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Diagnosing Disease with Shopping Data

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Supervisory team:

- James Goulding, NLAB
- Laila Tata, Epidemiology
- Alexandra Lang, Human Factors

The aim of my PhD is to create a framework for using shopping data in medical research by investigating the issues surrounding the use of an individual's personal transactional data in public health research projects.

Research Question

How can personal transactional data be collected and analysed for the purposes of health research in (1) a way that is acceptable to society, and (2) works for infectious and chronic disease?

METHODOLOGY

Mixed methods collecting and analysing both qualitative data, and quantitative data for integrated interpretation:

CHRONIC DISEASE: Ovarian and bowel cancer

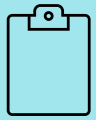
INFECTIOUS DISEASE: Respiratory deaths and COVID-19

***Study 1**: Public acceptability*

- Study – Interviews with the general public on sharing loyalty card data for health research into ovarian / bowel cancer and covid-19.

***Study 2**: Domain knowledge, and Patient and Public Involvement*

ovacome ovarian cancer

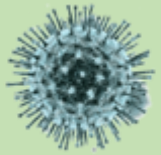


- **Study 2** – Survey on ovarian cancer diagnosis and shopping habits to assess potential of loyalty card data in health research using Machine Learning

Mixed methods to create:
A framework for using shopping data in medical research

***Study 3**: Nationwide longitudinal shopping data to investigate Public Health*

NHS X

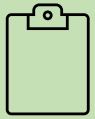


- **Study 3** – Machine learning analysis of national transactional data to investigate respiratory deaths and COVID 19 in the UK population.

- **Study 4** – Collection, and analysis of individual loyalty card data linked with participant health data to investigate:

Boots advantage card

a) ovarian cancer



b) COVID 19.

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Donating personal transactional data for research:

Investigating the public acceptability of using commercial transactional data in public health research

https://www.turing.ac.uk/research/research-projects/donating-personal-transactional-data-research

The PhD is connected to a wider project by partners: ALSPAC, Bristol University www.bristol.ac.uk/alspac/ and the Alan Turing Institute

Engineering and Physical Sciences Research Council

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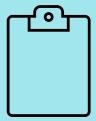

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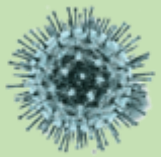

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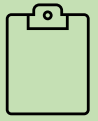

b) COVID 19.

Digital Footprints Lab

http://digifootprints.co.uk/research/

"A multidisciplinary team using digital footprint data to understand people's behaviour and health, based at the Population Health Sciences, Bristol Medical School, University of Bristol. Currently we are focusing on transaction data, specifically loyalty and banking cards, and working on realising the value of using these data to improve population health."

Current Lab Members

Anya Skatova

Neo Poon

Elizabeth Dolan

Torty Sivill

Sean Devine

Past members

Alastair Tanner

Joel Dyer

Kate Shiells

Steve Evans

Finbar Rhodes

Edward Sloan

Linking longitudinal health data to digital footprints

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BMC Medical Ethics

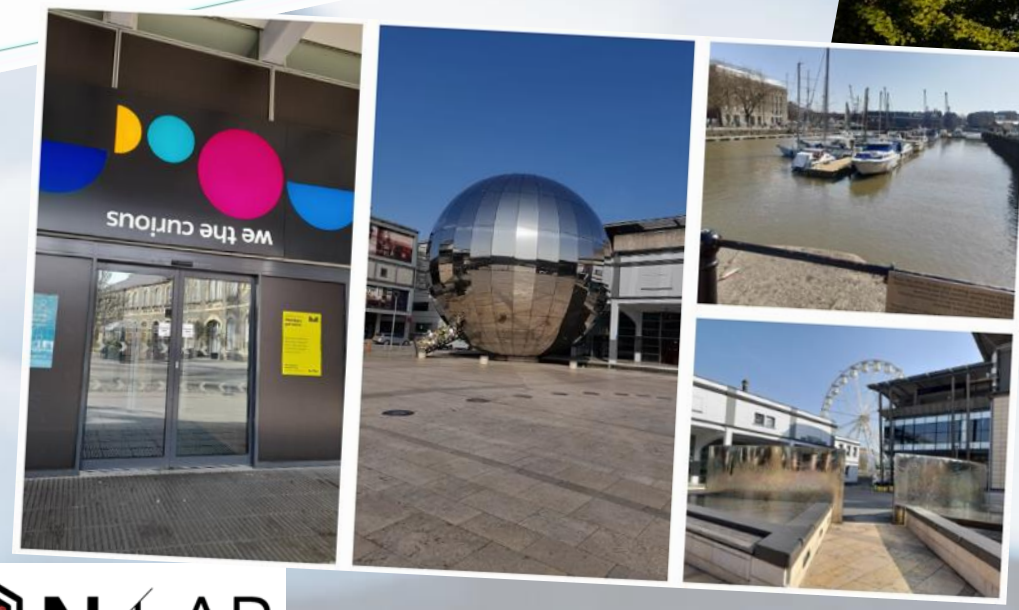
Dolan et al. BMC Medical Ethics (2022) 23:58
https://doi.org/10.1186/s12910-022-00795-8

Open Access

RESEARCH

Public attitudes towards sharing loyalty card data for academic health research: a qualitative study

Elizabeth H. Dolan[1*†], Kate Shiells[2,3,4†], James Goulding[1] and Anya Skatova[2,3,4]



University of Nottingham
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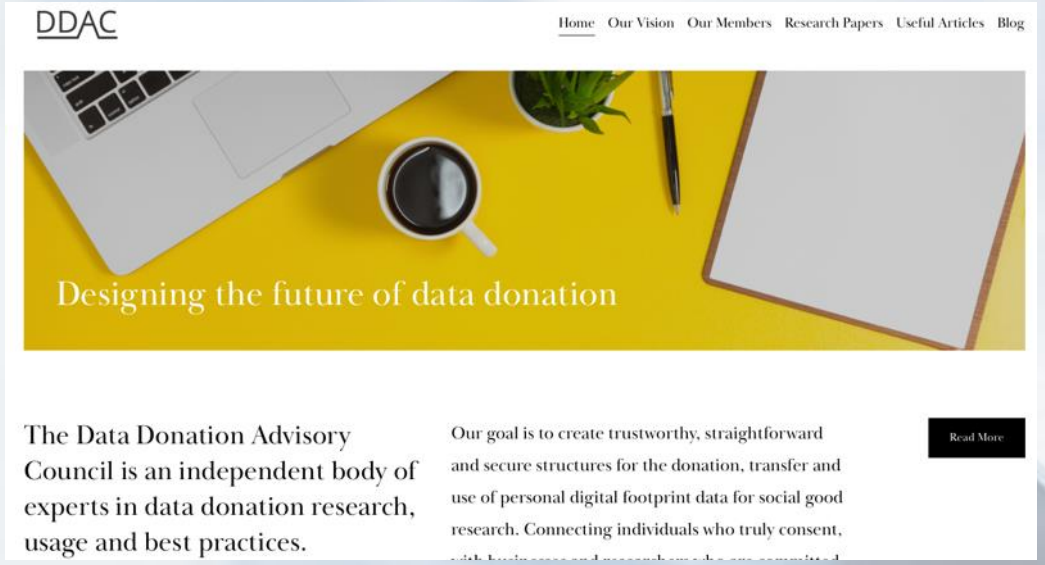
N/LAB

UKRI Engineering and Physical Sciences Research Council

What next?



https://www.ddac.org.uk

Turing Special Interest Group on Digital Footprint Linkages for Health and Wellbeing
26 October

DDAC is a collaboration between:

The University of Nottingham
University of BRISTOL
Imperial College London
KING'S College LONDON
UNIVERSITY OF LEEDS
WARWICK THE UNIVERSITY OF WARWICK
The Alan Turing Institute
UKRI