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## Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Evaluating the Effect of Green Game Jam 2024 on Player Climate Actions

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**Affiliation:** University of Edinburgh

**Template:** UoE Default DMP template for Research Staff

### Project abstract:

The gaming industry reaches 1 in 3 people globally and is experiencing an increase in the development of video games that aim to foster climate action. These “climate games” could aid climate change mitigation efforts by encouraging players to perform pro-environmental behaviours. However, limited research evaluates what effects these games have on pro-environmental behaviour and its underlying determinants, as well as how these effects emerge from gameplay. Collaborative research across academia and industry is needed to start tackling these questions.

Playing for the Planet, a collaborative alliance between the United Nations Environment Programme (UNEP) and over 30 prominent gaming studios, is a notable example of climate games in action. This alliance hosts an annual Green Gam Jam, encouraging studios to integrate green activations into their video games addressing specific climate change issues. In 2023, 41 games embraced this challenge, incorporating interventions to enhance players' knowledge and readiness to take climate action on wildlife conservation. Additionally, in 2022, Playing for the Planet conducted a cross-sectional survey (N = 389,594 players; 10 games) showing that the proportion of players with intentions to engage in climate action increased by 10% after gameplay, and over 80% of players would like to engage with more green messaging in their video games. This year's Green Game Jam 2024 aims to get 1 million players to take action on the themes of food, waste and restoration. Our research aims to use longitudinal qualitative and quantitative methods to provide initial results on the effects green activations have on pro-environmental behaviour and its underlying determinants over time. Specifically, we have the following aims:

1. To assess to what extent (if any) player pro-environmental behaviour and its related determinants change before versus after exposure to green activations in Green Game Jam 2024.
2. To explore what aspects of gameplay and the wider player experience underlie the effects (if any) observed in player pro-environmental behaviour and its related determinants.

This research aims to provide actionable insights regarding green activation design for the gaming industry. As such, we will generate a report based on the research results accessible to the games industry while simultaneously meeting the standards of academic rigour. This report will address the outlined research questions and critically reflect on the methodologies employed and the overall research process, offering guidance and inspiration for others who may want to conduct research in this space.

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# Evaluating the Effect of Green Game Jam 2024 on Player Climate Actions

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## Administrative Information

### 1) School or Institute

- CMVM - Centre for Population Health Sciences

### 2) Project start date

2024-07-01

### 3) Project end date

2025-02-28

### 4) Project funder or sponsor.

Playing for the Planet commissioned this project, a United Nations Environment Programme initiative funded by UK Interactive Entertainment.

## Data Collection

### 5) Data Collection

The UK Government's [Video Game Research Framework](#) informed our data collection plan.

#### Quantitative data collection:

- This will be controlled by three studios participating in the Green Game Jam 2024.
- Survey Data: They will use their preexisting data collection infrastructure to collect closed survey questions from players pre and post-launch of their green activation. Survey questions will include, for example, Likert scale items regarding players' motivation to perform and performance of the environmental behaviour the studio's green activation aims to promote.
- Play data: They will also collect play data while the activation is live. This will include, for example, whether players engaged with the green activation and for how long.
- Data linkage: The studios will link the survey (pre and post) and play data, creating a master anonymised dataset.
- Data sharing: The anonymised data will be shared with the research team via a shared project on the Open Science Framework between the studios and the research team. This project will be private for the duration of the research and then made public upon completion. This process adheres to FAIR data principles and Video Game Research Framework recommendations.

#### Qualitative data collection:

- This will be controlled by the research team and collected for one of the participating studios.
- Recruitment survey: The studio will disseminate our recruitment material via whatever channel they are comfortable with (e.g., the games Discord channel). This will include a link to the recruitment survey, which players interested in participating can fill in. This will collect the player's email and basic information for screening participants (e.g., how much they typically play the game and whether they follow the game's social media channels). It will give us a pool of people to follow up with. We will cap the responses to this survey (e.g., 10 or 15) to avoid collecting personal data on more players than needed.
- Interviews: Qualitative interviews about players' gameplay experience and environmental behaviour will be conducted and recorded (video and audio) using AR's university Microsoft Teams account. AR will also use Microsoft Teams auto transcribe feature. During the interview, the research team will take notes on the interview in a shared Word document on SharePoint. This document will be encrypted with a password, that only the research team know.
- Journals: Journal entries about players' experience of gameplay will be collected in a format convenient for participants. The research team will provide a Word template of the information entries should include (e.g., date, general location such as home, university, work, etc) and recommended formats (e.g., the Word template, their phone notes app). Participants will upload their journal entries to a password-protected folder on the research team's SharePoint Site that only the participant and

AR can access.

#### **Publicly available X (i.e., Twitter) data:**

- The research team will use [Tweepy](#) and [X API](#) to collect players' tweets related to the activation. They will query tweets using the hashtags developed by the studio and the dates over which the activation is live.
- They will sample a maximum of 500 tweets and collect the following data from each:
  - Username (to assess whether tweets are from separate individuals)
  - Tweet text
  - Tweet media (i.e., URLs to images)
  - Likes
  - Retweets
  - Replies
- This is in line with X APIs [Developer Agreement & Policy](#).

#### **Data Volume:**

The research team does not expect the project's data to exceed AR's 500GB storage allocation on DataStore.

## **Documentation & Metadata**

### **6) Documentation & Metadata**

Documentation:

The following section lists what documentation will be created, by whom and its storage location:

- Created by the research team and stored on their UofE SharePoint site. This site is owned by AR, and TY and CW contribute as guests:
  - Recruitment material (i.e., recruitment process note, posts shared with/messages sent to players, qualitative recruitment survey)
  - Ethics material (i.e., informed consent process notes, information, and debrief sheets)
  - Data collection material (i.e., quantitative surveys, interview guides, journal word template, Tweepy code)
  - Analysis files (i.e., R Markdown file for quantitative analysis, qualitative analysis process notes)
- Collected/created/stored by the studios. Once anonymised shared with the research team via a shared OSF project:
  - Quantitative Data (i.e., master dataset of player survey and play data & data dictionary).
- Collected/created/stored by the research team. Stored on DataStore, collaborators are given access via DataSync.
  - Qualitative Data (i.e., Interview recordings, interview transcripts, & journal entries)
  - Twitter Data (i.e., tweet dataset & data dictionary).

AR will create a README file for the quantitative and qualitative data describing all the research data files for this project: file names, what they contain, how they are related, how they were created (e.g. data collection, analysis software, file format); how they should be used.

## **Ethics & Legal Compliance**

### **7) Ethics & Legal Compliance**

The data processing procedure outlined below will be reviewed by the Edinburgh Medical School Research Ethics Committee

#### **Types of Data**

- **Quantitative Data:**
  - Players' responses to closed survey questions (e.g., VAS, Likert scale items)
  - Play data (e.g., duration of gameplay)
  - User IDs for data linkage
- **Qualitative Data:**
  - Recruitment survey responses (e.g., interview availability, email for interview invite)
  - Interview recordings (video and audio)
  - Journal data (player's name, date of entry, open text box entries)
- **X (i.e., Twitter) Data:**
  - Tweets related to activation collected via Tweepy and X API
  - Maximum of 500 tweets sampled
  - Data collected: Username, tweet text, tweet media URLs, number of likes, retweets, replies

## Capture and Transfer

- **Quantitative Data:**
  - Collected via the studio's internal GDPR-compliant data processing infrastructure
  - Anonymised data shared with the research team via a OSF in line with UK government Video Game Research Framework
- **Qualitative Data:**
  - **Recruitment Survey Responses:**
    - Captured via AR's Microsoft Forms
    - Downloaded, uploaded to DataStore, and deleted locally
    - Research team given access via DataSync
  - **Interview Recordings:**
    - Captured via AR's Microsoft Teams
    - Uploaded to DataStore and deleted locally
    - Research team given access via DataSync
  - **Journal Data:**
    - Participants record entries in means convenient for them
    - Participants upload to password encrypted folder UofE SharePoint
    - AR uploads to DataStore. Deleted on SharePoint.
    - Research team given access via DataSync
  - **Email Communication & Calendar Invites:**
    - Stored in "GGJ Qual Data Collection" folder in AR's outlook
    - Deleted after qualitative data linkage and anonymisation
- **X (i.e., Twitter) Data:**
  - Collected and stored on AR's university laptop
  - Uploaded to DataStore and deleted locally
  - Research team given access via DataSync

## Data Processing

- **Quantitative Data:**
  - Studio anonymise data. No record kept linking random IDs to player usernames
  - The research team generate new random IDs to replace the studio's random IDs. No record kept linking new IDs to old IDs stored.
- **Qualitative Data:**
  - Anonymised collectively using DataSync
  - Pseudonyms replace participants' names in data files
  - Transcripts and journals reviewed for accuracy and anonymised (e.g., people and place names deleted)
  - All personal data deleted after anonymisation
- **X (i.e., Twitter) Data:**
  - Usernames assigned random number IDs and deleted

## Storage

- **Quantitative Data:**
  - Stored in studio's internal infrastructure until anonymised and uploaded to OSF.
  - AR will analyse using a copy downloaded to university laptop.
  - Anonymised data made public upon project completion.
- **Qualitative & X (i.e., Twitter) Data:**
  - Stored on DataShare and DataSync during collection and analysis
  - Upon project completion: Qualitative data: Anonymised data stored open access on Open Science Framework upon project completion. Twitter data: Stored in a private, encrypted data component on the OSF that only AR can access until the research is published in an academic journal. We will make the Tweepy code used to collect the tweets publicly available so interested parties can replicate the process used to generate the data. In line with best practice guidance on balancing the privacy of Twitter users with the aims of research (Hswen et al., 2018).

## Preservation

All anonymised data made publicly available on the OSF will also be archived publicly on the University of Edinburgh's DataShare open access data repository. AR will manage the archiving process.

## Security Measures

The University of Edinburgh's secure data storage and collaboration platforms are used (Amy's university device, DataStore, DataSync). Personal data are only collected and stored for as long as it takes to anonymise them.

## Storage and Back-Up

### 8) Where will your data be stored and backed-up during the project?

All live data will be stored on DataStore and Sharepoint as outlined above.

## Selection and Preservation

### 9) Where will the data be stored long-term?

The Open Science Framework & DataShare.

Players and studios will provide informed consent for the research team to share anonymised data on the OSF and DataShare.

### 10) Which data will be retained long-term?

- Meta data:
  - Recruitment material (i.e., recruitment process note, posts shared with/messages sent to players, qualitative recruitment survey)
  - Ethics material (i.e., informed consent process notes, information and debrief sheets)
  - Data collection material (i.e., quantitative surveys, interview guides, journal Word template, Tweepy code)
- Anonymised Quantitative Data (i.e., a master dataset of player survey and play data & data dictionary).
- Anonymised Qualitative Data (i.e., interview transcripts, & journal entries)
- Twitter Data (i.e., tweet dataset & data dictionary) - Private no access provided outside of AR in line with best practice ethical guidance for ensuring Twitter user privacy. See ethical discussion in applied research using Twitter data to understand suicide discourse ([Hswen et al., 2018](#)). Only stored until research is published in an academic paper.
- Analysis files (i.e., R Markdown file for quantitative analysis, qualitative analysis process notes)

## Data Sharing

### 11) Will the data produced from your project be made open?

- Yes: go to 12

### 12) How will you maximize data discoverability & access?

We create a DOI in OSF and DataShare and cite these in a data availability statement in the published report.

## Responsibilities & Resources

### 14) Who will be responsible for the research data management of this project?

The studios will be responsible for :

- collecting or generating the quantitative data,
- anonymising this data, and
- uploading it to a private, shared OSF project along with a data dictionary.

The research team (AR unless otherwise specified) will be responsible for:

- collecting the Qualitative and Twitter data,
- manage the transfer of this data between her university laptop and Data Store/DataSync,
- anonymising this data (AR, TY, & CW)
- analysing this data (AR, TY, & CW) and the quantitative data, and
- preparing this data for the OSF and DataShare

CW: Clayton Whittle, tamugaming@gmail.comOther

TY: Trevin York, Trevin@direlark.comOther

**15) Will you require any training or resources to properly manage your research data throughout this project?**

No. AR and TY have taken data protection and management training through UoE (AR through her role as a research fellow. TY during his MSc course). CW has taken similar training via the CITI Program (Human Subjects Research, Social and Behavioural Human Subjects Research, Responsible Conduct of Research) completed through Pennsylvania State University. He has also reviewed UofE's data protection and data management guidance online.

AR will support the research team if any queries arise during this process. Where she is unable to address these queries, she will contact the research data service or data protection team.