

Digital Traces via Data Donations

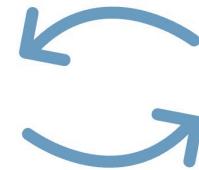
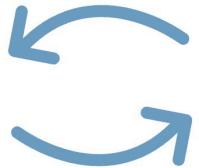
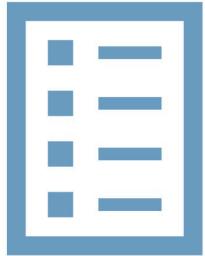
Workshop DGPUK RezFo 2026

Session **3** : Data Donation Studies (Researcher Perspective)

👉 Part of the SPP DFG Project [Integrating Data Donations in Survey Infrastructure](#)



Data Donation: Methodological Decisions

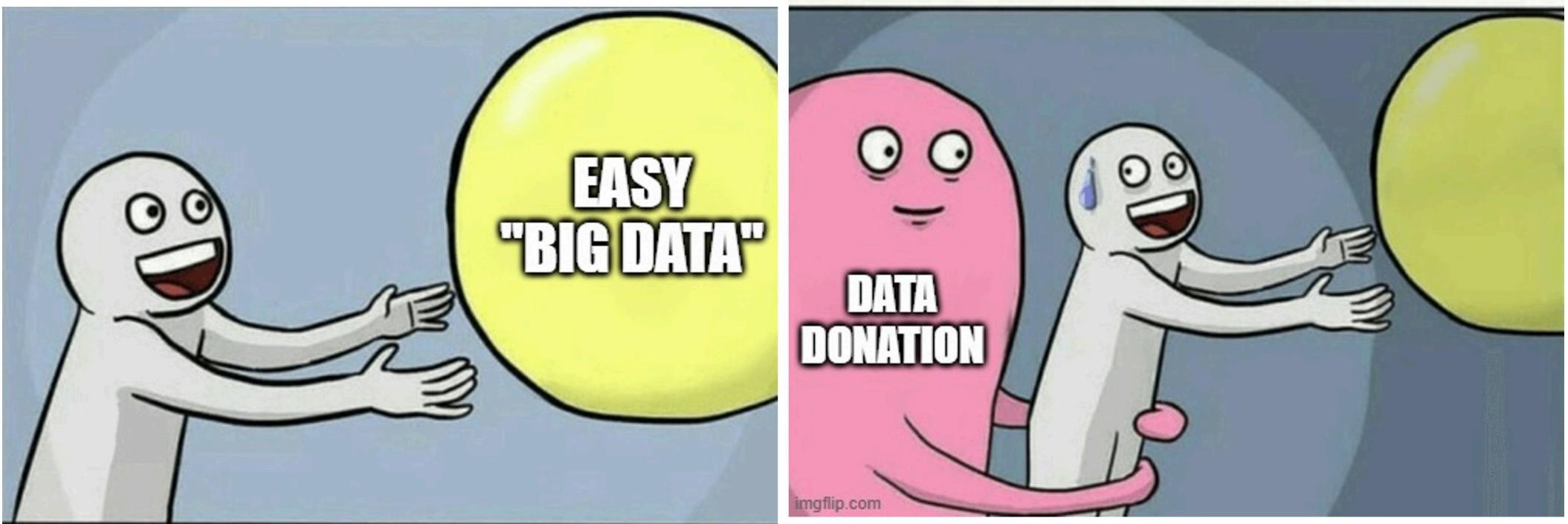


1 Research Design &
Tool Set-Up

2 Data Cleaning &
Augmentation

3 Modelling

Data Donation: Methodological Decisions



For a summary: shoutout to this primer



Quality & Quantity (2025) 59 (Suppl 1):S389–S412
<https://doi.org/10.1007/s11135-024-01983-x>



Best practices for studies using digital data donation

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Abstract
Digital trace data form a rich, growing source of data for social sciences and humanities. Data donation offers an innovative and ethical approach to collect these digital trace data. In data donation studies, participants request a copy of the digital trace data a data controller (e.g., large digital social media or video platforms) collected about them. The European Union's General Data Protection Regulation obliges platforms to provide such a copy. Next, the participant can choose to share (part of) this data copy with the researcher. This way, the researcher can obtain the digital trace data of interest with active consent of the participant. Setting up a data donation study involves several steps and considerations. If executed poorly, these steps might threaten a study's quality. In this paper, we introduce a workflow for setting up a robust data donation study. This workflow is based on error sources identified in the Total Error Framework for data donation by Boeschoten et al. (2022a) as well as on experiences in earlier data donation studies by the authors. The workflow is discussed in detail and linked to challenges and considerations for each step. We aim to provide a starting point with guidelines for researchers seeking to set up and conduct a data donation study.

Keywords Data donation · Digital trace data · Data quality · Local processing · Privacy preservation

(Carrière et al., 2024)

Agenda

1. Research design & tool set-up
2. Data cleaning & augmentation, including

 **Task 5:** Classify search terms

3. Modelling

 **Task 6:** Example Analysis of YouTube Watch history



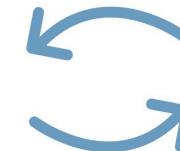
Image by Hope House Press via Unsplash

1) Research design & tool set-up



Source: Image by Markus Winkler via Unsplash

Step I: Research design & tool set-up



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

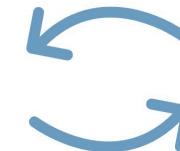
1.2 How do I operationalize key variables via my data donation tool?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

3 Modelling

Step I: Research design & tool set-up



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

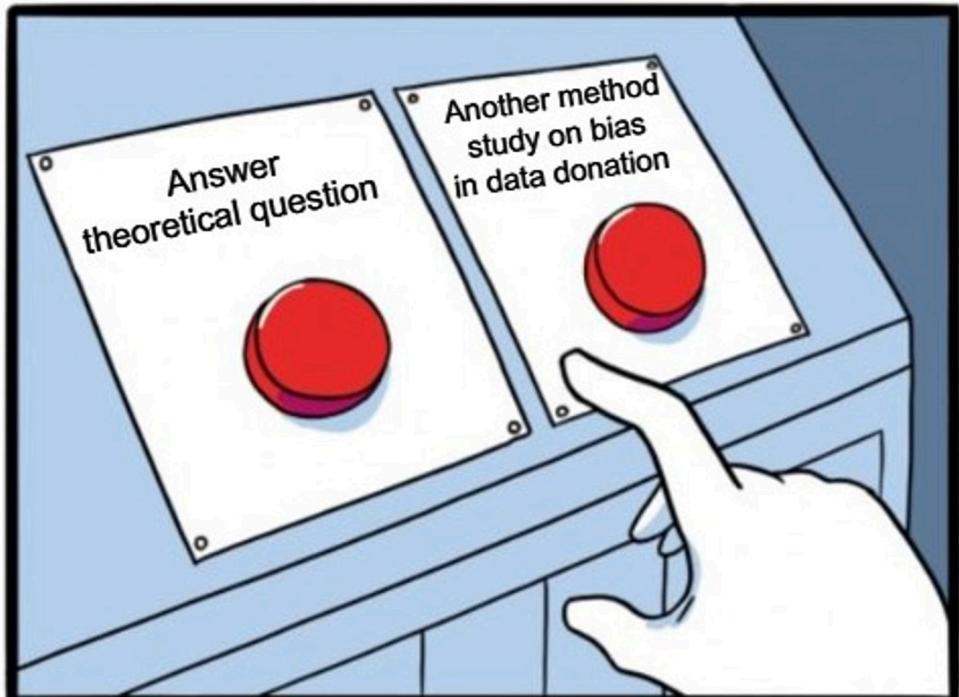
1.2 How do I operationalize key variables via my data donation tool?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

3 Modelling

Step I.I Which questions do I want to answer?



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JAKE-CLARK.TUMBLR

Step I.1 Which questions do I want to answer?

Article

Avenues to News and Diverse News Exposure Online: Comparing Direct Navigation, Social Media, News Aggregators, Search Queries, and Article Hyperlinks

The International Journal of Press/Politics 2022, Vol. 27(4) 860–886
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DOI: 10.1177/1940162211009160
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SAGE

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Ericka Menchen-Trevino³,
Joao F. F. Goncalves⁴ ,
and Brian Weeks⁵ 

Original Article

What is news? Mapping the diversity of news experiences in digital trace data

j

Felicia Loescherbach 
University of Amsterdam, The Netherlands

Judith Moeller
Hans-Bredow-Institut für Medienforschung an der Universität Hamburg, Hamburg, Germany

Damian Trilling
Vrije Universiteit Amsterdam, The Netherlands

Wouter van Atteveldt
Vrije Universiteit Amsterdam, The Netherlands

Journalism 2024, Vol. 0(0) 1–19
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COMPUTATIONAL COMMUNICATION RESEARCH 5,1 (2023) 1–32
[HTTPS://DOI.ORG/10.5117/CCR2023.1.15.GONG](https://doi.org/10.5117/CCR2023.1.15.GONG)

Media selection is highly predictable, in principle

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Cognitive Science Program, University of California Davis
Center for Mind and Brain, University of California Davis

ORIGINAL ARTICLE

Do New Romantic Couples Use More Similar Language Over Time? Evidence from Intensive Longitudinal Text Messages

Miriam Brinberg¹  & Nilam Ram²

Journal of Communication ISSN 0021-9916

cogitatio

Media and Communication (ISSN: 2183–2439)
2023, Volume 11, Issue 1, Pages 19–30
<https://doi.org/10.17645/mac.v1i1.6030>

Special Issue: Data Reflectivity: New Pathways in Bridging Datafication and User Studies

CONVERGENCE

Integrating trace data into interviews: Better interviews, better data

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Convergence: The International Journal of Research into New Media Technologies 2024, Vol. 30(6) 2059–2074
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S Sage

Data Donation Studies - DGPUK RezFo - Valerie Hase

Step I.I Which questions do I want to answer?

Empirical studies on data donation focus on ...

- exposure/pathways to news or political content ([Loecherbach et al., 2024](#); [Wojcieszak et al., 2023](#); [Xuanjun Gong & Richard Huskey, 2023](#))
- social interaction/relationship development ([Brinberg & Ram, 2021](#); [Corten et al., 2025](#); [Virtanen et al., 2021](#))

Step I.1 Which questions do I want to answer?

Research designs include ...

- use of **observational data to describe/explain** (e.g., how platforms shape exposure diversity, often via sequential modeling) ([Loecherbach et al., 2024](#))
- **combination with experimental designs** (e.g., interventions, sock puppet training) ([Yu et al., 2024](#))
- **triangulation with qualitative methods** (e.g., walk-through-interviews) ([Pierce-Grove & Watkins, 2024](#))

Step I.1 Which questions do I want to answer?

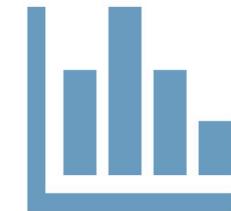
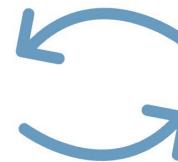
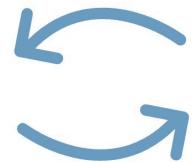
Research designs include ...

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- **combination with experimental designs** (e.g., interventions, sock puppet training) ([Yu et al., 2024](#))
- **triangulation with qualitative methods** (e.g., walk-through-interviews) ([Pierce-Grove & Watkins, 2024](#))

 Causal inference remains a key problem!

 Match between theoretical concepts and measurements remains a key problem!

Step I: Research design & tool set-up



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

3 Modelling

Step I.II: How do I operationalize key variables?

Key questions:

- Which data donation tool do I use? 
- Which variables do I extract? 
- How do I anonymize data? 

Step I.II: Which data donation tool do I use?



Key questions:

- Which data donation tool do I use? A simple icon depicting a computer monitor with a blue screen and a black keyboard positioned below it.
- Which variables do I extract? A purple icon of a magnifying glass with a circular frame.
- How do I anonymize data? A brown icon of a person's head with short hair.

Step I.II: Which data donation tool do I use?



- Participants “upload” data (nothing is send anywhere)
- Local extraction, anonymization, & aggregation
- Users can delete data
- Informed consent, only then: send to researcher server

Step I.II: Which data donation tool do I use?



Choose a tool, e.g., ...

- **Next** ([Boeschoten et al., 2023](#)) (different measurements, different platforms)
- **Data Donation Module** ([Pfiffner et al., 2022](#)) (different measurements, different platforms)
- **Dona** ([Hakobyan et al., 2025](#)) (messaging data, different platforms)
- **WhatsR** ([Kohne & Montag, 2024](#)) (messaging data, WhatsApp)

Step I.II: Which data donation tool do I use?



Choose a tool, e.g., ...

- **Next** ([Boeschoten et al., 2023](#)) (different measurements, different platforms)

The screenshot shows the 'Data donation' interface of the Next tool. On the left, there's a sidebar with a 'Next' logo, navigation links for 'Desktop', 'Projects' (which is selected), and 'To-do' (with a green '0' badge). Below these are 'Projects' (Workshop Vienna), 'Example Workflow', 'Settings' (selected), 'Workflow', 'Monitor', 'Publish', and 'Preview' buttons. The main content area is titled 'Settings' and includes fields for 'Expected number of participants' (set to 50) and 'Language setting for participants' (with English selected). At the bottom, there's a footer with the text 'Data Donation Studies - DGPK RezFo - Valerie Hase'.

Step I.II: Which data donation tool do I use?



Relevant questions include...

- Can I/do I want to change extraction scripts myself? (example: TikTok)
- Can I/do I want to provide my scripts to other researchers?
- Can I/do I have to host data on my own server?

Step I.II: Which data donation tool do I use?



Key questions:

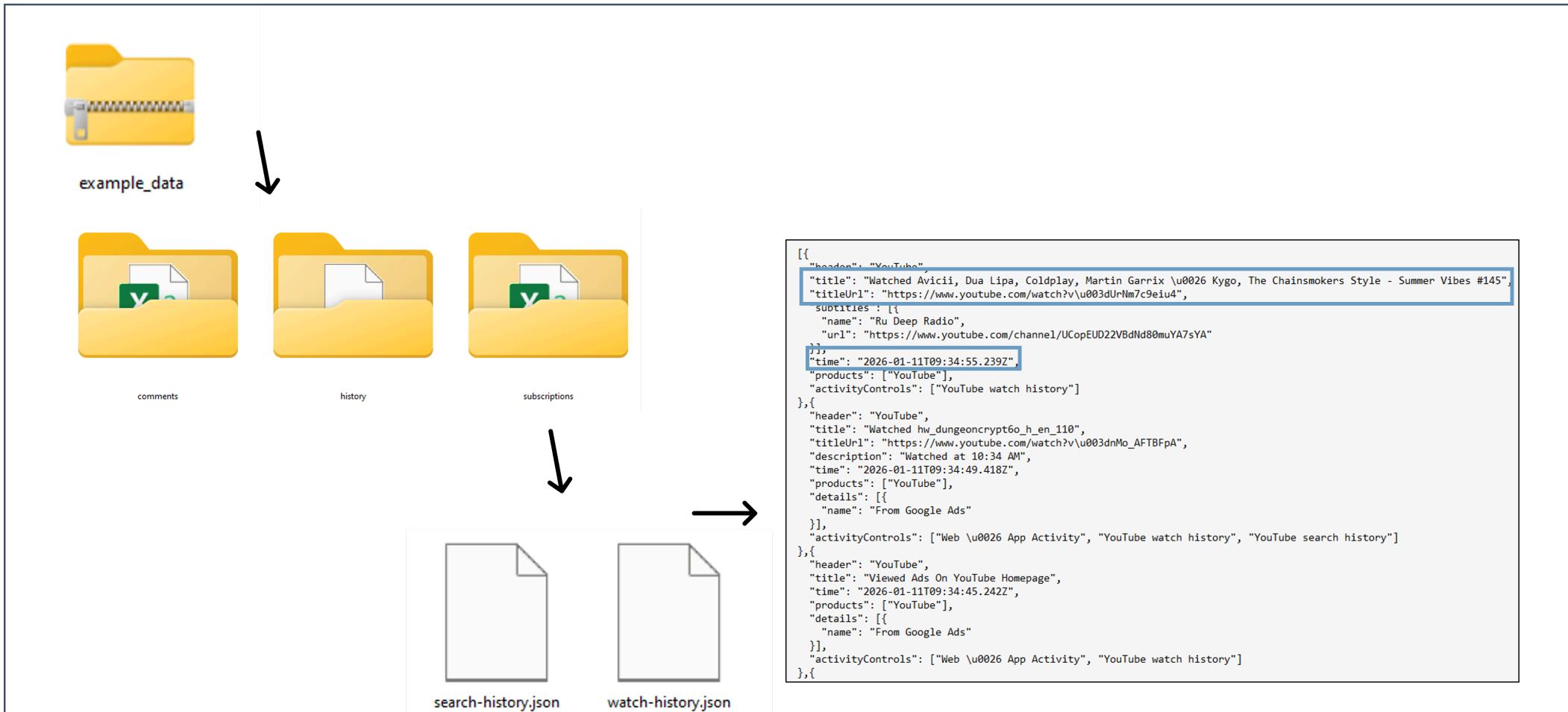
- Which data donation tool do I use? A simple icon of a computer monitor with a blue screen and a keyboard below it.
- Which variables do I extract? A purple icon of a magnifying glass.
- How do I anonymize data? A brown icon of a person's head with a thinking bubble above it.

Step I.II: Which variables do I extract?

Key questions:

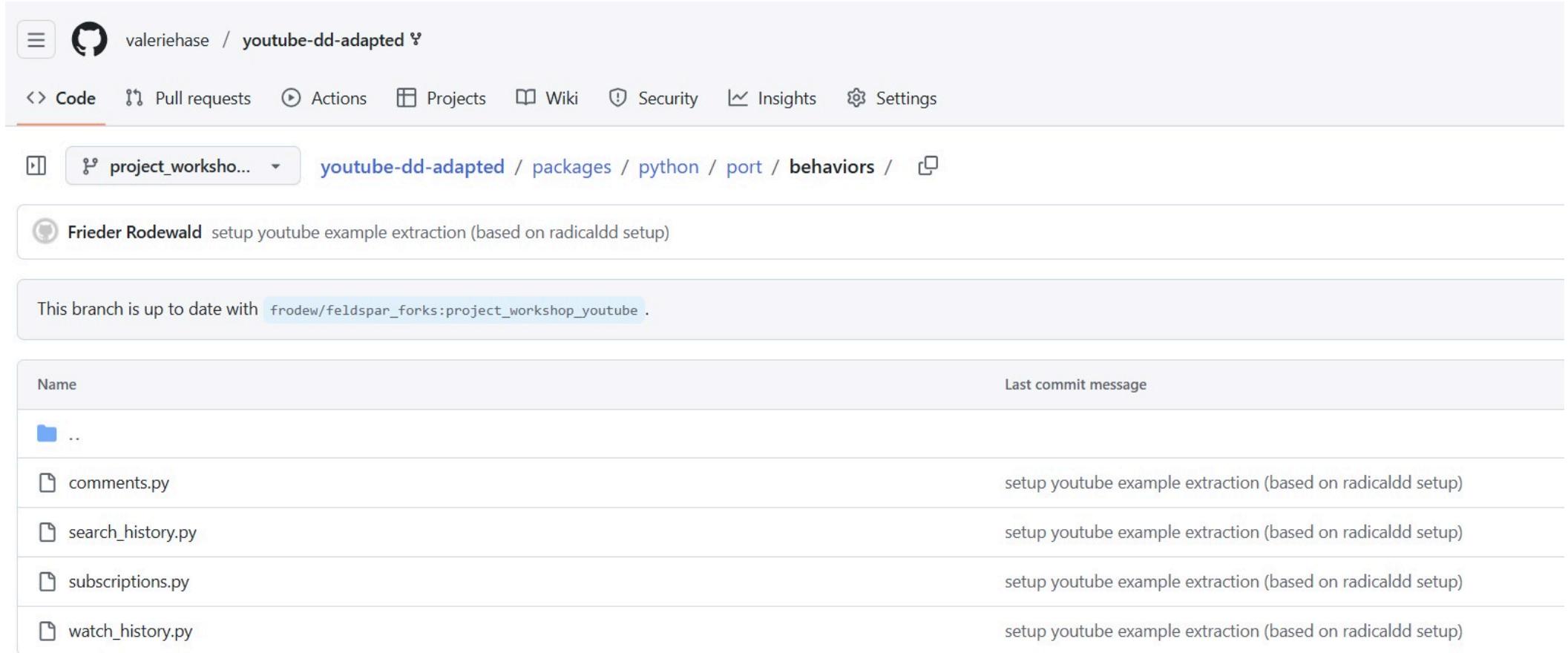
- Which data donation tool do I use? 
- Which variables do I extract? 
- How do I anonymize data? 

Step I.II: Which variables do I extract?



Step I.II: Which variables do I extract?

You can find the following Python code for data extraction [here](#):



The screenshot shows a GitHub repository page for `valeriehase / youtube-dd-adapted`. The `Code` tab is selected. The URL in the address bar is `youtube-dd-adapted / packages / python / port / behaviors / project_workshop... /`. A commit by `Frieder Rodewald` is visible, with the message: "setup youtube example extraction (based on radicaldd setup)". A note below states: "This branch is up to date with `frode/feldspar_forks:project_workshop_youtube`". The repository contains four files: `comments.py`, `search_history.py`, `subscriptions.py`, and `watch_history.py`, all updated by the same commit.

Name	Last commit message
<code>...</code>	
<code>comments.py</code>	setup youtube example extraction (based on radicaldd setup)
<code>search_history.py</code>	setup youtube example extraction (based on radicaldd setup)
<code>subscriptions.py</code>	setup youtube example extraction (based on radicaldd setup)
<code>watch_history.py</code>	setup youtube example extraction (based on radicaldd setup)

Step I.II: Which variables do I extract?

Code

Blame

120 lines (98 loc) · 4.18 KB

```
1  from datetime import datetime
2
3  import pandas as pd
4
5  from port.extraction_helpers import extract_single_file_from_zip
6
7  # Patterns to find the relevant files for this behavior (English and German)
8  patterns = ["history/watch-history", "Verlauf/Wiedergabeverlauf"]
9
10 # Title used in prompt_consent() to describe this behavior
11 title = {
12     "en": "Watch History",
13 }
14
15
16 > def format_timestamp(timestamp_str): ...
17         return timestamp_str
18
19
30 > def extract_watch_history(zip_file_path): ...
120         return df
```

Step I.II: Which variables do I extract?

Key decisions include:

- Which files “count” towards measuring my latent concepts?
- Which meta data do I want to extract? (e.g., time stamps, video IDs)
- Do I include multilingual data?

Step I.II: How do I anonymize data? 🤫

Key questions:

- Which data donation tool do I use? 💻
- Which variables do I extract? 🔎
- How do I anonymize data? 🤫

Step I.II: How do I anonymize data? 🤫

Good anonymization may require...

- Whitelists/dictionaries of social media accounts
 - Database of public speakers, Hans-Bredow-Institute ([Link](#))
 - Database of news media and their social media handles, University of Vienna ([Link](#))
- Local, in-tool classification (e.g., topic modeling)
- Manual annotation (e.g., type of contact)
- Aggregation

Step I.II: How do I anonymize data?



Code Blame 1012 lines (1002 loc) · 40.1 KB

```
1 import typing
2 import re
3 from .genuine import unravel_hierarchical_fields
4
5 fb_list_usernames = [
6     '1LIVE',
7     '12-App',
8     '20 Minuten',
9     '3sat',
10    'Aachener Nachrichten',
11    'Aachener Zeitung',
12    'Aarauer Nachrichten',
13    'Aargauer Zeitung',
14    'Abendzeitung München',
15    'Achgrund.com - Die Achse des Guten',
16    'Achtzig - Die Kulturzeitung',
17    'actu.fr',
18    'Adpunktum',
19    'Advantage Wirtschaftsmagazin',
20    'Aichacher Zeitung',
21    'Aktuell Obwalden',
22    'Alfelder Zeitung',
23    'all-in.de - das Allgäu online.',
24    'Allgäuer Zeitung',
25    'Allgemeine Zeitung',
26    'Allgemeine Zeitung | Coesfeld | Billerbeck | Gescher | Rosendahl | azonline',
```

Figure. Example whitelist

Step I.II: How do I anonymize data?



engagement_timestamp	day	engagement_type	donation_platform	donation_type
2021-12-04 10:37:46	2021-12-04	non-news	Instagram	followed
2021-12-04 05:41:51	2021-12-04	non-news	Instagram	followed
2021-11-30 13:58:03	2021-11-30	non-news	Instagram	followed
2021-11-26 15:11:16	2021-11-26	non-news	Instagram	followed
2021-11-22 22:00:22	2021-11-22	news	Instagram	followed
2021-11-19 15:22:43	2021-11-19	non-news	Instagram	followed
2021-11-08 16:13:18	2021-11-08	news	Instagram	followed
2021-11-07 15:56:43	2021-11-07	non-news	Instagram	followed
2021-11-01 07:25:09	2021-11-01	non-news	Instagram	followed

Figure. Example anonymized data



Anonymized does not mean anonymous!

Unique in the Crowd: The privacy bounds of human mobility

Yves-Alexandre de Montjoye^{1,2}, César A. Hidalgo^{1,3,4}, Michel Verleysen² & Vincent D. Blondel^{2,5}

¹Massachusetts Institute of Technology, Media Lab, 20 Ames Street, Cambridge, MA 02139 USA, ²Université catholique de Louvain, Institute for Information and Communication Technologies, Electronics and Applied Mathematics, Avenue Georges Lemaître 4, B-1348 Louvain-la-Neuve, Belgium, ³Harvard University, Center for International Development, 79 JFK Street, Cambridge, MA 02138, USA, ⁴Instituto de Sistemas Complejos de Valparaíso, Paseo 21 de Mayo, Valparaíso, Chile,

⁵Massachusetts Institute of Technology, Laboratory for Information and Decision Systems, 77 Massachusetts Avenue, Cambridge, MA 02139, USA.

We study fifteen months of human mobility data for one and a half million individuals and find that human mobility traces are highly unique. In fact, in a dataset where the location of an individual is specified hourly, and with a spatial resolution equal to that given by the carrier's antennas, four spatio-temporal points are enough to uniquely identify 95% of the individuals. We coarsen the data spatially and temporally to find a formula for the uniqueness of human mobility traces given their resolution and the available outside information. This formula shows that the uniqueness of mobility traces decays approximately as the 1/10 power of their resolution. Hence, even coarse datasets provide little anonymity. These findings represent fundamental constraints to an individual's privacy and have important implications for the design of frameworks and institutions dedicated to protect the privacy of individuals.

Let's have a look at the technical set-up :

- the platform: <https://github.com/eyra/mono>
- the data donation tool: <https://github.com/eyra/feldspar>

The screenshot shows the Next platform interface. At the top left is a navigation bar with icons for Desktop, Projects (selected), and To-do (with a green notification badge). The main title "Data donation" is displayed prominently in white on a blue header. Below the header, the breadcrumb navigation shows "Projects > Workshop Vienna > Example Workflow". The main content area has tabs for "Settings" (selected), "Workflow", and "Monitor". On the right are "Publish" and "Preview" buttons. The "Settings" section contains fields for "Expected number of participants" (set to 50) and "Language setting for participants" (with English selected). The background features abstract blue and white geometric shapes.

Data donation

Projects > Workshop Vienna > Example Workflow

1 Settings 2 Workflow 3 Monitor

Publish Preview

Settings

Expected number of participants

50

Language setting for participants

English German Italian Dutch

Figure. Next setup



Desktop

Projects

To-do

0

Branding

Use the fields below to customize the header of your participant workflow. Curious to see what this will look like for participants? Click 'Preview' at the top right to check it out.

Title

Workshop: Donate your Data

Subtitle

Logo



[Change logo](#)

Header image



[Change image](#)

Figure. Next setup



About page

Add an about page to onboard and inform your participants or choose 'Skip'.

Show Skip

Privacy page

Adding a privacy statement is optional. When a pdf is uploaded, it will be shown as a separate privacy page. You can add privacy information to the text fields of the information page or the consent form without uploading a pdf or use the Privacy Statement URL available after upload to refer to the uploaded privacy statement.

Upload a privacy statement

Select PDF

Consent form

Use the text field below to write a consent form for your participants. Did your participants already provide consent in some other way? Choose 'Skip'.

Show Skip

Figure. Next setup



Desktop

Projects

To-do

0

Helpdesk page

Use the text field below to inform participants about how to get support when needed. This page will be shown when participants click the 'i' at the right bottom. Check out 'Preview' to see what this will look like. Choose 'Skip' if you are not planning to provide support.

Show Skip

Panel

Connect the panel that you will use for recruiting participants.

Other

Edit Disconnect

Copy the url below and provide it to your contact person at the panel agency. With this url participants can visit your data donation workflow. The parameter 'participant' is the unique identifier for a participant.

<https://next.eyra.co/assignment/335/participate?participant={id}> Copy

Data storage

The data donated by participants is stored on the Next platform.

Figure. Next setup

The screenshot shows the Next platform interface. At the top, there are three navigation tabs: 'Settings' (grey), 'Workflow' (blue, indicating the current page), and 'Monitor'. On the right side, there are two buttons: 'Publish' (green) and 'Preview' (blue). The left sidebar has a 'Next' logo and three menu items: 'Desktop', 'Projects' (which is selected and highlighted in grey), and 'To-do' (with a green notification badge '0'). The main content area is titled 'Workflow' and contains the instruction: 'Add tasks from the library to build a custom workflow for participants.' Below this, a task card for 'Questionnaire' is shown with a green checkmark icon. The card includes fields for 'Task title' (set to 'Questionnaire') and 'Task description' (set to 'Ask participants in a survey here.'). A note above the card says 'Use the arrows to order the tasks'. To the right of the card are a blue downward arrow and a red trash can icon. A large black callout box with white text reads: 'How to set up your questionnaire on Qualtrics?'. To the right of the main workflow area is a 'Library' section with the heading 'Choose which tasks to add to the workflow.' It lists three items: 'Instruction manual (beta)', 'Provide instructions on how to request or download digital trace data by building a manual.', and an 'Add' button; 'Donate', 'Enables participants to donate data.', and an 'Add' button.

1 Settings 2 Workflow 3 Monitor

Publish Preview

Desktop

Projects

To-do 0

Workflow

Add tasks from the library to build a custom workflow for participants.

Use the arrows to order the tasks

Questionnaire ✓

Task title

Task description

Ask participants in a survey here.

How to set up your questionnaire on Qualtrics?

Library

Choose which tasks to add to the workflow.

Instruction manual (beta)

Provide instructions on how to request or download digital trace data by building a manual.

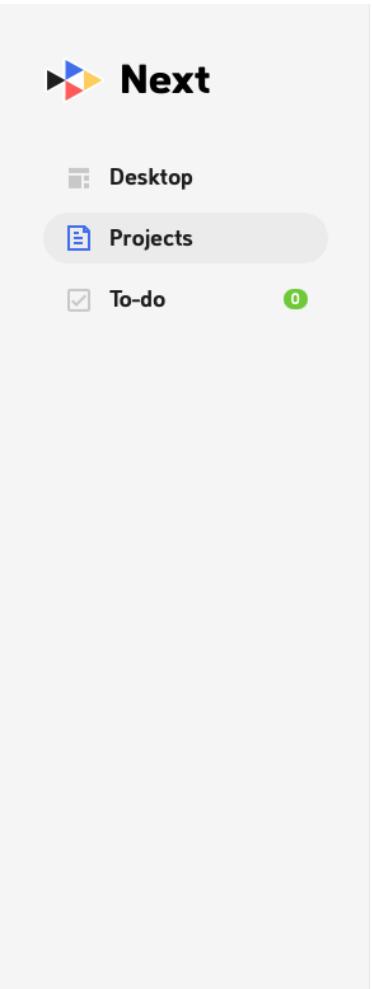
Add

Donate

Enables participants to donate data.

Add

Figure. Next setup



Instruction manual (beta) ✓

Data source

Task title
Manual

Task description
Instruct participants on how to request and download their data.

How to set up participant instructions?

- Create **sections**, so participants can navigate to the relevant section.
- Use section **labels** to specify use cases, like *iPhone* or *Android*.
- Provide multiple brief **instructions** within each section, including relevant **screenshots** for clarity.

Library

Choose which tasks to add to the workflow.

Instruction manual (beta)

Provide instructions on how to request or download digital trace data by building a manual.

Add

Donate

Enables participants to donate data.

Add

Figure. Next setup

The screenshot shows the Next platform interface. On the left, there's a sidebar with a logo and three main categories: Desktop, Projects (which is selected and highlighted in blue), and To-do. The To-do section has a green circular badge with the number '0'. In the center, there's a 'Edit manual' button and a 'Collapse' button. Below these are two cards: 'Donate' and 'Instruction manual (beta)'. The 'Donate' card contains fields for Data source, Task title (Process and inspect your data), Task description (Use your YouTube, Instagram, and/or LinkedIn data.), and Flow application (with a file named feldspar_2025-04-22_2.zip and a 'Replace file' button). There are also collapse and delete icons. To the right, there's a 'Library' section with a heading 'Choose which tasks to add to the workflow.' and a card for 'Instruction manual (beta)' with an 'Add' button. Below it is another 'Donate' card with an 'Add' button.

Next

Desktop

Projects

To-do 0

[Edit manual](#)

[Collapse](#)

Donate

Data source

Task title

Process and inspect your data

Task description

Use your YouTube, Instagram, and/or LinkedIn data.

Flow application

feldspar_2025-04-22_2.zip

[Replace file](#)

[Collapse](#)

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Choose which tasks to add to the workflow.

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[Add](#)

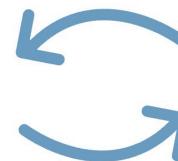
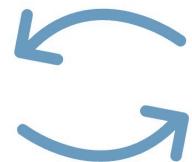
Donate

Enables participants to donate data.

[Add](#)

Figure. Next setup

Step I: Research design & tool set-up



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

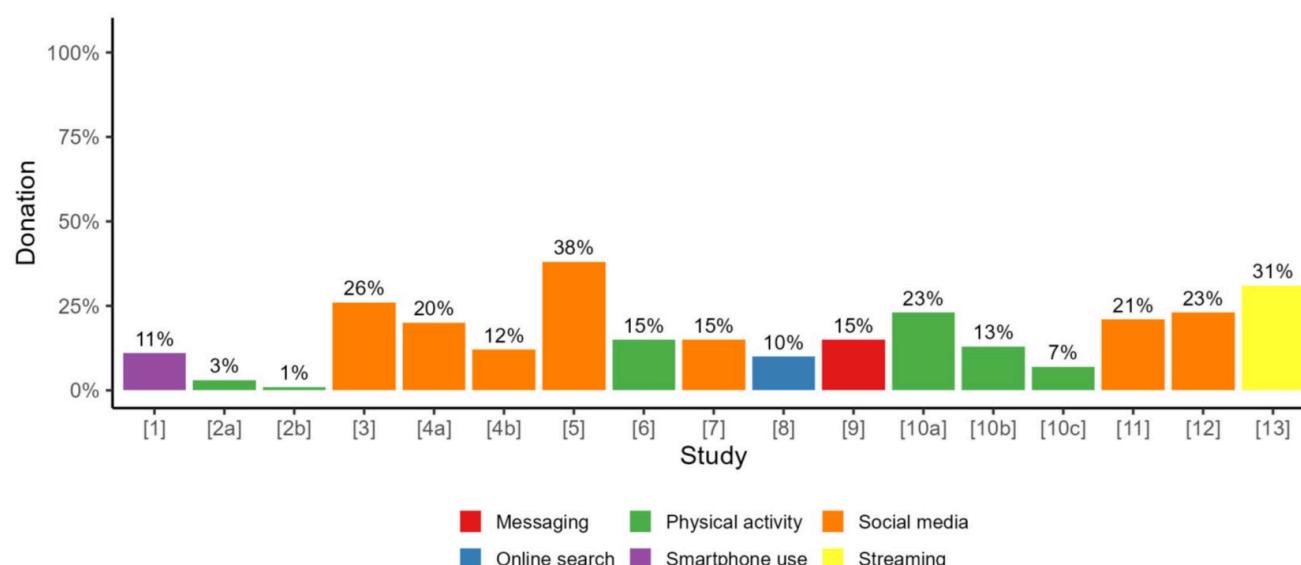
3 Modelling

Step I.III: How do I integrate the tool in surveys & recruit participants?

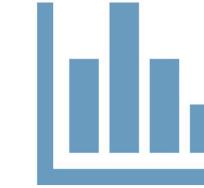
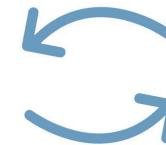
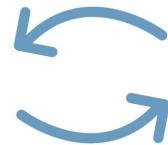
- Use a single platform for survey & data donation
- Think about characteristics of your population, e.g.,
 - Who is using the platform where data should be donated from?
 - Who is willing and able to share their data?
 - Can you incentive participants in a meaningful way?
- ⚠ Often, the main goal will not (or cannot) be to reach a “representative” sample.

Step I.III: How do I integrate the tool in surveys & recruit participants?

- Low response rates (e.g., Hase & Haim, 2024; Keusch et al., 2024)
 - Behavioral intentions as “willingness to donate” high (79-52% of survey respondents)
 - Actual behavior as “participation in data donation” low (38-1% of survey respondents)
 - Well known intention-behavior gap (Kmetty & Stefkovics, 2025)



Step I: Research design & tool set-up



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables via my data donation tool?

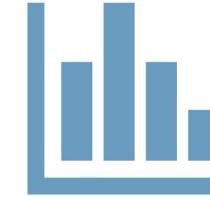
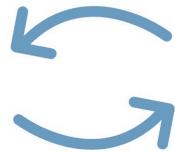
1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

3 Modelling

Figure. Data donation study - researcher perspective

Step II: Data cleaning & augmentation



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

2.1 How do I clean and extend data?

2.2 How do I check for bias?

3 Modelling

Figure. Data donation study - researcher perspective

Step II.I: How do I clean and extend data?

This is how your data may look like:

	id	submission_id	filename	n_deleted	insert_timestamp	update_timestamp	entry
7868	308142	5345	liked_posts.json	0	2022-12-09 10:37:45.458707+00:00	2022-12-09 10:37:45.458714+00:00	{"string_list_data": [{"timestamp":1654035032}], "title": "<user>"}
7869	308143	5345	liked_posts.json	0	2022-12-09 10:37:45.458731+00:00	2022-12-09 10:37:45.458737+00:00	{"string_list_data": [{"timestamp":1654034499}], "title": "<user>"}
7870	308144	5345	liked_posts.json	0	2022-12-09 10:37:45.458754+00:00	2022-12-09 10:37:45.458761+00:00	{"string_list_data": [{"timestamp":1654034341}], "title": "<user>"}
7871	308145	5345	liked_posts.json	0	2022-12-09 10:37:45.458777+00:00	2022-12-09 10:37:45.458784+00:00	{"string_list_data": [{"timestamp":1654020807}], "title": "<user>"}
7872	308146	5345	liked_posts.json	0	2022-12-09 10:37:45.458801+00:00	2022-12-09 10:37:45.458808+00:00	{"string_list_data": [{"timestamp":1654020127}], "title": "<user>"}
7873	308147	5345	liked_posts.json	0	2022-12-09 10:37:45.458824+00:00	2022-12-09 10:37:45.458831+00:00	{"string_list_data": [{"timestamp":1654020057}], "title": "tagesschau"}
7874	308148	5345	liked_posts.json	0	2022-12-09 10:37:45.458847+00:00	2022-12-09 10:37:45.458854+00:00	{"string_list_data": [{"timestamp":1654019851}], "title": "<user>"}
7875	308149	5345	liked_posts.json	0	2022-12-09 10:37:45.458871+00:00	2022-12-09 10:37:45.458878+00:00	{"string_list_data": [{"timestamp":1654019739}], "title": "<user>"}
7876	308150	5345	liked_posts.json	0	2022-12-09 10:37:45.458894+00:00	2022-12-09 10:37:45.458901+00:00	{"string_list_data": [{"timestamp":1654019708}], "title": "<user>"}
7877	308151	5345	liked_posts.json	0	2022-12-09 10:37:45.458918+00:00	2022-12-09 10:37:45.458925+00:00	{"string_list_data": [{"timestamp":1653940335}], "title": "<user>"}
7878	308152	5345	liked_posts.json	0	2022-12-09 10:37:45.458941+00:00	2022-12-09 10:37:45.458948+00:00	{"string_list_data": [{"timestamp":1653938012}], "title": "<user>"}
7879	308153	5345	liked_posts.json	0	2022-12-09 10:37:45.458965+00:00	2022-12-09 10:37:45.458971+00:00	{"string_list_data": [{"timestamp":1653937848}], "title": "<user>"}
7880	308154	5345	liked_posts.json	0	2022-12-09 10:37:45.458988+00:00	2022-12-09 10:37:45.458995+00:00	{"string_list_data": [{"timestamp":1653937307}], "title": "<user>"}
7881	308155	5345	liked_posts.json	0	2022-12-09 10:37:45.459011+00:00	2022-12-09 10:37:45.459018+00:00	{"string_list_data": [{"timestamp":1653808843}], "title": "<user>"}
7882	308156	5345	liked_posts.json	0	2022-12-09 10:37:45.459035+00:00	2022-12-09 10:37:45.459042+00:00	{"string_list_data": [{"timestamp":1653781269}], "title": "<user>"}
7883	308157	5345	liked_posts.json	0	2022-12-09 10:37:45.459058+00:00	2022-12-09 10:37:45.459065+00:00	{"string_list_data": [{"timestamp":1653753711}], "title": "sz"}
7884	308158	5345	liked_posts.json	0	2022-12-09 10:37:45.459082+00:00	2022-12-09 10:37:45.459089+00:00	{"string_list_data": [{"timestamp":1653691455}], "title": "<user>"}
7885	308159	5345	liked_posts.json	0	2022-12-09 10:37:45.459105+00:00	2022-12-09 10:37:45.459112+00:00	{"string_list_data": [{"timestamp":1653674965}], "title": "<user>"}
7886	308160	5345	liked_posts.json	0	2022-12-09 10:37:45.459128+00:00	2022-12-09 10:37:45.459135+00:00	{"string_list_data": [{"timestamp":1653674398}], "title": "<user>"}

Figure. Donated data - example

Step II.I: How do I clean and extend data?

This is how your data may look like:

	id	submission_id	filename	n_deleted	insert_timestamp	update_timestamp	entry
1	708905	9073	Suchverlauf.json	0	2022-12-17 12:43:07.127782+00:00	2022-12-17 12:43:07.127790+00:00	{"title": "Gesucht nach: kinocheck", "titleUrl": "https://www.youtube.com/results?search_query=kinocheck"}
2	1050798	10102	Suchverlauf.json	0	2022-12-20 11:08:43.968028+00:00	2022-12-20 11:08:43.968035+00:00	{"title": "Gesucht nach: anno 1602 denkmal", "titleUrl": "https://www.youtube.com/results?search_query=anno+1602+denkmal"}
3	619493	8665	Suchverlauf.json	0	2022-12-16 21:04:58.414825+00:00	2022-12-16 21:04:58.414832+00:00	{"title": "Gesucht nach: ytitti", "titleUrl": "https://www.youtube.com/results?search_query=ytitti"}
4	938862	9908	Suchverlauf.json	0	2022-12-19 13:26:30.762649+00:00	2022-12-19 13:26:30.762657+00:00	{"title": "Coop Erbjudande v6 angesehen", "titleUrl": "https://www.youtube.com/watch?v=qI1goWZD8nQ"}
5	1289477	10178	Suchverlauf.json	0	2022-12-28 15:33:30.872355+00:00	2022-12-28 15:33:30.872362+00:00	{"title": "The spring collection angesehen", "titleUrl": "https://www.youtube.com/watch?v=f49A9iB1hA"}

Figure. Donated data - example

Step II.I: How do I clean and extend data?

Often, we need to further preprocess collected data through...

- Manual annotation (by participants or researchers)
- APIs/scraping to extend collected data
- Text-as-data methods

Task 5: Classify search terms

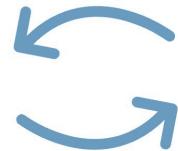
Download the “Data for Task 5” from the website. It contains YouTube searches from a German social media sample. Either discuss this conceptually or try this in R/Python.....

1. How you would clean the data?
2. How you would identify health-related searches using manual or automated coding?

external_submission_id	search_query	donation_platform
3862	https://www.youtube.com/results?search_query=theorien+d...	YouTube
3862	https://www.youtube.com/results?search_query=Gero+hesse	YouTube
3862	https://www.youtube.com/results?search_query=macarons	YouTube
3862	https://www.youtube.com/results?search_query=Weihnacht...	YouTube
3862	https://www.youtube.com/results?search_query=sallys+welt...	YouTube
9296	https://www.youtube.com/results?search_query=reitmaier	YouTube
9296	https://www.youtube.com/results?search_query=zotero+ma...	YouTube
9296	https://www.youtube.com/results?search_query=einfach+inka	YouTube
9296	https://www.youtube.com/results?search_query=tissot+197...	YouTube
9296	https://www.youtube.com/results?search_query=Druck	YouTube
9272	https://www.youtube.com/results?search_query=der+pate+...	YouTube

Figure. Donated data - example

Step II: Data cleaning & augmentation



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

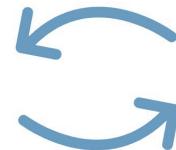
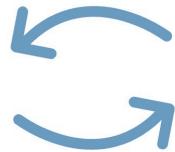
2.1 How do I clean and extend data?

2.2 How do I check for bias?

3 Modelling

Figure. Data donation study - researcher perspective

Step II: Data cleaning & augmentation



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

2.1 How do I clean and extend data?

2.2 How do I check for bias?

3 Modelling

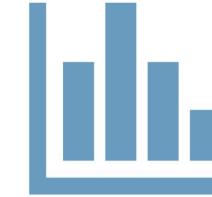
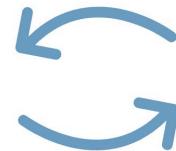
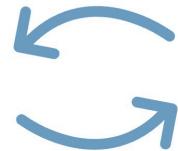
Figure. Data donation study - researcher perspective

Step II.II: How do I check for bias?

- Errors in representation and measurements
 - based on systematic drop-out ([Pak et al., 2022](#))
 - based on systematic misclassification of digital traces ([TeBlunthuis et al., 2024](#))

 You know the drill: We will talk about this in session .

Step III: Modelling



1 Research Design & Tool Set-Up

1.1 Which theoretical questions do I want to answer?

1.2 How do I operationalize key variables?

1.3 How do I integrate the tool in surveys & recruit participants?

2 Data Cleaning & Augmentation

2.1 How do I clean and extend data?

2.2 How do I check for bias?

3 Modelling

3. How do I analyze results?

Figure. Data donation study - researcher perspective

Step III.I: How do I analyze results?

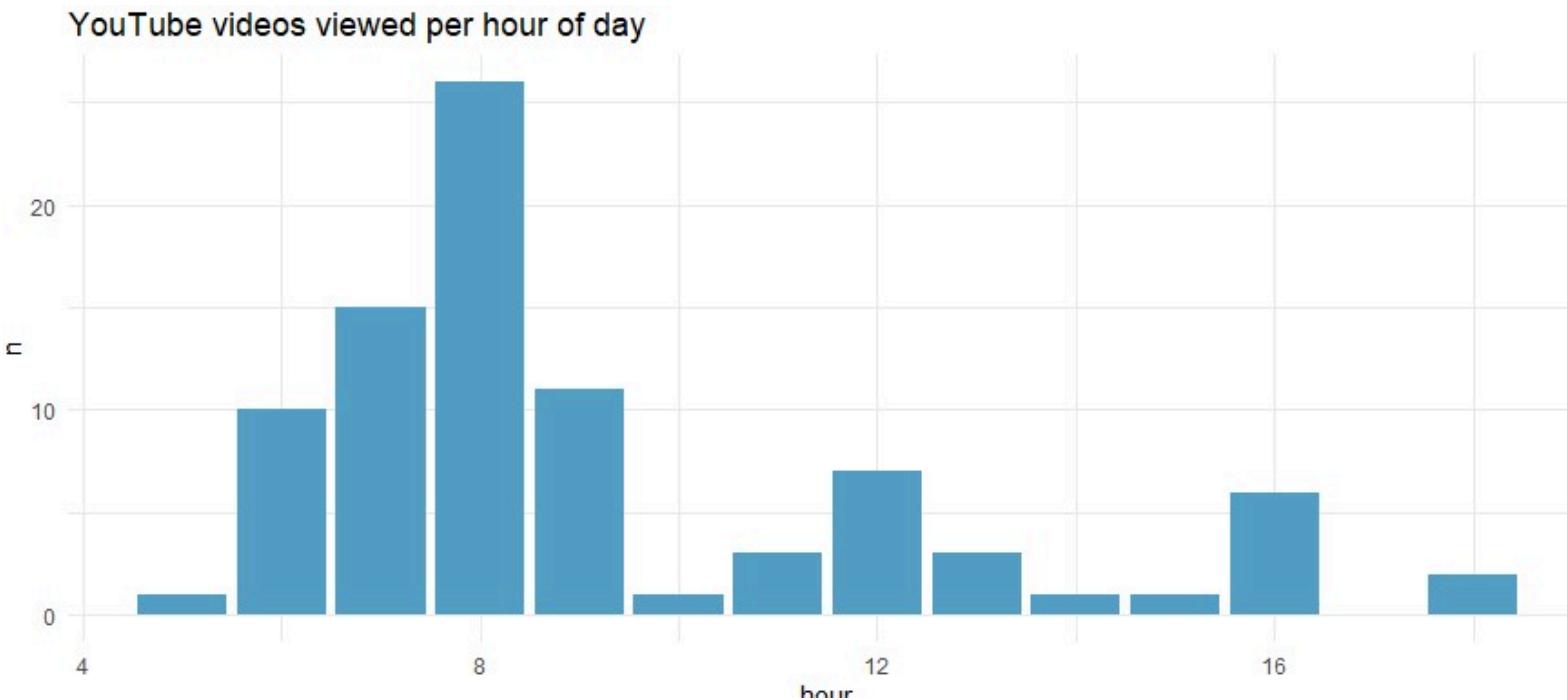
For inferential modeling, consider ([Clemm Von Hohenberg et al., 2024](#))....

- Creating indices from different metrics (e.g., liking, sharing, or commenting) and testing their consistency
- Accounting for missing data (units, measures)
- Skewed data (e.g., zero-inflation) and non-linear relationships
- Hierarchical structure (nested in participants, metrics, platforms) and within/between variance
- Advanced longitudinal approaches (e.g., with respect to sequences, feedback loops and causal inference)

📢 Task 6: Example Analysis of YouTube Watch history

Download the “Data for Task 6” from the website or use your own YouTube watch history. Also, load the respective R-code. Run the code (you just have to change the location and name of your data).

1. On which day do you mostly watch YouTube?
2. At what time do you mostly watch YouTube?



The idea for this code and analysis was provided by [Michael Scharkow, University of Mainz](#).

Summary: Researcher perspective



- **Summary:** Key steps include...
 1. Research design & tool set-up
 2. Data cleaning & augmentation
 3. Modelling
- **Further literature:**
 - Boeschoten et al. (2022)
 - Carrière et al. (2024)

Questions?



References

- Boeschoten, L., Mendrik, A., Van Der Veen, E., Vloothuis, J., Hu, H., Voorvaart, R., & Oberski, D. L. (2022). Privacy-preserving local analysis of digital trace data: A proof-of-concept. *Patterns*, 3(3), 100444.
<https://doi.org/10.1016/j.patter.2022.100444>
- Boeschoten, L., Schipper, N. C. de, Mendrik, A. M., Veen, E. van der, Struminskaya, B., Janssen, H., & Araujo, T. (2023). Port: A software tool for digital data donation. *Journal of Open Source Software*, 8(90), 5596.
- Brinberg, M., & Ram, N. (2021). Do New Romantic Couples Use More Similar Language Over Time? Evidence from Intensive Longitudinal Text Messages. *Journal of Communication*, 71(3), 454–477.
<https://doi.org/10.1093/joc/jqab012>
- Carrière, T. C., Boeschoten, L., Struminskaya, B., Janssen, H. L., De Schipper, N. C., & Araujo, T. (2024). Best practices for studies using digital data donation. *Quality & Quantity*. <https://doi.org/10.1007/s11135-024-01983-x>
- Clemm Von Hohenberg, B., Stier, S., Cardenal, A. S., Guess, A. M., Menchen-Trevino, E., & Wojcieszak, M. (2024). Analysis of Web Browsing Data: A Guide. *Social Science Computer Review*, 42(6), 1479–1504.
<https://doi.org/10.1177/08944393241227868>
- Corten, R., Boeschoten, L., Carrière, T., Jongerius, S., Struminskaya, B., Mulder, J., Zahedi, P., Nadi Najafabadi, S., & Mendrik, A. (2025). Assessing mobile instant messenger networks with donated data. *Social Network Analysis and Mining*. <https://doi.org/10.1007/s13278-025-01550-8>

- Hakobyan, O., Hillmann, P.-J., Martin, F., Böttinger, E., & Drimalla, H. (2025). Development and evaluation of Dona, a privacy-preserving donation platform for messaging data from WhatsApp, Facebook, and Instagram. *Behavior Research Methods*, 57(3), 94. <https://doi.org/10.3758/s13428-024-02593-z>
- Hase, V., & Haim, M. (2024). Can We Get Rid of Bias? Mitigating Systematic Error in Data Donation Studies through Survey Design Strategies. *Computational Communication Research*, 6(2), 1.
<https://doi.org/10.5117/CCR2024.2.2.HASE>
- Keusch, F., Pankowska, P. K., Cernat, A., & Bach, R. L. (2024). Do You Have Two Minutes to Talk about Your Data? Willingness to Participate and Nonparticipation Bias in Facebook Data Donation. *Field Methods*, 36(4), 279–293.
<https://doi.org/10.1177/1525822X231225907>
- Kmetty, Z., & Stefkovics, Á. (2025). Validating a willingness to share measure of a vignette experiment using real-world behavioral data. *Scientific Reports*, 15(1), 9319. <https://doi.org/10.1038/s41598-025-92349-2>
- Kohne, J., & Montag, C. (2024). ChatDashboard: A Framework to collect, link, and process donated WhatsApp Chat Log Data. *Behavior Research Methods*, 56(4), 3658–3684.
- Loecherbach, F., Moeller, J., Trilling, D., & Van Atteveldt, W. (2024). What is news? Mapping the diversity of news experiences in digital trace data. *Journalism*, 14648849241303115.
<https://doi.org/10.1177/14648849241303115>
- Pak, C., Cotter, K., & Thorson, K. (2022). Correcting Sample Selection Bias of Historical Digital Trace Data: Inverse Probability Weighting (IPW) and Type II Tobit Model. *Communication Methods and Measures*, 16(2), 134–155.
<https://doi.org/10.1080/19312458.2022.2037537>
- Pfiffner, N., Witlox, P., & Friemel, T. N. (2022). *Data Donation Module*. <https://github.com/uzh/ddm>

- Pierce-Grove, R., & Watkins, E. A. (2024). Integrating trace data into interviews: Better interviews, better data. *Convergence: The International Journal of Research into New Media Technologies*, 30(6), 2059–2074.
<https://doi.org/10.1177/13548565241300897>
- TeBlunthuis, N., Hase, V., & Chan, C.-H. (2024). Misclassification in Automated Content Analysis Causes Bias in Regression. Can We Fix It? Yes We Can! *Communication Methods and Measures*, 18(3), 278–299.
<https://doi.org/10.1080/19312458.2023.2293713>
- Virtanen, M. T., Vepsäläinen, H., & Koivisto, A. (2021). Managing several simultaneous lines of talk in Finnish multi-party mobile messaging. *Discourse, Context & Media*, 39, 100460.
<https://doi.org/10.1016/j.dcm.2020.100460>
- Wojcieszak, M., Chang, R.-C. (Anna)., & Menchen-Trevino, E. (2023). Political content and news are polarized but other content is not in YouTube watch histories. *Journal of Quantitative Description: Digital Media*, 3.
<https://doi.org/10.51685/jqd.2023.018>
- Xuanjun Gong, & Richard Huskey. (2023). Media selection is highly predictable, in principle. *Computational Communication Research*, 5(1), 1. <https://doi.org/10.5117/CCR2023.1.15.GONG>
- Yu, X., Haroon, M., Menchen-Trevino, E., & Wojcieszak, M. (2024). Nudging recommendation algorithms increases news consumption and diversity on YouTube. *PNAS Nexus*, 3(12), pgae518.
<https://doi.org/10.1093/pnasnexus/pgae518>