

CCT College Dublin Continuous Assessment

Programme Title:	<i>Diploma in Data Analytics for Business</i>		
Cohort:	<i>PT Sept 2023</i>		
Module Title(s):	<i>Fundamental of Statistics of DA</i>		
Assignment Type:	<i>Individual</i>	Weighting(s):	<i>50%</i>
Assignment Title:	<i>CA1</i>		
Lecturer(s):	<i>Marina Iantorno</i>		
Issue Date:	<i>3rd October 2023</i>		
Submission Deadline Date:	<i>28th October 2023 at 23:55 hs</i>		
Late Submission Penalty:	Late submissions will be accepted up to 5 calendar days after the deadline. All late submissions are subject to a penalty of 10% of the mark awarded. Submissions received more than 5 calendar days after the deadline above <u>will not</u> be accepted and a mark of 0% will be awarded.		
Method of Submission:	Moodle		
Instructions for Submission:	<i>You must submit a zip file containing a Word document with the report and a Jupyter Notebook file with the code and the outcome</i>		
Feedback Method:	Results posted in Moodle gradebook		
Feedback Date:	<i>Approximated 2 weeks after submission</i>		

Attainment of the learning outcomes is the minimum requirement to achieve a Pass mark (40%). Higher marks are awarded where there is evidence of achievement beyond this, in accordance with QQI *Assessment and Standards, Revised 2013*, and summarised in the following table:

Percentage Range	CCT Performance Description	QQI Description of Attainment	
		Level 6, 7 & 8 awards	Level 9 awards
90% +	Exceptional	Achievement includes that required for a Pass and in most respects is significantly and consistently beyond this	Achievement includes that required for a Pass and in most respects is significantly and consistently beyond this
80 – 89%	Outstanding		
70 – 79%	Excellent		
60 – 69%	Very Good	Achievement includes that required for a Pass and in many respects is significantly beyond this	Achievement includes that required for a Pass and in many respects is significantly beyond this
50 – 59%	Good	Achievement includes that required for a Pass and in some respects is significantly beyond this	Attains all the minimum intended programme learning outcomes
40 – 49%	Acceptable	Attains all the minimum intended programme learning outcomes	
35 – 39%	Fail	Nearly (but not quite) attains the relevant minimum intended learning outcomes	Nearly (but not quite) attains the relevant minimum intended learning outcomes
0 – 34%	Fail	Does not attain some or all of the minimum intended learning outcomes	Does not attain some or all of the minimum intended learning outcomes

Please review the CCT Grade Descriptor available on the module Moodle page for a detailed description of the standard of work required for each grade band.

The grading system in CCT is the QQI percentage grading system and is in common use in higher education institutions in Ireland. The pass mark and thresholds for different grade bands may be different from what you have experience of in the higher education system in other countries. CCT grades must be considered in the context of the grading system in Irish higher education and not assumed to represent the same standard the percentage grade reflects when awarded in an international context.

Learning Outcomes:

- Explore and evaluate datasets using descriptive statistical analyses. (Linked to PLO 1) .
- Use and understand current software tools and languages to produce result sets from existing data(e.g. Excel, Python). (Linked to PLO 4)
- Apply statistical analysis to appropriate datasets and critique the limitations of these models.

Assessment Task

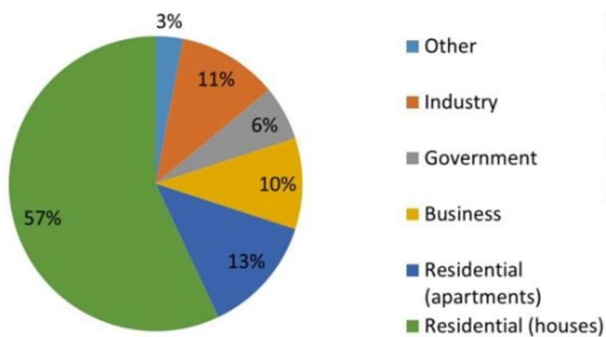
This assessment will be divided into three sections: Descriptive statistics, Probabilities and Research.

Assessment Details

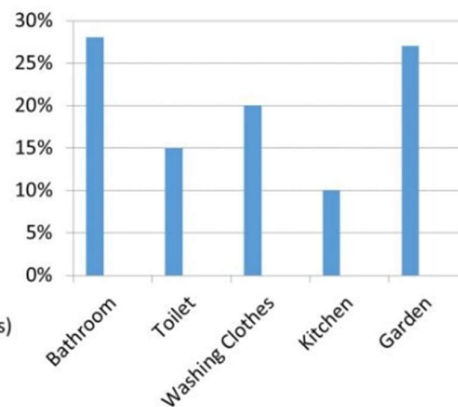
Descriptive Statistics

1. In today's data-driven world, the ability to extract meaningful insights from raw data is a fundamental skill for professionals in various fields. Your first task focuses on the analysis of two critical graphs related to water consumption in Australia. Water is a precious and finite resource, and understanding its consumption patterns is vital for sustainable resource management and informed decision-making.

Water Consumption in Australia in 2021



Residential Water Usage in Australia in 2021



Describe the two visualisations above and explain the results. According to this data, what can you suggest to improve the water consumption habits and the distribution of the residential water usage in Australia? **[0-20%]**.

2. In the last year's report, it has been displayed that the average and the median water consumption in Australia were the same. With this information, is it possible to affirm that the data was symmetric and normally distributed? Justify your answer. **[0-20%]**
3. The following table contains information about the freshwater withdrawal in Australia. The data is expressed in billion cubic meters. You are required to determine the type of data that this variable is, calculate central tendency metrics and variation metrics and explain the results **[0-30%]**.

Year	Annual freshwater withdrawals, total (billion cubic meters)
1993	18.5502
1994	21.1102
1995	19.8502
1996	22.1602
1997	21.9282
1998	21.8222
1999	21.7162
2000	21.65924
2001	21.534
2002	20.8338
2003	20.1336
2004	19.4334
2005	18.7332
2006	17.55665
2007	16.3801
2008	15.20355
2009	14.027
2010	13.175
2011	13.215
2012	15.868
2013	19.148
2014	18.463
2015	9.22
2016	10.623
2017	12.05864137
2018	12.33
2019	10.53
2020	8.64

Probabilities

1. It is known that in the state of Victoria, 4% of the total residential properties claim not to have access to freshwater withdrawal in their houses. In an analysis done in a subgroup last year, it is shown that, in average, 1 property did not have access to freshwater withdrawal. How many residential properties were taken to reach this result? [0-10%]
2. The annual freshwater withdrawal in Sydney is normally distributed with an average of 10.5 billion cubic meters (bcm) with a standard deviation of 2 bcm. If 4 years are picked randomly, what is the probability that in two years the annual freshwater withdrawal was greater than 11 bcm? [0-20%]

Submission Requirements

All assessment submissions must meet the minimum requirements listed below. Failure to do so may have implications for the mark awarded.

All assessment submissions must:

- Add required word count if applicable (1.000 words minimum).
- Submission of a zip folder with a Word document and. JPYNB file containing the code. The name of the file should be dip_YOUR_NAME_Year.
- Be submitted by the deadline date specified or be subject to late submission penalties.
- Use [Harvard Referencing](#) when citing third party material.
- Be the student's own work.
- Include the CCT assessment cover page.

Additional Information

- Lecturers are not required to review draft assessment submissions. This may be offered at the lecturer's discretion.
- In accordance with CCT policy, feedback to learners may be provided in written, audio or video format and can be provided as individual learner feedback, small group feedback or whole class feedback.
- Results and feedback will only be issued when assessments have been marked and moderated / reviewed by a second examiner.
- Additional feedback may be requested by emailing the lecturer up to one week after the grade is released. Additional feedback may be provided as individual, small group or whole class feedback. Lecturers are not obliged to respond to email requests for additional feedback where this is not the specified process or to respond to further requests for feedback following the additional feedback.
- Following receipt of feedback, where a student believes there has been an error in the marks or feedback received, they should avail of the recheck and review process and should not attempt to get a revised mark / feedback by directly approaching the lecturer. Lecturers are not authorised to amend published marks outside of the recheck and review process or the Board of Examiners process.
- Students are advised that disagreement with an academic judgement is not grounds for review.
- For additional support with academic writing and referencing students are advised to contact the CCT Library Service or access the [CCT Learning Space](#).
- For additional support with subject matter content students are advised to contact the [CCT Student Mentoring Academy](#)
- For additional support with IT subject content, students are advised to access the [CCT Support Hub](#).