

### Introduction to the Millennium Cohort Study

Thursday 18th May 2023 13:00-14:00

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### Housekeeping

- Please keep your cameras off and mics muted at all times recording session
- If you have a question, please use the chat function, and please note your question will be visible to all attendees
- Technical issues please email us: <u>ioe.clsevents@ucl.ac.uk</u>
- We would be grateful for your feedback. Please follow the link in the chat at the end of the event for the short survey – we have also emailed this to you

Thank you for joining us today

## Plan for today

- About CLS
- Overview of MCS
- Data, by theme
- Data enhancements and innovations
- Examples of current research using MCS survey and linked data
- Q&A to the panel\*



### Introductions

Vanessa Moulton, Senior ResearcherMorag Henderson, Associate Professor

And Emla Fitzsimons PI of the MCS



### Birth cohort studies at CLS



1920	1940	1960	1980	2000	2020

## COVID-19 surveys

Wave	Dates	Context	Mode
Wave 1	May 2020	First national lockdown	Web
Wave 2	Sept/Oct 2020	Eased restrictions	Web
Wave 3	Feb/Mar 2021	Third national lockdown	Web $\rightarrow$ Telephone

Study	Age in 2020
MCS	19
Next Steps	30
BCS70	50
NCDS	62



https://cls.ucl.ac.uk/covid-19-survey/



# About the Millennium Cohort Study (MCS)

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## About the UK Millennium Cohort Study

- Millennium Cohort Study (MCS) is a birth cohort study of around 19,000 individuals born in 398 areas of the UK in 2000-2002
- Highly multidisciplinary survey, designed to capture the influence of early family context on child development and outcomes throughout childhood, into adolescence and through adulthood
- Collects information about cohort member's physical, socio-emotional, cognitive and behavioural development, as well as parental health, parents' employment and education, income and poverty; housing; neighbourhood among other topics

Joshi & Fitzsimons (2016). Study profile: The UK Millennium Cohort Study: the making of a multipurpose resource for social science and policy in the UK. Longitudinal and Life Course Studies, 7, 409-430.

CENTRE FOR Connelly & Platt (2014). Cohort Profile: UK Millennium Cohort Study (MCS). International Journal of Epidemiology, 43, 1719-1725.

## The MCS population

All children born between

1/09/2000 and 31/8/2001 (England and Wales)

24/11/2000 and 11/1/2002 (Scotland and Northern Ireland)

AND

alive and living in the UK at age 9 months, and eligible to receive Child Benefit at that age

Oversamples for:

- Wales, Scotland and Northern Ireland
- areas with high child poverty and,
- in England, areas with higher ethnic minority populations



#### Overview of MCS timeline and main survey

	9m ම	3 3	5 ⊖≟	7	11 878	14 (19)	17	
Household questionnaire	Х	X	х	Х	x	x	х	
Main resident parent - Interview and questionnaire self-completion	Х	X	Х	X	х	х	(x)	
Main parents' partner - Interview and questionnaire self-completion	Х	Х	Х	Х	Х	Х	(x)	
Questionnaire self-completion (in interview)				Х	х	Х	х	$\supset$
Main interview - interview and online questionnaire							х	$\supset$
Older siblings		X	Х					
Teachers				х	х			
	2001	2004	2006	2008	2012	2015	2018	

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### Overview of MCS cohort members (CM) data

	9m	3	5	7	11	14	17	
	6	B	₽ľ		(18)	(19)		
Physical measurements	Х	Х	Х	х	х	х	Х	
Cognitive assessments		Х	Х	х	х	х	X	
Activity monitor				х		х		
Time use record						х		
Saliva for DNA & genotyping						х		
Consent for linking admin data	health re econom	ecords; eo ic records	ducation re ; police ar	ecords; pai nd criminal	rents' and ( justice	CM's		
	2001	2004	2006	2008	2012	2015	2018	

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#### MCS achieved sample (Number of families)





# Data, by theme

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### Themes

- Family and relationships
- Education and cognition
- Physical health
- Mental health and well-being
- Behaviours, attitudes and identity

...but there are many more





### Family and Relationships

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# Family and relationships

- Who is in the household
- Relationship to cohort member
- Age/number of siblings
- Biological, step, adoptive parents
- Age of parents when the cohort member was born
- Pregnancy, labour and delivery
- Family context, e.g. marital status and partnership formation / dissolution, language spoken, ethnicity
- Socio-economic context of family e.g. parents' employment, social class, income, housing

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### Family and relationships

Early years Primary school years Adolescence Parents relationship (9m) Parents relationship (5) **YP Social Provisions Scale** (14, 17)Parenting activities (5,7,11) Social support (P, 9m, 3) Parenting activities (14) Father involvement (9m, 3) Discipline (M, 5,7) Relationship with parents (14,17) Partners relationship with CM Grandparents (9m, 3) Friends (14) (11)Maternal attachment (9m) Romantic relationships (14.17) Relationship with siblings (5,7) Child-parent relationship – Pianta SF (3) Sexual experiences (14,17) Friends (7,11)Parenting activities (3) Parenting values (3) Discipline (M, 3) Child environment – Home\_Sf (Int., 3)

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### Education and cognitive measures

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## **Educational attainment**

- Parental education
- Early education provision (5,7)
- Foundation Stage Profile (and equiv.) (5)
- Teacher assessment (7,11)
  - Abilities, groupings/sets, behaviour, language, SEN etc.
- Key stage 1, 2, and GCSE (National Pupil Database)
  - GCSE or equiv. self-report
- Study intentions (11, 14)
- Higher education
  - Degree subject (17)
- CENTRE FOR LONGITUDINAL STUDIES
- University type (17)

### MCS Cognitive Assessments/Skills

Developmental milestones	9 months
<u>School readiness (BSRA-R)</u> Colours, letters, numbers, sizes, comparisons, shapes	3
<u>Verbal skills</u> BAS II Naming Vocabulary BAS II Word Reading APU Vocabulary Test	3,5 7 14 (and parents)
<u>Verbal reasoning</u> BAS II Verbal Similarities	11
<u>Non-verbal reasoning</u> BAS II Picture Similarities	5
Mathematics and numeracy NFER Progress in Maths Number Analogies (GL)	7 17
Visual/spatial processing BAS II Pattern Construction	5,7
Decision making (CANTAB) Cambridge Gambling Task	11,14
Memory (spatial working) (CANTAB)	11

BSRA- R (Bracken School Readiness Assessment – Revised) BAS (British Ability Scales) APU (Applied Psychology Unit) NFER (National Foundation for Education Research) GL Assessment

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### **Physical Health**

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### Physical Health in MCS – measurements and samples

#### Anthropometrics:

- Height, Weight and BMI (3,5,7,11,14,17)
- Waste circumference (5,7)
- Body fat (11,14,17)
- Samples:
  - Saliva sample DNA extraction and genotyping (14)
  - Oral fluid sample assays used to detect variety of infections (3)
  - Milk teeth test for exposure to lead in the environment. (7)
- <u>Activity monitor</u> (7,14)
  - Actigraph every day for 7 days during waking hours (7)
  - Geneactiv accelerometer 1 weekday & 1 weekend day measured physical and sedentary activity (14)

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• Activity monitor was paired with time use diary: sample and day selection the same

## Assessment of Physical Health

- Parents health
- Parent/self-assessed of CM's general health (3, 5, 7, 11,14,17)
- Medical conditions/Long standing illness (9m, 3, 5, 7, 11, 14, 17)
- Adolescence:
  - Pubertal Development Scale (adapted) (14)
  - Periods (14,17)
  - Sex, contraception, pregnancy, STIs (17)
- Linked administrative health records:
  - Hospital Episodes Statistics (in England, Scotland, Wales)

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## Health behaviours

- Physical activity (7,11,14,17)
- Diet
  - YP Eating Choices Index (4 item index to measure healthiness of diet) (14,17)
  - Dieting (14,17)
  - Body image (14,17)
- Sleep (14,17)
- Drugs (14,17)
- Smoking (11,14,17)
- Drinking (11, 14, 17)





### Mental health and well-being





### Mental health and well-being I

Parent	Cohort member
	<u>Strengths and Difficulties Questionnaire (SDQ)</u> Emotional symptoms, conduct, and peer problems, and hyperactivity, prosocial behaviour - parent-report about CM (3,5,7,11,14,17) - teacher report (7,11) - CM report (17)
<u>Kessler 6</u> (K6) (3,5,7,11,14,17) Depressive and anxiety symptoms	YP <u>Kessler</u> 6 (K6) (17)
	Mood & Feelings Questionnaire (Shortened) (14)
	Diagnosis of depression or anxiety (17)
	Self-harm: 6 questions from the Edinburgh Study of Youth and Transitions incl. attempted suicide (17)

### Mental health and well-being II

Parent	Cohort member
Shortened Rosenberg <u>Self-Esteem</u> Scale (9m)	YP Shortened Rosenberg <u>Self-Esteem</u> Scale, (11,14,17)
	YP Warwick-Edinburgh <u>Mental Wellbeing</u> Scale (WEMWBS) (17)
Life satisfaction (9m, 3, 5, 7,11)	Life satisfaction (11)
<u>Happiness</u> (9m, 3, 5, 7,11)	Happiness (11,14)





### Behaviours, attitudes and identity

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### **Behaviours**

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- Temperament (14 items Carey Infant Temperament Scale) (9m)
- Personality Big Five personality traits (OCEAN) (M&P 7,14) (CM, 17)
- Self-regulation (3,5,7)
- YP Brief Self-Control Scale (17)
- Risk and time preferences (17)
- Bullying, victimisation (11,14,17)

### Attitudes and identity

- Activities and interests (7, 11, 14, 17)
- Aspirations (7,11,14,17)
- Attitudes: Politics, Employment, Couples with children, Abortion, Race, Religion, The environment
- Sexual, gender, ethnic, religious identity, sexual attraction

## **Risky behaviours/ Crime**

- Contact with the police:
  - o stopped by police (14,17);
  - o warned/cautioned (14,17);
  - o arrested (14,17);
  - o appeared in court crime (17), found guilty/not guilty (17)
- Carried a knife or weapon (14,17); hit someone or used weapon (14,17); pushed or shoved/hit/slapped/punched someone (14,17)
- Member of a street gang (14,17)
- Stolen/theft: from shop (11,14,17) & no. times (14,17), a vehicle (17) & no. times (17), entered home with intent to (17) & no. times (17), used credit/debit card (17) & no. times (17), from somebody (14,17)
- Graffitied (11,14, 17) & no. times (14,17)
- Damage to public property (11,14,17) & no. times (14,17)
- Arson (17) & no. times (17); what set fire to (17)

CENTRE FOR LONGITUDINAL STUDIES Hacked, or put a virus on someone else's machine deliberately (14, 17) & no. times (14,17) Harassed someone via phone/email (17); sent pictures or spread rumours via phone/email (17);

or made an unwanted sexual approach (17)



### Data enhancements and innovations

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### Access to different types of data



Access to data held by the UK Data Service varies depending on how the data is classified:

<u>Tier 1a:</u> <u>End User Licence</u> (EUL) for access to data with a low level of sensitivity and disclosivity.

- Most of our data are available under this licence.
- Your application is authorised directly by the UK Data Service, and you can download the data directly from there.

<u>Tier 1b</u>: <u>Special Licence</u> (SL) or CLS DAC (genetics) for access to moderately sensitive or disclosive data. Access through the UK Data Service and application approved by CLS before you can download the data.

<u>**Tier 2</u>**: <u>Secure Access Licence</u> (SA) for access to highly disclosive data. Access through a Trusted Research Environment (UKDS Secure Lab, UK LLC, DAIL Databank, UCL DSH) approved the UK Data Service and attend a specialised training course.</u>

<u>**Tier 3**</u>: <u>Special controlled</u> for access to data with very high level of disclosure. For example: open text responses, postcodes, school IDs, etc. Access through the UCL Data Safe Haven (DSH) and highly secure external servers as needed.

https://cls.ucl.ac.uk/data-access-training/data-access/

#### CLS record linkage programme – available data in MCS **CENTRE FOR I ONGITUDINAL STUDIES** Access Domain Country Data set / information England National Pupil Database (NPD) KS1,KS2 via the UKDS (SA) National Pupil Database (NPD) (KS1-KS4 including GCSE results, via the UKDS (SA) pupil level school census data and absence data) via the UKDS (SA) Pupil level school census data and Absence data Education Scotland NPD KS1 via the UKDS (SA) • Welsh National Pupil Database (KS1) Via the UKDS (SA) & via SAIL Wales • Via the UKDS (SA) & via SAIL Welsh National Pupil Database (up to KS4) in SAIL Databank England Hospital Episodes Statistics (HES) via the UKDS (SA) Admitted Patient Care (APC), Critical Care (CC) – linked to APC, Accident & Emergency (A&E), Outpatient Care (OP) Scotland Inpatient, Outpatient, Birth Records, Immunisation, Prescribing via the UKDS (SA) • Health Information, Child Health Review,

Up to age 11- Health, Emergency Hospital inpatient (PEDW),

Primary Care General Practice, Welsh Demographic Service.

Cohort members up to age 14 and parents in SAIL Databank

Wales

SA (UKDS Secure Access); SAIL (Secured Anonymised Information Linkage) Databank

via SAIL

via SAIL

# Geographical data enhancements

#### Available via the UKDS

Country	MCS sweep	Data set / information	Access
UK	1 to 7	<ul> <li>Geographic identifiers (SA)</li> <li>For example, electoral wards, Output Areas, Lower and Middle Super Output Areas, Parliamentary Constituency</li> </ul>	via the UKDS (SA)
Great Britain	4,5,6	<ul> <li>Ordnance Survey Point of Interest (Pol) <ul> <li>3 levels (3<sup>rd</sup> level 600+ classes e.g. fast food outlets)</li> </ul> </li> <li>Ordnance Survey Integrated Transport Network (ITN) <ul> <li>Topological snapshot of the entire road network to create 400, 800 and 1600 metres network-based buffers.</li> </ul> </li> </ul>	via the UKDS (EUL)
England, UK	1 to 6	<ul> <li>Green Space Deciles at LSOA and Ward Level</li> <li>MEDix Air Pollution Deciles</li> </ul>	via the UKDS (EUL)
Great Britain	3,4,5,6 1 to 6	<ul> <li>Banded distances:</li> <li>Home and school</li> <li>Home moves between sweeps</li> </ul>	via the UKDS (EUL)

#### Harmonised data sets (in MCS and across other British cohorts) Available via the UKDS (EUL)



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#### MCS COVID-19 and serology surveys Available via the UKDS (EUL)

COVID-19 surveys response				
	MCS cohort members	MCS parents		
Wave 1	2,645	2,831		
Wave 2	3,274	5,707		
Wave 3	4,474	5,251		

#### Serology survey response

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	MCS cohort members	MCS Parents
Invited	5,266	7,143
Consented	1,397	3,214
Blood sample returned	1,140	2,266

#### https://cls.ucl.ac.uk/covid-19-survey/

#### Serology Survey:

- Participants who took part in one of three COVID-19 Surveys were invited to provide a finger-prick blood sample
- Two antibody tests conducted Nassay and S-assay
  - N-assay more likely to identify naturally occurring antibodies through exposure to virus
  - S-assay more likely to identify antibodies occurring following vaccination

https://cls.ucl.ac.uk/covid-19-survey/covid-19-antibody-testing/
# Genetic data

- MCS6 saliva samples were collected from cohort members and resident biological parents for DNA extraction:
  - Approx. 200 twins or triplets
  - Triads (cohort, mother, father) @47%, cohort and one parent @44%
- Now available, genotyped data single chip (Infinium Global Screening Array)

Cohort member	8,031
Mother	8,181
Father	4,782
Total	20,994



Working on: polygenic scores for multiple phenotypes

CLS | Genetic data and biological samples (ucl.ac.uk)



Fitzsimons, E., Moulton, V., Hughes, D. A., Neaves, S., Ho, K., Hemani, G., ... & Ring, S. (2021). Collection of genetic data at scale for a nationally representative population: the UK Millennium Cohort Study. *Longitudinal and Life Course Studies*.

# Measurement of health behaviours in MCS

- <u>Time use diary (14)</u> was paired with activity monitor: sample and day selection the same
- Full record of activities collected for 2 selected days; also collected information on where they were, who they were with, & how much they liked the activity
  - 4,851 CMs completed day 1 of the time-use record
  - 4,095 CMs completed day 2 of the time-use record
  - 8,946 TOTAL days of information

		Early morning																								
Activities	4am				5am				6a	m				7a	m				8ai	n				9a	m	
- What were you doing?	10 2	0 30	40 5	0	10 2	0 30	40	50	10	20	30	40	50	10	20	30	40	50	10	20	30	40	50	10	) 20	30
Sleep and personal care																										
Sleeping and resting (including sick in bed)																										
Personal care (including taking a shower/bath, grooming, getting dressed etc.)																										

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#### Activity monitor (7,14)

- Actigraph (waist) every day for 7 days during waking hours (7)
- Geneactiv accelerometer (wrist) – 1 weekday & 1 weekend day measured physical and sedentary activity (14)
- 44 activity codes were grouped into 12 high-level categories
  1.Sleep and personal care
  2.School, homework and education,
  3.Paid or unpaid work
  4.Chores, housework and looking after people or animals
  5.Eating and drinking
  6.Physical exercise and sports
  7.Travelling
  8.Social time and family time
  9.Internet, TV and digital media
  10.Volunteering and religious activities
  11.Hobbies and other free time activities
  12.Any other activity



### Resources and data access

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# Data <u>freely</u> available to researchers, government analysts and third sector workers: <u>https://ukdataservice.ac.uk/</u>



#### Key services

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#### https://cls.ucl.ac.uk/cls-studies/millennium-cohort-study/

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COVID-19 Our studies Dur research Dublications and resources Data access and training

Home Our studies

#### Millennium Cohort Study

On this page: Introduction Sweeps COVID-19 survey and data Sub studies Latest from MCS Age 17 initial findings Recent publications Study features Popular documentation Data access Principal Investigator More related content





The Millennium Cohort Study (MCS), known as 'Child of the New Century' to cohort members and their families, is following the lives of around 19,000 young people born across England, Scotland, Wales and Northern Ireland in 2000-02. The study began with an original sample of 18,818 cohort members.

<sup>A</sup>UCL

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+ more

#### https://cls.ucl.ac.uk/cls-studies/millennium-cohort-study/

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User guide		User Guide (Survey	ys 1 – 5)	Technical Report		1 <sup>st</sup> edition, Augus	t 2020
2 <sup>nd</sup> edition, December 2020	Institute of Edu	cation			Institute of Education		
	Millenniu Sixth Surve	m Cohort Study			Millennium Cohort SI A guide to the linked educat datasets (First Edition)	tudy ion administrative	Economic and Social Research Council
CENTRE FOR LONGITUDINAL STUDIES	User Guide Edited by Eml (With contributi Calderwood, E Smith and the I	r (Second Edition) a Fitzsimons ions from Vilma Agalioti-Sgompou, Lisa mily Gilbert, Lucy Haselden, Jon Johnson, Kate Millennium Cohort Team)	Economic and Social Research Council		May 2019		
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# **Training and Support**

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COVID-19 Dur studies

Publications and resources Data access and training

Home Data access and training

#### Training and support

Welcome to the CLS training and support page. This page features recordings from past CLS training events, often with accompanying slides. Please use the menu below to navigate. If you're looking for recordings of our COVID-19 survey training, please head to our separate COVID-19 training page. There are also many more training videos to explore on our CLS YouTube Channel.

Dur research

Upcoming training events

For upcoming training events, please see our events page. If you would like to hear about future training by email, as well as other CLS news, please sign up to our mailing list.

On this page: 1. Getting started 2. The cohorts in focus 3. Enhanced data in focus

Training videos on this page

#### Forthcoming events

**UCL** 

<u>Children of the noughties: a conference to celebrate 21</u> <u>years of the Millennium Cohort Study</u> 12&13 June 2023

Mental health in the 1958, 1970, 1989/90, and 2000-1 birth cohorts: measures, research and access 12 July 2023 12-1pm

#### https://cls.ucl.ac.uk/events/

#### Videos available: CLS website





# Looking ahead

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# Looking ahead

- MCS8, age 23 survey
  - Fieldwork starts September 2023
  - Testing f2f v sequential mixed mode (online f2f)
    - 1<sup>st</sup> stage @ 3k (higher RR)
  - Data deposit at UKDS ~ 2025
- Linked administrative data
  - Police National Computer (PNC) England ~ end of 2023
  - Police UK Monthly street level police data England and Wales ~ 2023

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### MCS8 content



#### Education:

Academic and vocational learning and apprenticehips

Educational experiences

Qualifications

**Employment:** 

Occupation

Income

Labour market transitions

Asset accumulation

#### Physical health and health behaviours

Longstanding

COVID-19

Height/Weight/Body fat

Substance use

Sleep

Diet and exercise

Cognitive skills and processes:

Short-term memory

Working memory and attention

#### Mental health and well-being

Psychological distress Mental well-being Life satisfaction Loneliness Coping mechansims Self-esteem Positive childhood experiences Body dysmorphia Family and relationships Support from parents and family members Social roles and interactions Partnership formation and fertility **Risky behaviours** Contact with the police Knife carrying Victimisation Stealing; graffiti, public damage, arson etc Activities, attitudes, aspirations

#### <u>Also</u>:

#### Interviewing resident partners Collecting information on offspring



### New research in the MCS using linked data

#### Emla Fitzsimons, PI of the MCS Nicolas Libuy Rios, Senior Researcher

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# Research potential using MCS

- Fast Food and Childhood Obesity: Evidence from Great Britain Nicolás Libuy, David Church, George B. Ploubidis, Emla Fitzsimons (under review at the Health Economics Journal)
- Describing the geographical linkage between the UK Millennium Cohort Study and crime incidents in England and Wales Nicolás Libuy, Emla Fitzsimons and David Church (under review at International Journal of Population Data Science)



# Fast Food and Childhood Obesity: Evidence from Great Britain

- Aims: to examine how school and home proximity to fast food restaurants relates to children's weight (BMI, BMI standardized scores by sex, overweight and obesity, body fat and weight).
- We linked the Ordnance Survey Point of Interest data to MCS and count the number of fast food outlets near the residences and schools of MCS participants (postcodes)
- We construct 400, 800, and 1600 metres road network-based buffers around MCS participants residences, since they equate to an average person's 5-minute, 10-minute, and 20-minute walking distance respectively.
- We use fixed effects models, exploiting changes in fast food restaurants near MCS respondents' homes and schools over time, controlling for a wide range of area-level and demographic factors.

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Year: 2008 Age: 7

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CENTRE FOR LONGITUDINAL STUDIES Year: 2012 Age: 11

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Year: 2015 Age: 14

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Change in the number of fast-food restaurants around MCS cohort member's residences between age 7 and 11 (20 minutes walking distance)



# Fast Food and Childhood Obesity: Evidence from Great Britain

- We find that proximity to fast food outlets is associated with increased weight (BMI, overweight, obese, body fat, weight), but only among those with maternal education below degree level.
- Within this sample, those with lower levels of emotional regulation are at heightened risk of weight gain.

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Table 1. The impact of fast food restaurants on BMI

	Homes	Schools
Fast food restaurant within		
400 metres	0.098	0.0296
	(0.0775)	(0.0426)
800 metres	0.0554**	0.0742***
1600 metres	(0.0255) 0.0355*** (0.0126)	(0.0229) 0.0225** (0.0106)
Other food outlets	Yes	Yes
Individual controls	Yes	Yes
Area level controls	Yes	Yes
Individual FE	Yes	Yes
Year of survey FE	Yes	Yes
Observations	24,759	24,759
Number of individuals	8,253	8,253
Mean of dependent variable	18.95	18.95

Notes: \*\*\*, \*\*, and \* denote statistically significant at 1%, 5% and 10%. Robust standard errors in parenthesis are clustered at the individual level.

#### Describing the geographical linkage between the UK Millennium Cohort Study and crime incidents in England and Wales

- Aim 1: To describe the geographical linkage between the UK Millennium Cohort Study and street-level crime incidents reported to the Police in England and Wales
- Aim 2: To demonstrate the potential use of the linked data by estimating crime count and rates around MCS participants' residences, and by studying the association between household income inequalities and exposure to neighbourhood crime during adolescence.



## Crime Data (Police UK)

- Monthly street-level database held by the Police UK, who routinely collect and curate the crime incidents reported to different Police Forces across the UK.
- Validated and geomasked to minimise privacy risks of victims while maintaining an approximate location of crimes incidents.
- Includes the name of the Police Force that provided the information, the latitude and longitude of the geomasked coordinates of the crime, the associated LSOA, the crime type or category.
- It also includes the outcome associated with the crime (e.g., offender sent to prison, under investigation, status update unavailable, investigation complete, no subject identified, among many other possible outcomes).

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### **Crime categories**

	Crime type	Description
1	Anti-social behaviour	Includes personal, environmental and nuisance anti-social behaviour.
2	Bicycle theft	Includes the taking without consent or theft of a pedal cycle.
3	Burglary	Includes offences where a person enters a house or other building with the intention of stealing.
4	Criminal damage and arson	Includes damage to buildings and vehicles and deliberate damage by fire.
5	Drugs	Includes offences related to possession, supply and production.
6	Other crime	Includes forgery, perjury and other miscellaneous crime.
7	Other theft	Includes theft by an employee, blackmail and making off without payment.
8	Public disorder and weapons*	Includes offences which cause fear, alarm, distress or a possession of a weapon such as a firearm.
9	Possession of weapons*	Includes possession of a weapon, such as a firearm or knife.
10	Public order*	Includes offences which cause fear, alarm or distress.
11	Robbery	Includes offences where a person uses force or threat of force to steal.
12	Shoplifting	Includes theft from shops or stalls.
13		Includes crimes that involve theft directly from the victim (including handbag, wallet, cash, mobile
	Theft from the person	phones) but without the use or threat of physical force.
14	Vehicle crime	Includes theft from or of a vehicle or interference with a vehicle.
16	Violent crime	
15		Includes offences against the person such as common assaults, Grievous Bodily Harm and sexual
	Violence and sexual offences	offences.

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### Some challenges and limitations of Police UK:

- Changes in classification and data quality.
- Geomasking the location of crime incidents may introduce measurement error in the derived crime variables.
- Inconsistency in geocoding policies and reporting of crime incidents by Police Forces may introduce differences in the quality of crime incident records.
- The definition of neighbourhood crime counts and rates. Buffer size, weighted rates by crime severity, proximity, and societal cost.
- Others (dark figure of crime, bias in reporting crime incidents, seasonality)



# Changes in classification of crime incidents and MCS fieldwork

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			201 <sup>-</sup>	1		2012	2		201:	3		2014	4		201	5		2016	6	2017		2017			7 20			2018 2				
	Crime type	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec	Jan - Apr	May- Agu	Sep - Dec				
1	Anti-social behaviour																															
2	Bicycle theft																															
3	Burglary																															
4	Criminal damage and arson																															
5	Drugs																															
6	Other crime																															
7	Other theft																															
8	Public disorder and weapons*																															
9	Possession of weapons																															
10	Public order																															
11	Robbery																															
12	Shoplifting																															
13	Theft from the person																															
14	Vehicle crime																															
16	Violent crime*																															
15	Violence and sexual offences																															
	MCS 5																															
	MCS 6																															
	MCS 7																															

### Crime rates and counts

- Crime rates were computed using crime counts as numerator and an appropriate population estimate as denominator
- Five periods: The month prior to the interview month, and the last 3, 6, 9 and 12 months before the month of the interview.
- The denominator (population estimate in a circle) was estimated as a weighted average of population size in squares that intersect circles- allowing changes over time in local population estimates.



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#### Results

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Figure. Distribution of crime rates and counts (1600metres buffer and 3-months period)



### Results

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After controlling for area crime rates at age 11 and several other sociodemographic characteristics, we observe a strong socioeconomic gradient in exposure to neighbourhood crime.



## Figure. Predictive margins of crime rates at age 14 and 17



# Thanks...

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### We've covered

- A brief overview of CLS and the MCS
- Data in the MCS by themes
- Enhancements and innovations
- Examples of research using MCS and linked data
- Q&A to the panel



# Q&A to the panel

### Please complete the feedback form

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# Questions to the panel

Emla Fitzsimons, PI of Millennium Cohort Study

Vanessa Moulton, Senior Researcher

and Morag Henderson, Associate Professor





# **IOE.CLS** Data User Support

clsfeedback@ucl.ac.uk

Thanks!

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# Current geo data linkages

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# Geographical data deposited at UKDS



# Specialist geo-data linkages currently available @UKDS

1958 National Child	Development S	tudy		
1970 British Cohort S	Study			
Next Steps				
Millennium Cohort S	tudy			
1920	1940	1960	1980	Air Pollution MEDIx deciles 2001-2015
1958 National Child	Development St	udy		
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1970 British Cohort S	Study			
Next Steps				
Millennium Cohort S	tudy			
1920	1940	1960	1980	Linked to Green Space Deciles at LSOA (England) and Ward Level (2001-2012)

1958 National Child	Development St	udy		
1970 British Cohort S	Study			
Next Steps				
Millennium Cohort S	tudy			
1920	1940	1960	1980	Linked to 'Points of Interest data / fast food category (2008-2015)

1958 National Child	Development St	tudy		
1970 British Cohort S	Study			
Next Steps				
Millennium Cohort S	tudy			
1920	1940	1960	1980	Banded distances of home moves between sweeps (2001-2015)

1958 National Child	Development St	udy		
1970 British Cohort	Study			
Next Steps				
Millennium Cohort S	tudy			
1920	1940	1960	1980	Banded distances to grammar schools in England (2012)

1958 National Child	Development St	udy		
1970 British Cohort S	Study			
Next Steps				
Millennium Cohort S	tudy			
1920	1940	1960	1980	Banded Distances to Current, First, Second, and Third Choice Schools (2006)

# COVID-19 surveys – geo linkages via UK LLC

Wave	Dates	Context	Mode
Wave 1	May 2020	First national lockdown	Web
Wave 2	Sept/Oct 2020	Eased restrictions	Web
Wave 3	Feb/Mar 2021	Third national lockdown	Web $\rightarrow$ Telephone

- Met Office Weather (rainfall, temp, humidity)
- Met Office Air Pollution (DAQI)
- Green space
- OS Points of Interest (supermarkets, pharmacies, Cash points, post-offices, hair and beauty services)
- Crime (street level crime exposures)
- Population density
- 2019 IMD rank

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