

Module 3

Hackathon - Rules

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Hackathon- Mission Example

Longitudinal questionnaire data have been collected from >20,000 people at two timepoints. Half the participants were surveyed early in 2020 and then in Christmas 2020–21. The other half were surveyed in May 2020, mid lockdown, and then again in Christmas 2021, mid resurgence. A subset of the measures taken have been curated for you to analyse.



Schedule

Stage 1 — 09:30–09:50

Individual Planning

- **Task: Prepare and submit 2 individual slides 50%**
- Submission: via MT to TA

Stage 2 — 09:50–14:00

Group Analysis

- Task: Collaborative coding and data analysis
- We will provide a semi-empty iPython notebook via Github
(includes structure, headings, and cells — but students must fill in analysis)
- **Output: Submit group analysis code MT to TA 20%**
 - Note: Coding stops at deadline

Break 14h 14h30

Stage 3 — 14:30–15:00

Group Slide Preparation

- Task: Create final presentation slides 8

Stage 4 — 15:00–16:00

Group Presentations

- **Format: 8 min presentation + 2 min Q&A 30%**

Stage1 | Individual Planning (Brainstorm) 9:30-9:50

Task: Produce **up to 2 slides** outlining your analysis plan.

Your slides must include:

1. Scientific Question(s) What are you trying to discover or compare in the dataset?

2. Hypothesis / Hypotheses What do you *expect* to observe? State a clear, testable prediction.

3. Proposed Analysis Steps Brief plan of the methods you will use

Example: data cleaning → group comparison → visualisation → statistics

Goal: Be clear, focused, and concise — this will guide your group work in Stage2.

Submitted at 9:50 to your TA via Team

Example

Longitudinal questionnaire data have been collected from >20,000 people at two timepoints. Half the participants were surveyed in early 2020 and again at Christmas 2020–21. The other half were surveyed in May 2020 (mid-lockdown) and again at Christmas 2021 (mid-resurgence). A subset of the measures has been curated for your analysis.

Slide 1 – Scientific Question(s):

- What are the key changes in mental health across timepoints?
- Do certain demographic groups show greater changes in wellbeing?
- How does the pandemic period relate to differences in reported mental health outcomes?

Slide 2 – Hypothesis & Analysis Plan:

Hypothesis: Mental health declined more during the mid-pandemic period, particularly among younger individuals.

Proposed Analysis Steps:

1. Data cleaning and variable selection
2. Group participants by demographic characteristics (e.g., age, gender)
3. Compare mental health measures across timepoints
4. Visualise trends using plots
5. Perform statistical tests to evaluate differences

Stage 2 | Group Analysis (09:50–14:00)

Task: Work collaboratively on coding and data analysis.

Your group will:

As a group, select a combination of questions to address

- Marks will relate to the **number and difficulty** of questions answered
- Recommendations include (but are not limited to):
 - **Easy, Moderate, and/or Advanced** questions (choose a mix)
- Follow the semi-empty iPython notebook** (provided via GitHub)
- Structure and headings are provided — *you fill in the analysis*
- Carry out the analysis and produce clear, well-commented code**
- This is your **final product** for Stage 2

Output:

Submit group analysis code via MT to your TA (worth 20%)

Three level of problem: example

Easy | What demographic has been sampled in this study?

Intermediate | How does mental health relate to age & other variables at baseline or during the pandemic?

Intermediate | Has mental health changed during the pandemic?

Difficult | Which sub-populations have been most affected?

Advanced | To what degree can mental health be predicted from demographic and lifestyle variable

Stage 3 | Group Slide Preparation (14:30–15:00)

Task: Create your final **presentation slides** for the group.

Your slides must include:

- 1. Analysis Aims, Pipeline, and Results**
- 2.– (maximum 6 slides total)**
- 3. Implications / Interpretation**
- 4.– (2 slides)**

Deliverable:

- Prepare an **8-minute group presentation** (presentation only – Q&A follows in Stage 4)

Hackathon Rules & Expectations

Allowed

- You may **use your notes, workshops, and course materials**
- You may **take coffee and snack breaks at any time**
- **Lunch break: 14:00 – 14:30**

Not Allowed

- **No collaboration across groups**
- **No generative AI tools** (e.g., ChatGPT, Copilot, Gemini, etc.)

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