# Data Science Group Projects

Thank you for considering providing our students with a group project opportunity. We are looking for projects that are:

* related to the activity of your organisation
* enable exploration of a real-world dataset and for inferences to be made

As part of their ‘Fundamentals of Data Science’ module, our students undertake a 5-week group project. The students are grouped into teams with a balance of interests and skills.

For each project, we request:

* A dataset (with a description of the data within each field – this can be a public dataset or your own)
* An objective (although this can be a general aim for the project)
* A contact (who can answer the students’ questions about the project)

**Dataset:** The dataset is given to the students for analysis. The contents, format or extent of the dataset are not important, provided that the data is reasonably substantial (ideally >100 MB / 10,000 items). Where appropriate, the data should be anonymised before being shared. NDAs will be signed if required.

**Objective:** An overall research question should be posed, together with a statement of what insights would be of value to the project sponsor. If the aim of the project is to explore a general area, then such objectives can be defined in more loose terminology.

**Contact:** A contact within the partner organisation should be provided to enable the students to ask questions about the data and get a better idea of what outcomes would be valued.

# Process Overview

The group project process is quite straightforward – projects are proposed and accepted (by the end of October); students are assigned to the projects; the projects take place (between mid-November and January); and the students’ work is reviewed. The students provide a written report and present their work orally (in January). Project partners are provided with a copy of the students’ report and are very welcome to attend the oral presentation.

To propose a project please complete the form overleaf.

# Lancaster University Data Science Group Project Description

Please overwrite the guidance text in the right hand box to complete the form.

## Project Details

Please give details of the project in broad terms – this information is for guidance and will be replaced by a detailed specification later in the process.

|  |  |
| --- | --- |
| Project name | “Extreme Weather Performance Impact” |
| Project owner / sponsor | Kat Burnett, Head of Performance |
| Project description | What are the aims of the project?  The Avanti West Coast rail services covers a large stretch of the country, and during any one day the different weather-related decisions being made across that geography can vary and affect overall performance. The aim of the project is to look at a localised incident north of Preston where the industry reacted with certain operational decisions, and to evaluate the impact of these decisions, and how they could be improved on going forwards.  What research question(s) should be addressed?   1. What is the relationship between extreme weather (flooding and high winds) and railway performance for AWC north of Preston? What is the change in performance? 2. How much is performance impacted by the introduction of blanket temporary speed restrictions north of Preston to respond to extreme weather? 3. What was the benefit of the emergency timetable work that went in in 27th-30th October 2021 in response to weather related temporary speed restrictions??   How do we know if, and then when NR should put in an emergency speed restriction as a response to weather? Confidence in weather data vs appropriate time to implement.  What insights would be valuable?  Is the application of proactive timetable changes as beneficial as perceived?  Is there an optimum way in which these should be implemented?  What is the counter- what can happen to performance if an emergency timetable is not put in place? Help evidence whether it is worth doing this prior work, and a good use of business resource. |
| Project Data | What data will be analysed?   * Incident overview from Bugle * Delay data- which can be filtered for geography * Log for days affected by weather * Extract from DataHub for T3, services run and services p-coded and cancellations * NAS passenger satisfaction data for context   *Network Rail permitting-*   * Metdesk data? * Historic run of data from the relevant NW/Scotland weather stations? * Reference data: Lat/longs of key locations (e.g. stations and timing points)   In what format is it currently held?   * Excel * Word * PowerBI |
| Other comments | Is there anything else about the project of which you would like to make us aware?  To assist the students an overview of the industry may be needed in the early days of the group project to provide context of the industry. The project covering Preston north could allow for a site visit to a station, or for the local network to make more sense to students.  Other context documentation will also be available such as;   * Timeline of events up until the 27th * Proactive Disruption Document * Explanation of industry performance metrics |

## Organisation Details

Please give the following details about your organisation

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| --- | --- |
| Organisation name | Avanti West Coast |
| Main contact name | Karen Broad |
| Main contact position | Talent Development Manager |
| Main contact email | [Karen.broad@avantiwestcoast.co.uk](mailto:Karen.broad@avantiwestcoast.co.uk) |
| Main contact phone | 07919 538518 |
| Main contact address | NA |
| Other comments | NA |

If you have any questions or to return this form please mail to Dr Simon Tomlinson at [s.tomlinson2@lancaster.ac.uk](mailto:s.tomlinson2@lancaster.ac.uk)