Week 1 | Unit introduction and revision of basic statistical concepts

What is Biostatistics?

Week 1 - Workshop Notes and Recording

PC Lab 1 - Foundational Week

PC Lab 1 - Solution to Excel t-test calculation

Resources

**READ**

To get you started on reading journal articles in public health, please read the two papers below. Write down what you think are the main points in the Introduction, Methods, Results and Discussion/Conclusion sections. Pay special attention to how the statistics is presented in the papers.

[Wilson, D. H., Appleton, S. L., Taylor, A. W., Tucker, G., Ruffin, R. E., Wittert, G., ... & Adams, R. J. (2010). Depression and obesity in adults with asthma: multiple comorbidities and management issues. Medical Journal of Australia, 192(7), 381-383.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=DH&aulast=Wilson&atitle=Depression%20and%20obesity%20in%20adults%20with%20asthma:%20multiple%20comorbidities%20and%20management%20issues&id=doi:10.5694%2Fj.1326-5377.2010.tb03559.x&title=MJA&volume=192&issue=7&date=2010&spage=381&issn=0025-729X&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

[Links to an external site.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=DH&aulast=Wilson&atitle=Depression%20and%20obesity%20in%20adults%20with%20asthma:%20multiple%20comorbidities%20and%20management%20issues&id=doi:10.5694%2Fj.1326-5377.2010.tb03559.x&title=MJA&volume=192&issue=7&date=2010&spage=381&issn=0025-729X&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

[Atalay, H. H., & Atalay, B. G. (2019). Cardiac surgery clinical outcomes in 70 years and over patients. Hypertension, 155, 56-2.](https://acu.primo.exlibrisgroup.com/discovery/fulldisplay?docid=cdi_openaire_primary_pmid_7492402e293bbe30a5c0d5320f38e8fc&context=PC&vid=61ACU_INST:61ACU&lang=en&search_scope=MyInst_and_CI&adaptor=Primo%20Central&tab=Everything&query=any,contains,cardiac%20surgery%20clinical%20outcomes%2070&offset=0)

[Links to an external site.](https://acu.primo.exlibrisgroup.com/discovery/fulldisplay?docid=cdi_openaire_primary_pmid_7492402e293bbe30a5c0d5320f38e8fc&context=PC&vid=61ACU_INST:61ACU&lang=en&search_scope=MyInst_and_CI&adaptor=Primo%20Central&tab=Everything&query=any,contains,cardiac%20surgery%20clinical%20outcomes%2070&offset=0)

Week 2 | Inferential statistics and sampling techniques

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Welcome to Week 2!

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Week 2 - Workshop Notes and Recording

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PC Lab 2 - Introduction to SPSS

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PC Lab 2 - How to "Recode into different variables" in SPSS

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Resources

For additional video tutorials on SPSS, visit Linkedin Learning <https://linkedin.com/learning/?u=2107881&auth=true>

[Links to an external site.](https://linkedin.com/learning/?u=2107881&auth=true)

and search for ‘SPSS Statistics Essential Training’ by Barton Poulson. **Complete the Introduction and Sections 1 through to 5**. Bookmark this page so you can come back to it later in the semester.

Week 3 | T-tests and chi-square tests

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Welcome to Week 3!

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Week 3 - Workshop Notes and Recording

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Lecture Examples SPSS files

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PC Lab 3 - T-tests and Chi-square Tests Using SPSS

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Resources

**READ**

Read the paper below that details normality tests and for what sample size they are useful.

[Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. *International journal of endocrinology and metabolism*, *10*(2), 486.](https://brieflands.com/articles/ijem-71904.pdf)

[Links to an external site.](https://brieflands.com/articles/ijem-71904.pdf)

Read the papers below to see how t-tests and chi-square tests are used in research.

[Clarke, V., White, V., Beckwith, J., Borland, R., & Hill, D. (1993). Are attitudes towards smoking different for males and females?. *Tobacco Control*, *2*(3), 201.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1759266/pdf/v002p00201.pdf)

[Links to an external site.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1759266/pdf/v002p00201.pdf)

[Dehkordi, A. H., & Far, A. K. (2015). Effect of exercise training on the quality of life and echocardiography parameter of systolic function in patients with chronic heart failure: a randomized trial. *Asian journal of sports medicine*, *6*(1).](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4393541/)

[Links to an external site.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4393541/)

[Maleki, A., Montazeri, M., Rashidi, N., Montazeri, M., & Yousefi-Abdolmaleki, E. (2015). Metabolic syndrome and its components associated with chronic kidney disease. *Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences*, *20*(5), 465.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4590201/)

[Links to an external site.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4590201/)

Week 4 | Analysis of Variance and Post-Hoc Testing

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Week 4 - Workshop Notes and Recording

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PC Lab 4 - One-Way ANOVA

Week 5 | Pearson's correlation and simple linear regression

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Welcome to Week 5!

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Week 5 - Workshop Notes and Recording

Week 6 | Multiple linear regression

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Week 6 - Workshop Notes and Recording

External URL

Another good example of reporting MLR in APA format Links to an external site.

Another good example of reporting MLR in APA format

Links to an external site.

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PC Lab 6 - Pearson's, SLR and MLR

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Resources

**READ**

The below article has a statistical analysis section that uses SPSS version 7.5! Despite using software from the dark ages (joking), there is a paragraph on the statistical analysis, which shows the reporting of the multiple linear regression and Pearson's. The paper also mentions the Spearman's test which is the non-parametric equivalent to the Pearson's test. We will learn about this in Week 10.

[Alewijnse, D., Mesters, I. E. P. E., Metsemakers, J., Adriaans, J., & Van Den Borne, B. (2001). Predictors of intention to adhere to physiotherapy among women with urinary incontinence. *Health Education Research*, *16*(2), 173-186.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=D&aulast=Alewijnse&atitle=Predictors%20of%20intention%20to%20adhere%20to%20physiotherapy%20among%20women%20with%20urinary%20incontinence&id=doi:10.1093%2Fher%2F16.2.173&title=Health%20education%20research.&volume=16&issue=2&date=2001&spage=173&issn=0268-1153&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

[Links to an external site.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=D&aulast=Alewijnse&atitle=Predictors%20of%20intention%20to%20adhere%20to%20physiotherapy%20among%20women%20with%20urinary%20incontinence&id=doi:10.1093%2Fher%2F16.2.173&title=Health%20education%20research.&volume=16&issue=2&date=2001&spage=173&issn=0268-1153&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

The below article has a detailed description of running a multiple linear regression analysis. Take note on how the authors have dealt with the categorical variables in doing the MLR.

[Ferrari, M., Dal Cin, M., & Steele, M. (2017). Self‐compassion is associated with optimum self‐care behaviour, medical outcomes and psychological well‐being in a cross‐sectional sample of adults with diabetes. *Diabetic Medicine*, *34*(11), 1546-1553.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=M&aulast=Ferrari&atitle=Self%E2%80%90compassion%20is%20associated%20with%20optimum%20self%E2%80%90care%20behaviour,%20medical%20outcomes%20and%20psychological%20well%E2%80%90being%20in%20a%20cross%E2%80%90sectional%20sample%20of%20adults%20with%20diabetes&id=doi:10.1111%2Fdme.13451&title=Diabetic%20medicine.&volume=34&issue=11&date=2017&spage=1546&issn=0742-3071&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

[Links to an external site.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=M&aulast=Ferrari&atitle=Self%E2%80%90compassion%20is%20associated%20with%20optimum%20self%E2%80%90care%20behaviour,%20medical%20outcomes%20and%20psychological%20well%E2%80%90being%20in%20a%20cross%E2%80%90sectional%20sample%20of%20adults%20with%20diabetes&id=doi:10.1111%2Fdme.13451&title=Diabetic%20medicine.&volume=34&issue=11&date=2017&spage=1546&issn=0742-3071&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

Week 7 | Relative risk and odds ratio

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Week 7 - Workshop Notes and Recording

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PC Lab 7 - Relative Risk and Odds Ratio

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Resources

**READ**

The article below looks at determinants of Type 2 DM in a rural population Pondicherry in South India. The statistical methods section indicates that continuous and categorical variables were analysed using an unpaired (independent) t-test and chi-square test respectively. A backward logistic regression is also done and OR and CI values can be seen to have been calculated in Tables 1, 3 and 4.

[Shrivastava, S. R., & Ghorpade, A. G. (2014). High prevalence of type 2 diabetes melitus and its risk factors among the rural population of Pondicherry, South India. *Journal of research in health sciences*, *14*(4), 258-263.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=SRBL&aulast=Shrivastava&atitle=High%20prevalence%20of%20type%202%20diabetes%20melitus%20and%20its%20risk%20factors%20among%20the%20rural%20population%20of%20Pondicherry,%20South%20India&id=doi:10.34172%2Fjrhs141769&title=Journal%20of%20research%20in%20health%20sciences.&volume=14&issue=4&date=2014&spage=258&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

[Links to an external site.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=SRBL&aulast=Shrivastava&atitle=High%20prevalence%20of%20type%202%20diabetes%20melitus%20and%20its%20risk%20factors%20among%20the%20rural%20population%20of%20Pondicherry,%20South%20India&id=doi:10.34172%2Fjrhs141769&title=Journal%20of%20research%20in%20health%20sciences.&volume=14&issue=4&date=2014&spage=258&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

In the discussion (page 262), we see a statement about "positive family history of diabetes". The OR quoted here is 1.96...we remember that OR > 1 means that the exposed group has a higher odds than the unexposed groups in getting diabetes so in this context it means that those with a positive family history of diabetes are 1.96 times more likely to get T2DM.

Week 8 | Binary logistic regression

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Welcome to Week 8!

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Week 8 - Workshop Notes and Recording

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PC Lab 8 - Binary Logistic Regression

This week you will have the class to focus on your Assessment 2. Please use this time wisely!

It is highly recommended that you work through the Binary Logistic Regression example in the lecture notes. This will help you with your Assessment 2.

In the PC lab, we will be doing workshops on how to write sections of a journal article. Please make sure you attend your classes!

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Resources

Week 8 Reading

In the Methods (Analyses) section of the below paper, you will see that a multivariate logistic regression was performed. Pay attention to how this statistical test has been reported. You will also see the details of this test in Table 3. Note that the Hosmer and Lemeshow test was used to assess model fit, just like what we have been doing! Another test that was used was the c-statistic however, this is not something we cover in this unit but essentially is just another test for checking model fit.

[Du Mont, J., & Forte, T. (2014). Intimate partner violence among women with mental health-related activity limitations: a Canadian population based study. *BMC public health*, *14*(1), 51.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=J&aulast=Du%20Mont&atitle=Intimate%20partner%20violence%20among%20women%20with%20mental%20health-related%20activity%20limitations:%20a%20Canadian%20population%20based%20study&id=doi:10.1186%2F1471-2458-14-51&title=BMC%20public%20health.&volume=14&issue=1&date=2014&spage=1&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

[Links to an external site.](https://acu-edu-primo.hosted.exlibrisgroup.com/primo-explore/openurl?sid=google&auinit=J&aulast=Du%20Mont&atitle=Intimate%20partner%20violence%20among%20women%20with%20mental%20health-related%20activity%20limitations:%20a%20Canadian%20population%20based%20study&id=doi:10.1186%2F1471-2458-14-51&title=BMC%20public%20health.&volume=14&issue=1&date=2014&spage=1&vid=61ACU_SP&institution=61ACU&url_ctx_val=&url_ctx_fmt=null&isSerivcesPage=true)

Week 9 | Consolidation Week

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Week 9 - Consolidation Week

**You will have the PC lab to work on your A2 this week. Please make sure you use this time wisely.**

The workshop class will be time for Q&A with regards to your A2. Please make sure you attend this class.