

## **Data Skills On-line: Methods for Public Health Practice PUBH 806 (1 credit)**

### **Course Syllabus & Schedule (1.5.15)**

#### **Course Description**

This course focuses on training public health professions to apply basic analytic and technical skills to their day-to-day job responsibilities. Examples of these responsibilities are quantitative data collection and analysis, working with population-based data, and monitoring progress on specific program activities. We encourage students to apply these data concepts and skills to their own current public health careers and interests.

The course is structured in nine modules. Modules will engage students in active learning through the use of case studies, basic data descriptions and analysis, on-line discussions, and/or quizzes. Modules will have a self-paced learning component. Students have the opportunity to apply data skills in a final project.

\*\*Subject to change per instructions on Final Exam Date and approval from Department Chair.

#### **Course Objectives**

Course objectives focus on increasing basic data skills and literacy in the context of state and local health department goals and activities.

By the end of the course, the student will be able to:

- 1) Characterize different types of public health data
- 2) Create a questionnaire
- 3) Collect and analyze data with current technology/software
- 4) Demonstrate basic knowledge of national, state, and local secondary public health data
- 5) Create tables and figures to display public health data
- 6) Assess advantages and disadvantages of using primary and secondary data
- 7) Interpret statistical significance within the context of published research

#### **Course Instructor**

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## Course Schedule

Dates for Modules	# weeks	Start Date (Fridays)	End Date (Thursdays)
Module 1 Introduction and Icebreaker	1	January 7 (Wed.)	January 15
Module 2 Characterize types of public health data	3	January 16	February 5
Module 3 Creating a questionnaire	2	February 6	February 19
Module 4 Collecting and analyzing data	2	February 20	March 5
Module 5 Secondary Public Health Data Sources	2	March 6	March 19
Module 6 Assess Advantages Secondary Data	1	March 20	March 26
Module 7 Creating figures and tables	2	March 27	April 9
Module 8 Interpreting Statistical Significance	1	April 10	April 16
Module 9. Final Course Project	2	April 17	April 30
Final Exam Presentations			May 5, 4pm. Available for questions/discussion through 5pm

## Course Resources

All necessary course information and links are provided on the Sakai website.

## Assignments and Grading System

Assignments will be grading using the graduate grading system (H="High Pass, clear excellence", P="Pass, entirely satisfactory," L="Low Pass, inadequate" and F="failure." Final grades will be assigned according to the following criteria: 100-95 H, 94-76: P, and 75 or less: L.

Your grade in the module will be determined as a weighted average of your scores for the assignments listed in the table below. All assignments will need to be submitted by **5pm EST** (Eastern Standard Time) on the scheduled due date, unless otherwise specified. Late assignments will be subject to a penalty of 10% of the total score per each day late.

Assignments and Grading	Percentage	Due Date*
Module 1. Questionnaire I	10%	January 15
Module 2. Data Types		
Module 2. Part 1. Data (on-line quiz)	3.3%	January 22
Module 2. Part 2. GIS	3.3%	January 29
Module 2. Part 3. Qual.	3.3%	February 5
Module 3. Creating Your Own Questionnaire		
Part 1. Create quest.	10%	February 12
Part 2. Critique quest.	5%	February 19
Module 4. Collecting and Analyzing Data	10%	March 5
Module 5. Secondary Public Health Data Sources	5%	March 19
Module 6. Assess Advantages of Secondary Data	10%	March 26
Module 7. Creating Figures and Tables	5%	April 9
Module 8. Interpreting Statistical Significance (on-line quiz)	5%	April 16
Module 9. Final Exam Project		
Final Exam Paper	15%	April 30
Final Exam Presentation slide set**	10%	April 30
Final Presentation Discussion		May 5, 4pm
Class Participation	5%	Throughout semester
Total	100%	

### Assignment Descriptions

#### Module 1. Questionnaire I Assignment

Your first assignment is divided in two parts. First you will introduce yourselves in your team discussion forum. Team assignments will be provided in an Excel spreadsheet posted in the Syllabus folder. Detailed instructions for the team forum are provided in the module. For the second part of the assignment, you will complete the electronic questionnaire that will be sent to you via email. We ask that you find 5 other colleagues or friends to also complete the questionnaire. The survey is anonymous. The goal is to create a dataset that can provide examples and potentially be analyzed in later modules.

#### Module 2. Data Types Assignment

Part I. (Week 1) Categorize question types from Qualtrics Questionnaire

Part 2. (Week 2) GIS Assignment. Find a choropleth map that you would use to support the allocation of a targeted public health education intervention at a local, national, or global level. Write a brief paragraph interpreting the map. Include 3 key patterns from the map. Describe the targeted public health education intervention you would recommend at the local, national, or global scale.

Please upload either the pdf or website with the image into the assignment tool and also post the link or image in your team discussion forum. Make sure to reference the source of the image/map.

Part3 (week 3)-Qualitative Assignment. Using data collected from the class, convert data from a qualitative open ended question to categorical results.

### Module 3 .Creating Your Own Questionnaire (this week is a 6 hour week)

1. For the first activity in this module, please complete the basic Qualtrics survey tutorial (2.5 hours).
2. Pick one of the topics from your list of your top 3 public health topics. You will focus on this topic for the majority of the subsequent assignments, so you might want to review subsequent assignments before you make your choice.
3. Create a questionnaire with the following in mind:
  - a. Your questionnaire will be used to collect baseline information as to the specific public health problem, program, or intervention you will need to have at baseline. When thinking of questions, frame it in the context of two key hypotheses you would like to test. Include 20 questions, 5 for demographic information and the other 15 for substantive information. Make sure that you use 3 different types of questions and response category types that you learned about in Module 2 (e.g. ordinal, nominal, continuous). Please upload a pdf or word document with your questionnaire to the assignment tool.
4. You will then be paired with another class mate, and asked to critique their questionnaire with a standardized grading rubric. Make sure your assessment is collegial. Provide *constructive* criticism [use a criticism sandwich-start with a positive, describe any recommended improvements, and close with a positive]; Submit your critique via the assignment tool.

### Module 4. Collecting and Analyzing Data

Objectives for this assignment are to learn to use Qualtrics to collect on-line data, as well as to learn about the format of datasets. You will be introduced to variable coding,

and manipulating your data to create graphs in Qualtrics. You will work with the questionnaire you designed in Module 3.

#### Module 5. Secondary Public Health Data

Pose a research question related to the topic for which you created a questionnaire. Answer these questions:

What data can you find at 1) the state level (North Carolina) on your topic, and 2) at the national level?

Are there sufficient data to design an intervention on your topic? (i.e. bullying, obesity among teenagers, Medicaid fraud etc.) What data are they? If there are no existing data, what kinds of questions would you add, if any, to existing state and national surveys? Would the advantages of collecting your own data outweigh the advantages of using existing state and national survey data?

#### Module 6. Assess Advantages and Disadvantages of Primary and Secondary Data

Within the context of your selected research topic that you focused on in Modules 3-5, first describe an optimal version of the data you collected in Module 4. This includes the following: 1) define your target population, 2) describe the study design in which you would use the survey, 3) detail how you would recruit your study population from your target population including the statistical sampling procedure if you need one, and 4) describe how you would administer this survey to your target population.

Compare these hypothetical primary data with the secondary data you found in module 5. Describe two advantages and disadvantages of each data source. Describe two instances, within your selected topic area, in which these primary data would be preferable and two examples of times that secondary data would be preferable. Be specific to your selected topic.

#### Module 7. Creating Figures and Tables

Using principles discussed by Dr. Tufte (including avoidance of chart junk) recognize how basic graphs and tables (bar, column, pie, scatter, and line charts) can be used to clearly present results. In a two page document, provide responses to Parts 1 & 2, and upload your document to the Module 7 assignment tool.

Part 1. Find a report produced by a state or county health department on your selected topic. Examine and critique how data (graphs and tables) are presented. Use the provided rubric to conduct the critique. Include a link to the report critiqued in the assignment document.

Part 2. Make four graphs from the data you collected in module 4. Present one piece of data in two different graphical formats. Determine which is more effective in conveying the result.

## Module 8. Interpreting Statistical Significance

The assessment for this module will include an online quiz with questions on a number of graphs and include interpretation of p-values, confidence intervals, and statistical significance.

## Module 9. Final Project

Part 1. Use the topic you select for module assignments 3-5. Based on what you've found in the literature and the evidence in your primary and secondary data sources, propose a public health intervention for your target population. Summarize your primary and secondary data sources (for the sake of this assignment, assume that you have the optimal version of the data you described in Module 6.). Create a power point presentation with 10 slides. Begin with your background & theoretical rationale slides (include your substantive knowledge on the topic) for your proposed public health intervention. Include a graph from your primary data and 2 graphs from secondary data to support your proposed intervention. Also include one slide with references.

Part 2. Design an easily conducted questionnaire that you will use to assess your proposed intervention, and create the questionnaire in Qualtrics. Include an introduction for the target population, and a maximum of 25 questions. Make sure to include both demographic and substantive questions with both quantitative and qualitative response options. Upload a pdf of the survey and the Qualtrics link to the assignment tool.

### **Optional: CITI training-on-line IRB training module. (Extra credit)**

There is also an option for extra credit (1 point), which will be added to your final project grade. This is only for students who have not completed the training before the start of the course. Please send Dr. Yeatts your certificate of completion. The [Collaborative Institutional Training Initiative](#) (CITI) is a web-based training package on issues relating to human subjects research. CITI contains modules on topics like informed consent, vulnerable populations, ethical

principles and IRB regulations. Each module has a short quiz at the end to assess understanding. Over 1300 institutions are using CITI for their mandatory training.

### **Online Class Statement**

By enrolling as a student in this course, you agree to abide by the University of North Carolina at Chapel Hill policies related to the Acceptable Use of online resources. Please consult the Acceptable Use Policy (<http://help.unc.edu/1672>) on topics such as copyright, net-etiquette and privacy protection.

As part of this course you may be asked to participate in online discussions or other online activities that may include personal information about you or other students in the course. Please be respectful of the rights and protection of other participants under the UNC Chapel Hill Information Security Policies ([http://its.unc.edu/ITS/about\\_its/its\\_policies/index.htm](http://its.unc.edu/ITS/about_its/its_policies/index.htm)) when participating in online classes.

When using online resources offered by organizations not affiliated with UNC Chapel Hill, such as Google or Youtube, please note that the Terms and Conditions of these companies and not the University's Terms and Conditions apply. These third parties may offer different degrees of privacy protection and access rights to online content. You should be well aware of this when posting content to sites not managed by UNC Chapel Hill.

When links to sites outside of the [unc.edu](http://unc.edu) domain are inserted in class discussions, please be mindful that clicking on sites not affiliated with UNC-Chapel Hill may pose a risk for your computer due to the possible presence of malware on such sites.

### **Honor System**

As part of the UNC Honor Code, Carolina students pledge to maintain ideals of academic honesty, personal integrity, and responsible citizenship. These ideals are embodied in the Honor Code set forth in the Instrument of Student Judicial government, with the support of students, faculty, and staff. When a student applies to Carolina, he/she undertakes a commitment to the principles embodied in the Honor Code. It is our expectation that all students in the class will uphold the UNC Honor System. It shall be the responsibility of every student at the University of North Carolina at Chapel Hill to obey and to support the enforcement of the [Honor Code](#), which prohibits lying, cheating, or stealing when these actions involve academic processes or University, student, or academic personnel acting in an official capacity.

### **Course Evaluations System**

The School uses an on-line evaluation system to assess the quality of instruction and learning of the courses offered. The system is open for a two week period before the end of classes. An email will notify you that the system is open and a link to access the form. This evaluation

system is anonymous. The instructors will only see the aggregate data with any comments at the end of the course after grades are turned in. It is your responsibility as a student to complete the evaluations. You will be sent multiple emails until it is completed.

We value your feedback on the course. We will conduct an in-house class evaluation, at the end of the semester. We will ask you for your (anonymous) feedback about specific modules and assignments. We would like to incorporate your feedback and improve the course.