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ASSESSING THE POTENTIAL UTILITY OF 'BIG DATA' FROM THE PRIVATE SECTOR FOR HEALTH RESEARCH: LINKING EXPERIAN™ MOSAIC GROUPS TO DEPRIVATION INDICES

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Background Socioeconomic circumstances are routinely measured using government-held data e.g. the Index of Multiple Deprivation (IMD) for health research and service planning. However, alternative approaches may be necessary as key datasets (e.g. the decennial census and specific welfare claims) may not be available in the future. 'Big data' from the private sector could help meet this need. Experian collates diverse information to produce socio-demographic and lifestyle variables, primarily for marketing purposes. Unlike traditional deprivation measures, these variables are intended to reflect affluence and consumption patterns. We assessed the overlap between deprivation measures and Experian's British population segmentation (Mosaic Groups) to establish the utility and feasibility of bringing together commercial and health data for public health purposes.

Methods Experian Mosaic classifies all UK consumers into 15 distinct groups at the postcode level which comprehensively describes their socio-economic and sub-cultural behaviour, based on 1,754,408 unique postcodes (mean population 39). Thus, each postcode can be allocated to only one Mosaic Group. These data were linked to widely used deprivation measures, i.e. Index of Multiple Deprivation (IMD) and its devolved equivalents for Scottish (SIMD) and Welsh (WIMD) populations and Carstairs quintiles ranked from 1 to 5 (most to least deprived) based on full postcode. Cochran-Armitage tests were used to determine if there were significant trends in the proportions of deprivation quintiles within each Mosaic Group.

Results The Experian segmentation showed good population coverage; 92% of the UK population was included in the dataset. IMD quintiles and Mosaic Groups were associated (all P-values for trend <0.05); for example, the proportions increased with deprivation in Municipal Challenge (0.1% and 73.6% in least and most deprived quintiles) and Family Basics (1.1% and 50.2%, respectively). For some Mosaic Groups the proportions increased with decreasing deprivation, e.g. Prestige Positions (0.3% and 67.1% in most and least deprived, respectively). However, there were Mosaic Groups (e.g. City Prosperity, Country Living) that showed no consistent trend with deprivation, indicating Mosaic is capturing a different aspect of socio-economic circumstances. Similar patterns were found for Carstairs and measures of IMD for Scottish and Welsh populations.

Conclusion Experian Mosaic Groups appear to capture different aspects of socioeconomic circumstances to deprivation measures. A key limitation of our study to date is the lack of investigation of health outcomes. These marketing data may provide new insights into the social determinants of health at a very small area level and could help plan service delivery.

Gender

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PRE-PREGNANCY AND POSTNATAL DEPRESSIVE SYMPTOMS ARE ASSOCIATED WITH QUALITY OF MOTHER-CHILD RELATIONSHIPS; LONGITUDINAL DATA FROM THE SOUTHAMPTON WOMEN'S SURVEY

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Background Maternal mental health difficulties have been associated with poor outcomes for children, possibly because they affect the quality of the relationship between mother and child. We examined associations between maternal depressive symptoms before pregnancy, and again 6 months postnatally, and quality of the mother-child relationship in the Southampton Women's Survey (SWS).

Methods The SWS is a population based cohort study of 12 583 women aged 20–34 years who were assessed when not pregnant; those enrolled during the latter half of the recruitment period completed the General Health Questionnaire (GHQ-12), a short screening instrument with good sensitivity for depression and anxiety disorders. Women who became pregnant and their children (n=3158) were followed up. Six months post-partum, mothers completed the Edinburgh Postnatal Depression Scale (EPDS) questionnaire to determine depressive symptoms. Established cut-offs for each scale were used to determine the presence or absence of depressive symptoms at the two time points. A summary pre-pregnancy and postnatal depressive symptoms 4-level categorical variable was derived indicating symptoms at neither, one or other, or both periods. When the child was 3 years old, mothers completed the Pianta Child-Parent Relationship Scale (CPRS), from which closeness and conflict scores were derived. To normalise these scores a Fisher-Yates transformation was used so that the scores are presented in standard deviation (SD) units. Linear regression was used to relate the two mother-child relationship measures to depressive symptoms, adjusting for confounding factors identified using a Directed Acyclic Graph: receipt of benefits, employment, parity and educational attainment.

Results Among women with GHQ-12 and EPDS data, 1441 completed the Pianta CPRS. Presence of depressive symptoms was identified before pregnancy in 28% of mothers and postnatally in 42%. After adjustment for confounders, and compared with those with no symptoms during either time period, those who only had depressive symptoms postnatally had conflict scores that were elevated by 0.28SD (95% CI: 0.16–0.41), whereas scores for those with depressive symptoms at both time periods were elevated by 0.53SD (95% CI: 0.39–0.68). Closeness scores were reduced in those with symptoms at both time periods, being 0.26SD (95% CI: 0.08–0.43) lower than for those with no symptoms, but were not

reduced in those with depressive symptoms at one or other period only.

Conclusion Women who suffer from depressive symptoms both before and after pregnancy appear vulnerable to poorer relationships with their children. This emphasises the importance of maternal mental health for the mother and for her relationship with her child.

OP90 THE EMBODIMENT OF GENDER DIVISIONS OF LABOUR: GENDER DIVISIONS OF LABOUR AND INFLAMMATORY MARKERS IN THE UK HOUSEHOLD LONGITUDINAL STUDY

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Background While the gender division in paid work has progressively diminished, this is less true of unpaid labour. A gender perspective requires an extension of investigations of stress and health beyond paid work to include unpaid labour. This study investigates associations between gender divisions of 'total labour' and inflammatory markers thought to potentially link chronic stress exposure with disease outcomes amongst contemporary UK couples.

Methods The study sample includes co-resident, opposite sex couples aged 16–65 in Wave 2 of the UK Household Longitudinal Study or Understanding Society. Gender divisions of labour were measured using the number of weekly hours that each member of the couple spent in paid work, housework, and caring, as well as who has responsibility for children. Inflammatory marker outcomes included C-Reactive Protein (CRP) and fibrinogen. High CRP was defined as greater than 3 mg/L. Cross-sectional multivariate regression models were used to investigate associations between gender divisions in paid work, caring, housework and childcare with inflammatory markers, adjusting for household income, educational qualifications, longstanding illness and age, stratifying by gender to investigate whether associations are differential within couples.

Results Gender divisions of labour were associated with raised inflammation for men but not women. Men living in households in which women were providing care to an adult or doing all of the housework had significantly higher levels of Fibrinogen (caring: coef=0.11, 95% CI=0.04–0.19; housework: 0.08, 0.02–0.14) and CRP (caring: OR=1.66, 95% CI=1.15–2.39; housework: OR=1.50, 1.06–2.14) compared with men in households in which neither partner provided care or both did few hours of housework. In addition, men in traditional 'male breadwinner' households, or childless households, were significantly less likely to have raised CRP levels (paid work: OR=0.49, 0.36–0.68; parental status: 0.64, 0.44–0.92) than men in dual-earner households or those in which childcare was equally shared between parents.

Conclusion Contrary to expectations, inflammatory markers were significantly associated with gender divisions of labour within couples for men and not for women. While potential stress-reducing benefits of participation in paid work and childlessness are aligned with prior research, further investigation is required to better understand the effects of women's caring and housework on men's inflammation. Next steps

include investigation of the identity of care recipients, non-linear associations with hours spent in housework, and interaction effects between labour types.

OP91 INFORMAL CAREGIVING AND MARKERS OF ADIPOSITY IN THE UK HOUSEHOLD LONGITUDINAL STUDY

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Background Providing informal care is known to be associated with poorer psychological health. However less is known about other, more objective health outcomes such as adiposity. The aim of this study was to investigate associations between being an informal caregiver with measures of adiposity using a large, representative UK longitudinal study.

Methods Data on 20 669 participants of the UK Household Longitudinal Study were used to explore the relationship between caregiving and adiposity (body mass index (BMI) and waist circumference). We additionally investigated caregiving intensity (hours spent caregiving per week, number of people cared for and combining caregiving with paid work). Multiple imputation was used to account for missing data. Associations between caregiving and adiposity measures were tested using multivariable linear regressions. Analyses were stratified by gender and interactions with age were tested. Models adjusted for household income, educational attainment, social class, presence of a long-standing limiting illness, number of dependent children in the household and partnership status. All analyses included survey weights to account for design, unequal probabilities of selection, differential non-response and potential sampling errors. The analyses were conducted in Stata v14.

Results Being an informal caregiver was associated with increased waist circumference (1.48 cm, 95% CI: 0.42, 2.53) but not BMI for men in age-adjusted models. Women who were informal carers had higher waist circumferences (3.62 cm, 95% CI: 2.77, 4.47) and BMIs (1.26, 95% CI: 0.89, 1.64) relative to non-carers. A caring-age interaction was present for women suggesting that younger women carers (aged 16–44) had particularly higher waist circumferences (5.44 cm, 95% CI: 3.77, 7.10) and BMIs (1.90 cm, 95% CI: 1.17, 2.62). Caregiving intensity was found to be important with increasing hours of caregiving associated with increasing adiposity.

Discussion Being an informal carer was associated with increased adiposity amongst UK men and women. Caring appears to be particularly negatively associated with adiposity when occurring during non-normative life stages, such as early adulthood, and when high intensity. These findings are based on nationally representative longitudinal data. The main limitation of this study was the inability to investigate the reasons the care recipient requires care (i.e. dementia vs cancer), and to investigate the mechanisms involved. Given funding cuts for social care, advancements in medical treatment and increasing life expectancy, a greater proportion of the population will be expected to provide informal care for relatives