**ECON 1030 – BUSINESS STATISTICS 1**

**PROJECT**

**Instructions**:

This is a group assignment with a minimum group size of two and a maximum group size of three. All group members must be enrolled in the same tutorial. There will be two parts to this assignment:

Part A: Business Report Part B: Ministerial Brief

This assignment, along with a Micro-credential component, is worth 40 marks. The allocation of marks is:

|  |  |
| --- | --- |
| **Part A** | **30** |
| Statistical Analysis | 22 |
| Professional Report | 8 |
| **Part B** | **8** |
| *Sub-total* | *38* |
| **Micro-credential\*** | **2** |
| *Total* | *40* |

*\*This is a separate submission and the grade will appear separately on Canvas for each student.*

The response to Part A must be provided in the form of a business report with no more than 10 pages (including cover page). The structure of your business report must include **1] A Title, 2] An Executive Summary, 3] An Introduction, 4] Analysis (Part A) and 5] Conclusions.**

**The response to Part B must be provided in the form of a ministerial brief with no more than** 200 words and containing no more than three graphs.

In addition, you need to complete a [**Micro-credential on cross-cultural communication**](https://rmit.instructure.com/courses/52021/pages/cross-cultural-communication). To show evidence of successful completion you need to provide a copy of the badge. You have the option of completing the Micro-credential earlier in the semester and making a separate submission on Canvas. Alternatively, you can provide the badge along with your assignment submission. You have 2 attempts and you need a score of 80% to receive a badge.

You must submit an **electronic copy** of your assignment in Canvas. **SHOW YOUR WORK** for calculation based questions. **See an attached Template of your submission for more details.**  Only one submission is required per group. Hard copies will not be accepted. It is very important that you submit an assignment cover sheet with all the group members’ signatures at the time of submission. If any dispute arises on your contribution to the group work, the cover sheet will be used as evidence of contribution.

This assignment requires the use of Microsoft Excel. If you have Windows, you will need to use the Data Analysis ToolPak. If you have a Mac with Excel 2011, you may need to use StatPlus:MAC LE.

Presentation Instructions:

Your written report should comply with the following presentation standards:

1. Typed using a standard professional font type (e.g. Times Roman), 12-point font size.

2. Single or 1.5 line spacing, numbered pages, and clear use of titles and section headings.

3. Delivered as a Word (.doc or .docx) or PDF (.pdf) file

4. Checked for spelling, typographical and grammatical errors. Where relevant, round to 3 decimal places.

5. With all relevant tables and charts, the report should be no more than 10 pages long.

**Problem Description:**

The blockchain is a decentralized ledger of all transactions across a peer-to-peer network. Using this technology, participants can confirm transactions without a need for a central clearing authority (or a middle man). According to some, replacing the middle man with a revolutionary technology that is faster, cheaper and as secure will greatly improve market efficiency.

One application of blockchain technology in finance is the “cryptocurrencies”, with the best known example being “Bitcoin”. Some believe that such a secure, global, and digital currency represents the future of finance, while some are not optimistic about the future of Bitcoin and cryptocurrencies in general.

Useful links on blockchain and cryptocurrencies:

<https://www.data61.csiro.au/en/our-work/safety-and-security/secure-systems-and-platforms/blockchain>

<https://www.pwc.com/us/en/industries/financial-services/fintech/bitcoin-blockchain-cryptocurrency.html>

Your task is to evaluate recent prices of Bitcoin and based on this evidence whether individuals should invest in Bitcoin. There are two parts to this assignment, each of which is described in detail:

Part A (2 + 2 + 4 + 2 + 3 + 4 + 5 = 22 marks; professional report = 8 marks)

Locate the data file (Assignment\_BusStats.xls) on CANVAS.

1. Use the most appropriate type of graph to present the weekly closing price of Bitcoin (BIT) and provide a general description, commenting on the trend. [Topic 1]
2. Calculate the weekly return for BIT and construct a histogram. Does the data on return rates appear normally distributed? On the basis of z-scores do you find evidence of outliers? Hint: the formula for a return is (Current Price – Previous price)/Previous price multiplied by 100. [Topics 1-4]
3. Calculate and interpret the three aspects of Descriptive Analysis for weekly return: Location, Shape and Spread. Hint: make sure you interpret these measures in the context of the data and pay attention to the unit of measurement. [Topic 1]
4. Construct a 95% confidence interval for BIT return and interpret the interval. [Topics 6-7]
5. An investment advisor claimed that BIT return is 2%. Do you agree? Justify your reasoning using a two-tailed hypothesis test approach at the significance level of 5%. [Topic 8]
6. Repeat steps 1-5 above for another financial stock traded at the Australia Securities Exchange: the Macquarie Group Limited (MAC).
7. Explore the association between BIT and MAC returns. Specifically, construct a contingency table for the positive and non-positive returns of the two stocks and calculate the following: a) Prob (BIT return is positive), b) Prob (MAC return is positive), and c) Prob (positive BIT return conditional on positive MAC return). Are returns to BIT and MAC statistically independent? Hint: use the IF function in excel to construct the four joint events: +ve and +ve returns, +ve and -ve returns, -ve and +ve returns, -ve and -ve returns. [Topic 3]

Part B (Ministerial Brief = 8 marks)

Write a ministerial brief of no more than 200 words containing no more than three graphs on whether you can confidently recommend investing in the Bitcoin, as compared with MAC. Hint: draw on the relevant evidence you have gathered from Part A, as well as other information/evidence not covered here but you believe is useful.

Micro-credential (2 marks)

Complete a [Micro-credential on cross-cultural communication](https://rmit.instructure.com/courses/52021/pages/cross-cultural-communication).