PSYU3349

Design and Statistics III

Session 1, Special circumstances 2021

Archive (Pre-2022) - Department of Psychology

Contents

Disclaimer

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Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to timetable viewer. To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff
Mike Jones
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Naomi Sweller
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Credit points
10

Prerequisites
((Admission to BPsych(Hons) and 60cp in PSY or PSYU or PSYX units at 2000 level including
(PSY248 or PSYU2248 or PSYX248 or PSYX2248)) OR ((60cp from PSY234 or PSYU2234
or PSYX234 or PSYX2234 or PSY235 or PSYU2235 or PSYX235 or PSYX2235 or PSY236
or PSYU2236 or PSYX236 or PSYX2236 or PSY246 or PSYU2246 or PSYX246 or
PSYX2246 or PSY247 or PSYU2247 or PSYX247 or PSYX2247 or PSY248 or PSYU2248 or
PSYX248 or PSYX2248) and (30p(Cr) from PSY234 or PSYU2234 or PSYX234 or PSYX2234
or PSY235 or PSYU2235 or PSYX235 or PSYX2235 or PSY236 or PSYU2236 or PSYX236
or PSYX2236 or PSY246 or PSYU2246 or PSYX246 or PSYX2246 or PSY247 or PSYU2247
or PSYX247 or PSYX2247 or PSY248 or PSYU2248 or PSYX248 or PSYX2248))

Corequisites

Co-badged status

Unit description
This unit builds on and unifies statistical and design topics introduced in previous units,
particularly PSYU2248 Design and Statistics II. Topics include: repeated measures and mixed
design ANOVA, multiple regression (linear and curvilinear); analysis of variance and
covariance; and model reduction procedures. The unit also illustrates the links between these
different methods through placing them in the context of the generalised linear model; in so
doing the unit enhances students' understanding of statistical methods and their relationship
with research design. Practical classes utilise the Stata statistical package.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are
available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Clearly and concisely communicate quantitative research results to your peers.

ULO2: Demonstrates an understanding of the connection between research design and data analytic methods

ULO3: Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation

ULO4: Understand the framework of data analysis methods that exist within the Generalized Linear Model

ULO5: Appropriately apply analysis methods to a given research design, type of data and research question.

ULO6: Undertake data analysis using Stata that answers practical questions in psychology research

General Assessment Information

There are four forms of assessment for PSYU3349: weekly quizzes, which involve data analysis via Stata and will be submitted online through iLearn; a mid-session test which will be held in computer labs and will involve data analysis in Stata; a major practical project, which will involve data analysis and communication of findings in response to a research question; and the final examination. Overall grades for the unit will be determined by adding together marks for the weekly quizzes, the mid-session test, the practical project and the final examination. See the university policy on grading for more information.

Late Penalties

Late submission of the practical report will attract a penalty of 5% of the maximum mark for every day it is late. In other words, the assignment is worth 40%, so a penalty of 5% x 40 = 2.0 will be applied. Two (2) marks are subtracted from whatever the student received for the report for each day late. No work can be accepted after marked project reports are handed back to students. Requests for extensions for assignments are granted by the Faculty Student Centre. Neither the weekly quizzes nor the mid-session test can be submitted late although alternate assessments may be substituted if the student is granted special consideration via the ASK system.

Examination Policy

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations and will be available from this website:

http://students.mq.edu.au/student_admin/exams

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration, through https://ask.mq.edu.au. If a Supplementary Examination is granted as a result of the Special Consideration process, the examination will be scheduled after the conclusion of the official examination period. The format of a supplementary

examination is at each unit convener's discretion and is subject to change from the original final examination. Supplementary Exams are only offered to students who have satisfactorily completed all other assessments for the unit and were unable to sit the final exam because of documented illness or unavoidable disruption.

All applications for supplementary exams should be submitted as a Special Consideration request, through https://ask.mq.edu.au. It is the student's responsibility to follow the steps outlined in this website and to submit supporting documentations with the request. This must be done within five (5) working days after the exam or test date. An email will be sent to the student advising them of the outcome of their request for a supplementary exam. If a supplementary exam has been granted, it is the student's responsibility to check the date and location of the supplementary exam although they are generally in mid-July. Students who are granted to sit for a supplementary exam must make themselves available to sit for the supplementary exam on the specified date. There will only be one time. It is the student's responsibility to email Student Centre to confirm attendance at the supplementary exam. You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, which is the final day of the official examination period

Weekly online quizzes

Tutorial quizzes will be worth 1% each to a maximum overall value of 10% across the session. Only the best 10 quizzes from each student will contribute to the final score out of 10. The two quizzes with the lowest scores across the session will be discounted from each student's mark.

The unit's tutorial program is vital for students to have a first-hand understanding of the material and its application in psychology research. Each week (starting week 1) there will be a set of practical tasks to complete. Most weeks this will involve a simple, practical data analysis (involving Stata) and interpretation task, although some weeks students may be given Stata output to interpret and asked to answer some questions using the output. The requirement to complete a small on-line quiz each week will help ensure that students keep up with the unit material week-by-week. Tutors will then work through the solution during tutorial sessions in the subsequent week. Solutions to quizzes will not be made available outside of tutorial classes. The final task in Week 13 will be graded but will not be reviewed in tutorials. The answers will be posted on iLearn rather than discussed in a tutorial. Quizzes must be completed within iLearn by 5pm on the Friday before the week in which it will be discussed. The one exception to this rule is the quiz for Week 1 which must be submitted via iLearn by 5pm on Sunday 1st March. The iLearn system will not accept submissions after that time and a mark of zero for that week will be recorded if no quiz is submitted on-time without a valid medical certificate or other documented unforseen circumstances. Each quiz is completed via iLearn and you will receive your mark once the quiz closes. The tasks must be completed individually by each student. If there are technical problems associated with iLearn (e.g., error message and then being unable to complete the quiz), make sure you take a screen shot of any error messages that occur. If a screen shot of an error occurring within iLearn is sent to both Mike Jones and Naomi Sweller (in a single email) before the quiz deadline, and it is deemed to be an error occurring that was out of the student's control, then a second attempt at the quiz will be granted, as long as the quiz attempt was commenced at least 2 hours before the quiz deadline and must be completed before the first

tutorial session that reviews that quiz. No second attempts will be granted under any circumstances without evidence of the glitch. Similarly, no second attempts will be granted if you begin your attempt too late and cannot complete the quiz before 5pm Friday. It is strongly recommended you complete your quiz well in advance of the 5pm deadline! In the event of health or other issues that may prevent you from completing the quiz by the 5pm deadline, you may apply for Special Consideration to be exempted from 1 quiz only. If further issues are experienced no further exemptions will be granted and an alternate assessment task will be set for you by Mike Jones and Naomi Sweller to replace the missed quiz.

Midsession test

PSYU3349 is a unit emphasising practical data analysis for psychologists and hence an assessment on practical data analysis is crucial. This is a one-hour e-test conducted on campus, which will cover the content from Weeks 1 – 4 of the unit. The test will involve "live" analysis of datasets in Stata, and students will be required to answer questions through the test portal relating to their analyses. Questions will be a combination of fill in the blank-style questions and multiple choice questions. The test will be conducted entirely through iLearn. No internet access is allowed during this exam and any attempt to do so will be considered cheating. Separate laptops / tablets / mobile phones will not be permitted in the exam room. The test is closed book and no external written or electronic materials will be permitted. Students are required to enrol in one of the exam slots on eStudent in the same manner as you enrol in tutorials. Students will only be permitted to sit the test in the slot in which they are enrolled and must bring their student ID to the exam room for verification. If you do not enrol in one of the slots or you do not bring your student ID you will not be eligible to sit the test. Similarly, if you miss your timeslot you will not be permitted to sit the test in the subsequent slot.

Practical project

In the practical project, students are asked to address a practical research question and must operationalise it and determine an appropriate course of analysis with only general directions. Stata commands needed to complete the practical project will not be provided for you. You will be expected to have learnt the required Stata commands through understanding the demonstration programs used in lectures and quizzes and through your own practice with Stata. Details of the practical project including the question and the dataset will be made available via iLearn.

Please also note that iLearn can lag when large numbers of students are in the system at the same time. Submission time for assignments will be counted as the time the assessment was received. Because of this, make sure you don't leave your submission to 4:55pm the day it is due! Late penalties will be applied to assignments that are received after the due time.

Assessment Tasks

Name	Weighting	Hurdle	Due
Weekly Online quizzes	10%	No	Weekly
Final Examination	40%	No	Formal examination period

Name	Weighting	Hurdle	Due
Mid session Examination	10%	No	31/03/2021
Practical Project	40%	No	30/04/2021

Weekly Online quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 12 hours
Due: **Weekly**
Weighting: **10%**

Mix of multiple choice /answer type short questions online quiz.

On successful completion you will be able to:

- Demonstrates an understanding of the connection between research design and data analytic methods
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Understand the framework of data analysis methods that exist within the Generalized Linear Model
- Appropriately apply analysis methods to a given research design, type of data and research question.
- Undertake data analysis using Stata that answers practical questions in psychology research

Final Examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 31 hours
Due: **Formal examination period**
Weighting: **40%**

Final examination held within the University's formal exam period, in accordance with relevant requirements.

On successful completion you will be able to:

- Demonstrates an understanding of the connection between research design and data analytic methods
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Understand the framework of data analysis methods that exist within the Generalized Linear Model
- Appropriately apply analysis methods to a given research design, type of data and research question.
- Undertake data analysis using Stata that answers practical questions in psychology research

Mid session Examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 10 hours
Due: **31/03/2021**
Weighting: **10%**

Practical analysis of random selection of statistical data requiring an answer.

On successful completion you will be able to:

- Demonstrates an understanding of the connection between research design and data analytic methods
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Understand the framework of data analysis methods that exist within the Generalized Linear Model
- Appropriately apply analysis methods to a given research design, type of data and research question.
- Undertake data analysis using Stata that answers practical questions in psychology research

Practical Project

Assessment Type [1]: Quantitative analysis task
Indicative Time on Task [2]: 40 hours
Due: **30/04/2021**

Weighting: **40%**

Students are asked to address a practical research question and must operationalise it and determine an appropriate course of analysis with only general directions. No word limit applied.

On successful completion you will be able to:

- Clearly and concisely communicate quantitative research results to your peers.
- Demonstrates an understanding of the connection between research design and data analytic methods
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Appropriately apply analysis methods to a given research design, type of data and research question.
- Undertake data analysis using Stata that answers practical questions in psychology research

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Please note that this unit has been altered to accommodate our delivery provisions in compliance with current COVID-19 requirements (Special Circumstance delivery). Learning activities (such as tutorials and other small group learning activities) will be offered on-campus while keeping an online version available for those students who choose to continue their studies online (selected via eStudent). Learning activities for this unit will be delivered as follows:

Lectures

There are three hours of lectures per week. These lectures will be pre-recorded and uploaded to iLearn. In addition, there will be a one-hour Question and Answer session run via Zoom. These sessions will cover the previous week's lecture content with the exception of Week 1, which will cover administrative matters.

Tutorials

There is a one hour tutorial each week starting in Week 2. There are both on-campus and on-line tutorials available, please make sure you enrol in whichever version you intend to attend.

Managing Classes: Official changes to all units can be done on-line via eStudent, including tutorials. Students will be allowed to informally move between tutorial classes, provided: 1) for on-campus classes there are spare seats after all students enrolled in that class have taken their seats and 2) for on-line classes students understand that those enrolled in the class will have priority when asking questions during class. Please email the tutor of the class you wish to attend for a particular week to check.

Textbook

Agresti, A. (2018). Statistical Methods for the Social Sciences (5thed.). Boston, USA: Pearson.

Additional reading for Repeated Measures and Mixed Designs lecture:

Howell, D.C. (2012). Statistical methods for psychology (8th ed.). Belmont, California: Duxbury Press. [Note: the relevant sections are available in Leganto]

Additional readings for Week 5 lecture [available in Leganto]:

Fox, J. (2008) Bootstrapping regression models. In Applied regression analysis and generalized linear models (2nd ed.) (pp. 587-606). Los Angeles: Sage.

Singh, K., & Xie, M. (2008). Bootstrap: A statistical method. Unpublished manuscript, Rutgers University, USA. Retrieved from http://www.stat.rutgers.edu/home/mxie/RCPapers/bootstrap.pdf.

Additional general reading

The text below is a useful reference. Students are not required to have or read this text but may find it useful if they are wanting additional material beyond the textbook. The Weinberg and Abramowitz text is the required text for PSY248/PSYU2248 and is particularly useful for revision of Stata which is an essential practical skill for PSYU3349.

Weinberg, S. L. & Abramowitz, S. K. (2016). Statistics using Stata: An Integrative Approach (1st ed.). New York: Cambridge University Press.

Computing

You are expected to have had prior experience in the use of Stata before coming into PSYU3349, and be able to read raw data files, access pre-existing data files and retrieve Stata data files. You are also expected to have some knowledge of syntax in Stata. There are several ways of accessing Stata throughout this course, including purchasing the software yourself, using computers on campus or logging in to AppStream. These options will be discussed in more detail during the first week of lectures.

Unit Schedule

There are three hours of lectures each week. The lectures are considered essential to understanding the unit material so you must access the recordings online. The lecture content will begin by building on PSY248/PSYU2248 statistical modelling, with special reference to the General Linear Model (GLM). The GLM includes regression models (simple and multiple), the t-

test, oneway ANOVA models, factorial ANOVA models (balanced and unbalanced), ANCOVA models and models involving statistical control with mixed measurement independent variables. For these models we will only concern ourselves with models which have one, numeric dependent variable. Following this, we will cover approaches to analysis of non-Normal dependent variables including bootstrapping and Logistic Regression (categorical DV). As our models become more complex (i.e., have increasing numbers of independent variables), we will discuss the process of model reduction. The unit finishes with an extension of ANOVA content into repeated measures and mixed within/between subject designs. There is a one hour tutorial each week starting in Week 2. Attendance at tutorials is not compulsory, but is strongly recommended as it is the only place answers to the weekly quizzes are discussed. Quiz answers will not be available outside of tutorials.

Week by week list of topics				
Week	Lecture Topic	Reading	Assessment	Tutorial Topic
1	Administration Overview of the unit Intro to multiple regression	Textbook Ch 9 (revision) Textbook Ch 11 (new)	Quiz - revision	No tutorials this week
2	2-way ANOVA by regression	Textbook 12.1 – 12.4	Quiz – simple regression	Revision
3	ANCOVA	Textbook 13.1 – 13.2	Quiz – multiple regression	Simple regression
4	Curvilinear relationships	Textbook 14.5	Quiz – ANOVA via regression	Multiple regression
5	Badly behaved data	Textbook 5.5, 14.2	Quiz - ANCOVA	ANOVA via regression
6	Model reduction	Textbook 14.1 Supplementary notes	Mid-session test Quiz – badly behaved data	ANCOVA
Mid-session break				
7	Categorical data and logistic regression	Textbook 8.1 – 8.2, 15.1	Quiz – model reduction	Badly behaved data
8	Logistic regression	Textbook 15.1 – 15.3	Prac project (no quiz)	Model reduction
9	Paired t-test and repeated measures	Howell 7.4	Quiz – logistic regression	No tutorials this week
10	Repeated measures I	Howell 14.1 – 14.5	Quiz – paired t-tests and RM intro	Logistic regression
11	Repeated measures II	Howell 14.1 – 14.5	Quiz – one-way RM ANOVA	Paired t-tests and RM intro

12	Mixed designs	Howell 14.7	Quiz – two-way RM ANOVA	One-way RM ANOVA
13	No formal lecture		Quiz – Mixed designs	Two-way RM ANOVA

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment

- Workshops

- StudyWise

- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides

- Ask a Librarian

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/ offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.