GAIN HANDS-ON EXPERIENCE IN DATA-ANALYSIS
(A graduate-level course in applied statistics)

This winter, Prof. James Hanley is offering a 4-credit course, with limited enrollment, where you will gain experience in applying the statistical techniques you have already met in courses, and learn how to approach data-analysis. The datasets will address a broad range of scientific topics.

Description

bios691 [4 credits] Topics in biostatistics: applications of statistics to data-analysis

Students will be guided through the statistical analysis of several datasets, so as to apply the statistical techniques they have already learned, and to learn how to approach new problems.

The evaluation will be based on class participation and the quality of the data-analyses carried out in and outside of class.

In-class: 3 hours, once per week, Friday mornings.

Prerequisites: Math533 and Math 523, or EPID621, or equivalents, as determined by instructor.

Further details

Students will work through many datasets that Prof. Hanley has collected/obtained over four decades of teaching and collaborative research, so as to become more confident in approaching data, translating scientific questions into statistical analyses, and communicating the results/answers through tables, figures and words. As for 'words': you will practice by writing abstracts, and in some cases writing statistical methods sections. The topics will not be limited to biology and medicine, but will cover a wide range of fields.
(see the 'menu' at `https://jhanley.biostat.mcgill.ca/c691/691Exercises.pdf`)

The course is a prelude (or a prerequisite) to doing 'live' statistical consultations. Before you can consult live, you need to have done many (preferably guided) data-analyses, so that when it comes to a real consultation, you will have 'seen' many previous cases. It is a bit like a young doctor seeing the patient in person, making a diagnosis and treatment plan: the first cases handled on one's own, with no senior person to guide or to check with, are scary.

There will not be much formal didactic content: instead you together will set up the work in class, and then in smaller groups outside of class, do the main work, and the professor will help guide you. Some datasets will be analyzed entirely within a class, but when we do so, you will be expected to have read the background material before and come to class with a 'plan'.

To keep numbers manageable, enrolment will be limited. Auditors don't make sense in a 'participation' course like this — we will 'learn by doing', as surgeons do*.

Each week, students will be assigned to a different 'team' of biostatistics, statistics, and epidemiology/public health students.

For any other information, please e-mail `james.hanley@mcgill.ca` .

** I Hear, I Forget. I Do, I Understand: A Modified Moore-Method Mathematical Statistics Course (title of a very nice article by Horton in the American Statistician in 2013). Surgeons have 3 ways: SEE one, DO one, TEACH one.*

`https://jhanley.biostat.mcgill.ca`
2020.01.14