

School of Administrative Studies
Faculty of Liberal and Professional Studies

AP/ADMS 2310 3.00
BUSINESS STATISTICS THROUGH APPLICATIONS

WINTER 2022
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*As Socrates teaches us, when this happens
– when our own definitions produce results that seem intuitively wrong to us –
it’s because we’re not aware of what we really think
~ David Graeber (1961-2020)*

1. Overview: Learning Statistics

The course focuses on making sense of statistics rather than solving something to compute something or proving some equations to come up with more equations. The course is designed to empower you to develop your statistical literacy in your own way as a lifelong learner.

I hope with the design of this course I could help put you more at ease with statistics so when you encounter them in business and society as well as in your professional career and your personal life you can make some sense of them.

In general, if we are fortunate enough, by the end of the course you will be able to not only understand the numbers you encounter, produce and/or visualize but also make good use of your handy work in communicating your ideas.

Part debunking and part bungee jumping, the course is not standard introductory statistical fare. There are many excellent standard introductory statistics courses at York so if you are interested in those you would be well served.

As of Nov. 29, 2021, the university lists the course as LECT to be held at 2:30 pm-5:30 pm EST Friday at SLH B. The accompanying note states: “This course or a portion of this course will meet in person in the location assigned.”

2. Learning Outcomes: Learning to Get the Best Available Version of the Truth From Data

The learning outcomes could be transformative if students want them to be, no matter what the subject of a course is. Being held hostage in the quagmire of post-truth delusions, we could safeguard a scintilla of hope that whatever that is left of our idealism is not destined for demolition by daring ourselves to ask: does it have to be this way? If students are willing, at the end of our time together, students would be able to ask the tough questions needed in challenging the status quo.

The course is an introductory course about applied statistics, but it is about a lot more than that. You will learn how to use Stata (www.stata.com) to run some simple analyses and to visualize data. More importantly, you will learn statistical literacy for self-defense in this post-truth age.

At university you learn to become not only a productive employee but also an informed and responsible citizen. Like university studies in general, the course is designed to develop your capabilities in critical thinking, information literacy, effective communication as well as your sense of your responsibility.

Critical thinking. A big challenge in your daily experience is to live with ambiguity. The world is not neatly organized, and it won't organize itself for you. But you can make sense of what you initially see as disorganization for yourself if you want to. Hopefully this course will give you ample opportunities to learn to face the messy world.

Information literacy. In our society another big challenge is to live with information overload. The massive information flow does not come with navigation manuals or come in handouts or PowerPoint slides. But you can separate the signals from the noises if you want to. Hopefully this course will give you ample opportunities to learn to separate the good information from the bad information.

Effective communication. Whether some ideas become entrenched often rests on how they are argued. Agenda setting is cruel as at times the most compelling arguments beat the most sensible ideas. But you can be precise and concise in making your arguments if you want to. Hopefully the course will give you ample opportunities to learn to cut to the chase.

A sense of your responsibility. The purpose of university education is to enlighten, not to indoctrinate to conform. Sadly, nowadays our society allows university education to become just a big broken promise. But if you want to, you can help make things right by working hard to be responsible. You can start to learn to become responsible learners by solving the problems you are asked to solve on your own rather than just giving up and asking others to solve them for you. Hopefully the course will give you ample opportunities to learn to nurture your sense of responsibility.

On how to pursue the above learning outcomes in this course, here are three actionable suggestions:

- *Pay attention.* Once you start paying attention, many seemingly unanswerable questions will end up as obtainable information that you can look up.
- *Prepare relentlessly.* Students are expected to do most of their work outside the classroom both before and after class, and they are expected to demonstrate their outside work with their engagements inside the classroom.
- *Own it.* When you have a problem, look for the solution. Whenever something does not go your way, ask "What have I done wrong and how can I do better?"

Your course grade is just a reflection of your performance in the course. A grade is just a grade. In five years no one will care about what you get as a student in this course. But people do care who you are.

as a human being – whether you care not only about your own self-interests but also about others' well-being.

Students will earn the grades they get and will get the grades they earn. Thus, students are expected to take full responsibilities for studying and keeping up with the fast pace of the course. No special consideration will be given to students who don't get the grades they want due to reasons not required to be considered by university policies. Students shouldn't negotiate for marks they didn't earn, and all academic queries on marks if warranted should be made on solid academic grounds supported by evidence. For example, claiming that you have worked very hard or you have never received such a low grade won't be sufficient. By the same token, claiming that you need such a grade to advance to the next level, keep your scholarship or graduate or get a job won't be sufficient either.

3. Course Materials: Basic Tools

No one can predict the future accurately but we all could learn from the past to not only understand the present but also make an educated guess about the future. In working through the course materials, students will gain a sense of the convergence of the past, the present and the future.

Students are required to make good use of the following:

- [Stata/BE](#) [student license in US\$ for six months]
- [Introductory Business Statistics](#) [free Kindle textbook for students' own reference at home]
- [Calling Bullshit: The Art of Skepticism in a Data-Driven World](#) [the designated Kindle book in C\$ for reading diary as specified in Section 5]

4. Teaching Approach: Use What It Is to Probe What It Could Be

In the course, we will learn statistical literacy by doing in each class. Each step will build on prior steps in real time, and each class will build on prior classes in real time. No class is designed to be missed. Given the pace of the course, students missing any class will be at their own peril no matter how hard I try to accommodate their absence. Given the course design, the course will NOT be recorded as not attending any class defeats the purpose of the course. **Please note that each class builds on the previous one so missing any class is not an option. If students cannot attend all classes in full, they should take the course in the future in their best academic interests. Normally only students who attend all classes in full and do everything as instructed can achieve a B or above.**

In addition to using Stata, all students are required to use their York University email accounts – perhaps through Outlook – for ALL course correspondences [all York students can download MS Office for free at <https://yuoffice.yorku.ca>; you don't need to log into, for example, MS Word to use your downloaded software]. All emails should be sent to taxlaw@yorku.ca. At times functions follow forms. The subjects of all your course correspondence must be sent from your yorku.ca account and must start with with “2310-(your last name)-(your first name)-(your student ID)- ...”. The “-“ is a hyphen.

Students are expected to learn to find answers on their own. If after exhausting all avenues you still think you cannot find answers on your own please follow the course email protocol as stated above to

send an email to taxlaw@yorku.ca. If you don't get any reply within 72 hours, you should assume that you are expected to have the capability to find your answer on your own.

I am eager to talk shop all the time. But to make sure that any academic discussion with any student will be shared with all students in the course so all students can benefit from it, please follow course email protocol to email the questions to taxlaw@yorku.ca so I can incorporate your wonderful contributions into the development of our course for all students. I am confident that such an approach is more conducive to learning than, let's say traditional office hours, given the design of the course.

5. Evaluation: Less is more

The evaluation focuses on what students are expected to learn in university studies – information literacy, critical thinking and effective communication as well as responsibility. All students will be graded and ranked in comparison to their peers. Failure to follow the protocols below could lead to failures in the course. Tentative marks of the Reading Diary (see 5.2 below) will be posted on eClass by the drop date. A final letter grade for the course will be based on the following.

5.1. *Two short Stata do-files (20%).*

- 5.1.1. Students are randomly assigned to prepare two short Stata do-files with a PDF file of the outputs to be submitted following very specific submission protocol in two classes. Students cannot choose the topic or the class for submissions. The random assignment will be made available by the start of Class 3 on eClass.
- 5.1.2. The topic and related info of the exercise will only be discussed in the class before the deadline class. For example, on the topic for a Stata do-file to be submitted in Class 4, the topic will be discussed in Class 3.
- 5.1.3. The topic and related info will not be sent to students via emails, and the topic will not be posted on eClass. Any such query will be added to the records of the sender of the query, but it will not trigger any non-automatic response.
- 5.1.4. **Students must use their yorku.ca email accounts to send their Stata do-file with its PDF output as attachments by 7 am EST of the Wednesday before the Friday class to taxlaw@yorku.ca.** For security reasons, emails sent from accounts other than one from yorku.ca will not be opened and thus graded. Submissions sent to any account other than the designated submission account will not be graded. No late submission will be graded. Neither typing the designated email account wrong nor experiencing internet outage would be accepted as an excuse for late submission.
- 5.1.5. Each submission must use the following format for both the email subject line and the filename of the Stata do-file — 2310-[last name]-[first name]-[student number]-[class number]. For example, if your last name is Kamala Harris and your student number is 123456789, and you are required to submit your Stata do-file for Class 4, your email subject line and your filename for your Stata do-file must be “2310-Harris-Kamala-123456789-Class 4.” There are four hypens. Submissions without the required subject line and filename will not be graded.
- 5.1.6. Each student must only make ONE submission for each of the assigned two classes. The submission must contain only ONE Stata do-file and ONE PDF output of the do-file.

- Any other submission will not be graded.
- 5.1.7. Given the students' local computing setup, a submission may or may not trigger an auto-response. To ensure the submission is made, students should copy their submissions to their yorku.ca email accounts.
 - 5.1.8. A Stata do-file that cannot run will not be graded. A PDF file that cannot be opened will not be graded. Submissions in any other format will not be graded.
 - 5.1.9. No deferral or extension or substitution will be granted. TO BE FAIR TO ALL NO EXCEPTION CAN BE MADE.
- 5.2. *Reading diary (40%).*
- 5.2.1. Students are required to read a part of the designated Kindle book everyday starting from Class 3 and log their daily thoughts in the designated Excel file available on eClass. The designated book is listed in Section 3. Students should buy the Kindle version, even for students who prefer to read in any other format.
 - 5.2.2. Everyday means everyday starting from Class 3.
 - 5.2.3. The Excel file provided on eClass must be used. Submissions in any other format will not be graded.
 - 5.2.4. Students can use the free mobile Kindle app to read and use the free desktop Kindle app to make entries to the Excel file. The exercise will be discussed in Class 3. The info will not be sent to students via emails, and the info will not be posted on eClass. Any such query will be added to the records of the sender of the query, but it will not trigger any non-automatic response.
 - 5.2.5. **Students must use their yorku.ca email accounts to send their diary as an attachment by 7 am EST of Saturday March 5 to taxlaw@yorku.ca.** For security reasons, emails sent from accounts other than one from yorku.ca will not be opened and thus graded. Submissions sent to any account other than the designated submission account will not be graded. No late submission will be graded. Neither typing the designated email account wrong nor experiencing internet outage would be accepted as an excuse for late submission.
 - 5.2.6. Each submission must use the following format for both the email subject line and the filename of the Stata do-file — 2310-[last name]-[first name]-[student number]-diary. For example, if your last name is Kamala Harris and your student number is 123456789, your email subject line and your filename for your dairy submission must be “2310-Harris-Kamala-123456789-diary.” There are four hypens. Submissions without the required subject line and filename will not be graded.
 - 5.2.7. Each student must only make one submission. The submission must contain ONE Excel file only. Any other submission will not be graded.
 - 5.2.8. Given the students' local computing setup, a submission may or may not trigger an auto-response. To ensure the submission is made, students should copy their submissions to their yorku.ca email accounts.
 - 5.2.9. An Excel file that cannot be opened will be given 0 mark.
 - 5.2.10. No deferral or extension or substitution will be granted. TO BE FAIR TO ALL NO EXCEPTION CAN BE MADE

5.3. Capstone project (40%).

- 5.3.1. Students are required to prepare a comprehensive Stata do-file to answer a specific research question. Students cannot choose the research question.
- 5.3.2. The project info will be discussed in Class 7. The info will not be sent to students via emails, and the info will not be posted on eClass. Any such query will be added to the records of the sender of the query, but it will not trigger any non-automatic response.
- 5.3.3. **Students must use their yorku.ca email accounts to send their capstone project as an attachment by 7 am EST of Saturday April 9 to taxlaw@yorku.ca.** For security reasons, emails sent from accounts other than one from yorku.ca will not be graded. Submissions sent to any account other than the designated submission account will not be graded. No late submission will be graded. Neither typing the designated email account wrong nor experiencing internet outage would be accepted as an excuse for late submission.
- 5.3.4. Each submission must use the following format for both the email subject line and the filename of the Stata do-file — 2310-[last name]-[first name]-[student number]-capstone. For example, if your last name is Kamala Harris and your student number is 123456789, your email subject line and your filename for your Stata do-file must be “2310-Harris-Kamala-123456789-capstone.” There are four hypens. Submissions without the required subject line and filename will not be graded.
- 5.3.5. Each student must only make one submission. The submission must contain only ONE Stata do-file. Any other submission will not be graded.
- 5.3.6. Given the students’ local computing setup, a submission may or may not trigger an auto-response. To ensure the submission is made, students should copy their submissions to their yorku.ca email accounts.
- 5.3.7. A Stata do-file that cannot run will be given 0 mark. Submissions in any other format will not be graded.
- 5.3.8. No deferral or extension or substitution will be granted. **TO BE FAIR TO ALL NO EXCEPTION CAN BE MADE**

6. Tentative Schedule: Learning by doing

*Again, students are expected to learn by doing in real time in class. In each class the use of Stata for data analysis by using do-file will be demonstrated, and students are expected to follow the instructions to perform analyses on their own computers in real time in class. The sequence of topics could change, and any change will reflect in the latest version of the outline. Under each topic below, a few key items in italics along with sample Stata commands in courier bold are listed for illustrative purposes. All Stata commands have options, which are not listed. All listings under topics are non-exhaustive. **Please note that each class builds on the previous one so missing any class is not an option. If students cannot attend all classes in full, they should take the course in the future in their best academic interests. Normally only students who attend all classes in full and do everything as instructed can achieve a B or above.***

Class 1. Jan. 14: How the course works

Course administration, learning by doing in real time, looking for patterns in distributions ...

Using some Stata commands to be introduced in the course ...

Class 2. Jan. 21: Stata demo

Another look at what you can do with Stata ...

Using some Stata commands to be introduced in the course ...

Class 3. Jan. 28: Surveys and experiments

Data hygiene ...

**gen
replace
sort
merge 1:m
...**

Class 4. Feb. 4: Exploratory data analysis

Means, median, standard deviation, interquartile range ...

**codebook
sum
list
table
tabstat
graph bar
graph box
lowess
twayay
scatter
qfit
...**

Class 5. Feb. 11: Additional explorations – the normal distribution

The 68-95-99.7 rule, law of large numbers, central limit theorem, hypothesis testing, confidence intervals

...

histogram

...

Class 6. Feb. 18 & Class 7. Mar. 4: Means comparisons

t-test, ANOVA ...

ttest

oneway

...

Class 8. Mar. 11 & Class 9 & Mar. 18: Categorical data analysis

Contingency table, chi-square test ...

tab

csgof [start with how to install]

...

Class 10. Mar. 25 & Class 11. Apr. 1: Correlation & regression

r, R-squared, standard error ...

pwcorr

reg

margins

marginsplot

eststo [start with how to install]

esttab [start with how to install]

...

Class 12 – Apr. 8: Applied statistics

Statistical literacy ...

Using some Stata commands introduced in the course ...

[THE FOLLOWING PAGES ARE INFORMATION SUPPLIED BY SAS]

RELEVANT UNIVERSITY/LA&PS/SCHOOL REGULATIONS

Applicable to all ADMS and DEMS courses

RELEVANT UNIVERSITY REGULATIONS

Should there be any updates to these regulations, you can review the most recent Faculty of Liberal Arts and Professional Studies regulations, which are used by SAS (the School of Administrative Studies) at:

<https://www.yorku.ca/laps/sas/academic-resources/common-course-policies/>

Deferred Final Exams: Deferred standing may be granted to students who are unable to write their final examination at the scheduled time or to submit their outstanding course work on the last day of classes. Details can be found at <http://myacademicrecord.students.yorku.ca/deferred-standing>

DSA Form: http://www.registrar.yorku.ca/pdf/deferred_standing_agreement.pdf

In order to apply for deferred standing, students must register at:

<http://sas-app.laps.yorku.ca>

Followed by handing in a completed original Deferred Standing Agreement (DSA) form and supporting documentation directly to the main office of the School of Administrative Studies (282 Atkinson) and add your ticket number to the DSA form. The DSA and supporting documentation must be submitted no later than five (5) business days from the date of the exam. These requests will be considered on their merit and decisions will be made available by logging into the above-mentioned link. No individualized communication will be sent by the School to the students (no letter or e-mails).

IMPORTANT NOTE: Any request for deferred standing on medical grounds must comply with University regulations. At the time of writing of this outline, the requirement for APS forms had been suspended due to COVID-19. If it resumes, the University will inform you of such resumption, and you would include an Attending Physician's Statement form; a "Doctor's Note" will not be accepted.

Students with approved DSA will be able to write their deferred examination during the School's deferred examination period. **Deferred exams might take place during the regular exams period or in subsequent weeks depending on the course**; precise dates are known when the Office of the Registrar publishes the final exam schedule of the term. No further extensions of deferred exams shall be granted. The format and covered content of the deferred examination may be different from that of the originally scheduled examination. The deferred exam may be closed book, cumulative and comprehensive and may include all subjects/topics of the textbook whether they have been covered in class or not.

Academic Honesty/Integrity: The Faculty of Liberal Arts and Professional Studies considers breaches of the Senate Policy on Academic Honesty to be serious matters. The Senate Policy on Academic Honesty is an affirmation and clarification for members of the University of the general obligation to maintain the highest standards of academic honesty. As a clear sense of academic honesty and responsibility is fundamental to good scholarship, the policy recognizes the general responsibility of all faculty members to foster acceptable standards of academic conduct and of the student to be mindful of and abide by such standards. Suspected breaches of academic honesty will be investigated and charges shall be laid if reasonable and probable grounds exist.

Students should review the York Academic Honesty policy for themselves at:

<http://www.yorku.ca/secretariat/policies/document.php?document=69>

Students might also wish to review the interactive on-line Tutorial for students on academic integrity, at: <https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>

Grading Scheme and Feedback Policy: The grading scheme (i.e. kinds and weights of assignments, essays, exams, etc.) shall be announced, and be available in writing, within the first two weeks of class, and, under normal circumstances, graded feedback worth at least 15% of the final grade for Fall, Winter or Summer Term, and 30% for 'full year' courses offered in the Fall/Winter Term be received by students in all courses prior to the final withdrawal date from a course without receiving a grade, with the following exceptions:

Note: Under unusual and/or unforeseeable circumstances which disrupt the academic norm, instructors are expected to provide grading schemes and academic feedback in the spirit of these regulations, as soon as possible. For more information on the Grading Scheme and Feedback Policy, please visit: <http://www.yorku.ca/univsec/policies/document.php?document=86>

In-Class Tests and Exams - the 20% Rule: For all Undergraduate courses, except those which regularly meet on Friday evening or on a weekend, tests or exams worth more than 20% will not be held in the two weeks prior to the beginning of the official examination period. For further information on the 20% Rule, please visit: <http://secretariat-policies.info.yorku.ca/policies/limits-on-the-worth-of-examinations-in-the-final-classes-of-a-term-policy/>

Reappraisals: Students may, with sufficient academic grounds, request that a final grade in a course be reappraised (which may mean the review of specific pieces of tangible work). Non-academic grounds are not relevant for grade reappraisals; in such cases, students are advised to petition to their home Faculty. Students are normally expected to first contact the course director to discuss the grade received and to request that their tangible work be reviewed. Tangible work may include written, graphic, digitized, modeled, video recording or audio recording formats, but not oral work. Students need to be aware that a request for a grade reappraisal may result in the original grade being raised, lowered or confirmed. For reappraisal procedures and information, please visit the Office of the Registrar site at: <http://myacademicrecord.students.yorku.ca/grade-reappraisal-policy>

Accommodation Procedures: LA&PS students who have experienced a misfortune or who are too ill to attend the final examination in an ADMS course should not attempt to do so; they must pursue deferred standing. Other students should contact their home Faculty for information. For further information, please visit: <http://ds.info.yorku.ca/academic-support-accomodations/>

Religious Accommodation: York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. For more information on religious accommodation, please visit: <https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs>

Academic Accommodation for Students with Disabilities (Senate Policy)

The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses. Provided that students have given sufficient notice about their accommodation needs, instructors shall take reasonable steps to accommodate these needs in a manner consistent with the guidelines established hereunder. For more information, please visit the Student Accessibility Services (formerly known as Counselling and Disability Services) website at <https://accessibility.students.yorku.ca>

York's disabilities offices and the Registrar's Office work in partnership to support alternate exam and test accommodation services for students with disabilities at the Keele campus. For more information on alternate exams and tests please visit <http://www.yorku.ca/altexams/>

Please alert the Course Director as soon as possible should you require special accommodations.