



TIME TO ENGAGE

(LCF/PR/SR23/57000012)

Intentions and behaviours of using digital health technology by older adults: collaborative research

Data Management Plan

Lead Beneficiary: Iscte – University Institute of Lisbon

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History of changes

Version	Date	Type	Changes	Contributors
1.0	27/05/2024	Report	Initial version	EBC, CF, JS, CC
2.0	03/01/2025	Report	Addition of new chapters: (i) Project overview, (ii) Introduction, and (iii) Data generation and collection method. Minor changes update.	EBC, CF, JS, CC, EP, RM
3.0	01/07/2026	Report	Changes in chapters: Data Summary, FAIR Data, Data Security and Ethical and Legal Considerations.	EBC, CC

1. Project Overview

Project Title: Intentions and behaviours of using digital health technology by older adults: collaborative research

Project Acronym: Time-To-Engage

Project Leader: Elzbieta Bobrowicz-Campos

Project co-Leader: Cristina Camilo

Host Organisation: Iscte – University Institute of Lisbon

Funding Agency: Funding from the Social Research Programme, promoted in the context of Iberian social research and innovation initiative, i4S (an agreement between the Foundation for Science and Technology of the Government of Portugal and “la Caixa” Foundation).

Project Duration: From October 15, 2023 to April 14, 2026

Project Description: Time-To-Engage project intends to explore person- and context-related factors that interfere with the motivation of older adults to use digital technologies in health. It also aims at understanding how these factors are shaped by levels of digital competences and engagement and by availability, accessibility, and affordability of digital connectivity and infrastructure. To that end, an original survey will be carried out, built on the conceptual framework elaborated and validated based on the views of older adults on the topic, and in articulation with the Theory of Planned Behaviour, as well as the 10th European Social Survey findings on socio-cultural determinants of digital health behaviours. The sampling process will consider quotas defined in accordance with the population characterization provided by the 2021 Census of the National Institute of Statistics. Based on the survey results, an explanatory model will be proposed that identifies and describes different profiles of intention to use digital technologies in health. This model will be translated into guidelines for the development of person-centered and context-adapted community interventions that promote behavioural change. By approaching the digital transformation-related challenges in advanced age from a new angle, which recognizes the diversity of mobilized adaptive responses and explores the associated factors, Time-to-Engage project will allow a more in-depth analysis of possible paths towards digital inclusion and, from there, a definition of evidence-based solutions for digital health equity.

Project page: <https://ciencia.iscte-iul.pt/projects/intentions-and-behaviours-of-using-digital-health-technology-by-older-adults-collaborative-research/1960>

2. Introduction

The Time-to-Engage project Data Management Plan provides the key elements of the data management policy that will be implemented throughout the project lifecycle for all datasets generated and used. This Plan follows the principles of findability, accessibility, interoperability, and reusability, alongside an Open Data policy by European Commission, and covers all stages of the lifecycle including data generation, organization, curation, storage, preservation, security, quality assurance, allocation of persistent identifiers, provision of metadata, licencing, as well as rules and procedures for data sharing. The main dimensions of management of these data, shared in the form of scientific publications and associated datasets, include persistent Identifiers (achieved by assigning a Digital Object Identifier), standardized metadata framework (established according to rules defined by publishers), and licences (used for immediate and long-term availability of content published in gold or green open access). The Data Management Plan will be regularly updated in live with emerging needs.

3. Data Summary

Type of data: The project will generate qualitative and quantitative data within the scope of three (explanatory, validation and survey-based) studies.

Type of datasets: Raw data will include audio files and questionnaire responses, collected using paper-and-pencil, online and by telephone.

- Audio files will be transcribed into Word documents and anonymized. The audio files will not be preserved nor shared, due to the possibility of including personal and sensitive data. Transcripts will not be shared; they will be stored in the Iscte institutional infrastructure (Office 365) and will be accessible only by the project team. Transcripts will be subjected to a content analysis process. Only the results of the content analysis with illustrative examples will be made available to external researchers.
- All collected data will be subjected to the anonymisation process. Responses to paper-and-pencil questionnaires will be stored in Excel, SPSS and STATA files exclusively on institutional secure servers that ensure controlled access and enhanced data protection. Paper copies will not be preserved nor shared, due to the personal data contained with them. Responses collected online and by telephone will be directly recorded in secure digital platforms licensed by partner institutions (Qualtrics for Iscte and Lime-Survey for Spirituc - a contracted company specialised in professional data collection, responsible for conducting fieldwork in hard-to-reach areas in Portugal.), without inclusion of any identifiable elements (e.g., IP address). The contract with the data-collection company will include a confidentiality clause that prohibits the use of any collected data for purposes other than those for which the

company was engaged. Anonymised data will be made available to external researchers following the publication of the main articles planned for the project.

Data and datasets preservation and share: All processed data will be preserved for 10 years after the project finalization and shared on Iscte Zenodo Community (<https://zenodo.org/communities/iscte/>) with a DOI assignment without any restrictions. Zenodo's metadata is compliant with DataCite's Metadata Schema minimum and recommended terms, with a few additional enrichments. License is one of the mandatory terms in Zenodo's metadata. DataCite's Metadata Schema meets one of the broadest cross-domain standards available.

The availability of datasets in repositories will provide external researchers with a greater capacity to reproduce the research while contributing to the construction of a global database on the facilitators and barriers of the use of digital health technology by older adults.

4. Data Generation and Collection Methods

Data will be generated and collected within the scope of three studies. These studies will be carried out with participants who will volunteer to participate and give their written consent to be part of this study.

Exploratory study: This qualitative study encompasses three tasks grounded in a person-based approach. The first task consists of 2-hour face-to-face creative workshops, held in small groups, which aim to identify the facilitators and barriers related to the use of digital technologies in health. In the second task, the identified facilitators and barriers will be subjected to a thematic analysis, the findings of which will be subsequently validated in the third task through community-guided focus groups. To ensure the trustworthiness of the study findings, the procedures to meet the credibility, transferability, dependability, and confirmability criteria will be applied in data collection, data analysis and data reporting.

Validation study: Within this study, we will construct and validate the tool for assessing individual and contextual factors that interfere with the intention to use digital technologies in health. The construction process will be informed by the findings from the exploratory study. It will also consider the 10th European Social Survey findings on socio-cultural determinants of digital health behaviours, especially those related to technology acceptance and usage. The initial item pool with corresponding assessment procedures will be tested through cognitive interviews and content validity indices. The final item pool will be validated through the psychometric properties' evaluation, according to the Classical Theory of Tests assumptions.

Survey-based study: This quantitative study will be conducted in a large, non-probabilistic sample, stratified based on gender, region of residence (five Portuguese geographical regions), age group (65-74/75+ years) and education level (less than primary/basic/secondary/tertiary).

To avoid the impact of outliers in small stratus, the correction of sample values to population stratus sizes will be made using weightings. The participants will be invited to respond in person to questions from the previously validated assessment tool. Data obtained will be subjected to multilevel structural equation modelling, allowing the identification of interrelationships between individual and contextual factors that interfere with the intention to use digital technologies in health, sociodemographic variables, and indicators of digital competences and engagement and of availability, accessibility, and affordability of digital connectivity and infrastructure.

5. FAIR Data

Making data findable: The project's relevant datasets will include processed, anonymised data and will be deposited in the Zenodo Iscte Community (<https://zenodo.org/communities/iscte/>) following the publication of the main articles planned for the project. The Zenodo platform is an open access digital repository that enables researchers to share, ensure long-term storage of research data and publish their research data more easily. The datasets will be accompanied by a README file with a description of the data.

For metadata we will use DataCite Metadata Schema v4, the metadata standard supported by Zenodo. This metadata schema allows data objects to be assigned with a globally unique identifier – DOI, indicating the ORCID identifier of their creator, specifying the access right and license, describing version of the resource, etc. (<https://about.zenodo.org/principles/>). To facilitate findability, datasets descriptions, made through README text files, will include elements that allude to administrative (e.g., name of the project, name of the funding agency, acronym, grant number, contact person), descriptive (e.g., researchers involved in producing the data, publication title, publication date, subject describing the data, keywords relevant to the theoretical field of the project) and structural (e.g., resource type, data size and format) content.

Making data accessible: Raw data will be accessible only by the project team and destroyed as soon as possible after transcription or processing. Raw data will be stored in the Iscte institutional infrastructure (Office 365).

Access to processed data (datasets) will follow the principle of “as open as possible as closed as necessary”. In cases where certain datasets need to be shared under restrictions, the reasons will be clearly explained. All data submitted to Zenodo will have open and accessible metadata. The data needed to validate the results in scientific publications will be available in the Iscte community on Zenodo.

Making datasets available in open formats will increase the transparency of data, allowing researchers, educators and citizens to reuse them in new contexts and for new purposes. It is expected that this sharing will result in the promotion of new research in the area of interest,

contributing to greater citizen engagement and informing public policies on a more sustainable basis.

Making data interoperable: Zenodo makes data interoperable by offering export to the Dublin Core metadata schema. Data in the Iscte Zenodo community will be harvested by the Iscte CRIS system and migrated to the Iscte institutional repository for long-term preservation. To ensure data interoperability, the preferred file formats for sharing will be *.xls/.xlsx, *.doc/.docx and *.sav (spss). Metadata will include qualified references to other metadata.

Making data reusable: The metadata is subject to the CC0 licenses. For publications, the CC BY license will be used. The processed shared data may be reused without any restrictions (but only after the publication of the papers related to the data) and any time limit. Third parties will become aware of the existence of such data through multiple channels (including project page at Ciência-IUL, social media, leaflets, posters, communications and publications), which are described in the Project Communication and Dissemination Plan. Third Parties will be able to access, explore, reproduce, and disseminate the data, even after the end of the project. However, the reuse of data will be limited to non-commercial use and may only occur for the intended purposes and in accordance with the obligations contained in the consent form obtained from the participants. The definition of the license(s) to be used for data is still under discussion. Data will be linked to the project documentations and publications.

6. Data Security

Storage and maintenance of raw data: The raw data, including the interview audio files and questionnaires responses, will be temporarily stored on Institutional infrastructure (Iscte Office365) with automatic backups. They will not be preserved in the long-term. Namely:

- During transcription process of audio files, the data will be anonymized, without the possibility of identifying the respondent. After the approval of the transcript by project PI and co-PI, the audio recording will be destroyed.
- During storing process of questionnaires response in Excel files and Qualtrics and LimeSurvey digital platforms, the data will be anonymized, without the possibility of identifying the respondent. After data being processed, the paper questionnaires answers will be destroyed.

Storage and maintenance of processed data: The processed data will be stored on Institutional infrastructure (Iscte Office365) with automatic backups.

The data needed to validate results in scientific publications will be deposited in the Zenodo trusted repository where a DOI is issued for every published record, making the data easy to find. Submitting the data to Zenodo is cost-free and enables enduring preservation and curation in accordance with EU directives.

Storage and maintenance of other project outputs: The processed data will be presented in reports and scientific publications that will be stored on the project page at Ciência-IUL and maintained for at least 5 years in accordance with Open Science practices.

7. Ethical and Legal Considerations

Throughout the project, national legislation in personal data collection and EU/international regulations and ethical protocols for social research will be respected. Furthermore, before being carried out, all project studies will be submitted to the Iscte Ethics Council to address the following ethical aspects:

- The voluntariness of participation and signing of the informed consent form. This term will detail the nature and purpose of the research and explain what data will be collected and how these data will be used.
- The confidentiality, privacy and anonymity of participants' personal data at all stages of the research process. Identifiable information will be accessible only to the research team and used exclusively for the purposes described in the consent form.
- Sharing anonymised data in publicly accessible repositories to promote transparency and enable future studies. Participants will be informed about this possibility and specific authorization for such use will be requested.

The Code of Ethical Conduct in Research Iscte, compliance with which will be guaranteed by the project, is available at: <https://www.iscte-iul.pt/conteudos/iscte/organization/advisory-bodies/1348/ethics-council>

The ethical dimensions of data collection conducted by the contracted company will be safeguarded through the contract, which includes a confidentiality clause ensuring that all collected data remain protected and cannot be used for any purposes other than those for which the company was engaged.

8. Responsibilities

Monitoring and updating the Data Management Plan: under the responsibility of the project PI. Their implementation will take place during regular meetings of the project team, where the production of data and the form of storage and access authorizations will be verified, and where possible deviations from the agreed plan will be discussed with the respective mitigation solutions.

Managing the data or outputs: under the responsibility of the research team with supervision by the project PI. Updated versions of the datasets will be properly identified, and the changes made will be indicated in the datasets description.

Publishing and sharing data: under the responsibility of the project PI and co-PI, with the knowledge of the project manager and the entire research team. With each publication of the project results, the data used will be converted into open formats suitable for long-term preservation, converting the files into formats that include metadata, are free of commercial licenses, and are of widespread use.

Preservation and conservation of data: under the responsibility of Iscte. For this purpose, the Iscte institutional infrastructure (Office 365) will be used. Data will be preserved for 10 years after the project finalization. Non-processed data will only be accessible by project research team and through encrypted means.

9. Other Matters

The Data Management Plan is available on the respective project page at Ciência-IUL (<https://ciencia.iscte-iul.pt/projects/intentions-and-behaviours-of-using-digital-health-technology-by-older-adults-collaborative-research/1960>).