



University of Maryland School of Public Health

EPIB97 – Public Health Data Management

Semester: Fall 2016
Section: 0101
Classroom and Time: SPH 0227, Wednesday 4:00 -6:40 pm
Course webpage: See *ELMS Canvas*
Instructor: Dr. Raul Cruz-Cano **Office Hours:** Wednesday 2:00 p.m. - 4:00 p.m.
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Course Description: Many graduate students are faced with the intimidating task of performing data analyses for their theses and dissertations. Students quickly discover that getting the data ready for analysis is a complex process and don't feel ready to take on the task. This course is designed to provide students with the expertise needed to effectively manage research data using SAS as the statistical programming language.

Course Learning Objectives:

Upon completing this course, the student will be able to:

1. Frame a research question and verify that the research question can be answered with the data;
2. Get to know the data set by creating descriptive statistics, tables and graphs;
3. Document work using codebooks, commenting in programs, etc.;
4. Choose, construct and name variables;
5. Selecting appropriate methods for transforming data;
6. Differentiate data set contents;
7. Clean and manipulate data (e.g. identify outliers and missing data; merge, append, update and subset datasets, etc.);
8. Create reports to present data including summary tables and figures.

Program Competencies Addressed in this Course:

The following competencies for the Master of Public Health with concentration in Biostatistics are addressed in this course:

1. Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data.
2. Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures

Required Texts and Other Readings:

Required: A series of book chapters, articles, and PowerPoint presentations will be posted for each lecture. No textbooks are required.

Recommended:

- "Data Management Essentials Using SAS and JMP" by Julie Kezik and Melissa Hill, ISBN: 9781107535039
- The Little SAS Book: A Primer, Fourth Edition by Lora D. Delwiche, Susan J. Slaughter

- Learning SAS by Example: A Programmer's Guide by Ron Cody, Publisher: SAS Institute; ISBN-10: 1599941651, ISBN-13: 978-1599941653

Required Technology and Other Materials:

- SAS University Edition software can be downloaded to your computer from: http://www.sas.com/en_us/software/university-edition.html
- Instructions to Register for SAS Studio Online .

Course Requirements and Expectations:

Class Materials

The syllabus, required journal articles, PowerPoint slides, videos, and other course materials will be posted on the Canvas website for EPIB697: <http://elms.umd.edu/>.

Homework:

- For each problem there must be a problem statement, steps showing worked performed to reach conclusion and final conclusion.
- Homework must include a header with student name, class name and homework number.
- Late homework will NOT be accepted without a reasonable and advance notice.

Homework Format:

- Homework will be submitted online as a single MS Word File. For each assigned problem the following information must be included:
- The problem statement. This is material can be just copied from the document provided by the instructor.
- SAS Code that solves the problem.
- Solution for the problem. This can be a screenshot shown the SAS Output or the SAS Output directly.
- Bring USB thumb drive to save programs and files.

Exams:

- Exams time limited. The content of the exam will be cumulative, but the emphasis will be on the materials not covered in the previous exams. You need to bring a calculator to facilitate the computation.
- As a general rule, make-up exams and advance exams will NOT be given. Exceptions to this rule are evaluated on a case-by-case basis. Students must submit the request before the exam takes place with valid supporting document. No post-exam request will be considered except the student is hospitalized during the exam period.

Final Project Report

Each student will prepare a typed 2-3 page final report of the summary project findings, which is due on the same day of the Final Exam. The summary report should reflect each student's work, analysis, and interpretation of their findings. A hard copy should be submitted to the instructor. The font should be no smaller than Arial 11. Margins should be one inch. Line spacing should be 1.5.

University Course Related Policies:

Religious Observances:

The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs; students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the student's responsibility to inform the instructor in advance of any intended absences for religious observance.

Special Accommodations / Disability Support Services:

If you have a documented disability and wish to discuss academic accommodations for test taking or other needs, you will need documentation from Disability Support Service (301-314-7682). If you are ill or encountering personal difficulties, please let the instructor know as soon as possible. You can also contact Learning Assistance Services (301-314-7693) and/or the Counseling Center (301-314-7651) for assistance.

Academic Integrity:

The University's code of academic integrity is designed to ensure that the principle of academic honesty is upheld. Any of the following acts, when committed by a student, constitutes academic dishonesty:

- CHEATING: intentionally using or attempting to use unauthorized materials, information, or study aids in an academic exercise.
- FABRICATION: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- FACILITATING ACADEMIC DISHONESTY: intentionally or knowingly helping or attempting to help another to violate any provision of this code.
- PLAGIARISM: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

For more information see: <http://www.shc.umd.edu/code.html>.

The Honor Pledge is a statement undergraduate and graduate students should be asked to write by hand and sign on examinations, papers, or other academic assignments. The Pledge reads:

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

Course Evaluations:

The University, the School of Public Health, and the Department of Epidemiology and Statistics are committed to the use of student course evaluations for improving the student experience, course and curriculum delivery, and faculty instruction. Your evaluations help instructors improve their courses; help deans and department chairs decide on merit pay for faculty, renewal of contracts, and support tenure and promotion decisions; and help current and future students decide on classes. Your participation in the evaluation of courses through CourseEvalUM is a responsibility you hold as a student

member of our academic community. Your feedback is confidential and important to the improvement of teaching and learning at the University as well as to the tenure and promotion process. CourseEvalUM will be open for you to complete your evaluations starting about two weeks prior to the last day of the term before exams begin. Please go directly to the website (www.CourseEvalUM.umd.edu) to complete your evaluations. By completing all of your evaluations each semester, you will have the privilege of accessing online evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations. You can access results at www.CourseEvalUM.umd.edu, the same link you use to submit your evaluations. Click View Past Results instead.

Course Procedures and Policies:

Email – The Official University Correspondence:

Verify your email address by going to www.my.umd.edu.

All enrolled students are provided access to the University's email system and an email account. All official University email communication will be sent to this email address (or an alternate address if provided by the student). Email has been adopted as the primary means for sending official communications to students, so email must be checked on a regular basis. Academic advisors, faculty, and campus administrative offices use email to communicate important and time-sensitive notices. Students are responsible for keeping their email address up to date or for redirecting or forwarding email to another address. Failure to check email, errors in forwarding email, and returned email (from "full mailbox" or "unknown user" errors for example), will not excuse a student from missing University announcement, messages, deadlines, etc. Email addresses can be quickly and easily updated at <http://www.my.umd.edu> or in-person at the Student Service Counter on the first floor of the Mitchell Building. For technical support for University email: www.helpdesk.umd.edu or call 301-405-1400.

Absence Policy:

In accordance with University policy if you are absent for a single (1) lecture due to illness or some form of personal or family emergency, this absence will be considered "excused" and the instructor will accept a note from you attesting to the date of the illness/incident, along with an acknowledgement that the information is true. Whenever feasible, you should try to contact the instructor in advance.

Multiple or prolonged absences, and absences that prevent attendance at a major scheduled grading event (like an exam or test) will require written documentation from an appropriate health care provider/organization.

A link to pull information on the new policy covering absences from class can be found at <http://www.president.umd.edu/policies/v100g.html>.

Method for Communicating

All enrolled students are provided access to the University's email system and an email account. *All official University email communication will be sent to this email address* (or an alternate address if provided by the student). Email has been adopted as the primary means for sending official communications to students, so email must be checked on a regular basis. Academic advisors, faculty, and campus administrative offices use email to communicate important and time-sensitive notices.

Students are responsible for keeping their email address up to date or for redirecting or forwarding email to another address. Failure to check email, errors in forwarding email, and returned email (from “full mailbox” or “unknown user” errors for example), will not excuse a student from missing University announcement, messages, deadlines, etc. Email addresses can be quickly and easily updated at www.my.umd.edu or in-person at the Student Service Counter on the first floor of the Mitchell Building.

Official communications to the course will be sent through the course announcement tool in ELMS (CANVAS). If you do not have your profile settings such as you receive these notices, you will miss important information on this course. It is your responsibility to make sure you are able to receive these notices in the format of your choosing. If you need more information on your ELMS settings, please see the Technology Help Desk on the main floor of the Computer and Space Science Building or by phone at X 5 1500.

For technical support for University email: www.helpdesk.umd.edu or call 301-405-1400.

Late work and Missed Exams / Assignments

Assignments are due 24 hours before the start of the class unless specified in the syllabus. If you are ill, or otherwise need to reschedule exams or assignment due dates, please notify the instructor in advance by email so arrangements can be made. An assignment won't be accepted late unless arrangements have been made prior to class. All coursework must be completed by the end of the term, or an incomplete grade will be assigned.

Inclement Weather / University Closings / Emergency Procedures:

In the event that the University has a delayed opening or is closed for an emergency or extended period of time, the instructor will communicate to students regarding schedule adjustments, including rescheduling of examinations and assignments due to inclement weather and campus emergencies.

Grading Procedures:

The class slides and other materials are copyrighted and may not be reproduced for anything other than personal use without written permission from the instructor.

Assessment	Grade Points:
Homework	50
Mid-Term Exam	20
Final Report	10
Final Exam	20

Final letter grades will be assigned according to the following system:

A+ = 97+, A = 93-96.9999, A- = 90-92.9999
 B+ = 87-89.9999, B = 83-86.9999, B- = 80-82.9999
 C+ = 77-79.9999, C = 73-76.9999, C- = 70-72.9999
 D+ = 67-69.9999, D = 63-66.9999, D- = 60-62.9999
 F = below 60

If a student has questions or concerns about grade(s) and believes I should review the grade, the student should submit a written request over email that describes concerns in detail. This request must be submitted within one week of the date that the assignment is returned to him/her.

Please show all of your work (i.e., calculations) on homework, midterm exams and the final exam. If you provide the correct answer, but, do not show your work I will mark it as incorrect and give you no points. If you provide the incorrect answer, but, show in your calculations that you understood how to answer the question correctly, you will get partial credit. This partial credit will be entirely to the professor or grader discretion and indisputable.

Course Outline / Course Calendar:

The class sessions will include lectures and homework. Students are expected to complete the assigned readings **prior** to each session. Readings include book chapters, assigned journal articles and/or PowerPoint slides.

Note: The contents of this syllabus are a just a plan for the work to be completed during the semester; it might be changed if deem necessary by the instructor.

Module	Date	Topic	Assignments
# 1	8/31	Intro to SAS programming; importing and formatting data	Homework #1 due 9/6/2016
# 2	9/7	Creating new variables; functions	Homework #2 due 9/13/2016
# 3	9/14	Iterative and conditional steps	Homework #3 due 9/20/2016
# 4	9/21	Merging and updating datasets/Sorting and labeling data	Homework #4 due 9/27/2016
# 5	9/28	Summarizing Data/ Generating tables	Homework #5 due 10/4/2016
# 6	10/5	Graphs, automatic creation of reports	Homework #6 due 10/11/2016
# 7	10/12	Midterm Exam	Midterm Exam due 10/12/2016
# 8	10/19	Regression	Homework #7 due 10/25/2016
# 9	10/26	Complex survey design	Homework #8 due 11/1/2016
# 10	11/2	Data set contents; Documenting your data Variable choice; Use of continuous versus	Homework #9 due 11/8/2016

		categorical variables	
# 11	11/9	Data cleaning: outliers, misspellings, contradictions, duplicates, out of range	Homework #10 due 11/15/2016
# 12	11/16	Data cleaning: missing/omitted/don't know; coding, frequency, missing pattern	Homework #11 due 11/29/2016
#13	11/30	Reliability and validity tests; and normality checks	Homework #12 due 12/6/2016
#14	12/7	Model specification	Homework #13 due 12/13/2016
#15	12/14	Final Exam	Final Report due 12/14/2016

* This is a tentative schedule, and the actual materials covered in each lecture might not be exactly the same.

Module Outline	
Module 1	8/31/2016
<p>Topic: Intro to SAS programming; importing and formatting data</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures. <p>Assignments – HW#1 due on 9/6/2016</p>	
Module 2	9/7/2016
<p>Topic: Creating new variables; functions</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures. <p>Assignments – HW#2 due on 9/13/2016</p>	
Module 3	9/14/2016
<p>Topic: Iterative and conditional steps</p> <p>Competencies:</p>	

<ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures. <p>Assignments – HW#3 due on 9/20/2016</p>	
Module 4	9/21/2016
<p>Topic: Merging and updating datasets/Sorting and labeling data</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures. <p>Assignments – HW#4 due on 9/27/2016</p>	
Module 5	9/28/2016
<p>Topic: Summarizing Data/ Presenting Data: generating tables, graphs, automatic creation of reports</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures. <p>Assignments – HW#5 due on 10/4/2016</p>	
Module 6	10/5/2016
<p>Topic: Regression</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures. · Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data. <p>Assignments – HW#6 due on 10/11/2016</p>	
Module 7: Midterm Exam	10/12/2016
Module 8	10/19/2016

Topic: Regression

Competencies:

- Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures.
- Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data.

Assignments – HW#7 due on 10/25/2016

Module 9

10/26/2016

Topic: Complex survey design

Competencies:

- Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data;
- Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures

Assignments – HW#8 due on 11/1/2016

Module 10

11/2/2016

Topic: Data set contents; Documenting your data, Variable choice; Use of continuous versus categorical variables

Competencies:

- Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data;
- Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures

Assignments – HW#9 due on 11/8/2016

Module 11

11/9/2016

Topic: Data cleaning - outliers, misspellings, contradictions, duplicates, out of range

Competencies:

<ul style="list-style-type: none"> · Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data; · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures <p>Assignments – HW#10 due on 11/15/2016</p>	
Module 12	11/16/2016
<p>Topic: Data cleaning - missing/omitted/don't know; coding, frequency, missing pattern</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data; · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures <p>Assignments – HW#11 due on 11/29/2016</p>	
Module 13	11/30/2016
<p>Topic: Reliability and validity tests; and normality checks</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures <p>Assignments – HW#12 due on 12/6/2016</p>	
Module 14	12/7/2016
<p>Topic: Model specification</p> <p>Competencies:</p> <ul style="list-style-type: none"> · Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data; · Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures 	

Assignments – HW#13 due on 12/13/2016

Module 15

12/14/2016

Topic: **Final Exam/Final Reports**

Competencies:

- Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data;
- Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures

Assignments – Final Exam & Final Report due on 12/14/2016