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Work less, help out more? The persistence of gender inequality in housework and childcare during UK COVID-19

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ABSTRACT

By leveraging the UK COVID-19 lockdown, this paper examines the impact of changes in paid working hours on gender inequality, specifically time devoted to housework and childcare. We compare potential outcomes of similar couples who only differed in partners' losing (or maintaining) paid hours during the period from January/February 2020 to April 2020. We draw on wave 9 of the UK Household Longitudinal Study and the first wave of the Understanding Society COVID-19 study to evaluate competing hypotheses derived from time availability, relative resources and 'doing gender' perspectives. Following studies on the gendered division of unpaid labour, we also account for heterogeneous implications by analysing couples where partners' relative contributions to household labour income differ by gender. Our empirical results indicate that both men and women who lost paid hours increased the time devoted to domestic chores, but gender inequality strikes back, especially after breadwinner women lose paid hours. Overall, this paper provides fruitful insights into how theories of gender inequality in the division of domestic tasks could benefit from research on labour market shocks.

1. Introduction

Shortly after the COVID-19 outbreak, a vivid debate was sparked in social science research over gender inequality in the exposure to the crisis and its negative consequences, whether health-related (Sobotka, Brzozowska, Muttarak, Zeman, & di Lego, 2020; Wenham, Smith, & Morgan, 2020) or socio-economic (Alon, Doepke, Olmstead-Rumsey, & Tertilt, 2020; Kristal & Yaish, 2020). Among the second group, a specific subfield of research has concentrated on the division of housework and childcare (e.g., Carlson, Petts, & Pepin, 2020).

In the UK, COVID-19 lockdown measures had an unprecedented impact on family daily lives. From 23 March and throughout April 2020, working outside the home was permitted only for 'key workers', whose tasks could not be easily shifted to home-working. In addition, childcare and schools were closed, except for children of (at least one) key worker and vulnerable children. Social distancing, 'stay-at-home' measures and connected closures of public places and non-essential shops inevitably affected working arrangements. A large majority of workers experienced changes in their working hours, as a common by-product of unemployment, furlough or home-working. According to the official figures (Office for National Statistics, 2020), in April almost 30 % of the entire workforce was furloughed, 50 % moved to home-working and about 1 million people claimed Universal Credit and Jobseeker's Allowance benefits. Research on the UK lockdown has estimated a 30 % generalized reduction in paid working hours, with men losing more hours (Zhou, Hertog, Kolpashnikova, & Man-Yee, 2020). Given the strong instruction to remain at home, inevitably these hours were spent there. In turn, this must have had implications in terms of time available for carrying out domestic tasks, magnified by the fact of being left with no alternative activities outside the house.

In this work, we contribute to extant research by investigating how the April 2020 lockdown affected the use of time within couples and how time spent on domestic tasks was allocated. We consider how different combinations of changes in working hours led to rearranging the time division of household chores. Moreover, since studies of inequalities have highlighted how the interplay of partners' resources within couples can vary (Dieckhoff, Gash, Mertens, & Romeu Gordo, 2020; Grotti & Scherer, 2016; Vitali & Arpino, 2016; Vitali & Mendola, 2014), we assess the extent to which the possible renegotiation differed depending on the partners' contributions to household labour income, distinguishing male breadwinner, female breadwinner and couples earning similar amounts.

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This work is theoretically informed by, and aims to contribute to, the long tradition of research into gender inequality in domestic labour, focusing on a particularly interesting context. Owing to the liberal model of its welfare state, the UK is characterized by limited welfare support and by the market being the main provider of services. This country also shows comparatively high rates of female participation in the labour market. Nevertheless, despite initiatives aiming to facilitate work–life balance and to increase equality between men and women, gender inequality seems to persist – within households as much as outside them.

Our contribution is an empirical investigation of three diverging theoretical frameworks on the division of housework and childcare: time availability, relative resources and 'doing gender'. While investigating how gender equality in domestic labour evolved during the UK's first COVID-19 lockdown, we aim to contribute more broadly to research on the link between transitions and changes in labour market conditions and gender inequality in household chores.

2. Theoretical background

Despite the growth in women's labour force participation in recent decades, how domestic tasks have been allocated between genders has proved resistant. Indeed, housework and childcare still appear to be female responsibilities (Bianchi, Sayer, Milkie, & Robinson, 2012; Flèche, Lepinteur, & Powdthavee, 2020; Hook, 2010; Horne, Johnson, Galambos, & Krahn, 2018; Mandel, Lazarus, & Shaby, 2020; Siminski & Yetsenga, 2020). Different theoretical perspectives aim to explain gender differences in time spent performing domestic tasks and their persistence over time. The explanations usually invoked focus on time, money and gender (Godwin, 1991; Ross, 1987; Shelton, 1992; Shelton & John, 1996). While the first two deal with material factors, the last emphasizes cultural and symbolic meanings associated with the performance of housework and childcare.

According to the time availability approach (Hiller, 1984), couples manage time, which is a scarce resource, rationally. Time devoted to housework and childcare primarily depends on the total quantity of household work to be performed; and its allocation among partners depends on the time they have available – thus primarily and mainly on the hours left after paid work. Since the allocation of time is assumed to be rational, the time availability perspective is, in essence, gender-neutral (see also Gough & Killewald, 2011; van der Lippe, Treas, & Norbutas, 2018; Voßemer & Heyne, 2019). Empirically speaking, family composition and working hours represent significant variables in predicting time spent in performing household tasks, for both men and women (Bianchi, Milkie, Sayer, & Robinson, 2000; Coverman, 1985). Nevertheless, the time availability perspective may be losing credibility in a context of growing female participation in the labour market. Indeed, the predicted trade-off between time spent at work and within the home is inconsistent with the empirical finding that women tend to perform the bulk of household work despite their increased involvement in paid work (for a review, see Lachance-Grzela & Bouchard, 2010).

In parallel, the relative resources perspective, which draws on an economic framework, assumes domestic work to be inherently less attractive and desirable than paid work. It therefore assumes that partners have potentially conflicting interests and try to negotiate away household work using personal resources, such as educational status, occupational prestige or income (Blood & Wolfe, 1960; Brines, 1994). The interpretation of such a dynamic may be twofold. Adopting Becker's (1991) view, this is because couples maximize efficiency through specialization: it is more rational for the couple to allow the member with more resources (education or salary) to invest more time in paid work. However, resources may also be translated into 'bargaining power' (Brines, 1994; Ross, 1987), thus enabling the 'richer' partner to avoid domestic tasks. In such cases, the allocation of housework and childcare may reflect power relations between the sexes. Empirical evidence is mixed about the explanatory power of the relative resources perspective. Relative educational level (Bianchi et al., 2000) and share of family income (Mannino & Deutsch, 2007) seem to be relevant factors. Nevertheless, other researchers have found no association between such resources and the gender division of domestic work (e.g. Nitsche & Grunow, 2016).

Finally, a third interpretative framework focuses on normative and symbolic aspects of the gender allocation of household work. According to the 'doing gender' approach (Berk, 1985; Bittman, England, Folbre, Sayer, & Matheson, 2003; West & Zimmerman, 1987), since housework and childcare have historically been 'constructed' as a female prerogative, the performance or avoidance of such tasks enables symbolic masculinity and femininity to be built, and to express gender roles and relations (Ferree, 1990; Greenstein, 1996; South & Spitze, 1994). This mechanism has been defined in terms both of 'gender display' (Brines, 1994) and of 'deviance neutralization' (Greenstein, 2000). One common finding is that, in female breadwinner households, the man tends to invest fewer, and the woman more, than their 'share' of hours in domestic tasks – in contrast to what the time availability or relative resources theses would predict (Brines, 1994; Evertsson & Nermo, 2004; Flèche et al., 2020; Greenstein, 2000).

Tasks performed within the house are qualitatively different, and their division among couples may follow different rationales (Bianchi et al., 2012; Gracia, 2014). Although a gender gap is evident for both housework and childcare, it has been argued that the different kinds of reward these tasks bring make the division of childcare more gender-equal (Craig & Mullan, 2011). Indeed, while housework consists of more unpleasant activities (Deutsch, Lussier, & Servis, 1993), childcare is more likely to be perceived as pleasant, further providing parents with gains in terms of self-identity, self-esteem and well-being (Coltrane, 2000; Sullivan, 2013). Moreover, the costs of neglecting housework and childcare differ, too (Deutsch et al., 1993).

2.1. *Labour market changes and implications for the division of domestic labour*

The original formulation of the theoretical perspectives mentioned above focused on labour market states. As an example, van der Lippe et al. (2018) found, consistently with the time availability thesis, that being unemployed is generally associated with devoting more time to domestic chores in several European countries. Nonetheless, women whose (male) partner is unemployed spend even more time on housework than those with an employed partner, thus suggesting 'deviance neutralization' mechanisms.

The same theoretical frameworks have been applied to labour market transitions, too. Job loss, reemployment, promotion and other changes of work status may have non-economic effects on a variety of life outcomes (Brand, 2015), including household 'production' and the gendered allocation of domestic tasks. In this line, Gough and Killewald (2011) have investigated the impact of a transition to unemployment on total housework and its reallocation within American married couples. Fixed-effects panel models suggest that unemployment leads to an increase in housework for the unemployed spouse, but also to an increase in the *total* quantity of housework. Most importantly, such an increase is gendered, in that wives entering unemployment spent much more time on housework than husbands doing so.

A similar research question and methods were adopted by Voßemer and Heyne (2019) in Germany. However, their findings point to the prevalence of economic rationales in the reallocation of housework time in response to one spouse's job loss. To put it differently, both husbands and wives react by increasing their housework hours – although on gender-typed tasks.

Finally, Foster and Stratton (2018) investigated the consequences of job promotions and terminations by using Australian panel data and couple fixed-effects models. Their general finding points to a rational reallocation of housework time following a female promotion, with the woman spending less and the man more time on domestic tasks.

However, the significant moderation of couples' level of education (and gender attitudes) rather suggests the presence of 'doing gender' mechanisms. Specifically, in less educated households termination of the man's job is often followed by his spending less and the woman more time on housework.

Among its various societal implications, the COVID-19 pandemic and the related sudden first lockdown have led to substantial changes in employment, involving rising unemployment and a widespread reduction in working hours. The impact of such labour market shocks on individual lives, particularly on a couple's reallocation of time devoted to housework and childcare, is still unclear.

Preliminary research posits that an increase in flexible work arrangements and fathers performing more childcare (consequently eroding traditional gender norms) may eventually promote enduring gender equality (Alon et al., 2020; Hupkau & Petrongolo, 2020). However, initial descriptive evidence is mixed about the impact of the pandemic on the gender division of work, while it is too early to assess long-run consequences.

Carlson et al. (2020) have found a slightly more gender-equal division of unpaid work in US couples. Similarly, Shafer, Milkie, and Scheibling (2020) have highlighted that housework and especially childcare seem to have become slightly more equally shared between Canadian heterosexual parents during the pandemic. A similar finding is reported by Herzberg-Druker, Kristal, and Yaish (2020) for Israeli couples with children. Specifically, fathers appear to have increased the number of hours spent on care, but not housework hours. In line with this evidence, Mangiavacchi, Piccoli, and Pieroni (2020) and Del Boca, Oggero, Profeta, and Rossi (2020) have shown a more gender-equal share of additional childcare activities following the Italian lockdown. Nevertheless, Del Boca et al. (2020) also documented increased female involvement in housework – which appears to be asymmetric to changes in paid work. Similarly, gender inequality in both paid and unpaid work seems to have increased in Spain (Farré, Graves, & Graves, 2020). Finally, women continued to perform the major share of unpaid work during the first UK lockdown (Sevilla & Smith, 2020; Zhou et al., 2020).

2.2. The UK as a 'modified male breadwinner' society

The overall persistence of the gendered division of domestic work despite women's large-scale participation in the labour market has led to the UK being described as a 'modified male breadwinner' society (Altintas & Sullivan, 2017). We analyse the labour market changes attributable to COVID-19, especially the gendered division of domestic labour, in this context. Many studies have pointed out the relevance of contextual factors – welfare provision (Esping-Andersen, 1990, 2009; Kan, Sullivan, & Gershuny, 2011), work–life balance policies (Gershuny & Sullivan, 2003; Noonan, 2013; Sullivan, Coltrane, Mcannally, & Altintas, 2009) and public childcare – in incentivizing or hampering a more equal division of domestic tasks (see also Pedulla & Thébaud, 2015). Although the first COVID-19 lockdown levelled cross-country institutional differences to some extent (mainly through the closing of schools and day-care centres), institutional factors are still relevant for understanding different contextual levels and the dynamics of gender inequality.

In Anglo-Saxon countries, characterized by a liberal (market-oriented) model of welfare state, the state provides a low level of welfare support, mostly in the form of means-tested benefits (Kan et al., 2011). In these countries, care needs are usually considered a private issue and families tend to rely on the market providing services, and though the UK is no exception, parental leave, childcare services and workplace arrangements have been extended in recent years (Lewis & Campbell, 2007). Daly and Ferragina (2018) have pointed out that, over time, Anglo-Saxon countries have significantly increased their support to families with children. In particular, the UK has significantly raised the benefits package provided for children (Bradshaw, 2006), with attempts to increase the number of childcare places for young children, as well as the number of hours of early years education. Labour market policies are also likely to play a relevant role in gender inequality. Recently, the UK has introduced measures helping people who wish to move from full- to part-time working (without changing job), and increasing flexibility in the location and hours of work (Chung & van der Horst, 2018; Chung & van der Lippe, 2018; Hegewisch & Gornick, 2011). If part-time working is mostly chosen by women, other flexible working measures are likely to be used also by men. As a result, these may have consequences for how partners share out housework and childcare.

Notwithstanding these efforts to help families balance paid and unpaid work, effects on gender inequalities seem small. According to Lewis and Campbell (2007), work–life balance policies developed in the UK have increased female participation in the labour market but not male participation (see also Chau, Foster, & Yu, 2017). This could be due to the lack of male usage of benefits, which may crystallize the gendered divisions of labour (on this point, see also Hook, 2010). Moreover, childcare provision in the UK is highly fragmented and unstable, and costs for parents are comparatively high (Lewis & Campbell, 2007; Paull, Taylor, & Duncan, 2002).

3. Research question and expectations

COVID-19 lockdown measures have had an unprecedented impact on the daily lives of individuals and families. Many workers have lost their job or their paid hours have reduced. In parallel, the government request to stay at home (unless unavoidable) exponentially augmented the time spent within the home. This shock to the allocation of time offers a valuable opportunity to examine the short-term consequences of labour market changes on time and effort spent in the domestic realm.

Our research question is whether and to what extent labour market changes attributable to COVID-19 have led heterosexual partners to reallocate time dedicated to housework and childcare during strict lockdown. Our specific interest lies in consequences for gender inequality in unpaid work. Moreover, we ask whether such potential time reallocation varies in households characterized by different relative contribution to total labour income. Among the many resources individuals have and may share within a couple, income has been argued to be a crucial marker of power relations between partners (1997, Pahl, 1989, 1999), and is therefore of primary interest here. Analysing households in terms of partners' share of total labour income enables us to evaluate the different (even competing) expectations of different theoretical perspectives, further accounting for qualitative differences between households where a man (or a woman) is the main breadwinner, and households where both bring in similar amounts (see also Vitali & Arpino, 2016; Vitali & Mendola, 2014).

First, the time availability thesis suggests that an increase in the quantity of domestic duties coupled with a reduction in working hours should lead to hours spent in housework and childcare increasing in proportion. During lockdown, it seems plausible that increased use of the home and the unavailability of schools or day-care centres would have augmented the need for housework and childcare that could not be outsourced. Since paid hours decreased concomitantly for many men and women, *following the time availability theory we would expect involvement in housework and childcare to increase in step with the reductions.*

Second, the relative resources perspective predicts that the family member with more resources, here defined as the breadwinner, is in a position to bargain domestic tasks away, regardless both of the quantity of housework and childcare to be performed and of his or her paid hours. *According to the relative resources perspective, we should expect breadwinners not to alter the time they devote to housework and childcare, even after a reduction in paid hours.*

Finally, the 'doing gender' theory posits that deviance from traditional gender norms (the man as 'breadwinner' and the woman as 'caregiver') triggers counter-reactions aiming to 'display gender' or 'neutralize deviance'. In other words, women and men tend to resume

Table 1
Stepwise sample selection steps. Percentages refer to individuals left from the initial sample.

	Individuals	Couples	%
COVID W1	17,142		100
Participant in UKHLS W9	15,668		91.4
Identified as couple	10,995		64.1
Matched with partner	7,466	3,733	43.6
In heterosexual couple	7,334	3,667	42.8
Less than 65 years old	4,906	2,453	28.6
Housework sample	4,408	2,204	25.7
Childcare sample	1,820	910	10.6

their traditional roles, respectively increasing and decreasing the effort devoted to household chores. The 'deviant' scenarios studies most commonly address are the man losing paid hours (or job, or employment) (Gough & Killewald, 2011; van der Lippe et al., 2018) and female breadwinner households (Bittman et al., 2003; Brines, 1994). *Following the 'doing gender' theory, we would expect women to increase the time devoted to domestic labour and men to reduce it if the man's paid hours reduce or when the woman is the chief breadwinner.*

4. Data and methods

4.1. Data and measures

To shed light on the questions just identified, we rely on the recent *Understanding Society* UKHLS[1] COVID-19 study (University of Essex, Institute for Social & Economic Research, 2020a). This survey collects monthly individual-level information, both cross-sectionally (starting from April 2020) and retrospectively (referred to January or February 2020) from the longitudinal household sample of the UK Household Longitudinal Study (University of Essex, Institute for Social & Economic Research, 2020b). Individuals and households can be linked to previous longitudinal waves (wave 9 is the latest, staged from 2017 to 2019) to merge important characteristics not included in the COVID-19 study.[2] Such operation is necessary to match partners and to have informations on the most recent individual occupational and job-related details, which are missing from the latest data collection. From individuals who answered both waves, we identified cohabiting heterosexual couples to compile a dataset gathering couples' members and household information over three points in time: (i) wave 9, (ii) the 'baseline period' (January/February 2020) and (iii) the strict lockdown (April 2020). We further restricted the sample to households in which both partners are less than 65 years old, to reduce the number of retired couples. At this point, 2,453 heterosexual couples composed our raw sample. Table 1 reconstructs the steps adopted to refine the sample.

The dependent variables are defined as the female share (expressed as a percentage) of the total hours spent by both partners during April 2020 on housework and on childcare (examined separately). Each subject reports hours she/he spends on each household task, thus reducing the potential for distortion if household time use were reported by one respondent for both partners. Then, given our focus on inequality between partners rather than on their engagement at home *per se*, we favour the share of total hours as a relative measure over the absolute number of hours each partner spent on each domestic task.

We analyse two distinct samples: the first contains all couples in our dataset who supplied information on housework (n = 2,204 couples); the second focuses on couples who provided information on childcare (n = 910 couples). Please note that households containing no children of school age or in need of care did not provide information on their childcare involvement.

We focus on the labour market shock caused by the impact of reductions in paid hours from the baseline period (January/February 2020) to the first lockdown (April 2020). While relatively few jobs were lost at the beginning of the first lockdown (Benzeval et al., 2020), a large portion of the working population experienced reductions in paid hours – and the hours lost were spent mostly at home. Notably, this was the case both for people working from home and working at the workplace.

We rely on a dichotomous indicator of paid hours lost constructed following two complementary routines. First, we consider whether the paid hours declared in April were lower than those in the baseline period. Then we exploit a series of ad hoc questions in which respondents selected from a list the reason for the loss of paid hours after the lockdown began. To improve robustness, we included only participants who reported a loss in both places.[3] We dropped those who indicated hours loss in just one routine. Respondents who reported stable working hours (or even increase) compose the reference group.

At the couple level, we categorized couples into those where (i) neither partner experienced a reduction in paid hours (the reference group), (ii) only the man or (iii) only the woman lost paid hours, and (iv) both partners' time in paid work reduced. Appendix A, Fig. A1 shows the distribution of changes in paid hours among these four categories and according to the different sample specifications. Notably, a small proportion of couples saw their paid hours increasing during the first lockdown. Appendix A, Fig. A2, moreover, describes the gender distribution of paid hours lost in both analytical samples: more men experienced a drop in paid hours, and men generally lost more hours than women. This is consistent with empirical evidence on the UK (Zhou et al., 2020).

Finally, to faithfully address the relative resources and 'doing gender' theses, we distinguish couples where the man (or the woman) is the chief breadwinner from those in which partners' labour earnings are similar. We specifically rely on net pay (after taxes: 'take-home pay'), not total income, which enables us to explicitly investigate the role of 'bargaining power' (Brines, 1994; Ross, 1987) and of gender-related normative and symbolic meanings deriving from labour market status and relative income. We define 'breadwinner' on the female share of total household earnings during the baseline period,[4] assuming this to have been a more economically stable situation and to avoid distortion from post-treatment variables (any alteration in the wage balance between partners may be a consequence of losing paid hours). Couples are categorized as 'male breadwinner' when the woman's share is 35 % of total earnings or less; conversely, when the female share is 65 % or more, the couple is categorized as a 'female breadwinner' one. Finally, we define couples in which both partners earn more than 35 % and less than 65 % of the total as having 'similar' earnings. Appendix A, Fig. A3 shows the relative distribution of changes in couples' paid hours according to these categories.

[1] In the following, we use *Understanding Society*, UK Household Longitudinal Study and UKHLS synonymously, since they refer to the same data collection.

[2] Unlike the usual UKHLS mixed survey methods, web surveys were adopted during the pandemic emergency to overcome the constraints of lockdown. Benzeval et al. (2020) found that almost half of wave 9 respondents completed the April 2020 web survey, well below the usual UKHLS response rate. Distributional descriptions show that the COVID-19 sample subjects are more socio-economically advantaged, so on paper expected to be better protected from potential labour market shocks. Negative implications of the shocks could therefore be under-represented. Nevertheless, attrition tests found that potential bias attributable to non-random sample selection is small and acceptable for both descriptive and inferential studies (Benzeval et al., 2020).

[3] We preferred a dummy indicator to summarize the average impact of hours lost on gender equality in unpaid work. We replicated the presented analyses using a continuous measure of hours lost, and the results point to effects that are proportional to the number of hours lost; accordingly, the absence of nonlinearities corroborates our dummy measure in estimating *average* impacts. These additional analyses are available upon request.

[4] In calculating the female share of the couple's labour income, we include non-working partners by imputing a value of 0 labour income.

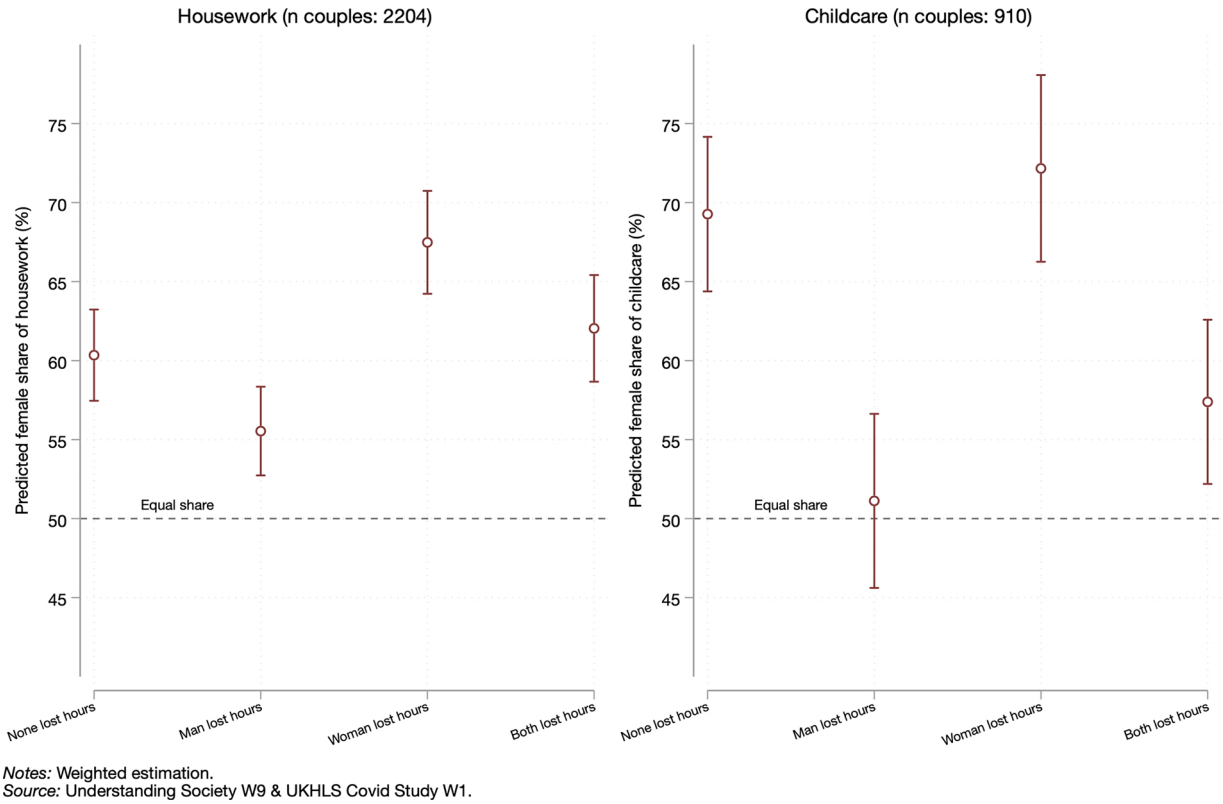

Fig. 1. Predicted female share of housework and childcare (in April 2020), conditional on labour market changes (if any) during first COVID-19 lockdown. Percentage values. 95 % conficende intervals.

4.2. Analytical strategy

The most efficient way to address temporal implications of labour market shocks within couples would be to analyse longitudinal fixed effects, as most past research on this topic has done. Modelling differences within couples, however, requires information on housework and childcare engagement at more points in time. Previous works using the same data we examine in this paper (Zhou et al., 2020) have described aggregate changes in how equally time is used, overall, by comparing previous years,[5] since comparable measures are unavailable in the baseline period (January/February 2020). Our chief interest, however, is in the period around the first lockdown in April 2020, so a fixed effects specification using dependent variables collected far back in time may bias the results. To overcome these data limitations we propose a counterfactual design that compares *potential outcomes* of couples that have been assigned to different 'treatment' conditions.

Adopting the *selection on observables* assumption (Gangl, 2010; Heckman, 1979), we assume that 'unaffected' couples (the reference group) resemble the counterfactual condition in which no reduction of paid hours was experienced – an intrinsically unobservable condition. Then, empirically, we compare couples in which one or both partners lost paid hours in the period from January/February 2020 to April 2020 with the reference group. Differences between each group examined and the reference group approach average treatment effects on the treated (ATT) – localized to the lockdown period – to the extent that included confounders purge any potential spurious selection bias from the estimation.

The issue of selection into treatment and the related consequences is obviously tightly linked to the debate around the exogeneity (Brodeur, Gray, Islam, & Bhuiyan, 2020; Ludvigson, Ma, & Ng, 2020) of the labour market shock produced by the global pandemic. Notwithstanding the extraordinary nature of this event and focusing on our independent variable, a clear occupational gradient in labour market risk is well embodied in the institutional identification of 'key workers': people working in occupations vital to the production system, whose conditions of employment remained quite unaffected during the lockdown. Furthermore, individuals' and family characteristics matter in shaping gendered dynamics in household chores. Accordingly, we performed OLS regressions, including theoretically relevant observable characteristics of both partners – separately – that could determine the specific risk of a partner losing paid hours and their engagement in housework/childcare. We controlled for partners' age (and its square), educational level (GCSE or lower, A-level, completed degree), whether partners had worked part-time before April, and whether they worked often or always at home during the baseline period. We then addressed occupational differences in the risk of losing working hours, including both a division by occupational sectors (ISCO 88 single-digit) and a dummy for key workers (see Appendix B for its definition and construction). Although vulnerable children and children of key workers were eligible for out-of-home, school-based childcare, take-up was negligible and the Department of Education estimated that in April only 4% of children of key workers were attending educational settings (Department for Education, 2020). We further included participants' clinical vulnerability, since potential health risks could determine

[5] The authors used data for housework from the 8th wave (2016–18), and information collected in 2015 for time spent on childcare.

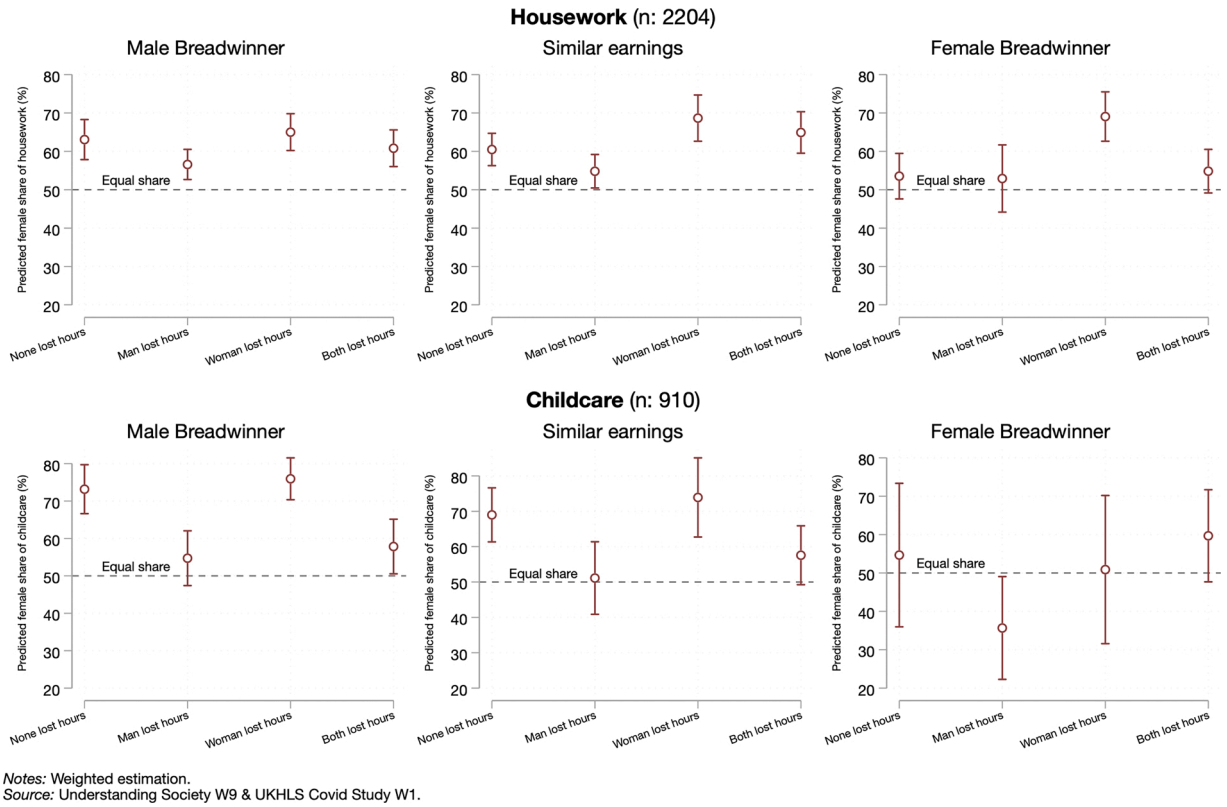

Fig. 2. Predicted female share of housework and childcare (in April 2020), based on which partner was the chief breadwinner (in January/February 2020), conditional on labour market changes (if any) during first COVID-19 lockdown. Percentage values. 95 % confidence intervals.

indisposition to work and to participate in domestic chores. Then, the models also considered whether children in need of care or of school age were present in the household (in the housework analysis), whether households contained more than one such child (in the childcare analysis) and whether the couple was married. Finally, models also account for regional differences.

We begin by describing the association between control variables and a partners' specific risk of losing hours during the lockdown. We constructed separate linear probability models of potential reductions in paid hours for the man, for the woman, and for both partners, keeping the same control group scenario (no changes). Plots and full tables of results are given in Appendix C. The core analysis investigates the relationship between changes in couples' paid hours and the allocation of housework and childcare between genders. First, we present and discuss total effects net of the various control variables; then we include an interaction with distribution of earnings (that is, the household's 'breadwinner'). In presenting the results, we focus on the predicted shares of housework and childcare according to different treatments, while tables of average marginal effects (AME) are given in Appendix A (Tables A1 and A2). All analyses were performed using the cross-sectional weights provided by *Understanding Society*,[6] which already account for longitudinal attrition and adjust for the not-(fully)-random participation in the COVID study (Benzeval et al., 2020).

5. Results

Appendix C, Fig. C1 and Table C1 document the association between socio-demographic variables, health condition, occupational sorting and job arrangements with partners' risk of losing paid hours during the first lockdown in April 2020. While we provide a more detailed discussion in Appendix C, it is important to stress that in our sample there is no sharp difference based on observable individual characteristics. Nevertheless, our results confirm the occupational gradient mentioned in Section 4. In particular, for both genders being a skilled or less-skilled manual worker (ISCO 88 codes 7 and 8) was generally positively and significantly associated with a higher risk of a reduction in paid hours. Moreover, service sector jobs (ISCO 88 code 5) held by women proved to be more at risk. All in all, the evidence suggests that, for the period considered, during the first lockdown exposure to this labour market shock largely was not contingent upon couples' socio-economic characteristics.

[6] Weights are constructed on the probability of participating in the COVID-19 study net of the potential for attrition of participants in the core longitudinal study (see the User Guide: https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/covid-19/user-guides/covid-19-user-guide.pdf). Since weights are calculated at the individual level, we multiply partners' weights together when both have values above 0. When one partner has weight 0 assigned, any positive weighting given to the other partner is generalized to the couple.

5.1. The gender division of housework and childcare during lockdown

Moving to the core analysis, Fig. 1 (based on Appendix A, Table A1) shows the predicted share of housework (left panel) and childcare (right panel) taken on by women in consequence of the change (or lack thereof) in paid hours during the first COVID-19 lockdown in April 2020. Plotted values are percentages of the total time devoted by the couple to housework or childcare. The dashed line is placed at 50 %, a perfectly gender-equal share of time spent performing domestic work. Values above or below that line point out an unequal division of time spent on housework or childcare. Specifically, values above 50 % indicate that the woman performs the greater share of domestic work, while values below 50 % suggest that the greater share is performed by the male partner.

The left-hand panel shows that, in all potential labour market changes considered, the time women reported dedicating to housework is a greater share of the total than the time men reported. In the reference group that did not experience a loss of paid working hours, women reported spending about 60 % of the total time the couple devoted to housework. Interestingly, the share was very similar for couples in which both members lost paid hours. Results for couples in which only the man or only the woman lost paid hours seem instead to point to a rational allocation of the time available, in line with what the time availability perspective would predict. Indeed, compared to the reference group, where only the male partner lost paid hours women's share of total housework time fell by about 5% (closer to gender equality), but where only the female partner lost paid hours her share of total housework time rose by about 7 % (moving further from equality).

Similar results emerge when considering the allocation of childcare – although there seems to have been a slightly more gender-equal division of such activity, especially where the father lost paid hours. Among our reference group, the mother appears to spend between 65 % and 70 % of the total amount of time devoted by the couple to childcare. If the father lost paid hours, the couple almost reached an equal share: the range reported by men spans the 50 % line. In couples where only the woman lost paid hours, her share grew to 70 %. Finally, when both partners lost paid time, the female share is about 55 % of the household total, suggesting higher participation by fathers in childcare and home-schooling activities, compared to the reference group. Once again, an increase in time spent in housework and childcare following a loss of paid working hours is consistent with the time availability expectation.

The finding that fathers tend to spend significantly more time with their children when losing paid hours, getting close to gender parity, is in line with studies finding that childcare is divided more equally than housework (Craig & Mullan, 2011; Gracia, 2014).

5.2. Does it make a difference who the main breadwinner is?

The analysis now moves to the influence of partners' relative contribution to household labour income (Appendix A, Table A2). Fig. 2 shows the percentage of the total housework (top panels) and childcare (bottom panels) predicted to be performed by the female partner in households where the main breadwinner is the male partner, the female partner, and where the partners bring in similar shares of the household labour income.

Where the male partner was the main breadwinner, women performed the largest share of housework, no matter how paid working hours changed during the first lockdown. In these families, the reference group reported that the woman performed around 60%–65% of all housework; and where the female partner or both partners lost paid hours, the woman's share of the housework remained almost unchanged. When the man lost paid hours he did a larger share of the housework, but the increase is not statistically significant.

The predicted allocation of childcare is similar to that shown in Fig. 1. In the reference group, the mother spent between 70 % and 75 % (perhaps more) of the total time devoted by the couple to childcare. A very high share was also reported when the woman lost paid hours. However, where the father or both partners lost paid hours, the woman's share fell closer to 50 %, signalling a higher commitment by fathers and a more gender-equal allocation of time spent with children.

In sum, findings for male breadwinner households offer some support for the thesis that partners allocate time to domestic labour rationally when adverse labour market events occur. Men who lost paid hours during the lockdown had more time available and appear to have got more involved in childcare, thus approaching equality more closely, which is in line with what the time availability thesis would predict. However, they did not significantly increase their housework time after a reduction in paid hours. This result is at odds with that thesis and suggests that higher relative economic resources may have allowed these men to (at least partly) 'contract away' domestic tasks, consistent with the relative resources expectation.

The middle graphs in Fig. 2 present results for partners with similar earnings. Once again, housework appears to be a female responsibility. Among these couples, the reference condition (no labour market changes assumed to occur) predicts that women contribute about 60 % of the total time devoted by the couple to housework. When the man lost hours, this share fell to about 55 %, but when the woman lost paid hours it rose to about 70 %. Finally, where both partners lost paid hours, the female share rose slightly (although not in a statistically significant way) compared to the reference group: around 65 % of the total. Likewise, the mother appeared to devote the largest share of the time spent on childcare (between 60 % and 75 %) in all scenarios except where the man lost paid hours. Such men tended to increase their involvement, and the share was more nearly gender-equal. This further confirms that qualitative differences between childcare and housework are likely to be relevant, encouraging different explanations for the gender division of such tasks.

Lastly, graphs on the right of Fig. 2 focus on households in which the woman is the chief breadwinner. Although the number of such households was small, leading to lower statistical power and larger confidence intervals, we notice important differences from comparing these findings with those for other households.

Overall, the share of time devoted to housework is predicted to be broadly equal in all scenarios (with point estimates between 50 % and 55 %) but when the woman lost paid hours her share soared to about 70 %. Likewise, the partners' involvement in childcare appeared broadly equal in all scenarios except where the father lost paid hours, in which case the female share was predicted to be 35 %, well below the equal share line. This is the only scenario in which a point estimate fell below the equal share threshold, pointing to fathers getting more involved than mothers.

Although these graphs suggest (seemingly exceptionally) greater gender equality than in other types of household, in virtually all scenarios the woman contributed the greater share of domestic labour, regardless of her breadwinning status. Moreover, in families where the woman is the chief breadwinner, men who lost paid hours after the first lockdown are found to be more responsive than men in other types of household, and to have spent more time in housework and childcare accordingly. However, the increase in male commitment is not proportional to the increase in commitment of a woman who lost paid hours.

All scenarios considered, the time availability thesis seems unable to entirely explain dynamics in families where the woman is the chief breadwinner, and other mechanisms are likely to be in place. Neither does the relative resources perspective find confirmation, since where the woman lost paid hours during the first lockdown she devoted a much larger share of time to housework than in the other labour market scenarios examined for this type of household. Moreover, female 'chief breadwinners' who lost paid hours reported a much higher marginal change in housework time from the reference group than women who lost hours in the other types of family considered. This is a particularly striking result, considering that the relative resources thesis would predict that breadwinners are better able to 'contract away' domestic

tasks. The results observed for households where the woman is the chief breadwinner seem, instead, to be in line with the 'doing gender' thesis.

5.3. Robustness checks

To test the sensitivity of our findings, several robustness checks have been performed. First, analyses were repeated excluding couples in which neither partner held paid employment in January and February 2020 (our baseline period), to focus the analytical sample on households active in the labour market. We also restricted our sample to married couples, with the aim of investigating whether mechanisms of 'gender display' or 'deviance neutralization' more strongly characterize such households, in which normative guidelines about 'proper' gender behaviours regarding housework (Baxter, Hewitt, & Haynes, 2008) and childcare (Barnes, 2015; Yavorsky, Kamp Dush, & Schoppe-Sullivan, 2015) should be strongest. We also tried a less polarized specification of income thresholds for defining the breadwinner, categorizing households as 'male breadwinner' where the woman brought in 40 % or less of household income (up from 35 %), and 'female breadwinner' where she brought in 60 % or more (down from 65 %). As a further check, analyses were repeated including the total amount of time spent by the couple in housework among the control variables, to control for households with different needs (e.g. larger houses). Then, to check the effect of key-worker status, we allowed participant's status and partner's status to interact (instead of including them as separate control variables). Finally, analyses of the allocation of time to housework were repeated for the childcare analytical sample, so excluding childless couples.

Our main results proved robust to the different checks, although compositional differences between the housework and the childcare samples suggest that, following a reduction in fathers' paid hours, couples with children adopted a slightly more gender-equal allocation of housework. Estimates are reported in Appendix D (Tables D1–D4).

6. Discussion and conclusions

In this paper, a short-term empirical research is built on a long literature on gender inequality in housework and childcare. The original contribution is, therefore, twofold. First, we document the immediate consequences of the COVID-19 pandemic on the gendered division of unpaid labour in the UK. In doing so, some limits of existing research are overcome by theoretically considering and empirically modelling pre-existing family arrangements and gender-based structures of inequality. Second, we add to the literature on gender inequality in domestic labour by testing the relevance of different theoretical perspectives during an unusual situation of major labour market alterations.

We examined the impact of a reduction in paid working hours on how couples allocated domestic tasks during the first UK COVID-19 lockdown. By comparing potential outcomes for couples in which only the partners' involvement in paid work changed, we provided estimates about the gendered division of housework and childcare in a context of sudden labour market changes. While a reduction in paid hours may represent a proxy to test the time availability perspective, we separately analysed couples where one partner or the other was the main breadwinner, and those in which the partners' jobs bring in similar amounts, to address the relative resources and 'doing gender' theses.

On one side, there appeared to be a degree of rationality in heterosexual couples' (re-)allocation of time in paid and unpaid labour, supporting the time availability thesis. Indeed, men and women who lost working hours during the pandemic dedicated a larger share of their time to housework and childcare. As previous research has found, childcare was shared more equally than housework, mainly due to the increased contribution of fathers whose paid hourse reduce. On the other hand, allocation in families where the man is the main breadwinner was not inconsistent with the relative resources perspective. In such families, the woman was found to spend a much larger share of the time devoted by the couple to housework and childcare, even when her male partner lost working hours.

It is noticeable that unpaid labour, particularly housework, remains a female responsibility in all the scenarios addressed. Moreover, gender gaps in marginal differences from the reference condition clearly show women committing more of their time to domestic tasks when their paid hours reduced. This result was particularly evident in households where the woman is the chief breadwinner, in which the time availability and the relative resources perspectives are clearly inadequate; it suggests the likely presence of 'doing gender' mechanisms.

We expected such mechanisms to become evident in situations diverging from traditional gender roles, which we identified as men losing paid hours and 'female breadwinner' households. However, no evidence in favour of the 'doing gender' thesis was found after men lost paid hours, in any of our three types of household ('male breadwinner', 'female breadwinner' and partners' earnings similar). We suspect this may be attributable to the sudden and relatively exogenous labour market shock that the pandemic represents, which may not have been perceived as a strong deviation from normative roles – as would be the case for job loss or unemployment in more normal circumstances (as found, e.g., by Bittman et al., 2003). Most strikingly, breadwinner *women* whose paid work reduced reacted by disproportionally increasing the share of housework they contributed. This may suggest that they do not have (or do not make use of) their bargaining power, as the relative resources thesis would suggest. Instead, they tend to get back to their normative role as caregivers as soon as their 'dominant' and 'deviant' labour market position is jeopardized.

All our results also point to important differences between housework and childcare. Childcare appears to be shared between partners more equally in virtually all scenarios we considered. Furthermore, fathers seemed to significantly increase the share of time they spent with children after losing paid hours. This was found in all three types of household, but it is particularly evident in 'female breadwinner' households. The more gender-egalitarian division of childcare is not a new finding. Past studies often suggest childcare offers more pleasant activities than housework (Deutsch et al., 1993). Moreover, time spent with children is more rewarding for parents (Craig & Mullan, 2011), especially in terms of self-identity, self-esteem and well-being (Coltrane, 2000; Sullivan, 2013). Some have also highlighted the higher costs of neglecting childcare as one reason for its more equal share among parents (Deutsch et al., 1993). We suspect that the latter argument, together with the difficulty of outsourcing this activity, particularly fits the lockdown situation.

Moreover, the slightly greater involvement of fathers in housework after their paid hours reduced (as suggested by our robustness checks in Appendix D) seem to point to relevant differences not only between housework and childcare, but also between couples with and without children. If couples with children share *all* types of domestic tasks more gender-equally following a labour market shock, this may reflect difficulty in making use of bargaining power or 'doing gender' in a situation of exceptional increase in the total quantity of housework and childcare to be performed.

This contribution comes with some limitations, which mostly stem from the data. First of all, survey responses on time spent in housework and childcare are measured in hours and refer to the past week. This is likely to measure time imprecisely (compared, say, to time-use diaries reporting minutes) and is potentially subject to recall bias (even though the period recalled is relatively recent). Moreover, the *Understanding Society* survey does not ask for detailed information about specific tasks

performed, which would help to distinguish between gender-neutral and gender-typical chores (e.g., within the 'housework' category, putting up shelves or repairs are often considered 'masculine' tasks, while ironing or cleaning are 'feminine' ones).

Whether our findings on the first COVID-19 lockdown in the UK could be generalized to other countries exceeds the aims of this paper – even though this kind of 'stay-at-home' lockdown has been adopted in other countries with similar degrees of strictness and rapidity. We argue that the relevance of our findings does not lie in the assessment of gender inequality during the pandemic, but rather in documenting short-term reduction, or persistence, of gender inequality in the domestic sphere after unprecedented labour market shocks.

Declaration of Competing Interest

The authors report no declarations of interest.

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Appendix A

Changes in labour market hours

Table A1
OLS average marginal effects (AME) of changes in labour market hours on female share of childcare and housework during first COVID-19 lockdown.

	Housework		Childcare	
	AME	(SE)	AME	(SE)
Couple's changes in working hours (ref. none lost)				
Man lost hours	−4.804*	(1.965)	−18.146***	(3.763)
Woman lost hours	7.139**	(2.240)	2.892	(4.039)
Both lost hours	1.696	(2.263)	−11.879**	(3.711)
N couples	2204		910	
R-squared	0.115		0.272	

Control variables: age, age squared, educational level, marital status, care-need children, risk exposure in case of COVID, part-time contract, pre−COVID home-working, occupational sector, breadwinning type, regional differences.
Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

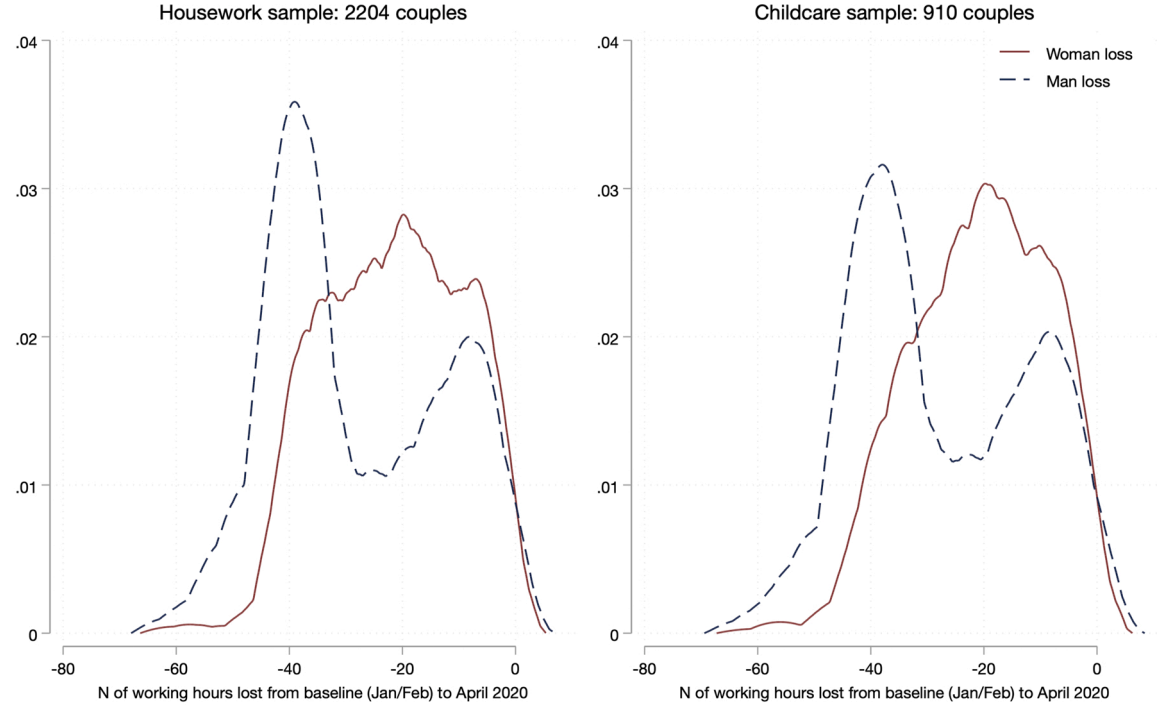
Table A2
OLS average marginal effects of changes in labour market hours across breadwinning type on female share of childcare and housework during first COVID-19 lockdown.

	Housework		Childcare	
	AME	(SE)	AME	(SE)
Man lost hours				
Male breadwinner	−6.489*	(3.024)	−18.446***	(5.013)
Similar earnings	−5.673	(3.021)	−17.862**	(6.559)
Female breadwinner	−0.614	(5.198)	−18.995	(11.418)
Woman lost hours				
Male breadwinner	1.932	(3.588)	2.781	(4.306)
Similar earnings	8.172*	(3.657)	4.933	(6.497)
Female breadwinner	15.528***	(4.246)	−3.773	(13.568)
Both lost hsours				
Male breadwinner	−2.263	(3.590)	−15.323**	(5.051)
Similar earnings	4.438	(3.354)	−11.415*	(5.714)
Female breadwinner	1.285	(4.021)	5.023	(11.308)
N couples	2204		910	

Control variables: age, age squared, educational level, marital status, care-need children, risk exposure in case of COVID, part-time employment, pre−COVID home-working, occupational sector, regional differences.
Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

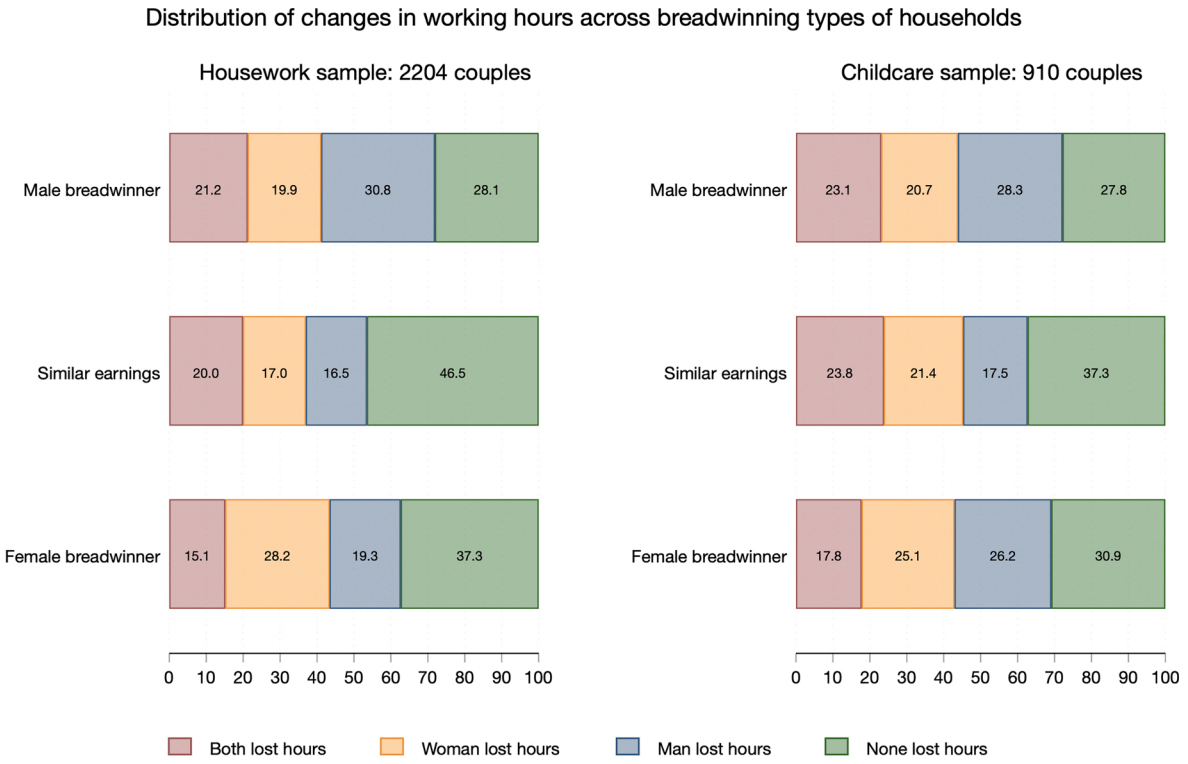
Notes: **M**: male **F**: female ↑: increase ↓: decrease =: stable
Changes in working hours between the baseline period (January/February 2020) and the strict lockdown (April 2020) across couples (aged less than 65).

Fig. A1. Bar plot of the percentage distribution of changes in paid hours across all couples during first COVID-19 lockdown, according to different sample specifications.



Notes: Both graphs refer to treated couples.
Data source: Understanding Society W9 & UKHLS Covid Study W1.

Fig. A2. Density plot of the distribution of loss in paid hours (including individuals who lost at least one hour), separately for men (n housework = 845; n childcare = 368) and women (n housework = 786; n childcare = 348).



Notes: Changes in working hours between the baseline period (January/February 2020) and the strict lockdown (April 2020) across breadwinning types
Housework analytical sample (left panel) and childcare analytical sample (right panel). Percentage values.

Fig. A3. Bar plot of the percentage distribution of changes in paid hours across all couples during first COVID-19 lockdown, according to household breadwinning type different sample specifications.

Appendix B

Construction of the 'key worker' indicator

On 19 March 2020, the Cabinet Office released guidance to identify 'key workers' during the pandemic. This communication was published to define parents eligible to access childcare places. The guide, however, did not provide a comprehensive map of occupations and listed a few sectors: health and social care, education and childcare, key public services, local and national government, foods and other necessary goods, public safety and national security, transport, utilities, communication and financial services. The guidance was intentionally vague, and employers were entitled to decide whether an employee was a 'key worker'.

Given this imprecise definition, the most straightforward and widespread strategy to identify key workers would be to use the International Standard Classification of Occupations (ISCO) occupational codes. Nonetheless, the vagueness of the guidance allows the researcher to identify only sub-major groups (to two digits in the ISCO codes), and does not allow the identification of key workers outside the sectors listed by the UK government. Besides, this approach is highly sensitive to arbitrary decisions by the researcher.

On 15 May 2020, the Office for National Statistics (ONS) provided a fine-grained definition of 'key worker' based on the 2010 Standard Occupational Classification (SOC) and the 2007 Standard Industrial Classification of Economic Activities (SIC). The complete list reports 209 unit-groups of occupations (SOC-10, four digits). *Understanding Society* provides a condensed (three-digit) version of SOC-10. We aggregated the ONS list and derived a list of 70 minor groups of occupations. To promote replicability, we lists groups defined as key workers in our sample in Table B1.

Table B1
List of COVID-19 key occupations according to ONS classification (SOC-10 3digits).

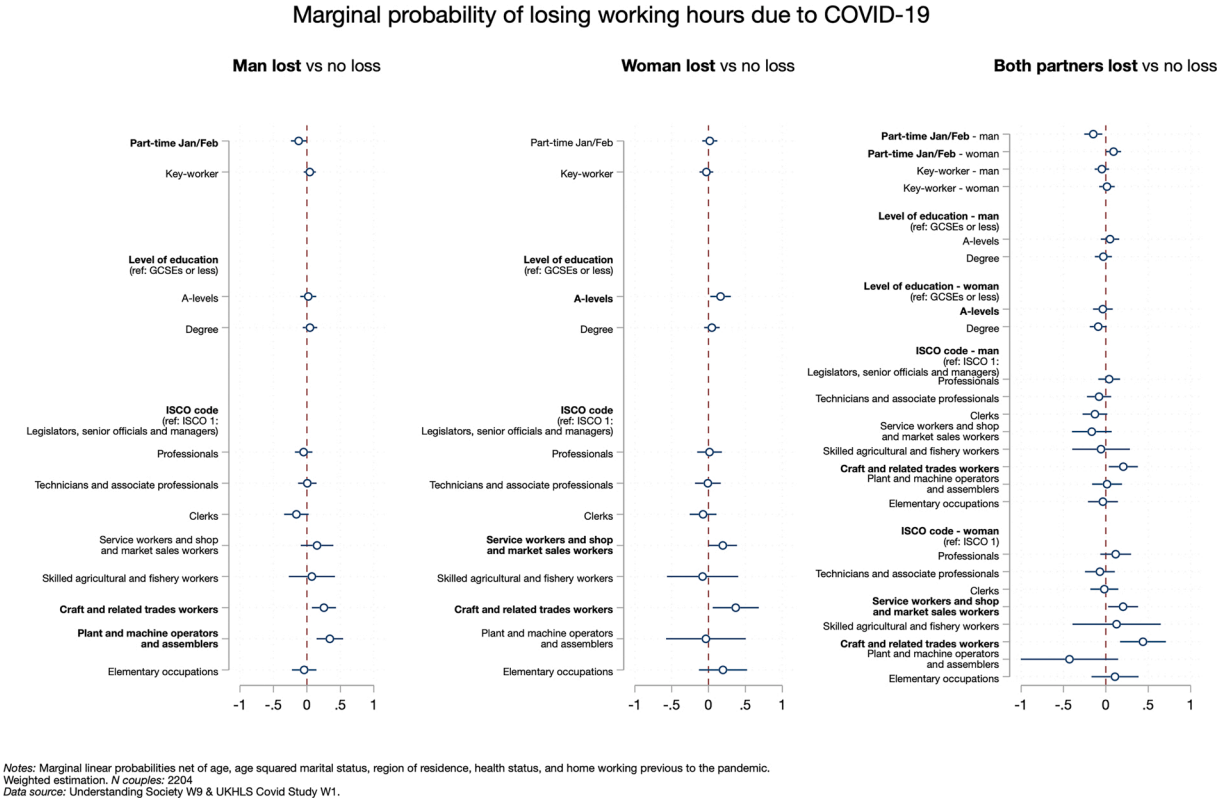
Code	SOC-10 label	Code	SOC-10 label
111	Chief Executives and Senior Officials	413	Administrative Occupations: Records
112	Production Managers and Directors	421	Secretarial and Related Occupation
113	Functional Managers and Directors	511	Agricultural and Related Trades
115	Financial Institution Managers and Directors	523	Vehicle Trades
116	Managers and Directors in Transport and Logistics	524	Electrical and Electronic Trades
117	Senior Officers in Protective Services	531	Construction and Building Trades
118	Health and Social Services Managers and Directors	542	Printing Trades
119	Managers and Directors in Retail and Wholesale	543	Food Preparation and Hospitality Trades
121	Managers and Proprietors in Agriculture Related Services	612	Childcare and Related Personal Services
124	Managers and Proprietors in Health and Care Services	613	Animal Care and Control Services
125	Managers and Proprietors in Other Services	614	Caring Personal Services
211	Natural and Social Science Professionals	621	Leisure and Travel Services
212	Engineering Professionals	623	Housekeeping and Related Services
213	Information Technology and Telecommunications Professionals	624	Cleaning and Housekeeping Managers and Supervisors
215	Research and Development Managers	711	Sales Assistants and Retail Cashiers
221	Health Professionals	712	Sales Related Occupations
222	Therapy Professionals	713	Sales Supervisors
223	Nursing and Midwifery Professionals	721	Customer Service Occupations
231	Teaching and Educational Professionals	722	Customer Service Managers and Supervisors
241	Legal Professionals	811	Process Operatives
242	Business, Research and Administrative Professionals	812	Plant and Machine Operatives
244	Welfare Professionals	813	Assemblers and Routine Operatives
247	Media Professionals	814	Construction Operatives
311	Science, Engineering and Production Technicians	821	Road Transport Drivers
313	Information Technology Technicians	822	Mobile Machine Drivers and Operatives
321	Health Associate Professionals	823	Other Drivers and Transport Operatives
323	Welfare and Housing Associate Professionals	911	Elementary Agricultural Occupations
331	Protective Service Occupations	912	Elementary Construction Occupations
341	Artistic, Literary and Media Occupations	913	Elementary Process Plant Occupations
351	Transport Associate Professionals	921	Elementary Administration Occupations
352	Legal Associate Professionals	923	Elementary Cleaning Occupations
353	Business, Finance and Associate Professionals	924	Elementary Security Occupations
356	Public Services and Other Associate Professionals	925	Elementary Sales Occupations
411	Government and Related Organizations	926	Elementary Storage Occupations
412	Administrative Occupations: Finance	927	Other Elementary Services Occupations

Appendix C

Descriptive risk analysis

To describe the risk of losing paid working hours, we ran separate linear probability models for each potential outcome (man losing hours, woman losing hours, both losing hours). The regressions for each outcome took into account socio-demographic and health-related characteristics (age, age squared, level of education, clinical risk) and job-related conditions (being a key worker, part-time employment, home-working before COVID-19, occupational sector). We considered the characteristics of the male participants when modelling male risk, the characteristics of the female participants when modelling female risk, and the characteristics of the whole sample when modelling risk for both. In the core analysis characteristics of both partners were considered simultaneously. Conveniently, all models control for marital status and regional variations. Occupation-specific coefficients are portrayed in Fig. C1 while complete estimates are reported in Table C1.

All in all, we observe that there are no remarkable differences in the socio-demographic and occupational characteristics of people whose paid hours reduced during the first lockdown. Seemingly, there are no substantial regional differences. During the first COVID-19 lockdown paid hours were less likely to reduce among men who worked part-time in the baseline period, than for other men, and craft workers and machine operators faced a higher risk of their paid hours reducing. Among women, service, sales and craft workers were more likely to experience reduced paid hours. Occupational sector was the only substantial predictor of the risk that paid working hours would reduce for both partners.



Notes: Marginal linear probabilities net of age, age squared marital status, region of residence, health status, and home working previous to the pandemic.
Weighted estimation. *N couples:* 2204
Data source: Understanding Society W9 & UKHLS Covid Study W1.

Fig. C1. Selected coefficients from descriptive risk analysis of loss of paid hours during first UK COVID-19 lockdown.

Table C1
Linear probability of losing paid hours during first COVID-19 lockdown.

	Man beta	(SE)	Woman beta	(SE)	Both beta	(SE)
Male characteristics						
Age	−0.020	(0.021)			0.008	(0.034)
Age squared	0.000	(0.000)			−0.000	(0.000)
Education (ref: GCSEs or less)						
A-levels	0.000	(.)			0.000	(.)
Degree	0.021	(0.061)			0.050	(0.056)
Clinical risk	0.046	(0.055)			−0.029	(0.052)
Key-worker	−0.057	(0.047)			−0.042	(0.042)
Part-time employment	0.043	(0.046)			−0.047	(0.043)
Home-working before COVID	−0.123*	(0.059)			−0.148**	(0.054)
ISCO code (ref: ISCO 1: Legislators, senior officials and managers)						
Professionals	−0.049	(0.066)			0.040	(0.065)
Technicians and associate professionals	0.006	(0.070)			−0.080	(0.073)
Clerks	−0.157	(0.093)			−0.128	(0.074)
Service workers and shop and market sales workers	0.151	(0.124)			−0.166	(0.120)
Skilled agricultural and fishery workers	0.074	(0.175)			−0.057	(0.174)
Craft and related trades workers	0.254**	(0.092)			0.206*	(0.087)
Plant and machine operators and assemblers	0.343***	(0.101)			0.015	(0.090)
Elementary occupations	−0.041	(0.093)			−0.034	(0.090)
Female characteristics						
Age			−0.020	(0.020)	−0.040	(0.033)
Age squared			0.000	(0.000)	0.000	(0.000)
Education (ref: GCSEs or less)						
A-levels			0.164*	(0.071)	−0.036	(0.059)
Degree			0.046	(0.054)	−0.090	(0.051)
Clinical risk			−0.009	(0.047)	−0.014	(0.044)
Key-worker			−0.029	(0.048)	0.013	(0.047)
Part-time employment			0.018	(0.052)	0.091*	(0.045)
Home-working before COVID			0.066	(0.064)	0.142*	(0.062)
ISCO code (ref: ISCO 1: Legislators, senior officials and managers)						
Professionals			0.014	(0.086)	0.116	(0.092)
Technicians and associate professionals			−0.009	(0.089)	−0.070	(0.090)
Clerks			−0.074	(0.093)	−0.018	(0.084)
Service workers and shop and market sales workers			0.194*	(0.098)	0.204*	(0.090)
Skilled agricultural and fishery workers			−0.080	(0.246)	0.127	(0.265)
Craft and related trades workers			0.369*	(0.159)	0.438**	(0.137)
Plant and machine operators and assemblers			−0.035	(0.276)	−0.429	(0.293)
Elementary occupations			0.197	(0.167)	0.108	(0.141)
Both partners						
Married	−0.015	(0.060)	0.015	(0.059)	−0.044	(0.056)
Region (ref: North East)						
North West	−0.076	(0.104)	−0.207*	(0.098)	0.045	(0.081)
Yorkshire	−0.061	(0.109)	−0.130	(0.103)	0.115	(0.094)
East Midlands	−0.051	(0.110)	−0.159	(0.111)	0.169	(0.096)
West Midlands	−0.147	(0.110)	−0.193	(0.106)	0.129	(0.088)
East of England	−0.195	(0.114)	−0.231*	(0.106)	0.089	(0.094)
London	−0.158	(0.099)	−0.242*	(0.097)	0.037	(0.078)
South East	−0.032	(0.113)	−0.031	(0.117)	0.080	(0.095)
South West	−0.165	(0.125)	−0.048	(0.139)	0.184	(0.105)
Wales	0.019	(0.117)	−0.143	(0.104)	0.009	(0.085)
Scotland	−0.083	(0.140)	−0.116	(0.141)	0.207	(0.169)
Constant	0.934	(0.513)	0.920	(0.496)	1.059	(0.544)
N couples	1249		1189		1121	
R-squared	0.124		0.120		0.262	

Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

Appendix D

Robustness checks

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Table D1
OLS average marginal effects (AME) of changes in labour market hours on female share of housework during first COVID-19 lockdown, robustness model specification.

Female share housework	Base model AME/(SE)	Exclusion no wrk couples AME/(SE)	Married only AME/(SE)	Breadwinner 40/60 AME/(SE)	Incl. hours housework AME/(SE)	Interaction key workers AME/(SE)	Childcare sample AME/(SE)
Couple's changes in working hours (ref. none lost)							
Man lost hours	−4.804*	−5.180**	−5.470*	−4.776*	−4.802*	−4.876*	−9.593***
	(1.965)	(1.962)	(2.128)	(1.995)	(1.960)	(1.950)	(2.565)
Woman lost hours	7.139**	6.519**	7.271**	7.143**	7.046**	7.186**	3.609
	(2.240)	(2.184)	(2.503)	(2.229)	(2.248)	(2.257)	(2.488)
Both lost hours	1.696	0.966	0.458	1.779	1.682	1.706	−3.142
	(2.263)	(2.215)	(2.307)	(2.276)	(2.293)	(2.263)	(2.545)
N couples	2204	2057	1815	2204	2204	2204	910

Common controls: age, age squared, educational level, marital status, care-need children, risk exposure in case of COVID, part-time employment, pre-COVID home-working, occupational sector, regional differences Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

Table D2
OLS average marginal effects of changes in labour market hours across breadwinning type on female share of housework during first COVID-19 lockdown, robustness model specification.

Female share housework	Base model AME/(SE)	Exclusion no wrk couples AME/(SE)	Married only AME/(SE)	Breadwinner 40/60 AME/(SE)	Incl. hours housework AME/(SE)	Interaction key workers AME/(SE)	Childcare sample AME/(SE)
Male Breadwinner							
Man lost hours (ref. none lost)	−6.489*	−6.386*	−7.760*	−5.870*	−6.555*	−6.605*	−10.165**
	(3.024)	(3.009)	(3.114)	(2.776)	(3.044)	(3.010)	(3.490)
Woman lost hours	1.932	1.815	3.705	1.412	1.600	2.014	−0.222
	(3.588)	(3.578)	(3.818)	(3.378)	(3.601)	(3.601)	(3.839)
Both lost hours	−2.263	−2.609	−2.951	−1.236	−2.368	−2.249	−3.205
	(3.590)	(3.608)	(3.660)	(3.194)	(3.630)	(3.572)	(3.823)
Similar earnings							
Man lost hours (ref. none lost)	−5.673	−6.671*	−3.475	−6.833*	−5.587	−5.745	−8.046*
	(3.021)	(2.876)	(3.370)	(3.480)	(2.992)	(3.000)	(4.011)
Woman lost hours	8.172*	7.182*	6.896	10.984**	8.164*	8.115*	5.239
	(3.657)	(3.486)	(4.384)	(3.877)	(3.667)	(3.664)	(3.671)
Both lost hours	4.438	3.306	3.094	5.935	4.504	4.475	−3.394
	(3.354)	(3.203)	(3.375)	(4.139)	(3.346)	(3.373)	(3.906)
Female Breadwinner							
Man lost hours (ref. none lost)	−0.614	0.796	−5.391	−1.965	−0.682	−0.546	−12.474
	(5.198)	(5.297)	(6.228)	(4.537)	(5.198)	(5.180)	(7.167)
Woman lost hours	15.528***	15.953***	15.395**	14.013***	15.657***	15.775***	12.502*
	(4.246)	(4.395)	(4.747)	(4.063)	(4.225)	(4.234)	(5.848)
Both lost hours	1.285	2.214	0.943	−0.723	1.213	1.162	−2.163
	(4.021)	(4.029)	(4.871)	(3.763)	(4.049)	(4.051)	(5.655)
N couples	2204	2057	1815	2204	2204	2204	910

Common controls: age, age squared, educational level, marital status, care-need children, risk exposure in case of COVID, part-time employment, pre-COVID home-working, occupational sector, regional differences Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

Table D3
OLS average marginal effects of changes in labour market hours on female share of childcare during COVID-19 lockdown, robustness model specification.

Female share childcare	Base model AME/(SE)	Exclusion no wrk couples AME/(SE)	Married only AME/(SE)	Breadwinner 40/60 AME/(SE)	Incl. hours housework AME/(SE)	Interaction key workers AME/(SE)
Couple's changes in working hours (ref. none lost)						
Man lost hours	−18.146***	−16.203***	−18.725***	−18.214***	−17.563***	−18.759***
	(3.763)	(3.710)	(4.340)	(3.721)	(3.784)	(3.778)
Woman lost hours	2.892	4.562	2.889	2.849	3.012	3.090
	(4.039)	(3.984)	(4.177)	(4.112)	(4.033)	(4.004)
Both lost hours	−11.879**	−10.965**	−12.578**	−12.128**	−11.519**	−12.130**
	(3.711)	(3.699)	(3.925)	(3.708)	(3.708)	(3.703)
N couples	910	894	773	910	910	910

Common controls: age, age squared, educational level, marital status, care-need children, risk exposure in case of COVID, part-time employment, pre-COVID home-working, occupational sector, regional differences Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

Table D4
OLS average marginal effects of changes in labour market hours across breadwinning type on female share of childcare during COVID-19 lockdown, robustness model specification.

Female share childcare	Base model AME/(SE)	Exclusion no wrk couples AME/(SE)	Married only AME/(SE)	Breadwinner 40/60 AME/(SE)	Incl. hours housework AME/(SE)	Interaction key workers AME/(SE)
Male Breadwinner						
Man lost hours (ref. none lost)	−18.446***	−17.919***	−20.316***	−17.501***	−17.817***	−18.962***
	(5.013)	(4.846)	(5.705)	(4.869)	(4.935)	(5.020)
Woman lost hours	2.781	1.729	5.478	3.291	2.808	3.033
	(4.306)	(4.314)	(4.503)	(4.076)	(4.288)	(4.307)
Both lost hours	−15.323**	−16.139**	−15.208**	−13.773**	−15.096**	−15.547**
	(5.051)	(5.116)	(5.264)	(4.526)	(5.035)	(5.068)
Similar earnings						
Man lost hours (ref. none lost)	−17.862**	−13.809*	−14.625*	−20.640**	−17.273**	−18.954**
	(6.497)	(6.645)	(7.135)	(7.196)	(6.568)	(6.543)
Woman lost hours	4.933	9.478	−0.876	3.451	5.257	4.481
	(6.771)	(7.152)	(7.166)	(8.297)	(6.737)	(6.712)
Both lost hours	−11.415*	−7.994	−11.444*	−13.520	−10.727	−11.809*
	(5.714)	(5.868)	(5.695)	(7.240)	(5.632)	(5.722)
Female Breadwinner						
Man lost hours (ref. none lost)	−18.995	−18.195	−21.577	−17.355	−18.801	−18.303
	(11.488)	(11.192)	(12.644)	(10.484)	(11.841)	(11.489)
Woman lost hours	−3.773	−1.694	4.732	0.193	−3.958	−1.659
	(13.568)	(12.315)	(14.846)	(12.579)	(13.578)	(13.658)
Both lost hours	5.023	3.010	2.190	3.768	4.840	5.299
	(11.308)	(10.875)	(13.896)	(10.316)	(11.619)	(11.234)
N couples	910	894	773	910	910	910

Common controls: age, age squared, educational level, marital status, care-need children, risk exposure in case of COVID, part-time employment, pre-COVID home-working, occupational sector, regional differences Data: Understanding Society (9th wave) + UKHLS Covid Survey W1 (weighted) (* $p < .05$, ** $p < .01$, *** $p < .001$).

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