UNIVERSITY OF MANNHEIM
School of Social Sciences

Collecting Digital Trace Data via Data Donation

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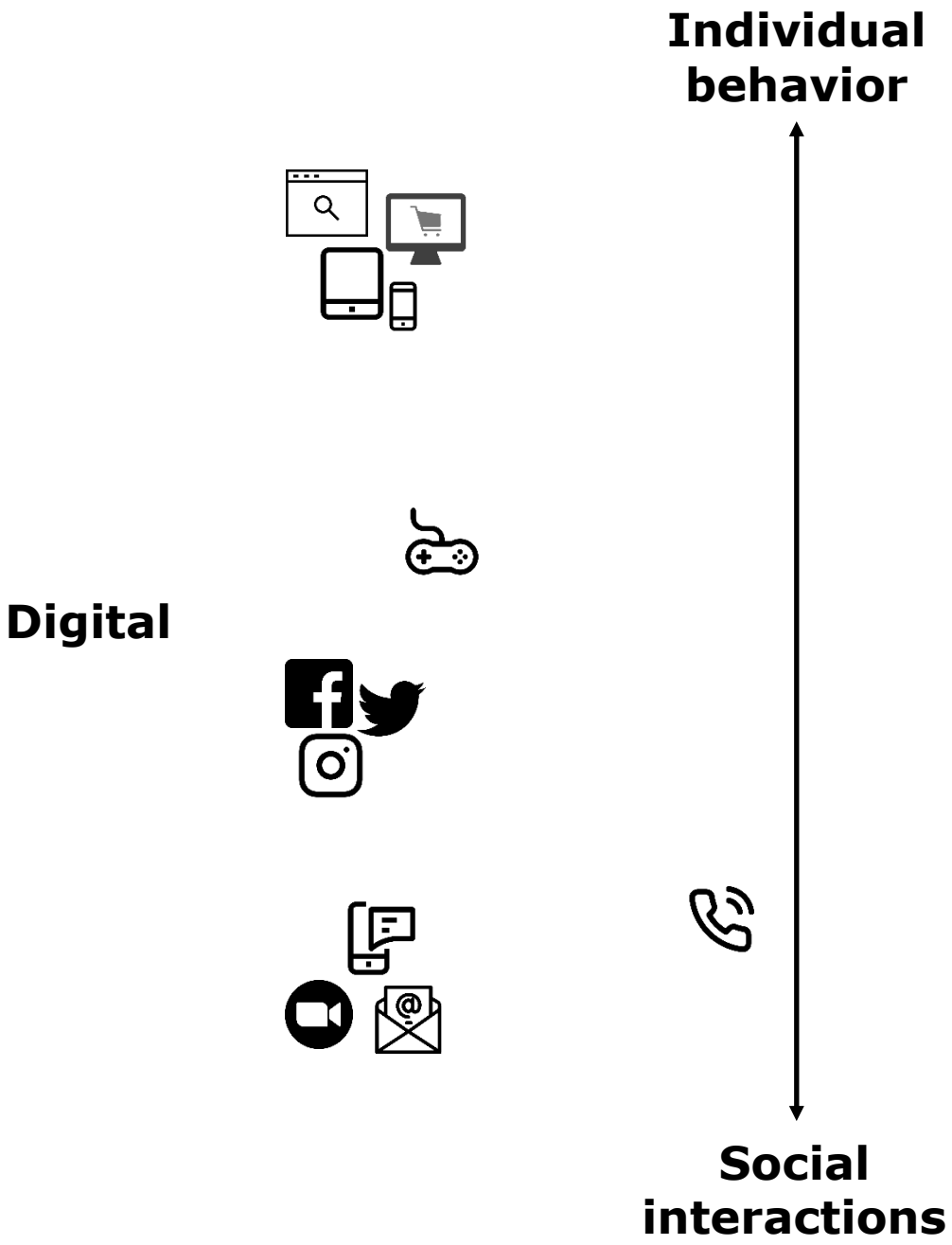
What Are Digital Traces?

"Records of activity (trace data) undertaken through an online information system (thus, digital)"
(Howison et al. 2011:769)

"Behavioral residue [individuals leave] when they interact online"
(Hinds & Joinson 2018:2)



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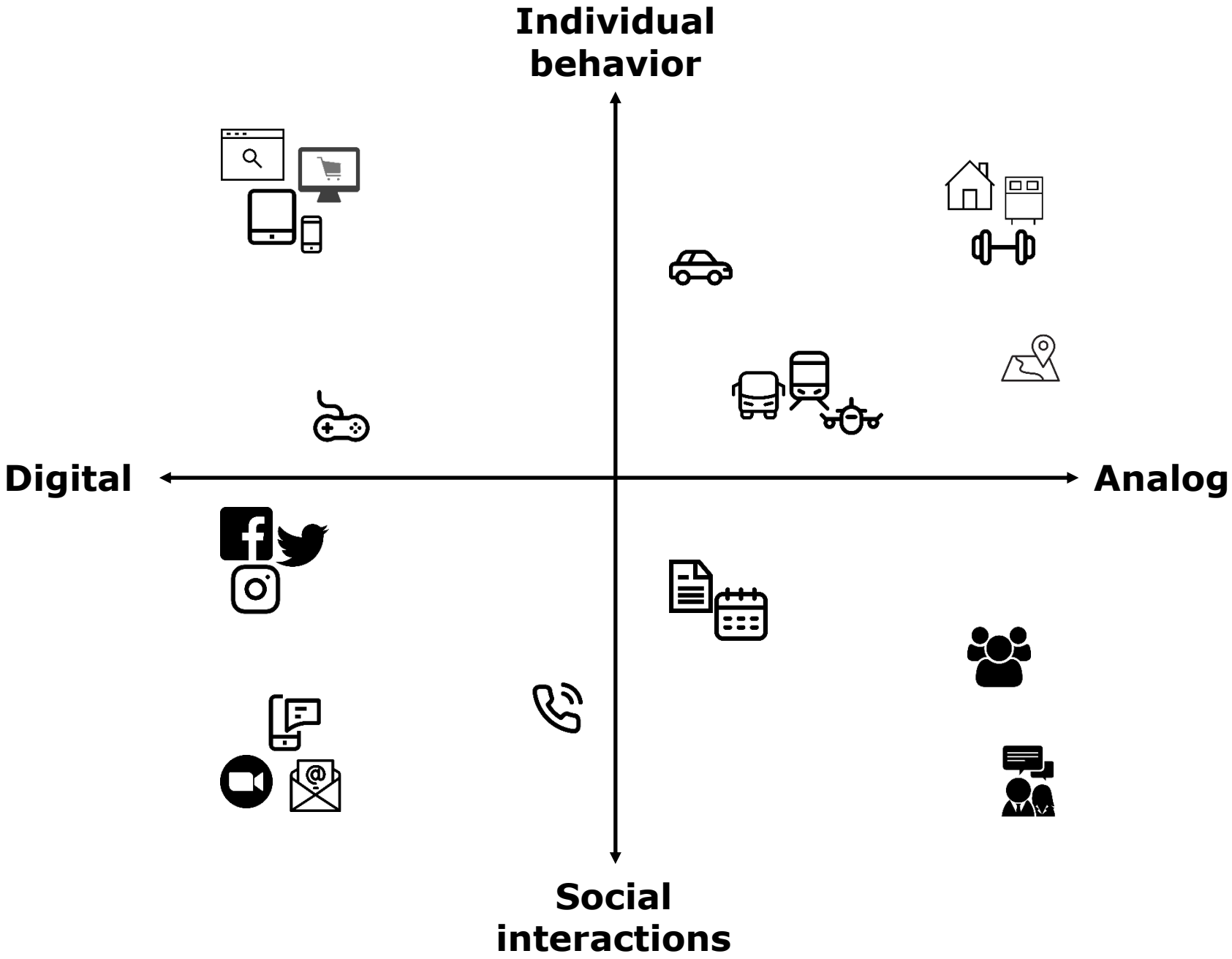

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Benefits of Digital Trace Data

- Allow measurement of behavior (in-the-moment) at high frequency
  - Evaluation of moment-to-moment changes
  - Without increasing burden on participants
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- Measurement is nonreactive, i.e., without direct solicitation of subject studied
  - Digital trace data should be unaffected by measurement itself
  - Reduced measurement error when measuring…
    - smartphone use (Kobayashi & Boase 2012; Boase & Ling 2013; Andrews, et al. 2015; De Reuver & Bouwman 2015; Revilla et al. 2017; Jones-Jang et al. 2020)
    - online media consumption (Araujo et al. 2017; Haenschen 2020; Revilla et al. 2017; Scharkow 2016)
    - mobility (Stopher et al. 2007; Scherpenzeel 2017)

How to Collect Individual-Level Digital Traces

- Use APIs

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Meta

An Update on Our Plans to Restrict Data Access on Facebook

April 4, 2018

Chesnot / Getty Images

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FEATURE

Reddit pricing: API charge explained

Providing a free API was becoming costly for Reddit. Enterprise-scale developers now have to pay for access to Reddit's data.

By Ben Lutkevich, Technical Features Writer Published: 11 Jul 2023

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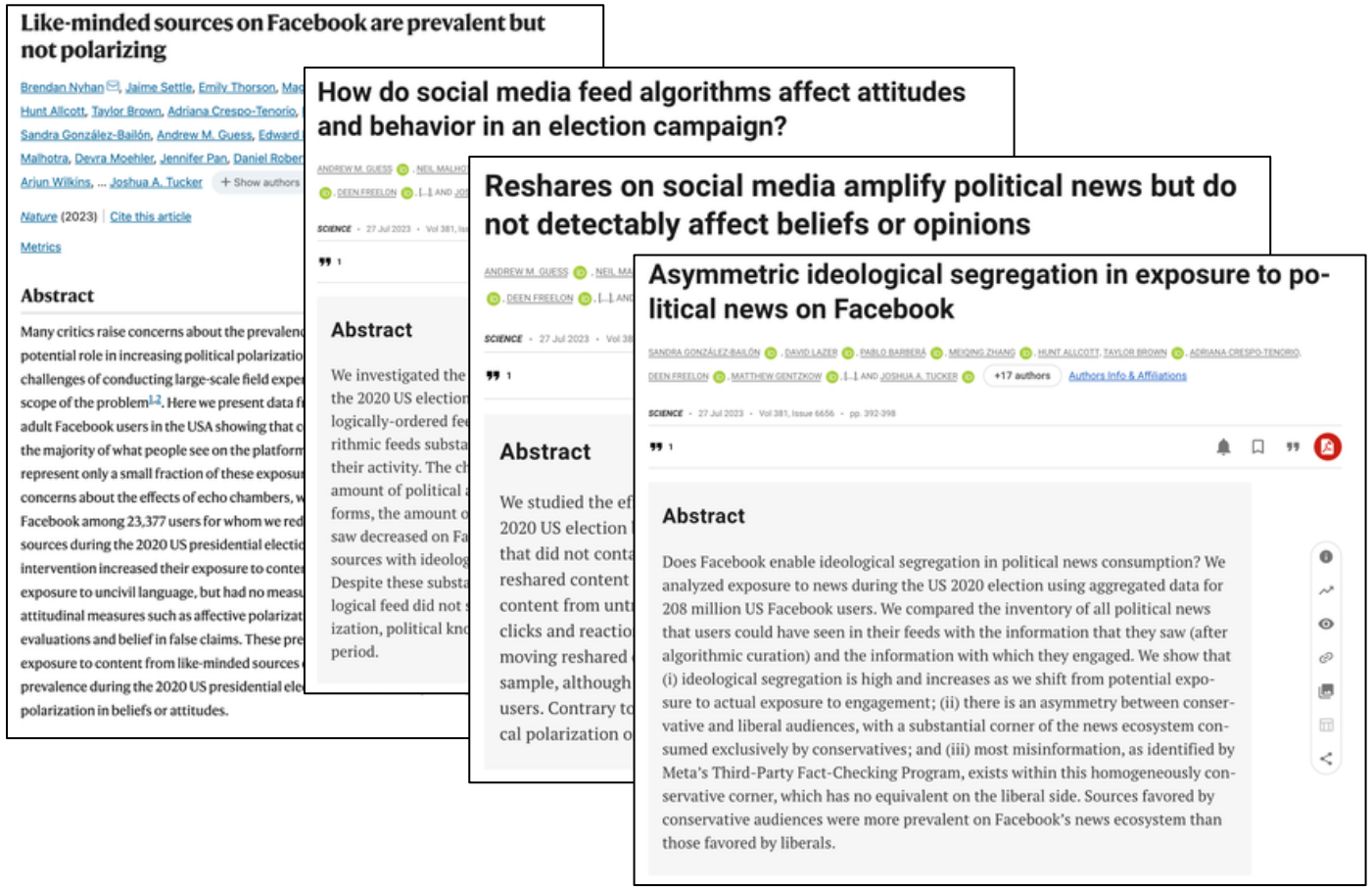
How to Collect Individual-Level Digital Traces

- Use APIs
- Collaborate with industry



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Advantages

+ Access to fine-grained, prospective data
+ Relatively easy to combine with self-reports (Keusch & Conrad 2023)
  - e.g., EMAs

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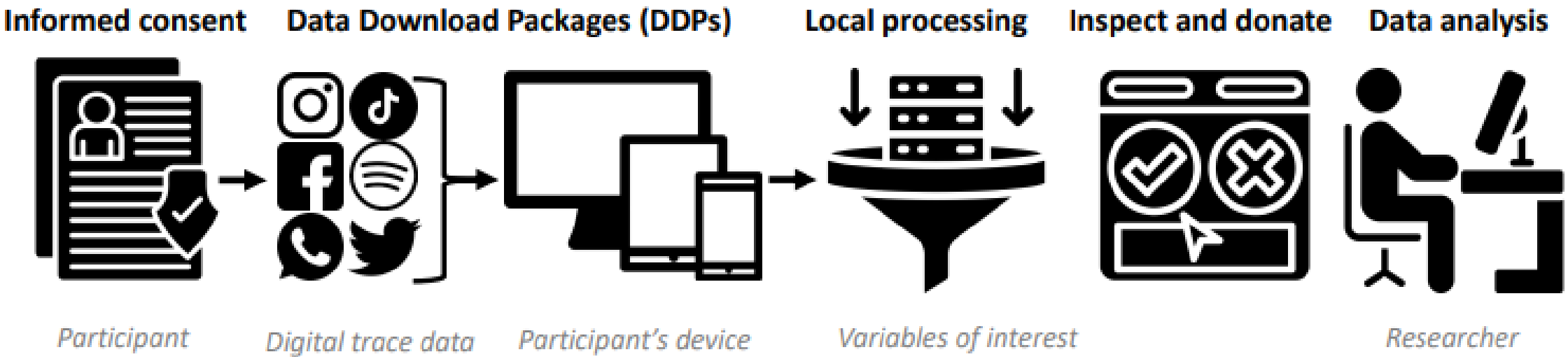
Challenges

- Coverage & nonparticipation (Bosch et al. 2024; Keusch et al. 2022, 2023)
- Ethics & privacy concerns (Keusch et al. 2019; Revilla et al. 2019; Struminskaya et al. 2020, 2021; Wenz et al. 2019; Wenz & Keusch 2023)
- Missing data (Bähr et al. 2022)
- Analytical challenges

How to Collect Individual-Level Digital Traces

- Use APIs
- Collaborate with industry
- Have users install meters and apps
- Ask users to "donate" data
  - Takes advantage of legislation such as GDPR Articles 15 (*Right of access by the data subject*) and 20 (*Right to data portability*)
    - See also California Consumer Privacy Act (CCPA)

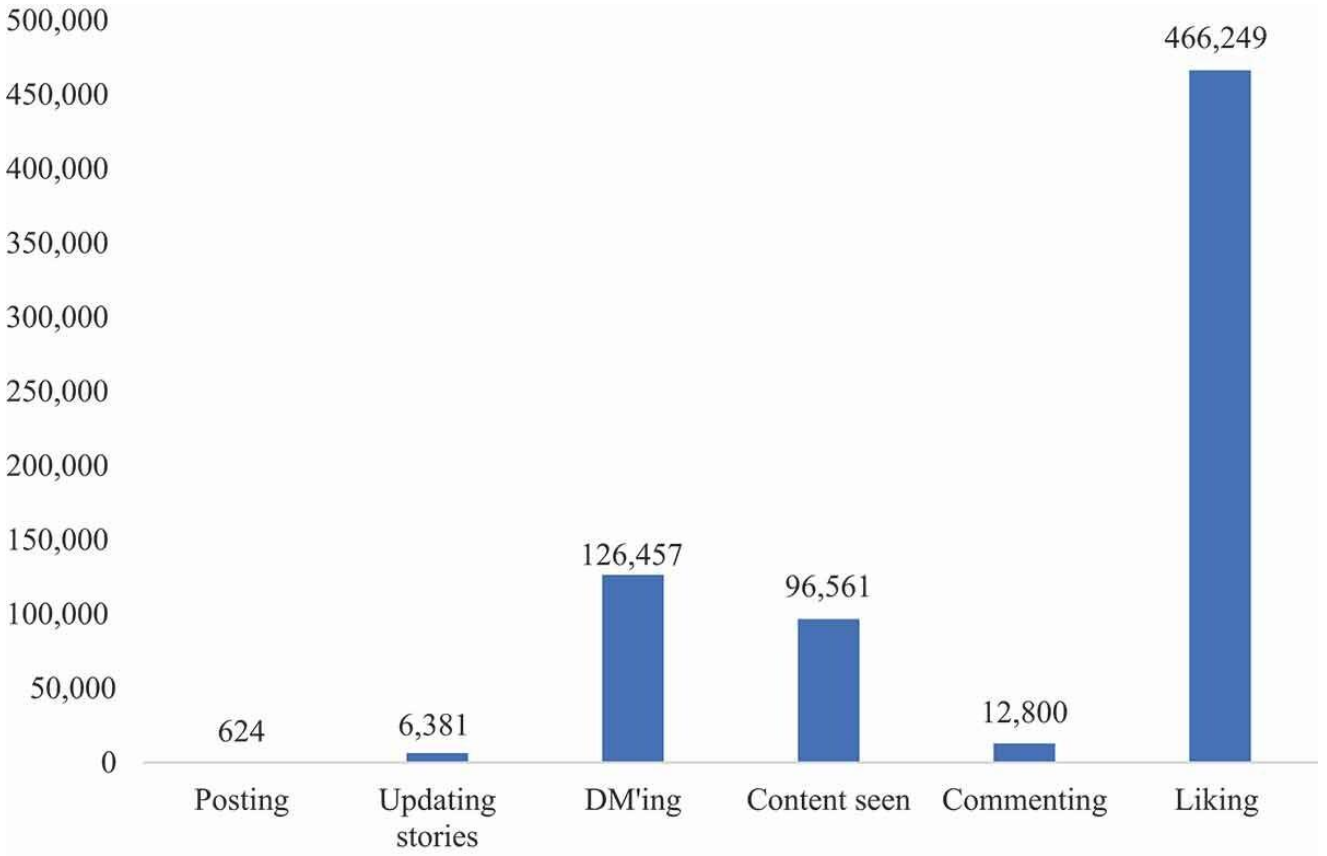
Privacy-preserving Data Donation Platforms



Boeschoten et al. (2023)

Example Studies

- Instagram activities among 8th and 9th graders (van Driel et al. 2022)



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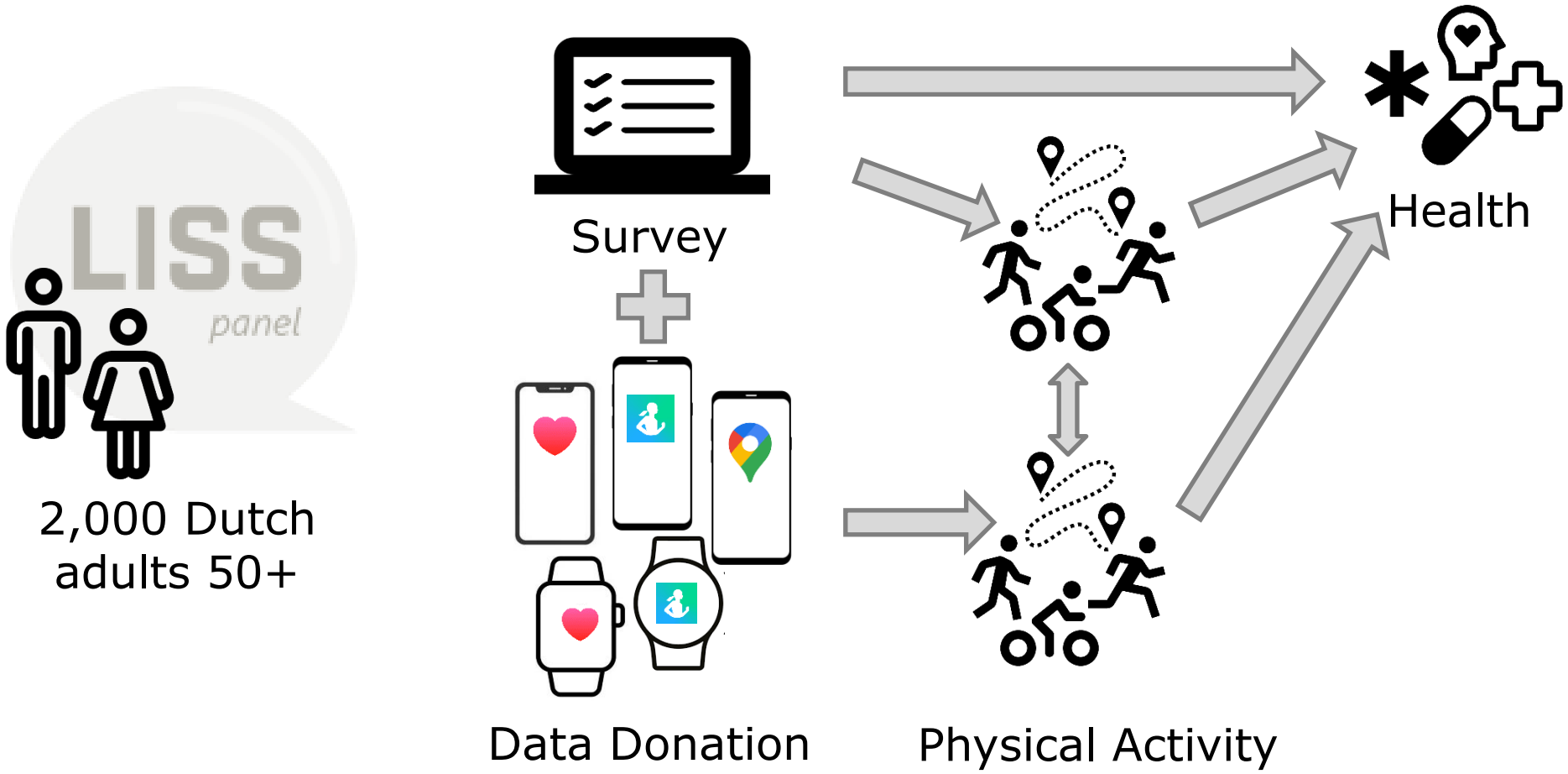
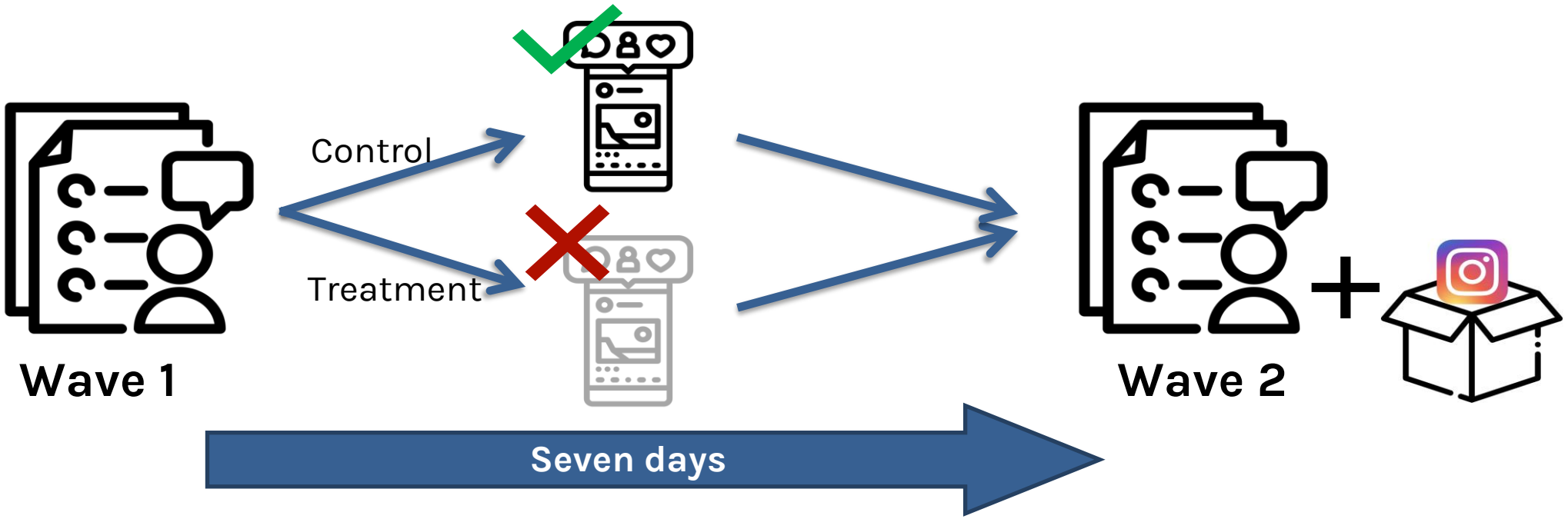


Example Studies

- Instagram activities among 8th and 9th graders (Driel et al. 2022)
- Physical activity of older adults (Keusch & Struminskaya in preparation)
- Effect of Instagram abstinence on body image (Szafran et al. in preparation)



Data Donation

Advantages

+ Allows access to digital trace data that cannot be collected otherwise
  - e.g., https://www.facebook.com/dyi

+ Works for large range of platforms
  - WhatsApp, Facebook, Instagram, Google, LinkedIn, YouTube, Netflix, Apple Health, Fitbit,…

+ User retains full control over what data are donated

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Challenges

- Data donation process rather cumbersome for users (consent, data download, data upload)

- Technical skills needed to participate

What Do We Know So Far?

- Users report relativly high willingness to donate data (30-75%)
  (Hase & Haim 2024; Keusch et al. 2024; Ohme et al. 2021; Pfiffner and Friemel 2023; Silber et al. 2022; van Driel et al. 2022)
  - Main reason for not being willing: privacy concerns (Keusch et al. 2024)

- Large share (up to 50%) drop out during data donation process
  (Hase & Haim 2024; Keusch et al. 2024; Ohme et al. 2021; Silber et al. 2022; van Driel et al. 2022)
  - Cumbersome process that requires some technical skills

- So far, few studies have assessed nonparticipation bias
  - Some evidence for higher social media use (Hase & Haim 2024; but not Keusch et al. 2024), political interest (Hase & Haim 2024), and "healthy donor" bias (Keusch et al. 2024)

Potential Developments for Methodological Research on Data Donation

- Communicate idea of data donation to participants
  - e.g., stressing data privacy advantages for participants
- Effective integration of data donation into survey infrastructure
  - At what point to ask for donation, how to frame, how to incentivize
- Platforms/data controllers keep changing structure of and access to DDPs (Hase et al. 2024)
  - Constant monitoring (by researchers) and/or standardization (by legislators)
- Unpacking full potential of digital trace data
  - In combination with self-reports, e.g., measurement models (Cernat et al. 2024)

Thank You!

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