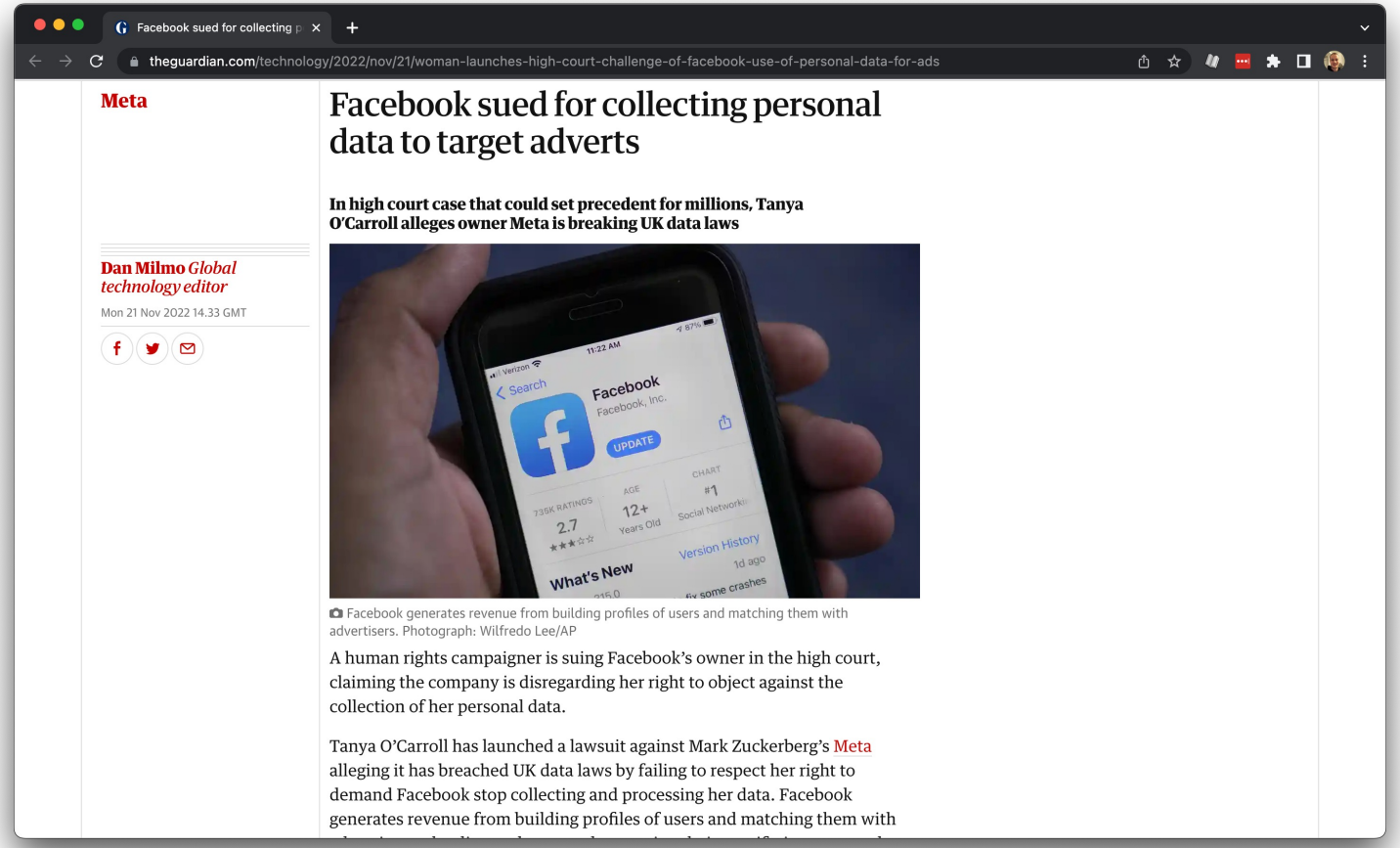
Data, Politics and Society

W7 – Safe Research

In the news



Facebook sued for collecting p

theguardian.com/technology/2022/nov/21/woman-launches-high-court-challenge-of-facebook-use-of-personal-data-for-ads

Meta

Facebook sued for collecting personal data to target adverts

In high court case that could set precedent for millions, Tanya O'Carroll alleges owner Meta is breaking UK data laws

Dan Milmo *Global technology editor*

Mon 21 Nov 2022 14.33 GMT

Facebook generates revenue from building profiles of users and matching them with advertisers. Photograph: Wilfredo Lee/AP

A human rights campaigner is suing Facebook's owner in the high court, claiming the company is disregarding her right to object against the collection of her personal data.

Tanya O'Carroll has launched a lawsuit against Mark Zuckerberg's Meta alleging it has breached UK data laws by failing to respect her right to demand Facebook stop collecting and processing her data. Facebook generates revenue from building profiles of users and matching them with

Where we at?

W6
W7

Regulations and governance

W8
W9

Crowdsourcing, VGI, and Geographic Citizen Science

W10

Critical Data Studies

Today*

- Importance of data access for social science
- Data disclosure risk
- How can we conduct research safely?
- Slightly meme heavy

* Slides available later today.

Why is access important?

Bender *et al.* 2020:

- Validating the data generating process
- Replication
- Building knowledge infrastructure

How to organise this safely?

Approaches to giving access

Bender *et al.* 2020:

- Statistical disclosure techniques
- Research Data Centers
- A combination of both?

Quiz

Approaches to giving access

Bender *et al.* 2020:

- Statistical disclosure techniques
- Research Data Centers
- A combination of both?

Quiz

Go to www.menti.com and use the code 5483 7523

Statistical disclosure control

- Addressing residual risk of re-identification in results for publication
- Precautionary, but: consistent with good research practices and balancing utility and risk

Statistical disclosure control

Variable	Description
`id`	random ID number
`male`	male dummy
`age`	age
`ethnicity`	census ethnicity category
`diabetic`	diabetes diagnosed
`lcovid`	long covid
`education`	highest education
`soceco`	socio-economic group
`income`	annual income in £
`incomeqrt`	income quartile
`imputed`	imputed value dummy

Statistical disclosure control

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Statistical disclosure control

	Has long covid?		
	No	Yes	**Total**
Gender			
Female	85	6	91
Male	58	1	59
Total	143	7	150

Statistical disclosure control

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	No	Yes	**Total**
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Total	143	7	150

Statistical disclosure control

	Has long covid?		
	No	Yes	**Total**
Diabetes			
No	114	2	116
Yes	29	5	34
Total	143	7	150

Statistical disclosure control

	Has long covid?		
	No	Yes	**Total**
Diabetes			
No	114	2	116
Yes	29	5	34
Total	143	7	150

Statistical disclosure control

- It is not only unique observations that matter
- Average salary of the highlighted cell in the first and second table: £30,000

  (1) male, with long covid (count 1): £30,000

  (2) no diabetes, with long covid (count 2): each can calculate salary of the other

  (3) counts above 3: no certainty on income of others
- So: statistical disclosure control is about the risk of disclosure

Statistical disclosure control

	At least one value imputed?		
	No	Yes	**Total**
Gender			
Female	89	2	91
Male	58	1	59
Total	147	3	150

Statistical disclosure control

	Income Quartile				
	1	2	3	4	**Total**
Education					
PG Degree	1	1	8	18	28
UG Degree	2	6	14	17	39
College	8	18	16	3	45
School	13	9	0	0	22
None	13	3	0	0	16
Total	37	37	38	38	150

Statistical disclosure control

	Income Quartile				
	1	2	3	4	**Total**
Education					
PG Degree	1	1	8	18	28
UG Degree	2	6	14	17	39
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None	13	3	0	0	16
Total	37	37	38	38	150

Statistical disclosure control

	Age				
	16-17	18-19	20-23	24-29	**Total**
Education					
UG Degree	0	0	51	64	115
College	0	25	33	57	115
School	15	18	19	41	93
None	8	7	12	17	44
Total	23	50	115	179	367

Statistical disclosure control

	Income Quartile				
	1	2	3	4	**Total**
Education					
PG Degree	1	1	8	18	28
UG Degree	2	6	14	17	39
College	8	18	16	3	45
School	13	9	0	0	22
None	13	3	0	0	16
Total	37	37	38	38	150

Statistical disclosure control

	Income Quartile				
	1	2	3	4	**Total**
Education					
PG Degree	< 3	< 3	8	18	26
UG Degree	< 3		14	17	37
College	8	18	16	3	45
School	13	9	< 3	< 3	22
None	13	3	< 3	< 3	16
Total	34	36	38	38	146

Statistical disclosure control

	Income Quartile				
	1	2	3	4	**Total**
Education					
PG Degree	0	0	10	20	30
UG Degree	0	5	15	15	35
College	10	20	15	5	50
School	15	10	0	0	25
None	15	5	0	0	20
Total	40	40	40	40	150

Statistical disclosure control

	Income Quartile				
	1	2	3	4	**Total**
Education					
Postgrad / Degree	3	7	22	35	57
College	8	18	16	3	45
School	13	9	0	0	22
None	13	3	0	0	16
Total	37	37	38	38	150

Which is best?

- Depends on the output, not all approaches will work all the time.
- Depends on the message you want to present.

Statistical disclosure control

	Socio-economic group		
	X1	X2	**Total**
Age			
50-54	21	11	32
55-59	25	11	36
60-64	28	12	40
65+	31	11	42
Total	105	45	150

	Socio-economic group		
	X1	X2	**Total**
Age			
50-54	21	11	32
55-59	25	11	36
60-64	28	12	40
65+	31	11	42
Total	105	45	150

	Socio-economic group non-diabetics		
	X1	X2	**Total**
Age			
50-54	17	7	32
55-59	19	9	36
60-64	23	8	40
65+	23	10	42
Total	82	34	150

	Socio-economic group		
	X1	X2	**Total**
Age			
50-54	21	11	32
55-59	25	11	36
60-64	28	12	40
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Total	105	45	150

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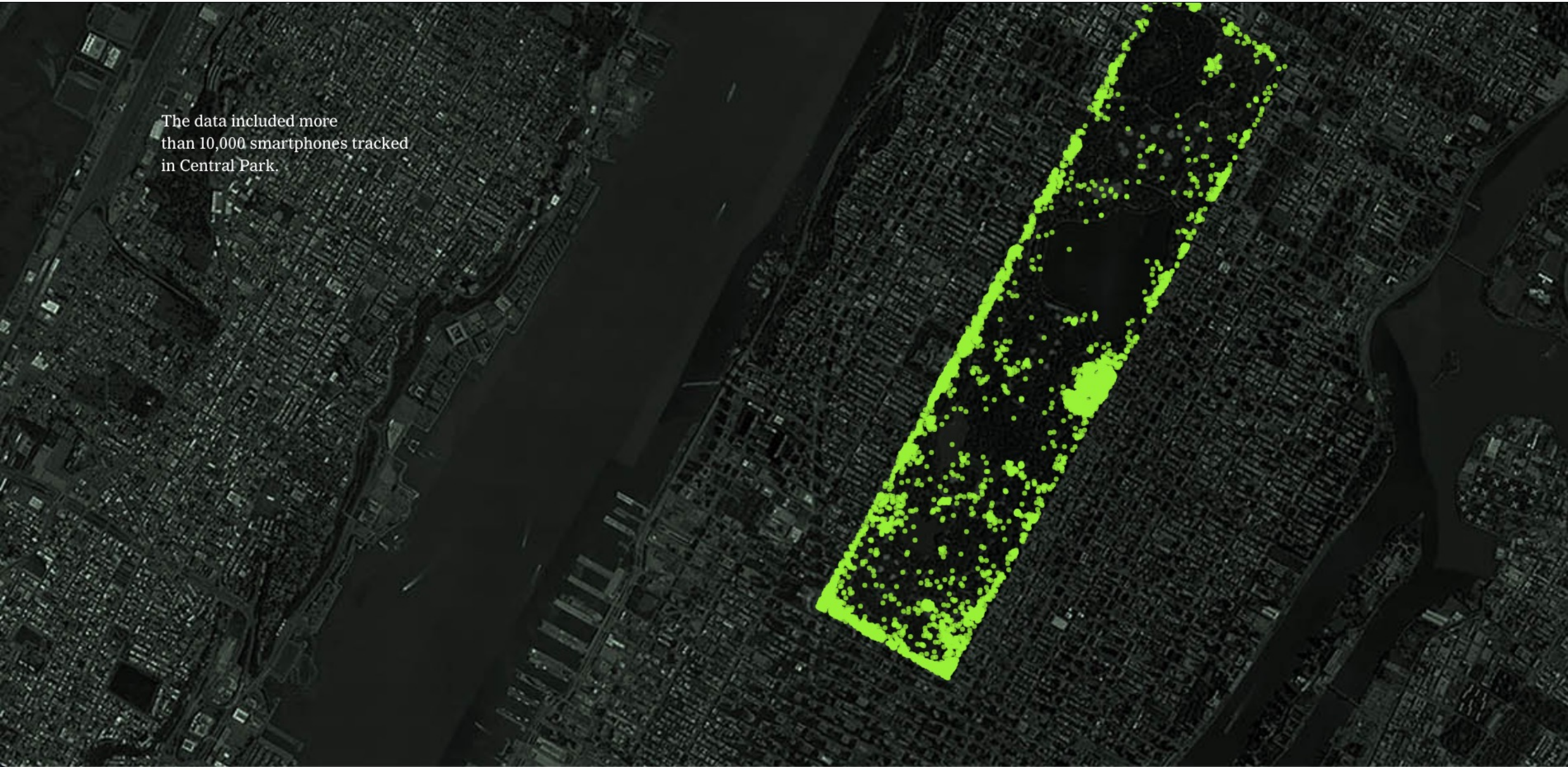
Beyond tables

Same rules apply to:

- Linear regression coefficients
- Scatter plot of regression residuals
- Box plots
- Minimum, maximum, median
- Ranks

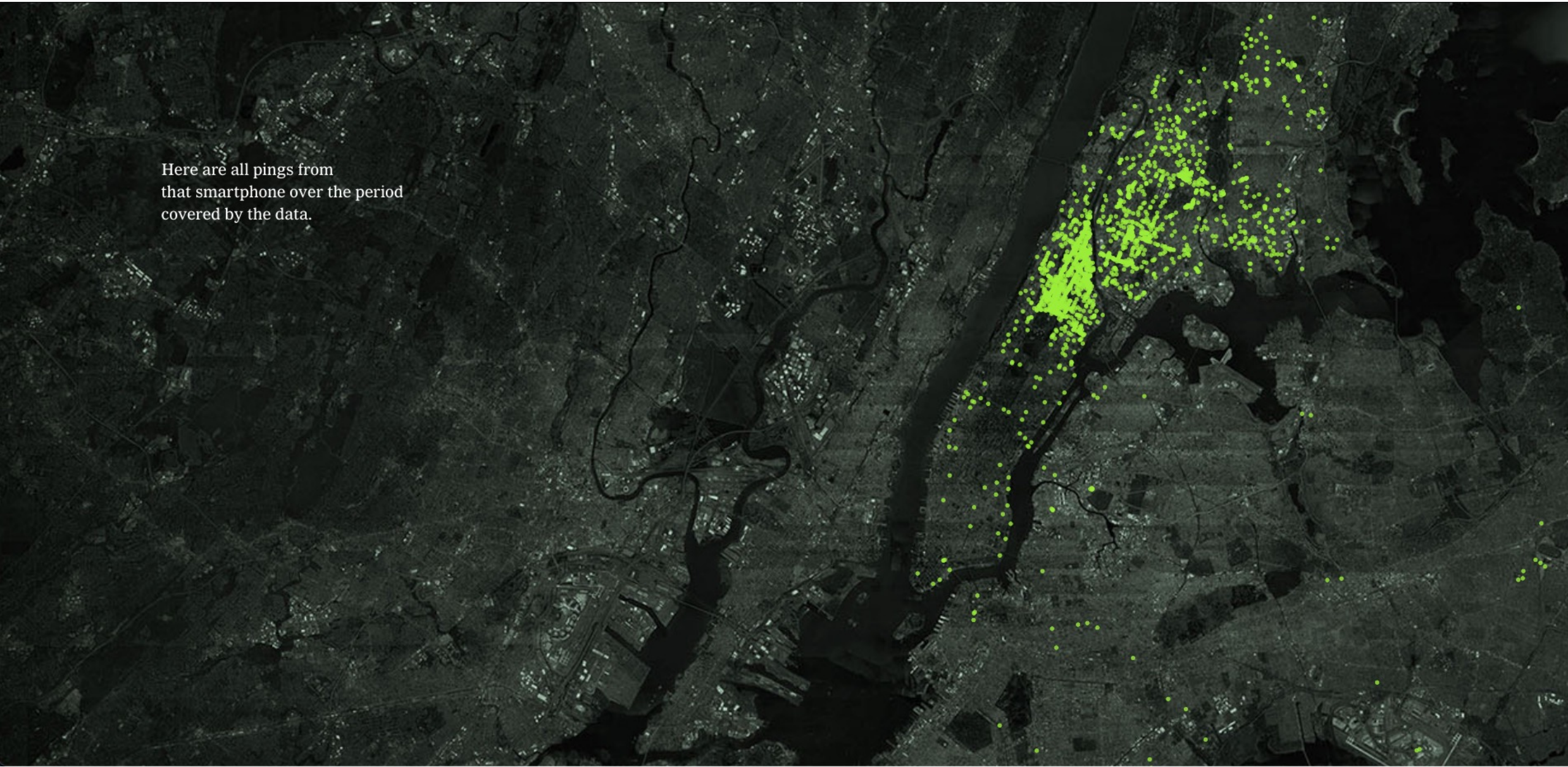
And of course: maps!

The Privacy Project



The Privacy Project

The Privacy Project



The Privacy Project

Five safes

Safe projects:	Is this an appropriate use of the data?
Safe people:	How trustworthy are the researchers?
Safe setting:	Does the environment prevent misuse?
Safe data:	Is the level of detail appropriate?
Safe outputs:	Is there any confidentiality risk from publication?

Attitudes toward data sharing

Imagine you are the Data Provider. How would your impression of researchers affect the way you make data available?

- If you believe researchers will try to look after the data, but could make mistakes then you can train them?
- If you do not trust researchers then perhaps you will only make Public Use Files available, hugely restrictive in the detail available.

Default of most data services is that users can be trusted but will need some training on the specifics.

Data protection

Research Data Centers typically host data in different tiers:

- Open data
- Safeguarded data
- Controlled / Secure data
- Source data

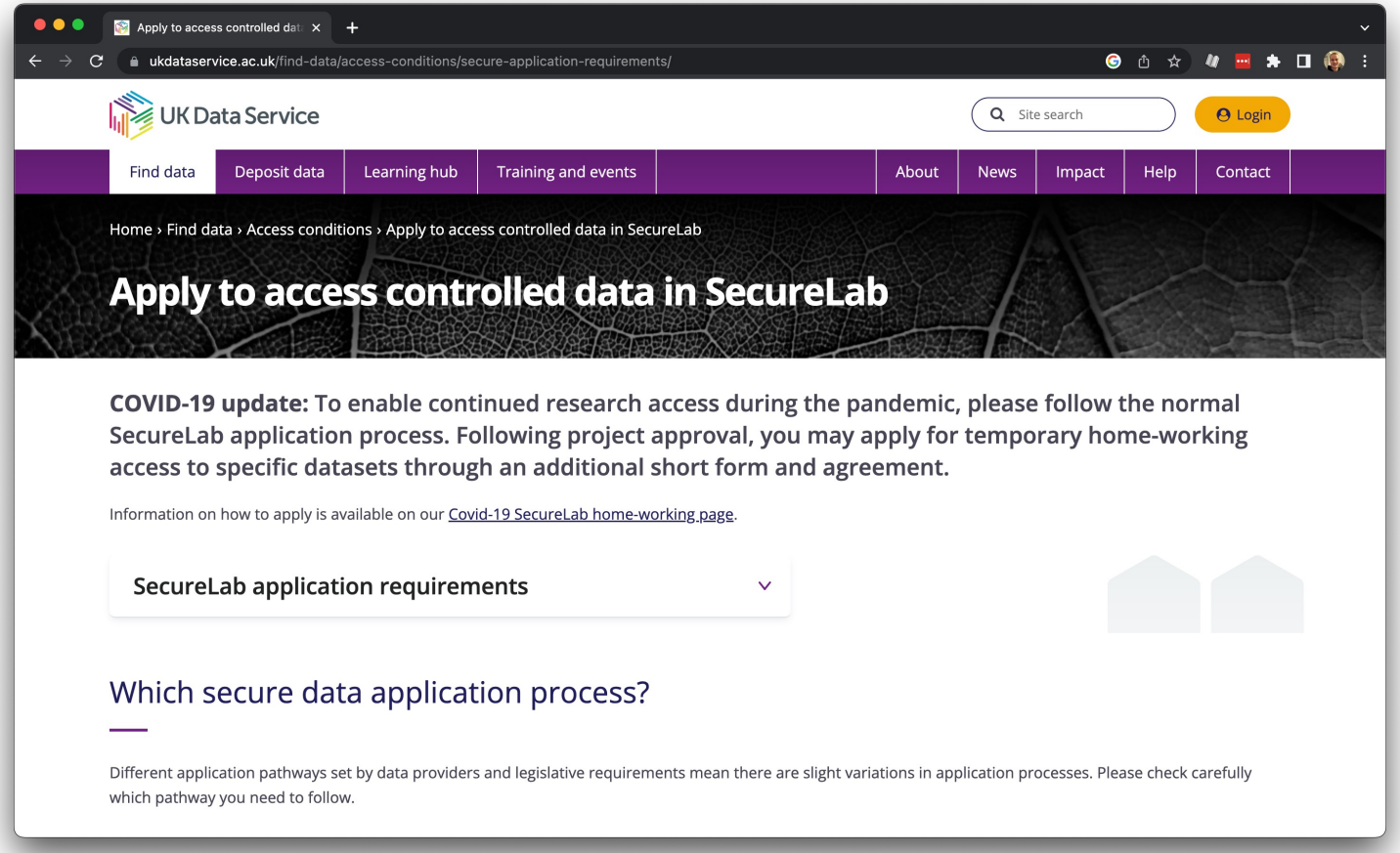
Data protection

- Open data: data which are freely available to all for any purpose. Open data are often accessed via basic registration and download.
- Safeguarded data: data to which access is restricted due to license conditions, but where data are not considered ‘personally-identifiable’ or otherwise sensitive. Access is typically available via a remote service with registration and project approval requirements.
- Controlled data: data which need to be held under the most secure conditions with stringent access restrictions. Access is available via secure services, with registration and project approval requirements.

Data protection

- License agreements: these stipulate whether the data can be made available via the Open, Safeguarded or Secure services. It also sets out the conditions of use, for example it may limit the use to research for academic purposes only or look to accommodate the commercial interests of the data provider.
- Research Approvals Groups: conducting reviews for project proposals.
- Safe Results: statistical disclosure control, typically by one or two independent approved researchers.

UKDS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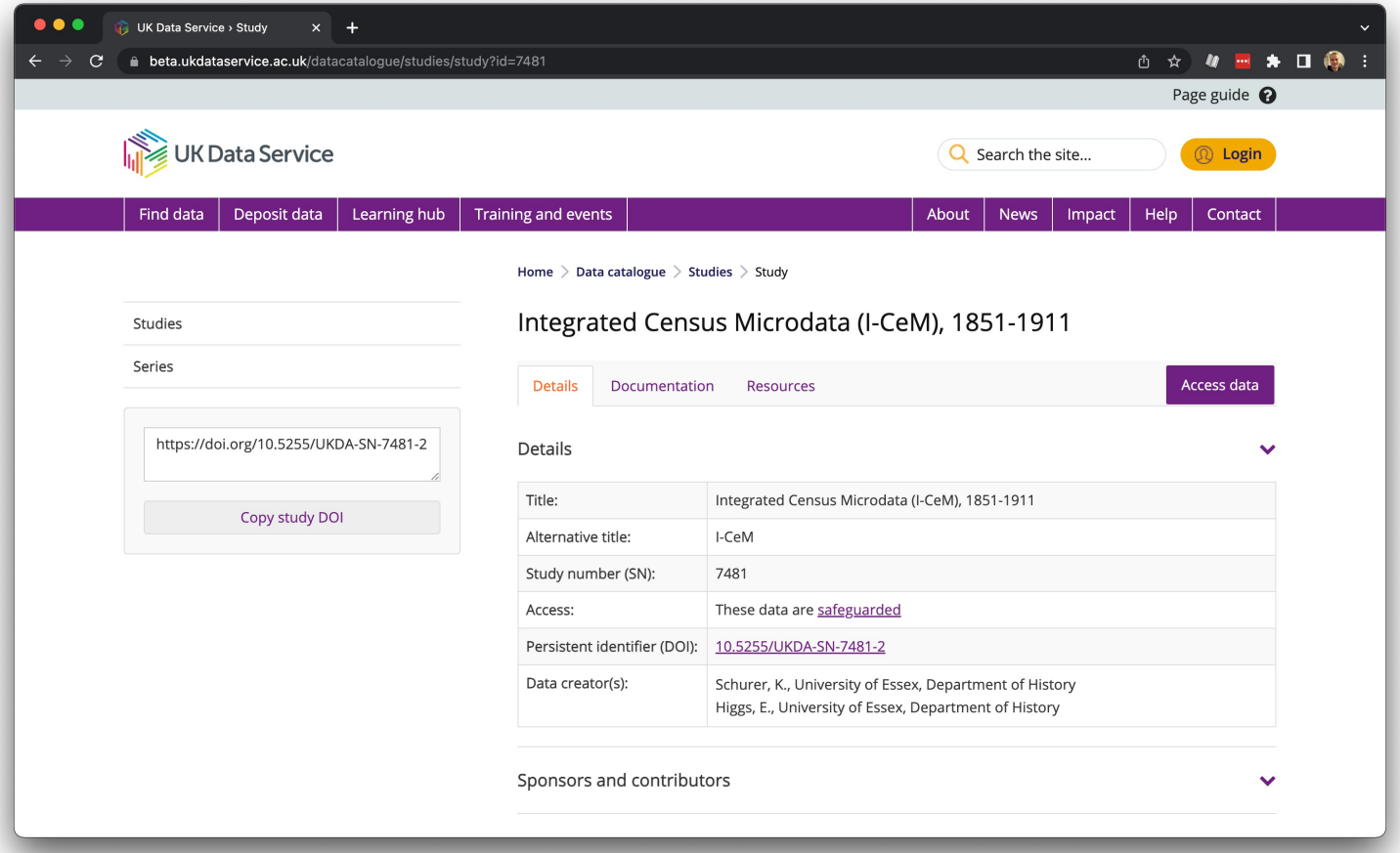
COVID-19 update: To enable continued research access during the pandemic, please follow the normal SecureLab application process. Following project approval, you may apply for temporary home-working access to specific datasets through an additional short form and agreement.
Information on how to apply is available on our Covid-19 SecureLab home-working page.
SecureLab application requirements
Which secure data application process?
Different application pathways set by data providers and legislative requirements mean there are slight variations in application processes. Please check carefully which pathway you need to follow.

UKDS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Alternative title: I-CeM
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Access: These data are safeguarded
Persistent identifier (DOI): 10.5255/UKDA-SN-7481-2
Data creator(s): Schurer, K., University of Essex, Department of History
Higgs, E., University of Essex, Department of History
Sponsors and contributors

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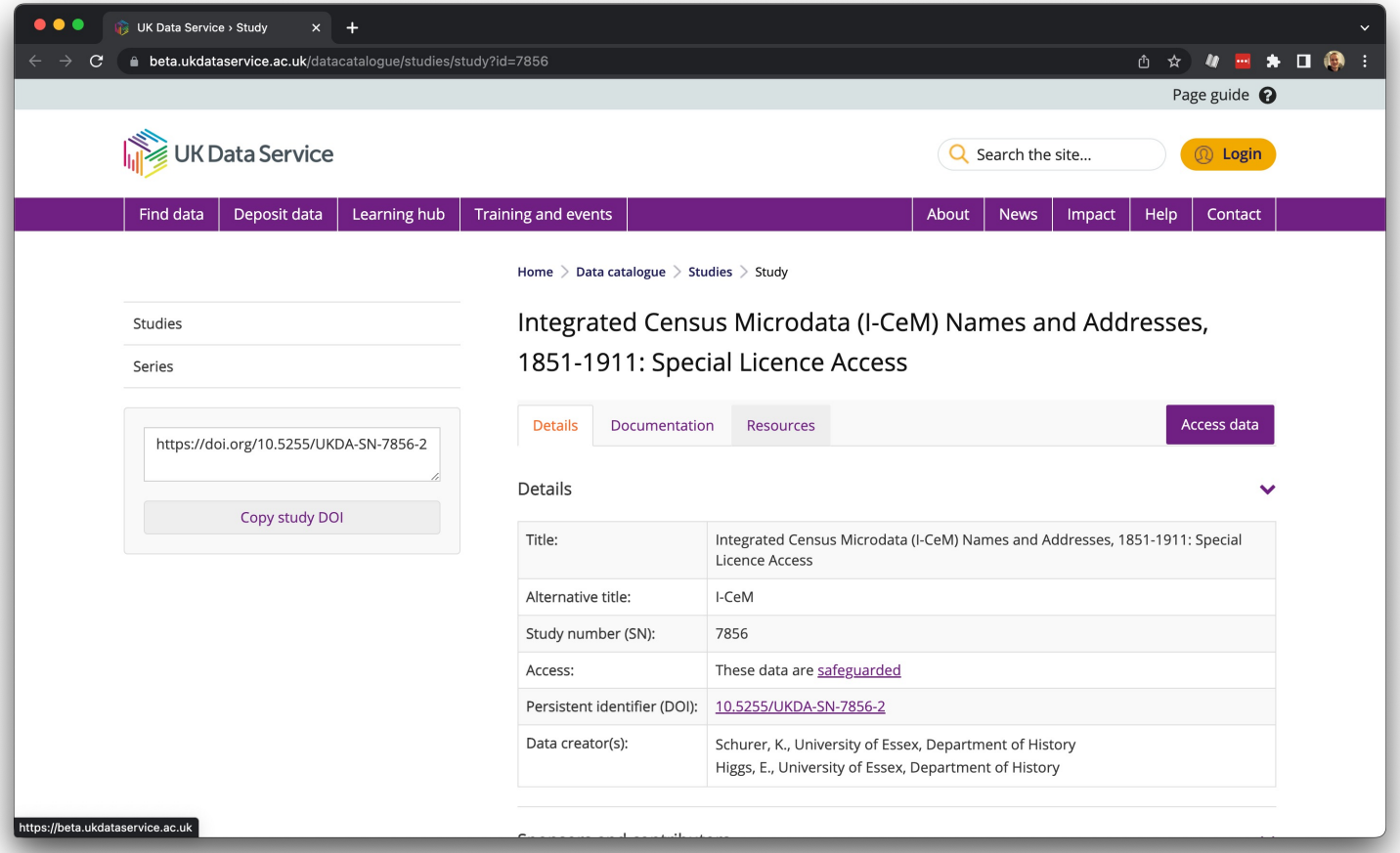
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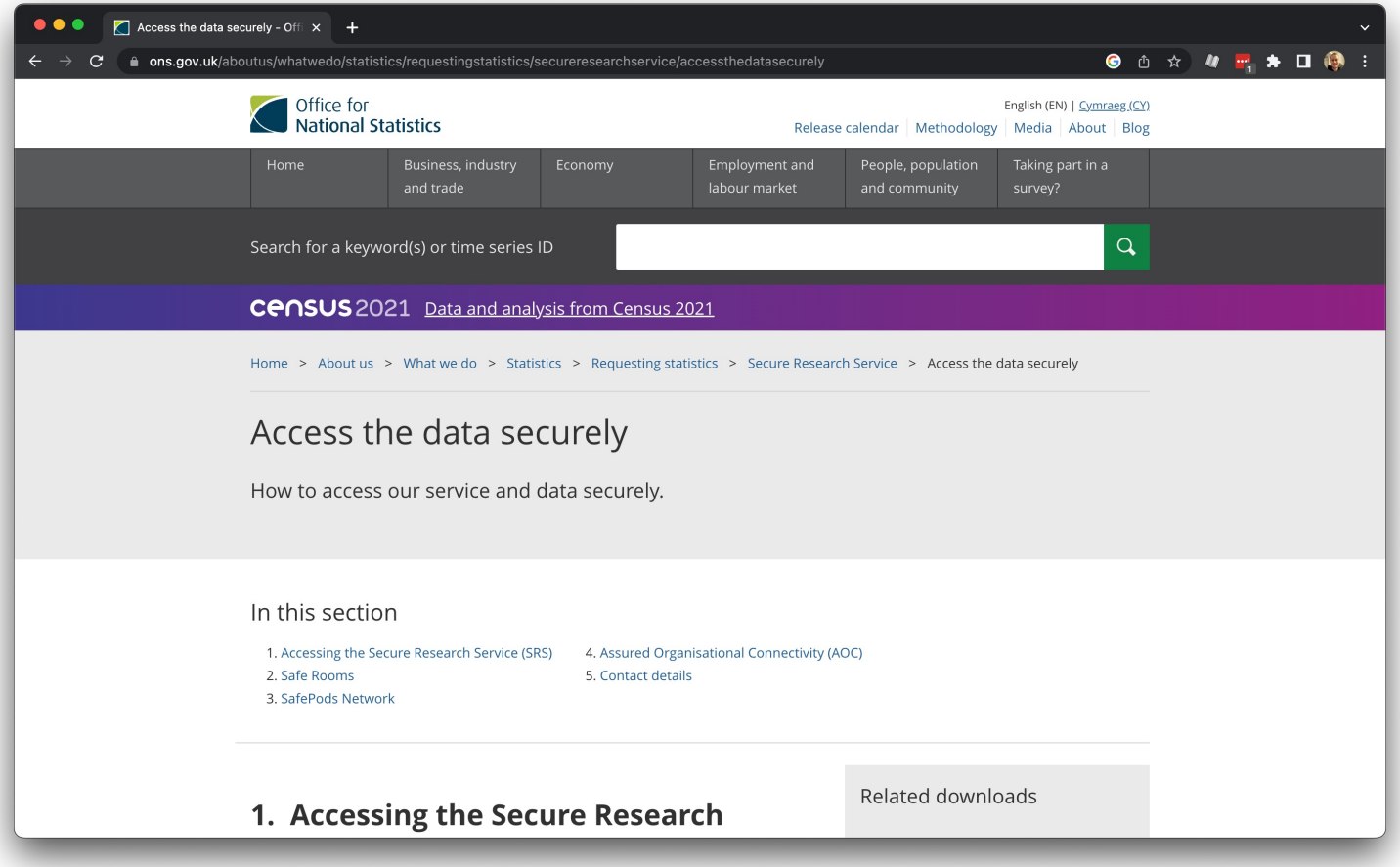
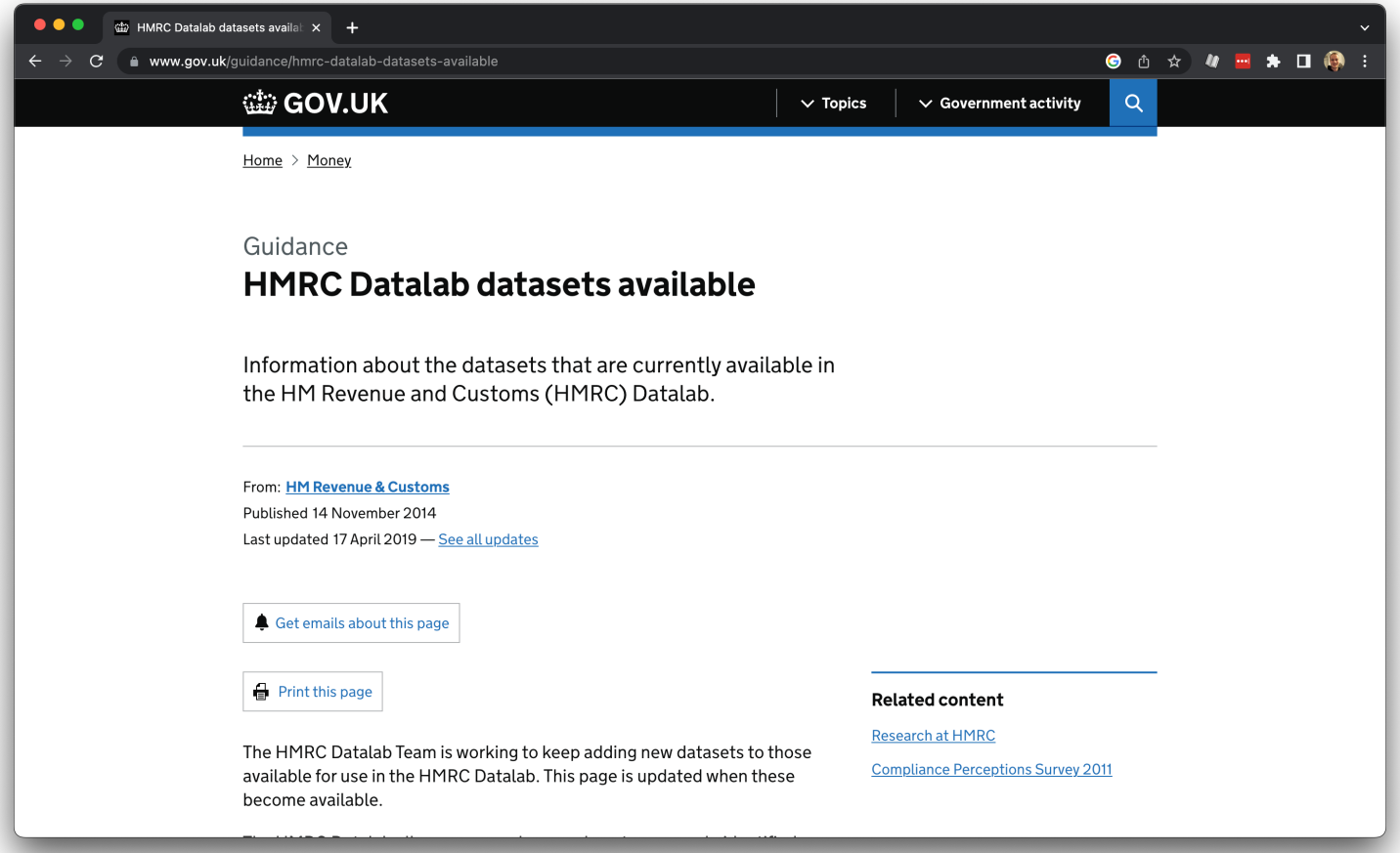
https://beta.ukdataservice.ac.uk

Office for National Statistics



HMRC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HMRC Datalab datasets available
Information about the datasets that are currently available in the HM Revenue and Customs (HMRC) Datalab.
From: HM Revenue & Customs
Published 14 November 2014
Last updated 17 April 2019 — See all updates
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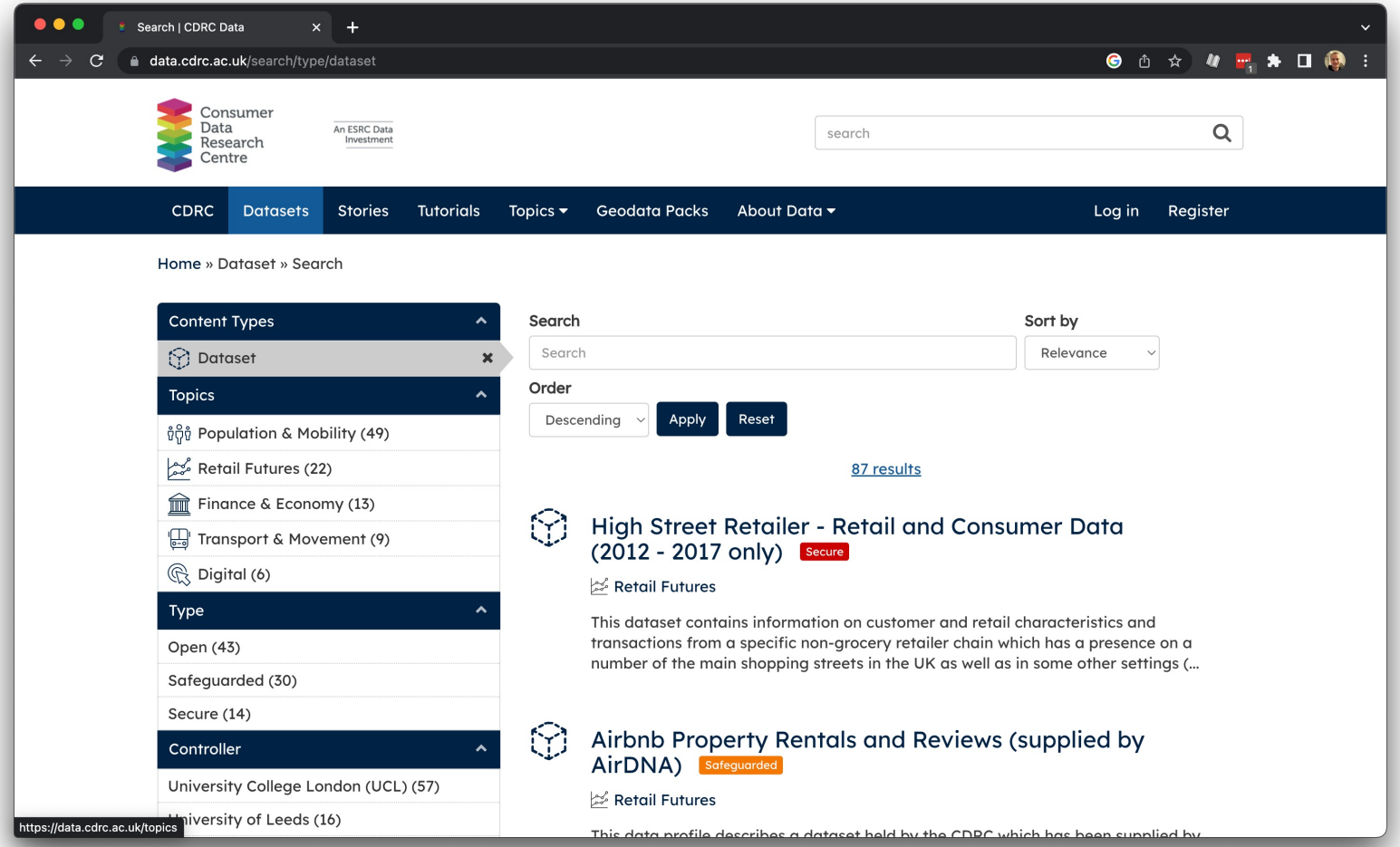
The HMRC Datalab Team is working to keep adding new datasets to those available for use in the HMRC Datalab. This page is updated when these become available.
Related content
Research at HMRC
Compliance Perceptions Survey 2011

Consumer Data Research Centre



Consumer Data Research Centre

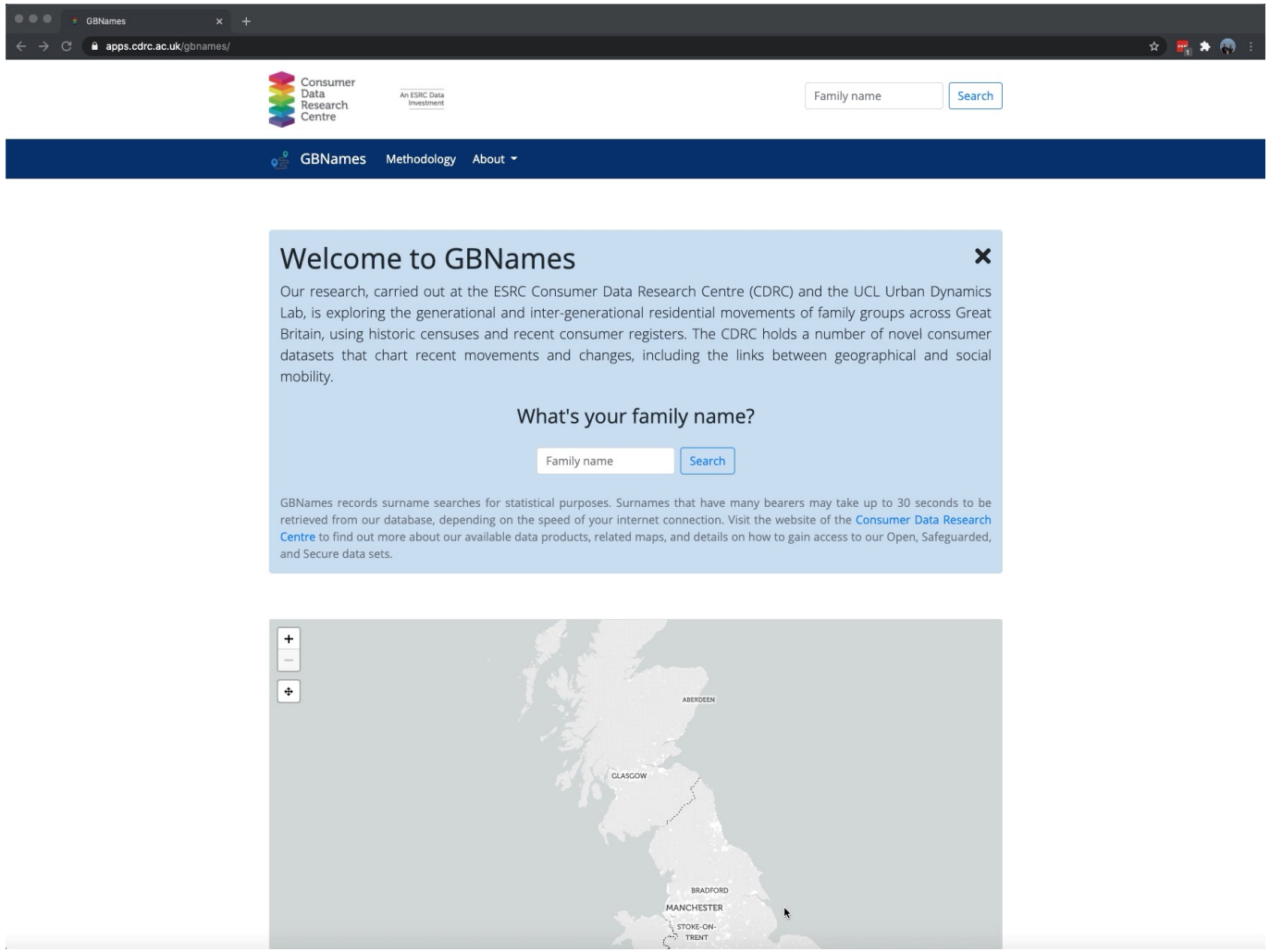
- The Consumer Data Research Centre was established in 2014 to lead academic engagement between industry and the social sciences and utilise consumer data for academic research purposes.
- Led by leading UCL Academics together with Leeds, Liverpool, Oxford.
- Focus on consumer data – i.e. large-scale human-generated datasets.
- Access through several data licensing agreements with industry partners.
- Funded till at least September 2024.

Data Products

Examples:

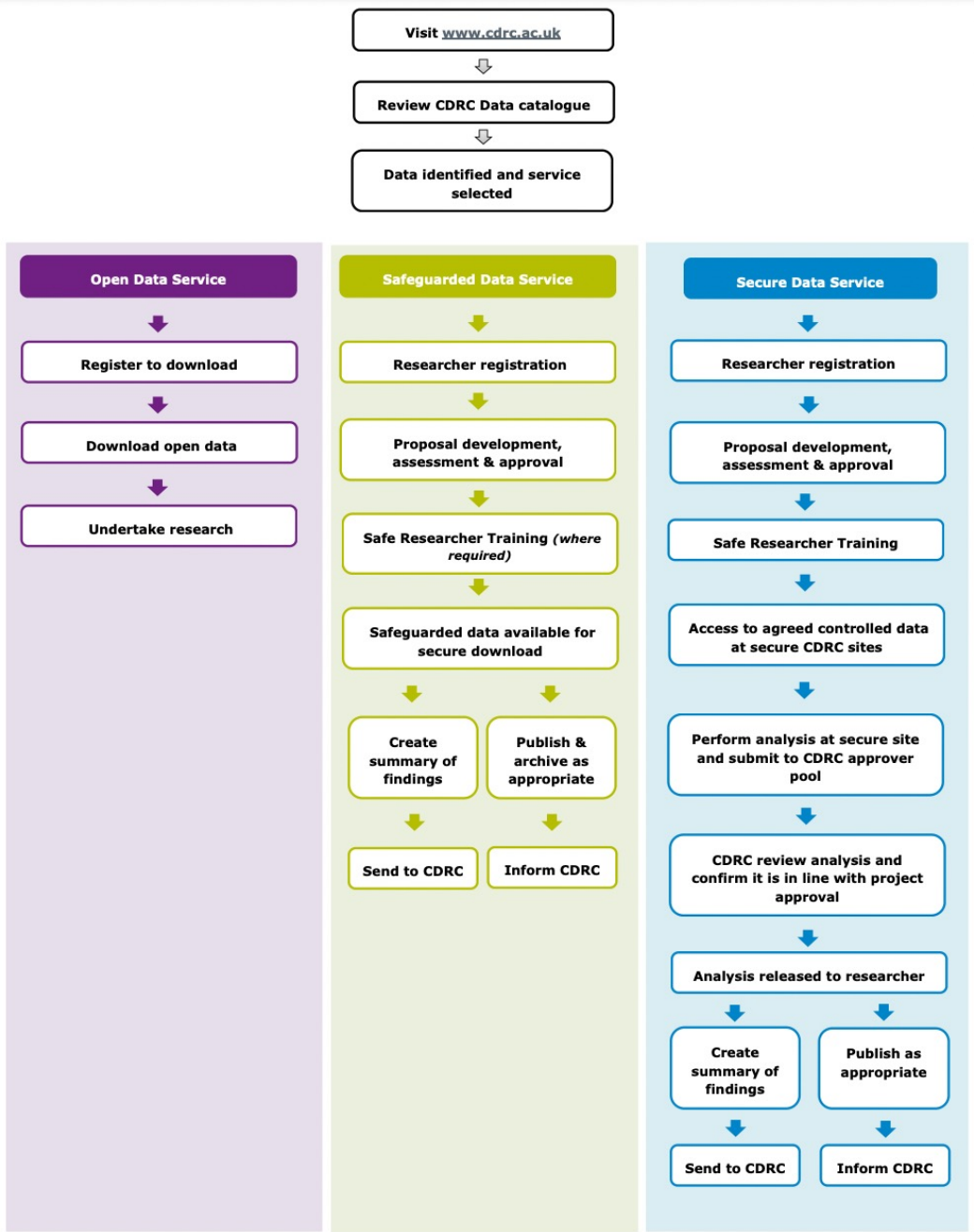
- WhenFresh/Zoopla Property Transactions (2014-2019)
- Customer and Ticket Sales data from a regional transport provider
- Analysis-ready products: indices in relation to population (e.g. ethnicity estimates, population churn, residential mobility), retail centre boundaries, geodemographic classifications.

Data Products



www.apps.cdrc.ac.uk/gbnames

Pipeline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Safe Researcher Training (where required)
Safeguarded data available for secure download
Create summary of findings
Publish & archive as appropriate
Send to CDRC
Inform CDRC
Secure Data Service
Researcher registration
Proposal development, assessment & approval
Safe Researcher Training
Access to agreed controlled data at secure CDRC sites
Perform analysis at secure site and submit to CDRC approver pool
CDRC review analysis and confirm it is in line with project approval
Analysis released to researcher
Create summary of findings
Publish as appropriate
Send to CDRC
Inform CDRC

How does data get into the data catalogue?

- Confidential and sensitive data will require some form of informed consent.
- Datasets need be cleaned, prepared, clear variables – typically no raw data dumps.
- Documentation needs to be included on how the data set was constructed (e.g. links from variables to questions in the questionnaire, codebook, description of data linkage).
- Access and licensing conditions need to be specified.
- ESRC grant holders are contractually obliged to offer their data for deposit with a responsible digital repository within three months of the end of their grant.

How is data secured?

- Physical secure lab at an undisclosed location with specialised access procedures
- Online facilitated research environments (“Trusted Research Environments”)
- ISO27001 certified

Data Safe Haven

- UCL's facility for Secure Research
- A technical solution for storing, handling and analysing identifiable data
- 'Walled garden' approach where research stays within a secure environment with carefully controlled access
- Project-based
- Safe-researcher training required
- Output is controlled

Data Safe Haven

What not to do:

- Using data for which you are not licensed
- Using data for anything other than the proposed project
- Linking or matching data without permission
- Handing out usernames and passwords to others
- Attempting to identify individuals, households, or firms
- Copying anything from the screen
- Writing down anything from the screen

Data Safe Haven

What DSH offers:

- Several pre-installed software programmes (python, R, Stata, SAS, SPSS, NVIVO)
- Following a recent refresh: dedicated HPC VMs / queue-based shared HPC facilities
- Dedicated PostgreSQL or MySQL databases
- Local copies of `CRAN`, `pypi` and `conda`

Limitations

- Very technological focus where the data themselves is not questioned.
- Still partly focused on ‘traditional’ ways of data collection and analysis, not always provision for large datasets.
- A confusing landscape of data providers and research facilities.

Conclusion

- Safe Research using privacy sensitive data predominantly focuses on conducting research in a safe research environment.
- Data Services tend to offer data in a graduated manner (tier system), depending on the level of ’sensitivity’ of the data.
- Data typically can only be deposited with metadata, documentation, depends on the creator of the data to what extent attention is paid to issues of data and representation.

Seminar preparation

There is no preparation required for this week's seminar other then carefully reading the articles on the reading list. Use the remainder of your time to work on your coursework assignment.

Seminar preparation

Formative feedback

- Formative feedback on a 300-word proposal / outline.
- Suggestions to include in the proposal / outline: provisional title, aim, proposed structure with main arguments; bullet points are perfectly fine.
- Submit by: Wednesday December 7 at noon (2 weeks) – details TBC.
- Feedback by: Friday December 16.

Formative feedback

Questions

Justin van Dijk

j.t.vandijk@ucl.ac.uk