University of Westminster

School of Computer Science and Engineering

7BUIS009W Data Visualisation and Dashboarding

Module leader	Dr Deepika
Unit	Coursework
Weighting:	70%
Qualifying mark	40%
Description	Data Analysis, visualisation narrative and presentation
Learning Outcomes Covered in this Assignment:	This assignment contributes to obtaining the following LOs: • L01: discuss and critically apply the basic principles to data visualisation techniques; • L03: evaluate critically data visualisation using appropriate software tools; • L04: use a design process to build interactive Dashboards; • L05: synthesise the application of raw data into meaningful visualisation results and justify the appropriate techniques.
Handed Out:	9th June 2023
Due Date	Date: 7th August 2023 Time: 13:00
Expected deliverables	Report Working files (separate link) Feedback form (separate link)
Method of Submission:	Online Submission via Blackboard Turnitin submission as a PDF document in the format: 7BUIS009W_StudentNumber_firstName_lastName.pdf
Type of Feedback and Due Date:	**Feedback after submission** Written feedback on the CW will be provided within three weeks after the submission (unless unexpected circumstances occur). All marks will remain provisional until formally agreed by an Assessment Board.

Assessment regulations

See the Assessment guidelines https://www.westminster.ac.uk/current-students/guides-and-policies/assessment-guidelines for a clarification of how you are assessed, penalties and late submissions, **what constitutes plagiarism etc.**

Penalty for Late Submission

If you submit your coursework late but within 24 hours or one working day of the specified deadline, 10 marks will be deducted from the final mark, as a penalty for late submission, except for work which obtains a mark in the range 50-59%, in which case the mark will be capped at the pass mark (50%). If you submit your coursework more than 24 hours or more than one working day after the specified deadline you will be given a mark of zero for the work in question unless a claim of Mitigating Circumstances has been submitted and accepted as valid.

It is recognised that on occasion, illness or a personal crisis can mean that you fail to submit a piece of work on time. In such cases you must inform the Campus Office in writing on a mitigating circumstances form, giving the reason for your late or non-submission. You must provide relevant documentary evidence with the form. This information will be reported to the relevant Assessment Board that will decide whether the mark of zero shall stand. For more detailed information regarding University Assessment Regulations, please refer to the following website:

http://www.westminster.ac.uk/study/current-students/resources/academic-regulations

Note: By submitting the work through Blackboard you are acknowledging that this is solely your own work. Any code which is not created by you MUST be clearly commented as such. Any code discovered to not have been created by you will mean that the work will be submitted to academic standards for a potential assessment offence, which may result in a zero mark in the component or whole module.

Coursework Description

Using one or more publicly available data sets (e.g. from data.gov.uk) to:

1. Formulate a research question – this will frame your analysis.

2. Carry out exploratory data analysis of the data using R or Tableau or both. You should visually explore the data as part of your data analysis.

3. Using the findings from your analysis, construct a data graphics narrative to inform the viewer of the results of your data analysis and how you have interpreted them.

4. Use feedback to improve your graphics. You need to provide proof of the feedback received!

5. Write a short report explaining your process and critical thinking.

Report

Write a report detailing your work. The report must not be longer than 3000 words (excluding cover sheets, appendices, data tables). You must include at least five different visualisations but should use as many as are needed to support your findings.

The report must cover the following areas:

- **Research Question**: A research question is a clear and concise question summarising the issue your research will investigate. It should reflect something about you being genuinely curious.

- **Data Acquisition**: State the source of the data you are using (who compiled the data and where it can be downloaded). Provide a short description of the data set(s). Consider who compiled the data and its implications on the analysis (e.g. how reliable can we expect it to be, does it cover all areas you are interested in, and so forth).

- **Preparation**: State what steps you took to prepare the data. What checks did you carry out to ensure the data is in acceptable shape. State if you needed to mutate the data and what tools you used.

- **Data Analysis (narrative)**: Present and evaluate the findings of your data analysis. This section needs to answer your research question and should contain most of your charts. Critically evaluate and reflect on the findings and methods you used. Which strategies were the most effective, and which ones were the least effective? Why?

- **Visualisations**: State which visual encodings you considered and which encodings you chose. Justify your decisions. Reference to published works on these topics would be appropriate here.

Supporting files

In addition to the report, you must also submit all the files you created during your project. That includes any manipulated data files, Tableau and R files, and exported graphics. You do not need to submit the original data sets, but you must clearly indicate where they are available. Submissions without complete supporting files might not be marked.

Feedback form

You need to seek feedback regarding your data visualisations from your peers. Your peer should give you a short summary of their feedback on the feedback form at the end of this coursework specification. You will need to summarise on the feedback form any changes you made based on the peer feedback.

Every student is expected to give at least one feedback to another student.

Frequently asked questions

Can I use a spreadsheet tool like Excel?

Yes, but ONLY for data preparation and cleaning. You may NOT use it for the exploratory data analysis or producing the final data graphics.

Can I use other tools than Tableau, Power BI or R to create graphics?

Yes, you can use any other professional tool to create graphics, but not Excel. If you're in doubt what consists a "professional data visualisation tool", consult with your module leader.

How many visualisations do I need to produce?

You should produce as many visualisations as are needed to support your narrative. A minimum of five visualisations is required. You shouldn't increase the number of visualisations by adding irrelevant graphics – you won't receive better marks for it. Most acceptable submissions use between five and fifteen visualisations, but this depends on the research questions, the data sets used and the type and style of your visualisations.

Can I have the same research questions as another student?

Each student must come up with an individual research question. While two or more students could have conceived the same research questions, this is very rare, and we would take great care to affirm that each student submitted original work.

Marking scheme

Criteria	Mark per Component	Details
Report	**100**	
Formation of the research question	10	Clear and precise question with obvious measurables and sufficient opportunity for data visualisation.
Data Acquisition	10	The source(s) are clearly stated. The dataset is sufficiently described. Enough data acquired to answer research question satisfactorily.
Data Preparation	15	Steps are clearly described. Integrity checks and initial data exploration. Appropriate use of tools and methods.
Narrative	30	Appropriate methodology and following relevant lines of inquiry. Interesting and conclusive narrative. Answering research question. Critical evaluation methods.
Visualisations	25	Appropriate selection of charts and encodings. Justification of choices. Appropriate use of colours. Clarity and general aesthetics.
Feedback	10	Satisfactory feedback form submitted.
Total	**100**	

See also separate rubric for detailed marking criteria.

Data Visualisation Feedback Form

Report title	
Name/Id of student seeking feedback	
Name/Id of student giving feedback	
Feedback given on (date)	

Reviewer's comments (what is good, what could be improved?)
Research question
Data acquisition
Data preparation
Data analysis / Narrative
Visualisation
Reviewee's comments (What – if anything – did you change in your report after the feedback?)