

COVID-19 and the Housework Gender Division: Traditional or New Gender Patterns?

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Beatriz Larraz¹, Rosa Roig² , Cristina Aybar² and Jose M. Pavía²

Abstract

Since the outbreak of the COVID-19 pandemic, the gender dimension of its more visible socio-economic impacts has been the topic of study by several researchers. The current paper takes this further by focusing on the invisible chores done in the families at home. This paper studies how people's behavior towards housework changed during and after the confinement period in Spain. We analyze whether people did more housework during the lockdown period than before it, the way this housework was distributed between women and men, and whether this has changed since the end of lockdown. The empirical analyses point to a new trend in the housework gender gap: differences between men and women have narrowed since the lockdown, although women continue to bear most of the responsibility.

Keywords

gender inequality, household chores, COVID-19, care, Spain

¹University of Castilla-La Mancha, Toledo, Spain

²GIPEyOP, Universitat de València, Valencia, Spain

Corresponding Author:

Rosa Roig, GIPEyOP, Universitat de València, Av. Els Tarongers, s/n, València 46022, Spain.

Email: rosa.roig@uv.es

Introduction

The COVID-19 pandemic is giving rise to significant labor and social changes, such as an increase in teleworking and restrictions on the provision of services; and, in many countries, these changes have been accompanied by home confinements. In this context, a question attracting much interest is the impact of the pandemic on the housework distribution within the family. Different studies suggest that the closure of schools, nurseries and day centers, along with restrictions on mobility, have had a greater impact on women than men. [Alon et al. \(2020\)](#) analyze the different gender impact of the COVID-19 crisis compared to previous economic recessions and highlight that the female workload in the family has grown due to the suspension of all services and activities outside the home. [Collins et al. \(2020\)](#) also study the US case, but focus on the worse impact on mothers' working hours than on fathers' working hours of dual-earner parents' employment. [Borràs Català and Moreno Colom \(2021\)](#) observe the impact of gender in the organization of working time, but within households in Spain, the same as [Hauptkau and Victoria \(2020\)](#). Both corroborate the greater burden of domestic work on women as well as the widening of gender gaps in the labor market ([Hauptkau and Victoria, 2020](#)). Along the same lines, in reference to Germany, [Hipp and Bünning \(2021\)](#) and, in Belgium, [Van Tienoven et al. \(2023\)](#) conclude that the traditional gender division of household tasks in the home prevails to the detriment of women. This burden of domestic work on women has had a negative impact on their participation in the labor market ([Adams-Prassl et al. 2020](#); [Farré et al. 2020](#)), especially for women with children ([Del Boca et al. 2020](#)) as well as those caring for the elderly ([Cohn-Schwartz and Ayalon 2020](#)).

The replacement of face-to-face employment by teleworking has also been cited as a factor leading to women spending more time caring for dependents. As the boundaries of space and time between work and private life become blurred, it is more difficult to separate the roles of economic production and reproduction in the public and private spheres ([Roig, 2021](#); [Roig et al., 2020, 2022](#); [Schieman et al. 2020](#); [Tatay 2020](#)).

Within this scenario, the extent to which confinement has led to a change in the household distribution of chores offers an interesting review of the gender gap. Different research studies consider that the result of the adoption of extraordinary measures to prevent the spread of COVID-19, has brought about a more equitable redefinition of gender family roles due to a greater participation of men in housework and as carers ([Chung et al., 2021](#); [Rodríguez-Rivero et al., 2020](#); [Sevilla & Smith, 2020](#); [Shafer et al., 2020](#)). [Reichelt et al. \(2021\)](#) show that men assume the function of reproduction in the home when they have gone from a situation of employment to unemployment and their partners are still employed. In contrast, these same authors find that if men

continue to have a paid job and women do not, the role of wife-mother-carer is reinforced in women. Instead of moving towards gender equality in the family, there is a refeminization. This view on the people's behavior in the family according to gender, linked to changes in labor relations (Thompson & Walker, 1989), is based on the conceptualization of the individual as a rational economic agent who makes his/her decisions after calculating the costs and benefits of certain hypothetical actions.

Scientific evidence, however, considers that the labor division in the family is an obstacle to the equal participation of women and men in the labor market and confirms that the period of confinement prompted by COVID-19 has affected the distribution of family chores. Within this framework, we study to what extent the distribution of chores changed during and after confinement compared to prior to confinement. We analyze the evolution of the domestic workload from a gender perspective and propose new indexes for measuring the gender gap by referring to the completion of household chores. These new measures identify the existing gender gap in the population, quantifying the percentage of chores that women do more than men on average, the percentage of chores that men would need to do in order to reach the total number done by women on average, and the percentage of chores that should be interchanged between genders to reach equality (assuming both groups were to complete the same chores on average). These measures, although based on the Eurostat gender pay gap indicator (Eurostat 2021), present important differential characteristics, since they are measured on a bounded set, with a maximum number of weekly chores.

This research focuses in Spain. A country where in the last decades, a majority of the female population has ceased to be a homemaker to become a breadwinner, but with men still abstaining from domestic work compared to other European countries (Esping-Andersen 2009; Treas and Tai 2016). Spain is characterized by the so-called gender asymmetry in the distribution of work within the family (Canzio 2021). The increase of female participation in the labor market “*have not been associated with changes in domestic division of labor and in the provision of collective services*” (Carrasco and Recio 2001: 299), and when an increase of men involvement in care tasks is observed it is not universal: men get more involved in child rearing associated with leisure time. They are still not in charge of fundamental household chores, like washing machines or cleaning the bathroom (Borràs Català & Moreno Colom, 2021).

The analysis is performed through the data collected in two surveys: the first during the period of confinement (March–June 2020) to which the Spanish population was subjected, and the second during a period called the *new normal*, in autumn 2020. This enables us to address (for Spain) three working hypotheses. Our first hypothesis (H_1) is that the number of household chores completed by women increases due to the growth in demand for care. The mobility and social contact restrictions imposed by the authorities to stop

the spread of the virus translate into the disruption of supply care chains, whether formal or informal (grandparents, for instance), leading to a greater burden of household chores. Our second hypothesis (H_2) states that not only women did more housework but men also spent significantly more time on household chores. Our third hypothesis (H_3) proposes a convergence/reduction in the gender gap in the completion of household chores during and after confinement. This hypothesis (H_3) aims to answer questions such as: Does the gender gap in household chores narrow during the confinement period because men are doing more housework? Does the gender gap in household chores narrow after confinement?

In this paper, work in the home refers to housework (cleaning bathrooms, shopping, and so on) as well as social care of dependent people. A dependent person could be a baby or an 80-year-old, to give two extreme examples. At the height of the COVID-19 crisis, the concept of care widened, incorporating groups at risk of contagion of the virus, many of whom, before the pandemic, were non-dependent people. With the COVID-19 crisis, these people had to isolate themselves socially and were dependent on others to go shopping, as well as complete other essential tasks for them. COVID-19, therefore, increased the demand for social care. From this perspective social care includes all the social, psychological, emotional and physical care demanded by people daily. This definition goes beyond childcare, and it also concerns elderly care, and any dependent person care, whether temporary or permanent.

The rest of the paper is structured as follows. The next section completes a brief literature's review on the traditional gender labor division in the family and the women's participation in the workforce. Then, the two surveys used are outlined, describing some of their characteristics and defining the target variable. Afterwards, we introduce the new housework gender gap measures and present the statistical analysis methodology employed. Later, the results obtained are analyzed. The last section discusses and synthesizes the main conclusions of the study

Labor Market and Gender Labor Division Within the Family: A Literature Approach

The traditional gender division of work in the family represents an obstacle both in quantitative and qualitative terms for equal labor participation of women and men. This is empirically proven by the existing literature (e.g., [Albanesi and Kim 2021](#); [England 2010](#); [McMunn et al. 2020](#)). The distribution of housework and the role of carer according to gender translates into a greater workload for women ([Coltrane 2010](#); [Horne et al. 2018](#)), with negative repercussions on the female collective. The responsibilities that women take on in the home limit them to certain jobs outside the home, shaping the horizontal and vertical female occupational segregation ([Bick 2015](#); [Reskin 1993](#)). The workload at home

often leads women to reduce their working hours or even leave their paid jobs (Adda et al. 2017; Rosenfeld and Birkelund 1995). This affects their future pensions via shorter contribution times or lower wages, and it impacts on other types of gender gaps (Roig et al. 2020), such as the gender gap in pensions (Halvorsen and Pedersen 2019).

For women who work outside the home, the care function in the family is reflected in the so-called double working day (Balbo 1978; Hochschild and Machung 2012). This double shift becomes a triple shift if the emotional work involved in maintaining affective networks among family members is also added (Chung 2020). The first working day takes place in the public sphere and is economically remunerated. The second working day involves taking care of the family and the house. The third working day refers to the development of affective ties between the members of the family. In other words, women take on the care function, the emotional responsibility, and a job outside the home. Time, as a resource, is finite and women must spread their time between these three types of activities, something which men generally do not have to do. Women's socio-labor status is conditioned by so-called "family obligations" since they cannot dedicate the same time to their paid employment in the labor market as men, leading to consequences that go beyond the wage gender gap (Larraz et al. 2019, 2020).

The study of the relationship between gender inequality in the labor market and the gender imbalance in the work distribution within the family has been approached from a variety of disciplines, among which are economics, sociology, social work and political science (Lachance-Grzela and Bouchard 2010). This research is framed within the feminist economic approach and its concept of the invisible economy or the care economy (Bezanson and Luxton 2006; Hoskyns and Rai 2007), which sets out the socioeconomic structure as the main explanatory factor of the interaction between distribution of labor by gender in the home and in the labor market. This approach points to an economic system articulated around the division of housework within the family by gender which places the burden of this workload on women, in line with the traditional family model of Parsons (1970). Under this view, women are responsible for the function of reproduction, while men are responsible for economic production. This labor division is, de facto, the separation between public space and private space by gender (Lewis 1992).

From this specific economic approach, the delimitation of women to the private environment leads to the invisibility of care work in the family in a market economy built around the idea of productive and non-productive activity (Smith and Skinner 1970; Durán 2018). Feeding an elderly person, changing a baby's nappy, or cleaning the bathroom are not considered productive activities. Conflict arises with the massive incorporation of women into the paid labor market. Women assume the economic production function along with the traditional care function. The *dual-earner* family is born,

although the dynamics of distribution of responsibilities in the family unit continue to follow the classic gender division model. The clash between the logic of the labor market and that of the family results in the increase of care burden of women, with three shifts for them, as discussed earlier.

Data and Variables

Surveys are considered to be an appropriate instrument to use for collecting information on the gender impact of COVID-19 in the distribution of housework between men and women. This paper uses the microdata collected in two surveys (Pérez et al., 2022a, 2022b) carried out at two different moments of time during the COVID-19 crisis in Spain. Both surveys use a snowball sample design, initiated from a file of collaborators, to collect the data. The questionnaire distribution process started by sending an email message to each of the GIPEyOP collaborators, who were asked to fill in the survey and to share it with their contacts and acquaintances. The survey was very simple to share, as it provided utilities to automatically it be shared in social networks, including WhatsApp, Facebook and Twitter. This type of sample design, which is not probabilistic but chained, usually leads to non-completely representative samples but, according to last research, allows valuable information to be collected (e.g., Kirchherr and Charles 2018; Pavia et al. 2019) and does not entail an obstacle to reach valid conditional inferences (Pavia and Aybar 2018). In any case, as far as we know, this data represents the only source available in Spain to study how the gender distribution of household chores has evolved during the COVID-19 pandemic.

The first survey (Pérez et al., 2022a) collected 8387 valid responses and was conducted between 28 April and 14 May, 2020, although most of the responses were collected during the first few days of fieldwork. Specifically, 92% of the responses were collected before 2 May (this was the start date of de-escalation of home confinement measures imposed in Spain when, after 7 weeks of strict home confinement, people were allowed to go out to do physical exercise for just 2 hours, at different time slots according to age). 96.8% of responses were received during the first week. The effective period of this survey is between 28 April and 1 May, 2020, that is, during strict home confinement. From here on, this survey is referred to as *Survey-1: Lockdown*.

After the summer of 2020, a second survey (Pérez et al. 2022b) collected 1955 valid responses between 23 September and 14 October, 2020, coinciding with the so-called new normal period and the start of what was the second wave of the pandemic in Spain. Hereafter, this survey is referred to as *Survey-2: Post Lockdown*.

In terms of composition (see Table 1), 54.3% of the respondents to the first survey were women, while this figure dropped to 43.9% in the second survey.

Table 1. Age-Gender Distributions of the Collected Data (Percentages).

	Survey-1: Lockdown					Survey-2: Post Lockdown				
	Age Groups					Age Groups				
	18–30	31–44	45–64	>64		18–30	31–44	45–64	>64	
Men	10.3	21.4	48.5	19.8	46.6	11.1	22.0	45.2	21.7	56.1
Women	11.3	21.6	51.7	15.5	53.4	13.2	24.3	46.9	15.6	43.9
	10.8	21.5	50.2	17.4		11.8	22.8	46.2	19.2	

Note. Age-gender cross distributions are presented row-standardized.

In terms of age, in both surveys the age distribution is very similar, with the age group with the greatest presence being that of 45–64 years followed by those between 31 and 44 years; the age groups on which, presumably, most of the household chores and care roles fall. The age groups with the least participation appear to be that of the youngest and of the oldest. Despite the latter group having the widest age range, from 64 to more than 90 years of age, this was clearly the one with the lowest relative participation.

In both surveys, female participation by age group is very similar to that of male, with the presence of women being slightly higher in all ranges except for those over 64 years of age where the percentage of men exceeds that of women (see Table 1). In terms of labor situation, Table 2 offers similar figures to that presented in Table 1. By gender, the labor status distribution is quite similar within both samples, with some differences between samples. We have relatively more employed people in the post-lockdown survey. The greatest imbalance in the sample is registered for the educational level, as is usual in self-administered internet surveys due to the digital gap. The group of the most qualified people is clearly overrepresented, being around 2 out of every 3 respondents. In terms of gender, however, the percentages of women and men having completed a university degree is similar within and between surveys.

Both surveys ask how many times per week the respondent does several household chores, including caring for dependents (see the types of activities HC_i ; $i = 1, \dots, 14$ listed in Table 3). In the case of Survey-1, Lockdown, respondents are asked to quantify each one of the activities listed in Table 3 at two moments in time: before and during lockdown. In the case of Survey-2, Post Lockdown, a third moment in time is added. In addition to before and during lockdown, the respondents are also asked about their household chores after lockdown.

All the answers given by each individual are added up to give the number of household chores she/he does per week in each period. Dividing this figure by seven gives the average per day (see equation (1)). Our dependent variable corresponds to the amount of housework people do, which is defined as the number of unpaid household chores and those related to the care of dependents on average per day. Table 4 shows the main basic statistics of this dependent variable in both samples. Before computing the household chores summary statistic, some of the samples' elements are removed, such as those corresponding to people who either answered "not applicable" or did not respond to any household chores.

$$\text{Household chores per day in period } t = \frac{1}{7} \sum_{i=1}^{14} HC_{it} \quad (1)$$

Table 2. Labor-Gender Distributions of the Collected Data (Percentages).

	Survey-1: Lockdown				Survey-2: Post Lockdown							
	Labor Status				Labor Status							
	Employed	Unemployed	Housekeeper	Retired	Other	Employed	Unemployed	Housekeeper	Retired	Other		
Men	53.4	14.8	0.3	22.9	8.6	45.8	60.4	9.3	0.3	24.7	5.3	56.3
Women	51.0	17.4	3.8	17.9	9.8	54.2	61.8	10.4	2.5	18.2	7.1	43.7
	52.1	16.2	2.2	20.2	9.3	61.0	61.0	9.8	1.3	21.9	6.1	

Note. Labor-gender cross distributions are presented row-standardized.

Table 3. List of Unpaid Household Chores and the Care of Dependents Considered in Both Surveys.

Household Chores	
Prepare dinner	Prepare lunch
Bath dependent relatives	Dust
Activities with children	Mop the floor
Look after other people outside the home	Do the washing
Wash up after meals	Do the ironing
Help with children's homework	Go food shopping
Clean the bathroom	Take the rubbish out

Table 4. Basic statistics of the Dependent Variable: Daily Unpaid Household Chores and Those Related to the Care of Dependents Carried Out Per Period (Relative to Lockdown) in Both Surveys.

	Average Household per day				
	Survey-1: Lockdown		Survey-2: Post Lockdown		
	Before	During	Before	During	After
Minimum	0.000	0.000	0.000	0.000	0.000
1 st Quartile	2.826	2.857	2.429	2.714	0.429
Median	3.857	4.429	3.857	4.429	3.000
Mean	3.955	4.457	4.001	4.518	3.093
3 rd Quartile	5.429	6.000	5.429	6.143	4.714
Maximum	13.429	13.000	11.857	11.571	11.714
Sample size	7871			1382	
# of women	4280			605	
# of men	3591			777	

Methodology

Measuring the Housework Gender Gap

This paper proposes three different measures to quantify the gender gap, in terms of household chores completed per day, in order to identify the convergence/reduction or, on the contrary, the divergence/distancing of the average behavior of both population groups over the time periods studied. Because it is not only a matter of analyzing the difference in hours dedicated to this issue, but its measurement in percentage terms, which allows us to see more clearly the advances or setbacks in equality.

Definition 1. The Gender Housework Gap with respect to the male mean (GHG_{male}) is defined as the percentage of chores that women do more than men on average.

$$GHG_{male} = \left(\frac{\bar{x}_{female} - \bar{x}_{male}}{\bar{x}_{male}} \right) \cdot 100\% = \left(\frac{\bar{x}_{female}}{\bar{x}_{male}} - 1 \right) \cdot 100\%$$

Definition 2. The Gender Housework Gap with respect to the female mean (GHG_{female}) is defined as the percentage of chores that men would need to do to complete the same total of chores that women do on average.

$$GHG_{female} = \left(\frac{\bar{x}_{female} - \bar{x}_{male}}{\bar{x}_{female}} \right) \cdot 100\% = \left(1 - \frac{\bar{x}_{male}}{\bar{x}_{female}} \right) \cdot 100\%$$

Definition 3. The Gender Housework Gap with respect to the total tasks (GHG_{total}) is defined as the percentage that should be transferred for the average for women and men to reach an equal level.

$$GHG_{total} = \left(\frac{\bar{x}_{female} - \bar{x}_{male}}{\bar{x}_{female} + \bar{x}_{male}} \right) \cdot 100\%$$

From these definitions, if all the women completed the same number of chores (the average for women) and all the men completed the same number of chores (the average for their population group), the calculation of these measures would enable us to conclude whether during and after confinement there has been a trend towards greater equality in the number of chores distributed within the family home.

Using these definitions, where there is an equal sharing of household chores, $GHG_{female} = GHG_{male} = GHG_{total} = 0$. The maximum (total inequality to the detriment of women) would correspond to the case in which women did all the housework and men did none, $GHG_{female} = GHG_{total} = 100$, and GHG_{male} would not be defined (or would be less infinite). The minimum (total inequality to the detriment of men) would correspond to the case in which men did all the housework and women did none, $GHG_{male} = GHG_{total} = -100$ and GHG_{female} would not be defined. A value of $GHG_{total} = 50$ corresponds to a sharing of chores of a ratio of 3 to 1, with women doing three times as many chores as men ($GHG_{female} = 200$ and $GHG_{male} = -66.7$). In other words, on the basis of an equal distribution (2 to 2), women would be doing 50% more than their share and men 50% less. Similarly, in the case of a 2.5 versus 1.5 distribution, $GHG_{total} = 25$, women would do 25% more chores on the basis of an equal distribution.

ANOVA Methodology

To clarify whether the behavior of women and men regarding the number of unpaid household chores and tasks related to the care of dependents has changed during (and after) the confinement period of COVID-19 in Spain, we apply ANOVA tests for repeated measures (Hand and Taylor 1987; Tabachnick and Fidell 2020). Since people are responding to surveys which ask about their behavior at three different times of their lives (before, during and after the confinement), this gives measurements of the same variables at different moments in time. When each case is measured more than once for the same dependent variable this represents a repeated-measures design (also called a within-subjects design). These designs are used to track changes in a dependent variable between treatments or over time, as in our study.

Another factor at play, that of gender, does not correspond to repeated measures but characterizes our randomized groups. This, therefore, gives rise to a mixed design ANOVA: the design is randomized groups with respect to gender but repeated measures with respect to time. We have different respondents by gender (randomized-groups) and each respondent is measured repeatedly, on repeated measures. Hence, we can provide answers to questions regarding time and gender separately and on their interactions, as the design enables analysis of both kinds of effects and their interactions. In the next section we address the following questions: Are there significant mean differences associated with the time levels (before, during, and after confinement)? Does the housework completed depend on the gender? Are there interactions between both factors, that is, does completion of the housework depend on the gender in a different way before, during, and after confinement? Is there any convergence between genders during and after confinement? Although we could answer all these questions just employing Survey-2, we also present the results of Survey-1 to reinforce the robustness of the conclusions. Despite using different samples and the data being collected in different periods, both samples lead to the same conclusions in their intersection questions.

Results

Descriptive Analysis

Table 4 presents a short summary of the number of household chores carried out by the total surveyed population at different moments in time. In this section we perform a broad analysis, focusing on gender and time. Later, in subsection 5.3, we extend the analysis in order to assess the robustness of our conclusions, there respondents are classified attending to its labor or education status. The first result we obtain, which is in line with the available literature

on the division of housework by gender mentioned earlier, confirms that, overall, women on average do more housework and care for dependents than men (see [Figure 1](#)).

A more detailed analysis shows that the unpaid domestic workload (measured in number of chores completed) of Spanish residents increased appreciably during the period of home confinement (see [Table 4](#) and [Figures 2](#) and [3](#)). The tight restrictions decreed by the Spanish authorities to deal with COVID-19 increased the number of unpaid chores that needed attention within the home and, also, but to a lesser extent, outside the home. On the one hand, the number of chores increased, firstly, as a consequence of the impossibility of contracting certain services outside the home (such as, for example, childcare services, or meals) and, secondly, due to the impossibility of having external help service personnel come into the home (for example, workers in domestic cleaning or care companies were not allowed to enter other people's homes). On the other hand, elderly (semi-) dependent people (relatives or loved ones) outside of the habitual residence required care. This vulnerable group, including who up until the state of alarm had been self-sufficient, needed to shield from the outside world and were therefore more reliant on help from other people.

The questions posed by this research focus on studying how the changes caused by the lockdown have impacted on the distribution of household chores between genders in the Spanish population. We look at whether during the period of confinement household chores and care of dependent persons were carried out equally by men and women and how the associated gender gap has evolved or whether, after confinement and with a return to the new normal, the distribution of chores has leveled off, that is, whether there has been a trend towards a greater equidistribution of these household chores or, on the contrary, things have returned to the original imbalance in chore-sharing with its corresponding negative impact on women.

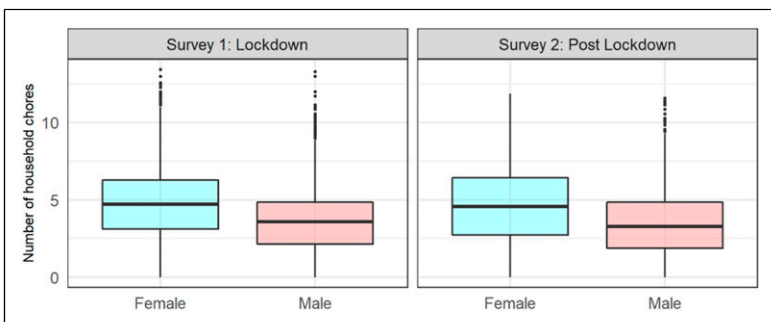


Figure 1. Boxplots of household chores per day by gender in both surveys.

Descriptive analysis (see Figures 2 and 3) clearly suggest that, on average, unequal distribution of housework between genders has indeed continued to result in women taking on the biggest share during and after confinement. However, it is also clear that, after confinement, the burden of household chores for both genders has been reduced compared to the pre-confinement situation (see Figures 2 and 3). Furthermore, the data in Figure 3 point to the possible presence of a certain interaction effect between both factors (gender and time): some differences can be seen between behavior before and during confinement by gender. The question is whether the changes indicated are statistically significant.

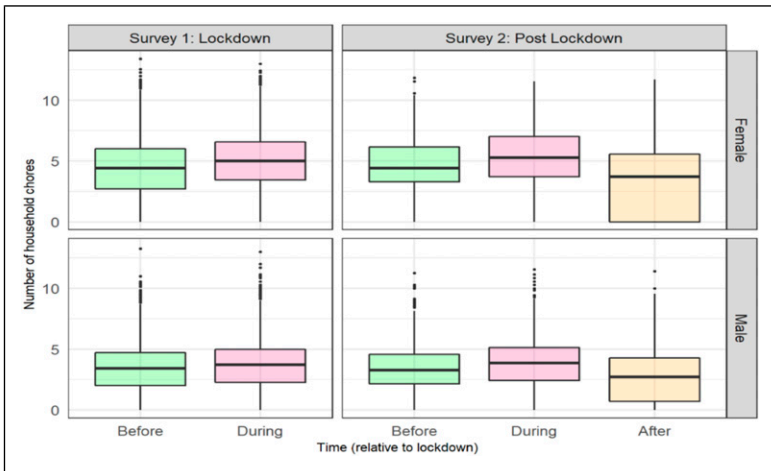


Figure 2. Boxplots of household chores per day by gender and time in both surveys.

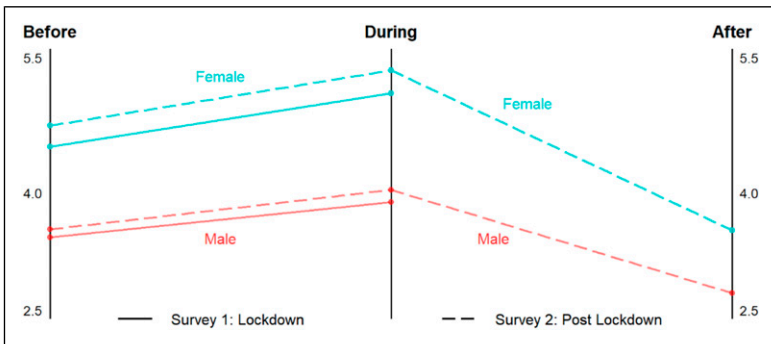


Figure 3. Averages of household chores done per day by gender and time (relative to lockdown) in both surveys.

Significance of the Results. ANOVA tests

The significance of the results pointed out in the previous section have been assessed with ANOVA tests. The tests presented below make use of all the observations, including the outliers observed in [Figures 1 and 2](#). The calculations without outliers show negligible variations so, for completeness and simplicity, the results corresponding to the entire sample are presented.

The application of ANOVA tests is theoretically based on a series of previous hypotheses. Normality of the sampling distribution of means is anticipated if there are at least 20 degrees of freedom for the error term, which is the case in this study. However, according to the Levene test, homoscedasticity is only accepted in the first survey among the chores completed before and during confinement, but not between genders nor in the second survey (see [Table S1](#) in the supplementary material). A greater variability is observed in the household chores completed by women than by men in Survey-1, and equally a general increase in variability is observed in the behavior of the respondents after confinement (see also [Table S2](#) in the supplementary material). Likewise, the Mauchly's Test of Sphericity is significant, and, also the second option, which is to use the results of the Huynh-Feldt and Greenhouse-Geisser corrections instead. The non-parametric test of Kruskal-Wallis, however, also gives similar results, so we have opted to show the most intuitive analysis of ANOVA tests. [Table S3](#) in the supplementary material presents the more technical details of the ANOVA tests, while [Tables 5, 6 and S4](#) (in the supplementary material) and [Figure 4](#) show the more interpretable results in terms of means and their differences, which are (almost) all significant.

In both surveys the effects are seen to be significant (see [Table S2](#)). Gender is seen to affect the number of household chores and tasks involving care of dependents that are carried out each day, and also that these numbers vary comparing before, during and after confinement. It is worth noting that the results of both surveys coincide despite being independent surveys carried out at different moments in time and with different respondents. The data do not show significant differences between the estimates of both surveys for the mean number of chores completed before and during the confinement (see [Table 5](#)). Moreover, as seen in [Table 6](#) and, in particular, in [Figure 4](#) (which graphically shows the numbers in [Table 6](#)), correlation between the results of both surveys is seen for practically all interaction effects. The intervals estimated with the data from Survey-1 are always contained within those obtained from Survey-2 and the differences between specific estimates are, as a rule, not significant. The concurrence of these estimates in both surveys reinforces consistency and provides a measure of robustness of the results obtained.

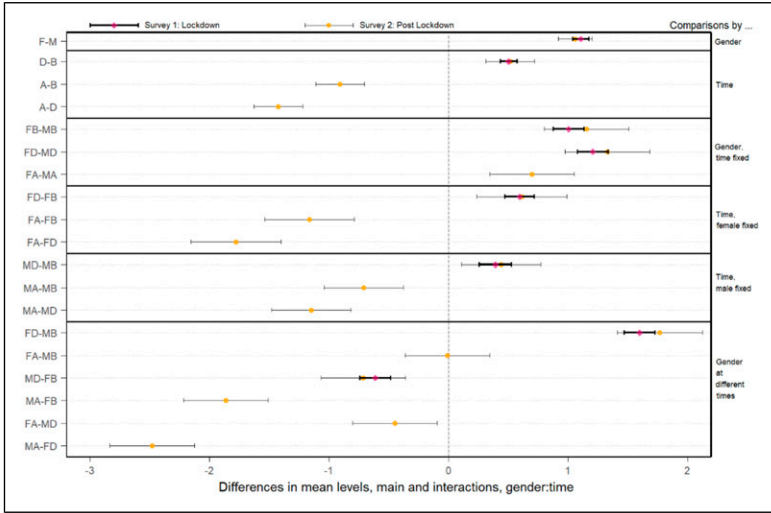


Figure 4. Tukey confidence intervals of mean differences by factors in both surveys. Note: F: Female; M: Male; B: Before lockdown; D: During lockdown; A: After lockdown.

Taking as a reference the data of the first survey, carried out between April and May, when respondents were asked about the number of household chores they completed before and during confinement, we attain a first result in line with that expected: women complete on average more housework than men (see Table 5). In general, women complete on average 1.11 more chores (1.06 chores with the data from the second survey) than men. Women, on average, complete between 4 and 5 daily chores, while men complete between 3 and 4. However, and also as expected, during confinement there was a clear increase in the need for the Spanish population to carry out household chores. Specifically, from an average of 3.96 daily chores before confinement (4.00 with data from the second survey), the average grew to 4.46 chores (4.52 in the second survey), that is, an average increase of 0.50 more chores (0.52 in the second survey).

But to what extent was this additional effort maintained by men and women? Firstly, the results (see Figures 2, 3 and 4 and Table 6) show that during the period of confinement women assumed the greater part of the domestic workload, completing on average 1.21 more chores than men (1.33 according to the information from the second survey), which amounted to 5.00 daily chores for women compared to 3.80 for men (5.27 and 3.94, respectively, according to the results of the second survey). Considering that prior to the pandemic situation women already completed between 1.00 and 1.15 more

Table 5. Table of Basic Means and Main Effects of ANOVA Tests in Both Surveys.

Grand mean	Survey-1: Lockdown			Survey-2: Post Lockdown					
	Male	Female	F-M	Male	Female	F-M			
Mean	3.604	4.711	1.107	3.406	4.468	1.062			
Effect	-0.602	0.505		-0.465	0.599				
Sample size	7182	8560		2331	1815				
	3.871			3.871					
Time	Before	During	D-B	Before	During	After	D-B	A-B	A-D
Mean	3.955	4.457	0.502	4.001	4.518	3.093	0.517	-0.908	-1.425
Effect	-0.251	0.251		0.131	0.647	-0.778			
Simple size	7871	7871		1382	1382	1382			

Note. F: Female; M: Male; B: Before lockdown; D: During lockdown; A: After lockdown.

Table 6. Table of Tukey Multiple Comparisons of Means in Both Surveys (95% Family-Wise Confidence Level Intervals and Adjusted *p*-values).

Comparisons...	Survey-1: Lockdown				Survey-2: Post Lockdown				
	Diff.	Interval		Adjusted <i>p</i> -value	Diff.	Interval		Adjusted <i>p</i> -value	
		Lower	Upper			Lower	Upper		
By gender	F-M	1.1065	1.0371	1.1760	0.0000	1.0615	0.9209	1.202	0.0000
By time	D-B	0.5025	0.4333	0.5717	0.0000	0.5167	0.3124	0.7211	0.0000
	A-B					-0.9082	-1.1126	-0.7038	0.0000
	A-D					-1.4249	-1.6293	-1.2206	0.0000
By gender at	FB-MB	1.0051	0.8763	1.1339	0.0000	1.1549	0.8007	1.5091	0.0000
	FD-MD	1.2080	1.0792	1.3368	0.0000	1.3302	0.9761	1.6840	0.0000
Fixed times	FA-MA					0.6993	0.3451	1.0535	0.0000
	FD-FB	0.5951	0.4720	0.7181	0.0000	0.6153	0.2397	0.9909	0.0000
Females	FA-FB					-1.1643	-1.5399	-0.7887	0.0000
	FA-FD					-1.7797	-2.1553	-1.4041	0.0000
By times for	MD-MB	0.3922	0.2578	0.5265	0.0000	0.4399	0.1085	0.7714	0.0022
	MA-MB					-0.7088	-1.0402	-0.3773	0.0000
Males	MA-MD					-1.1487	-1.4802	-0.8173	0.0000
	FD-MB	1.6002	1.4714	1.7290	0.0000	1.7702	1.4160	2.1245	0.0000
By gender at	FA-MB					-0.0094	-0.3636	0.3448	0.9999
	MD-FB	-0.6129	-0.7417	-0.4841	0.0000	-0.7149	-1.0691	-0.3607	0.0000
different times	MA-FB					-1.8637	-2.2179	-1.5095	0.0000
	FA-MD					-0.4494	-0.8036	-0.0952	0.0041
	MA-FD					-2.4790	-2.8332	-2.1248	0.0000

Note. F: Female; M: Male; B: Before lockdown; D: During lockdown; A: After lockdown.

household chores than men on average, it seems clear that the responsibility for chores during the period of confinement fell more to women than to men.

Secondly, the results indicate that men did, in fact, complete more chores during the period of confinement than before it (0.39 or 0.44 more chores, with respect to Survey-1 and 2). This suggests more willingness on the part of men to share household chores at a time of difficulty, when most Spanish residents were forced to spend practically all their work time and private time inside the home. However, men as a whole completed even fewer chores during these months of confinement compared to women before the confinement (between -0.61 and -0.71 chores on average). In other words, during confinement, despite having increased their daily chores, the men as a group did not manage to match the number of daily chores that women previously completed (see [Figure 3](#) and the last block in [Figure 4](#) and [Table 6](#)). This fact is interesting because, even in times of necessity and uncertainty, men did not complete the same number of household chores as women in a normal situation.

So, what happened following the return to a new normal? How did the group of men and women cope with the new situation after the summer? The results of Survey-2, whose respondents were approached during the month of October 2020, confirm the results of the first survey regarding behaviors before and during confinement and, also show that after confinement 1.43 less chores are carried out overall (see the second block [Table 6](#) and [Figure 4](#)). By gender, men have reduced their daily household chores by 1.15 on average while women have reduced theirs to a greater extent, by 1.78 (see fourth and fifth blocks in [Table 5](#) and [Figure 4](#)). A part of this reduction □those chores that could be dropped after the return to a new normal□ is related to caring for dependent people. Once confinement was lifted, a certain normalcy returned with the progressive reactivation of economic and social activity, including the reopening of nurseries and educational centers. Another part of the reduction, discussed in the last section, might be to do with the relatively different composition of the sample from the second survey.

Despite the fact that the workload at home for both groups have been reduced, women as a whole continue to do more housework after confinement than men, on average 0.70 more chores (see third blocks of [Table 6](#) and [Figure 4](#)), completing an average of 3.49 daily chores compared to 2.79 by men (see [Table S2](#)). The drop in the number of chores completed by women in the new normal has been so significant that even they do fewer chores after confinement than men did during confinement (-0.45) (see the last blocks of [Table 6](#) and [Figure 4](#)). This indicates, as discussed in the last subsection of this section, a change in trend in the gender gap in the distribution of work within the family after the period of confinement. The difference between the household chores that women and men complete on average now, after confinement, has been reduced compared to the difference between them

before confinement. However, even with a lower workload, the so-called new normal continues to perpetuate an important gender inequality in the distribution of household chores, to the detriment of women.

A robustness Analysis

Our previous analysis show some interesting results that, however, could be (in part) a consequence of the composition of the collected sample. Not all the women have the same (economic and educational) resources and our sample displays some biases in this regard (see, e.g., [Table 2](#)). Compared with the general population, our data have larger percentages of educated and employed people. So, it is pertinent to examine whether different collectives show different patterns. In this subsection, we study this by splitting out the sample attending to two different variables: whether or not the respondent is employed and whether or not the respondent has completed tertiary (university) studies.

[Figure 5](#) is the counterpart of [Figure 3](#) for these collectives. As can be seen, in the different panels of this figure, despite the baseline differences between groups, they all display the same evolution patterns from before to after the lockdown. Indeed, although (as expected in a male chauvinist society) the distances between the number of household chores assumed by each gender are higher among the unemployed and among the people with lower levels of education, the data also show that, after confinement, these distances have also been significantly reduced compared to the pre-confinement situation (see [Figure 5](#)). Compared to the pre-confinement period, the relative increase in housework burden experienced in general during confinement as well as their relative decrease after confinement are more evident among the employed and

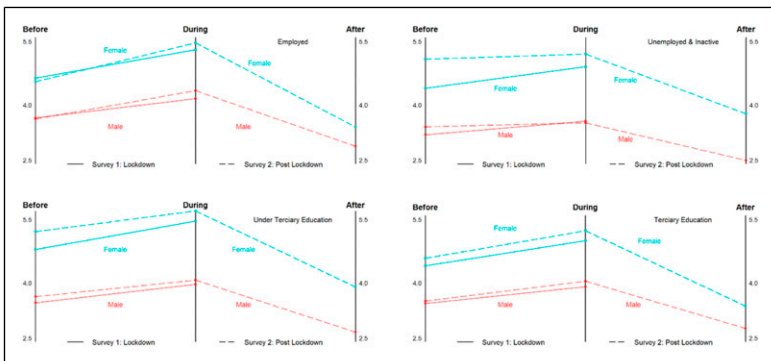


Figure 5. Averages of household chores done per day by gender and time (relative to lockdown) in both surveys by different respondent groups.

the most educated people. In any case, even after the highest reduction observed in these groups, the women of these collectives still continue to do more housework than men after confinement.

Evolution of the Housework Gender Gap

At this point, the question arises as to what impact this lower number of chores completed by women after the confinement period has had and to what extent this matches the number of chores done by men prior to lockdown. In this case, the results are not entirely encouraging. When comparing the household chores done by women on average after the confinement period with those done by men on average before this period, there is very little difference (see last blocks of [Table 6](#) and [Figure 4](#)), with the gap remaining after the confinement period, albeit reduced (see [Table 7](#)).

Indeed, the new measures proposed in this paper show by way of the gender gap with respect to the mean of men (GHG_{male}) that women did 29.49% (33.04% with the data from the second survey) more chores than men before the confinement period, and 31.39% (33.80%) more during lockdown, which meant a widening of the gender gap during this strict period when no-one could leave the house. Likewise, the gender gap with respect to the average for women (GHG_{female}) indicates that men would need to do 22.77% (24.83%) more chores to match the number done by women in the pre-confinement period, and that during lockdown, this difference widened to 24.12% (25.26%). The good news is that these gaps narrowed after the lockdown stage, down to about 25% and 20%, respectively. In terms of the total gap (GHG_{total}), the data indicate that it is necessary to transfer around 11% of the chores done by women to men to achieve equality on average (see [Table 7](#)).

Discussion and Concluding Remarks

In recent months, a large number of studies analyze, from a gender viewpoint, the effects on the gender gap of COVID-19 from various perspectives. In this

Table 7. Measures of Housework Gender Gap in Different Times (Relative to lockdown) in Both Surveys.

	Survey 1: Lockdown			Survey 2: Post Lockdown		
	GHG_{male}	GHG_{female}	GHG_{total}	GHG_{male}	GHG_{female}	GHG_{total}
Before	29.49	22.77	12.85	33.04	24.83	14.18
During	31.79	24.12	13.71	33.80	25.26	14.46
After				25.09	20.06	11.15

paper we address a question that has received less attention, related to the pandemic effects in the private sphere. Using data collected in Spain, this research addresses, also from a gender perspective, how the population deals with household chores and the responsibility for caring for dependents during and after the pandemic compared to the pre-pandemic situation.

A greater involvement of women in these chores would further increase the invisible inequalities that exist within the home and would widen labor and salary gaps, with the ensuing negative long-term repercussions, such as lower future pensions. In this paper we propose three main working hypotheses that aim to answer the following questions: How were household chores, including care, distributed between men and women before the confinement period? What was the situation during lockdown? What has happened since confinement has ended?

To answer these questions, the data obtained in two surveys carried out by GIPEyOP (Pérez et al., 2022a, 2022b) were used. The first of them (Survey-1: Lockdown) was carried out during confinement and the second was implemented to coincide with the so-called new normal period (Survey-2: Post Lockdown). In both surveys, information was collected on the number of times a week that the respondent carried out various household chores, including caring for dependents, at three very different moments of time; before, during and after confinement. Adding all the responses of each individual and dividing by seven gave the average number of daily household chores carried out by each respondent, which was the dependent variable of the analysis.

The data of this variable were analyzed using ANOVA tests with a randomized group design with respect to gender but repeated measures with respect to time and using new indicators that measured the housework gender gap. The data show a clearly unequal starting situation (before confinement) to the detriment of women and confirm (at least in the case of Spain) our first working hypothesis: women increased the number of household chores during confinement due to an increase in demand for care and housework. The average number of chores completed daily by women during confinement increased on average by around 0.6 chores. The data, however, also reinforces our second working hypothesis, which postulated that men also spent significantly more time on household chores during the lockdown. However, in the case of men the registered increase (even starting from a lower level) is lower, around 0.4 more chores on average per day. This results in a widening of the gender gap in relation to household chores during confinement and, therefore, rejects the first part of our third hypothesis that proposed a convergence/reduction of the gender gap in the completion of housework during confinement. Regarding the second part of our third hypothesis, which refers to what happens after confinement, the data show that after confinement the burden of housework on both genders was reduced. Although after confinement, women continue to bear more responsibility for housework, the

average decrease in the average number of household chores is higher among women (1.16 vs. 0.71 for men), leading to a significant reduction in the gender gap for household chores. The gap has fallen to levels clearly lower than before the lockdown. These results reinforce the second part of our third hypothesis, which postulates a convergence/reduction of the gender gap in the completion of housework after confinement.

Despite this data represents, as far as we know, the only source available in Spain to study how the gender distribution of household chores evolved during the COVID-19 pandemic, our conclusions, and mainly this last result, must be interpreted with some caution, due to the limitations of the data collected and since it could be influenced by at least two factors: on the one hand, a certain bias in the composition of the sample and, on the other, the possible existence of measurement error. The sample is largely composed of people with higher levels of education who, as is known, tend to have higher activity rates, both male and female, and enjoy higher incomes and, therefore, greater access to outside help with housework. Also, retrospective questions are exposed to memory problems, so memories of past efforts may be somewhat overrated. In fact, the data in [Figure 3](#) seem to point, although not significantly, towards this condition. Furthermore, although our analyses in subsection 5.3 point out to similar pattern evolution for different collectives and our conclusions seems to be robust against the (individual respondent) bias composition of the sample, our analyses and data show other relevant limitations. For instance, our data is about individual respondents, who are mainly classified according to gender, but no information about its family composition or about the features of other members of its family unit has been exploited.

Responses to questions such as “how many people are you living with” and “how many of them are dependent persons” has not been considered in this study. In any case, although future researches could be take this information into account to offer richer analyses, the analyzed data still contains some insurmountable limits. The survey does not contain information about how chores are distributed within each home among family members or about family relationships (if any) between respondents. Likewise, despite the analysis could be improved taking into account that some of the tasks were ineligible for some respondents, other limitations of the data are related with the fact that only the type of the chore and the number of chores could be considered and not the time spending doing each of them can be included in the analyses as they are not available. Finally, it should be also noted that this article only uses quantitative methods because no qualitative information was collected. For future research, the combination of both qualitative and quantitative information could enrich the results.

The composition biases and the measurement errors, however, are not enough to explain the huge drop of -0.91 chores (see second block in [Table 5](#)) in the average number of household chores overall, possibly suggesting that

there has been a certain rebound effect and a rethinking of attitudes after confinement, with a greater demand for external help. This last interpretation would be in line with Power's view (2020), who argues that the visibility of the importance of housework and responsibilities of care in supporting daily life in the context of the pandemic crisis could open the way towards co-responsibility between men and women in the family unit. The men's behavior change makes the idea of a more equitable family model in the distribution of work a possibility. In other words, COVID-19 could offer the opportunity to redefine gender-related hierarchical work relationships within the modern family organization outlined by Parsons. Further studies would be necessary to reject or reinforce this interpretation. In summary, the findings show changes in the role of men and women at home with regard to the gender division of labor in the family, although the empirical data still show the persistence of a gender gap, with women taking on more responsibility for housework than men.

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Data Availability

The data (surveys) that support these study's findings are publicly available in ([Pérez et al. 2022a](#), [2022b](#)).

ORCID iD

Rosa Roig  <https://orcid.org/0000-0003-2408-8417>

Supplemental Material

Supplemental material for this article is available online

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