



THE UNIVERSITY
of EDINBURGH

Usher
institute

Introduction to data science in health and social care

Datathon Assessment Specifications
2022-2023

Course Code
HEIN11037

Assessment



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1. Introduction

Learning, teaching, and assessment

The 'Introduction to data science in health and social care' course aims to equip you with the fundamental foundations and data skills needed for data-driven innovation in health and social care. This course will also provide you with an opportunity to demonstrate originality and creativity in the application of tools from data science. By the end of this course, you will have a critical understanding of the current issues, key concepts, and methods in data science used to improve health and well-being and manage systems in the health, social, and care services sector.

The course assessment will involve a datathon focused on storytelling with data from health and social care. You will work in groups of seven or more students, and specific individual and collaborative tasks and online discussion exercises relating to the assessment will be set. The assignment will culminate in a group presentation and a written project report at the end of the course. The datathon assessment will teach you the data science and communications skills necessary to be an effective data storyteller. You will learn how to locate and download datasets, extract insights from that data, and present your findings in various formats in R and R Markdown. You will learn how to communicate information through data visualisation and compelling narrative and learn how to tailor your data stories for different audiences and stakeholders.

From the outset, you will engage with the subject matter and one another through a series of individual and collaborative tasks that feed into the assessed work described in more detail in the following sections.

Learning Outcomes

By the end of this course, students will be able to:

- 1) Demonstrate a critical awareness of health and social service systems and the key concepts, issues and methods related to data science.
- 2) Effectively communicate about data-related issues in health and social services to a wide range of audiences.
- 3) Apply a range of specialised data science techniques and tools to different health and social service scenarios.

2. Overview and general guidance

There are no exams for this course, but students **MUST** submit all parts of the assessment. The final mark will be based on the following:

Group work

LO2 and LO3: Group presentation - 30%

Individual work

Written assignment -70%

LO1: Project report-50% (1,800)

LO2: Discussion post 1 - 10%

LO2: Discussion post 2 - 10%

Formal summative assessment will include a group presentation, which will constitute 30% and a project report (1,800 words) that will make up the 50% of your final grade. The final 20% of your grade will be made up by two discussion board posts: one discussion board post (10%) in week five and one discussion board post in week seven (10%).

The submission deadlines for each assessment are as follows:

Assessment	Submission deadline
Graded discussion board post (10%)	18/10/2022 12 noon (BST)
Graded discussion board post (10%)	08/11/2022 12 noon (BST)
Datathon-data storytelling: Group presentation slides	30/11/2022 12 noon (GMT)
Datathon-data storytelling: Group presentation (30%)	02/12/2022 10:00 or 18:00 (GMT)
Datathon-data storytelling: Project report (50%)	06/12/2022 12 noon (GMT)

Feedback turnaround time for assessment is 15 working days.

Please note:

- Should you experience technical problems that prevent you from submitting your assignment to Turnitin on the due date, **please notify the teaching team immediately** in an email (pgt.dshsc@ed.ac.uk), including a screenshot of the error message and copy of your assignment as an attachment before the submission time/date.
- Remember to KEEP A COPY of your work at all times.
- **The word count must be adhered to** (There is a +10% allowance). The word count does not include the title page, reference list or appendices. There is no lower limit as long as the assignment criteria have been met in full. Brevity and clarity of written material is important data science. The assignment word limits are enforced to help you improve your academic writing.
- See the **MSc Data Science for Health and Social Care Programme Handbook** for more information on extensions and special circumstances.
- All assessments must be completed and passed in order to progress to the next course.
- In the event of an unresponsive group member, you can alert the programme team by emailing pgt.dshsc@ed.ac.uk as soon as possible (at the latest after two weeks of silence).
- The exam board may lower the group work mark for members who have been shown not to contribute equally or on time.
- An individual's group work mark will be zero where they have made minimal or no contribution to the group project.

3. Grading Criteria

For each component of the course assessment, please be aware that the mark awarded is provisional. Please take note of the following information:

- The marks awarded for each component of the assessment are provisional and are provided to give you an indication of your progress before the course ends.
- At the end of the course, the quality of all your coursework will be assessed to provide a final grade on the scale provided below. This final grade remains provisional until after the exam boards in January in the current Academic Year.

University Common Marking scheme

Mark (%)	Grade	Description
90-100	A1	An excellent performance, satisfactory for a distinction
80-89	A2	An excellent performance, satisfactory for a distinction
70-79	A3	An excellent performance, satisfactory for a distinction
60-69	B	A very good performance, satisfactory for a merit
50-59	C	A good performance, satisfactory for a master's degree
40-49	D	A satisfactory performance for the diploma, but inadequate for a master's degree
30-39	E	Marginal fail
20-29	F	Clear fail
10-19	G	Bad fail
0-9	H	Bad fail

<https://www.ed.ac.uk/timetabling-examinations/exams/regulations/common-marking-scheme>

4. Group Work

All student groups will work collaborative over the ten-week course to compose a narrative around [health care utilization data from the Organisation for Economic Co-operation and Development \(OECD\)](#) using R that demonstrates their data science and storytelling skills. There are many different variables relating to health and social care in the health care utilization dataset – it is not expected (or indeed possible) to analyse all of them. Rather, within your groups you are to decide on a data story or research question that you would like to explore using some of the variables within the dataset.

The University of Edinburgh has a [subscription to the OECD iLibrary](#), which you are invited to explore. You are welcome to decide within your groups to include other datasets from the [OECD Health Statistics repository](#) or other OECD data (e.g., population data, income distribution, social expenditure, etc.) as well if it will help develop your data story.

See the Learn pages (Assessment > Datathon-data storytelling) for a step-by-step guide on how to access the datasets.

Group work guidance – group presentation

This is what we are looking for, overall.

Your groups have free rein on content and execution. However, all data stories must contain two visualisations created using R. Data stories must also serve one of two goals: to help the intended audience make data-driven decisions or convey the impact of your findings to service users or stakeholders. Your presentation should not just be an account of everything you tried (“then we did this, then we did this, etc.”), instead it should convey what choices you made, and why, and what you found.

The group work will be assessed through a group presentation at the end of the course. The group presentation will be evaluated based on five aspects: narrative and effective storytelling, data visualisation, time management, professionalism and slides, and teamwork and participation.

During your presentation session, you will also watch presentations from other teams and provide feedback in the form of peer evaluations. The presentation line-up will be generated randomly.

Slides

Your group will produce a short presentation (in PowerPoint or another software agreed upon within your team) explaining some key findings from your data and a clear recommendation about what action should be taken as a result of your findings. Your group presentation should include:

- Up to 10 content slides.
- Your first slide, which will appear on the screen before your narration begins, should identify who the audience for your presentation is. In most cases, you may envision your audience as the head of an organisation you work for (i.e., health or social care organisation) that needs to decide a course of action based on your findings.
- Your second slide should include the most exciting insight your team has discovered in your dataset, much like the "lead" of a news story. This "lead" statement should intrigue your audience and make them want to learn more.
- Your presentation should include at least two static visualisations that you created in R based on your data, though you can include more visuals if you wish. At least one of your two visualisations should support the statement made in your lead sentence.
- Your slides should include some visual elements other than static data visualisations that help illustrate your points and maintain viewer interest (i.e., photographs, clip art, etc.)
- If you wish to use transitions or reveals on your slides (i.e., bullet points appearing one after the other, one image being superimposed on top of another, things sliding in from the side), they should contribute to the presentation rather than distract from the overall data story.
- Your last slide should briefly outline the individual contributions to the group project.

Your group will share their presentation slides in week ten of the course on the University of Edinburgh Open Educational Resource (OER) website, which peers and the assessment panel can review before the group presentations.

Group presentation

Your group will give a presentation (10 minutes, with three to five minutes for questions from peers and the assessment panel at the end for a total of 15 minutes per group) in week ten of the course. Your presentation should be more than members of your group just reading your slides. Instead, your slides should be relatively minimalist in terms of text, showing key images, ideas or visuals that you use to enrich your narrative. Your lead sentence and visuals should be accompanied by an "elevator pitch" explaining why the insights you have discovered can help your intended audience make data-driven decisions or convey the impact of your findings to service users or stakeholders.

Group working guidelines and support

This assignment will require all group members to work together to form an efficient and productive online team. Working in groups can be challenging-especially online-but it can also be very rewarding and a richer learning experience than working individually.

Your first task as a group is to organize a time to meet and complete the group learning contract. Before you do anything else, find out from each other if there are any times that individuals will not be available (e.g., because of time zones, other courses, work, or other commitments). It is essential that you establish this upfront and plan each person's contributions. How you organise the workload is up to you, but you need to make sure that the distribution of work is as equitable as possible. It is also important that you assign clear roles within the group. Here is a suggestion of key tasks for the datathon project:

- Explore the available datasets, focusing first on health care utilisation
- Identify and select key variables and dataset(s)
- Decide on the intended audience
- Exploratory data analysis
- Compose narrative
- Produce visuals
- Prepare slides for presentation
- Class presentation and question and answer

Once you have agreed on your team roles and come up with a timeline, please post these information on your team discussion board. This will help you to keep on track, and it will help us to monitor your progress. Throughout the course, keep monitoring the roles to make sure there is a fair division of labour – if there isn't, you might have to adjust roles a little.

To help ensure that your collaborations on the group project are as constructive as possible, please review the following guidance.

General guidelines

- Once the groups have been allocated, contact your fellow group members via your group's private discussion area immediately – don't wait to be contacted.
- Your first action point as a group is to complete the Group Learning Agreement and decide amongst yourselves who will take on which role (i.e., Project manager, Collaborate director, Minute minder, File supervisor, Chief storyteller, Context Captain, and Presentation conductor).
- If someone hasn't suggested this already, try and find a time you can all be online together at the earliest opportunity (for example, perhaps via your Collaborate online meeting room).
- The bulk of communication proceedings should occur within your group's discussion board, where details of work allocated and decisions made can easily be viewed by all members, including the group tutor.
- Agree on individual responsibilities, tasks, and initial deadlines early on, mindful of

what the assignment specification indicates each element requires. Work should be distributed fairly in overall effort (which does not have to be spread evenly over time).

- Be patient, polite and respectful towards each other. Make use of each other's expertise and skills, and don't disregard an idea without due consideration. Proofread each other's work.
- NEVER overrule another group member's choice or preference without full group consent, NEVER re-write another's work without permission or having agreed editorial control.
- A good team will be able to accommodate time zone differences and absences announced in advance – be open and honest about your availability.
- In the event of an unresponsive group member, you can alert the programme team by emailing pgt.dshsc@ed.ac.uk as soon as possible (at the latest after two weeks of silence).
- The collaborative group project mark may be lowered by the exam board for members who have been shown not to contribute equally or in a timely manner as set out in the Learning contract.
- An individual's group project mark will be zero where there is minimal or no contribution to the group project.

Group working and communication

Each group will be provided with a private discussion board and can set up a Collaborate session from MyEd. Of course, you are welcome to use any other means to communicate, but let your tutor know and keep notes/record the sessions.

Group tutorial support

Each group will be supported by a subject expert group tutor who will be available on the group discussion board for questions and guidance. The group tutor's role is not to facilitate but to support when needed. While as a team you may communicate via any agreed upon means, communication with your group tutor should be on the team discussion boards.

5. Individual project report

All student groups must create a data story using R that demonstrates their data science and storytelling skills. Data stories must also serve one of two goals: to help the intended audience make data-driven decisions or to convey the impact of your findings to service users or stakeholders. Your individual work will be assessed through a project report at the end of the course (50%) and two discussion posts during weeks five and seven of the course (20%).

Project report (50%)

You will submit a 1,800 word written project R Markdown report that demonstrates a clear understanding of your group's data story at the end of the course. The project report will be evaluated based on five aspects, narrative/data storytelling, critical thinking/analysis, data visualisation, data wrangling and coding, and reflective practice.

Your project report will be submitted through Turnitin as a knitted PDF or word document (.pdf, .doc or .docx) R Markdown document.

All R code must be shown (**echo = TRUE**) and will not count towards your word limit. You do not need to show all of the code you have written throughout the datathon project, but rather the importing of the data into R, data wrangling used to prepare the data for visualisation, and the code to produce the 2 data visualisations. When you come to writing reports on your own data outwith this course, you will often choose not to show your code but just the final text and figures. For the purpose of this assessment all code is required, and it needs to appear in your Knitted report, not submitted separately.

Your narrative report should:

- demonstrate a clear understanding of your group's data story, context, and selected audience.
- describe the dataset and the limitations of the dataset.
- include a clear recommendation for your audience of what steps they should take in response to your group's findings.
- include at least one or two elements that may be missing from the data story and explain how you would improve the data story.
- describe anything about the data you do not understand and how you would go about sourcing information that might help you understand these aspects of the data.
- outline any additional questions that you could see could be answered with the data. You do not need to answer the questions; just state them and the variables in the data that could be used to answer them.
- Include and describe the data visuals and your team chose to tell your data story and why?
- discuss what visuals you would have used if you were working on your own, and describe if/how they could be used to better communicate your data story to your target audience.
- demonstrate you have reflected on your contributions to the project, and your interactions with team members
- report on the collaborative, teamwork, and communications skills you have developed, and areas that you have noticed that need development while working on the group project.

Your report should include an informative title and clear heading separating the narrative from your reflective practice. Other sections or headings may be included if you wish to organise your report.

6. Reflective writing guidance

The purpose of this section is to provide some further guidance on reflective writing about your engagement in the online discussions and how this contributed to your learning and professional development and you achieving the course learning outcomes.

Essentially, you are trying to demonstrate how you monitor and enhance your learning as an active online course participant on the course.

Reflective writing

Reflective writing is challenging and can feel uncomfortable at times as you will be writing about anxieties and flaws, and successes. However, by reflecting, you will understand yourself better, which should help you carry out your studies more successfully by making you aware of assumptions or misconceptions about your learning. In addition, the reflective practice narrative should provide a reflective overview of your personal academic and professional development as a result of active participation in and collaboration with your peers and tutors in the group datathon project.

Reflection and learning

Reflection on your learning requires you to be self-aware in the critical examination of yourself and your actions. You should be open about your weaknesses (what didn't go well, how you are going to improve it next time around) and candid about your strengths. Reflection constitutes the path by which to move forward.

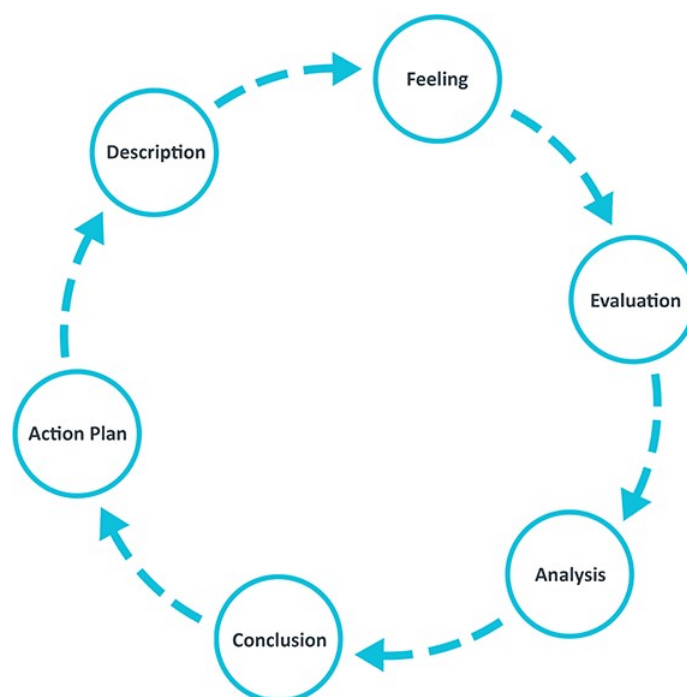
There are many forms of reflection. However, whatever form reflection takes, it should initially involve examining feelings about an experience, then identifying areas to develop and starting to think about ways to do this. Gibbs' (1988) model of reflection offers a structured approach to reflection, which some of you may be aware of already.

Part of your narrative will necessarily involve describing what you have undertaken and what you are trying to achieve, and how this has developed over time.

Gibbs' reflective cycle

When writing your narratives, try to think along the lines of Gibbs' (1988) and ask yourself the following questions at each of Gibbs' 6 stages.

- 1. Description:** What happened? Give a concise, factual account of the question asked and the ensuing discourse. This section should set the scene for the reader.
- 2. Feelings:** What were you thinking and feeling at the time of the discussion? What was affecting your feelings? Looking back, has your understanding of your feelings changed your view of the situation?
- 3. Evaluation:** What was good/bad? Why? Be specific! How do you feel about the discussion experience now?
- 4. Analysis:** What sense can you make of the situation/experience? What reflective cycle aspects (e.g., time management, preparedness, prior learning) contributed to the outcome? How does this compare to your other learning experiences online/offline? How does this compare to learning theory? Has this experience changed how you learn in general (academically/professionally)?
- 5. Conclusion:** Summarise what have you learned through reflection, including the main factors that contributed to the situation.
- 6. Action plan:** Summarise the practical steps you need to take/resources/skills you need to improve for the next time.



Gibbs' (1988) reflective cycle

Make your writing explanatory, not descriptive (i.e., *why*, not just *what*). Remember, simply reviewing what happened does not constitute reflective writing. Reflection is the process of interrogating the experience with searching questions.

Note

It is appropriate to use the first person singular ('I'), but you may need to also write in the third person when comparing your observations/experiences with theory or further academic evidence. While reflective writing is personal, try to step back and be as rigorous and thorough in the objective examination of your experience as possible. Remember, this is still an academic piece of writing!

7. Further reading

- Brent Dykes (2016). [Data storytelling: The essential data science skill everyone needs.](#)
- Gibbs, G. (1988). Learning by doing. A guide to teaching and learning methods, Oxford Centre for Staff and Learning Development, London: Further Education Unit. Available from [learning by doing \(PDF\)](#)
- IBM (2016) [Data science is a team sport. Do you have the skills to be a team player?](#)
- The University of Edinburgh reflection toolkit home page describes each stage of the Gibbs' (1988) Reflective cycle in more detail at <https://www.ed.ac.uk/reflection/reflectors-toolkit/reflecting-on-experience/gibbs-reflective-cycle>
- Somerville, D., Keeling, J., A practical approach to promote reflective practice within nursing. Nursing Times. 2004 March 20;100(12). Available from [A practical approach to reflection \(PDF\)](#)
- For the learning theory behind it all (not for the faint-hearted): Moon, J. A handbook of reflective and experiential learning. London: Routledge-Falmer; 2004 Available from DiscoverEd at https://ed.primo.exlibrisgroup.com/view/action/uresolver.do?operation=resolveService&package_service_id=33336771220002466&institutionId=2466&customerId=2465

8. Help with writing and referencing

Academic writing resources

There is writing help available online for non-native English speakers, which might also prove useful for those course participants who have not had a recent opportunity to write an academic paper. Please have a look at the resources held at:

- <https://www.ed.ac.uk/studying/international/student-life/language-support>
- <https://www.ed.ac.uk/institute-academic-development/study-hub/learning-resources/english>

For more general tips and resources on academic writing, see the Institute for Academic Development (IAD)'s website:

- <https://www.ed.ac.uk/institute-academic-development/study-hub/learning-resources/writing>

You may find the open-access academic writing course useful, which you can register for here:

- <http://ewriting.org.uk/>.

The University has recently subscribed to [Cite them right](#), which describes the referencing styles, Vancouver and Harvard, in much detail, including many relevant examples.

Further help and support

For many resources to help you improve your referencing skills and avoid plagiarism, have a look at the IAD's website:

- [Good academic practice](#)

For English language support for non-native English speakers, including a proofreading service, please consult

- [The University of Edinburgh English language support centre](#)

The University of Edinburgh Prepare for success website offers an [Academic writing support site](#), which includes a quiz to assess your writing skills.