Programming Assignment Marking Rubric

#### ***Data Storytelling (20%)***

|  |  |
| --- | --- |
| **F - Fail [0-39]** | * Research question is not present. * No introduction or conclusion. * No key results are presented. |
| **D – Pass [40 - 49]** | * Research question is unclear, unjustified or makes little sense. * Introduction, key results and conclusion lacks structure. * The arguments and conclusions are weak or lack clarity with unsubstantiated statements. |
| **C – Good [50-59]** | * Research question is clear, but it is not justified. * Introduction, key results and conclusion are structured in a clear and coherent way. * The arguments and conclusions are sound and justified. |
| **B – Very Good [60-69]** | * Research question is justified and demonstrates very good understanding of the data and their context. * Introduction, key results and conclusion are clear and coherent showing logical, ordered thought. * The arguments and conclusions show initiative, the ability to think clearly, critically evaluate ideas and draw sound conclusions. |

|  |  |
| --- | --- |
| **A3 – Excellent [70-79]** | * Research question is highly original, ambitious, and demonstrates deep understanding of the data and their context. * Clear justification provided for the chosen question with relevant references. * Narrative is compelling, insightful and shows evidence of critical thinking. * Multiple data sources are used where appropriate. * All recommendations and conclusions are grounded in the data. * Limitations of the dataset are discussed, and “next steps” suggested, particularly in terms of data that would allow for further analysis. |
| **A2 – Excellent [80-89]** | * A truly professional piece of work, with an absence of errors. As ‘A3’ but shows significant personal insight, extra depth and academic maturity. |
| **A1 – Exceptional [90-100]** | * Faultless storytelling. The work is well beyond that expected at this level of study. |

#### ***Data Wrangling (25%)***

|  |  |
| --- | --- |
| **F - Fail [0-39]** | * Data are uncleaned or improperly transformed, resulting in unusable or incorrect results. * Indicates a serious lack of data wrangling knowledge. * The submitted code is of limited size and cannot be executed. |
| **D – Pass [40 - 49]** | * There is an attempt to clean and transform the data, but with major inaccuracies. * Indicates basic data wrangling knowledge. * Code is difficult to read, repetitive in places or is poorly structured. * There are several unused variables and/or dead code. * There are no joins to other data. * Code executes without errors but with some warnings. |
| **C – Good [50-59]** | * Data have been cleaned and are properly transformed with minor inaccuracies. * Indicates sound but limited data wrangling knowledge. * Code is not DRY with lots of repetition. * Few or no unused variables or dead code. * Joins have been handled adequately. * Code executes without errors or warnings. |
| **B – Very Good [60-69]** | * Data have been cleaned and are properly transformed with few inaccuracies. * Indicates a firm grasp of data wrangling knowledge. * Code is DRY with little repetition. * No unused variables or dead code. * Joins have been handled well. * Code executes without errors or warnings. |
| **A3 – Excellent [70-79]** | * Data have been cleaned and are properly transformed with no inaccuracies. * Indicates an excellent command of data wrangling. * Code is DRY with no repetition and likely to support re-use. * No unused variables or dead code. * Joins have been handled well. * Code executes without errors or warnings and is easily readable. |
| **A2 – Excellent [80-89]** | * A truly professional piece of work, with an absence of errors. As ‘A3’ but shows extra depth and use of advanced techniques not taught in the course. |
| **A1 – Exceptional [90-100]** | * The code is faultless. The work is well beyond that expected at the appropriate level of study. |

#### ***Plots and Tables (25%)***

|  |  |
| --- | --- |
| **F - Fail [0-39]** | * There are no plots or tables. |
| **D – Pass [40 - 49]** | * Plots and tables show flaws and are basic. * Labels and titles have not been used. * No use of settings other than default. |
| **C – Good [50-59]** | * There are more than 4 plots and/or tables. * No use of settings other than default. * Plots and tables presented well but with some minor issues (e.g., too much or too little spacing, inconsistent number formats). |
| **B – Very Good [60-69]** | * Well labeled and titled plots. * Well labeled and titled tables. * Appropriate and thoughtful data visualisation with some use of non-default settings. |
| **A3 – Excellent [70-79]** | * Plots and tables are highly effective, communicate well and go beyond default settings. * Techniques such as faceting, multi-layered plots, or interactive visualizations have been used. |
| **A2 – Excellent [80-89]** | * Truly professional data visualisation. As ‘A3’ but shows significant creativity and advanced visualisation skills. |
| **A1 – Exceptional [90-100]** | * Faultless visualisations. The work is well beyond that expected at this level of study. |

#### ***Reporting (20%)***

|  |  |
| --- | --- |
| **F - Fail [0-39]** | * Report is poor, difficult to follow, or is not in the format (Github Page) required. |
| **D – Pass [40 - 49]** | * Presentation is inadequate and uses no R Markdown features. It is readable but could be improved for better flow and clarity. * Shows flaws in the overall standard of presentation or in specific areas such as figures, referencing techniques. * Unnecessary output has not been suppressed. |
| **C – Good [50-59]** | * Presentation is reasonable but uses no R Markdown features. * Generally well presented but there may be some flaws, for example in figures, tables, referencing technique. * Unnecessary output has been suppressed. |
| **B – Very Good [60-69]** | * Very good presentation. Clear and well structured. Good use of R Markdown features (e.g. YAML title, date, headings, sub-headings, table of contents). * Clear and well presented with relatively minor flaws. Accurate referencing. * Unnecessary output has been suppressed. |
| **A3 – Excellent [70-79]** | * Very high standard of style and presentation, using appropriate features of R Markdown (beyond those in B). * Clear and well presented with no flaws. Accurate referencing. * Unnecessary output has been suppressed. |
| **A2 – Excellent [80-89]** | * A truly professional piece of work, often with no errors. As ‘A3’ but shows advanced features of R Markdown effectively. It is easy to follow and visually appealing. |
| **A1 – Exceptional [90-100]** | * Faultless reporting. The work is well beyond that expected at this level of study. |

#### ***Reproducibility (10%)***

|  |  |
| --- | --- |
| **F - Fail [0-39]** | * R markdown has not been used. * Report is not reproducible. * There are no comments. * Code readability and object naming is poor. |
| **D – Pass [40 - 49]** | * Reproduction of the report is difficult or impossible. * Comments are limited or unclear. * Code is difficult to read in places. * Object naming is satisfactory in most cases. |
| **C – Good [50-59]** | * Reproduction of the report is possible, but requires some effort. * Comments are clear. * Code is mostly readable. * Object naming is satisfactory. |
| **B – Very Good [60-69]** | * The report can be easily reproduced. * Comments are clear and explain ‘why’ code was written in a particular way. * Object naming is very good, e.g. human readable and meaningful variable names. |
| **A3 – Excellent [70-79]** | * The report can be easily reproduced by others. * Comments are very clear and explain ‘why’ code was written in a particular way. * Object names are meaningful, consistent and human readable. * The structure of the repo is immediately clear and follows convention. |
| **A2 – Excellent [80-89]** | * A truly professional piece of work, often no errors. As ‘A3’ but shows significant empathy for other people reading and editing your code in the future. |
| **A1 – Exceptional [90-100]** | * Faultless reproducibility. The work is well beyond that expected at this level of study. |