socioeconomic status were included at the patient level, and we explored a continuous outcome. We included both binary and continuous effects at the provider level, to reflect organisational features such as surgeon speciality or available beds, although these were analysed separately to demonstrate proof-of-principle. We simulated unique sets of 100 datasets using a range of coefficient effect values and error variances. Interest lies in the ability of the MLC model to recover these simulated provider-level coefficient effects.

Results Models contained one patient-level latent class and up to five provider-level latent classes. For the binary provider-level covariate, median recovered values were almost identical to simulated effects throughout, e.g. for the simulated coefficient value 0.500 at 33% error variance, the median recovered value was 0.499 (95% CI 0.489–0.509) across all models. For the continuous provider-level covariate, median recovered values improved as the number of provider-level latent classes were increased, e.g. for the simulated coefficient value 0.200 at 33% error variance, the median recovered value was 0.153 (95% CI 0.113–0.184) for two provider-level classes and 0.191 (95% CI 0.168–0.210) for five provider-level classes.

Discussion The MLC modelling approach achieved successful recovery of simulated coefficient values, within credible intervals for at least three provider-level latent classes. Very small simulated coefficient values were not recovered as well as higher values, which may be due to the variability introduced during simulation dominating the coefficient effect. There is also some attenuation of effect seen for the continuous provider-level covariate. We have demonstrated the utility of this approach to separate modelling for prediction (to accommodate patient casemix) and for causal inference (to explore provider-level effects) across a data hierarchy. There is much scope to extend the assessment of upper-level causal effects by consideration of a multivariable DAG.

P19 BIRTH, CHILD AND MATERNAL OUTCOMES FOR YOUNG AND VULNERABLE MOTHERS IN ENGLAND: A POPULATION-BASED DATA LINKAGE COHORT STUDY

¹K Harron*, ²J Fagg, ³A Guttman, ⁴J van der Meulen, ¹R Gilbert. ¹Population, Policy and Practice, UCL Great Ormond Street Institute of Child Health, London, UK; ²Public Health, Imperial College London, London, UK; ³Health System Planning and Evaluation, IC/ES, Ontario, Canada; ⁴Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, UK

10.1136/jech-2019-SSMabstracts.170

Background Increased support during pregnancy and early childhood is targeted at first time teenage mothers and is recommended for other vulnerable mothers in England. We used population-level healthcare data to assess which mothers and children are most at risk of adverse health outcomes.

Methods We used Hospital Episode Statistics for births to mothers aged 15–44 years in NHS hospitals in England between 2011–2014. We evaluated a number of birth, child and maternal outcomes within 24 months following birth (including birthweight, emergency hospital contacts for children, and subsequent deliveries), according to a range of maternal risk factors: age, parity, neighbourhood deprivation, history of adversity (drug/alcohol abuse, violence, self-harm), or chronic mental or physical illness identified from ICD-10 diagnosis codes in the 5 years prior to delivery.

Results Of the 1,174,688 births in the study population, 61,370 (8.7%) were to first time teenage mothers, 16,675 (1.0%) were to multiparous teenage mothers, 76,245 (4.4%) were to mothers with a history of adversity, and 394,388 (23.0%) were to mothers with a mental health/behavioural chronic condition. The prevalence of risk factors generally decreased with maternal age, but the relationship between risk factors and outcomes varied according to maternal age. Compared with infants born to multiparous mothers aged 25–35 with no risk factors ('low risk' mothers), babies born to primiparous teenage mothers were 206 g lighter (95% CI 202–211 g) and babies born to multiparous teenage mothers were 206 g lighter (95% CI 198–215 g). Compared with children born to 'low risk' mothers, an additional 11.9% (95% CI 11.5–12.3%) of babies born to primiparous teenage mothers and 15.6% (95% CI 15.0–16.2%) born to mothers aged 20–24 with a history of adversity had an emergency hospital contact. Subsequent deliveries were most common in multiparous teenage mothers (21.9% for primiparous and 23.3% for multiparous teenage mothers, compared with 11.1% for 'low risk' mothers). When adjusting for all maternal risk factors together, mental health conditions were a strong driver of adverse outcomes.

Discussion In addition to primiparous teenage mothers, multiparous teenage mothers and mothers across a range of ages with a history of adversity or mental health condition could benefit from increased support before, during and after birth. Appropriate delivery and targeting of effective interventions for these groups could help improve birth, child and maternal outcomes.

P20 ANALYSIS OF IRISH INQUIRY REPORTS RELATING TO PREGNANCY LOSS SERVICES (2005–2018)

^{1,2,3}A Helps*, ¹L O'Byrne, ²S Leitao, ^{1,3}K O'Donoghue. ¹Pregnancy Loss Research Group, University College Cork, Cork, Ireland; ²National Perinatal Epidemiology Centre, University College Cork, Cork, Ireland; ³The Irish Centre for Fetal and Neonatal Translational Research (INFANT), University College Cork, Cork, Ireland

10.1136/jech-2019-SSMabstracts.171

Background External inquiries related to maternity services are sometimes carried out after negative media reporting of adverse events that have occurred. External inquiries aim to identify issues in the maternity care provided to pregnant women and to make recommendations to improve the standard of care; however, these recommendations are not always implemented. Published literature comparing external reports and assessing their impact on maternity services is limited. Hence, this is the focus of this study.

Methods Ten publically-available national health-service-commissioned inquiry reports published between 2005–2018 relating to perinatal deaths and pregnancy loss services, were identified from national inquiries into the maternity services in Ireland. These were assessed by 2 clinicians, separately, to compare and examine the content and recommendations made in each report.

Quantitative and qualitative data was collected using a specifically designed review tool (based on the Health Service Executive's (HSE) Systems Analysis Review Report Checklist (SARRC)). The findings and recommendations from each report were studied by descriptive thematic analysis outlining emerging themes and issues.