

PHC 6195: Public health data, information, & decision making*

"One forms provisional theories and waits for the time or fuller knowledge to explore them.
A bad habit, Mr. Ferguson, but human nature is weak."
Sherlock Holmes -- *The Adventure of the Sussex Vampire*

Time	(see schedule)
Location	
Instructor	Etienne E. Pracht, Ph.D.
Phone	813 974 7609; Fax: 974-6741
e-mail	epracht@hsc.usf.edu
e-resources	www.hsc.usf.edu/~epracht
Office Hours	<ul style="list-style-type: none"> • On campus: by appointment • E-Mail : Will respond within 48 hours
Textbook	<ol style="list-style-type: none"> 1. Veney, James E. (2003) <u>Statistics For Health Policy and Administration Using Microsoft Excel</u> Jossey-Bass, San Francisco 2. Reading packet (available in COPH copy room)
Prerequisite	<p>PHC 6050 Biostatistics I (or equivalent)</p> <p>* No exceptions will be made concerning this pre-requisite. Biostatistics II is recommended.</p>
Course format	This course will be offered both online and in face-to-face classroom format.

Course Description & Objectives

This course is designed to provide an understanding of commonly used public health databases and the methods necessary for sound policy decision making using the data. The course commences with a conceptual treatment of information (topics 1-3), followed by the application of commonly used analytical methods for "extracting" information from data. The emphasis is on the **appropriateness and application** of methods widely used for analysis in public health, particularly pertaining to health policy and management.

Course Objectives: After successfully completing this course, students will be able to:

1. Identify principal sources of health statistics databases
2. Demonstrate the use of the datasets for public health management
3. Determine appropriate use of data and statistical methods for problem identification and resolution, and program planning, implementation and evaluation.
4. Select and define variables relevant to public health problems.
5. Evaluate the integrity and comparability of data and identify gaps in data sources.
6. Understand how the data illuminate ethical, political, scientific, economic, social, and overall public health issues.

Evaluation

Evaluation will be based on assignments (quizzes and application) following each topic. The assignments are described under each topic/session below. Each assignment will be worth 10 points. The course grade will be based on the cumulative score:

Cumulative Score Range	Guaranteed Grade
90 and above	A
80 – 89	B
70 – 79	C
60 – 69	D
59 and below	F

* Proposed course number suggested to APCC (approved May 2006)

Quizzes and assignments	Points
Topic #1: Short quiz	10
Topic #2: Short quiz	10
Topic #3: Assignment	10
Topic #4: Suggested hypothesis (if valid)	1
Report	9
Topic #5: Suggested hypothesis (if valid)	1
Report	9
Topic #6: Suggested hypothesis (if valid)	1
Report	9
Topic #7: Suggested hypothesis (if valid)	1
Report	9
Topic #8: Suggested hypothesis (if valid)	1
Report	9
Topic #9: Short quiz	10
Topic #10: Report	10
Total	100

Databases for analysis under topics 3-8

- Florida hospital financial
Source: Agency for Health Care Administration , (<http://www.fdhc.state.fl.us/SCHS/data.shtml>)
- Death rates (overall, motor vehicle accidents)
Source: CDC, (<http://www.cdc.gov/nchs/fastats/deaths.htm>)
- Immunizations
Source: CDC, (<http://www.cdc.gov/nchs/fastats/immunize.htm>)
- Florida hospital discharge
Source: Agency for Health Care Administration, (<http://www.fdhc.state.fl.us/SCHS/data.shtml>)
- National Health Insurance Survey
Source: CDC, (<http://www.cdc.gov/nchs/datawh/ftpser/ftpdata/ftpdata.htm>)
- Databases proposed by students will be considered as replacements for those listed above. The decision will be based on (1) fulfillment of HIPAA criteria protecting anonymity of individuals, (2) suitability for hypothesis testing, (3) applicability to health policy and management, and (4) democratic vote of all class members.

Software for analysis under topics 3-8

- Microsoft Excel
- EPIINFO – Please download from <http://www.cdc.gov/epiinfo/downloads.htm>.
- ESRI ARC Explorer – Please download from <http://www.esri.com/software/arcexplorer/index.html>

O U T L I N E

SECTION I

1. Basic concepts
 - A. Topics:
 - a. Data, information, knowledge, wisdom
 - B. Reading assignment: Stephen Parente (2001) "Using Information Systems for Public Health Administration," in Novick, Lloyd F. and Glen P. Mays (2001) Public Health Administration, Principles for Population-Based Management Aspen Publishers, Inc. Gaithersburg, Maryland, pp. 222-247
 - C. Assessment: short quiz
2. Acquiring, sampling, and preparing data
 - A. Topics: review of concepts in statistics
 - B. Reading assignment: Veney, James E. (2003) Statistics For Health Policy and Administration Using Microsoft Excel Jossey-Bass, San Francisco, Chapter 3: *Data Acquisition, Sampling and Data Preparation*.
 - C. Assessment: short quiz
3. Representation of data/information
 - A. Topics: concepts, charting, summary measures, simple correlations, misuses of statistics
 - B. Reading assignment: Reading assignment: Veney, James E. (2003) Statistics For Health Policy and Administration Using Microsoft Excel Jossey-Bass, San Francisco, Chapter 4: *Data Display, Descriptive Presentation, Excel Graphing Capability* (section 4.1); Chapter 6: *Measures of Central Tendency and Dispersion, Data Distribution*
 - C. Assessment: short report

SECTION II: USING DATA AND DATASETS FOR DECISION MAKING

4. Comparing sample means
 - A. Dataset Database (a): Florida hospital financial data
 - B. Hypothesis TBA – student determined
Examples:
 - Not for profit hospitals treat a larger proportion of uninsured patients
 - Not for profit hospitals pay higher wages for patient care personnel
 - C. Reading assignment Veney, James E. (2003) Statistics For Health Policy and Administration Using Microsoft Excel Jossey-Bass, San Francisco Chapter 9: *t-Tests for Related and Unrelated Data*.
 - D. Statistical procedure **t-test**
 - E. Objective(s)
 - Compare sample means
 - Use spreadsheet to acquire test statistic
 - Interpret result and make inference
 - F. Computer package Excel
 - G. Assignment **Format** – one page structured abstract with sub-headings "objective," "data and methods," "results," "conclusions," "discussion."
 - Use the Excel spreadsheet data analysis function to generate a t-statistic testing the above specified hypothesis.
 - Interpret the result from a decision making perspective
 - Provide an example, either management or policy related, of how this test may be applied in practice.

5. Determining variable dependence/independence
- | | | |
|----|-----------------------|---|
| A. | Dataset | Database (b): CDC – Death Rates |
| B. | Hypothesis | TBA – student determined
Examples
Overall death rates have not changed over time (1990, 1950, 1998)
Death rates for males and females are the same |
| C. | Reading assignment | Veney, James E. (2003) <u>Statistics For Health Policy and Administration Using Microsoft Excel</u> Jossey-Bass, San Francisco
Chapter 8: <i>Statistical Tests for Categorical Data</i> . |
| D. | Statistical procedure | Chi-Square |
| E. | Objective(s) | Determine whether two variables are independent using contingency tables and a goodness of fit test |
| F. | Computer package | Excel |
| G. | Assignment | Format – one page structured abstract with sub-headings “objective,” “data and methods,” “results,” “conclusions,” “discussion.”
Use the Excel spreadsheet data analysis function to generate a t-statistic testing the above specified hypothesis.
Interpret the result from a decision making perspective
Provide an example, either management or policy related, of how this test may be applied in practice. |
6. Dependence of variables and difference in means
- | | | |
|----|-----------------------|--|
| A. | Dataset | Database (c): CDC – U.S. Immunizations |
| B. | Hypothesis | TBA – student determined
Examples
Immunization rates of children differ by parents’ marital status
Immunization rate of children differ by U.S. region |
| C. | Reading assignment | Veney, James E. (2003) <u>Statistics For Health Policy and Administration Using Microsoft Excel</u> Jossey-Bass, San Francisco
Chapter 10: <i>Analysis of Variance</i> . |
| D. | Statistical procedure | ANOVA and the F-test |
| E. | Objective(s) | Variable dependence/independence and difference of means test using ANOVA |
| F. | Computer package | Excel |
| G. | Assignment | Format – one page structured abstract with sub-headings “objective,” “data and methods,” “results,” “conclusions,” “discussion.”
Use the Excel spreadsheet data analysis function to generate an F-statistic testing the above specified hypothesis.
Interpret the result from a decision making perspective
Provide an example, either management or policy related, of how this test may be applied in practice. |

7. Regression analysis – accounting for multiple influences
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|----|-----------------------|--|
| A. | Dataset | Database (d): Florida AHCA hospital discharge (elderly) |
| B. | Hypothesis | TBA – student determined
Dependent variables: Charges, sub-charges, LOS |
| C. | Reading assignment | Veney, James E. (2003) <u>Statistics For Health Policy and Administration Using Microsoft Excel</u> Jossey-Bass, San Francisco
Chapter 11: <i>Simple Linear Regression</i> .
Chapter 12: <i>Multiple Regression: Concepts and Calculation</i> . |
| D. | Statistical procedure | Ordinary least squares
i. Simple regression
ii. Multiple regression |
| E. | Objective | Confounding variables, health outcomes, adjusted R ² , t-test |
| F. | Computer package | Excel |
| G. | Assignment | Format – one page structured abstract with sub-headings “objective,” “data and methods,” “results,” “conclusions,” “discussion.”
Use the Excel spreadsheet data analysis function to estimate the regression coefficients for a model developed in class testing the above specified hypothesis.
Interpret the result from a decision making perspective
Provide an example, either management or policy related, of how this test may be applied in practice. |
8. Analysis with dichotomous categorical dependent variables
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|----|-----------------------|---|
| A. | Dataset | Database (e): CDC – NHIS Dataset |
| B. | Hypothesis | TBA – student determined
Dependent variables: |
| C. | Reading assignment | Veney, James E. (2003) <u>Statistics For Health Policy and Administration Using Microsoft Excel</u> Jossey-Bass, San Francisco, Chapter 14: <i>Analysis with a Dichotomous Categorical Dependent Variable</i> . |
| D. | Statistical procedure | Logistic regression |
| E. | Objective | Calculating odds ratios |
| F. | Computer package | CDC EPI-INFO |
| G. | Assignment | Format – one page structured abstract with sub-headings “objective,” “data and methods,” “results,” “conclusions,” “discussion.”
Use EPI-INFO to estimate the log-odds for a model developed in class testing the above specified hypothesis.
Interpret the result from a decision making perspective
Provide an example, either management or policy related, of how this test may be applied in practice. |

SECTION III: OTHER TOPICS

9. Legal Considerations (time permitting)

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|----|--------------------|---|
| A. | Reading assignment | Patricia A. MacCubbin, Bruce Gordon, and Ernest D. Prentice (2001) in Novick, Lloyd F. and Glen P. Mays (2001) <u>Public Health Administration, Principles for Population-Based Management</u> Aspen Publishers, Inc. Gaithersburg, Maryland, pp. 374-393 |
| | | Dana C. McWay (1997) "Access to Health Information," in <u>Legal Aspects of Health Information Management</u> , Delmar Publishers |
| B. | Objective | Review of legal considerations in information management |
| C. | Assessment | Short Quiz |

10. Mapping public health data -- Geographic Information Systems (time permitting)

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|----|--------------------|--|
| A. | Reading assignment | Alan L. Melnick (2001) "Geographic Information Systems for Public Health" in Novick, Lloyd F. and Glen P. Mays (2001) <u>Public Health Administration, Principles for Population-Based Management</u> Aspen Publishers, Inc. Gaithersburg, Maryland, pp. 248-265 |
| B. | Objective | Introduction to the uses and capabilities of GIS |
| C. | Assessment | Short Quiz |

Institution and student conduct policies

<http://www.sa.usf.edu/>

Class materials:

Selling of class materials, including taped lectures and power point slides, is strictly prohibited!

University policies

Religious Observances: In accordance with University policy on observance of religious holy days, students are expected to notify their instructors if they intend to be absent for a class or announced examination prior to the scheduled meeting. No student shall be compelled to attend class or sit for an examination at a day or time prohibited by his or her religious belief.

Students with Disabilities: It is the policy of the University of South Florida to accommodate students with disabilities pursuant to federal and state law. Any student with a disability who need special accommodation should inform the instructor at the beginning of the course.

Plagiarism

The University of South Florida has an account with an automated plagiarism detection service which allows instructors to submit student assignments to be checked for plagiarism. I reserve the right to 1) request that assignments be submitted to me as electronic files and 2) electronically submit assignments to Turnitin.com. Assignments are compared automatically with a huge database of journal articles, web articles, and previously submitted papers. The instructor receives a report showing exactly how a student's paper was plagiarized. For more information, go to www.turnitin.com and <http://www.ugs.usf.edu/catalogs/0304/adadap.htm#plagiarism>.

List of topics

Section I

1. Introduction and basic concepts
2. Acquiring, sampling, and preparing data
3. Representation of data/information

Section II

4. Comparing sample means
Database (a): Florida hospital financial data
5. Determining variable dependence/independence
Database (b): CDC – Death Rates
6. Dependence of variables and difference in means
Database (c): CDC – U.S. Immunizations
7. Regression analysis – accounting for multiple influences
Database (d): Florida AHCA hospital discharge (elderly)
8. Analysis with dichotomous categorical dependent variables
Database (e): CDC – NHIS Dataset

Section III

9. Legal Considerations (time permitting)
10. Mapping public health data -- Geographic Information Systems (time permitting)

Due are shaded (light green)

Reports and quizzes that are due on Sundays will be accepted until **MIDNIGHT.

Student suggested hypotheses due on Wednesdays (topics 4-8) must be received in the Blackboard digital drop box before **NOON!

**Detailed descriptions of assignments will be located in the folder for the appropriate week.

May						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15 Session Begins	16	17	18	19	20
21 Quiz Topic#1	22	23	24	25	26	27
28 Quiz Topic#2	29	30	31			

June						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4 Report Topic#3	5	6	7 Hypothesis Topic#4	8	9	10
11 Report Topic#4	12	13	14 Hypothesis Topic#5	15	16	17
18 Report Topic#5	19	20	21 Hypothesis Topic#6	22	23	24
25 Report Topic#6	26	27	28 Hypothesis Topic#7	29	30	

July						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2 Report Topic#7	3	4	5 Hypothesis Topic#8	6	7	8
9 Report Topic#8	10	11	12	13	14	15
16 Quiz Topic#9	17	18	19	20 Report Topic#10	21 Session Ends	22
23	24	25	26	27	28	29
30	31					

August						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		