



The great outdoors: why access to green space is a determinant for health throughout life

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Green space & health

- Green space linked to wide range of health outcomes:
 - physical health
 - mental health
- Various pathways:
 - e.g. air quality, physical activity, social cohesion, and stress reduction
- Integral to urban policy development in many countries
 - e.g. WHO



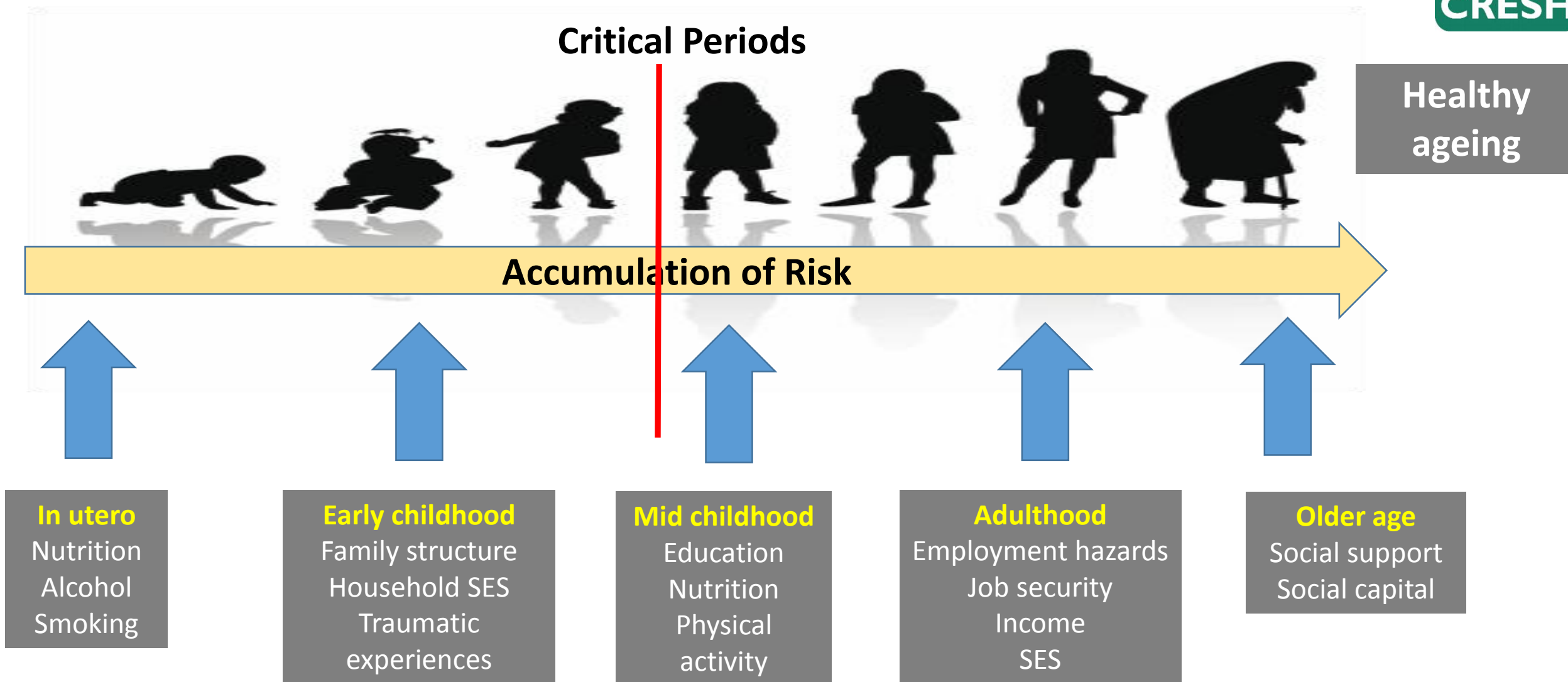
Questions for today



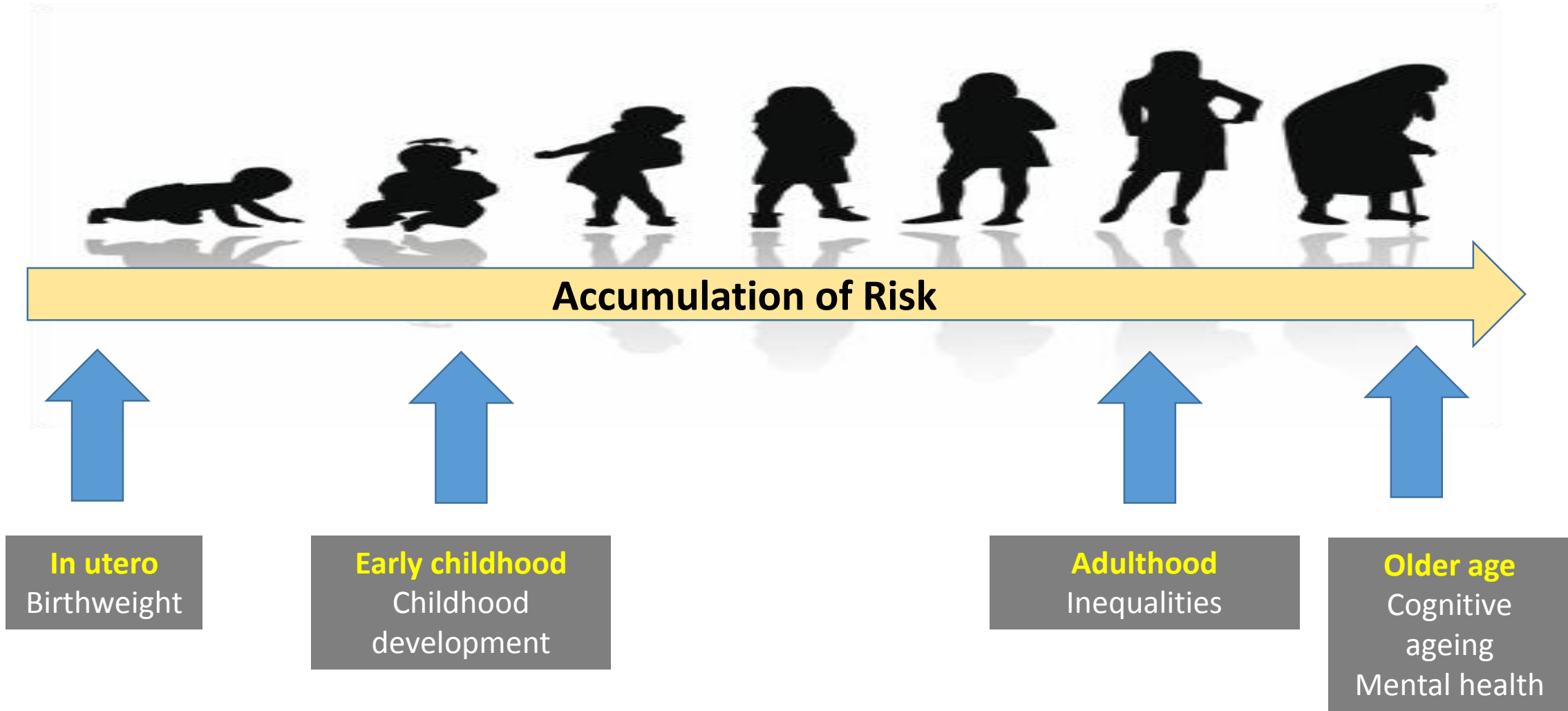
1. What is the evidence in Scotland relating green space & health?
2. Do green spaces affect health inequalities?
3. Is green space particularly beneficial at particular stages in life?



Life course approaches to health



Green space & health across the life course





Green space & birth weight

How might green space affect birth weight?



Psychosocial: restorative spaces → reduced maternal stress

Physiological: physical activity → improved maternal health

Environmental: reduced maternal exposure to environmental risk factors (noise, air pollution)



Maternal exposure to green space & birth weight



- Sibling study: compares births to the same mother
- “Quasi-experimental”: similar to moving mother from one environment to another between pregnancies, and comparing birth outcomes.
- Found total green space (public + private) more important than just public natural spaces



SLS-DSU

Scottish Longitudinal Study
Development & Support Unit

Pregnancy #1



Pregnancy #2





Green space & early childhood
development

Possible mechanisms



1. Attention Restoration Theory

Experiences of natural space may restore child's attention by giving fatigued cognitive processes the opportunity to rest

2. Psychoevolutionary Theory

Natural spaces may support stress reduction through favourable physiological responses

3. Playful environments

May offer increase opportunities to play, which in natural spaces is often more creative, adventurous, social & challenging play than elsewhere

4. Indirect influences

Via effects on a child's carer. Exposure to green space linked with better mental health in adulthood; carers mental health can influence early childhood development



Role of urban natural
space in childhood
development?



Green space (particularly private
gardens) contributes to better
social, emotional & behavioural
outcomes (4-6 years)



The role of public and private natural space in children's social, emotional and behavioural development in Scotland: A longitudinal study

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ARTICLE INFO

ABSTRACT



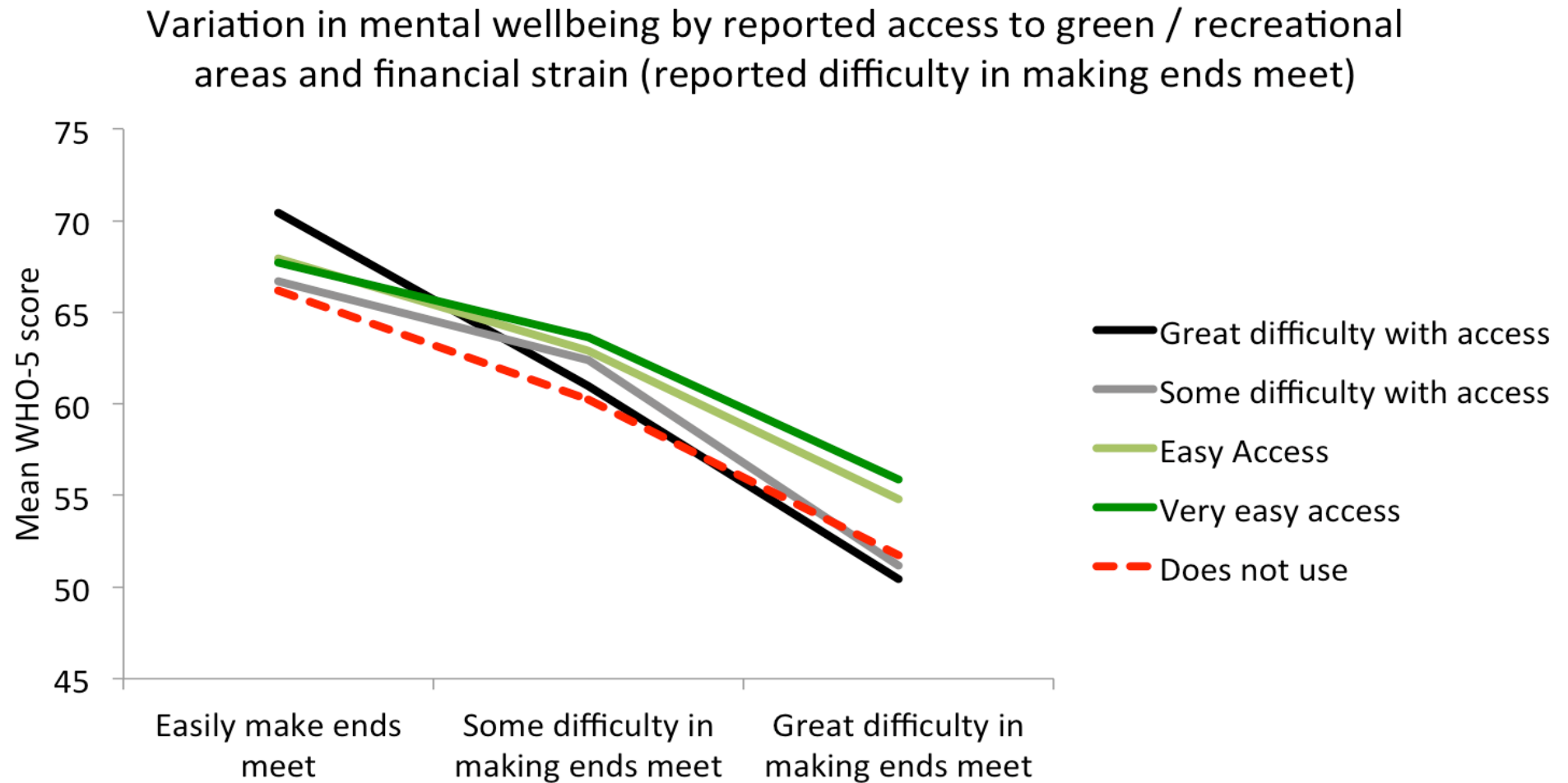


Green space & *inequalities* in mental health amongst adults

Are neighbourhood characteristics associated with narrower socio-economic inequalities in mental wellbeing?

Predicted mean mental wellbeing by perceived financial strain and ease of access to recreational / green areas.

- 21,294 urban residents
- 2012 European Q
- Associations: men
- 5 neighbourhoods reported access to



American Journal of Preventive Medicine 2015, 49 80–84.



Green space *across the lifecourse* &
cognitive ageing

MOBILITY
MOOD
PLACE


How do we look at effects of green space across the lifecourse?

Few studies **tracked historical development of places** & considered repercussions for local health

Short time periods

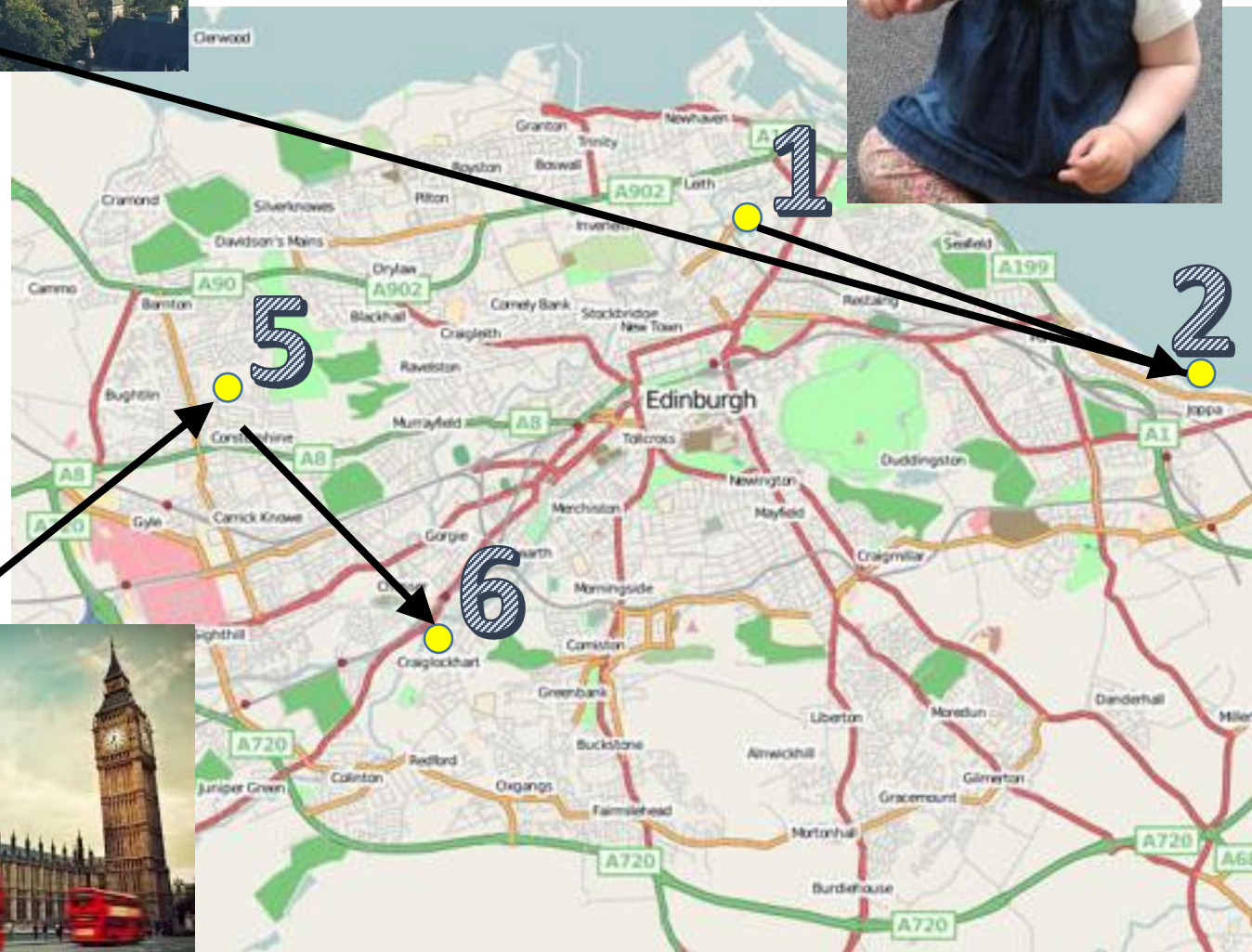
Poor understanding of **accumulation & critical periods**



We need to get much better at:

- tracking *people* over time
- tracking *places* over time

3



4



Lothian Birth Cohort 1936

DO NOT OPEN THE BOOK UNTIL YOU ARE TOLD

THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION
1947 MENTAL SURVEY

INSTRUCTIONS TO PUPILS
Listen carefully to the teacher and do quickly and carefully what you are told to do.

SEX (indicate by X)
Boy
Girl

Name of Pupil in block capitals, Surname first } Surname: Christian Names:
Name of County or City: School:

Date of Birth.*
Day: Month: Year:

To be completed by Teacher.†
Class in School:
Secondary V
IV
III
II
I
Primary V
IV
III
II
I
Infants
Special

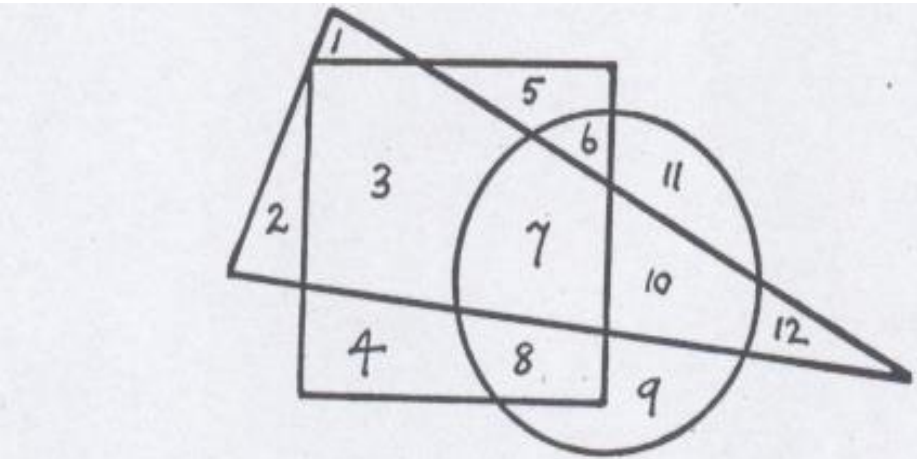
FOR MARKER'S USE ONLY.
PICTURE TEST. Score. Marked by.
VERBAL TEST. Page. Score. Marked by.
Total of pages 4 to 8.

* To be checked from register by Teacher.
† Mark the class by X.

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13. John is younger than Jim, and Jim is younger than Bill. Which is the oldest of the three? ... (John, Jim, Bill)
(Do not write anything, just underline the right one in the bracket).

In a certain secret writing
lzqkcofu, fttr yggr means
STARVING, NEED FOOD
In the same secret writing you find this. Write below it what it means:—
y o c t k g c t k l r t q r.

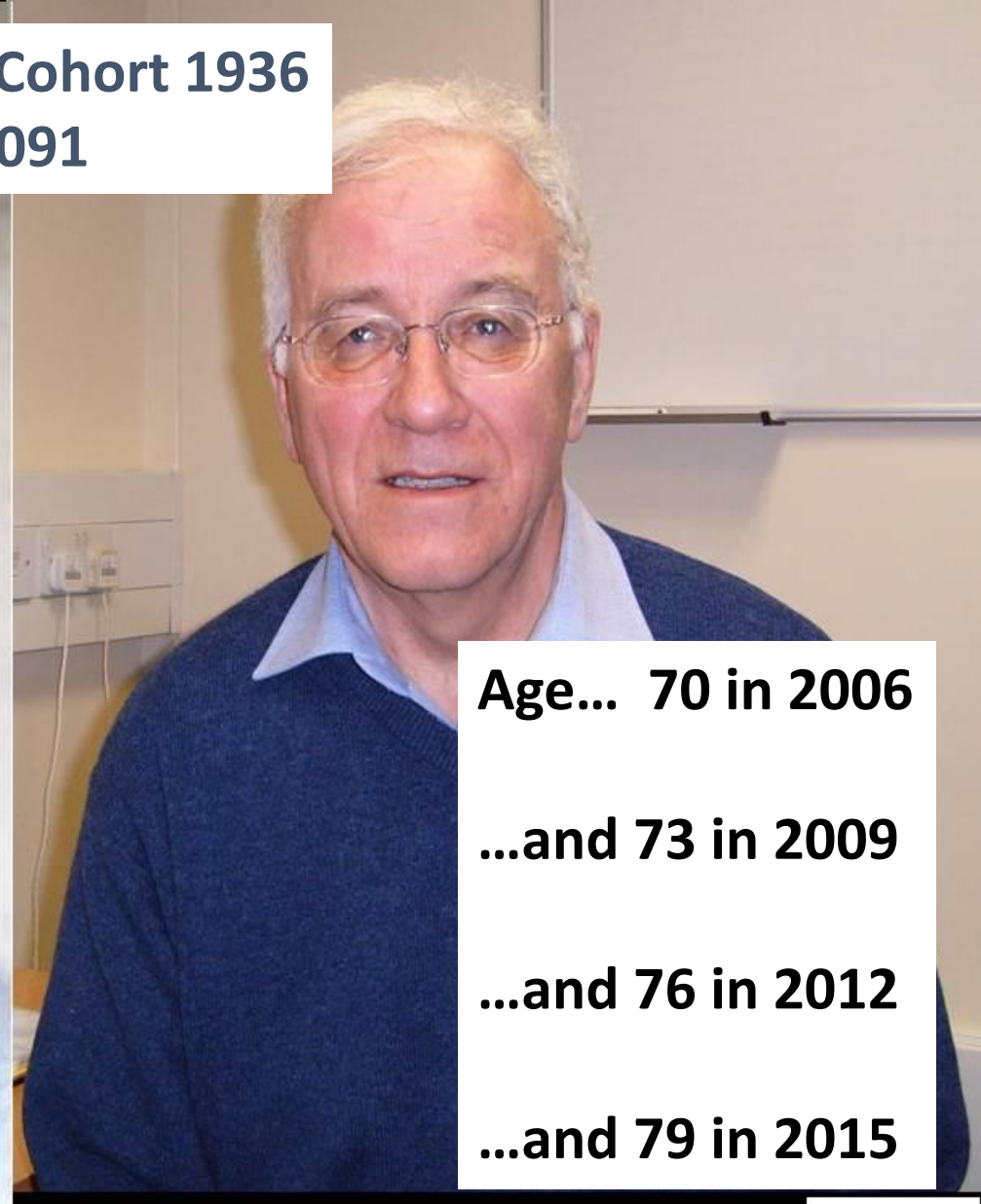


What number is in the triangle and square but not in the circle? ...

Lothian Birth Cohort 1936
N = 1091



Age 11 in 1947



Age... 70 in 2006

...and 73 in 2009

...and 76 in 2012

...and 79 in 2015

Deary et al. (2007) *BMC Geriatrics*, 7, 28.

Deary et al. (2012) *International Journal of Epidemiology*, 41, 1576-1584.

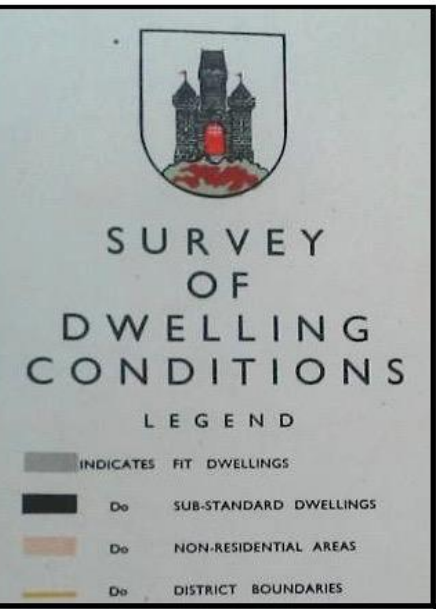
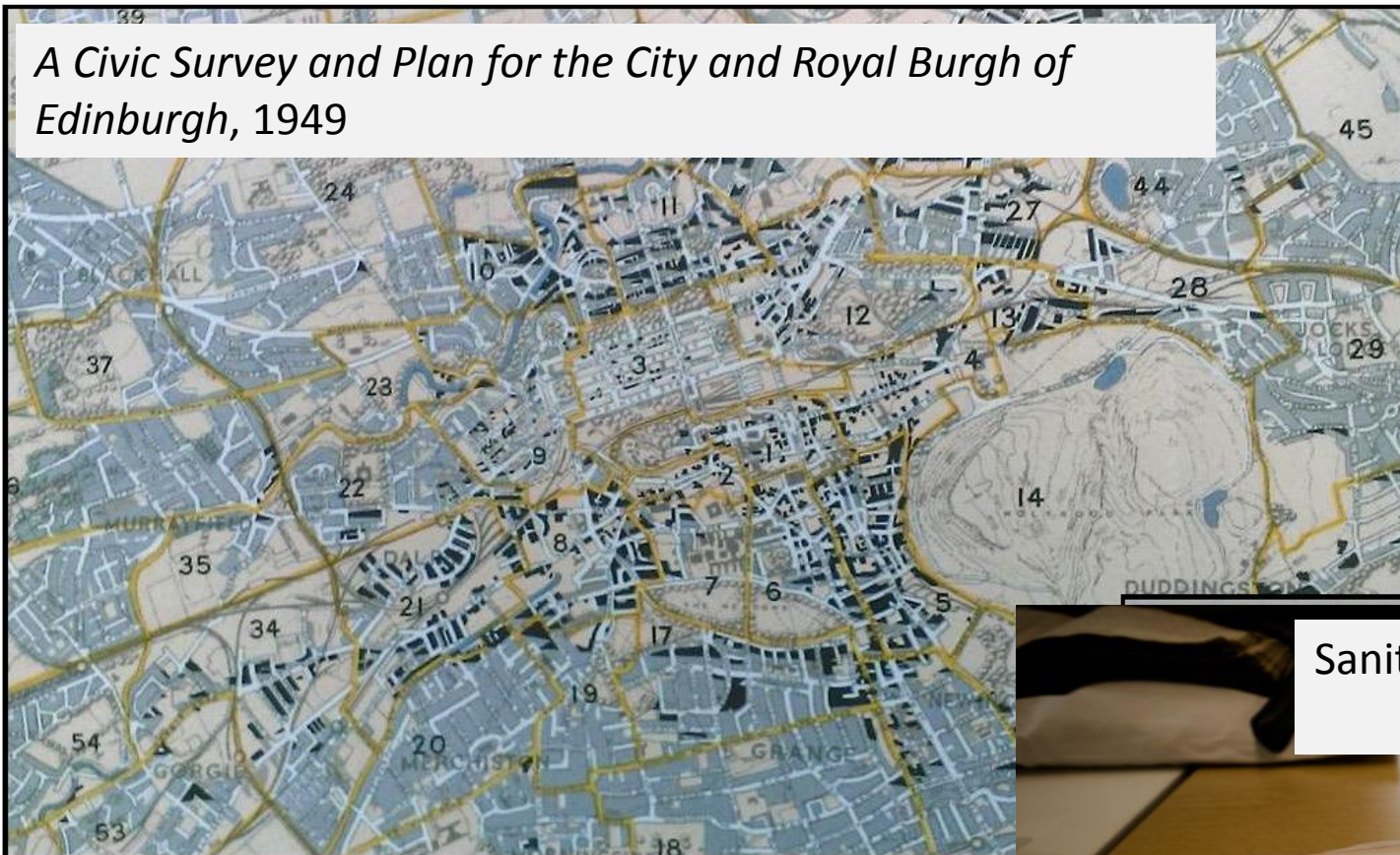
LBC
1936

'Life grid' technique – local, global and personal events are used to prompt recollection of past home addresses

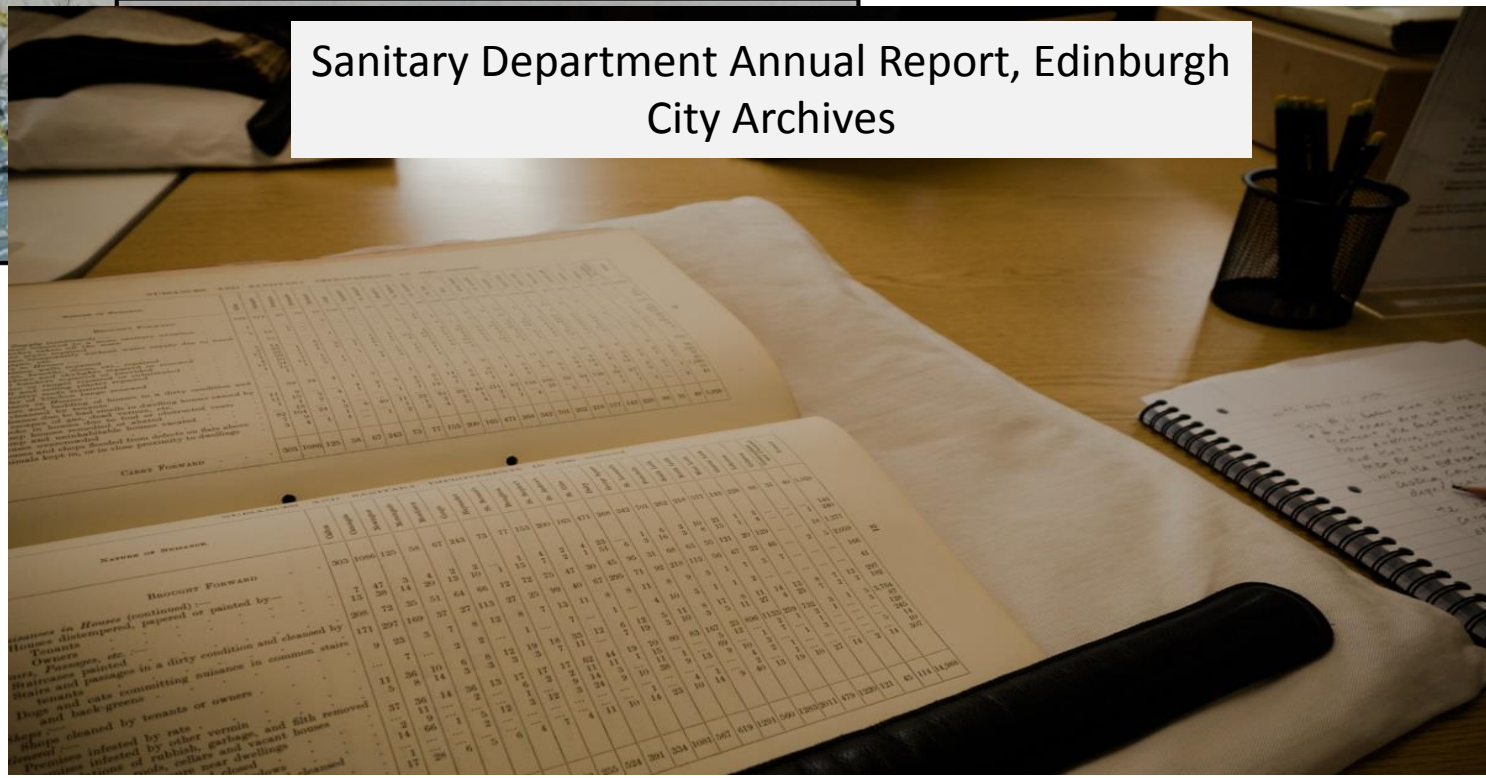


Year	Home address	Local/global/personal events	Work
	Write the street name, suburb and town/city of the home where you lived at the start of each decade e.g. 1930, 1940, 1950...	Major events that may help you date home address. Personal events could include the likes of marriage, birth of children, major holidays, death of parents...	Write the title of your job (or your Father's job if appropriate) at the start of each decade
1970	<i>Aylen Lea Cottages Gorgie Road Edinb.</i>		
1972		Oil crisis	<i>Self Employed</i>
1974		<i>Married</i>	
1976			<i>Mobile Fruit Van</i>
1978		Margaret Thatcher becomes prime minister	
1980	<i>Harrison Gardens Stratford Edinb.</i>		
1982		Falklands War	
1984		<i>Father Died</i>	
1986			
1988		Lockerbie bombing, Hillsborough disaster	
1990	<i>Forrester Park Gardens Edinb. EH12</i>	John Major becomes prime minister	<i>Self Employed</i>
1992			
1994			<i>Black Taxi Driver</i>
1996		Diana Princess of Wales dies	
1998		Scottish Parliament opened	
2000		9/11 attacks in New York	
2002			
2004			
2006			
2008			
2010		Earthquake and tsunami off coastal Japan	
2012			
2014			

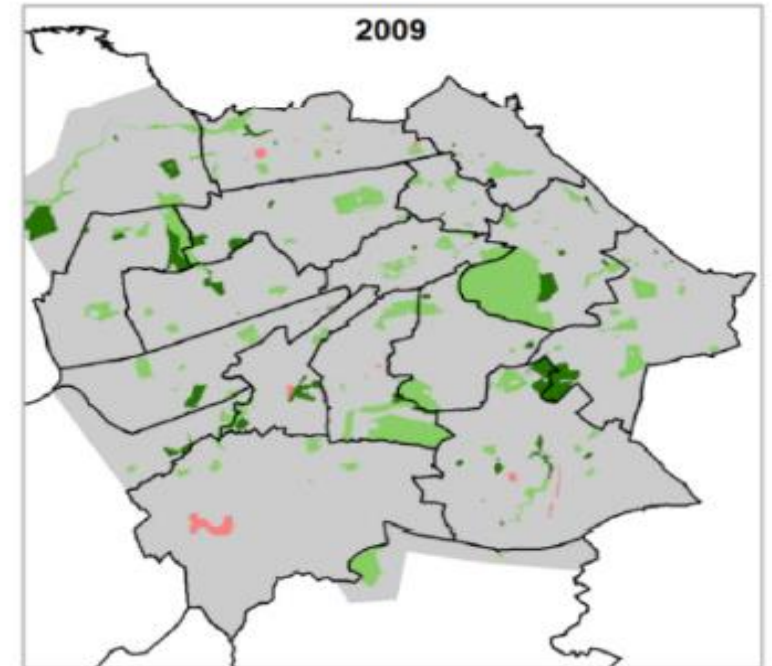
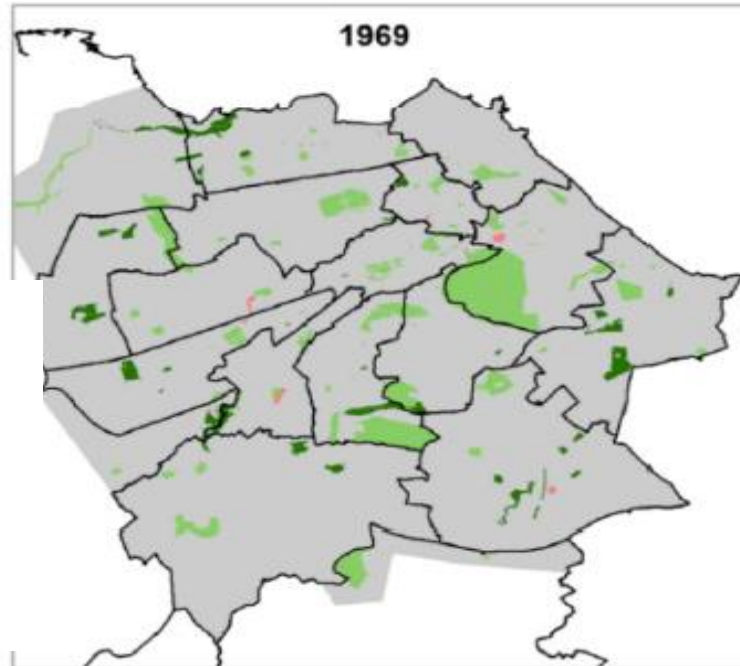
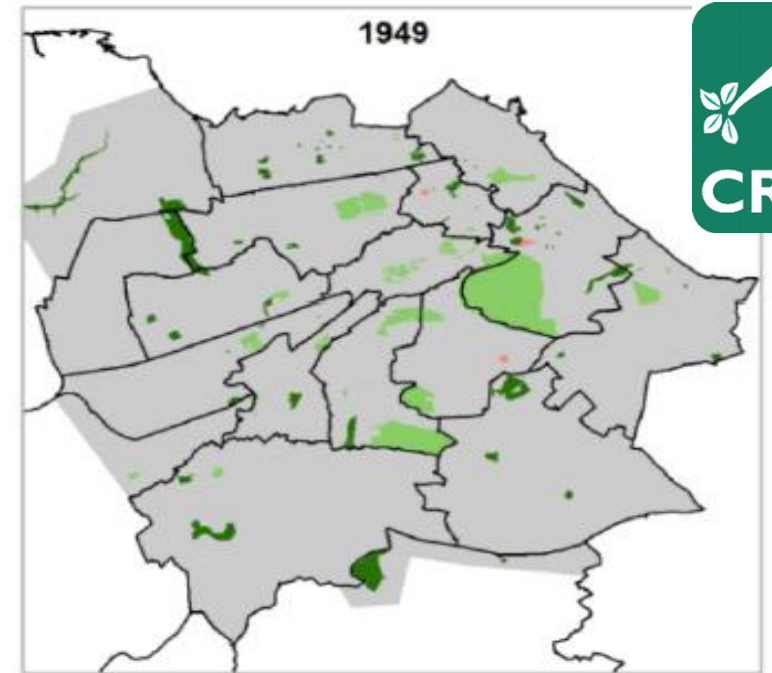
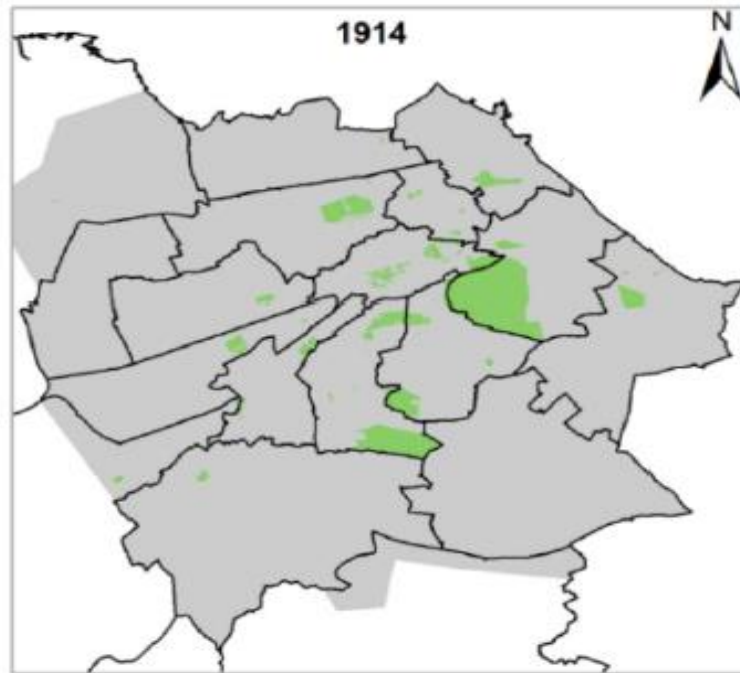
*A Civic Survey and Plan for the City and Royal Burgh of
Edinburgh, 1949*



Sanitary Department Annual Report, Edinburgh
City Archives

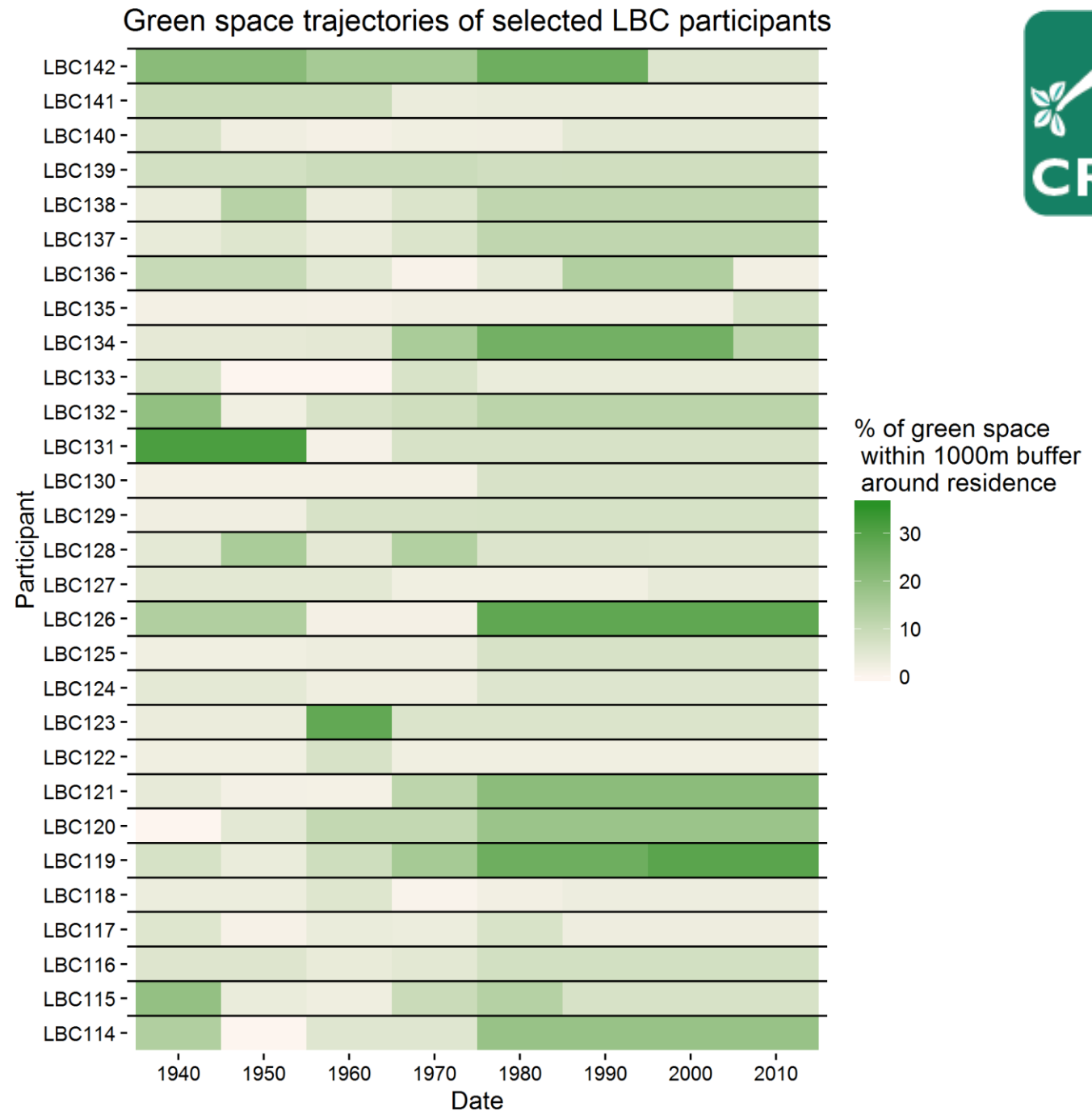


Mapping the public parks in Edinburgh in 1914, 1949, 1969 & 2009

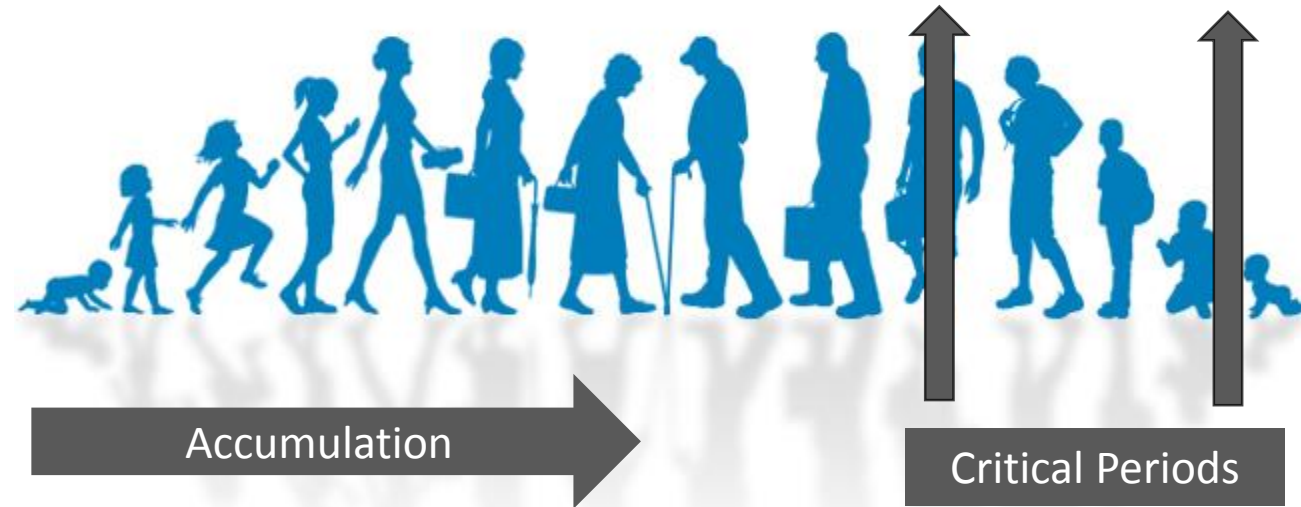


- Public park removed since previous time period
- Public park
- Additional public park since previous time period
- Survey extent
- Ward boundary (2001)

Lifetime green space exposure



Life course analysis



Green space → mental health outcomes
Green space → cognitive ageing

Green space & cognitive ageing

No assoc



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Green space and cognitive ageing: A retrospective life course analysis in the Lothian Birth Cohort 1936



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cognitive function trajectory in later life

- enhanced by green space in adulthood
- Strongest amongst women, & low SES

Conclusions

- Green space - related to **several health outcomes** in Scotland
 - Birth weight, developmental outcomes, mental health, cognitive ageing
 - Less so physical activity
- Green space matters at different stages of the **life course**
 - green space environments in the early years have ***lifelong implications*** for health (cognitive ageing & mental health)
- Offers opportunities for addressing **key policy priorities**:
 - child health & development
 - cognitive ageing
 - inequalities & resilience



Publications

- Cherrie M, Shortt N, Mitchell R, Taylor A, Redmond P, Ward Thompson C, Starr J, Deary I, Pearce J, 2018. Green space and cognitive ageing: a retrospective life course analysis in the Lothian Birth Cohort 1936. *Social Science & Medicine* 196, 56–65.
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- Mitchell R, Richardson E, Shortt N, Pearce J, 2015. Neighbourhood environments and reduced socio-economic inequalities in mental wellbeing: an international study of urban dwellers. *American Journal of Preventive Medicine* 49, 80–84.

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