**Business Data Analysis assignment description and requirements**

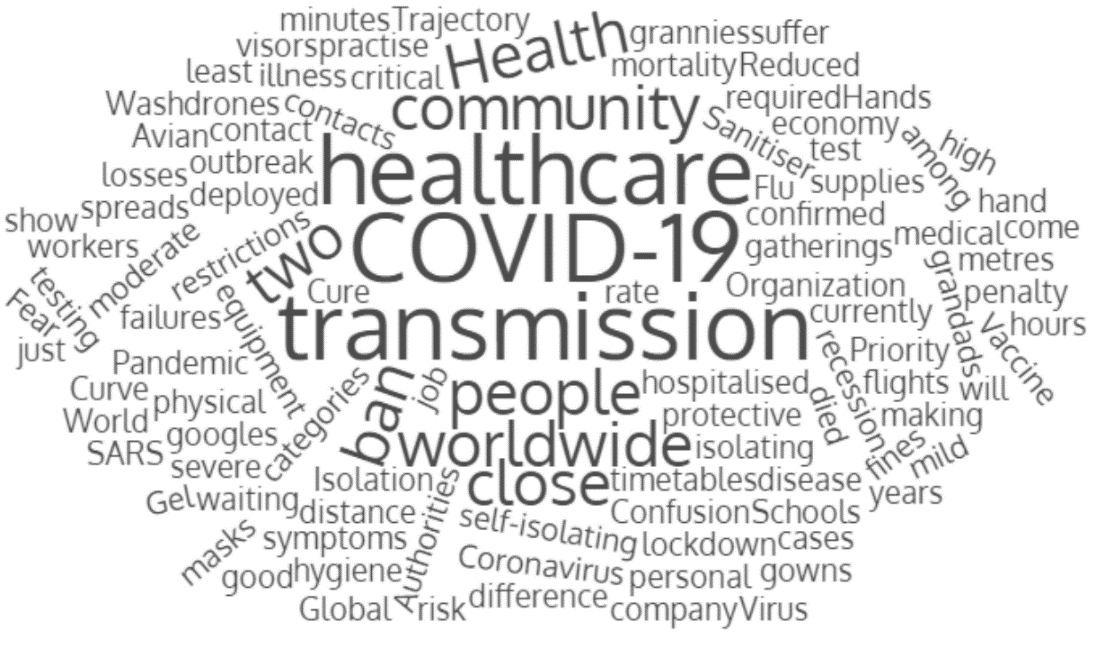
**Complete all 4 tasks outlined. Read detailed requirements carefully.**

Excel software and the Excel Data Analysis tool-pack should be used where indicated. Excel may also be used for any manual calculations needed. Where relevant, sufficient evidence of calculation should be given to clearly show the calculation method used and the dataset selected must also be shown in full.

Excel screenshots can be copied and pasted into Word to compile the individual submission document. It is the student’s own responsibility to ensure the final submission document is sufficiently legible. The submission should be a **single** ‘Word’ document for uploading to the Moodle submission link with images of Excel spreadsheets cut and pasted into the document as required. The submission document’s filename should contain the Student ID number.

**No Attachments**: statistical tables, formulae or reference material should be individually sourced as required.

1. ***Personal Insights COVID-19 Coronavirus*** ***Pandemic:***

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The learning outcomes for the HDSDA *Business Data Analysis* Module include the development of proficiency in the following:

* The principles and uses of descriptive statistics and inferential statistics.
* Principles of statistical Inquiry
* Analyses based on descriptive and inferential statistics within a business context
* Use of methodologies applied in prediction (forecasting)

Using the context of the current ***COVID-19 Coronavirus******Pandemic*** as a basis, discuss and give examples and descriptions of how the personal skills and competencies associated with these learning outcomes are relevant to your personal technical analysis, appreciation and understanding of the issues related to. and impacts resulting from, the global pandemic.

You should take as comprehensive a view as possible of all the possible aspects of the current pandemic crisis using the topics covered in the module as a primary basis of your consideration.

**Note:** This is intended as a discussion exercise only based on your own personal insights of the concepts involved. You should focus on your own personal learning and understanding rather than the real accuracy of any reports or data. There is no requirement to source or use actual data or to provide actual factual examples, but you could use illustrative diagrams/graphs where appropriate in your descriptions if you wish.

References should be provided to any sources of information used - using the Harvard referencing style

**Word count guideline**: 500 – 800 (not including quotations, tables, graphics)

**Marking Scheme Task 1** [For information]:

Overall marking to be based on the following in the context of personal experience and insights and will be expected to show a high degree of individual variability:

|  |  |
| --- | --- |
| > 30 Marks | Clear, concise and detailed personal review and discussion of a comprehensive range of topics based on what aspects of the four Business Data Analysis Module’s learning outcomes outlined might have relevance to the analysis of the data associated with the pandemic crisis. Examples could include, but are not limited to, how descriptive statistics could help / had helped the student’s personal understanding, how different sets of data might be compared, use of probability in assessing risk, confidence in data based on testing, potential for bias in samples, significance of mortality rates, meaning of correlations between datasets, testing of treatments, predicting infection rates / economics trends etc. Appropriate use of graphics and diagrams. Strong indication of personal consideration, research, approach and application. |
| 25 to 30  Marks | Good evidence of a well-considered realistic approach. Good range of topics outlined. Some use of graphics and diagrams as necessary. Good indication of personal consideration, research, approach and application. |
| 20 to 25  Marks | Realistic and useful consideration of some potential topics. Limited overall scope. Some indication of personal consideration, research, approach and application. |
| 15 to 20  Marks | Limited application of required approaches. Inclusion of some potential topics. Focus on / reliance on general theory / generic approaches rather than personally considered examples. |
| <15 | Insufficient evidence of application. Major aspects omitted. Lack of personal application to topics. |

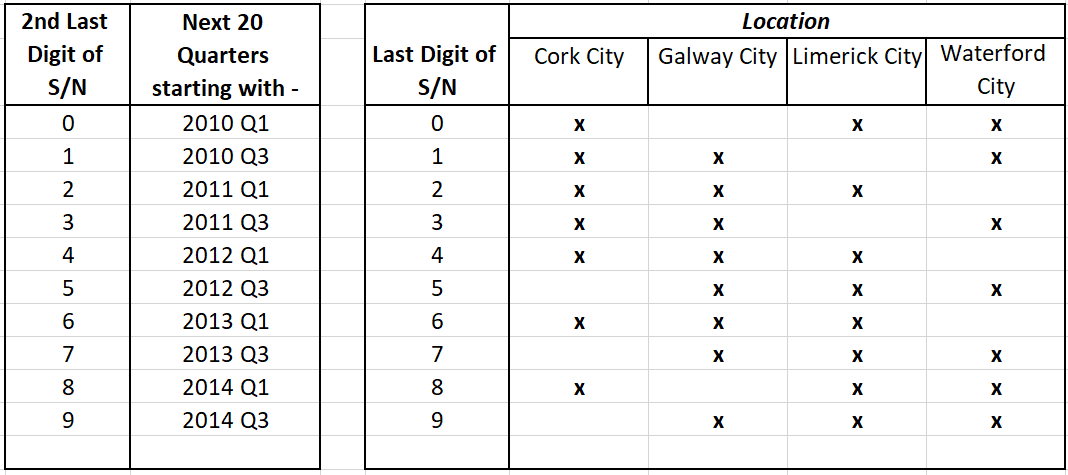
1. ***Are apartment rents significantly different in the four regional Irish cities?***

Source average monthly rents for two-bed apartments by quarter for the 10 years to Q3 2019 from the Residential Property Board (RTB) data held on the Central Statistics Office Statistic Bank (<https://statbank.cso.ie>). Based on the second last digit of your student number, as outlined below, use a subset of this quarterly data as samples of rents for input to a comparison of mean rents in three of the four cities (i.e. the data for three of the fours datasets for Cork City, Galway City, Limerick City and Waterford City) – selecting cities based on your Student Number as shown below..

1. Specify the null and alternate hypotheses to determine if there is a significant difference between the mean rents in the three cities.
2. Using the two-bed apartment quarterly rent data for the three selected cities, calculate the test statistic to test your hypotheses and report your result.
3. Report your overall outcome, clearly explain your reason for choosing this particular statistical test, your reasoning behind the process you followed, any decisions you made and any limitations on the outcome.

**NOTE:** You should carry out and clearly present all your calculations in Excel showing both the 'manual' step by step process and also the solution output derived using the Data Analysis Excel tool-pack.

*Datasets to use based on the last two digits of your Student Number (S/N)*

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***Example:*** *Student Number x12345678, use next 20 quarters starting with and including 2013 Q3 [7] and compare the rent data for Cork City, Limerick City and Waterford City [8].*

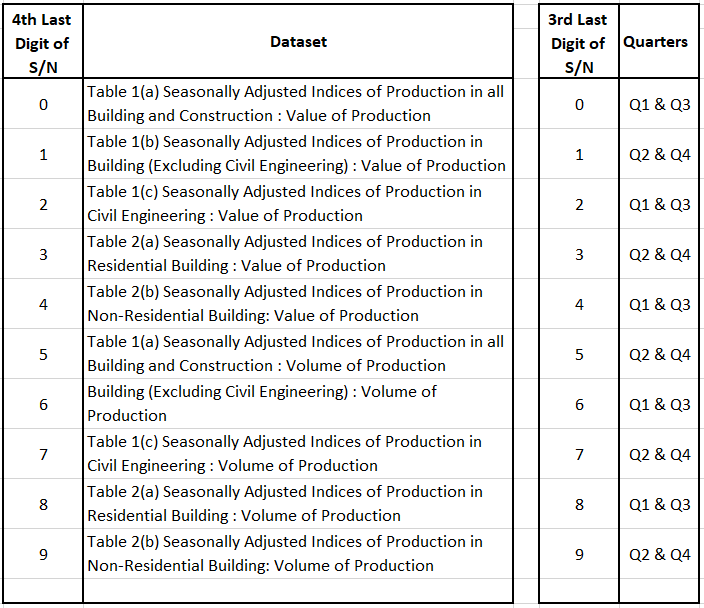
**3. *Central Statistics Office Data*** ***and Building Activity***

The ‘**Production in Building and Construction Index’** figures given in the Central Statistics Office data gives an indication of the level of recent Building and Construction activity in Ireland. Source the exact dataset indicated by your own Student Number (S/N) for Value or Volume of Production, and for the correct quarters indicated below.

Assuming the estimated index figure for the first relevant quarter in 2015 was 100.00 ((i.e. for Q1 2015 or Q2 2015 based on your S/N), using three different methods, make three individual forecasts of the next index figure for next relevant quarter in 2020 (i.e. for Q1 2020 or Q2 2020 based on your S/N). Compare and explain your three forecast figures.

**Note:** you should lay out your data and calculations clearly in Excel. Where needed: use six periods for averaging calculations, weightings of 5 (most recent), 4, 3, 2, 1 and 0.5 (t - 6) and an alpha value of 0.4.

*Datasets to use based on two digits of your Student Number (S/N)*



***Example:*** *Student Number x12345678, use Table 1(a), Volume of Production [5] and only quarters Q1 and Q3 figures for each year.[6]*

Ref: <https://www.cso.ie/en/statistics/construction/productioninbuildingandconstructionindex/>

4 ***Central Statistics Office Data continued***

Figures for the Residential Property Price Index, adjusted to a baseline of 100 in Q1 2015 are as follows:

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|  |  |  |
| --- | --- | --- |
| **2015** | Q1 | 100.00 |
|  | Q2 | 103.62 |
|  | Q3 | 106.08 |
|  | Q4 | 106.73 |
| **2016** | Q1 | 107.37 |
|  | Q2 | 109.31 |
|  | Q3 | 114.62 |
|  | Q4 | 116.30 |
| **2017** | Q1 | 117.85 |
|  | Q2 | 121.73 |
|  | Q3 | 128.33 |
|  | Q4 | 130.40 |
| **2018** | Q1 | 132.73 |
|  | Q2 | 136.22 |
|  | Q3 | 139.20 |
|  | Q4 | 138.55 |
| **2019** | Q1 | 137.77 |
|  | Q2 | 138.94 |
|  | Q3 | 140.75 |
|  | Q4 | 139.20 |

Using the dataset for the element of the ‘**Production in Building and Construction Index’** you sourced in Task 3 above and extracting the relevant data above for the same quarters you used in Task 3, produce in Excel a scatter plot of your element of the ‘**Production in Building and Construction Index’** (x-axis) against the extracted figures for the ‘**Residential Property Price Index’** for the appropriate quarters of 2015 to 2019 with the trendline equation and R-squared value shown on the chart.

What can you tell about the relationship between these two variables?