PSYC 513 – Statistical Methods
Summer 2017
Statistical Analysis of Administrative Health and Linked Longitudinal Encounter Data

Dates: June 5th – 16th, 2017, M-F
Meeting Time: 10:30-1:20 p.m.
Location: HSD A150

Instructors:	Scott Hofer, Ken Moselle, Andrey Koval
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COURSE DESCRIPTION

This course will focus on types and sources of administrative health data and on the permissions, acquisition, management, and statistical analysis of administrative health and linked longitudinal encounter data. Analyses will cover a range of methods, including descriptive statistics, longitudinal trajectories, visualization of encounter timelines, multilevel modeling of within-person change, growth mixture models, and predictive models to quantify risk of future health events. This course will lead to an ongoing collaborative interdisciplinary research group, including data, policy, and statistical analysis experts. Simulated data from Island Health will be used for purposes of this course (signed non-disclosure agreement required for access to information and analysis tools).

REQUIRED REFERENCE TEXTS/READINGS

- *Secondary Analysis of Electronic Health Records* (open access)

PREREQUISITES

Basic familiarity with R is recommended. While we do not exclude other statistical packages, the primary data handling, modeling, and graphing will be written out in R scripts. Student engagement with the data and models will take place via RStudio. Students will be expected to learn how to read, modify, and apply existing R scripts to perform data manipulation, model estimation, and publish results as dynamic documents.

EVALUATION AND GRADING POLICY

Students will be graded on class participation and two assignments that involve both written and oral submissions. Detailed instructions and grading criteria for each evaluation mode will be available on dropbox.

Evaluation	Date	Percentage of Grade
Class Participation	*Daily*	**20%**
Research Projects		**80%**
Reports 1 & 2 (15% each)	*June 9 & 14*	*30%*
Research Proposal	*June 16*	*30%*
In-class presentation (20-25 min.)	*June 16*	*20%*
		100%

The final letter grade in the course will be based on total percent score as shown below (based on UVic Calendar – http://web.uvic.ca/calendar2015-05/GRAD/FARe/Grad.html). Grades that end with a decimal point of 0.5 or above will be rounded to the next higher whole number, and grades that end with a decimal point below 0.5 will be rounded to the next lower whole number.

Letter Grade	Percentage	Description
A+	90 – 100	**Exceptional work** – Technically flawless and original work demonstrating insight, understanding and independent application or extension of course expectations; often publishable.
A	85 – 89	**Outstanding work** – Demonstrates a very high level of integration of material demonstrating insight, understanding and independent application or extension of course expectations.
A-	80 – 84	**Excellent work** – Represents a high level of integration, comprehensiveness and complexity, as well as mastery of relevant techniques/concepts.
B+	77 – 79	**Very good work** – Represents a satisfactory level of integration, comprehensiveness, and complexity; demonstrates a sound level of analysis with no major weaknesses.
B	73 – 76	**Acceptable work** – Represents a satisfactory level of integration of key concepts/procedures. However, comprehensiveness or technical skills may be lacking.
B-	70 – 72	**Unacceptable work** – Represents an unacceptable level of integration, comprehensiveness and complexity. Mastery of some relevant techniques or concepts lacking.

Class Participation (20%):

Students are encouraged to take an active part in the direction and content of the course by preparing for and contributing to class discussions of assigned readings, sharing with others their (direct or indirect) research experience, challenges and successes. The level and relevance of contribution to the course will be a prominent factor in final grading.

Research Project (80%):

1. **Analysis of Encounter Data: Research Reports 1 and 2 (30%)**: Statistical analysis will focus on simulated longitudinal encounter data from Island Health. Data and initial scripts for statistical analysis and plotting will be provided. Learners will be required to submit two reports which they will produce using software and scripts demonstrated in class. Course materials related to these reports are located at https://github.com/IHACRU/ihacru-2017-psy513.
2. **Research Proposal (30%):** A proposal (7-10 pages) will be developed that will be sufficient for a data request and ethics application. Details will be given in class.
3. **A 10 minute presentation (20%)**: Students are asked to present their research proposal to the class at the end of the term.

CLASS SCHEDULE

Date	Content	Assignments
June 5	AN ECOLOGICAL VIEW OF THE HEALTH SERVICE SYSTEM AND HEALTH DATA ENCOUNTER DATA: THE HEALTH SERVICE SYSTEM PREPARATION FOR STATISTICAL ANALYSIS WITH R	Ch. 1, 3, 4
June 6	GE1: LOCATION MAPPING : EHR ADDRESSES AND CLASS COMPRESSIONS	Ch. 7, 8, & 11
June 7	GE2: PATIENT EVENT TABLE: SEQUENCING ENCOUNTERS WITH SERVICE SYSTEM	Ch. 9 & 10
June 8	GE3: MAPPED ENCOUNTERS: COHORT SUMMARY AND TIMELINE VISUALIZATIONS	Ch. 12 & 13
June 9	REPORT 1 LAB: COHORT SUMMARY AND TIMELINE VISUALIZATION (DUE: 23:59)	Ch. 14, 15, 16
June 12	GE4: FLATTENED ENCOUNTER TIMELINES: QUANTIFYING SERVICE ENGAGEMENT	Ch. 6 & 17
June 13	GE5: STATISTICAL MODELS FOR EVALUATING ENCOUNTER PROFILES	Ch. 18 & 19
June 14	REPORT 2 LAB: PATTERNS OF SERVICE ENGAGEMENT (DUE: 23:59)	Ch. 20
June 15	DATA ANALYSIS AND RESEARCH PROPOSAL DEVELOPMENT	
June 16	STUDENT PRESENTATIONS	

Titles in red are class activities that will engage students with the data management and analysis code. These are "guided explorations" where data and scripts will be provided that provide reports and permit modifications. All the necessary scripts will be provided for the two Lab reports.