An introduction to health data in the CLS national longitudinal cohort studies

Richard Silverwood, Associate Professor of Statistics
Centre for Longitudinal Studies, UCL Social Research Institute

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CENTRE FOR LONGITUDINAL STUDIES

Economic and Social Research Council

What we do at CLS

CENTRE FOR LONGITUDINAL STUDIES

- ESRC-funded Resource Centre.
- Run a unique series of UK national cohort studies:
  - Follow thousands of people across life, from cradle to grave.
  - Covering multiple generations.
  - Collect extensive & rich data.
- Provide free data to the research community (e.g. via UK Data Service) (link):
  - Documentation, guidance & training.
  - Researchers can input on the data we collect (consultations).
- Conduct research:
  - Multidisciplinary, substantive & methodological (survey and statistical).

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1946

1946 National Survey of Health and Development

1958

ncds National Child Development Study

Photo: BiblioArchives/ LibraryArchives

1970

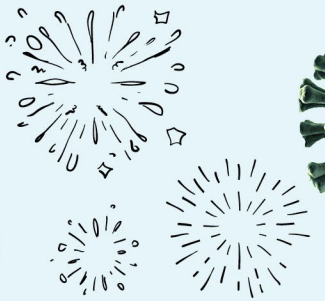
BCS70 1970 British Cohort Study

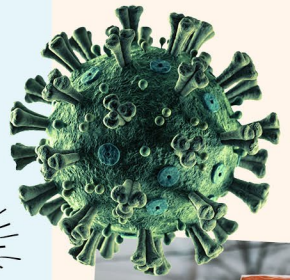
1989

NEXT STEPS LEARNING FROM YOUR GENERATION

2000

MILLENNIUM COHORT STUDY





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2022

EARLY LIFE COHORT FEASIBILITY STUDY

CLS cohorts

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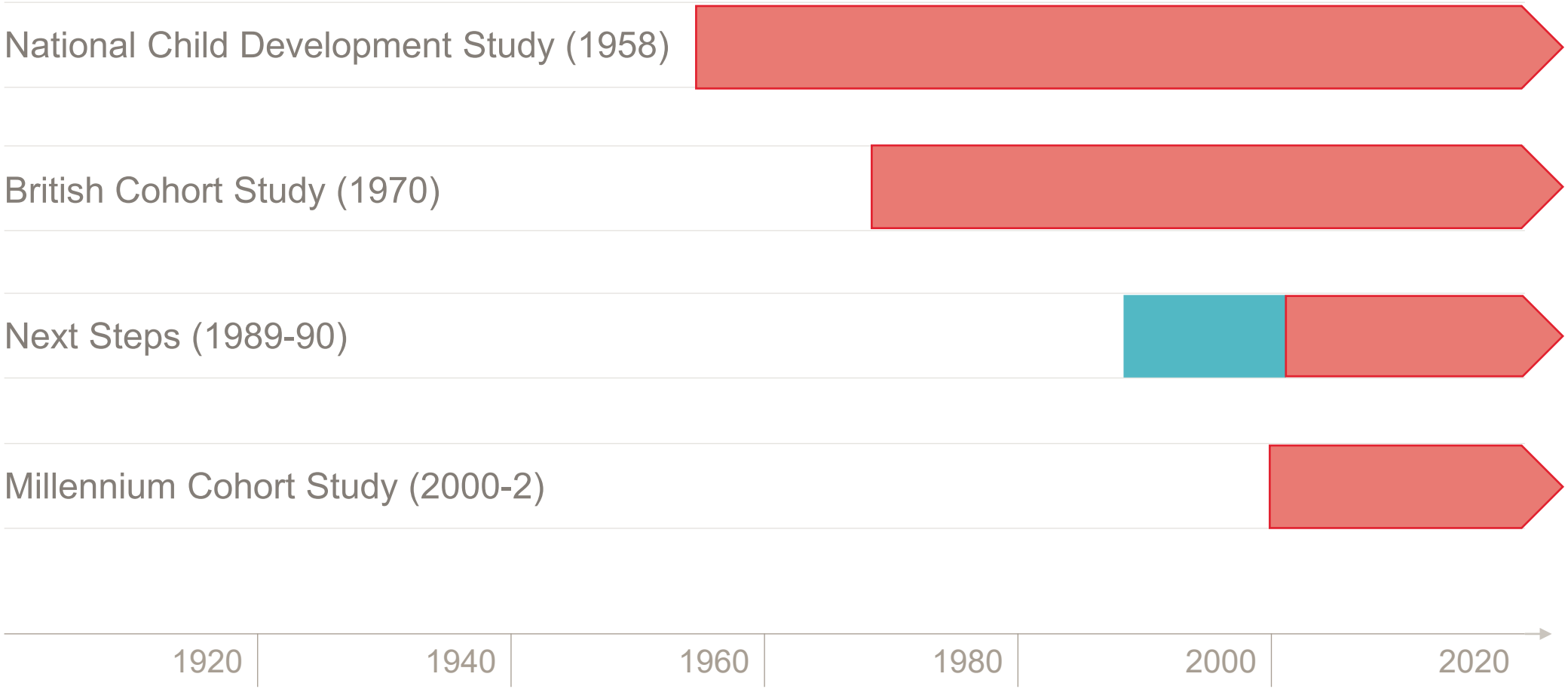

Follow-up across life, all N>16,000

CLS core study timelines

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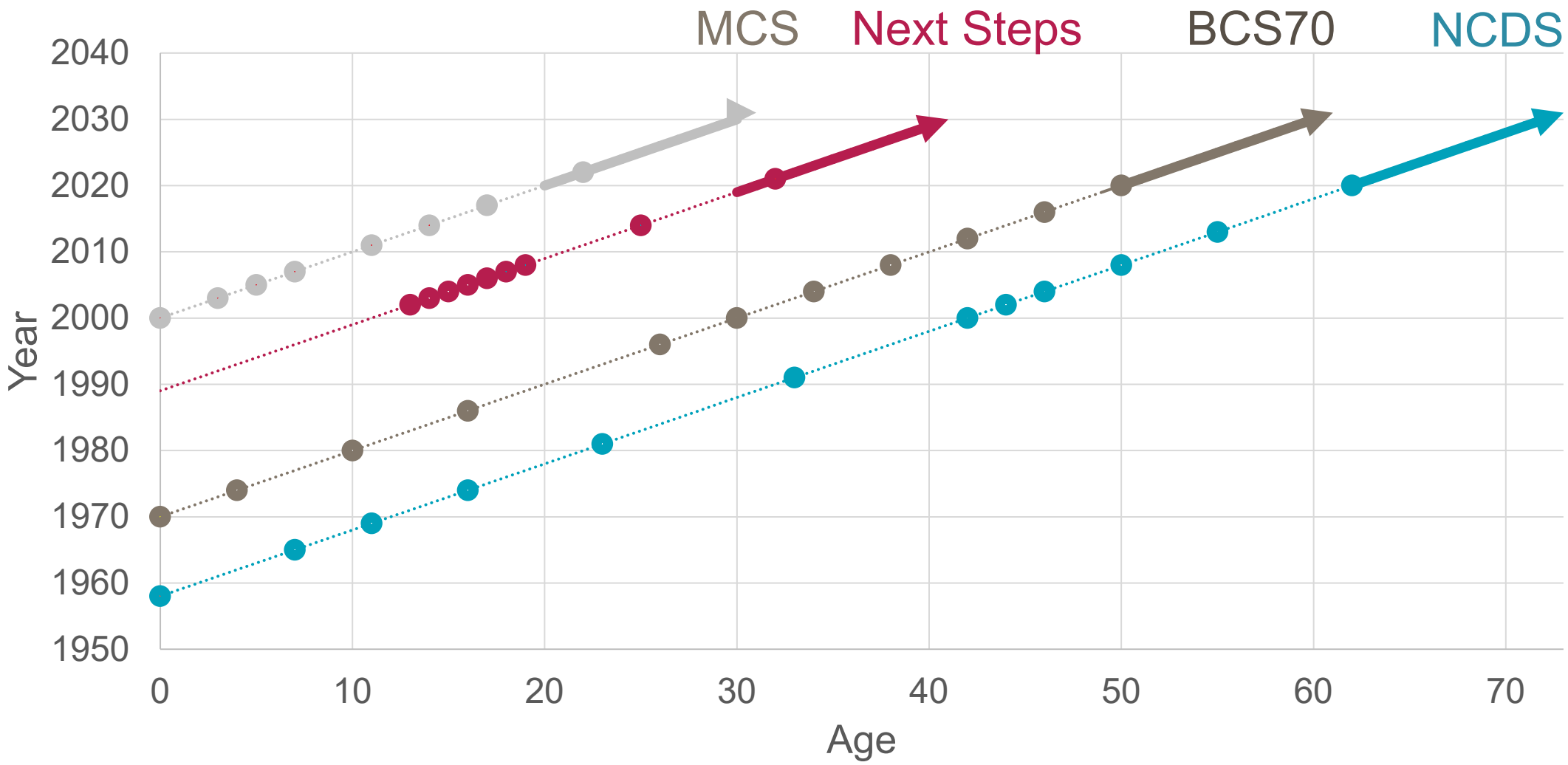

Typical information covered

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Birth	School years	Adult
Household composition	Household composition	Household composition
Parental social class	Parental social class	Employment
Obstetric history	Parental employment	Social class
Smoking in pregnancy	Financial circumstances	Income
Pregnancy (problems, antenatal care)	Housing	Housing
Labour (length, pain relief, problems)	Health	Health (including biomarkers)
Birthweight, length	Cognitive tests	Well-being and mental health
	Emotions and behaviour	Health-related behaviour
	School	Training and qualifications
	Views and expectations	Basic skills
	Attainment	Cognitive tests
		Views and expectations

Core data collections 2015-2025

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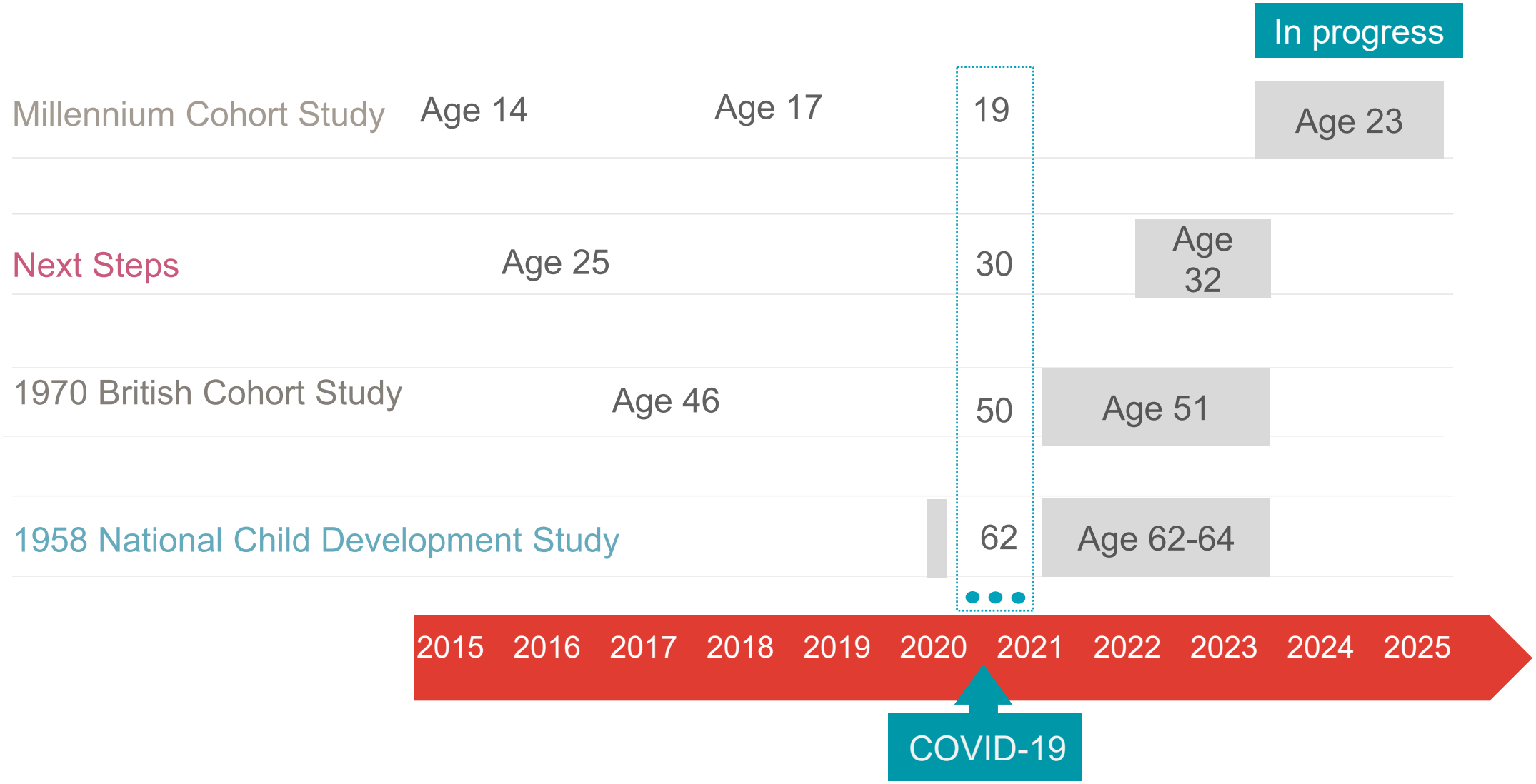

Next Steps age 32 health data

Available August 2024

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- General/longstanding health problems.
- COVID-19.
- Height/weight.
- Substance use.
- Sleep.
- Diet and exercise.
- Pregnancy histories, fertility treatments and family planning.
- Saliva collection for DNA extraction and genotyping.

BCS70 age 51-53 health data
Available November 2024

CENTRE FOR LONGITUDINAL STUDIES

- General/longstanding health problems.
- Health conditions.
- COVID-19.
- Height/weight.
- Substance use.
- Sleep.
- Diet and exercise.
- Drinking and smoking.
- Menstruation, gynaecological problems and menopause.
- Sterilisation/vasectomy.
- Fertility.

NCDS age 62-65 sweep health survey data

Available January 2025

CENTRE FOR LONGITUDINAL STUDIES

- General/longstanding/physical health problems.
- Health insurance.
- COVID-19.
- Height/weight.
- Substance use.
- Sleep.
- Diet and exercise.
- Pain.
- Gynaecological problems.
- Hearing.
- Vision.
- Dental health.

NCDS age 62-65 biomedical data

Available January 2025

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Nurse visit – bio-measures:

- Prescribed medications.
- Seated and standing blood pressure.
- Maximal grip strength.
- Blood sampling (biomarkers, DNA).
- Anthropometry (weight, body fat, waist, hip).
- Timed normal walk.
- Standing balance: Leg raise.

Online diet questionnaire:

- Oxford WebQ.
- 24-hour recall of food and drink consumption on two days.
- Days randomly selected from the seven days following the nurse visit.
- Nutrient intake automatically derived.

Adult biomedical data collections

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Cohort	Age	Data available
NCDS	44-45	Yes (UKDS)
	62-65	January 2025
BCS70	46	Yes (UKDS)

Enormous scientific opportunities:

- Single cohort analysis (e.g. life course determinants of health).
- Cross-cohort analyses (e.g. trends in health, its determinants and consequences).

Biomarkers in NCDS and BCS70

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	NCDS (44-45)	NCDS (62-65)	BCS70 (46)
Total and HDL cholesterol	✓	✓	✓
Triglycerides	✓	✓	✓
C-reactive protein (CRP)	✓	✓	✓
Glycated haemoglobin (HbA1c)	✓	✓	✓
Insulin-like growth factor 1 (IGF-1)	✓		✓
Total and allergen-specific immunoglobulin E	✓		
Fibrinogen	✓		
Tissue plasminogen activator (t-PA)	✓		
Von Willebrand factor (9vWF)	✓		
Serum 25-hydroxyvitamin D	✓		
Fibrin D-dimer	✓		
Ferritin			✓
Cytomegalovirus			✓
Red blood cell count			✓
Metabolic biomarker profiles		✓	

Linked administrative health data in the cohorts

Country	Study	Health admin data	Access
England	NCDS, BCS, Next Steps, MCS	**Hospital Episodes Statistics (HES)** • Admitted Patient Care (APC) • Critical Care (CC) – linked to APC • Accident & Emergency (A&E) • Outpatient Care (OP)	Available at UKDS (e.g. link) via Secure Lab
Scotland		**Scottish Medical Records (SMR)**	Available at UKDS (e.g. link) via Secure Lab
	BCS, NCDS, MCS	• Inpatient • Outpatient • Birth and neonatal records • Prescribing information	
	BCS, NCDS only	• Maternity	
	MCS only	• Immunisations (SRS), Child Health Review	
Wales	MCS	• Health data assets from SAIL Databank (e.g. emergency department, outpatient, COVID data) and for cohort members' parents	Available at SAIL Databank; to be deposited with UKDS (parents and cohort members up to age 14)
		• Hospitalisations & no. of diagnoses from ICD-10 chapter codes up to age 11	Available at UKDS via Secure Lab (link)

UK Longitudinal Linkage Collaboration

https://ukllc.ac.uk/

Genetic data

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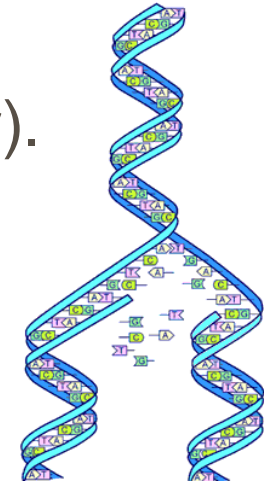
- **NCDS**: available, combined arrays n: 6,312.
- **BCS70**: available, n: 5,598.
- **Next Steps**: saliva collection completed at age 32, funding for DNA extraction and genotyping.
- **MCS**: available, n: 20,257, trios (cohort member, mother, father).
- New data access system (typically <1 month for a response, simple form) (link).
- More details: https://cls-genetics.github.io/.
- In future:
  - Polygenic scores for multiple health/social phenotypes.
  - Data for DNA methylation - derivation of multiple epigenetic clock measurements.



COVID-19

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- Aimed to understand economic, social and health impacts.
- Five national longitudinal cohort studies; ages 19–74.
- Surveys:
  - W1 May 2020, W2 Sept-Oct 2020 and W3 Feb-March 2021.
  - Wide range of topics including family, employment, home schooling, mental health during lockdown, other effects of the pandemic.
- Serology study:
  - Over 10,000 finger-prick blood samples returned, April-July 2021.
  - N-assay (naturally occurring antibodies through exposure to virus); S-assay (antibodies occurring following vaccination).
- More info on CLS website (link; link); data available from UKDS (link; link).

Three recent additions

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Early Life Cohort Feasibility Study (link):

- Testing the feasibility of a new UK-wide birth cohort study.
- Recruiting several thousand babies, collecting information about their families and their development; currently in evaluation phase.

Children of the 2020s (link):

- Nationally representative birth cohort study of babies from ~8,500 families born Sept–Nov 2021 in England.
- Focus on family, early education and childcare determinants of early school success.
- Wave 1 in 2022 (9 months old) (data available (link)); four subsequent waves, up to age 5 years.

Three recent additions

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COVID Social Mobility and Opportunities (COSMO) (link):

- Cohort study of over 12,000 students in England who were in Year 11 (15/16y) in 2020/21; includes data from parents.
- Exploring disruption to schooling during the pandemic and longer-term educational and employment inequalities.
- Wave 1 in 2021/2022, wave 2 in 2022/2023 (data available (link)).

Thank you.

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