER: uccstaff@uwyo.edu, 766-2187, 766-8989, 341 Knight Hall, www.uwyo.edu/ucc
ACADEMIC AFFAIRS: 766-4286, 312 Old Main, www.uwyo.edu/acadaffairs
DEAN OF STUDENTS OFFICE: dos@uwyo.edu, 766-3296, 128 Knight Hall, www.uwyo.edu/dos
UW POLICE DEPARTMENT: uwpd@uwyo.edu, 766-5179, 1426 E Flint St, www.uwyo.edu/uwpd
STUDENT CODE OF CONDUCT WEBSITE: www.uwyo.edu/dos/conduct

Course Calendar

| Week | Readings | Live Class | Assignment Due |
|------|---|------------|----------------|
| 1 | Book: Chapters 1-2 | July 9 | July 14 |
| 2 | Book: Chapters 3-4 | July 16 | July 21 |
| 3 | Book: Chapters 5-6 (excluding section 6.3.4) Midterm (Thursday-Saturday) - 7/24 thru 7/26 | July 23 | July 28 |
| 4 | Book: Chapter 7 (excluding section 7.4.4) | July 30 | August 4 |
| 5 | Book: Chapter 8 (excluding sections 8.6, 8.8, 8.9) | August 6 | August 11 |
| 6 | Book: Chapters 9-10 (excluding sections 9.1, 9.2) Final (Thursday-Saturday) - 8/14 thru 8/15 | August 13 | August 15 |

You are strongly encouraged to begin the assigned readings PRIOR to the live class session.

Packback Questions

Assignments are a requirement for this course, and the Packback Questions platform will be used for online discussion about class topics. Packback Questions is an online community where you can be fearlessly curious and ask open-ended questions to build on top of what we are covering in class and relate topics to real-world applications.

Packback Requirements:

Your participation on Packback will count toward 30% of your overall course grade.

There will be a **Monday at midnight MST** deadline for submissions. In order to receive full credit, you should submit the following:

- **The complete answer to one of the posed assignment questions with a minimum curiosity score of 65.**
- **A response to another student's posting with a minimum curiosity score of 65.**

How to Register on Packback:

An email invitation will be sent to you from help@packback.co prompting you to finish registration. If you don't receive an email (be sure to check your spam), you may register by following the instructions below:

1. Create an account by navigating to <https://app.packback.co> and clicking "Sign up for an Account"
Note: If you already have an account on Packback you can log in with your credentials.
2. Then enter our class community's lookup key into the "Looking to join a community you don't see here?" section in Packback at the bottom of the homepage.
Community Lookup Key: **3ER-UYI-6ON4**
3. Follow the instructions on your screen to finish your registration.

Packback may require a paid subscription. Refer to www.packback.co/product/pricing for more information.

How to Get Help from the Packback Team:

If you have any questions or concerns about Packback throughout the semester, please read their FAQ at help.packback.co. If you need more help, contact their customer support team directly at help@packback.co.

For a brief introduction to Packback Questions and why we are using it in class, watch this video: <https://www.youtube.com/watch?v=OV7QmkrD68>