

***EXPLORING THE LABOR MARKET IMPLICATIONS OF THE
PANDEMIC FOR WOMEN ****

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Abstract

The labour market has been profoundly impacted by the pandemic. Efforts to preserve employment during lockdowns have led to a significant shift toward remote work across various sectors, intensifying challenges in balancing work and family responsibilities. Our paper investigates how women were affected by the pandemic in terms of work and family. We rely on data from the Eurobarometer ‘Women in times of COVID-19’ to assess the experiences of women aged 15 and above in the 27 Member States of the European Union. A logistic regression-based approach is employed to evaluate which women were most impacted by the pandemic in terms of labour market participation and income reductions. The results revealed that women in rural areas or those being self-employed were more likely to be vulnerable. Furthermore, women caring for children under 15 encountered substantial difficulties in the labour market. Income reduction and decreased labour market participation were also challenging for women who experienced a negative impact on their mental health due to government measures during the pandemic or those who became more financially dependent on partners or family members.

Keywords: vulnerable groups, women’s labour market participation, labour market challenges, COVID-19

JEL Classification: J16, I31, J21, C35

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1. Introduction

The pandemic had a profound global impact, affecting individuals across all age groups and social categories. In the first days and weeks of the 2020 crisis, businesses were at least temporarily closed, schools were shut down, hospitals stopped receiving non-urgent patients, and life as we knew until that moment seemed to be in danger (World Health Organization, 2022). The weeks of lockdown, characterised by minimal social interactions, widespread remote work, and children attending online classes, proved particularly stressful for many.

Gender inequality, which had already been at a high level before the outbreak of the COVID-19 pandemic (ILO, 2019), was reinforced, especially in the labour field. Unlike the 2008 financial crisis, which mainly affected male-dominated work sectors, the 2020 crisis in OECD countries significantly impacted the health and long-term care sectors, where two-thirds of the workforce are women (Queisser, 2021). In the European Union (EU), compared to men, women had a higher chance of feeling constrained by the pandemic measures by 12.6% (Vasilescu et al., 2024).

A large body of literature has concluded that women were disproportionately affected by the pandemic compared to men, with the number of women leaving the labour market due to job losses and increased familial responsibilities being larger than that of the men (Alon et al., 2020; Reichelt et al., 2020). According to Dumitrescu (2021), women in the EU suffered more than men in terms of reduced working hours, reaching the lowest working time since 2006. Also, Markowska and Strahl (2024) discovered that in 21 EU countries, the female employment rate presented a significant decrease, especially in some sectors (trade, repair of motor vehicles and motorcycles, transportation and storage, accommodation and food services). A more extensive study with data from 112 countries clearly showed gender differences in the labour market worldwide (Kabeer et al., 2021). Even though women had a lower infection rate, they encountered steeper employment declines due to their relatively high concentration in sectors most affected by the lockdown. COVID-19 exacerbated gender inequalities, significantly impacting women's employment and income (Blundell et al., 2020; Dang and Viet Nguyen, 2021; Singh et al., 2022; Markowska and Strahl, 2024).

Even before the pandemic, women faced persistent disadvantages in the labour market, marked by occupational segregation, barriers to participation, and a disproportionate burden of unpaid care work (ILO, 2016). Globally, women dedicate considerably more time than men to unpaid work: around twice as much time on childcare and an additional two hours daily on domestic tasks (OECD, 2020). School and childcare closures during the pandemic intensified parental responsibilities, disproportionately increasing the time women devoted to childcare. This shift adversely impacted their labour market participation and placed greater strain on their work-life balance, with women bearing a heavier burden than men (Alon et al., 2020; Andrew et al., 2020).

Although numerous studies have demonstrated that women were disproportionately affected by the pandemic compared to men, not all women experienced its impact equally. Some were at the intersection of multiple vulnerabilities, such as low educational attainment or belonging to minority groups, which increased their susceptibility to adverse labour market outcomes. However, studies focusing exclusively on women, rather than comparing them to men, to identify which groups of women were more vulnerable during the pandemic remain relatively scarce.

Therefore, the study aimed to investigate the characteristics of women most affected by the pandemic in terms of labour market participation and income reduction. Specifically, the paper seeks to identify the socio-economic and demographic factors that contributed to variations in women's employment experiences during the pandemic. It also aims to assess how family responsibilities, mental health challenges, and financial dependency influenced women's ability to remain active in the labour market. To achieve this, the study addresses the following research questions: (1) Which groups of women faced the most difficulties in maintaining employment and income stability during the pandemic? (2) Do self-employment, rural residence, and low education contribute to a higher risk of job and income loss? (3) How did childcare responsibilities influence women's labour market participation? (4) Do financial dependence on partners or family and mental health challenges increase women's economic vulnerability?

This article is organised as follows. The next section investigates the literature review, while Section 3 describes the methodology and datasets used in the study. Section 4 presents a detailed analysis of the results and a comprehensive discussion of the key findings. Finally, Section 5 offers the concluding remarks, synthesising the insights derived from the research.

2. Literature review

The impact of the pandemic on women was multifaceted, affecting their income, opportunities, mental health, independence, and safety, thereby exacerbating their vulnerability.

The International Labour Organisation highlighted the significant impact of the pandemic on young women, particularly regarding their labour market participation. In 2020, employment among young women declined by 11.8% in high-income countries and by 15.8% in middle-income countries (ILO, 2021). Radu and Balan (2022) reported similar findings for the EU Member States, concluding that younger women faced more job losses compared to other groups. Aldea (2024) investigated the impact of the pandemic on the labour market outcomes of young women aged 15 to 29 in the European Union countries. The study identified the most vulnerable group as very young women (15-24 age category) who were self-employed and highly educated. Regarding age, younger women were more affected due to the perceived

loss of social interaction and uncertainty of the working conditions, a fact also confirmed by Brunetti et al. (2022) in their study on women's attitudes toward the pandemic in Italy. Abraham et al. (2021) employed logistic regression on gender-segregated samples and found that young female workers aged 15-24 were almost 4 times more susceptible to losing their jobs during lockdown compared to women aged 35-44.

Studies examining the impact of the pandemic on women's labour market outcomes have highlighted education level as a key factor but with mixed results. Hoffmann et al. (2023) conducted semi-structured interviews to explore the impact of the pandemic on labour market outcomes for women, focusing on how highly educated women experienced changes in their work-life balance. The selected women were part of the global health sector in Europe. Despite the curfew measures, there were also positive aspects, such as more time for family and reduced travel. The negative elements brought into discussion were the increased workload, investments in technical equipment, and limited space available for work due to teleworking. Goldin (2021) argued that highly educated women experienced less severe adverse effects during the pandemic. This outcome was largely attributed to their greater ability to work from home, which provided them with more flexibility and job security compared to less educated women. Further evidence from Germany, the UK and the US indicated that women with less education were most negatively impacted in terms of employment (Adams-Prassl et al., 2020). On the contrary, Abraham et al. (2021) found that highly educated female employees were more susceptible to losing their jobs in India.

The increased vulnerability of women in precarious, informal employment arrangements became evident during the pandemic. Research has shown that female daily wage workers faced significantly greater job insecurity during the pandemic, being five times more likely to lose their employment compared to women in salaried positions (Abraham et al., 2021). Additionally, the COVID-19 pandemic disproportionately impacted women from low-income households and marginalised communities, exposing them to increased social and economic vulnerabilities (Kabeer et al., 2021).

Several studies have specifically focused on mothers and the impact of the pandemic on their work-related experiences, including labour market participation and work-life balance. For instance, an analysis of women's situation during the pandemic in the UK and US identified mothers as one of the most vulnerable groups (Hassan et al., 2024). The survey included women with at least one child under five years old and found that those receiving limited support, particularly in the form of paid or unpaid childcare, were significantly more likely to reduce their participation in paid work. Moreover, Andrew et al. (2022) found that in the UK, mothers with preschool and school-aged children experienced notable declines in employment rates. Similar findings were reported in Canada (Fuller and Qian, 2021), where mothers faced greater challenges in balancing caregiving responsibilities with employment. Highly educated mothers initially benefited from the flexibility of working from home (Messacar et al., 2020), but the

demands of caregiving eventually forced many to leave employment as the pandemic persisted. In China, working mothers with children aged 0–6 were found to be particularly vulnerable, experiencing the most negative labour market outcomes (Zhang et al., 2024).

In the EU, the situation of mothers was quite similar, as shown in a cross-country analysis including all 27 Member States, revealing that mothers with young children were disproportionately impacted by the pandemic compared to other groups (Eurofound, 2022a). In Ireland, women with primary-school-age children experienced greater employment challenges compared to other groups (Alamir et al., 2024). Del Boca et al. (2020) found that in Italy, working women with young children, particularly those in the 0–5 age group, were among the most affected by the pandemic, facing a significantly heavier burden of responsibilities and struggling to balance work and family duties.

Alon et al. (2020) highlighted that single mothers faced significantly more severe challenges than married or partnered mothers regarding the pandemic's impact on their labour market outcomes. Moreover, during the pandemic, mothers with lower levels of education were more likely to lose their jobs and struggle to balance childcare demands due to limited remote work opportunities (Montenovo et al., 2020). Kim et al. (2022) found that less-educated, never-married, and single mothers' employment was particularly affected, stating that marriage could offer a type of insurance during adverse times.

The increase in domestic responsibilities and the reduction of maternal social networks have contributed to heightened physical and emotional stress, affecting women's possibility to work (Hassan et al., 2024). Using the State-Trait Anxiety Inventory (a form of measuring anxiety) and ad-hoc questionnaires, Iglesias Martínez et al. (2022) revealed high rates of anxiety among women and a relationship between higher levels of anxiety and more vulnerable work situations, such as unemployment or contract changes with financial consequences. Rodríguez and Camacho (2024) analysed the factors affecting women's mental health in EU countries, focusing on the pandemic's impact, including employment-related aspects. Using bivariate tests and stratified models by urbanisation level, they assessed seven factors: age, disability, employment status, educational attainment, household type, perception of violence against women, and country of residence. The results highlighted that employment status was a significant predictor, and women in rural areas or small/medium-sized towns felt a lower negative impact on their mental health than those living in cities.

The pandemic also disproportionately impacted labour market outcomes for women from ethnic minorities, amplifying pre-existing vulnerabilities and inequalities. Gezici and Ozay (2020) provided evidence from the US showing that women from minority ethnic backgrounds faced heightened employment vulnerabilities during the pandemic. Hispanic women were the most likely to experience unemployment, followed by Black women, both groups more affected than White women. Additionally, the study revealed that even in industries with high telework potential, Black and Hispanic women still had a significantly higher risk of job loss.

Qi (2024), using multinomial regression models on UK data, found that there were notable differences in labour market outcomes, with Black, Asian, and minority ethnic migrant women experiencing more disadvantages than white local women with comparable occupational skills.

The impact of the pandemic was also studied by Trentin et al. (2024) from an intersectional perspective, which included migrant women in Milan, Italy. This group was particularly vulnerable to the measures taken to combat COVID-19. Data for this study was collected from the healthcare sector and third-sector organisations that provided health, social and administrative support to migrant women. It was revealed that this category of women suffered on all levels, from financial deprivation and limited access to a decent job to gendered-based violence and deterioration of their mental health. The closure of certain public services further strained NGOs, which were compelled to fill the gaps left by these shutdowns. Focusing on the labour market situation, most migrant women worked as cleaners, housekeepers, babysitters, caregivers or floor servers, jobs highly negatively impacted by the pandemic. Consequently, migrant women faced a reduction in working hours or were even laid off, which resulted in a partial or complete loss of their income.

As previous studies show, the COVID-19 pandemic differently affected groups of women. The most disadvantaged were especially those who were characterised by an intersection of vulnerabilities, such as migrants or women from ethnic minorities. Mothers were also severely negatively impacted in terms of mental health and the possibility of working, while younger women were more prone to losing their jobs during lockdowns.

Our study contributes to filling the gap by exploring women's situation in the EU and their perceptions regarding the pandemic. Rather than comparing women to men, the attention shifts to highlighting the main characteristics of women whose labour and income opportunities suffered because of the measures imposed by the governments to combat the spreading of the virus.

3. Data description and methodology

The primary data source employed in this analysis is the Eurobarometer *Women in times of COVID-19* (European Parliament, 2022), as this dataset is a valuable tool for analysing the pandemic's consequences from multiple perspectives. The Eurobarometer was carried out in January-March 2022 and was commissioned by the European Parliament. The survey was conducted online and targeted all women older than 15 years of age and citizens of the European Union. The sample size was around 500 persons in Luxembourg, Cyprus and Malta and 1000 in all other countries, resulting in 26741 interviews.

Since our interest was in labour market vulnerabilities, aiming at answering the research questions presented in the Introduction section, we turned to those questions related to this theme. We investigated women's vulnerabilities during the pandemic, namely, if they had to

cut their working hours for a salary. Also, we were interested in investigating which characteristics of the employed women made them more vulnerable in the labour market (e.g. being self-employed, having children under a specific age in their household, living in rural areas, etc.)

The analysis started with a descriptive perspective of women's vulnerabilities because of the pandemic. However, the core of this investigation is the econometric analysis designed to identify the characteristics of women who encountered various labour-related adversities during the pandemic. A logistic regression model was employed to achieve this. A logit model generally allows for examining how explanatory variables affect the probability of a specific event occurring.

For our investigation, we identified three distinct categories of women's difficulties in the labour market caused by the pandemic, as follows: (1) women who did less paid work than they wanted because of the pandemic's impact on the labour market, (2) women who felt a negative impact on their income because of the pandemic, and (3) women who did less paid work than they wanted because of the increase in work at home. These three categories are constructed from three different questions in Eurobarometer. We considered a woman belonging to a category, for example, "women feeling a negative impact on their income because of the pandemic", if she answered "Yes" to that question in the Eurobarometer.

Based on the three categories presented above, we defined three binary variables, one for each category. Each variable takes the value of 1 if the respondent faced that difficulty and zero otherwise. Based on these three binary variables, we constructed three logistic regressions, considering as independent variables a set of socio-demographic data (age, type of community, education level, family composition) and several variables that captured other relevant aspects. The latter category comprises perceptions of their mental health, effects on financial status, violence against women and labour market status. A thorough description of the variables is presented in Table no. 1.

Table 1. Description of variables

Variable	Description and coding
Difficulty women faced in the labour market because of the pandemic – <i>dependent variable</i>	Have you been confronted with the difficulty? 0 = No 1 = Yes
Age	Age of the respondent: 1 = 15-24 years 2 = 25-39 years 3 = 40-54 years 4 = 55+ years
Type of community	Residential environment: 1 = Rural area or village 2 = Small or medium-sized town 3 = Large town/city
Children under 15 years	Whether there are children younger than 15 years or not in the care of the respondent: 0 = No

Variable	Description and coding
	1 = Yes
Level of education	0 = Low level of education 1 = High level of education
Labour market status	1 = Self-employed 2 = White collar 3 = Blue collar
Minority	Whether they consider themselves to be part of a minority or not: 0 = No 1 = Yes
Feelings with which the respondent had to deal with	Coding: 0 = No; 1 = Yes ➤ Feeling worried/anxious and getting stressed out ➤ Concerned about my mental wellbeing ➤ Worried about my future ➤ Feeling trapped/stuck at home
Measures with a negative impact on mental health	Coding: 0 = No; 1 = Yes ➤ Workplace and office closures and their effects (temporary / forced unemployment, homeworking) ➤ School and childcare closures and the need for homeschooling/caring for children at home ➤ Limitations in the number of people you could meet at home or visit
Financial dependency on partner/relatives/friends	0 = Less dependent 1 = More dependent
Violence against women	0 = Decrease 1 = Increase

Source: Authors' representations

We employ a multivariate binary logistic model to estimate the probability that the outcome variable (the dependent variable) belongs to one of the two categories based on the explanatory variable described above.

The logit model thus describes the relationship between a binary variable Y (the dependent variable) and several explanatory Xs (the independent variables), starting from a linear probability model (Hayashi, 2000):

$$Pr(y = 1|x) = \beta * x + \varepsilon \quad (1)$$

Next, if the probabilities are to be restricted in the [0,1] range, the following model is obtained:

$$\Omega(x) = \frac{Pr(y=1|x)}{Pr(y=0|x)} = \frac{Pr(y=1|x)}{1-Pr(y=1|x)} \quad (2)$$

Furthermore, after applying logarithms to the relation (2), the following logit model derives:

$$\ln\Omega(x) = \beta_0 + \sum_{j=1}^k \beta_i * x_{ij} \quad (3)$$

In relation (3), $\ln\Omega(x)$ is the logarithm of the probability of an individual belonging to a category depending on the explanatory variables.

The logistic regression results are more straightforward to interpret if the odds ratios (OR) are calculated. This can be quickly done by calculating the exponential of the coefficient β :

$$OR = e * \beta \quad (4)$$

The odds ratios represent in our analysis the likelihood of a woman being confronted with labour market adversities, considering a series of characteristics. Basic assumptions of the logit model include independent observations, meaning one individual's response does not affect another's. There should be no perfect multicollinearity among independent variables. The model also assumes a linear relationship between independent variables and the log-odds of the outcome. Lastly, a sufficiently large sample size is needed for accurate estimation (Stoltzfus, 2011; Harris, 2021).

4. Results and discussion

A starting point in our analysis was to observe the characteristics of the women participating in this survey (table no. 2).

Among the women responding to this investigation, 58% had completed a form of higher education. Furthermore, they mainly live in small or medium-sized towns and have white-collar jobs. One-third of respondents were over 55 years old, and a quarter were between 25 and 39 years old and between 40 and 54 years old, respectively. Regarding the presence of children under 15 years old, in 31% of the cases, the women had at least a child younger than this age in their household.

Table 2. Descriptive statistics

Variable	N	%
<i>DEPENDENT VARIABLES</i>		
Less paid work than wanted because of the pandemic (dependent variable in the first logistic regression)	12975	
Yes	5235	40.3%
Negative impact on income because of the pandemic (dependent variable in the second logistic regression)	14276	
Yes	6601	46.2%
Less paid work than wanted because of increased duties at home (dependent variable in the third logistic regression)	12398	
Yes	4229	34.1%
<i>INDEPENDENT VARIABLES</i>		
Age groups	26741	
15 - 24 years	3430	12.8%
25 - 39 years	6846	25.6%
40 - 54 years	6936	25.9%
55 years and older	9529	35.6%
Type of community	26741	
Rural area or village	6972	26.1%
Small or middle-sized town	10370	38.8%
Large town	9399	35.1%
Level of education	22807	
Low level of education	9593	35.9%
High level of education	13214	49.4%

Variable	N	%
Employment status	16696	
Self-employed	2254	8.4%
White collar	1261	4.7%
Blue collar	13181	49.3%
Financial dependency	7454	
More dependent	5638	75.6%
Children under 15 years	25885	
Yes	7950	30.7%
Minority	25956	
Yes	3966	15.3%
Violence against women	20046	
Increase	19591	97.7%
Workplace and office closures and their effects (temporary / forced unemployment, homeworking)	17937	
Yes	7818	43.6%
School and childcare closures and the need for homeschooling/caring for children at home	16483	
Yes	7106	43.1%
Limitations in the number of people you could meet at home or visit	19629	
Yes	9846	50.2%
Feeling worried/anxious and getting stressed out	26741	
Yes	10019	37.5%
Concerned about my mental wellbeing	26741	
Yes	5747	21.5%
Worried about my future	26741	
Yes	9459	35.4%
Feeling trapped/stuck at home	26741	0.34
Yes	8988	33.6%

Source: Authors' calculations in IBM SPSS Statistics 29

About a quarter of the respondents admitted that the level of their financial dependency suffered a change because of the pandemic. Of these respondents, 76% acknowledged increased financial dependency on the partner or other person.

A vast majority of the women interviewed considered that violence against women, either physical or emotional, increased during and because of the pandemic. Moreover, more than 40% thought that the measures taken to stop the spread of the virus negatively impacted their mental health. About a quarter of the respondents had to deal with feelings like anxiety, worries about the future, and a sense of being trapped in their own houses.

4.1 Women who were engaged in less paid activities because of the pandemic's impact on the labour market

The analysis reveals that young adult women (25-39 years) were less likely to have experienced a reduction in paid activities because of the pandemic compared to younger women (15-24 years). All other age groups (40-54 years or 55+ years) had more chances to

encounter such problems than the youngest women interviewed (table no. 3). It is possible that these young women were less affected by the pandemic's impact on the labour market because they were more flexible because they were at the beginning of their careers. On the contrary, women over 40 years old, although probably more experienced, were likely more affected by the diminished paid activities considering their family status and the possibility of relocating or changing activity domain. Older women may be, more or less, voluntarily choosing to work less because of a change in perspective: apart from the need to care for the family (children, grandchildren or even older parents), they may be more afraid of the whole situation and the risks involved in continuing to work those days (Eurofound, 2022b).

Table 3. Estimation results for women who were engaged in less paid activities because of the impact of the pandemic on the labour market

Independent variables	B	Exp(B)
Age (15-24 years - base)		
25-39 years	-0.062	0.940
40-54 years	0.317*	1.373
55+ years	0.281**	1.325
Type of community (Rural area – base)		
Small or medium-town	-0.098	0.907
Large city	-0.234**	0.791
Employment status (Self-employed - base)		
White collar	-0.715*	0.489
Blue collar	-0.723*	0.486
Feeling worried/anxious and getting stressed out (1=yes; 0=no)	0.214*	1.239
Concerned about my mental well-being (1=yes; 0=no)	0.205	1.227
Worried about my future (1=yes; 0=no)	0.369*	1.446
Financial dependency (1=more dependent; 0=less dependent)	0.954*	2.597
Mental health issues because of work closure (1=yes; 0=no)	0.572*	1.771
Constant	-0.188	0.829
Number of observations	3359	
Nagelkerke R Square	0.148	
Omnibus Tests of Model Coefficients (Sig)	<0.001	
Hosmer and Lemeshow Test (Sig)	0.381	
Overall percentage of the classification table	69.7%	

Note: * - 1% significance level, ** - 5% significance level, *** - 10% significance level

Source: Authors' estimations in IBM SPSS Statistics 29

As for the employment status in the labour market, the results showed that white or blue-collar employees were less likely to suffer from the pandemic's impact on the labour market. This result may be explained by job stability and the essential nature of their roles. White-collar workers often have more secure contracts, enabling them to transition to remote work. However, many blue-collar jobs continued operating despite the pandemic, particularly in essential sectors (e.g. manufacturing, retail, healthcare). Graeber et al. (2021) also argued that self-employed individuals were more affected by the pandemic, showing that they were 42 percentage points more likely to experience an income loss in comparison with the employees,

while Spasova et al. (2021) pointed out the fact that the self-employed had limited access to aid-schemes available to standard employees. Being a female self-employed combined the vulnerabilities of the two groups and, therefore, the liability in the labour market. Fewer contracts, many activities shutdown and other responsibilities becoming more stringent (like caring for family) are possible explanations for their vulnerability.

Considering the type of community, our findings revealed that women in rural areas were more likely to experience less paid activities because of the pandemic's impact on the labour market. It may be possible that commuting has been restricted, and hence the negative impact. Also, rural economies often rely on sectors like agriculture, local services, and small businesses, which were significantly disrupted by lockdowns and supply chain issues. Additionally, limited internet access and infrastructure in rural regions can hinder remote work possibilities, further exacerbating the impact of the pandemic on women's employment in these communities.

Women who felt worried or anxious, as well as those concerned about their mental health, turned out to be more likely to experience fewer paid activities, possibly because these mental health challenges affected their ability to work or seek new opportunities. The same outcome was obtained for those women who were worried about their future or faced mental health issues because of work closure. This excessive concern may be the root of the loss suffered in the labour market. Feeling overwhelmed and constantly at risk may decrease productivity at work or generate a lack of motivation and focus to pursue alternative employment during the pandemic's uncertainties. Similar results were obtained by Iglesias Martinez et al. (2022).

Women who consider themselves to be more dependent on their partners or other relatives were also more likely to have suffered the pandemic's consequences on the labour market.

4.2 Women who experienced a negative impact on their income

The results indicated that women aged 25+ have more chances of experiencing adverse effects on income than younger ones (table no. 4). In this case, younger women may still be in education, and their families may still provide for them. Another perspective might be related to older people who may opt to retire earlier than planned due to the deterioration in work conditions, changes in life priorities or fear of infection while working.

Regarding employment status, the employees are less likely to have felt income disturbances than self-employed women. As in the previous scenario, self-employed women combine two sets of disadvantages and, therefore, the negative impact.

Women with a high level of education were less likely to experience adverse effects on their income because of the pandemic. This is probably explained by the type of jobs these women have, which were less affected by the closure of some activities because they could

have been carried out remotely and thus had no impact on their income. Messacar et al. (2020) also reported that, initially, these women benefited from the flexibility of working from home.

Table 4. Estimation results for women who experienced a negative impact on their income

Independent variables	B	Exp(B)
Age (15-24 years - base)		
25-39 years	0.317***	1.373
40-54 years	0.661*	1.937
55+ years	0.620*	1.859
Employment status (Self-employed - base)		
White collar	-0.468**	0.626
Blue collar	-0.811*	0.444
Minority (1=yes; 0=no)	-0.439*	0.645
High_education (1=yes; 0=no)	-0.304*	0.738
Feeling worried/anxious and getting stressed out (1=yes; 0=no)	0.417*	1.518
Concerned about my mental well-being (1=yes; 0=no)	0.255**	1.291
Worried about my future (1=yes; 0=no)	0.739*	2.094
Feeling trapped/stuck at home (1=yes; 0=no)	0.331*	1.393
Financial dependency (1=more dependent; 0=less dependent)	1.779*	5.925
Mental health issues because of work closure (1=yes; 0=no)	0.623*	1.865
Constant	-0.794*	0.452
<i>Number of observations</i>	2965	
<i>Omnibus Tests of Model Coefficients (Chi-square)</i>	718.841	
<i>Nagelkerke R Square</i>	0.319	
<i>Hosmer and Lemeshow Test</i>	0.67	
<i>Overall percentage of the classification table (accuracy)</i>	80.5%	

Note: * - 1% significance level, ** - 5% significance level, *** - 10% significance level

Source: Authors' estimations in IBM SPSS Statistics 29

An interesting result was the lower probability of women belonging to a minority group suffering a negative impact on income because of the pandemic. A possible explanation for this situation might be that some of these women might have been employed in jobs that continued to work throughout the pandemic, so-called “frontline jobs” (OECD, 2022).

As for the other characteristics of women who experienced a negative impact on their income as a consequence of the pandemic, our findings suggest the following: (1) they are worried/anxious; (2) these women are concerned about their mental health, or they feel stuck at home; (3) they are worried about their future; (4) they experience mental health issues; (5) they have become more financially dependent of the partner/family.

4.3 Women who were forced to engage in fewer paid activities because of the increased work at home

The increased work at home is due to activities like caring for children or other family members, homeschooling because of school and other facilities closure, and other household tasks.

Once again, women in rural areas were more likely to suffer such consequences than women in towns or large cities. The commuting restrictions may have aggravated their situation (table no. 5).

Employed women in white or blue-collar roles were less likely than self-employed women to reduce their paid activities due to increased household work, possibly because they had more structured job commitments and stable incomes. In contrast, self-employed women had greater flexibility to adjust their schedules, making it easier to shift focus to domestic responsibilities, but often at the cost of reducing their paid work.

Table 5. Estimation results for women who had to engage in fewer paid activities because of the increased work at home

Independent variables	B	Exp(B)
Type of community (Rural area – base)		
Small or medium-town	-0.212***	0.809
Large city	-0.253**	0.777
Employment status (Self-employed - base)		
White collar	-0.667*	0.513
Blue collar	-0.465*	0.628
High_education (1=yes; 0=no)	0.172***	1.188
Children under 15 years (1=yes; 0=no)	0.503*	1.654
Worried about my future	0.196**	1.216
Financial dependency (1=more dependent; 0=less dependent)	0.876*	2.401
Mental health issues because of work closure (1=yes; 0=no)	0.660*	1.935
Mental health issues because of limitations of social life (1=yes; 0=no)	0.401*	1.493
Constant	-1.00*	0.368
<i>Number of observations</i>	2142	
<i>Omnibus Tests of Model Coefficients (Chi-square)</i>	256.773	
<i>Nagelkerke R Square</i>	0.152	
<i>Hosmer and Lemeshow Test</i>	0.314	
<i>Overall percentage of the classification table (accuracy)</i>	65.7%	

Note: * - 1% significance level, ** - 5% significance level, *** - 10% significance level

Source: Authors' estimations in IBM SPSS Statistics 29

Another logistic regression finding is that women with higher education are more likely to be forced to engage in less-paid activities. A possible explanation might be that highly educated women often hold demanding professional roles, and the added pressure of managing their home and work may have led them to reduce paid employment, especially if their jobs did not offer flexible working arrangements.

As probably expected, women who care for children under 15 years old are more likely to be forced to undergo fewer paid activities due to increased responsibilities at home. Mothers usually try to accomplish too many tasks: work, parenting responsibilities, and home care. Heggeness (2020) argues that parents in general, and mothers in particular, are more susceptible to career difficulties in a major crisis such as the COVID-19 pandemic. Andrew et al. (2022) obtained similar results for mothers in the UK.

Other characteristics of women who have had to perform fewer paid tasks due to increased work at home were: (1) increased financial dependence determines an increase in the probability of a woman being in this group; (2) the existence of mental health problems due to the closure of work or limitations of social life increases the probability of a woman belonging to this group. Women who perceived themselves as more dependent on their partners or relatives were likelier to engage in less paid activities because of the increased work at home during the pandemic. This dependency may have reinforced traditional gender roles, leading them to prioritise caregiving and domestic duties, thereby limiting their availability for paid employment and reducing their participation in the labour market. Women who reported mental health problems due to the closure of work or limitations of social life were more likely to engage in fewer paid activities because the increased burden of domestic work could have intensified their stress and anxiety. These mental health challenges, combined with greater household responsibilities, likely reduced their capacity to maintain or seek paid employment.

A comparative analysis of the three models was carried out to emphasise the characteristics of women who were more likely to be affected by the pandemic in terms of work and income (figure no. 1). There were some common features of those who were engaged in less paid activities because of the pandemic and increased work at home and experienced a negative impact on their income, such as: (1) women were self-employed, (2) were worried about their future, (3) were financially dependent, and (4) had mental health issues because of the work closure.



Figure 1. Venn diagram for the comparative analysis of the models

Source: Authors' representations

Other similarities were observed between two of the models. Women living in rural areas had a greater chance of doing less paid activities because of the negative impact of the lockdowns on the labour market and the increased amount of work at home. At the same time, those over 40 years old and feeling worried and stressed out were more prone to less paid activities because of the negative impact of the pandemic and experienced adverse effects on their income.

Regarding the differences, in the first model, alongside women over 40 years old, those aged 15-24 had a higher chance of engaging in less paid activities because of the changes in the labour market. In the second model, alongside women over 40 years old, those aged 25-39, concerned about their mental well-being and feeling stuck at home, were more likely to have their income reduced. Last but not least, in the third model, apart from women living in rural areas, there was a stronger possibility for those with high education, children under 15 years old and mental health issues because of the limitations of social life to be forced to have fewer paid activities due to the increased work at home.

5. Conclusions

The COVID-19 pandemic had a profound global impact, exacerbating pre-existing gender inequalities, particularly in the labour market. Women faced disproportionate challenges compared to men, including higher rates of employment declines due to their concentration in heavily affected sectors like healthcare, hospitality, and retail, as well as increased familial responsibilities resulting from school and childcare closures. These challenges led to significant disruptions in women's work-life balance and labour market participation, forcing many to reduce their working hours or exit the workforce entirely.

While it is well established that women were more severely affected by the pandemic, its impact varied significantly among different groups. Women with intersecting vulnerabilities, such as low educational attainment, minority status, or caregiving responsibilities, particularly mothers, faced heightened risks in the labour market. This study addressed this gap by examining the characteristics of women most affected in terms of labour market participation, using data from the Eurobarometer *Women in Times of COVID-19*.

We began with a descriptive overview before progressing to a more detailed econometric analysis. Specifically, logistic regression models were used to examine three categories of labour-related adversities: reduced paid work due to the pandemic, negative income impacts, and reduced paid work due to increased household duties. Independent variables included socio-demographic factors, such as age, education, community type, family composition, and other relevant aspects, such as mental health, experiences of violence, and financial and labour market status.

The analysis reveals several key findings regarding the impact of the pandemic on women's paid activities and income. Regarding income, women aged 25 and older were more likely to experience adverse effects compared to younger women. Conversely, women who were employed, highly educated, or belonged to a minority group were less likely to face negative impacts on their income.

Concerning the characteristics of women forced to do less paid work due to the direct impact of the pandemic on the labour market or increased household responsibilities, the analysis showed that women living in rural areas and those who were self-employed were more likely to experience this constraint. The same turned out to be true for women who felt more financially dependent on their partner or another family member, as well as those who expressed concern about their mental health due to workplace closures. Additionally, women aged 40 and older, along with those feeling anxious or worried about their overall mental health, were more likely to have reduced their paid work because of the pandemic's labour market effects. Furthermore, women with children under the age of 15 in their households were particularly prone to reduced paid work due to increased responsibilities at home.

A limitation of this study is its reliance on self-reported data from the Eurobarometer *Women in Times of COVID-19*, which may be a subjective interpretation of the situation during the pandemic, a stressful time, that could exacerbate people's opinions. Also, the cross-sectional nature of the data limits the ability to investigate the long-term effects of the pandemic on women's labour market participation.

Nevertheless, our study makes an important contribution by identifying the specific characteristics of women most vulnerable to the pandemic's labour market effects rather than solely comparing women to men. This approach provides nuanced insights into intersectional vulnerabilities, highlighting the challenges faced by women in rural areas, self-employed women, less educated, anxious women, or those with caregiving responsibilities.

As for the practical implications, our results highlight the need for better support for women in the labour market. Key measures could include flexible work options, affordable childcare, and financial aid for self-employed women to help them stay in the workforce. Mental health support is also important, especially for women in stressful situations and who are financially dependent. Public policies should consider the challenges faced by women, ensuring a fairer and more inclusive labour market.

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