

Breakout sessions: Physical health 2

Auditorium

14:00-15:20

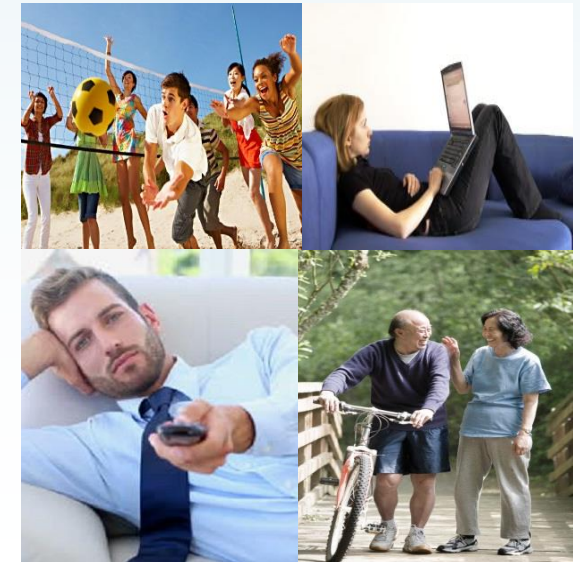
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Early life factors & adult leisure time physical inactivity: findings from the 1958 British Birth Cohort

Snehal M Pinto Pereira





CLOSER conference

The importance of early years, childhood and adolescence: Evidence from longitudinal studies

British Library Conference Centre
Monday 30 November

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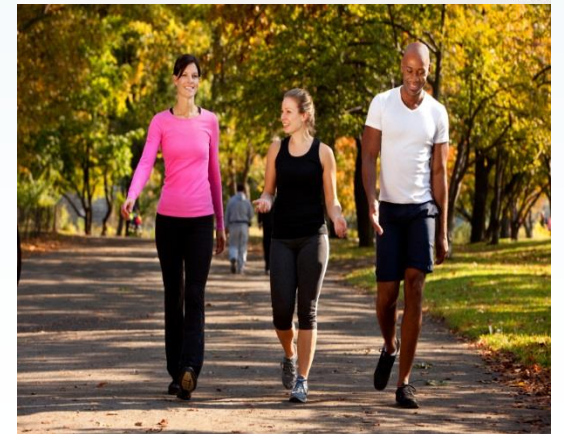
Physical inactivity

- Highly prevalent
- Modifiable



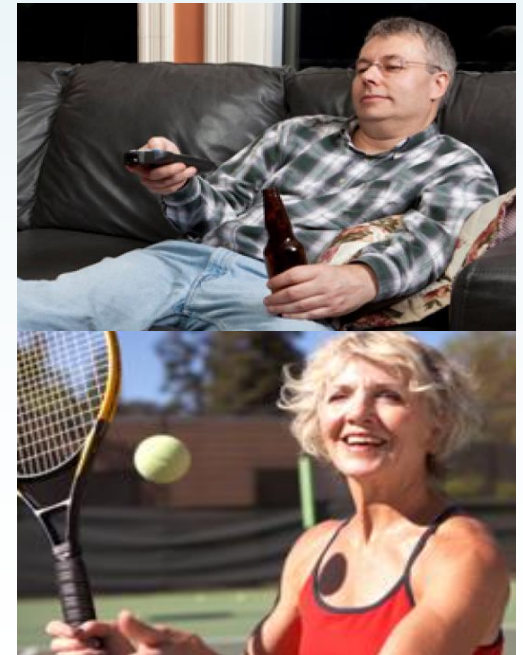
Predictors of inactivity: knowledge gaps

- Examine single time point
- Adult predictors only



Aims

- How stable is physical inactivity in adulthood?
- What influences inactivity at particular adult ages?
- What influences adult inactivity patterns?



National child development study, 1958-2008

All born one week in England, Scotland and Wales

N= ~12,000



Birth
1958

7y
1965

11y
1969

16y
1974

23y
1981

33y
1991

42y
2000

50y
2008

Physical inactivity (frequency < 1/week)
asked about leisure-time activity frequency:
swimming
going for walks
'keep fit' classes

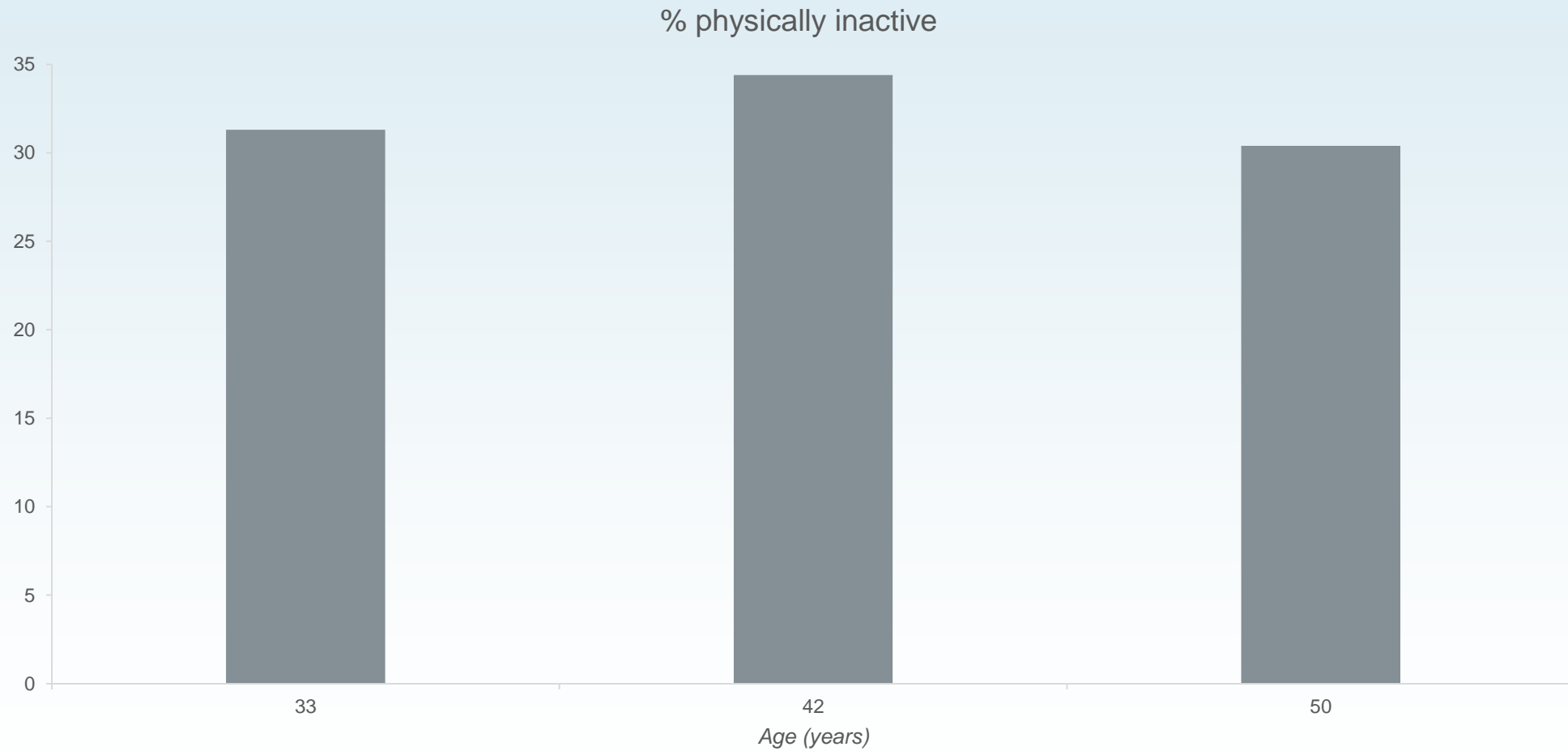
Early life

Physical: maternal smoking, pre-pubertal height

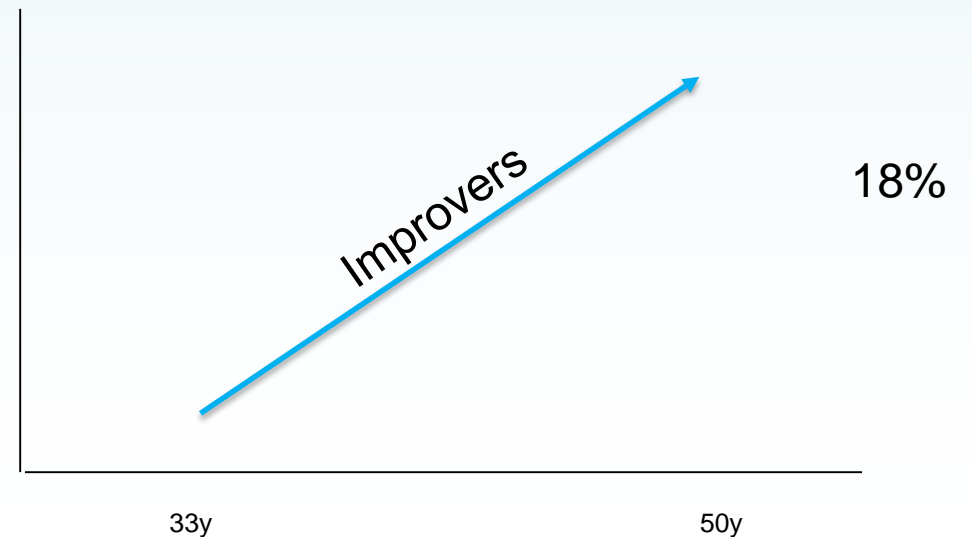
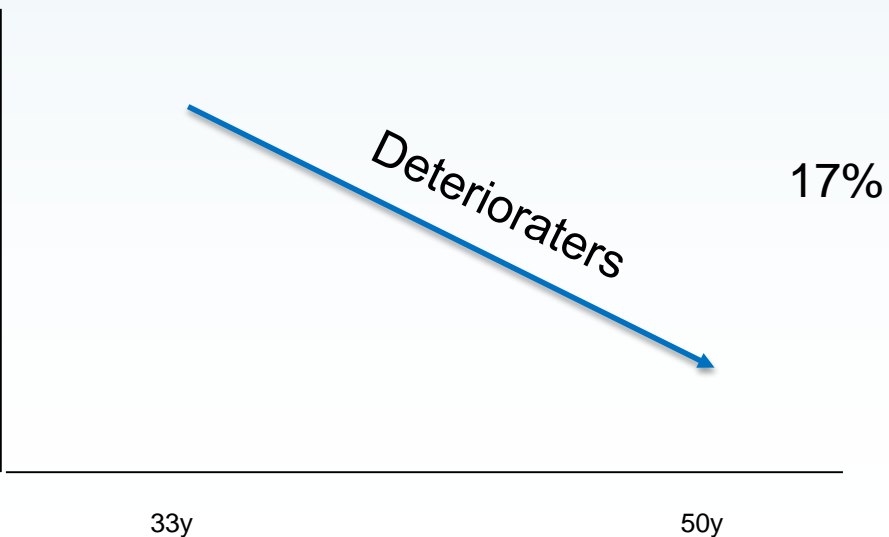
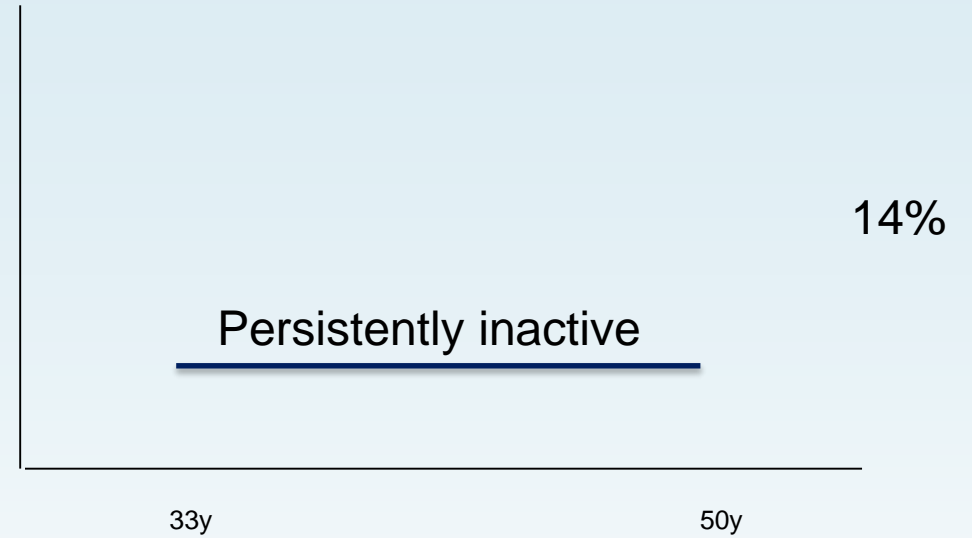
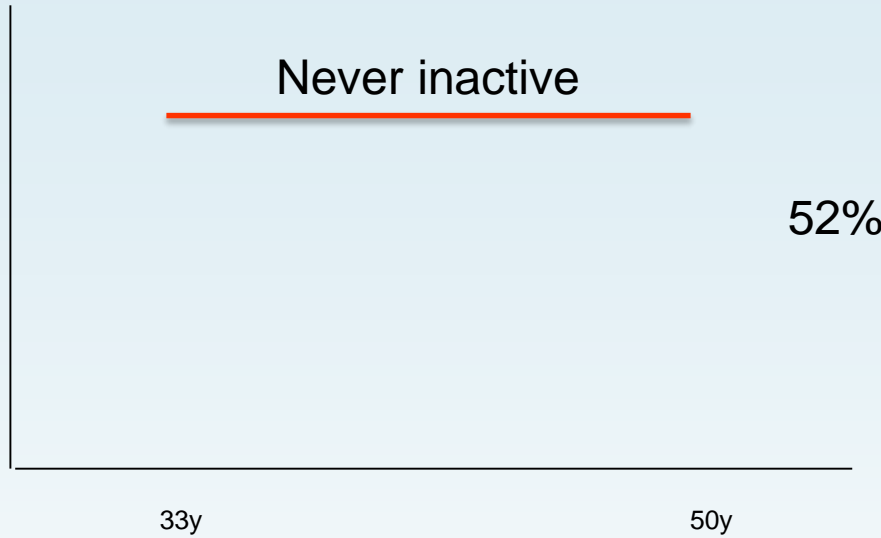
Social: class at birth, parental education

Behavioural: smoking, internalizing behaviours

How stable is physical inactivity in adulthood?



How stable is physical inactivity in adulthood?



What influences inactivity at particular adult ages?

Odds Ratios for Physical Inactivity



^a Per 1SD increase; ^b Per increase in scale; ^c Those with vs those without the attribute

What influences inactivity patterns?

Never inactive
(Baseline)

Persistently inactive

■ Persistently inactive v Never inactive
 ■ Deteriorating v Never inactive
 ■ Improving v Persistently inactive

^a Per 1SD increase; ^b Per increase in scale; ^c Those with vs those without the attribute

Conclusions

- 1/3 of the adult population are inactive
- Early life factors predict:
 - inactivity at particular adult ages
 - inactivity patterns in adulthood
- Limited predictors of improvement

Next steps

Examine adult predictors

Cross-cohort comparisons

Replication

Examine different factors



Public Health
Research Consortium

Leah Li
Chris Power

References

Pinto Pereira SM, Li L, Power C. Early-Life Factors and Adult Leisure-Time Physical Inactivity Stability and Change. *Med. Sci. Sports Exerc.* 2015.

Pinto Pereira SM, Li L, Power C. Early-life predictors of leisure-time physical inactivity in midadulthood: findings from a prospective British birth cohort. *Am. J. Epidemiol.* 2014; 180(11): 1098-108.

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Developmental and behavioural associations of burns and scalds in children

Prof Alan Emond

Healing Foundation Children's Burns Research Centre

Co-authors: Clare Sheahan, Julie Mytton, Linda Hollen

Background

Burns and scalds are common in young children

Steep social gradient with risk of burns

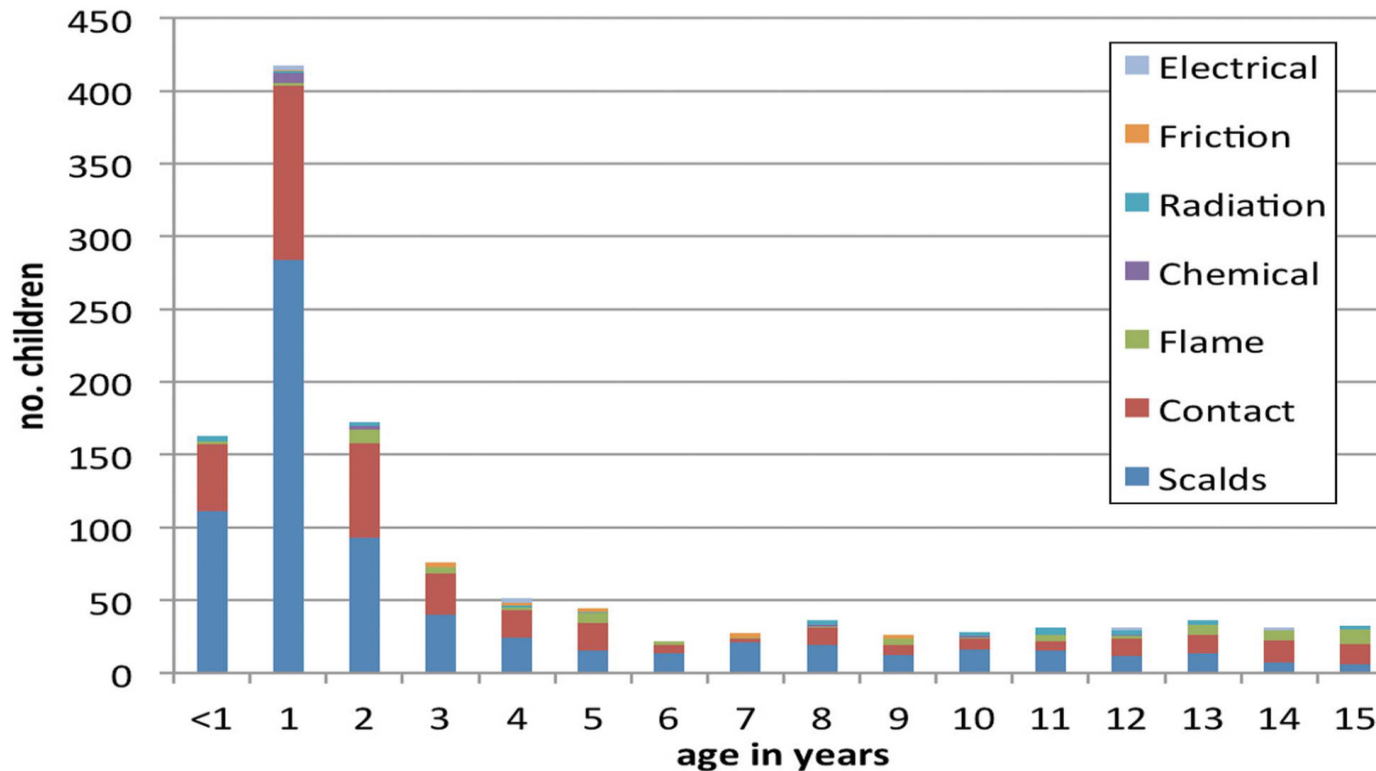
Types of burns and scalds also related to child's age and mobility

Little research on relationships between risk of burns and child developmental attainments and behaviour

Kemp 2013

Background

Types of burns and scalds related to age and development



Kemp 2013

Background

Risk of burns to children related to age and development



Aim

To investigate the correlations of paediatric burns and scalds with

- developmental and behavioural characteristics of the child
- measured prior to the injury





Avon Longitudinal Study of Parents And Children

ALSPAC

A longitudinal population study in Bristol, UK

Recruitment of women with EDD between
1.4.91 and 31.12.92

- 14,893 pregnancies
- 14,062 live births
- 13,988 alive at 12 months

Data collected by parent-completed
questionnaires and assessments in research
clinics



ALSPAC Injury data

Accident and injury data collected by parental self-completion questionnaires at ages:

- 6, 15, and 24 months
- 3, 4, 5, 7, 9, 11 years

Severity measure: Medically attended injury



ALSPAC developmental data used for burns study

- **Developmental scores** from parent- reported adapted Denver Developmental Screening Test at 18 months
- **Motor co-ordination** from parental report at 4.5 years
- **Behavioural profile** from Strengths and Difficulties Questionnaire (SDQ) at 3.5 and 7 years
- **Anxiety and depression** from the Developmental and Well Being Assessment (DAWBA) at 7 years
- **Cognition: IQ** measured at 8 using WISC III, **attention** measured at 7 using TEACH
- Linked to ALSPAC data pertaining to the family and local environment
Including Index of multiple deprivation (IMD) and family adversity index (FAI)

Results- Incidence

Injury data on 11,168 (83%) at 6 months and 7420 (53%) at 11 years

Incidence of burns and scalds:

0-2 years	83/1000/yr
2-4 years	34/1000/yr
5-8 years	28/1000/yr
9-11 years	26/1000/yr

Results- severity

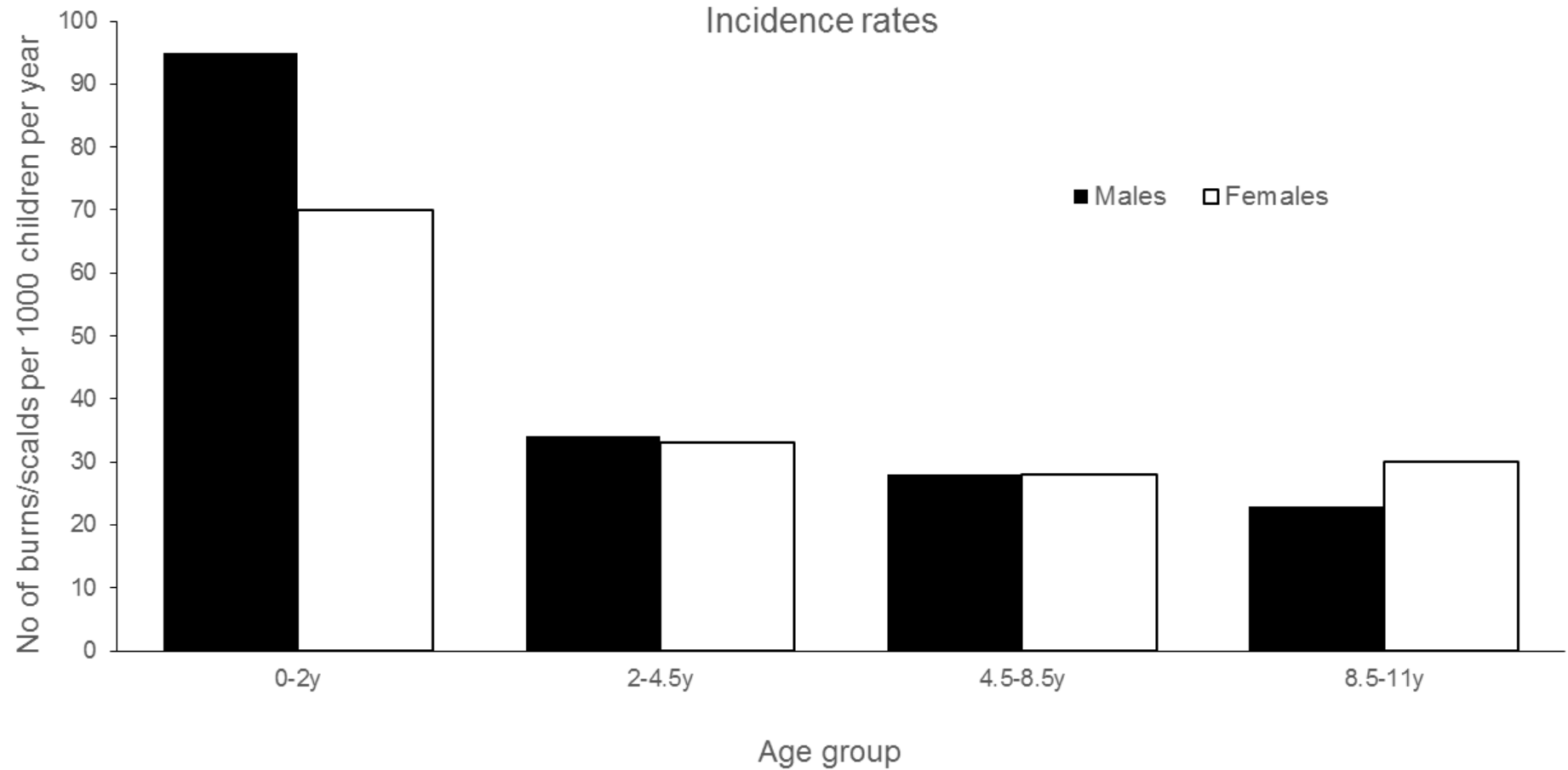
Medical attention was sought:

0 - 4.5 years	15%
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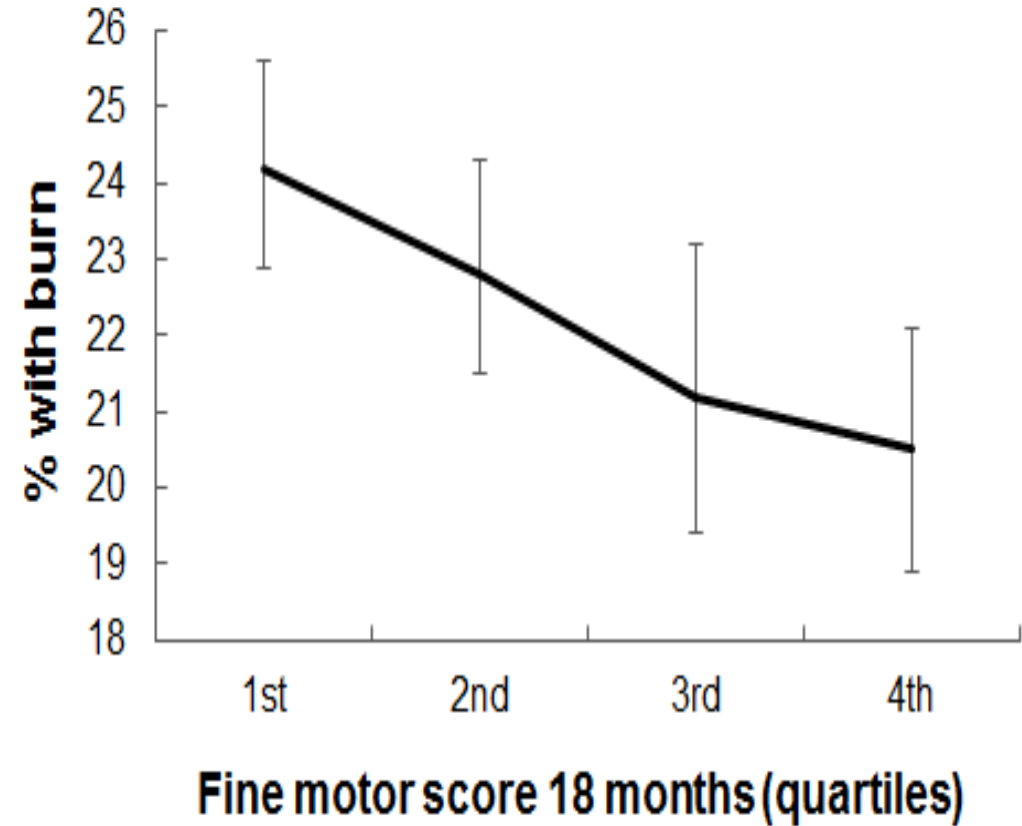
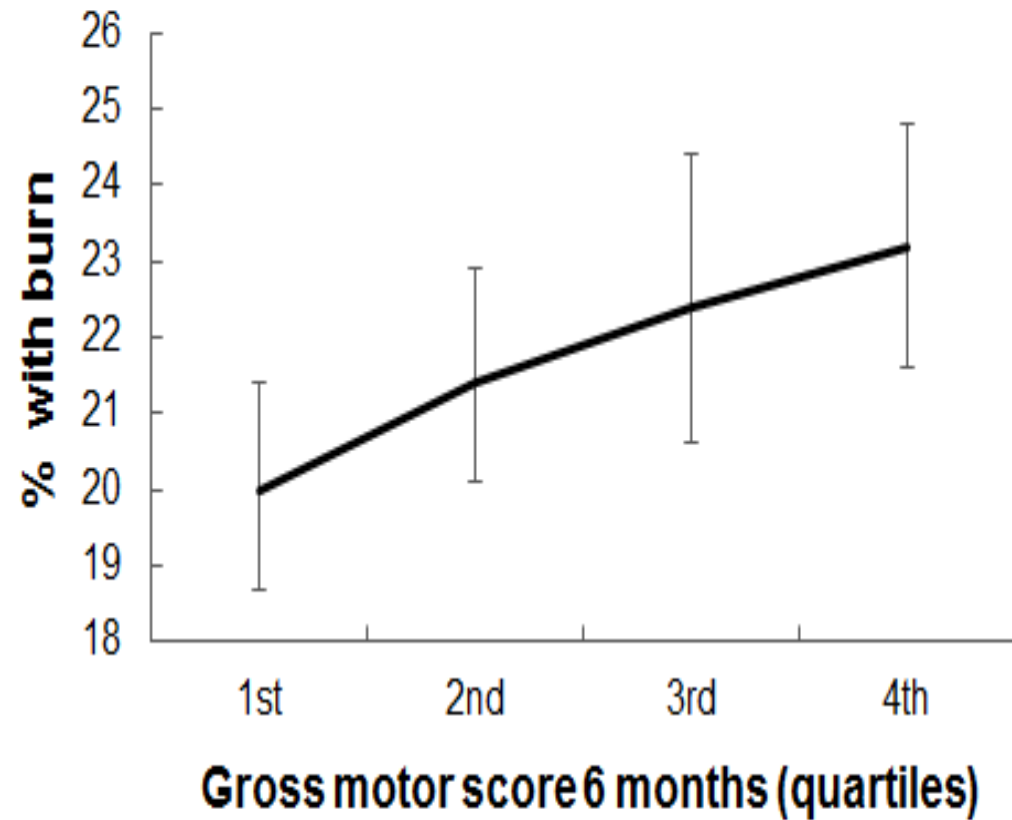
5 - 8 years	9.5%
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9 - 11 years	7%
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Results- gender



Motor development – burns under 5 years



Co-ordination

- Children with reported coordination problems at 4.5 years were more likely to sustain burns during school age (5-11years)
- *No* associations with diagnosed Developmental Coordination Disorder.
- *No* evidence that left handed children had any increased risk of a burn or scald

Cognitive development

No relation with incidence of burns and scalds 0-11 years and:

- Total development score reported at 18 m
- Total IQ measured at 8 years
- Attention measured at 7 years

Emotional development

- Frequent **temper tantrums** at 18 months, 3 and 5 years associated with increased rates of burns at all ages up to 11 years.
- General **anxiety and depressive** disorder symptoms at age 7 *not* related to risk of burns at 9-11 years.

Behavioural profile

SDQ at 42 months associated with risk of burns 5-11 years:

High **Hyperactivity** scores: Odds Ratio 1.48 (1.18 to 1.85)

High **Conduct difficulties** scores: Odds Ratio 1.56 (1.18 to 1.85)

Multivariate models

Adjusted for factors associated at 5% level in univariate analyses:

- Child factors: gender, age
- Parental factors: maternal education, marital status, domestic violence, maternal anxiety/depression, parenting score, maternal alcohol intake and life event score
- Socioeconomic factors: number of children in household, home satisfaction, neighbourhood quality, IMD and FAI

Final model- Burn injury 0-4.5 years

measure	age	UNADJUSTED Odds ratio (95% CI)	ADJUSTED Odds ratio (95% CI)
Gross motor score (highest quartile)	6 months	1.27 (1.11, 1.44)	1.25 (1.08, 1.45)
Fine motor score (highest quartile)	18 months	0.80 (0.69, 0.93)	0.81 (0.68, 0.95)
Temper tantrums (often)	18 months	1.39 (1.18, 1.63)	1.20 (1.00, 1.45)

Final model- Burn injury 5-8 years

measure	age	UNADJUSTED Odds ratio (95% CI)	ADJUSTED Odds ratio (95% CI)
Co-ordination problems	4.5 years	1.67 (1.24, 2.26)	1.52 (1.07, 2.15)
Hyperactivity (highest 10%)	3.5 years	1.48 (1.18, 1.85)	1.16 (0.89, 1.52)
Conduct problems (highest 10%)	3.5 years	1.56 (1.23, 1.98)	1.35 (1.03, 1.78)
Temper tantrums (often)	3.5 years	1.57 (1.25, 1.97)	1.31 (1.00, 1.71)

Final model- Burn injury 9-11 years

measure	age	UNADJUSTED Odds ratio (95% CI)	ADJUSTED Odds ratio (95% CI)
Gross motor score (highest quartile)	3.5 years	0.74 (0.57, 0.97)	0.83 (0.61, 1.12)
Co-ordination problems	4.5 years	2.08 (1.40, 3.07)	1.63 (1.05, 2.25)
Hyperactivity (highest 10%)	3.5 years	1.43 (1.04, 1.97)	1.21 (1.03, 1.78)
Temper tantrums (often)	5.7 years	1.69 (1.20, 2.39)	1.48 (1.02, 2.15)

Conclusions

Risk of burns and scalds is associated with:

- motor development in young children
- co-ordination difficulties in school aged children
- hyperactivity and conduct problems in school aged children
- emotional regulation at all ages

Strengths and weaknesses of study

Strengths

- Prospective study
- Large representative population
- Captures minor injuries
- Development and behaviour reported before burn injury

Weaknesses

- Parental reports not validated
- Recall bias
- Severity
- ?Non-accidental
- Missing data

Missing data

- boys, from ethnic minorities
- from a more deprived social background
- mothers with lower educational attainment.

Adjustment:

Models repeated with a 'complete case' sample with complete data on exposures and outcomes

NO DIFFERENCES IN ADJUSTED ASSOCIATIONS

Implications of findings

- Importance of development and behaviour in burns history
- Anticipatory guidance for parents of how risk of burns changes with development and emotional maturation
- Injury prevention strategies for different ages
- Specific advice for children with developmental and behavioural difficulties

Acknowledgements



THE HEALING FOUNDATION

Rebuilding the bodies, minds and lives of people with disfigurements



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University of
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University of the
West of England

University Hospitals Bristol



NHS Foundation Trust



Children's Burns
Research Centre

Understanding the origins of visual health inequalities

Phillippa Cumberland, Antonietta Chianca and Jugnoo Rahi

for the UK Biobank Eye & Vision Consortium

Population, Policy & Practice Programme
Institute of Child Health, UCL, London

CLOSER conference, 30th November 2015



- People value good eyesight; blindness is frequently ranked as the most feared disability
- Policies and research relating to ophthalmology and visual sciences have prioritised severe impaired vision and blindness
- Less is known about the much larger population with less severe impairment or near-normal vision
- Conceptual framework for research and policy centred on the notion of visual impairment rather than on the concept of visual health of the whole population

- Prior work using 1958 cohort data – visual function associated with poor childhood socio-economic status and with poor adult health and social outcomes
 - Limited size and diversity

Visual Function in Working-Age Adults

Early Life Influences and Associations with Health and Social Outcomes

Jugnoo S. Rahi, PhD, FRCOphth,¹ Phillippa M. Cumberland, BA, MSc,² Catherine S. Peckham, PhD, FRCP²

Purpose: To investigate how visual function in mid-adult life is associated with health and social outcomes and, using life-course epidemiology, whether it is influenced by early life biological and social factors.

- UK Biobank study
 - Associations between visual function and key social determinants, as well as key social and health outcomes

- CLOSER – Eyes & Vision
 - extending this work longitudinally
 - questions about the origin of inequalities in visual health

- *UK Biobank is the largest single resource for the study of health and disease*



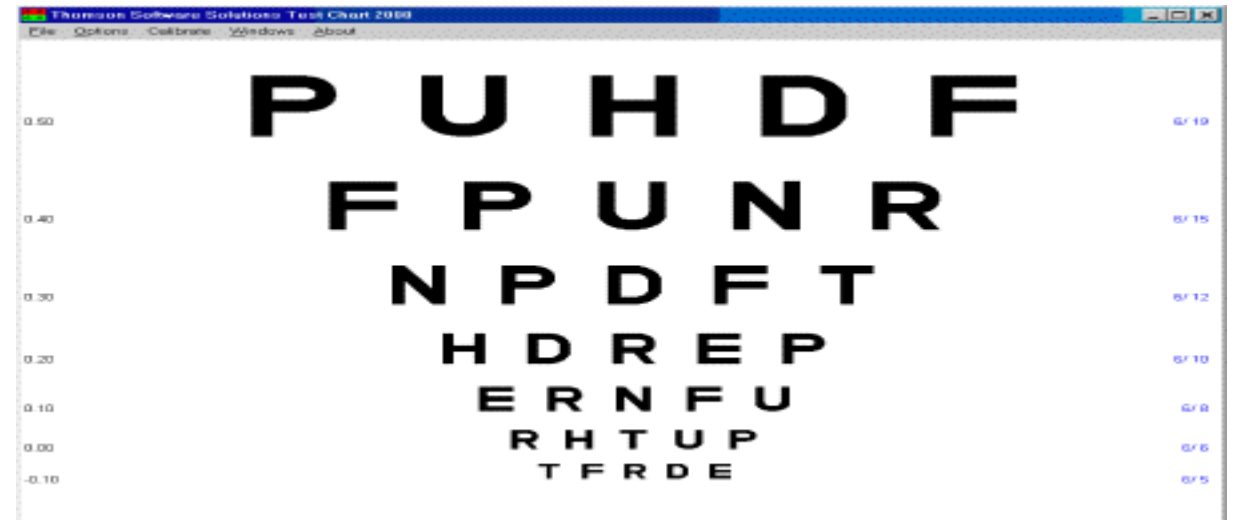
- **More than half a million** adults aged 40-70 years
 - recruited between 2006 & 2010
- A 22% subsample of participants underwent an enhanced ophthalmic examination:
 - **Presenting distance visual acuity (wearing glasses/contact lenses)**
 - autorefraction
 - intraocular pressure measurement
 - fundus photography
 - optical coherence tomography in a further subsample

- Recognition test (cognition test)



Snellen chart

logMAR chart



Log of the Minimum Angle of Resolution

117,458 participants had visual acuity assessment

- UKBB computerised system based on a logMAR chart
 - **Touchscreen questionnaire**
 - self-report on diagnosed eye conditions and treatments
 - socio-demographic and other information
- **112,314 (96%) subjects**
 - reliable *presenting* distance visual acuity measure in both eyes
 - self-report of absent eye/s (N = 144) i.e. blind
- **Exclusions from analysis**
 - report of not wearing prescribed optical correction (N=1,413)
 - unknown or unreliable distance visual acuity measure in at least one eye (N=3,731)
 - Incomplete data on all socio-demographic factors (N=2180)

Visual function category (habitual logMAR visual acuity)	Descriptive category in WHO taxonomy	Total
Bilateral normal 0.0 to 0.2	Mild or no visual impairment i.e. logMAR 0.0 to 0.49 in better seeing eye	85,877 77%
Unilateral near normal 0.0 to 0.2 vs 0.21 to 0.3		9,927 8.8%
Bilateral near normal 0.21 to 0.3		1,357 1.2%
Unilateral visual impairment 0.0 to 0.3 vs 0.31 or worse		12,477 11.1%
Socially significant visual impairment 0.31 to 0.49 in the better-seeing eye		1,917 1.7%
Visual impairment (VI) 0.51 to 1.0 in the better-seeing eye	VI and SVI = Low Vision	727 0.65%
Severe visual impairment (SVI) 1.1 to 1.3 in the better-seeing eye		26 0.02%
Blindness 1.31 or worse in both eyes	Blindness	6 0.01%

Associations between socio-demographic factors and visual function category^a

		Unilateral		Bilateral		
		Near normal	Visual Impairment	Near normal	Socially Significant VI	Visual Impairment Severe VI & Blind
Bilateral normal n = 84,383	N = 110,134	n = 9,699	n = 12,194	n = 1,307	n = 1,826	n = 725
	n	Adj. Risk Ratio ^b	Adj. Risk Ratio	Adj. Risk Ratio	Adj. Risk Ratio	Adj. Risk Ratio
Female	60,070	1.1	1.0	1.2	1.1	1.2
Age group						
40 – 49 yrs	25,056	1	1	1	1	1
50 – 59 yrs	35,178	1.8	1.9	2.2	2.3	1.3
60 – 73 yrs	49,900	2.5	2.3	3.5	3.0	1.8
Ethnicity						
White	99,117	1	1	1	1	1
Mixed	995	1.2	1.0	1.2	0.9	1.8
Asian/Asian British	4,073	1.5	1.3	2.4	2.1	2.0
Black/Black British	4,811	1.5	1.3	2.3	2.5	1.8
Chinese	491	1.6	1.7	2.5	2.2	1.3
Other	1,647	1.5	1.3	2.1	1.6	2.5
Townsend Index ^c		1.03	1.04	1.04	1.08	1.1
Qualifications						
Higher level	44,475	1	1	1	1	1
A level/HNC	19,920	1.1	1.2	1.1	1.1	1.2
O level	29,314	1.1	1.2	1.1	1.3	1.3
None	16,425	1.3	1.8	1.3	1.9	2.0

^a Comparing each visual function category to bilateral normal acuity. ^b Estimates adjusted for all factors in the table (age as continuous variable) and variance adjustment for test centre. ^c Townsend Index – higher score indicates more deprivation.

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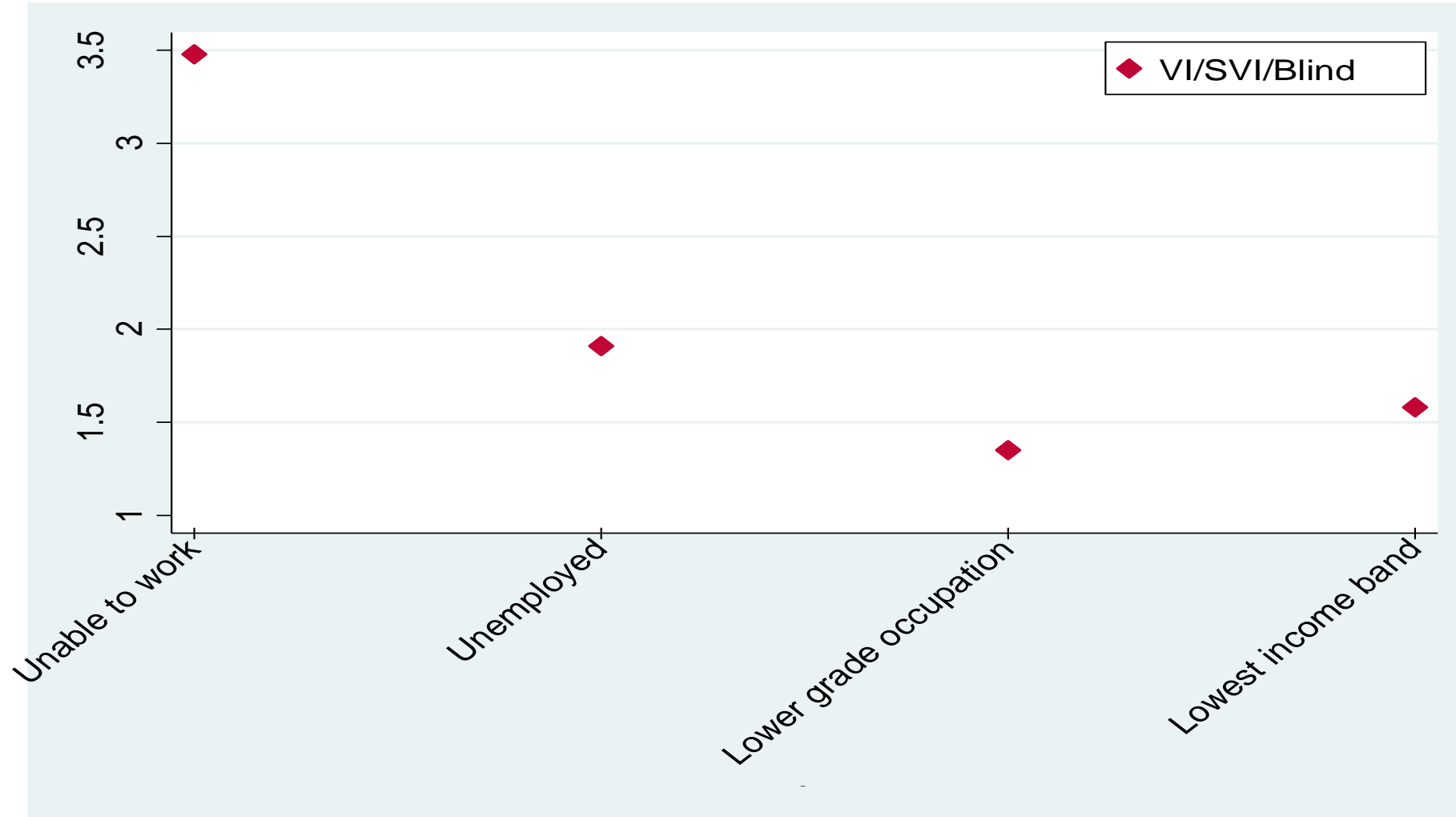
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- All-cause impaired visual function is independently associated with key social determinants and Black and minority ethnicity
 - Trend across acuity categories
 - Patterns of association not explained by risk of underlying eye disease

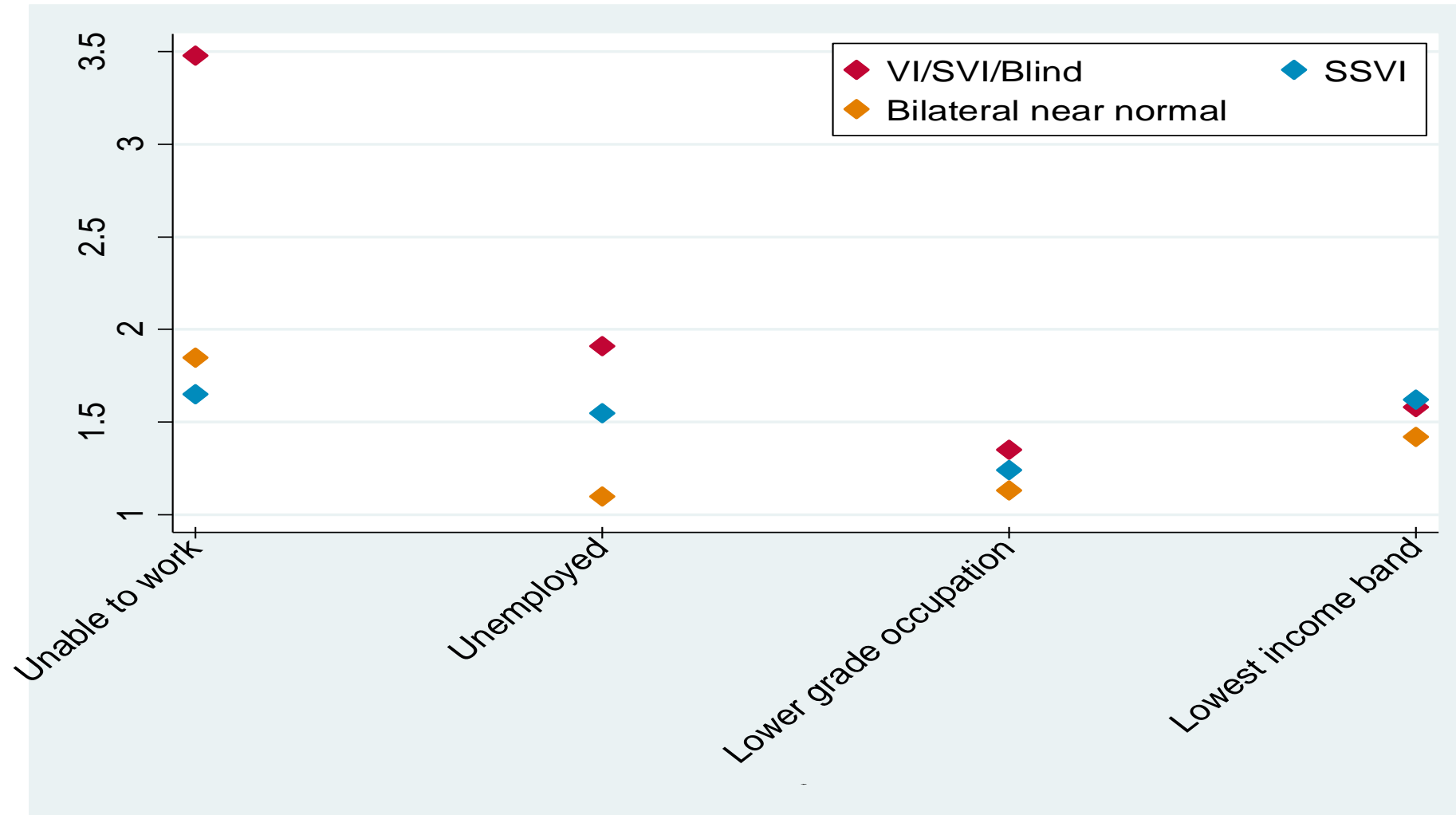
- Visual health is likely to improve with an improvement with social and health inequalities more broadly

- All-cause impaired visual function is independently associated with key social determinants and Black and minority ethnicity
 - Trend across acuity categories
 - Patterns of association not explained by risk of underlying eye disease
- Visual health is likely to improve with an improvement with social and health inequalities more broadly
- Is impaired visual health associated with adverse social outcomes?

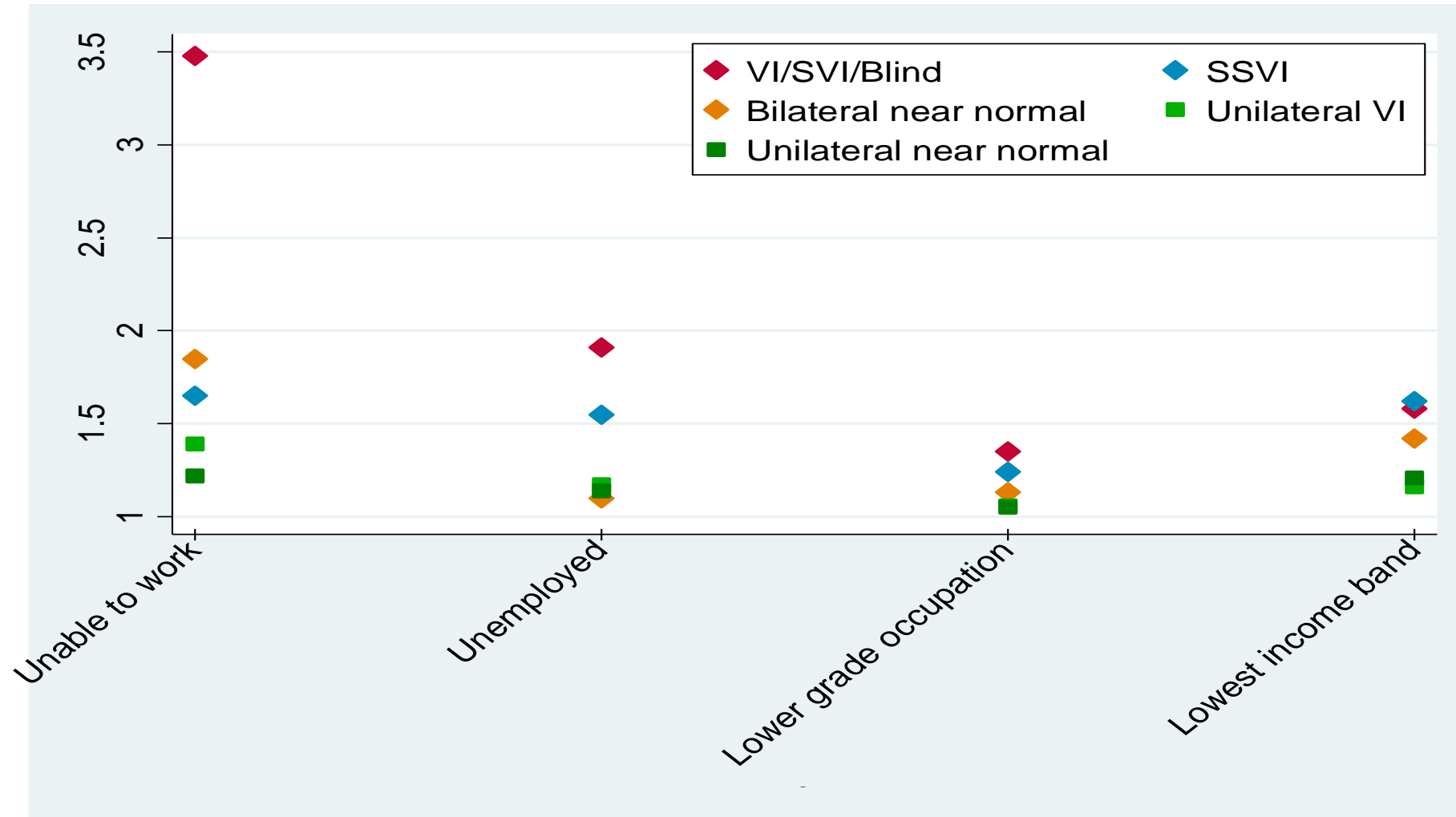
Associations between visual function category and employment/income status



Associations between visual function category and employment/income status



Associations between visual function category and employment/income status



- Impaired visual health is independently associated with adverse outcomes relating to employment and economic status
 - gradient observed from mild impairment affecting only one eye to blindness

- Impaired visual health is independently associated with adverse outcomes relating to employment and economic status
 - gradient observed from mild impairment affecting only one eye to blindness
- All-cause impaired visual acuity is a functional neurocognitive measure of the outcome of many factors/processes
- Evidence for the inclusion of distance visual acuity as an indicator or outcome in key UK initiatives designed to monitor and tackle health inequalities

- **Aim:** to extend the work on UK Biobank to investigate, longitudinally, the origins and pathways of development of inequalities in visual health

- Identification of available data
- Data harmonisation
 - primary outcome data, nature of the data, how is it measured & context of data collection
 - secondary outcome data
 - socio-demographic and other potential life course risk factors



Snellen chart

- Varied number of letters/shapes per row
- Spacing of letters varies
- Some letters easier to recognise
- **Result ordinal, non-linear scale**

LogMAR chart

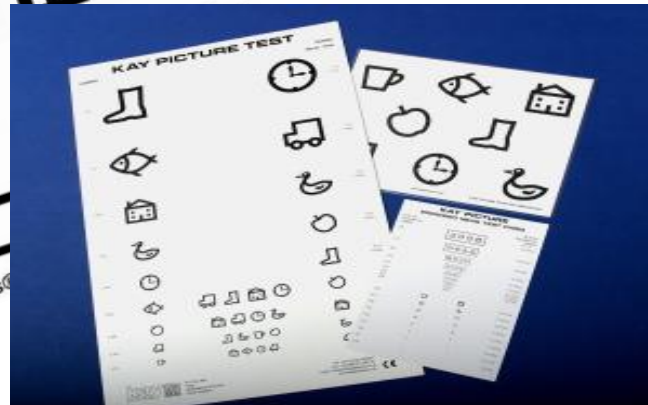
- 5 letters/shapes per row
- Size of letters - logarithmic progression
- Average difficulty per line is taken into account
- **Result on a continuous scale**



Visual acuity – primary outcome

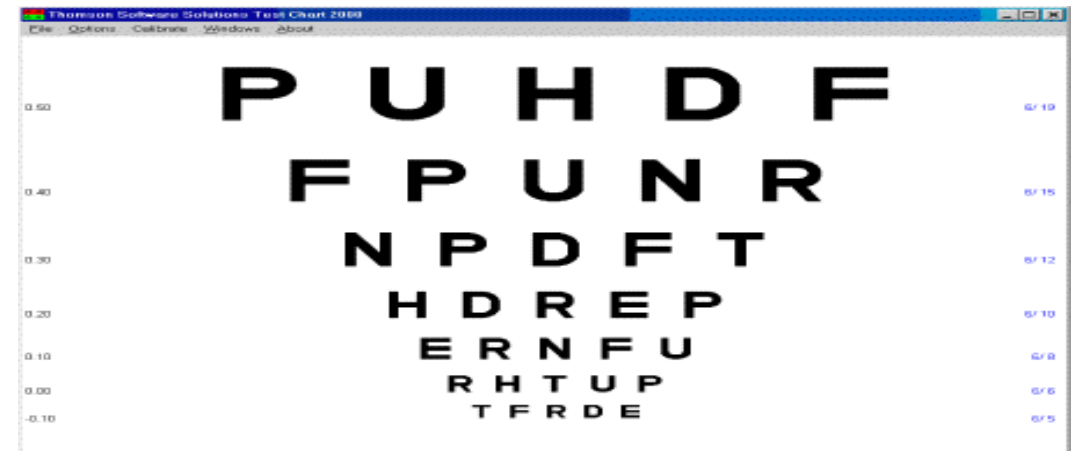
Snellen chart

- Varied number of letters/shapes per row
- Spacing of letters varies
- Some letters easier to recognise
- Result ordinal, non-linear scale



ETDRS - LogMAR chart

- 5 letters/shapes per row
- Size of letters - logarithmic progression
- Average difficulty per line is taken into account
- Result on a continuous scale



Snellen chart

6 meter notation

6/3
6/3.8
6/4.8
6/6
6/7.5
6/9.0
6/9.6
6/12
6/15
6/18
6/18.9
6/24
6/30
6/37.5
6/48
6/60
6/75
6/95
6/120
6/150

ETDRS chart

LogMAR

-0.3
-0.2
-0.1
0.0
0.1
0.18
0.2
0.3
0.4
0.48
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4

LogMAR acuity = $\log_{10} (1/\text{Snellen})$

e.g. LogMAR acuity = $\log_{10} \frac{1}{6/12} = \boxed{0.3}$

Measures by age	Cohort studies			
	1946	1958	1970	ALSPAC
Distance visual acuity				
6/7 years	✓ Snellen	✓ Snellen	X	✓ LogMAR ✓
10/11 years	✓ Snellen	✓ Snellen	✓ Snellen ✓ ✓	✓ LogMAR
15/16 years	✓ Snellen	✓ Snellen	✓ Snellen	X
44 years	N/A	✓ LogMAR +pinhole	N/A	N/A
53 years subsample (N = 200)	✓ LogMAR +pinhole	X	N/A	N/A

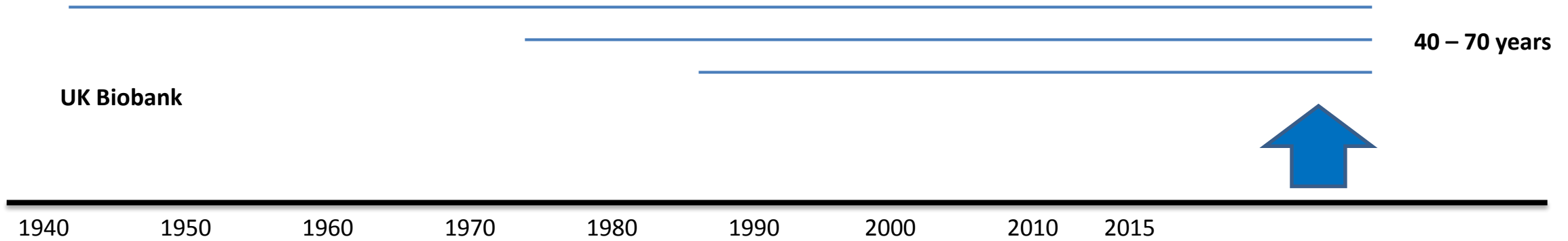
All acuity testing with glasses (if worn) and without glasses, unless stated otherwise

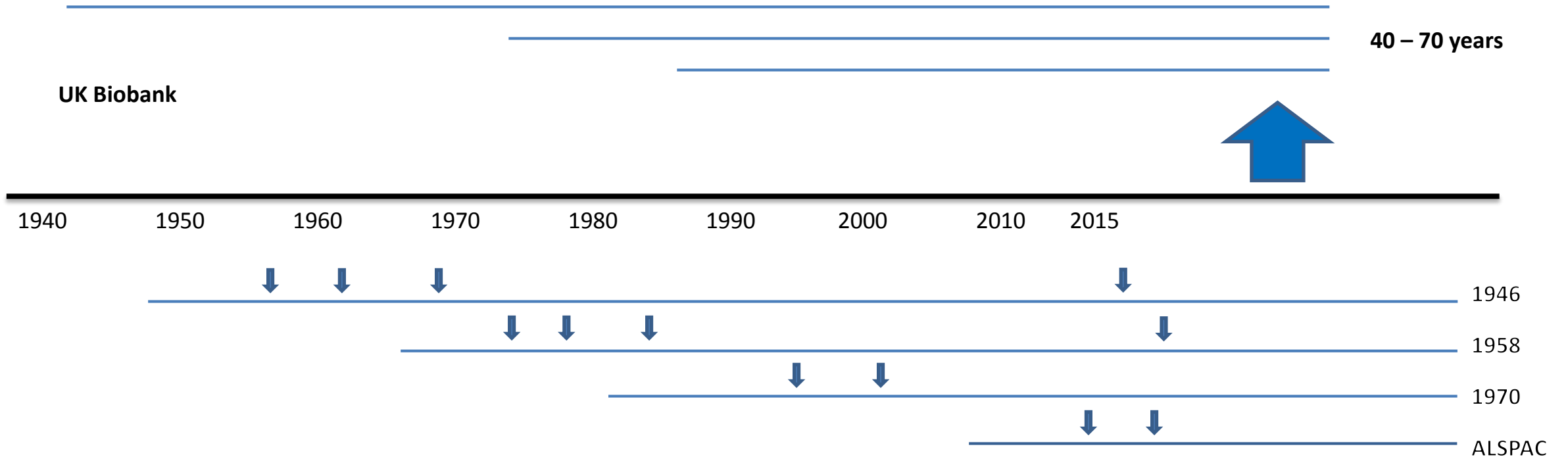
- Specific eye disease e.g. squint or cataract, is not our primary focus but it is important to know about other eye diseases
 - Interpretation of data
 - Indicator for exclusions from analyses
- Less reliable if parental/self-report data
- Information to support self-report of specific disorders may be available within the cohort
 - e.g. surgery, age of first wearing glasses etc.

Measures by age	Cohort studies			
	1946	1958	1970	ALSPAC
Distance visual acuity				
6/7 years	✓ Snellen	✓ Snellen	X	✓ LogMAR ✓
10/11 years	✓ Snellen	✓ Snellen	✓ Snellen ✓ ✓	✓ LogMAR
15/16 years	✓ Snellen	✓ Snellen	✓ Snellen	X
44 years	X	✓ LogMAR +pinhole	N/A	N/A
53 years subsample (N = 200)	✓ LogMAR +pinhole	X	N/A	N/A
Report of childhood squint				
6/7 years	observational exam	observational exam	parental report	clinical exam
10/11 years	observational exam	observational exam	observational exam	parental report
15/16 years	observational exam	observational exam	X	X
Additional eye problems				
6/7 years	observational exam	parental report	parental report	parental report
10/11 years	observational exam	parental report	parental report	parental report
15/16 years	observational exam	parental report	observational exam	X

All acuity testing with glasses (if worn) and without glasses, unless stated otherwise

- Explanatory factors
 - relevant to the research question
- Collaborating with groups within CLOSER to make use of expertise on harmonisation
- Look forward to reporting on this work





Acknowledgements



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This research has been conducted using the UK
Biobank Resource



Tea/coffee break and poster session

15:20-15:50

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