



## The Scottish ACE Study: exploring Adverse Childhood Experiences in Scotland

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## ACEs in Scotland?

- ScotPHN report, May 2016
- ‘although, data exists on various aspects of household dysfunction in Scotland, no published studies exist to date of the prevalence specifically of ACEs in the general population of Scotland’
- If 9% people in England have 4+ ACEs, Scotland is likely to be worse
- We know Scotland has poorer health outcomes than rest of UK which can’t be explained purely by deprivation...could ACEs be the answer?



## Study 1

**AIM:** to explore to what extent ACEs could be gathered using prospective cohort data, and what prevalence levels look like in this general population of Scottish children.

### RESEARCH QUESTIONS:

1. What are the levels of ACEs in the general population of Scottish children?
2. What factors predict a) having any ACEs and b) having more ACEs in the general population?
3. To what extent does relative poverty account for the burden of ACEs in Scotland?

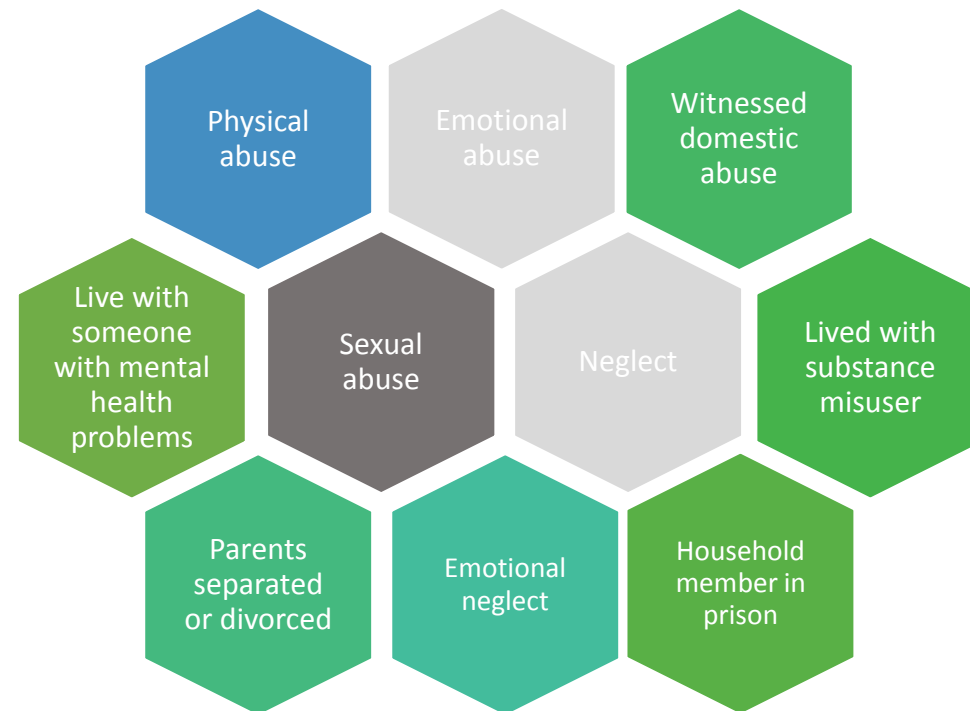


## The Growing Up in Scotland study sample

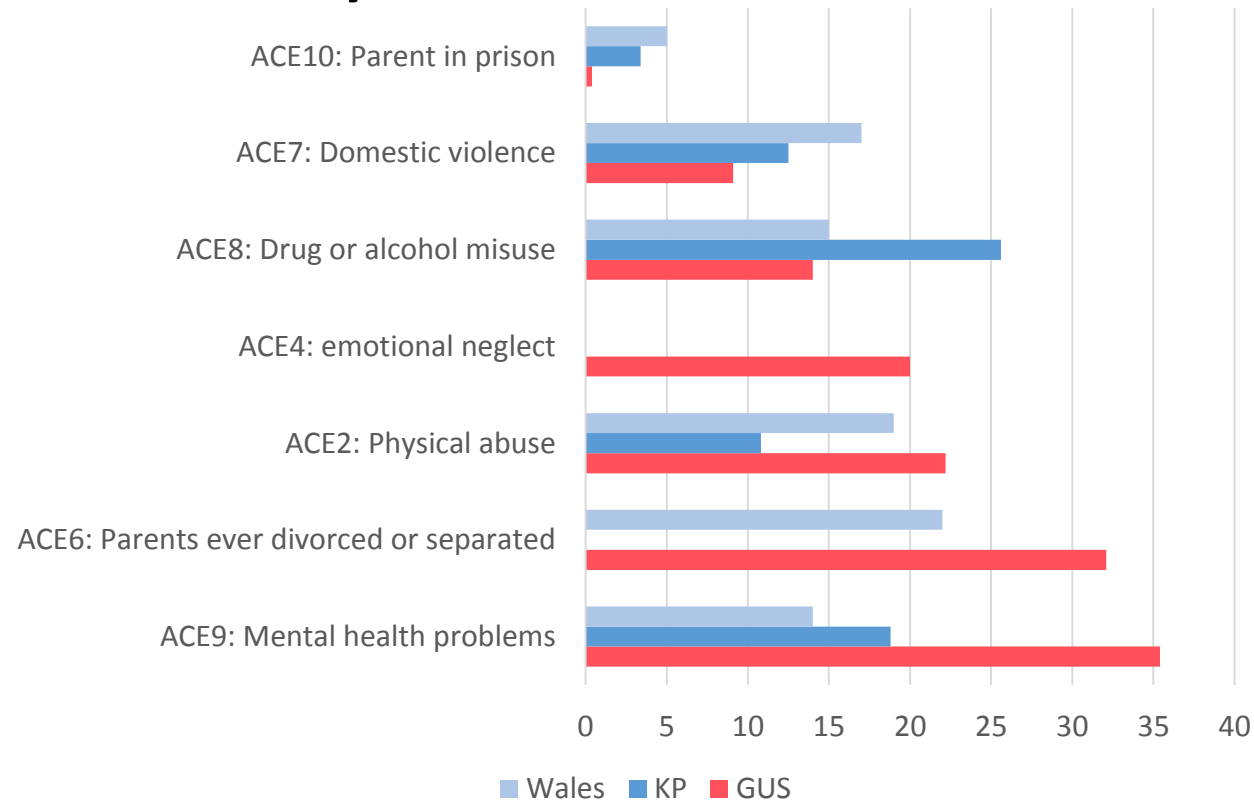
- Used Birth Cohort 1 – born 2004/5
- Data from sweeps 1-7 (10 months to age 8)
- National sample taken from child benefit records
- At sweep 1 there were 5,217 children recruited
- At Sweep 7 there were 3,456 children in the study (66% of sweep 1 children)
- Calculated ACE scores using data from every sweep



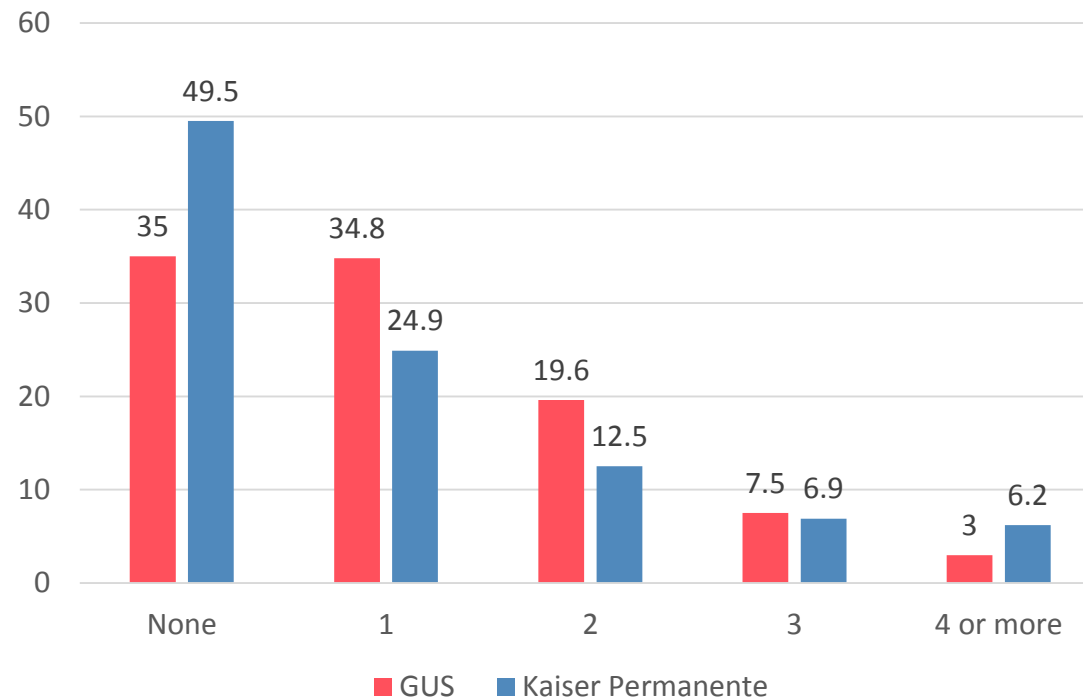
## Data availability



## Levels of ACEs by cohort



## Levels of ACEs



## Children's odds of having 3+ ACEs at age 8 were associated with...

Being male  
(O.R.=1.5)

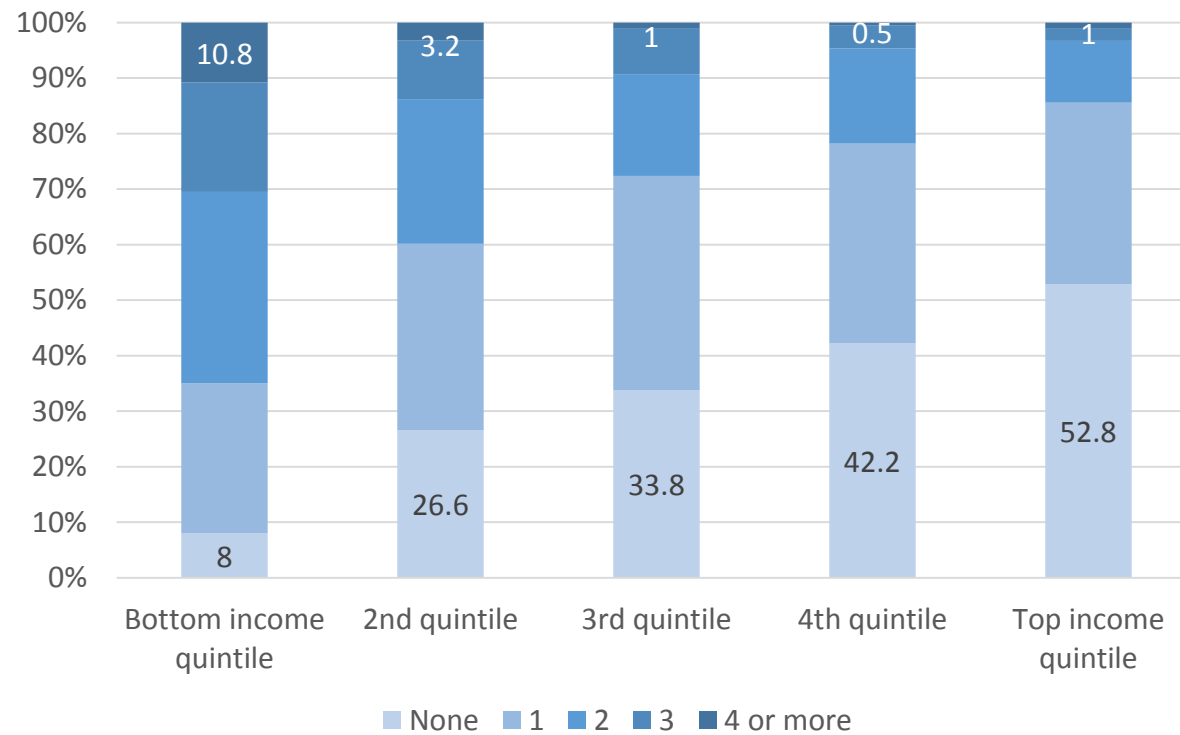
Having a mother  
aged <20 at the  
birth of 1<sup>st</sup> child  
(O.R.=2.1)

Living in a  
household in  
lowest income  
band (O.R.=6.5)

Living in an urban  
area (O.R.=1.8)



## ACE scores by income



## Income doesn't explain everything however...

- Calculated the Population Attributable Risk(PAR)
- 'the proportion of the health outcome in an entire population, which is attributable to the exposure'
- Exposure = below relative poverty line; health outcome= 3+ ACEs
- Results suggest that in 22% of cases where children experience 3+ ACEs, this experience can be directly attributed to poverty
- Moving children above poverty line would decrease the proportion of children experiencing 3+ ACEs by c.7%.



## Study 2 (currently under peer review)

# Can community resources help mitigate the effects of household poverty on ACE incidence?

### RESEARCH QUESTION:

1. Is the relationship between household poverty and the cumulative incidence of adverse childhood experiences modified by families' access to community resources?

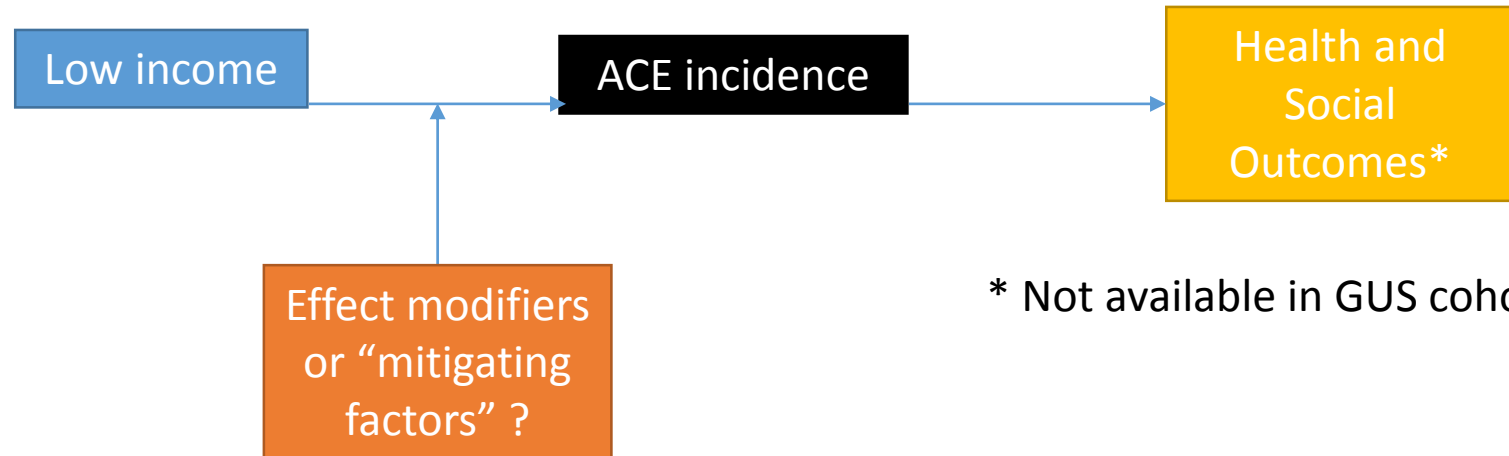


*This study uses the same sample as study 1.*

## Objectives

- 1. Effect modification:** Assess whether the association between household income and 8-year cumulative ACE incidence is modified by households' access to:
  - Non-precarious housing
  - Transportation services
  - Breastfeeding counselling
  - Childcare services
  - A local public park or playpark (among urban residents)
- 2. Proportion eliminated:** Assess the extent to which income inequalities in 8-year cumulative ACE incidence could be eliminated if access to the identified resources were available to all

## Background to study 2



\* Not available in GUS cohort yet

The experience of low-income can vary according to the relative generosity of state investment in benefits, policies and resources (simplified DAG)

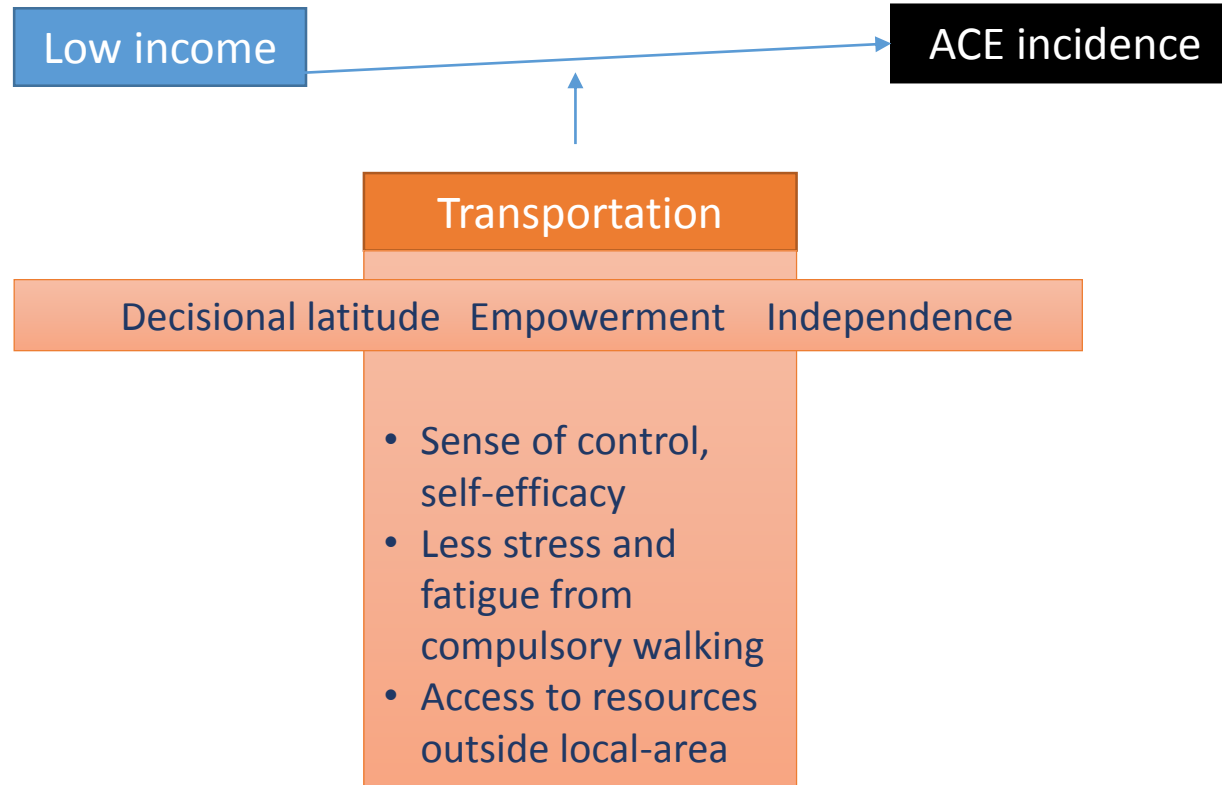
*(Bambra & Eikemo 2009, Bambra 2011, O'Campo et al. 2015)*

## Proportion of income-based inequality in 8-year cumulative ACEs (= >/3) eliminated if all families fully exposed to mediator (excess relative risk scale)

Mediators	Proportion eliminated (% , 95% CI)
Park proximity	-1.0 (-8.2, 5.5)
Housing	0.8 (-15.0, 13.0)
Transportation	<b>20.8 (3.4, 41.0) * p&lt; 0.05</b>
Breastfeeding Education	7.5 ( -7.8, 24.0)
Childcare	-20.0 (-39.0, 5.1)

- Interpretation:** The % of the relative income inequality in cumulative ACE incidence that could be eliminated by providing the amenity/service identified as a mediator (left column) to all families in the community (1. VanderWeele TJ. *Explanation in Causal Inference: Methods for Mediation and Interaction*. Oxford: Oxford University Press, 2015. 2. VanderWeele TJ. Mediation analysis: A practitioner's guide. *Ann Rev Public Health* 2016; 37(1):17-32)

## How do we interpret these results?

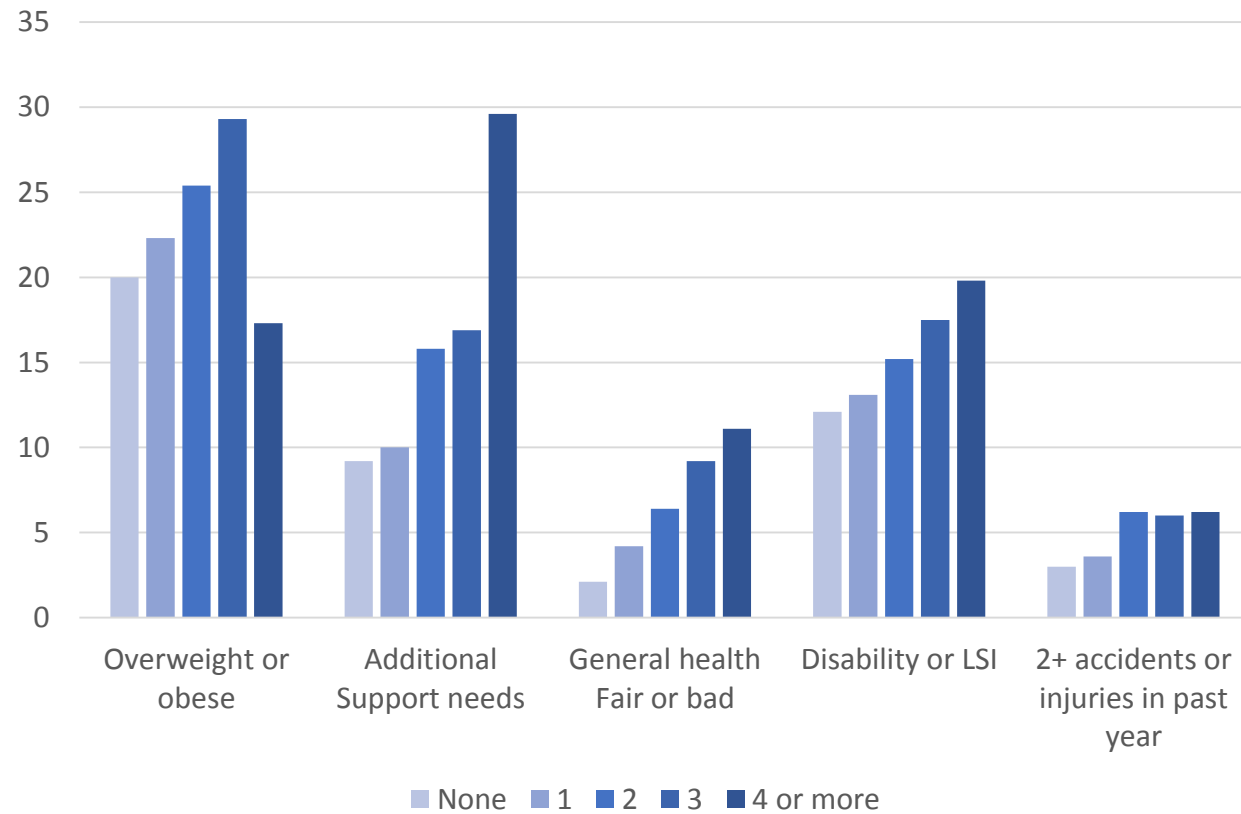


*Syme 1996, Markovich 2011, Bostock 2001, Bamba 2007, Fairburn 2005,  
Dieterich 2013, Chapman 2004*

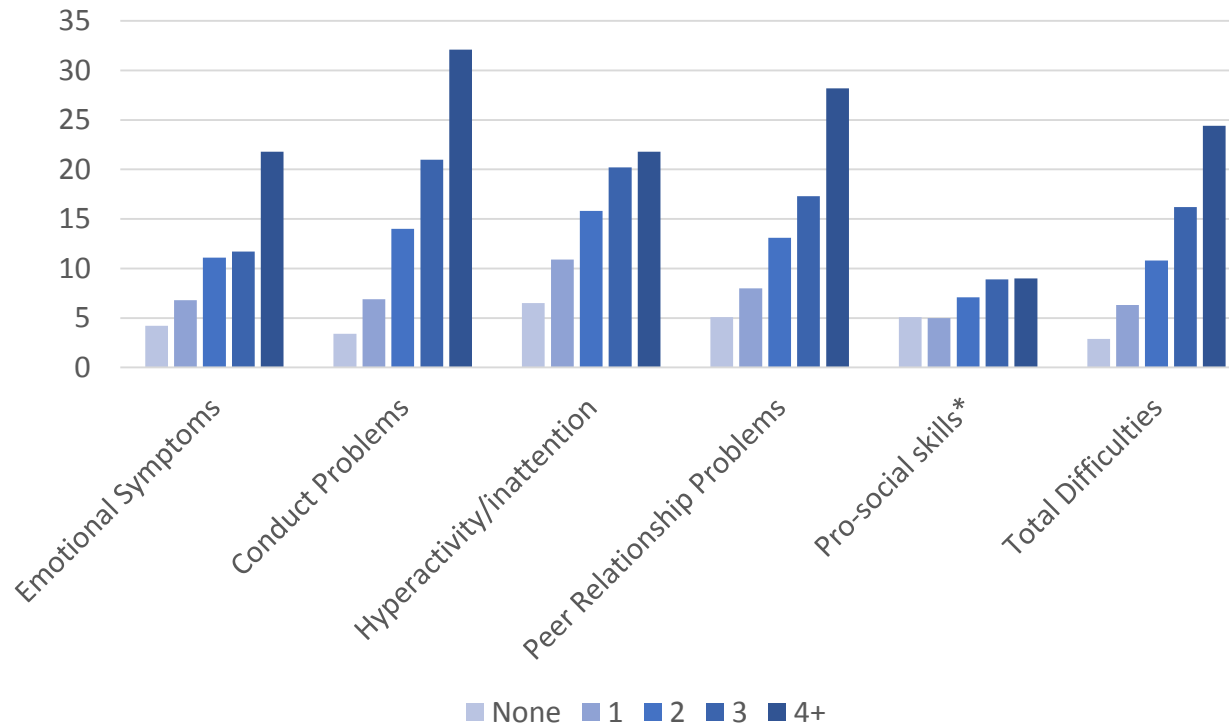
Current available outcomes within the  
GUS data



## ACE scores and health outcomes by age 8

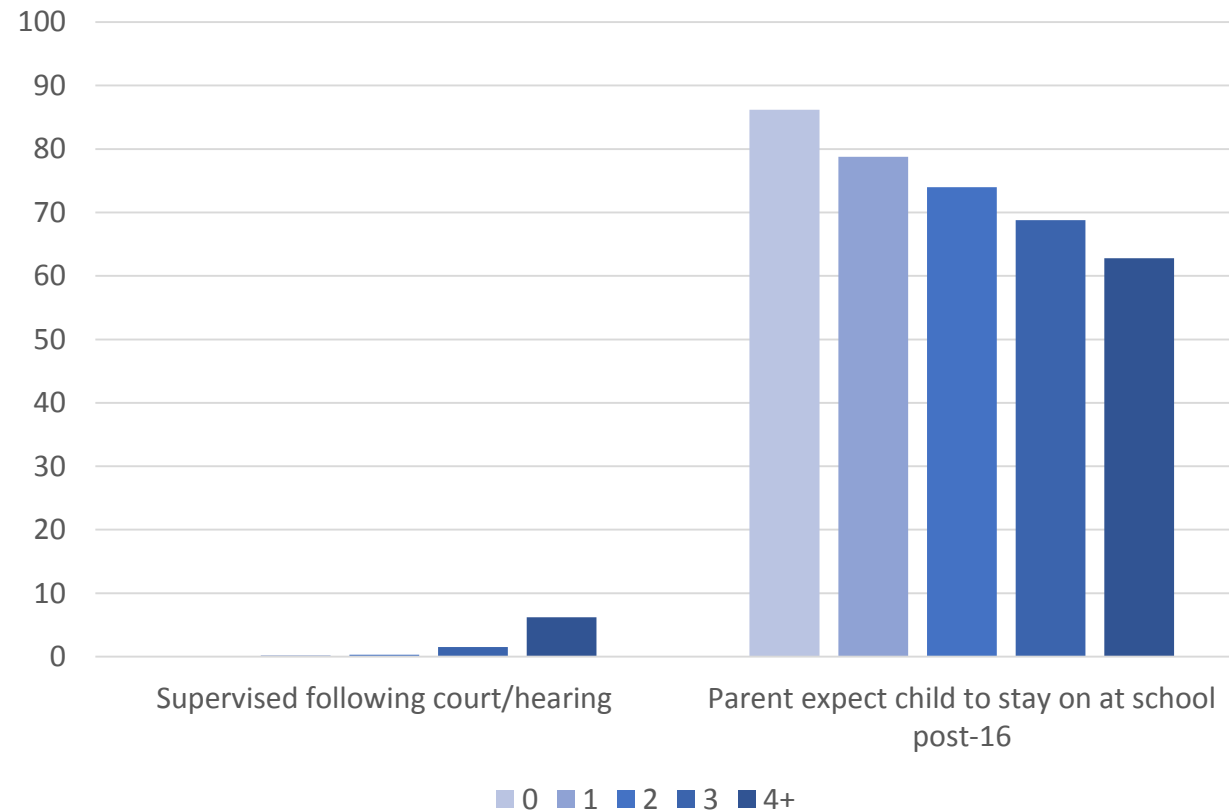


## Social, emotional and behaviour development by ACE scores



*\*Not statistically significant*

## Other outcomes by ACE scores



## Strengths and weaknesses of the study

Strengths	Weaknesses
Response rates are high	Possibly missing children with most ACEs
Prospective data more accurate?	Is it experience or memory/impact that is important?
Rich background data on child and household	Two ACEs not able to assess – arguably most serious
	Social desirability/fear increasing non-reporting?
	Parents may not be aware of some instances of ACEs e.g. abuse

## Discussion



- Proportions of children experiencing 1+ ACE higher than retrospective studies
  - Increase in parental separation/recognition of mental health issues etc.?
  - Poor recall in retrospective studies due to lack of early memory, mood at time of reporting, & ability to recall only what aware of at time
- Cohort differences
- Time period measured
- Poverty and ACEs: supporting proportionate universalism?

## Future work

- Explore linked routine health data in relation to ACE scores
- Generational cycles of ACEs, and parental neurodevelopmental disorders
- Investigate resilience factors – supportive adults and family/school stability
- Prospective ACEs up to age 18
- Health, education and economic outcomes in adulthood
- Other suggestions??



## Conclusions

- Two-thirds of Scottish children have 1+ ACE by age 8
- Compares unfavourably with previous studies
- Measurement differences make it hard to compare directly
- Clear that many Scottish children are experiencing far from ideal childhoods
- Few experiencing 4+ ACEs – the strong predictor of later negative outcomes
- Experience of ACEs was strongly associated with living in poverty
- Could better transport help support low income families to avoid ACEs?



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**Any questions or comments?**



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