



PubH 6035

Applied Research Method

Fall, 2015

Credits:	3
Meeting Days:	Tuesday and Thursday (class); Tuesday or Thursday (lab)
Meeting Time:	1:00-2:15 PM (class); 2:30-3:20 (lab)
Meeting Place:	Mayo A110 (class); Mayo C381 (lab)
Instructor:	Deborah Hennrikus, PhD
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Office Hours:	By appointment (for instructor and TA)

I. Course Description

The purpose of this course is to teach basic research skills and concepts needed to plan, conduct, and analyze data from a research project. Skills including performing literature searches; questionnaire development; scale construction; item analysis; data coding, entry and analysis; and report writing will be taught. Through the semester, students will develop a research question, devise a brief questionnaire to address that question, analyze their survey data using Stata statistical software, and write a report. Most of the class and lab activities will focus on the steps involved in completing this project. Students will also develop their data management and analysis skills using two existing datasets, the Golden Valley Renters Survey and the Baby Steps Baseline Survey.

II. Course Prerequisites

This course is designed primarily for graduate students in Community Health Promotion, Maternal Child Health and Public Health Nutrition who have completed the required biostatistics courses. Program Evaluation for Community Health Education (PubH 6034) is a strongly recommended course prerequisite. Students in other graduate programs may enroll as space permits.

III. Course Goals and Objectives

After completing the course, the student will be able to:

- 1) Search the literature and identify existing project-relevant research.
- 2) Select appropriate items to construct a research questionnaire and to develop scales.

- 3) Understand the concepts of reliability, validity, response biases, and the pros and cons of a variety of survey administration techniques.
- 4) Conduct data coding, entry and descriptive statistics using a computer software package.
- 5) Understand Human Subjects concerns and IRB applications.
- 6) Write a research report summarizing the study purpose, design and methods, and results.
- 7) Present the results of their project.

IV. Methods of Instruction and Work Expectations

Expectations. Students will be expected to:

- 1) Attend and actively participate in class and required labs.
- 2) Download lab instructions from Moodle before each lab, review the instructions before the lab session, and bring the instructions and other materials required for the lab to the lab session.
- 3) Read assigned materials.
- 4) Complete and turn in homework and lab assignments.
- 5) Provide feedback to other students regarding their projects.
- 6) Complete a final project.
- 7) Present the results of the project in class.

Course Website

There is a course website on Moodle. All homework assignments and class notes will be posted on the website on the Friday of the week before they will be needed for class. Please download these materials and bring them to class: additional copies will not be handed out in class. Grades for homework assignments will be posted on the website.

Assignments

Assignments must be turned in via the course website on the due date to receive full credit. Each assignment will be introduced and reviewed during class or lab sessions. Some homework assignments should be completed with other class members; some should be completed individually. Please check the directions on each homework assignment and consult the Important Dates table on p. 8 of this syllabus.

Computer-based assignments will be completed using Stata. It will be possible to analyze data using other statistical software, such as EXCEL, SAS or SPSS, but the instructor and the TA will be able to provide very limited help with programming and advice using some software. If you do want to use software other than Stata to analyze data, please talk with the course instructor.

Labs

The labs in the first half of the course will consist of structured tasks that teach data management and analysis using Stata. Those in the second half will be devoted to analyzing the data you've collected for the course with the TA available to provide help and advice. You should be able to complete your analyses during the lab periods, but computers that have Stata software can be found in the SPHere, the Computing Lab at the Coffman Union and in the Division of Epidemiology and Community Health offices in WBOB.

Quizzes

There will be five brief quizzes conducted on the course website. Each will be worth 2 points. Each quiz must be completed by the due date in order to receive credit. Most will cover information in the assigned readings. The quizzes will be announced in class, but it is very important that you also check the website every week to make sure that you don't miss a quiz.

Final Project

Final projects will be developed and completed over the course of the semester. Steps to be completed include:

- 1) Identify a topic and conduct a literature search.
- 2) Develop a questionnaire to answer a research question, evaluate a scientific hypothesis, or evaluate a program.
- 3) Pilot test the questionnaire and revise and re-pilot the questionnaire.
- 4) Review the administration protocol.
- 5) Administer the survey to classmates.
- 6) Code and enter the data into a data file.
- 7) Conduct data analysis to answer your research question.
- 8) Write a scientific report including an introduction/rationale, methods/analysis, results, and discussion. The final paper should resemble a scientific journal article in structure, style and format. Results presented should include some or all of the following: descriptive statistics (means, standard deviations, frequencies), graphic presentation, reliability and validity, and tests of significance.
- 9) Present the project in class.

Groups of two students will pose their own research questions and develop a survey to answer those questions. Students will then separately analyze their survey data and write a report. Groups of 4-6 students will also be formed early in the semester to act as “investigator groups.” These groups will meet periodically during class sessions and labs to discuss progress on the projects and to provide feedback and suggestions.

V. Course Text and Readings

Readings will be available via digital reserve (free of charge) or digital coursepack (payment required) on the class website. The purpose of the readings is to provide practical information about conducting research projects. Please note that they contain information that will help students design methodologically sound final projects. Final projects that fail to reflect issues covered in readings will receive lower grades. In addition, the brief quizzes administered on the course website will be based on the content of the readings.

Example materials, such as surveys and study protocols, will be posted on the course website. These materials will be used as examples in both the class and the lab.

Using Stata for data analysis will be covered in both class and in labs. There are very good web resources for using Stata that should also be helpful. The following are some recommended websites:

<http://www.ats.ucla.edu/stat/stata/>

<http://dss.princeton.edu/usingdata/stata/stata.html>

<http://www.stata.com/support/>

The Stata folder on the Moodle course website also contains useful information.

If you want further information about Stata, there are many good books. Some recommended books are J. Scott Long, [The Workflow of Data Analysis Using Stata](#), and S. Juul, [An Introduction to Stata for Health Researchers](#).

VI. Course Outline/Weekly Schedule

Week 1: September 8, 10

Class: Developing a Research Question; Searching the Research Literature

Lab: No lab this week

Readings:

Maxwell JA. (1996). Conceptual context: What do you think is going on? In Qualitative research design. Thousand Oaks, CA: Sage Publications, pp.25–48.

Due by September 17: Literature Search – Assignment 1

Due by September 24: Human Subjects – Assignment 2

Week 2: September 15, 17

Class: Multi-method research; Introduction to Surveys; designing the survey approach

Lab: Lit searching; 1st look at Stata

Readings:

Dillman DA, Smyth JD, Christian LM. (2014) Reducing people's reluctance to respond to surveys. In Internet, phone mail, and mixed-mode surveys: The tailored design method (fourth edition). Hobokon, NJ: John Wiley & Sons, Inc., pp. 19-55.

Week 3: September 22, 24

Class: Survey Development

Lab: Stata: Analysis – Student Survey

Readings:

Crosby RA, DiClemente RJ, Salazar L. (2006) Measurement in health promotion. In Research methods in health promotion. Hobokon, JH: John Wiley & Sons, Inc., pp. 229-259.

Fowler F. (2014) Designing questions to be good measures. In Survey research methods. Thousand Oaks, CA: Sage Publications, pp. 75-98.

Due by October 1: First draft of survey – Assignment 3

Due by October 13: Second draft of survey – Assignment 4

Due by October 19: Final version of survey – Assignment 5

Week 4: September 29, October 1

Class: Reliability and Validity

Lab: Stata: the Golden Valley Survey

Readings:

Fowler F. (2014) Types of errors in surveys. In Survey research methods. Thousand Oaks, CA: Sage Publications, pp. 8-13.

Stata Programming documents (in the Stata folder on Moodle class website). See particularly:

Stata_Guide_V10_Princeton.pdf. Full citation: Stata Tutorial (Spring 2009), Data and Statistical Services, Social Science Reference Center, Firestone Library, Princeton University.

Optional reading: Birnbaum AS, Lytle LA, Murray DM, et al. Survey development for assessing correlates of young adolescent's eating. *Am J Health Behav* 2002;26(4):284-295. (In the Additional Readings folder on the Moodle class website)

Week 5: October 6, 8

Class: Sampling / response rates

Lab: Data management using Stata (Golden Valley Survey)

Readings:

Crosby RA, DiClemente RJ, Salazar L. (2006) Principles of sampling. In Research methods in health promotion. Hoboken, JH: John Wiley & Sons, Inc., pp. 289-316.

Fowler, F. J. (2014). Nonresponse: Implementing a sample design. In Survey research methods. Thousand Oaks, CA: Sage Publications, pp. 48-60.

Week 6: October 13, 15

Class: Human Subjects Considerations; Pre-testing Surveys; Stata Programming

Lab: Data analysis using Stata (Baby Steps Survey)

Readings:

Fowler, F. J. (2014). Evaluating Survey Questions and Instruments. In Survey research methods. Thousand Oaks, CA: Sage Publications, pp. 99-109.

http://www.literacytrust.org.uk/about/faqs/710_how_can_i_assess_the_readability_of_my_document_or_write_more_clearly

http://www.online-utility.org/english/readability_test_and_improve.jsp

<p>Due by October 23: Lab Check (Uploading this week's log) – Assignment 6</p>

Week 7: October 20, 22
Class: Stata Programming; Conducting Studies
Lab: Data analysis using Stata (Baby Steps Survey)
Readings: None.

Week 8: October 27, 29
Class: Data Analysis; Choosing the Right Statistical Test
Lab: Data analysis using Stata (Baby Steps Survey)
Readings: None

Due by November 12: Codebook, frequency distributions (your surveys) – Assignment 7

Week 9: November 3, 5
Class: Data Analysis; Report Writing
Lab: Data Entry / Analysis (your surveys)
Readings:

Miller J. E. (2004). Creating effective charts. In The Chicago guide to writing about numbers. Chicago, IL: The University of Chicago Press, pp. 129-166.

Miller J. E. (2004). Creating effective tables. In The Chicago guide to writing about numbers. Chicago, IL: The University of Chicago Press, pp. 102-128.

Due by November 24: Complete Background and Method Section & Outline of Results and Discussion – Assignment 8

Due by December 7: Complete Draft of Paper – Assignment 9

Due by December 10: Your Critique of a Peer's Paper – Assignment 10

Week 10: November 10,12

Class: Nov. 10: Report Writing.
Nov. 12: No class. Small groups will meet with the instructor to discuss progress on individual projects.

Lab: Data Analysis (your surveys)

Readings:

Miller J. E. (2004). Writing about distributions and associations. In The Chicago guide to writing about numbers. (pp. 185-199). Chicago, IL: The University of Chicago Press.

Week 11: November 17, 19

Class: No class on these days. Small groups will meet with the instructor to discuss progress on projects

Lab: Data Analysis (your surveys)

Readings: None

Week 12: November 24, 26 (Thanksgiving – no class)

Class: Report Writing; Student Questions regarding Analysis and Write-up

Lab: Data Analysis (your surveys)

Readings: None

Week 13: December 1, 3

Class: To Be Decided

Lab: Data Analysis (your surveys)

Readings: None

Week 14: December 8, 10

Class: Project presentations, peer review of papers (December 10)

Lab: Data Analysis (your surveys)

Readings: None

Week 15: December 15

Class: Project Presentations

Lab: No lab

Readings: None

<i>Due on December 15 in class:</i> Final paper
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Important Dates

Date	Assignment Due	Points	Individual or Group?
Sept. 17	Assign. 1 – Lit review	8	Group
Sept. 24	Assign. 2 – IRB Training (IRB website)	8	Individual
Oct 1	Assign. 3 -- First draft of survey	2	Group
Oct. 13	Assign. 4 – Second draft of survey	2	Group
Oct. 19	Assign. 5 – Final draft of survey - online	4	Group
Oct. 23	Assign. 6 - Lab Check – Upload log	2	Individual
Nov. 12	Assign. 7 – Codebook, distributions	8	Individual
Nov. 24	Assign. 8 – Partial draft of paper	3	Individual
Dec. 7	Assign. 9– Complete draft of paper	3	Individual
Dec. 10	Assign. 10– Review of classmate’s paper	2	Individual
Dec. 8, 10, 15	Short presentation of results	5	Group
Dec. 15	Final version of paper	40	Individual

VII. Evaluation and Grading

Grades for this course will be assigned based on total points earned from various course assignments, brief quizzes and class participation.

Grade	Points
A	94-100
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72

S/N option must complete all assignments to a C- level (70%). Letter grades are determined as follows:

<u>Sources of Points</u>	<u># Assignments X Points</u>	<u>Total Points Possible</u>
Final Project	1 X 40	40
Class presentation	1 X 5	5
Assignments	10 X (variable # points)	42
Class participation		3
Brief quizzes	5	<u>10</u>
		100

Class participation will be determined by attendance in both class and required labs and participation in class discussions and exercises. The 10 points for quizzes will be determined by very brief quizzes on the readings that will be given on the Moodle website. You will also be required to turn in the results you obtain during one of the lab sections for 2 points (See Assignment 7).

FINAL PAPERS ARE DUE IN CLASS ON DECEMBER 15. They will be graded using the following criteria:

	Maximum Possible Points
<u>Abstract</u>	
Provides good overview of rationale, methods, main results, interpretation; no more than 250 words in length	2
<u>Background</u>	
Good focused rationale for project provided	3
Relevant literature cited	3
Research question clearly stated	2
<u>Methods</u>	
Subjects / procedures / response rates / instructions described well	3
Measures described well	3
Analysis described well / appropriate tests used	3
<u>Results</u>	
Results clearly described / tables and graphs good (i.e., tables / graphs are self-explanatory and well-organized)	5
Results address study questions	3
<u>Discussion</u>	
Results discussed in light of study objectives	3
Discussion relevant to results / interesting	3
Limitations of method described	2
<u>Overall</u>	
Quality of writing and organization	5

	40

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

- A 4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
- A- 3.667
- B+ 3.333
- B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
- B- 2.667
- C+ 2.333
- C 2.000 - Represents achievement that meets the course requirements in every respect
- C- 1.667
- D+ 1.333
- D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements
- S Represents achievement that is satisfactory, which is equivalent to a C- or better.

For additional information, please refer to:

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>.

Course Evaluation

The SPH will collect student course evaluations electronically using a software system called CourseEval: www.sph.umn.edu/courseval. The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: www.sph.umn.edu/grades. All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

Incomplete Contracts

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: www.sph.umn.edu/grades.

University of Minnesota Uniform Grading and Transcript Policy

A link to the policy can be found at onestop.umn.edu.

VIII. Other Course Information and Policies

Grade Option Change (if applicable):

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at onestop.umn.edu.

Course Withdrawal:

Students should refer to the Refund and Drop/Add Deadlines for the particular term at onestop.umn.edu for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw.

Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at sph-ssc@umn.edu for further information.

Student Conduct Code:

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom:

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Scholastic Dishonesty:

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences:

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

Appropriate Student Use of Class Notes and Course Materials:

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Sexual Harassment:

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action:

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations:

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center Student Services is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DRC at 612-626-1333 or drc@umn.edu to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

Mental Health and Stress Management:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

The Office of Student Affairs at the University of Minnesota:

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development – Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student

Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

Academic Freedom and Responsibility: *for courses that do not involve students in research:*

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, (Dr Kristin Anderson, SPH Dean of Student Affairs), or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

** Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".*

Student Academic Success Services (SASS): <http://www.sass.umn.edu>:

Students who wish to improve their academic performance may find assistance from Student Academic Support Services. While tutoring and advising are not offered, SASS provides resources such as individual consultations, workshops, and self-help materials.

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