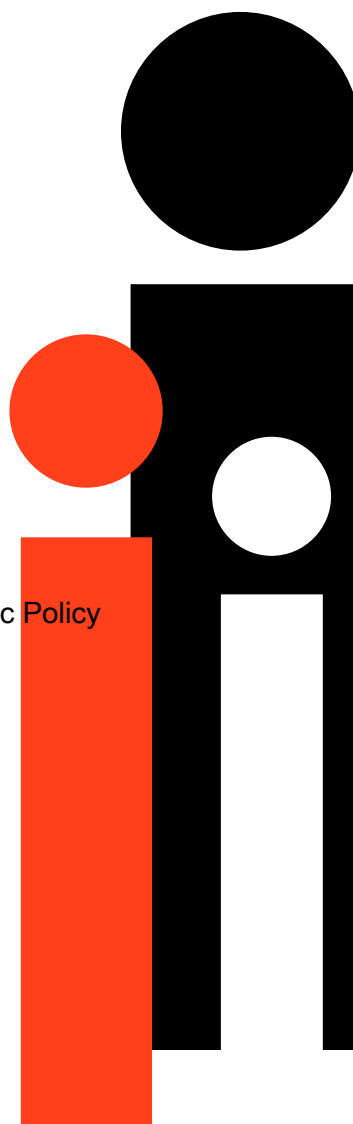# Adverse Pregnancy Outcomes Following a Job Loss in the UK

Alessandro Di Nallo

Dondena Centre for Research on Social Dynamics and Public Policy
Bocconi University

Selin Köksal

Institute for Social and Economic Research
University of Essex

INSTITUTE FOR SOCIAL
& ECONOMIC RESEARCH

UKRI

Economic
and Social
Research Council

University of Essex

Non-technical summary

Along with biological and lifestyle factors, social and economic contexts can shape pregnancy experiences. Prior evidence showed that stressful life events such as financial instability, and economic downturns could increase the risk of adverse pregnancy outcomes. Yet, there is no evidence on whether a job loss affects the continuity of gestation. In this study, we aim to uncover whether the experience of a job loss during pregnancy hampers or increases the risk pregnancy loss, namely miscarriage and stillbirth.

To address this question, we rely on "Understanding Society" data (all the available waves from 2009 to 2020) which provides detailed information on date of conception, date of job loss and the pregnancy outcome (i.e. live birth vs. miscarriage, stillbirth or pregnancy termination). We identify job losses through individuals who involuntarily lost their jobs due to dismissal or redundancy reasons. All this information allows us to understand whether the risk of pregnancy loss increases if a woman is exposed to a job during her pregnancy.

Our findings show that risk of pregnancy loss increases when the woman or her partner experienced a job loss during her pregnancy. Precisely, we estimate the probability of pregnancy loss in the absence of job loss about 12%, while the risk of pregnancy loss is estimated to increase up to 21% when a woman or her partner experiences a job loss during the pregnancy.

This study can be insightful for policymakers to design more comprehensive unemployment policies, particularly in the UK context where the unemployment benefits are relatively low, considering the repercussions of job loss on reproductive health.

Adverse pregnancy outcomes following a job loss in the UK

Alessandro Di Nallo[1] and Selin Köksal[2]

Abstract

Research has documented that economic downturns increase the risk of pregnancy loss. However, previous work on has not addressed the influence of *in utero* exposure to job loss with high-quality individual data. We draw on 'Understanding Society' (UKHLS, sweeps 1-11, 2009-2020), which contains a sample of 7,698 pregnancies. The dependent variable identifies a non-live birth, namely a miscarriage or a stillbirth. We examine the couples who were exposed to an involuntary job loss and those who were not. Baseline models controlling for women's socio-demographic background and prior experience of miscarriage indicate an increased risk of pregnancy loss when exposed to *in utero* job loss [odds ratio (OR) = 2.16, 95% CI: 1.42, 3.29]. When we account for all current socio-economic characteristics, the association remains statistically significant [odds ratio (OR) =1.96, 95% CI: 1.29, 2.98]. The findings support the inference that the *in utero* exposure to an involuntary job loss increases the risk of pregnancy disruption.

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[1] Bocconi University and Dondena Centre for Research on Social Dynamics and Public Policy
[2] Institute for Social and Economic Research, University of Essex

Introduction

A pregnancy loss is a collective term used to identify a pregnancy that does not result in a live birth [1], [2], and might occur any time during the course of pregnancy [3]. According to National Health Service (NHS) in the UK, it is termed "miscarriage" when it occurs before the 24th week of pregnancy, and "stillbirth" thereafter [1]. In high-income countries, 11 to 21% of clinically detected pregnancies result in miscarriage [4]–[7] while approximately 0.4-0.5 percent of pregnancy loss occur as stillbirths [8].

Pregnancy losses are consequential for women and their partner's health and well-being as they are associated with an increased risk of long-term depression and anxiety-related symptoms [7], [9]. They are also costly for healthcare systems, as the yearly economic cost of miscarriages are estimated at £471 million in the UK [1]. While the official statistics on miscarriages are rare, more detailed information on stillbirths reveal that their incidence has remained relatively stable as compared with the improvements in mothers' death at delivery and neonatal mortality [4], [7]. In the United Kingdom, in the last 5 years, the number of stillbirths has steadily exceeded the number of liveborn infants who die before their first birthday [10], [11]. Despite its social and economic relevance, pregnancy loss is still rarely discussed public health matter in private and public spheres [12].

Prior research has uncovered several antecedents of pregnancy loss such as maternal age, lifestyle factors and genetic propensity [13], [14]. A growing body research has investigated how *in utero* exposures can increase the risk of pregnancy loss [4], [15]. Environmental stressors such as natural disasters [16] and economic downturns [4], [17] may put pregnancies at risk as well. Ecological evidence shows that the probability of reporting a pregnancy loss increases during period of raising unemployment [1],[2], while individual-level studies indicated that stressful life events are linked with spontaneous loss at earlier stage of pregnancy

[19]. A job loss is generally considered as an external source of stress and discomfort as it indicates involuntary job termination that occurs when workers are laid off [20]. The studies focusing on individual labour market shocks have shown that job loss is negatively associated with a wide array of children's perinatal outcomes [21]–[23]. This could suggest that the risk of pregnancy loss might be associated with experiencing an involuntary job loss. A job loss could be associated with increased level of stress hormones [24], reduction in financial and time resources [20], frustration and eventually health-harming behavior (e.g. tobacco and substance use, unhealthy eating) during the pregnancy period [1],[2], all of which might jeopardize a gestation [26].

To date, however, no study has examined whether a job loss experienced post-conception by a woman, or her partner is associated with higher risk of pregnancy loss. This constitutes a gap in knowledge as job losses affect a significant portion of the population and are a source of discomfort for women and their kin [20], [27]. We hypothesise that women who experience their or their partners' job displacement are under higher risk of experiencing a pregnancy loss, namely miscarriage or stillbirth, compared to their counterparts who do not, as a couple facing an involuntarily job displacement is subject to increased stress, a decrease in (or uncertain inflow of) income, and heightened frustration, which may pose a pregnancy at risk.

Our study contributes to the literature by providing original evidence on the effect of job loss on a non-live birth. We identify two groups of couples: those who report an individual-level job loss and those do not. In further analyses, we include other indicators of 'job separation', we specify the gender of the partner hit by the job displacement and its timing with respect to the conception. Further, we investigate whether women's and their partners' characteristics play a role in attenuating this association. We draw on the UK 'Understanding Society' (sweeps

1–11), which provides fine grained information on pregnancy histories and labour market events on a monthly basis along with individuals' sociodemographic characteristics.

Methods

Data and sample

We use data from the UKHLS ('Understanding Society'), a representative survey of the United Kingdom population spanning from 2009 to 2020. The dataset includes the date of conception (month and year), gestational length (months), cause of interruption, delivery outcome of the pregnancies reported by women. Also, the survey provides information on workplace changes, such as the type of job interruption (e.g., redundancy, dismissal, contract end, etc.) and its date (month and year). We construct a pregnancy-level dataset, in which each woman can report more than one pregnancy. Our final sample size consists of 7,698 episodes of pregnancies (for 4,773 women and associated partners – if any – at a given time). We excluded the ongoing pregnancies (*N*=400); conceptions with no reported date (*N*=296); and pregnancies with unknown outcome (*N*=111).

Variables

For each self-detected pregnancy, we identify whether it results in a live birth or not. The dependent variable is a dichotomous variable equal to 1 if the respondent experienced a miscarriage or a stillbirth, and 0 otherwise[3].

Miscarriages constitute about 11.5% (*N*=884, Table 1) of the reported conceptions, in line with the estimates of clinically detected spontaneous losses [4], [5]. As the majority of pregnancies

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[3] Other types of non-live birth types, such as pregnancy termination (abortion), ectopic or tubal pregnancy are categorized as 0.

do not survive within the first month [3], [28], and a large proportion of pregnancies losses are undetected [29], the reported miscarriages may be underestimated compared to all the real pregnancy losses [28]. However, there is no evidence that reporting is influenced by episodes of economic hardship [30], [31]. Further, if miscarriages, particularly the early ones, went unnoticed or unreported, the analysis would likely underestimate the effects on birth outcomes.

Stillbirths represent 0.45% of the conceptions (*N*=35, Table 1), in keeping with the official statistics in the United Kingdom, as stillbirths have ranged between 0.36 and 0.45 per hundred pregnancies during the 2009-2020 period [8].

We exclude pregnancy termination (abortion) cases from the main analysis, as the focus of this study is primarily on pregnancy loss, defined by miscarriage or stillbirth. Induced abortions constitute approximately 18-25% of all detectable pregnancies in high-income countries [32]. According to the official statistics, the age-standardised abortion rate is 1.8 per hundred pregnancies in the UK [33], while they represent 2.3% in our sample (*N*=173).

The main explanatory variable identifies if an involuntary job loss occurs after the date of conception or before the delivery. Unlike other similar studies [23], [26], we can distinguish *involuntary* job losses, which occur because of (a) dismissal or (b) redundancy. We thus follow previous literature that has already addressed this source of involuntary job loss in the UK data. One main advantage of UKHLS is that women report the length of gestation that ends prematurely in a non-live birth. This piece of information can be combined with the timing of a job loss, also expressed at the monthly level, so it is possible to detect if the exposure to job loss occurred *in utero*. For instance, if a pregnancy loss occurs within the 3rd month from the conception, and job loss falls within the 3rd month, the binary indicator equals 1. Conversely, if a pregnancy loss occurs within the 3rd month from the conception, and the displacement

happens 6 months after the conception date, the binary indicator is 0. If conception and job loss occur in the same month, we consider the couple to be exposed to the shock. There are no cases of non-live birth and job loss happening in the same month.

All the other causes of job end, such as contract termination, illness, parental leave, retirement, or unspecified reasons, are *not* considered involuntary [20] and their binary indicator is 0. These episodes are considered for alternative specifications of the main independent variable in the Supplementary analyses.

We adjust the analyses for a set of confounders. As a measure of socio-economic background, we use women's ethnicity and parents' SES when the woman was 16. We also control for women's time-varying factors: age (linear, quadratic and cubic), maternal status (have a child or not), educational attainment (No qualification, Other qualification, GCSE etc., A level etc., Other higher degree, Degree), self-reported health (5 categories from 'Poor' to 'Excellent') and any previously reported miscarriages, in line with prior research on pregnancy loss [28], [34]. We also adjust for the marital status at conception (cohabiting, married, single); partner's age and job position (NSSeC- 3), if any co-residential partner is reported, and household income. All these controls are lagged with respect to the conception date. We also control for temporal patterns in pregnancy loss (e.g., seasonality, trend) captured by year and month fixed effects.

Table 1 Summary statistics by job status

	Job loss		No job loss		Total	
	N = 129		N = 7569		N = 7698	
	N	%	N	%	N	%
Pregnancy loss	33	25.6	888	11.7	921	12.0
Miscarriage	32	24.8	854	11.3	886	11.5

Stillbirth	1	0.8	34	0.4	35	0.5
Termination	2	1.6	171	2.3	173	2.2

Woman's characteristics	%	%	%
Age at conception (mean/SE)	31.43 (5.93)	30.47 (5.87)	30.49 (5.88)
Married or cohabiting at conception	59.0	56.1	56.7
Has a university degree	40.2	36.2	36.4
White ethnic origin	77.5	76.7	76.9
Parents were upper-middle class	25.2	24.6	24.8
Has children	30.1	31.6	31.3
Had at least one prior miscarriage	5.3	4.9	5.0
Health reported as 'fair'	11.1	7.9	8.1
Health reported as 'poor'	1.9	2.4	2.2
Partner's characteristics			
Age at conception (mean/SE)	34.46 (6.11)	33.98 (6.42)	33.99 (6.42)
Job class (Intermediate)	12.4	10.3	10.4
Job class (Manager & professional)	29.2	25.4	25.6
Household income in Pounds (mean/SE)	2345 (5312)	2345 (5312)	2353 (5277)

Empirical Strategy

We estimate a logistic regression to estimate the effect of a job loss on the risk of pregnancy loss. First, we estimate a baseline model predicting the risk of non-live birth including the main explanatory variable and controls for woman's socio-economic background, age, prior

experience of miscarriage and time trends. Second, we estimate a model adjusting for woman's time-varying characteristics: education, marital status, and subjective health. Finally, we add partner's SES, if a partner is reported, and household income. Heteroskedasticity-robust standard errors are clustered at the individual level to adjust for non-independence of conceptions within woman over time.

Results

Our findings show that women who are exposed *in utero* to job loss have their risk of a pregnancy loss increased (see column (1) of Table 2) as compared to the ones who were not. The estimated relative risk for women not exposed to job loss is 2.165 ($p < 0.01$) as opposed to women who are not. The effect remains statistically significant ($p < 0.01$) as new controls are added to the baseline specification, which only features the main explanatory variable, women's age, ethnicity and parents' SES, the seasonal trends, and self-reported prior experience of miscarriage. In the fully-specified model (Model 3), the estimated relative risk of pregnancy loss for pregnancies exposed to a job loss is 1.966 ($p<0.01$) compared to that for pregnancies that are not.

Figure 1 displays the predicted probability of pregnancy loss derived from the three models. The estimated probability of pregnancy disruption in the absence of job loss is about 12% in all specifications, in line with prior estimates [4], [5], which confirms the reliable self-reporting of recognized conceptions. The *in-utero* exposure job loss increases the risk of pregnancy disruption to approximately between 21% (Model 1) and 19% (Model 3).

Table 2 Logistic models regressing involuntary job loss on pregnancy outcomes

	Model 1	Model 2	Model 3

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Ref: No job loss

Job loss	2.165***	1.992***	1.966***
	(0.462)	(0.423)	(0.419)
Observations	7,698	7,698	7,698

[a]Model 1 includes: age (linear, quadratic, cubic), ethnicity, parents' highest social class, previous experience of miscarriage, year and month fixed effects.

[b]Model 2 includes: woman's educational attainment, partnership status, self-reported general health, in addition to the confounders of Model 1

[c]Model 3 includes: partners' educational attainment and NS-SeC3 job status, and household income (in logarithm), in addition to the confounders of Model 2

Full estimates are displayed in Table S1.

Figure 1. Predicted probability in risk of pregnancy loss and 95% confidence intervals of pregnancies affected and not affected by job loss.

Figure legend:
- Model 1. Woman's demographics & prior miscarriage
- Model 2. M1 + Woman's SES & partnership characteristics
- Model 3. M2 + Partner's SES & household income

95% confidence intervals
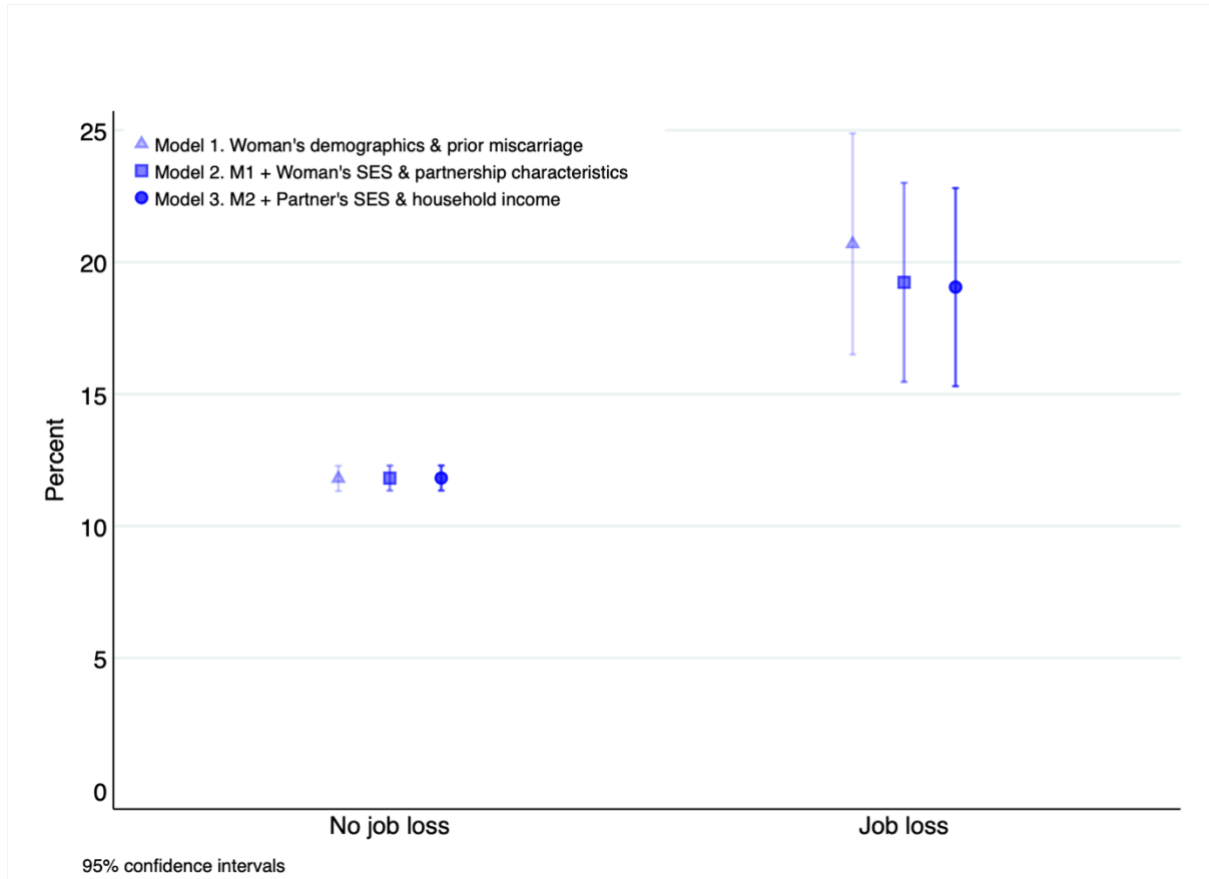
Sensitivity analyses

We performed several sensitivity analyses. First, we use two alternative outcomes: miscarriage and non-live birth (a term encompassing miscarriage, stillbirth and abortion). They are more and less restrictive definitions, respectively, of the outcome used in the main analysis. As our data rely on self-reported pregnancy histories, pregnancy outcomes might be prone to mis- or under-reporting [30]. For instance, miscarriage only captures a pregnancy that certainly ends before delivery, while stillbirth identifies all disrupted pregnancies from the 24th week of pregnancy onward, potentially including death at birth, which does not fit the definition of pregnancy loss. Moreover, a miscarriage can be misreported as abortion, or vice versa, as these two terms were used interchangeably by the medical professionals up until the end of the 20th century in the UK [35]. The lack of consensus in the clinical language can create a confusion in the way patients communicate and report their early pregnancy experiences [36].

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Second, we replicated our analyses with a categorical explanatory variable: (1) involuntary job loss (as in the main analysis); (2) an *anticipated* contract termination; (3) another voluntary exit from the labour market (e.g., illness, unspecified reason, etc.); (4) no labour market change. We tested whether other causes of job termination gauge the condition of uncertainty and are associated with an increase in the risk of pregnancy disruption. Another source of job end, which is not involuntary, might not be independent on individuals' decisions. Therefore, in some cases, a temporary labour market detachment could accommodate fertility decisions [37].

Third, we addressed the *timing* of job loss with respect to the *timing* of conception with more detail. We replicated the main analysis with a categorical independent variable: (1) a job loss *preceding* conception by 12 to 1 month; (2) *in utero* exposure to job loss (as in the main analysis); (3) a job loss between the gestation end and 12 months thereafter; (4) all the residual cases (a job loss in another period, or no job loss). We acknowledge that couples who experience a job loss and subsequently choose to conceive might still suffer stress-related consequences. A job loss on this margin does not affect a pregnancy disruption, but it may change pre-pregnancy health behaviors that affect a conception, namely sexual activity and/or contraception use.

Finally, we re-performed the analysis controlling for the gender of the partner hit by the job loss: (1) woman's job loss; (2) partner's (if any) job loss; (3) no job loss (as in the main analysis). In prior research, a partner's job condition are considered independent on the course of pregnancy, while women's labour market decisions may relate to the course of pregnancy, thus raising the issue of reverse causality [22]. The results of this analyses reveal that women's and their partners' job loss are associated with increased risk of pregnancy loss. The results of these sensitivity analyses are presented in Supplementary Tables S2-S6.

Discussion

Among the pregnancies that are clinically detected, 10 to 21 percent are spontaneously lost. Besides the biological factors, job loss is one of the possible social causes of adverse pregnancy outcomes. Previous studies have shown that economic downturns and stressful life events could increase the risk of pregnancy loss [4], [19]. Yet, whether a job loss affects the course of pregnancy remains an understudied question. The existing evidence is provided through ecological studies [4], which focus on a heterogeneous population of prospective parents, most of which do not lose a job. This limitation leaves open the question as to whether involuntary job loss in a family per se – and not the economic cycle or other events– affects the course of a pregnancy [7].

This study shows a significant increase in the probability of pregnancy loss for the women who are exposed to their own or their partners' job loss using a population-based survey in the United Kingdom. The findings are consistent with the hypothesis that the combination of physiological, psycho-social and economic hardship experienced *in utero* is likely to impair a pregnancy. Pregnancies could be at risk due to one or more of these mechanisms. First, the physiological response to a source of stress triggers the production of CHR, ACTH and cortisol [38]. These hormones are found to increase the risk of miscarriage [38], [39], while CRH could lead to uterine contractions to premature delivery [40], which is a risk factor for stillbirth [41]. Second, the reduction in the available income could restrict access and compliance to prenatal care. Therefore, at-risk pregnancies could be discovered late or be undetected at all, thus increasing the risk of pregnancy disruption or jeopardizing the health of the fetus [41]. Third, the emotional discomfort of job loss could give rise to health-harming behaviors during pregnancy, such as the use of toxic substances [41], smoking or unhealthy eating [18], [25].

Our evidence is in line with research showing how psychological shocks during gestation are associated with adverse pregnancy outcomes [18], [26].

Further, the exposure to an anticipated but *not involuntary* source of job interruption – which we tested in the sensitivity analyses – does not bring about the same consequence as an involuntary job loss. Although we cannot untangle the mechanisms, we can hypothesise that not only the financial uncertainty, but also the reaction due to stress and frustration, compatible with an involuntary but not with an anticipated job loss, seems to be at least equally, or more, harmful [42], [43].

The identification strategy clearly distinguished job displacements occurring *before* conception from those occurring post-conception. However, a displacement could be a marker of pre-existing economic disadvantage and stress which might not deter a woman from conceiving a child but might still impair pregnancy. If this mechanism had been at play, we could have found a significant effect of preconception job loss on miscarriage and non-live birth. Instead, we found no statistical association between a preconception job loss and the pregnancy outcomes. We interpret this finding as strengthening the inference that job loss during pregnancy, rather than job-related stressors experienced *before conception*, impairs pregnancy.

The implications of our results are manifold. First, our findings can be interpreted in the light of recent evidence on the effect of partner's job loss on other pregnancy outcomes from Denmark [22]. Low-birthweight results adversely hit by an *in utero* shock, while gestational length turns out unaffected. A recent meta-analysis also found that preterm birth is less responsive to maternal stressors than other pregnancy outcomes, such as birthweight [44]. If pregnancy loss is more frequent as a consequence of external stressors, such as a job loss, and gestational age is unaffected, this piece of evidence is compatible with the hypothesis that

stressful economic circumstances may induce selection in utero, leading to relatively better perinatal outcomes among pregnancies carried to term [45], [46]. However, this hypothesis must be confirmed by further evidence.

Second, we contribute to better understanding one of the causes of pregnancy loss, which is often hampered by poor-quality vital registrations [7], [22]. Our findings are based on a limited sample size and call for a validation based on larger and, possibly, register-based samples. In the United Kingdom, and in most European countries, individual-level data on pregnancy loss are very limited. Further, the integration with other sources of data providing insightful information on potential stressors is possible only in few countries, such as Denmark [22]. The construction of such a "data infrastructure" may contribute to systematically detect the causality of stress-related risk factors on pregnancy outcomes.

Our research is not free of limitations. First, we acknowledge the possibility of contextual self-selection into the risk of job loss during pregnancy and adverse pregnancy outcomes. For instance, a couple in which both partners suffer from physical or mental health issues might be relatively more exposed to the risk of job loss and pregnancy disruption. Moreover, women from less advantaged background might self-select into unions with low-SES partners who are, in turn, more prone to job precariousness [22]. The richness of the data allows us to control for a large set of confounders, which enables us to reduce this bias. Replication in larger samples matching individual databases and firms' records might enable the use of matched-sibling [22] or individual-fixed effect [21] estimators to further reduce the bias if a job loss was not entirely exogenous to the birth outcome.

Second, the availability of public registers would better discern clinically-induced abortions, which tend to be under-reported in surveys [30], and estimate the dates of conceptions with accurate clinical methods. Further, survey data is prone to under or misreporting of induced

abortion cases, particularly in contexts where abortion is highly stigmatized [47]. Also, the limited sample size did not allow us to explore if any heterogeneity across socio-economic groups as the risk of exposure to disruptive life events and the coping mechanisms are socially stratified [27].

The strengths of our study include the identification of a *in utero* exposure to job loss. In contrast to prior studies using self-reported job loss within two years before a live birth [21], [26], we can detect if the exposure to a job loss occurs *in utero*, hence between the month of conception and the month of birth, or the latest month of pregnancy. This operationalisation, unlike other measures of job separation, which do not distinguish between involuntary and anticipated causes of job end, reduces the bias due to unmeasured confounding by health and social factors that correlate with job loss. Prior research considered national or local unemployment rates as proxies for individual experiences of the economy. However, these measures could be subject to error [48]. Further, if we consider the fact that some of the proposed mechanisms operate through stress, unemployment rate - a proxy for economic distress - may not accurately capture this mechanism. A woman's hardship during pregnancy may depend on her household's economic circumstances more than on macroeconomic factors [49].

Britain's welfare state has an anti-poverty focus and provides low unemployment insurance benefits [50], whose replacement rates are relatively less generous than in the rest of Europe (34% for 6 months on average). The replication of this analysis in different country contexts can assess the external validity of our findings and reveal to what extent the deployment of unemployment buffers cushions the consequences of job loss on gestations. It is thus relevant for policymakers to understand if social safety-net programs in more generous welfare regimes more effectively redress the psycho-social hardship of job loss.

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Supplementary Material

Table S1. Logit model of pregnancy loss on job loss (Extended version of Table 2)

	Model 1	Model 2	Model 3
Job loss	2.165***	1.992***	1.966***
	(0.462)	(0.423)	(0.419)
Age	0.717	0.807	0.834
	(0.230)	(0.276)	(0.287)
Age (squared)	1.008	1.005	1.004
	(0.011)	(0.011)	(0.011)
Age (cubic)	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)
Ethnicity *(Ref: White British)*			
European/Other White	0.944	0.983	1.005
	(0.167)	(0.184)	(0.189)
Mixed: White & Other	0.734	0.643	0.664
	(0.194)	(0.178)	(0.184)
Indian	0.808	0.775	0.765
	(0.168)	(0.170)	(0.170)
Pakistani	0.688*	0.676*	0.671*
	(0.142)	(0.147)	(0.146)
Bangladeshi	0.439**	0.413***	0.408***
	(0.144)	(0.138)	(0.136)
Other Asian/Asian British	0.795	0.690	0.692
	(0.234)	(0.203)	(0.207)
Black/African/Caribbean/Black British	0.752	0.714*	0.726*
	(0.133)	(0.129)	(0.132)
Other	0.967	0.965	0.934
	(0.354)	(0.379)	(0.372)
No information	0.835	0.899	0.912
	(0.256)	(0.286)	(0.292)
Parents' highest class when woman was 16 yo *(Ref: Low-skilled)*			
Skilled working	0.954	0.980	0.985
	(0.124)	(0.132)	(0.132)
Lower-middle	0.907	0.985	0.983

	(0.116)	(0.133)	(0.134)
Upper-middle	0.854	0.954	0.968
	(0.108)	(0.129)	(0.132)
Missing	0.920	0.933	0.931
	(0.124)	(0.128)	(0.128)
Previous miscarriage *(Ref: None)*			
1+ prior miscarriage	14.022***	15.397***	15.274***
	(1.810)	(2.037)	(2.038)
Woman's highest qualification *(Ref: Degree)*			
Other higher		1.021	0.993
		(0.136)	(0.136)
A level etc.		1.241*	1.218*
		(0.138)	(0.138)
GCSE etc.		1.021	0.993
		(0.128)	(0.129)
Other qualification		0.887	0.873
		(0.224)	(0.221)
No qualification		1.305	1.258
		(0.263)	(0.267)
Missing		0.594*	0.621
		(0.180)	(0.196)
Partnership condition *(Ref: Married)*			
Cohabiting		0.800**	0.802**
		(0.086)	(0.088)
Single		1.185	1.421**
		(0.138)	(0.225)
Maternal status *(Ref: Childless)*			
Mother		0.488***	0.483***
		(0.048)	(0.048)
General health *(Ref: Excellent)*			
Very good		0.883	0.886
		(0.098)	(0.099)
Good		1.098	1.103
		(0.128)	(0.129)
Fair		1.417**	1.420**
		(0.224)	(0.226)

Poor		1.894**	1.864**
		(0.477)	(0.477)
Partner's highest education *(Ref: Degree)*			
Other higher			1.108
			(0.188)
A level etc.			1.069
			(0.149)
GCSE etc.			1.082
			(0.160)
Other qualification			0.748
			(0.182)
No qualification			1.184
			(0.340)
Missing			0.871
			(0.155)
Current job, Three Class NS-SEC *(Ref: Low-skilled and working class)*			
Intermediate			0.908
			(0.143)
Management & professional			0.912
			(0.125)
Not specified			0.916
			(0.131)
Income (ln)			0.969
			(0.024)
Missing income			0.834
			(0.169)
Year & Month FE	Yes	Yes	Yes
Constant	2.841	1.076	0.980
	(8.803)	(3.540)	(3.298)
Observations	7,698	7,698	7,698

*** p<0.01, ** p<0.05, * p<0.1

Table S2. Logit model of miscarriage on job loss

	Model 1	Model 2	Model 3
Job loss	2.129***	1.944***	1.920***
	(0.455)	(0.411)	(0.407)
Age	0.754	0.837	0.852
	(0.250)	(0.296)	(0.303)
Age (squared)	1.007	1.004	1.004
	(0.011)	(0.012)	(0.012)
Age (cubic)	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)
Ethnicity *(Ref: White British)*			
European/Other White	0.963	1.011	1.033
	(0.173)	(0.192)	(0.197)
Mixed: White & Other	0.712	0.624*	0.645
	(0.194)	(0.178)	(0.184)
Indian	0.851	0.816	0.813
	(0.178)	(0.179)	(0.181)
Pakistani	0.611**	0.604**	0.597**
	(0.135)	(0.139)	(0.138)
Bangladeshi	0.462**	0.437**	0.431**
	(0.152)	(0.146)	(0.144)
Other Asian/Asian British	0.830	0.721	0.726
	(0.245)	(0.212)	(0.216)
Black/African/Caribbean/Black British	0.741*	0.713*	0.727*
	(0.133)	(0.131)	(0.135)
Other	1.011	1.026	0.989
	(0.371)	(0.401)	(0.394)
No information	0.883	0.951	0.965
	(0.273)	(0.305)	(0.312)
Parents' highest class when woman was 16 yo *(Ref: Low-skilled)*			
Skilled working	0.952	0.971	0.977
	(0.127)	(0.133)	(0.134)
Lower-middle	0.940	1.007	1.006
	(0.122)	(0.138)	(0.139)
Upper-middle	0.854	0.938	0.956

		(0.110)	(0.130)	(0.133)
Missing		0.928	0.941	0.942
		(0.128)	(0.132)	(0.132)
Previous miscarriage *(Ref: None)*				
1+ prior miscarriage		14.583***	15.876***	15.705***
		(1.885)	(2.104)	(2.096)
Woman's highest qualification *(Ref: Degree)*				
Other higher			1.034	1.001
			(0.140)	(0.138)
A level etc.			1.258**	1.225*
			(0.141)	(0.141)
GCSE etc.			0.980	0.943
			(0.125)	(0.125)
Other qualification			0.877	0.849
			(0.225)	(0.219)
No qualification			1.222	1.152
			(0.253)	(0.251)
Missing			0.521**	0.536*
			(0.164)	(0.176)
Partnership condition *(Ref: Married)*				
Cohabiting			0.798**	0.794**
			(0.087)	(0.089)
Single			1.142	1.381**
			(0.136)	(0.224)
Maternal status *(Ref: Childless)*				
Mother			0.493***	0.488***
			(0.050)	(0.050)
General health *(Ref: Excellent)*				
Very good			0.894	0.894
			(0.101)	(0.101)
Good			1.078	1.079
			(0.129)	(0.129)
Fair			1.386**	1.380**
			(0.224)	(0.224)
Poor			1.921**	1.879**
			(0.490)	(0.486)

Partner's highest education *(Ref: Degree)*			
Other higher			1.143
			(0.196)
A level etc.			1.057
			(0.151)
GCSE etc.			1.128
			(0.169)
Other qualification			0.809
			(0.197)
No qualification			1.308
			(0.375)
Missing			0.877
			(0.158)
Current job, Three Class NS-SEC *(Ref: Low-skilled and working class)*			
Intermediate			0.907
			(0.132)
Management & professional			0.894
			(0.143)
Not specified			0.898
			(0.125)
Income (ln)			0.976
			(0.025)
Missing income			0.848
			(0.176)
Year & Month FE	Yes	Yes	Yes
Observations	7,698	7,698	7,698

Table S3. Logit model of non-live birth on job loss

	Model 1	Model 2	Model 3
Job loss	1.967***	1.829***	1.813***
	(0.409)	(0.381)	(0.379)
Age	0.593*	0.725	0.721
	(0.165)	(0.216)	(0.218)
Age (squared)	1.012	1.007	1.007
	(0.009)	(0.010)	(0.010)
Age (cubic)	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)
Ethnicity *(Ref: White British)*			
European/Other White	0.978	1.075	1.100
	(0.162)	(0.188)	(0.195)
Mixed: White & Other	0.793	0.648*	0.662
	(0.192)	(0.162)	(0.167)
Indian	0.839	0.877	0.886
	(0.159)	(0.176)	(0.180)
Pakistani	0.529***	0.571**	0.578**
	(0.110)	(0.124)	(0.127)
Bangladeshi	0.402***	0.405***	0.412***
	(0.122)	(0.125)	(0.128)
Other Asian/Asian British	0.846	0.748	0.753
	(0.221)	(0.204)	(0.209)
Black/African/Caribbean/Black British	0.730*	0.623***	0.633***
	(0.119)	(0.105)	(0.108)
Other	0.931	0.979	0.969
	(0.326)	(0.368)	(0.368)
No information	0.997	1.069	1.079
	(0.255)	(0.284)	(0.289)
Parents' highest class when woman was 16 yo *(Ref: Low-skilled)*			
Skilled working	0.914	0.948	0.947
	(0.112)	(0.121)	(0.121)
Lower-middle	0.932	1.039	1.032
	(0.111)	(0.133)	(0.133)

Upper-middle	0.842	0.973	0.977
	(0.100)	(0.126)	(0.127)
Missing	0.998	0.997	0.990
	(0.123)	(0.127)	(0.127)
Previous miscarriage *(Ref: None)*			
1+ prior miscarriage	11.685***	13.037***	13.016***
	(1.504)	(1.724)	(1.741)
Woman's highest qualification *(Ref: Degree)*			
Other higher		0.975	0.948
		(0.124)	(0.123)
A level etc.		1.290**	1.274**
		(0.135)	(0.138)
GCSE etc.		0.956	0.936
		(0.114)	(0.116)
Other qualification		0.843	0.834
		(0.198)	(0.198)
No qualification		1.154	1.131
		(0.221)	(0.227)
Missing		0.509**	0.588*
		(0.142)	(0.175)
Partnership condition *(Ref: Married)*			
Cohabiting		0.829*	0.829*
		(0.084)	(0.086)
Single		1.907***	2.316***
		(0.199)	(0.339)
Maternal status *(Ref: Childless)*			
Mother		0.487***	0.484***
		(0.044)	(0.044)
General health *(Ref: Excellent)*			
Very good		0.928	0.931
		(0.096)	(0.097)
Good		1.050	1.056
		(0.116)	(0.117)
Fair		1.490***	1.490***
		(0.218)	(0.220)
Poor		1.987***	1.950***

		(0.475)	(0.474)
Partner's highest education *(Ref: Degree)*			
Other higher			1.106
			(0.180)
A level etc.			1.065
			(0.141)
GCSE etc.			1.006
			(0.143)
Other qualification			0.693
			(0.165)
No qualification			1.109
			(0.308)
Missing			0.801
			(0.135)
Current job, Three Class NS-SEC *(Ref: Low-skilled and working class)*			
Intermediate			0.851
			(0.129)
Management & professional			0.865
			(0.112)
Not specified			0.926
			(0.127)
Income (ln)			0.983
			(0.024)
Missing income			0.712*
			(0.141)
Year & Month FE	Yes	Yes	Yes
Observations	7,698	7,698	7,698

*** p<0.01, ** p<0.05, * p<0.1

Table S4. Logit model of pregnancy loss on different instances of job end (involuntary job loss, anticipated contract end, other)

	Model 1	Model 2	Model 3
Job end *(Ref = None)*			
Involuntary Job loss	2.200***	2.024***	1.997***
	(0.472)	(0.432)	(0.428)
Contract end	1.786	1.528	1.494
	(0.835)	(0.786)	(0.778)
Other	0.797	0.751	0.727
	(0.265)	(0.245)	(0.238)
Age	0.715	0.804	0.831
	(0.229)	(0.276)	(0.287)
Age (squared)	1.008	1.005	1.004
	(0.011)	(0.011)	(0.011)
Age (cubic)	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)
Ethnicity *(Ref: White British)*			
European/Other White	0.943	0.982	1.004
	(0.167)	(0.184)	(0.189)
Mixed: White & Other	0.731	0.641	0.662
	(0.193)	(0.177)	(0.183)
Indian	0.811	0.778	0.768
	(0.169)	(0.170)	(0.171)
Pakistani	0.688*	0.676*	0.671*
	(0.142)	(0.147)	(0.147)
Bangladeshi	0.440**	0.414***	0.409***
	(0.144)	(0.138)	(0.136)
Other Asian/Asian British	0.797	0.690	0.693
	(0.234)	(0.203)	(0.207)
Black/African/Caribbean/Black British	0.754	0.716*	0.728*
	(0.133)	(0.130)	(0.133)
Other	0.966	0.963	0.930
	(0.354)	(0.378)	(0.371)
No information	0.834	0.895	0.907

	(0.256)	(0.285)	(0.291)
Parents' highest class when woman was 16 yo *(Ref: Low-skilled)*			
Skilled working	0.955	0.980	0.985
	(0.124)	(0.132)	(0.132)
Lower-middle	0.908	0.986	0.983
	(0.116)	(0.133)	(0.134)
Upper-middle	0.856	0.956	0.971
	(0.108)	(0.130)	(0.132)
Missing	0.919	0.933	0.932
	(0.123)	(0.128)	(0.128)
Previous miscarriage *(Ref: None)*			
1+ prior miscarriage	14.060***	15.437***	15.313***
	(1.816)	(2.047)	(2.048)
Woman's highest qualification *(Ref: Degree)*			
Other higher		1.020	0.991
		(0.136)	(0.135)
A level etc.		1.243**	1.220*
		(0.138)	(0.138)
GCSE etc.		1.019	0.990
		(0.127)	(0.128)
Other qualification		0.886	0.870
		(0.223)	(0.221)
No qualification		1.308	1.260
		(0.264)	(0.267)
Missing		0.595*	0.621
		(0.181)	(0.196)
Partnership condition *(Ref: Married)*			
Cohabiting		0.799**	0.801**
		(0.086)	(0.088)
Single		1.185	1.424**
		(0.138)	(0.225)
Maternal status *(Ref: Childless)*			
Mother		0.489***	0.484***
		(0.048)	(0.048)
General health *(Ref: Excellent)*			
Very good		0.883	0.886

		(0.098)	(0.099)
Good		1.097	1.102
		(0.128)	(0.129)
Fair		1.414**	1.417**
		(0.224)	(0.226)
Poor		1.889**	1.858**
		(0.477)	(0.477)
Partner's highest education *(Ref: Degree)*			
Other higher			1.108
			(0.188)
A level etc.			1.068
			(0.149)
GCSE etc.			1.086
			(0.161)
Other qualification			0.750
			(0.182)
No qualification			1.188
			(0.341)
Missing			0.870
			(0.154)
Current job, Three Class NS-SEC *(Ref: Low-skilled and working class)*			
Intermediate			0.907
			(0.143)
Management & professional			0.911
			(0.125)
Not specified			0.915
			(0.131)
Income (ln)			0.968
			(0.024)
Missing income			0.833
			(0.168)
Year & Month FE	Yes	Yes	Yes
Observations	7,698	7,698	7,698

*** p<0.01, ** p<0.05, * p<0.1

Table S5. Logit model of pregnancy loss on the timing of job loss (if any) with respect to conception

	Model 1	Model 2	Model 3
Ref: a job loss *preceding* conception by 12 to 1 month			
In utero exposure	2.521**	2.361**	2.387**
	(1.065)	(1.001)	(1.018)
Job loss between the gestation end and 12 months thereafter	1.440	1.376	1.388
	(0.625)	(0.601)	(0.611)
Job loss in another period, or no job loss	1.242	1.325	1.358
	(0.458)	(0.487)	(0.503)
Age	0.707	0.806	0.839
	(0.224)	(0.271)	(0.283)
Age (squared)	1.008	1.005	1.004
	(0.011)	(0.011)	(0.011)
Age (cubic)	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)
Ethnicity *(Ref: White British)*			
European/Other White	0.940	0.992	1.015
	(0.167)	(0.184)	(0.190)
Mixed: White & Other	0.735	0.693	0.717
	(0.194)	(0.185)	(0.192)
Indian	0.797	0.778	0.765
	(0.167)	(0.170)	(0.170)
Pakistani	0.689*	0.667*	0.656*
	(0.143)	(0.146)	(0.144)
Bangladeshi	0.435**	0.404***	0.396***
	(0.142)	(0.134)	(0.132)
Other Asian/Asian British	0.798	0.674	0.676
	(0.237)	(0.201)	(0.204)
Black/African/Caribbean/Black British	0.761	0.734*	0.746
	(0.134)	(0.133)	(0.136)
Other	0.803	0.756	0.714
	(0.330)	(0.334)	(0.320)
No information	0.834	0.888	0.904
	(0.256)	(0.286)	(0.293)

Parents' highest class when woman was 16 yo *(Ref: Low-skilled)*

Skilled working	0.966	1.003	1.008
	(0.126)	(0.136)	(0.136)
Lower-middle	0.910	0.997	0.994
	(0.116)	(0.135)	(0.136)
Upper-middle	0.855	0.959	0.974
	(0.108)	(0.131)	(0.133)
Missing	0.922	0.930	0.927
	(0.124)	(0.128)	(0.128)
Previous miscarriage *(Ref: None)*			
1+ prior miscarriage	14.180***	16.523***	16.434***
	(1.833)	(2.198)	(2.201)
Woman's highest qualification *(Ref: Degree)*			
Other higher		1.032	0.999
		(0.138)	(0.137)
A level etc.		1.256**	1.231*
		(0.139)	(0.139)
GCSE etc.		1.040	1.008
		(0.130)	(0.130)
Other qualification		0.909	0.892
		(0.231)	(0.228)
No qualification		1.338	1.280
		(0.271)	(0.274)
Missing		0.571*	0.598
		(0.179)	(0.195)
Partnership condition *(Ref: Married)*			
Cohabiting		0.785**	0.786**
		(0.084)	(0.086)
Single		1.149	1.395**
		(0.134)	(0.222)
Maternal status *(Ref: Childless)*			
Mother		0.459***	0.452***
		(0.046)	(0.046)
General health *(Ref: Excellent)*			
Very good		0.880	0.883

		(0.098)	(0.098)
Good		1.093	1.099
		(0.128)	(0.129)
Fair		1.421**	1.423**
		(0.224)	(0.226)
Poor		1.860**	1.826**
		(0.468)	(0.468)
Partner's highest education *(Ref: Degree)*			
Other higher			1.129
			(0.191)
A level etc.			1.083
			(0.151)
GCSE etc.			1.085
			(0.161)
Other qualification			0.734
			(0.179)
No qualification			1.241
			(0.354)
Missing			0.866
			(0.154)
Current job, Three Class NS-SEC *(Ref: Low-skilled and working class)*			
Intermediate			0.934
			(0.146)
Management & professional			0.909
			(0.124)
Not specified			0.921
			(0.132)
Income (ln)			0.964
			(0.024)
Missing income			0.817
			(0.168)
Month & Year FE	Yes	Yes	Yes
Observations	7,698	7,698	7,698

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table S6. Logit model of pregnancy loss on woman and partner's job loss

	Model 1	Model 2	Model 3
Ref: No job loss			
Woman's job loss	2.078**	1.824**	1.822**
	(0.594)	(0.520)	(0.528)
Partner's job loss	2.260***	2.188**	2.131**
	(0.706)	(0.681)	(0.658)
	Test: woman's job loss = partner's job loss		
	$\chi^2(1) = 0.04$	$\chi^2(1) = 0.19$	$\chi^2(1) = 0.14$
	$p > \chi^2 = 0.841$	$p > \chi^2 = 0.664$	$p > \chi^2 = 0.709$
Age	0.717	0.807	0.834
	(0.230)	(0.276)	(0.287)
Age (squared)	1.008	1.005	1.004
	(0.011)	(0.011)	(0.011)
Age (cubic)	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)
Ethnicity *(Ref: White British)*			
European/Other White	0.945	0.985	1.007
	(0.167)	(0.184)	(0.189)
Mixed: White & Other	0.734	0.644	0.664
	(0.194)	(0.178)	(0.184)
Indian	0.808	0.776	0.766
	(0.168)	(0.170)	(0.170)
Pakistani	0.689*	0.677*	0.672*
	(0.142)	(0.147)	(0.147)
Bangladeshi	0.439**	0.413***	0.408***
	(0.144)	(0.138)	(0.136)
Other Asian/Asian British	0.795	0.689	0.692
	(0.234)	(0.203)	(0.206)
Black/African/Caribbean/Black British	0.752	0.714*	0.726*
	(0.133)	(0.129)	(0.132)
Other	0.970	0.972	0.940
	(0.354)	(0.380)	(0.373)

No information	0.836	0.902	0.914
	(0.257)	(0.287)	(0.293)
Parents' highest class when woman was 16 yo *(Ref: Low-skilled)*			
Skilled working	0.954	0.980	0.985
	(0.124)	(0.132)	(0.132)
Lower-middle	0.907	0.985	0.982
	(0.116)	(0.133)	(0.134)
Upper-middle	0.854	0.953	0.967
	(0.108)	(0.129)	(0.132)
Missing	0.920	0.932	0.931
	(0.123)	(0.128)	(0.128)
Previous miscarriage *(Ref: None)*			
1+ prior miscarriage	14.021***	15.394***	15.271***
	(1.810)	(2.036)	(2.038)
Woman's highest qualification *(Ref: Degree)*			
Other higher		1.018	0.991
		(0.136)	(0.136)
A level etc.		1.240*	1.218*
		(0.137)	(0.138)
GCSE etc.		1.019	0.992
		(0.128)	(0.129)
Other qualification		0.883	0.869
		(0.224)	(0.221)
No qualification		1.300	1.255
		(0.263)	(0.267)
Missing		0.593*	0.620
		(0.180)	(0.196)
Partnership condition *(Ref: Married)*			
Cohabiting		0.800**	0.802**
		(0.086)	(0.088)
Single		1.188	1.423**
		(0.138)	(0.225)
Maternal status *(Ref: Childless)*			
Mother		0.487***	0.483***
		(0.048)	(0.048)
General health *(Ref: Excellent)*			

Very good		0.883	0.886
		(0.098)	(0.099)
Good		1.098	1.103
		(0.128)	(0.129)
Fair		1.418**	1.421**
		(0.224)	(0.226)
Poor		1.895**	1.865**
		(0.477)	(0.477)
Partner's highest education *(Ref: Degree)*			
Other higher			1.106
			(0.188)
A level etc.			1.068
			(0.149)
GCSE etc.			1.082
			(0.160)
Other qualification			0.749
			(0.182)
No qualification			1.184
			(0.340)
Missing			0.871
			(0.155)
Current job, Three Class NS-SEC *(Ref: Low-skilled and working class)*			
Intermediate			0.905
			(0.143)
Management & professional			0.911
			(0.125)
Not specified			0.914
			(0.131)
Income (ln)			0.969
			(0.024)
Missing income (ln)			0.834
			(0.169)
Month & Year FE	Yes	Yes	Yes
Observations	7,698	7,698	7,698

*** p<0.01, ** p<0.05, * p<0.1