# **BUSA8000 Techniques in Business Analytics, Session 1, 2024**

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| **Assessment Task** | Report - Topics 1 - 4 |
| **Due date** | Week 7 - 5th April 2024 11.55pm |
| **Weight (%)** | 30% |
| **Task description** | This is an individual assessment - Students will be given a business case to analyse. |
| **Submission Method** | On iLearn |
| **Feedback mechanism(s)** | TurnitIn |
| **Feedback available (anticipated date)** | 2-3 weeks post due date |
| **Links to Unit Learning Outcomes** | On successful completion you will be able to (ULO1, ULO2, ULO3):   * Articulate the importance and application of data in a variety of contexts. * Apply methods for handling data in R. * Implement statistical learning algorithms in R. |

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| INTEGRITY MATTERS |
| *Integrity matters – at home, in your workplace and here at University. As a highly valued member of the Macquarie University Community, you carry great responsibility to uphold the good name of our institution. Our reputation is your reputation and will stay with you for life when your degree opens amazing opportunities for you.*  *If you are ever unsure whether your actions fall within the guidelines of Academic Integrity, please don’t hesitate to reach out. Contact the Academic Literacies Unit or your Tutor/Unit Convenor.* |

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| ASSESSMENT DESCRIPTION |
| Nelson Mandela believed education was the most powerful weapon to change the world. But not every student has equal opportunities to learn. Effective policies and plans need to be enacted in order to make education more equitable—and perhaps your innovative data analysis will help reveal the solution.  Current research shows educational outcomes are far from equitable. The imbalance was exacerbated by the COVID-19 pandemic. There's an urgent need to better understand and measure the scope and impact of the pandemic on these inequities.  Education technology company LearnPlatform was founded in 2014 with a mission to expand equitable access to education technology for all students and teachers. LearnPlatform’s comprehensive edtech effectiveness system is used by districts and states to continuously improve the safety, equity, and effectiveness of their educational technology. LearnPlatform does so by generating an evidence basis for what’s working and enacting it to benefit students, teachers, and budgets.  In this assessment, you’ll work to uncover trends in digital learning. Accomplish this with data analysis about how engagement with digital learning relates to factors like district demographics, broadband access, and state/national level policies and events. Then, submit a report over Turnitin to propose your best solution to these educational inequities.  Your submissions will inform policies and practices that close the digital divide. With a better understanding of digital learning trends, you may help reverse the long-term learning loss among America’s most vulnerable, making education more equitable. |
| *Skills in focus for this assessment* |
| * *Basic syntax knowledge of R for operations and functions.* * *Familiarity of R packages and relevance to data manipulation and visualisation.* * *Data importing from multiple sources.* * *Understanding how to convert data types.* * *Handling missing values, techniques for detecting, removing or imputing missing values.* * *Ability to identify and correct errors in data such as outliers or inconsistent entries.* * *Graphical representation skills for various types of visualisations.* * Understanding the basic statistics for data analysis. * Critical thinking for analysing data, identify patterns or trends and draw meaningful conclusions. * Interpretation of results of data analysis and visualisations. * Familiarity of R Studio development environment for R programing. |

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| ASSESSMENT INSTRUCTIONS |
| **Step1:**  Use digital[learning data](https://ilearn.mq.edu.au/mod/folder/view.php?id=8075270) to analyse the impact of COVID-19 on student learning.  **Step 2:**  You will prepare a report to explore:  (1) the state of digital learning in 2020  (2) how the engagement of digital learning relates to factors such as district demographics, broadband access, and state/national level policies and events.  Below are some examples of questions can guide your analysis:   * What is the picture of digital connectivity and engagement in 2020? * What is the effect of the COVID-19 pandemic on online and distance learning, and how might this also evolve in the future? * How does student engagement with different types of education technology change over the course of the pandemic? * How does student engagement with online learning platforms relate to different geography? Demographic context (e.g., race/ethnicity, ESL, learning disability)? Learning context? Socioeconomic status? * Do certain state interventions, practices or policies (e.g., stimulus, reopening, eviction moratorium) correlate with the increase or decrease online engagement?   **Requirements:**   1. In your report, describe the data cleaning and wrangling process, justify any transformation of data and choice of analysis/visualisation techniques, clearly explain your transformation, visualisations, findings and provide valid conclusions. 2. You are supposed to conduct your analysis mainly using what we have learned in the first four modules (i.e. usage of more advanced statistical/computational techniques is possible but not necessary, and won’t be evaluated for grading purpose). 3. You must prepare your report using the provided [RMD template](https://ilearn.mq.edu.au/mod/folder/view.php?id=8075270). Submit **both** your RMD file and the Word Doc or PDF generated from R markdown. Make sure your submitted RMD file can be run successfully on a different machine and all results presented can be reproducible.   Refer to the RMD template and iLearn for further instructions on the report requirements. |

ASSESSMENT INSTRUCTIONS

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| TIPS & FAQs |
| **TIPS**  **Start with a Plan:** Before diving into coding, outline your analysis plan. Understand the objectives, the data you're working with, and the steps you might need to take to reach your conclusions.  **Understand Your Data:** Spend time exploring and understanding your data. Use summary statistics and initial visualisations to get a feel for the data's structure, variables, and potential quirks.  **Keep Your Code Organized:** Comment your code extensively and use consistent naming conventions for variables and functions. This makes your code easier to understand and debug, both for you and others.  **Break Down the Task:** Divide your assignment into smaller, manageable tasks (e.g., data import, cleansing, transformation, analysis, visualization). Tackle each task one at a time.  **FAQs**  **Q: How do I choose the right type of visualisation?**  **A:** The choice of visualisation depends on the nature of your data (categorical vs. numerical) and the story you want to tell.  **Q: How many visualisations should I include in my report?**  **A:** Include visualisations that add value to your analysis and help convey your findings clearly. Quality over quantity; each visualisation should have a clear purpose.  **Q:** **Can I use other packages beyond what was learned?**  **A:** Absolutely! R has a vast ecosystem of packages. If you find one that suits your needs better, feel free to use it. Just ensure you understand it well and explain your choice in your assignment. |

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| USE OF RESOURCES AND TECHNOLOGIES INCLUDING GENERATIVE ARTIFICIAL INTELLIGENCE |
| For this assessment, students are permitted to use generative artificial intelligence tools (GAITs e.g., ChatGPT) to:   * clarify concepts, theories, ideas, etc., discussed in class * generate preliminary ideas for writing and coding * edit a working draft of the assessment * read and summarise research and supporting evidence for the assessment   Students are **not** permitted to use GAITs to   * generate definitions or writing used in their final submission. * produce counter-arguments or refine thinking on their final submission * generate complete R code in their final submission.   Any of these actions will constitute and be treated as a breach of academic integrity. |

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| LATE SUBMISSION |
| *A maximum penalty of five percentage points of the total possible marks will be applied per day to late submissions, for up to a maximum of seven calendar days. Tasks that have not been submitted within the maximum number of additional late days will receive a mark of zero, unless otherwise specified in the late penalties section of the Unit Guide. Late submission for a task will only be permitted when specified in the unit guide. This provision does not apply to online exams or other assessment with a time-limit of less than 24 hours.*  *Where an application for Special Consideration is approved and the outcome is an extension to the due date of a task, submissions that are received after the new due date will be subject to late penalties that are calculated from the new due date. This only applies where the outcome is an extension to the due date – see the Special Consideration Policy for a schedule of all possible outcomes.* |