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Understanding & preventing health inequalities in the early years – what can we be doing better?

PHINS, 2023

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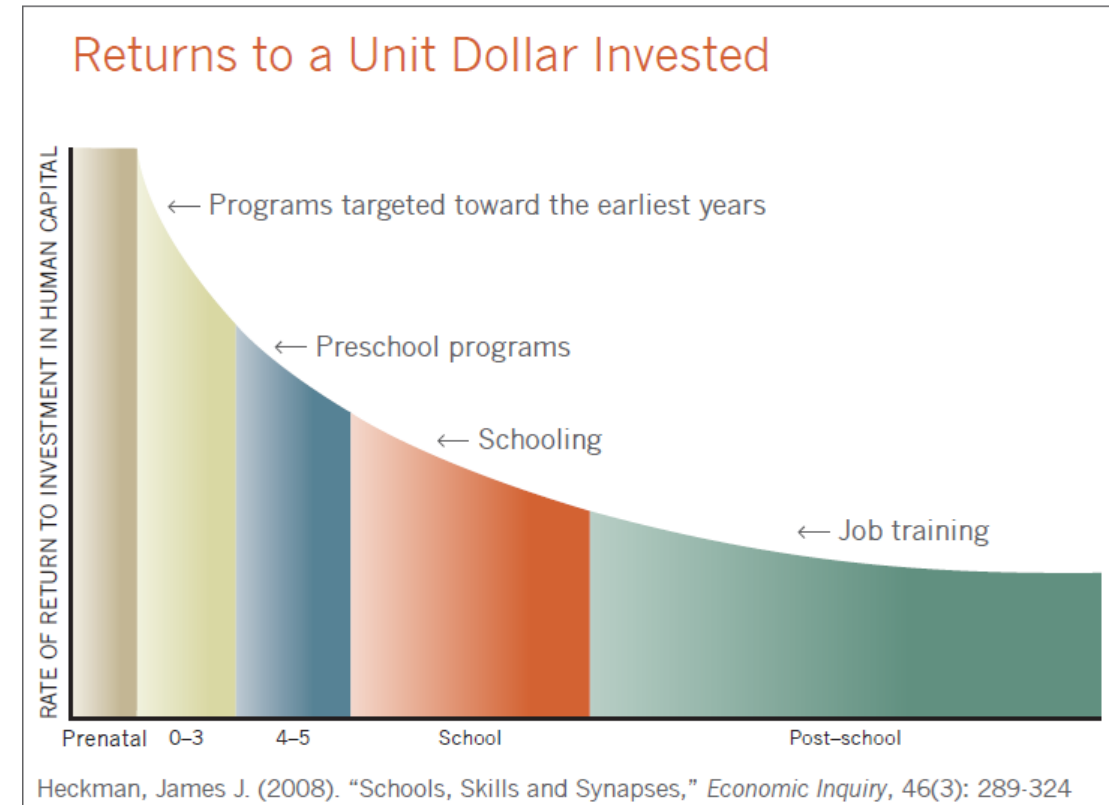


Outline

- Intro - health inequalities (HIs) in the early years (in Scotland)
- *Some* things we can be doing to help shape policy & practice
 1. Better understanding of HIs, using linked data
 2. Considering options for reducing HIs (using mediation methods)
- Future directions

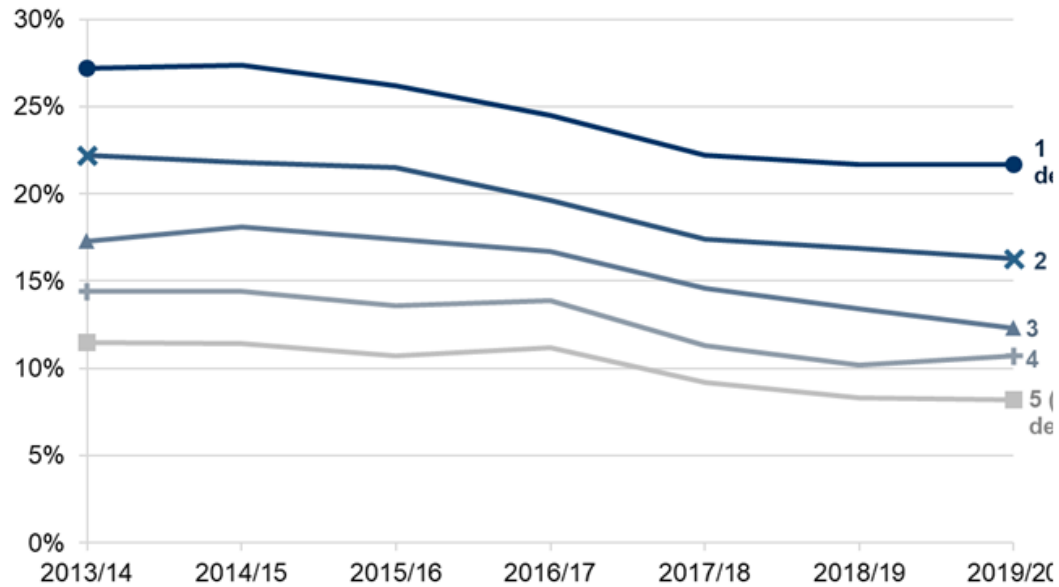
Health inequalities in the early years - background

- Preventable & unfair (especially the case for children)
- Emerge early & track across the life course
- An effective time to intervene

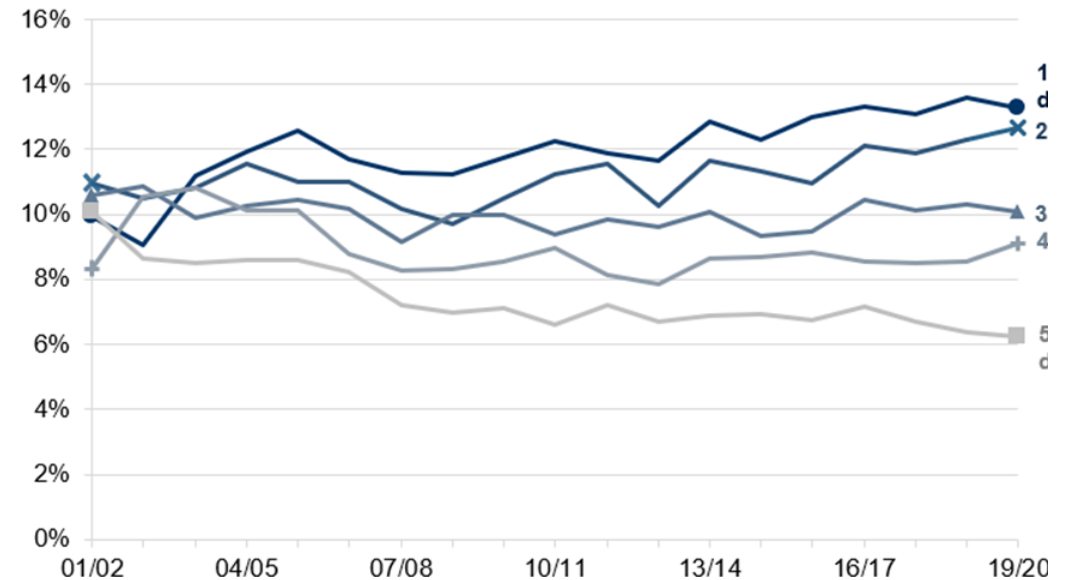


- Pervasive (seen for almost every aspect of health)
- Persisted and in some cases getting worse

Prevalence of developmental concerns at 27-30 months review (%), according to fifths of area-level deprivation: 2013/14 to 2019/20



Proportion of children in Primary 1 at risk of obesity (%), according to of area-level deprivation: 2001/2 to 2019/20



Reproduced from: Public Health Scotland

Miall et al. <https://gla.ac.uk/healthinequalities2022>.

1. Better understanding of His in the early years, through data linkage

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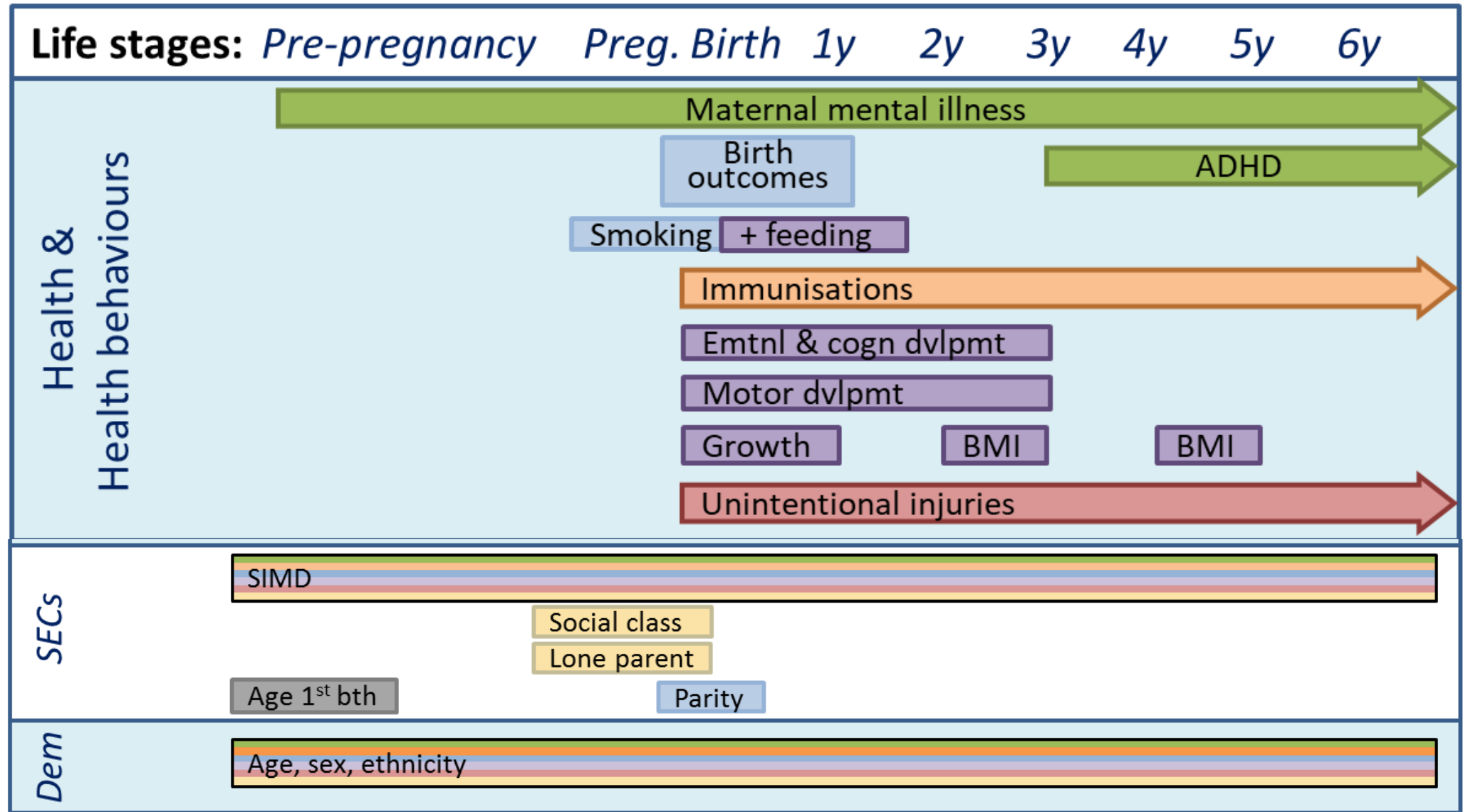
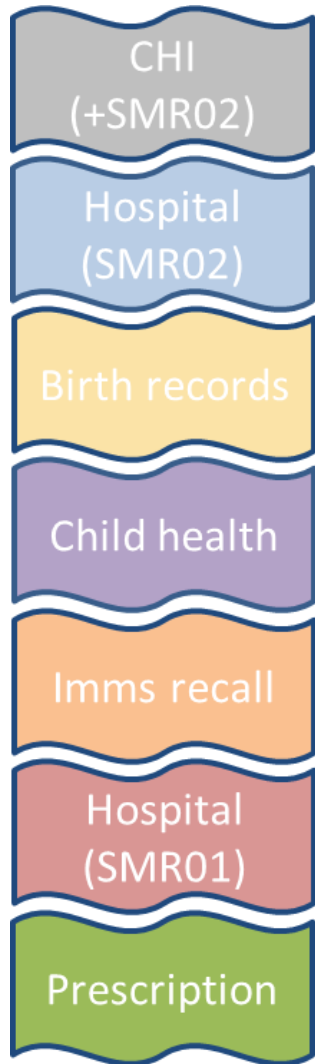


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Admin cohort: Born 2010-2012, n~200,000.....~170,000



These data allow us to explore... *timing & chronicity*

Examples:

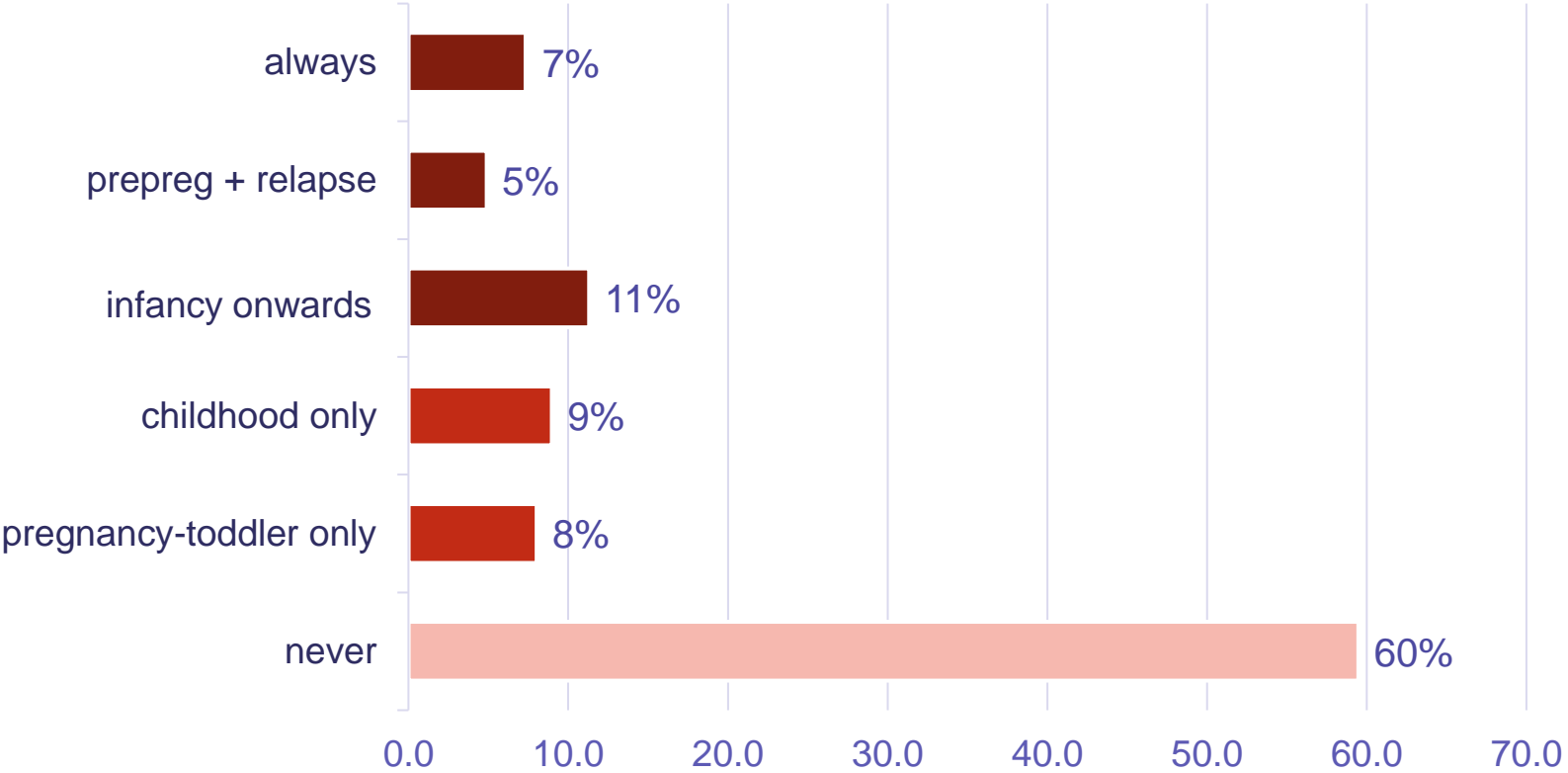
A. Maternal mental health
(dispensations for anxiety and depression medications)

B. Infant feeding

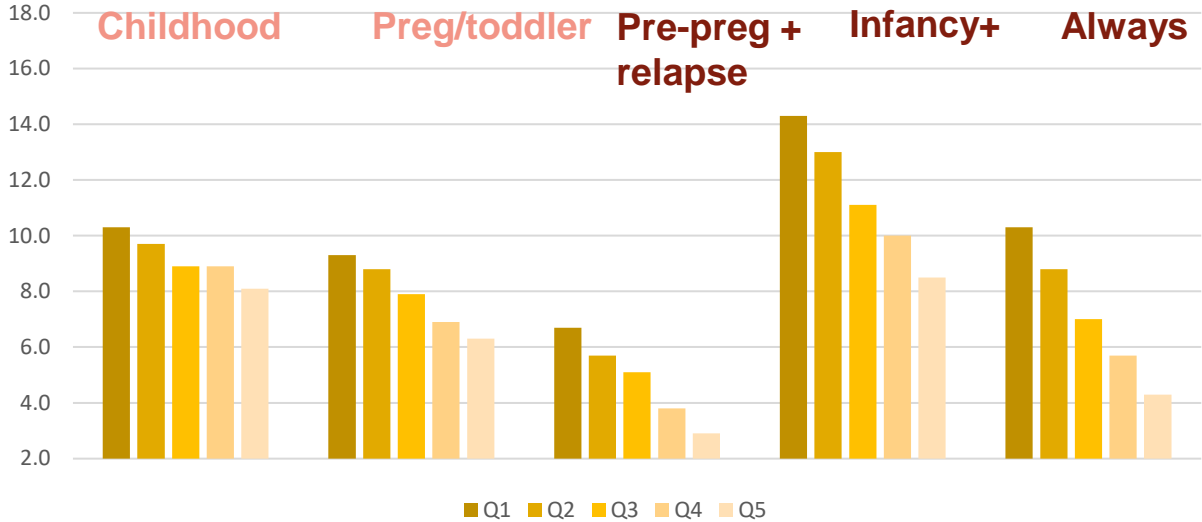


A. Longitudinal patterns of maternal anxiety and depression *prescribing*

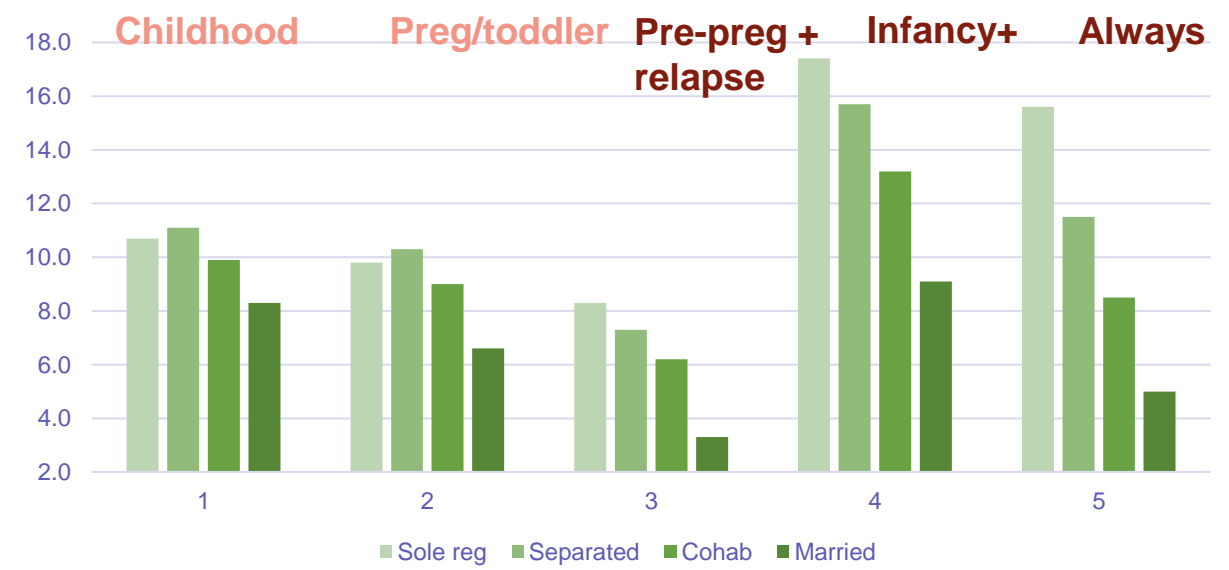
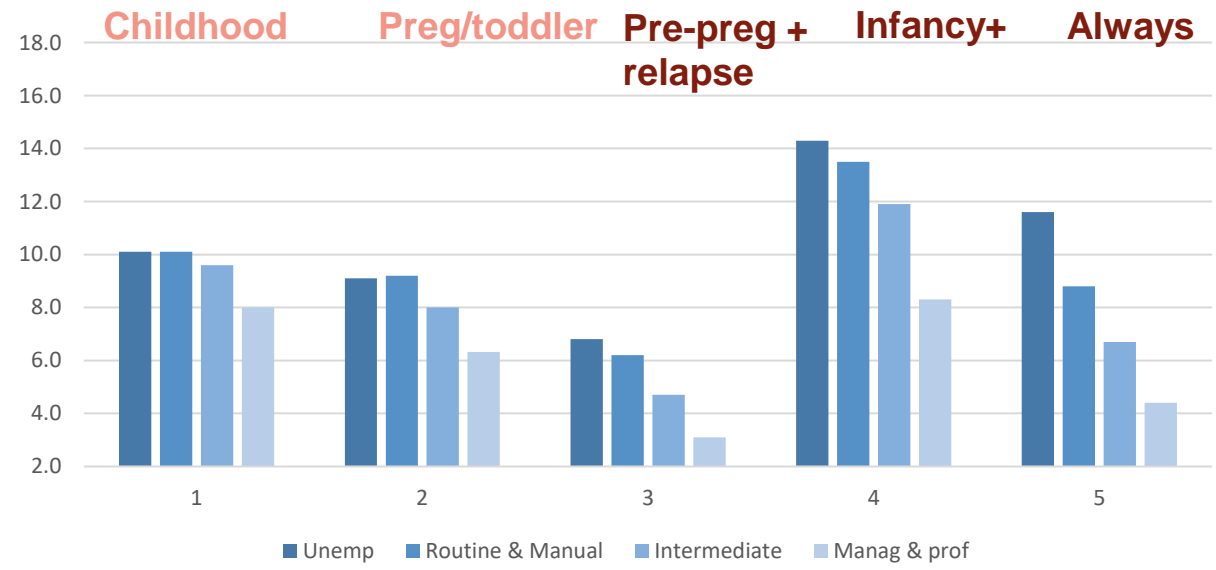
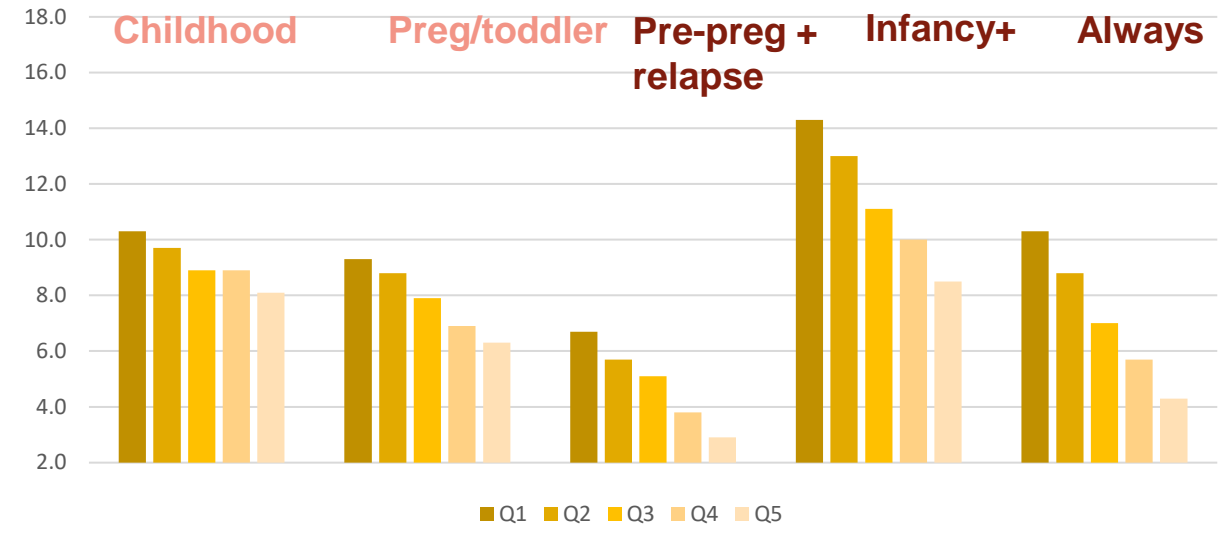
Life stages: *Pre-pregnancy* *Preg. Birth* *1y* *2y* *3y* *4y* *5y* *6y*



Inequalities in trajectories of maternal mental health



+ Different aspects of social inequalities...

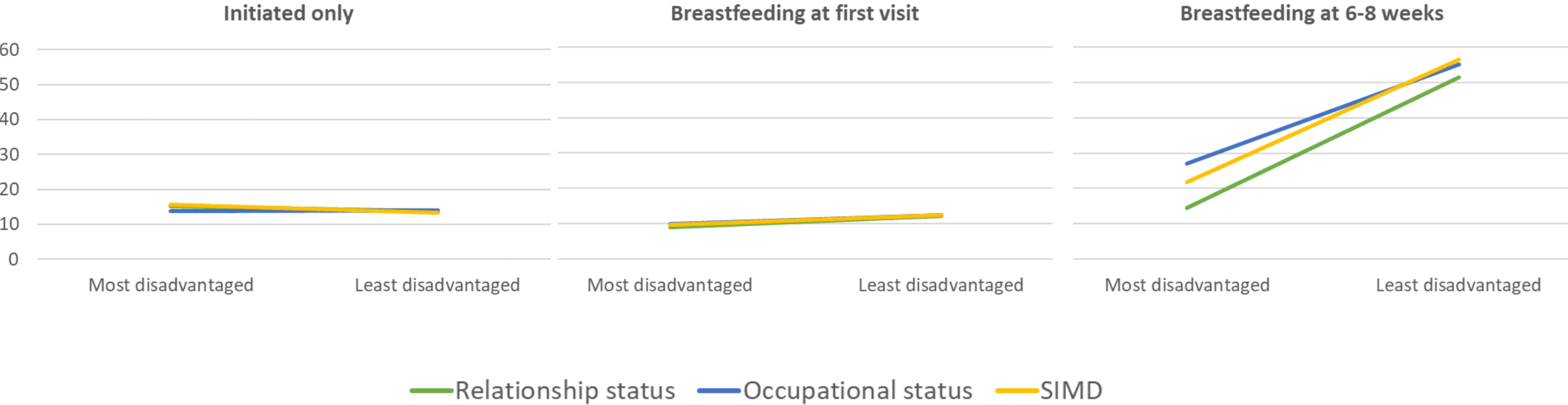


B. Longitudinal patterns of infant feeding

Ages: *First feed* *First fortnight* *6-8 weeks*

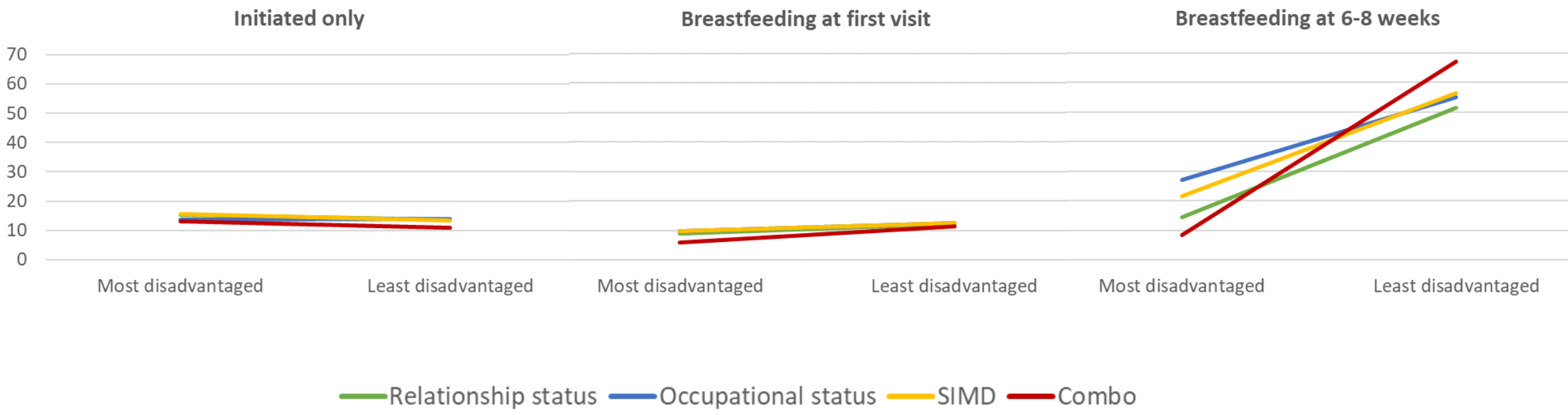
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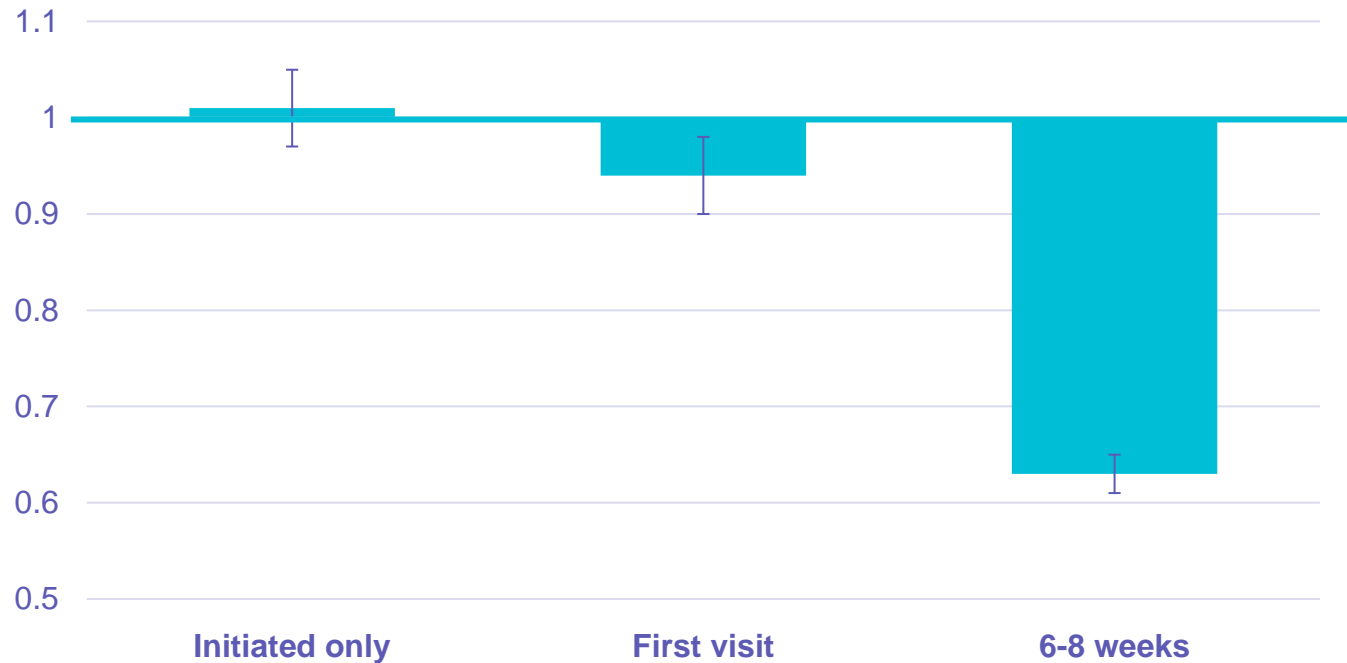
+ Multiple disadvantages

Ages: *First feed* *First fortnight* *6-8 weeks*



+ Possible causal chains...

E.g. Likelihood of breastfeeding in mothers with mental illness pre-pregnancy:



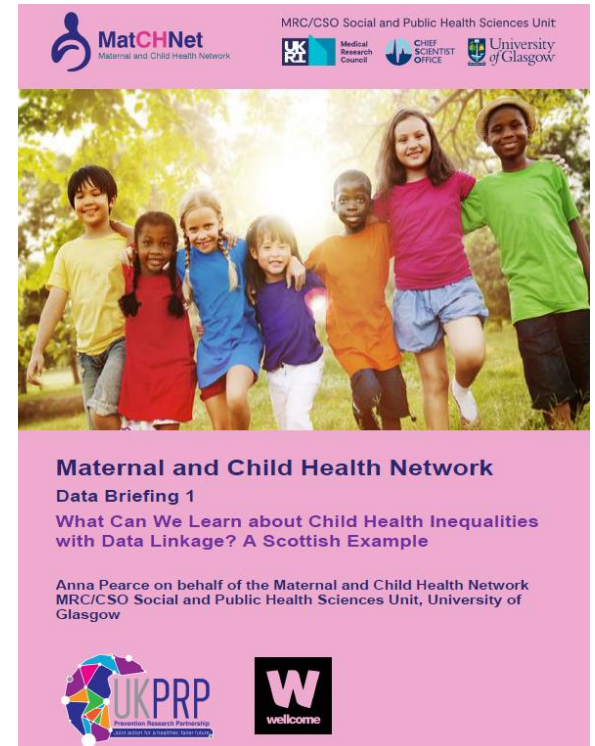
Relative Risk Ratios, after adjusting for: relationship status, mother's social class, quintiles of SIMD, mother's age, delivery mode, number of births this pregnancy, parity

Summary

- Can deepen our understanding of child health inequalities
 - Inequalities are potentially greater for persistent health outcomes
 - Inequalities vary for different aspects of SECs
 - Associations between maternal & child health
- ~Representative of whole population
- More severe/rarer outcomes
- Limited by what is measured and when

<https://matchnet.sphsu.gla.ac.uk/wp-content/uploads/2022/04/matchnet-data-briefing-1.pdf>

Cohort profile, forthcoming



MatCHNet
Maternal and Child Health Network

MRC/CSO Social and Public Health Sciences Unit
UKRI Medical Research Council
CHIEF SCIENTIST OFFICE
University of Glasgow

Maternal and Child Health Network
Data Briefing 1
What Can We Learn about Child Health Inequalities with Data Linkage? A Scottish Example

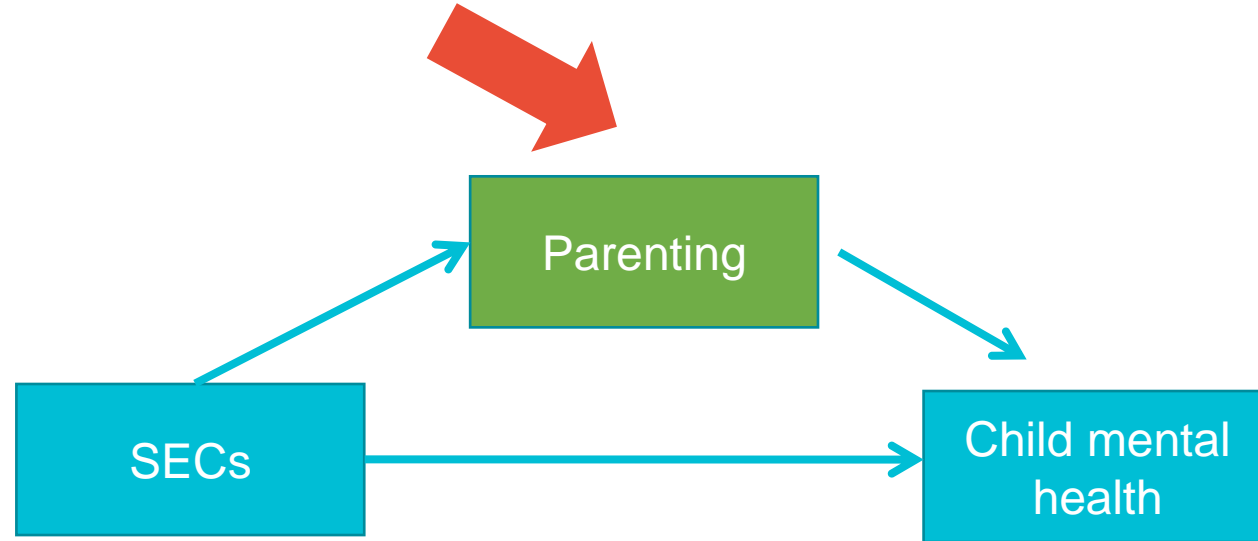
Anna Pearce on behalf of the Maternal and Child Health Network
MRC/CSO Social and Public Health Sciences Unit, University of Glasgow

UKPRP
UK Partnership for Research and Practice
Wellcome

2. Mediation methods to examine *hypothetical* policy impacts

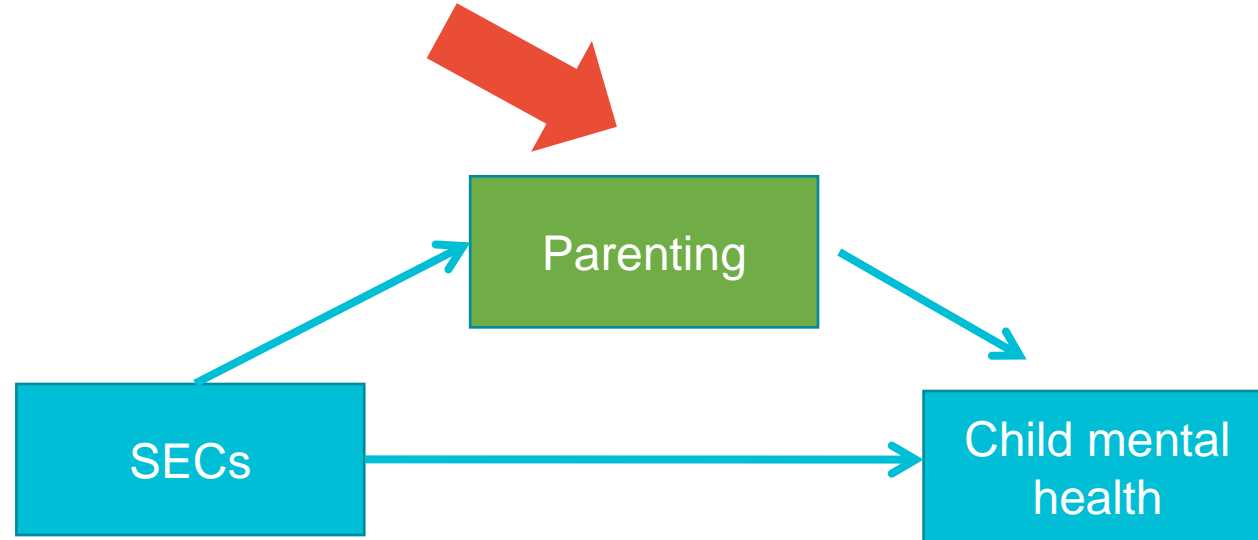
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E.g. What are the potential impacts of *parenting* interventions on inequalities in child mental health?



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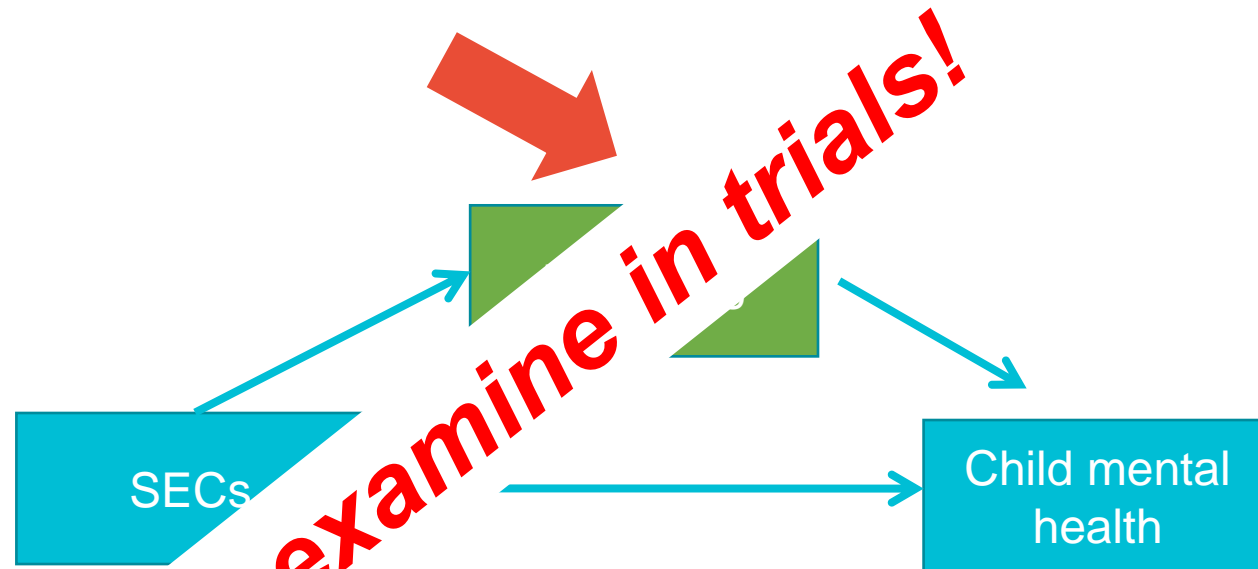


Depends on:

- Dose/effectiveness: **How much** improvement
- Eligibility: **Who** is eligible
- Uptake: % receive the intervention

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Cohort data

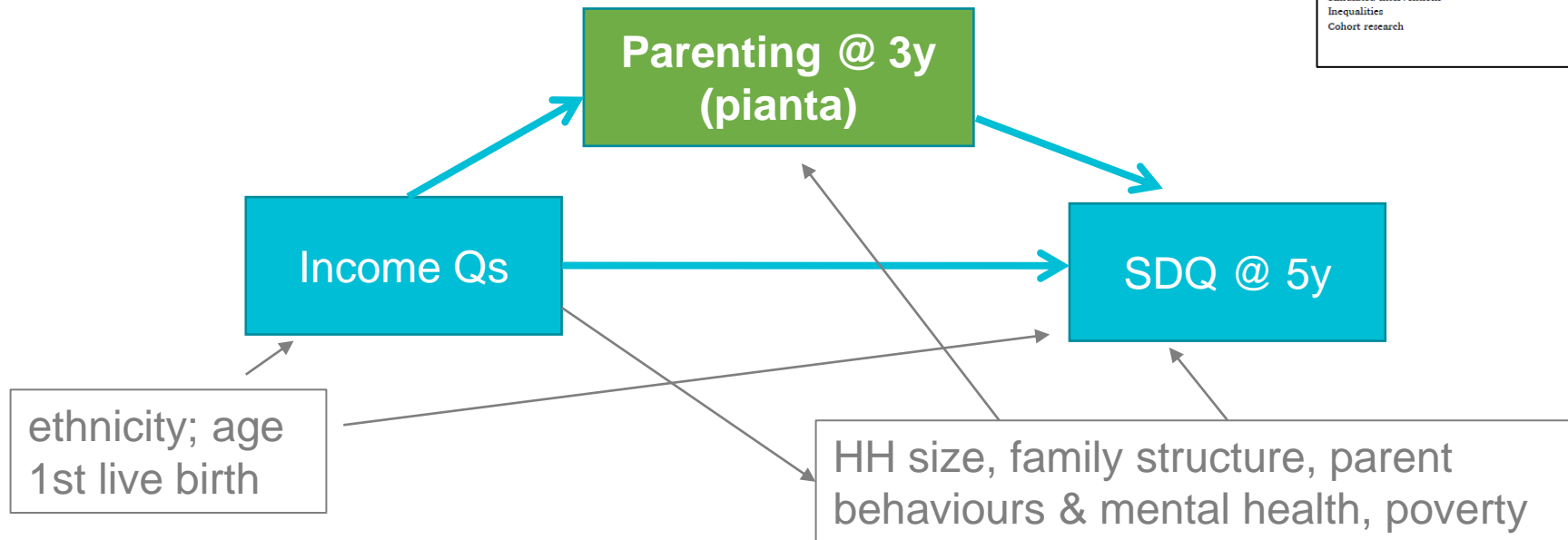
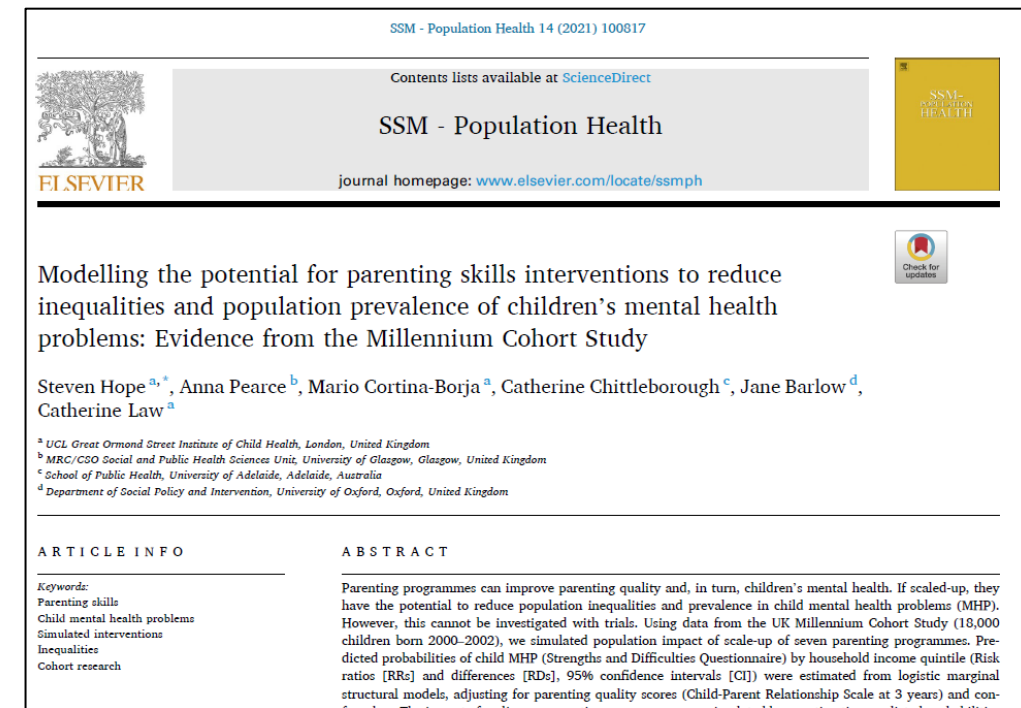


Trial evidence



‘What If’ Questions

- Millennium Cohort Study, born 2000-02
- Weighting for sample, attrition
- + Multiple imputation, $n \sim 14,000$
- Marginal structural modelling

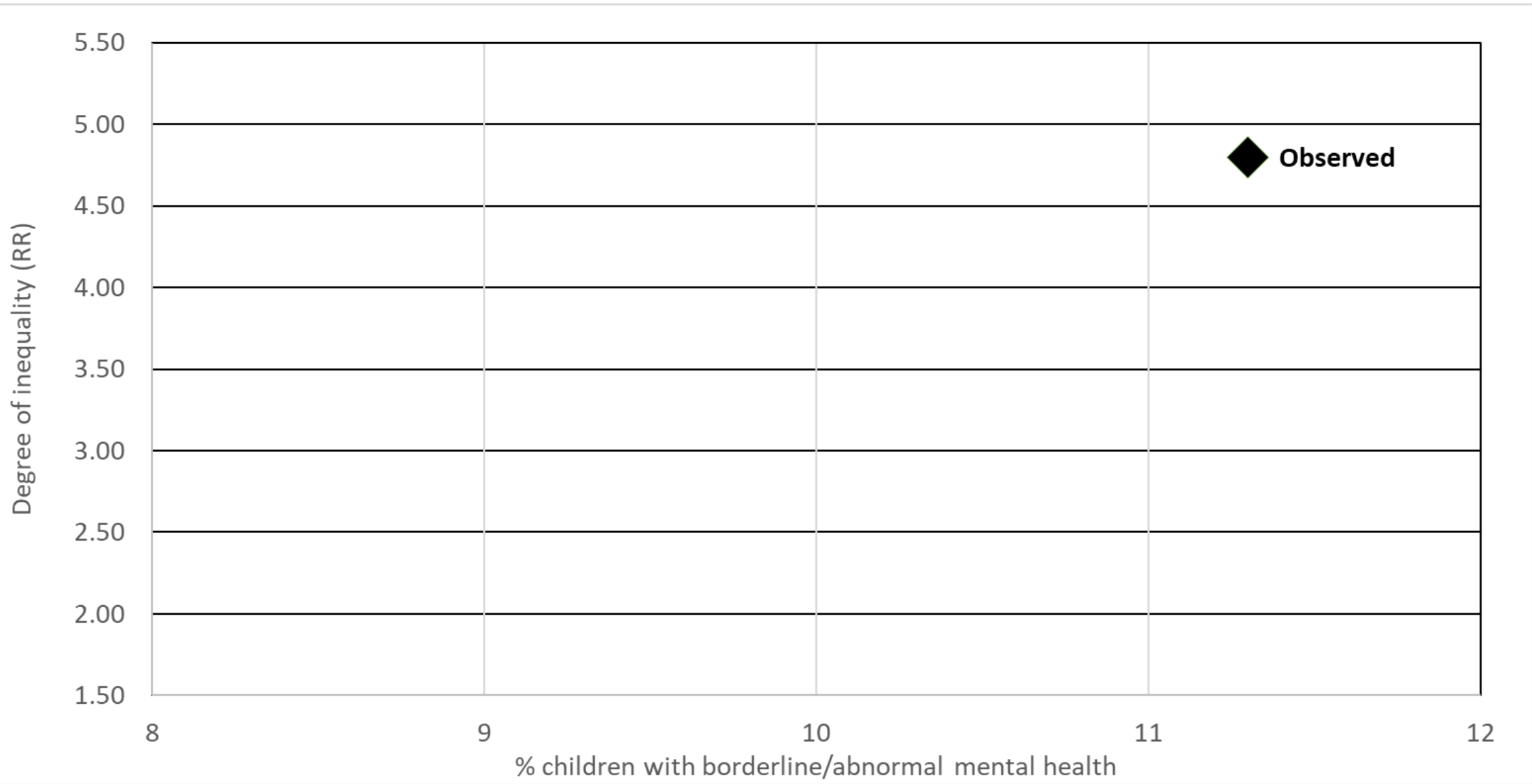


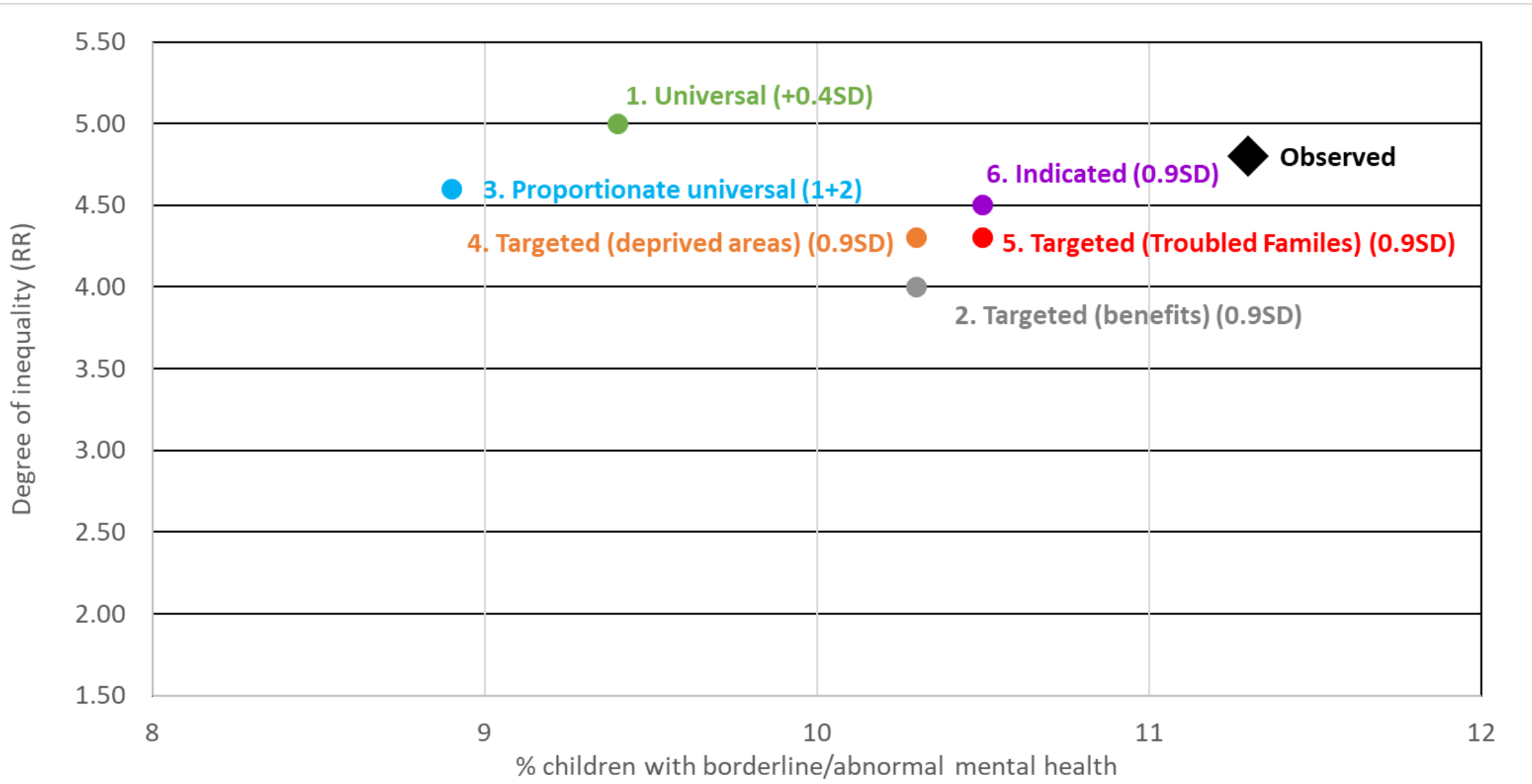
Hypothetical parenting intervention scenarios

(chosen with parents and stakeholders)



| Scenario | Eligibility | Effectiveness | Uptake |
|-----------------------------|---------------------------------|---------------|--------|
| 1. Universal | All parents | +0.4SD | 75% |
| 2. Targeted | Benefits | +0.9SD | 75% |
| 3. Proportionate universal* | Scenarios 1 + 2 | | |
| 4. Targeted | Deprived areas | +0.9SD | 75% |
| 5. Targeted | Troubled Families | +0.9SD | 75% |
| 6. Indicated | Previous mental health problems | +0.9SD | 75% |



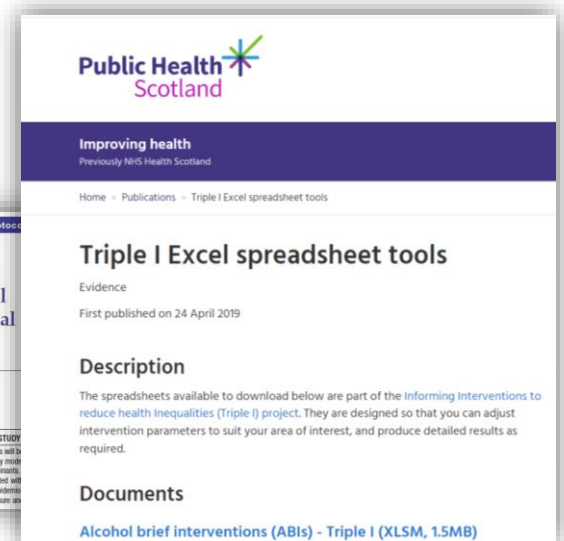


Other early years 'simulations' have implied that

- Interventions to increase physical activity won't reduce inequalities in childhood overweight, no matter the dose
- Universal childcare provision to under 2s may increase inequalities in child development if we don't pay careful attention to quality
- Levelling up scenarios have biggest impacts (but in reality these require changes to the distribution of power, money and resources)

Summary

- Examining mediating pathways & simplistic ‘What If’ scenarios can show:
 - Which amenable pathways hold most potential
 - Scale of change required
 - Impacts of eligibility and uptake
- Limited to pathways measured in datasets → downstream
- Can’t control existing policy contexts in the data
- More sophisticated approaches exist

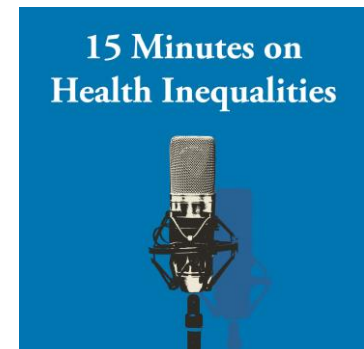


Looking ahead

- Untapped potential of administrative data:
 - More analysis can be done with this existing administrative cohort
 - Follow children into later childhood and adolescence
 - Link to other sectors – education, social care (Denise Brown)
 - Look at siblings, grandmothers...
- Continue to advocate for and build evidence base for upstream change
 - Simulations
 - Natural policy experiments



<https://matchnet.sphsu.gla.ac.uk/>



Thank you!



Acknowledgements

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Funders (205412/Z/16/Z, MC_UU_12022/2, SPHSU17)

Hypothetical maternal mental health scenarios



| Scenario | Eligibility | Effectiveness* | Uptake |
|-----------------------------|---------------------|----------------|--------|
| 1. Universal* | All mothers | +0.2SD | 77% |
| 2. Targeted* | <20 years | +0.3SD | 66% |
| 3. Targeted* | Deprived areas | +0.3SD | 66% |
| 4. Indicated* | Previous MH | +0.7SD | 66% |
| 5. Proportionate universal* | Scenarios 1 + 2 + 4 | | |
| 6. Levelling up | Poorer SECs | =Higher SECs | 100% |

Pearce et al. European Journal of Public Health, Volume 28, Issue suppl_4, November 2018,