

# A Time of Great Intensity: The Pandemic Effect on Work, Care Work and Subjective Wellbeing in MENA Countries

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## Abstract

In 2020, a global pandemic and its ripple effects swept through the world and disrupted every economy worldwide. We study the effect of this pandemic on employment, care work, and subjective wellbeing (SWB), particularly for women, in four countries in one of the most understudied regions, the Middle East and North Africa (MENA). We find that although employment-to-population ratios had an initial dip in the pandemic, they rose to pre-pandemic levels by February 2021. We, however, find that unemployment-to-population ratios for women rose during the pandemic and reached to two to three times their levels before the pandemic. We also find that about 40% of women reported a rise in their hours spent on childcare and housework during the pandemic. Finally, we find that controlling for individual characteristics and geographic-time fixed effects, the main factor associated with the SWB was the decline in household income. Men and women's SWB in households that experienced a reduction in their income declined by 0.26 and 0.14 standard deviation, respectively. Increase in the time spent on housework was the second factor affecting women's SWB. All other factors had no association with SWB. The implications of the results are discussed.

**Keywords:** Pandemics, care work, subjective wellbeing, unemployment, MENA region

**JEL Classifications:** J1, I1

## ملخص

في عام 2020 اجتاحت الجائحة العالمية وآثارها المتتالية العالم وأدت إلى اضطراب جميع الاقتصادات في مختلف أنحاء العالم. وتتناول هذه الدراسة تأثير هذا الوباء على التوظيف، وأعمال الرعاية، والرفاهية الشخصية للأفراد (SWB) خاصة بالنسبة للنساء، في أربعة دول في واحدة من أكثر المناطق التي لم تخضع لدراسات مماثلة كافية، وهي منطقة الشرق الأوسط وشمال إفريقيا (MENA). وقد وجدت الدراسة أنه على الرغم من انخفاض نسب العمالة إلى عدد السكان في ظل الجائحة، إلا أنها عاودت الارتفاع إلى مستويات ما قبل الجائحة بحلول فبراير 2021. ومع ذلك وجدت الدراسة أن نسب البطالة إلى السكان من النساء ارتفعت أثناء الجائحة ووصلت إلى ضعفين إلى ثلاث أضعاف مستوياتها قبل الجائحة. ووجدت الدراسة أيضًا أن حوالي 40% من النساء أبلغن عن زيادة في ساعات عملهن في رعاية الأطفال والأعمال المنزلية أثناء الجائحة. وأخيرًا توصلت الدراسة إلى أنه من خلال تثبيت الخصائص الفردية والتأثيرات الزمنية الجغرافية الثابتة، ظهر أن العامل الرئيسي المرتبط بالرفاهية الشخصية للأفراد (SWB) هو الانخفاض في دخل الأسرة. وانخفضت الرفاهية الشخصية للرجال والنساء في الأسر التي شهدت انخفاضًا في دخلها بمقدار 0.26 و 0.14 انحراف معياري، على التوالي. وكان العامل الثاني المؤثر هو زيادة الوقت المستغرق في الأعمال المنزلية.

## Introduction

The streets of Cairo, a normally bustling sleepless city, were silent. Curfew time extended from 7 PM to 6 AM in March 2020, with shifting hours throughout the winter and spring of 2020. Cairenes, like millions of others around the world, were locked at home. With a population density of 19,376 people per square kilometer, it is not hard to imagine how densely crowded some of these homes were. Even in the hours before the curfew, children were not going to school; some working family members were returning home earlier than usual; others were working from home or lost their work altogether. The longer these members stayed at home, the longer the hours needed for care work, with the brunt of the housework falling squarely on the women in the house. By all means, the pandemic lockdown was a time of great intensity.<sup>1</sup> It also had serious repercussions on individuals' subjective wellbeing. The burden of the disease and lost lives (at least 1.8 million, potentially 3 million, in 2020 alone<sup>2</sup>) has been compounded by the intensity of the lockdown, the economic repercussions of this global pandemic, and the increasing burden of care work. This paper seeks to capture this dynamic with a focus on four countries in the Middle East: Egypt, Jordan, Morocco, and Tunisia.

While the pandemic situation has exposed the healthcare deficiencies in many contexts, much of the research seeking to capture the effect of the pandemic comes from the Northern hemisphere, exposing the poverty of research in the global South. Few studies emerged about such contexts, such as Seck et al. (2021) on Asia-Pacific countries, İlkkaracan and Memiş (2021) on Turkey, and Desai et al. (2021) on India. This paper seeks to contribute to this nascent body of research by focusing on the Middle East and North Africa (MENA) region, a particularly understudied region from many social science aspects.

By no means do we seek to claim that the results of this study is representative of the Middle East or the Arab region in general. The diversity of the economic situation of the countries in the region, like everywhere else, has translated into a diversity of responses to the health and economic repercussions of COVID-19. We try to capture the nuance of this response in the paper too.

Using recently available data collected in the four countries mentioned above, this paper seeks to document the effect of the COVID-19 pandemic on three inter-related aspects: employment, care-work, and subjective wellbeing in the MENA region. We find that women consistently reported a lower level of subjective well-being than men in all four countries. We also find that women not only experienced worse labor market outcomes (their unemployment-to-population ratios more than doubled), but also experienced more burden of work at home (40% of women reported rise

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<sup>1</sup> We borrow the term “a time of great intensity” from the UN Women’s website (<https://data.unwomen.org/features/ipsos-survey-confirms-covid-19-intensifying-womens-workload-home>) accessed March 2021.

<sup>2</sup> World Health Organization. <https://www.who.int/data/stories/the-true-death-toll-of-covid-19-estimating-global-excess-mortality>, accessed on June 27, 2021.

in the time spent on childcare and housework). Although employment-to-population ratios for women stayed roughly the same, unemployment-to-population ratios for women rose during the pandemic and reached two to three times their levels before the pandemic. This may show that as households experienced declines in their income during the pandemic, women stood up and sought employment to raise household income to pre-pandemic levels. They have not given up their search. The fact that 40% of women reported a rise in their hours spent on childcare and housework during the pandemic clearly shows the burden of work on mothers, in particular.

We then study the determinants of men and women's subjective wellbeing during the pandemic and find that the most important factor associated with it was a decline in household income. Controlling for many confounders, men and women whose households experienced an income decline reported about 0.26 and 0.14 standard deviation lower subjective wellbeing than other households. A larger share of poorer households experienced a decline in their income due to the pandemic (compared to their income in February 2020), which shows the greater impact of the pandemic on the poor. We find that unemployment was negatively related to men's subjective wellbeing but not women's. More importantly, we find that the burden of work at home, particularly the rise in housework during the pandemic, was negatively associated with women's subjective wellbeing.

### **The Impact of COVID-19 on MENA Countries**

The policy response to COVID in the four countries under study followed a similar pattern. By the third week of March 2020, all four countries under study imposed partial lockdowns following varying hours. In Egypt, the curfew hours lasted from 7 PM to 6 AM and were gradually eased to start by mid-night by July, 2020. The same pattern was consistent in the other three countries. Despite the relatively relaxed lockdown measures, compared to countries in the global North, the impact on the labor market has been quite strong. Krafft et al. (2021) show that many wage workers in all the four countries of Egypt, Jordan, Morocco, and Tunisia, specifically those in the informal economy, have lost their jobs or had to work reduced hours at lower earnings due to COVID-19. The majority of employers and the self-employed also reported that their revenues in 2020 were less than 2019. Moreover, almost half of households in the four countries reported a decrease in their income due to the pandemic. This was particularly experienced by poor households (ibid.).

National statistics in all four countries confirm these patterns. In Egypt, the country's central statistical bureau announced that the unemployment rate increased to 9.6 percent in the second quarter of 2020, up from 7.7 percent in the first quarter (CAPMAS, 2020). The labor force contracted from 29 million in the first quarter, to 26.6 million in the second quarter, a decrease by 8% (ibid.). The outcome was also highly gendered: while male unemployment rose to 8.5 percent (up from 4.5 percent in the first quarter), female unemployment fell to 16.2 percent, down from 21.9 percent in the first quarter. It is probably the case that these women have become discouraged

from searching for jobs, given the complexity of the lockdown and job scarcity. Similarly, the Department of Statistics in Jordan announced that the unemployment rate reached (24.7%) during the fourth quarter of 2020; representing an increase by 5.7 percentage points of the fourth quarter 2019 (DOS, 2021). Unlike Egypt, women's unemployment rates showed worsening results in Jordan compared to men. The unemployment rate for males has reached (22.6%) during the fourth quarter of 2020 against (32.8%) for females. It becomes clear that the unemployment rate has increased for males by 4.9 percentage points and for females by 8.7 percentage points compared with the fourth quarter of 2019 (DOS, 2021). In Tunisia, unemployment increased from 15% prior to the pandemic to 17.8% by the end of the first quarter of 2021. Moreover, it continues to affect women (24.9%) and young people aged 15–24 (40.8%) in particular (World Bank, 2021). In Morocco, the unemployment rate rose from 8.1 percent to 12.3% between 2019 to 2020. The male unemployment rate rose from 7.2% to 11.3% and the female unemployment rate rose from 11.1% to 15.6% (Paul-Delvaux et al., 2021)

### **COVID-19, Work and Subjective Wellbeing: A Review of the literature**

The analysis in this paper bridges literature in three COVID-19 interrelated, albeit distinct, areas of research. These are the effect of the pandemic on individual subjective wellbeing; women's employment and the burden of care work on women. The three areas have had the most prominent focus on the nascent literature on the socio-economic effect of COVID-19.

For many, COVID-19 seems to have hit some of the long-held factors affecting SWB: income, healthy life expectancy, social support, prevalence of generosity and freedom of choice (Helliwell et al., 2020). A number of studies looked at the effect of the lockdown situation and economic threats on individual subjective wellbeing (SWB). Focusing on Germany, Zacker and Rudolph (2020) whistled one of the early alarms that the COVID-19 pandemic represents not only a medical and economic crisis, but also a psychological crisis related to the decline in people's subjective wellbeing. Best et al. (2020) focused on a Canadian sample with results suggesting the association between social distancing practices with increased psychological distress. Stiglic and Viner (2019) looked at earlier research to make the argument for the potential negative effect of screen time on the health and wellbeing of children and adolescents during the pandemic. Few studies highlighted a potential positive effect of the lockdown phase as it allowed more time for family and even autonomy to some workers who are working remotely (Reuschke 2019; Recchi et al., 2020). Focusing on an elderly population, Kivi (2020) note that their wellbeing remained stable or even increased in 2020 compared to previous years. Earlier research on SWB allows us to predict the likely negative effect of the lockdown. For example, Mata et al. (2012) highlighted the negative impact of reduced physical activity, while Blom et al (2017) highlighted the negative impact of employment challenges on straining the relationship between couples and their wellbeing.

The specific effect of the economic crisis on the subjective wellbeing received particular interest. These studies tended to focus on the more recent phase of the pandemic (beyond the Spring of 2020), reflecting the rather protracted economic downturn due to the pandemic. For example, Möhring et al. (2021) show that there has been a general decrease in family and work satisfaction, looking at a German sample. This research also highlights the accumulated knowledge of the effect of economic hardships become less satisfied with their family life (e.g. Conger et al. 2010) and the impact of job quality indicators on SWB (Drobnic et al. 2010).

Research on the role of gender in subjective wellbeing, which almost exclusively comes from the global North, have long shown that women and men have similar levels of subjective wellbeing (e.g. Clemente and Sauer, 1976). In fact, studies by Tay et al. (2014) and by Blanchflower and Oswald (2004) argue that women tended to have higher levels of life satisfaction than men. Inglehart (2002) qualifies this gender-happiness relationship by addressing the role of age, noting that women under 45 tended to be happier than men; but older women were less happy based on a study with a sample of 146,000 respondents from 65 societies. But COVID-19 seems to have broken this long-held rule, by negatively affecting women's wellbeing in some unprecedented ways. For example, Möhring et al. (2021) document that the decrease in family and work satisfaction during the pandemic was more pronounced for mothers than fathers, reflecting the burden of care work on women and. For example, Collins et al. (2020) looked at gender gap in working hours during the pandemic and show how School and day care closures increased caregiving responsibilities for mothers, particularly those with young children, and even reduced have mothers' work hours four to five times more than fathers in the context of the United States. More seriously, incidence of domestic violence increases with lockdown, a less documented situation in the global South despite evidence in the countries in the North (e.g. Hsu and Henke, 2021).

Another wave of studies focused on the effect of COVID-19 on women's paid work and care responsibilities. From the Middle East, İlkkaracan and Memiş (2021) document doubling of women's already long time. They also note that employed women saw what the researchers describe as "an alarming intensification" in their workload that would make it hard for these women to sustain a decent work-life balance. Desai et al. (2021) looked at the impact of COVID-19 on women wage workers, noting that women experienced greater job losses and highlighting the gendered impacts of this macro crisis. Seck et al. (2021) use evidence from eleven countries in Asia-Pacific to show that women were disproportionately shouldering the burden of unpaid care and domestic work triggered by the lockdowns, at the expense of a faster rate of losing livelihoods than men. They also document a disproportionate worsening of women's mental health. Evidence from countries in the global North reflected different aspects of the negative effect of COVID-19. For example, Ella (2021) shows that because of the large proportion of women among essential workers, Belgium also had a larger share of women with confirmed COVID-19 cases than other EU countries, and that these women's use of public transportation increased their exposure to the



virus. In Australia, Craig and Churchill (2021) document the increased burden of unpaid work for women during Lockdown; and that while men contributed more to care work, their share was at the level women were doing before the pandemic. The analysis also documented the pressure of paid work from home, which is compounded by responsibilities of childcare.

While work from home has been an option to many in the global North, this was the case for only a fraction of workers in the global South (Sanchez et al., 2020). The experience of essential workers in the global North (e.g. Ella, 2021) simply resonates with much more people in the global South. In low-income countries, only one of every 26 jobs can be done from home according to Sanchez et al. (2020). They relate this situation to the low share of jobs that rely on information and communication technologies (ICT) and the poorer internet connectivity in developing countries. This further compounds the health and economic effects of COVID-19 in the global South. Unable to work from home, more workers are forced to choose between the health threats of a pandemic and their livelihood opportunities. This has can have tremendous impact on people's subjective wellbeing in the global South that remains under-reported by the burgeoning research on the effect of COVID-19.

### **Data – A Gendered Critique of Mobile Phone Sampling**

The COVID-19 MENA Monitor Surveys, the source of data for this study, were administered and harmonized by a team of experienced scholars at the Economic Research Forum (OAMDI 2021).<sup>3</sup> These surveys were collected by phone during the pandemic in four countries: Egypt (two waves), Jordan (1 wave), Morocco (two waves), and Tunisia (two waves). The first wave of the survey in Egypt was conducted in June 2020 (about four months into the pandemic) in June 2020. Later in the year, the first waves of the survey in Morocco and Tunisia were collected in October 2020. In February 2021, the second waves of the survey in Egypt, Morocco, and Tunisia, as well as the first wave of the survey in Jordan were collected. These surveys cover topics such as demographic characteristics, labor market outcomes, such as employment status, economic activity and income, subjective wellbeing, social safety nets, and women's work at home during the pandemic. All surveys, except the Egyptian first wave (collected in June 2020) contain questions on subjective wellbeing, and a specific block on women, farmers, and household businesses. Therefore, we use all surveys, except the Egyptian first survey, in this study.

The sample universe for the household survey was mobile phone users aged 18-64. Random digit dialing (RDD) within the range of valid numbers was used, with up to three attempts. Samples were stratified by country-specific market shares of mobile operators. The number of observations in each county-wave is at least 2,000 (except the first wave of the Egyptian survey, which we do

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<sup>3</sup> The data are publicly available at [www.erfdataportal.com](http://www.erfdataportal.com)

not use).<sup>4</sup> The surveys were collected from one individual in a household. The surveys collected information about the respondent only but not the other members of the household. Observations are weighted, and the weights were calculated based on the following dimensions: 1) Telephone operators and their market shares, provided by the data collection firm, 2) Number of phones by each operator for individuals (individual weight) and household members (household weight and household member weight), and 3) Representative data with comparable demographic and household characteristics (to weight for non-response.)<sup>5</sup>

It is important to be cognizant of the gender differences in phone ownership and autonomy of use. The “mobile gender gap” as came to be dubbed in the literature is a key factor. Women in low- and middle-income countries are 20 per cent less likely to use mobile internet than men (Aranda-Jan et al., 2020). This explains why the women interviewed using RRD tend to be of a higher socio-economic status than the men, due to skewed distribution of mobile phones. While sample weighting takes into account observable variables of demographic and household characteristics, weighting cannot take into account levels of unobservable variation in empowerment and autonomy. The critical feminist tradition has long learned from Virginia Wolf’s notion of a woman’s “room of her own” (Wolf, 2014/1929). The mobile is a modern representation of women’s ability to have the time, the resources and the autonomy to freely talk to a stranger who is asking about the impact of COVID. The situation would be compounded, with a lower response rate among women, if the phone interviewer is a male. Consistently, the sample for the survey in the four countries had fewer women than men. This is only less pronounced in Jordan, but the difference remains drastic in other countries. To address this sampling bias, our decision has been to consider the men and women as two separate samples with different characteristics. Although results were weighted on observable characteristics to ensure comparability to mobile phone users in in-person surveys, results only generalize to the universe of mobile phone users, who are disproportionately higher income, male, and more educated. Table A6 reports the differences between men and women; one interesting fact to note is that about 50% of surveyed women were in the labor force (either employed or unemployed), which is larger than the national statistics for women. As we discuss below, we try to capture the unobservables, as much as possible, with fixed-effects.

We pick the most relevant variables in these datasets to study the impact of the pandemic on women. Almost all variables we use are readily available in the dataset. Subjective wellbeing,

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<sup>4</sup> There are 1,923 observations in the Egyptian first wave, but 2,000 observations in its second wave. Jordanian first wave has 2,549 observations. The sample sizes in the Moroccan first and second waves are 2,007 and 2,002 and in the Tunisian first and second waves are 2,000 and 2,077.

<sup>5</sup> Data are from mobile phone surveys, and it is important to keep in mind that, although results were weighted on observable characteristics to ensure comparability to mobile phone users in in-person surveys, results only generalize to the universe of mobile phone users, who are disproportionately higher income, male, and more educated. As we discuss later, we try to capture the unobservables, as much as possible, with fixed-effects.

however, was embedded in five questions.<sup>6</sup> They specifically ask how often (never to all the time) a respondent experienced the following: 1) felt cheerful and in good spirits, 2) felt calm and relaxed, 3) felt active and vigorous, 4) woke up feeling fresh and rested, 5) her/his daily life has been filled with things that interest him/her. The responses to these questions by sex are reported in Tables A1-A5 in the Online Appendix. Unfortunately, the survey is missing some key issues related to gender-based violence, which has been repeatedly highlighted in other studies and can have detrimental effect on womne’s SWB.

Using the principal component analysis, we created the Subjective wellbeing composite index (SWB) based on the responses to the above five questions. The lower the SWB index for a respondent, the less often she/he experienced the five statements above; in other words, the unhappier the respondent was. As the summary statistics in Table 1 show, the SWB index is a number between -2.48 and 3.82; its average is zero, and its median is -0.35. Figure 3 depicts the distribution of the SWB index for women and men. It shows that women, in general, had lower subjective wellbeing than men. The average SWB index for women is about 0.1 standard deviation (0.185 units) smaller than the average SWB index for men. Figure 3 depicts the distribution of the subjective wellbeing (SWB) index by sex. The summary statistics of the variables used in this study are reported in Table 1.

Unfortunately, it was not possible for the designers of the surveys to collect data on these questions before the pandemic. So subjective wellbeing of respondents before the pandemic is unknown.

## Methodology

We start our analysis by studying the cross-tabulations of employment, unemployment, the burden of work at home for women, and subjective wellbeing with other variables. In the final step, we run regressions, as described in the following regression equation, to find associations between the subjective wellbeing and other relevant variables in the dataset:

$$Y_{ijt} = \sum_{z=1}^K \beta_z X_{ijt}^z + \gamma_{jt} + \varepsilon_{ijt} \quad (1)$$

in which  $Y_{ijt}$  is the subjective wellbeing index for individual  $i$  in the administrative zone  $j$  at time  $t$ ;  $X_{ijt}^z$  is a set of  $K$  individual characteristics for individual  $i$  in the administrative zone  $j$  at time  $t$ , such as age, marital status, residing in an urban area (before the pandemic), as well as a set of

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<sup>6</sup> As mentioned before, these questions were not asked in the Egyptian first wave of the survey (that is, June 2020 Egyptian survey), but they were asked in the Egyptian second wave in Feb. 2021, Jordanian first wave in Feb. 2021, and both waves of Moroccan and Tunisian surveys (Nov. 2020 and Feb. 2021).

status/circumstances variables, such as employment status and change in income, that may be associated with the outcome. The fixed-effect  $\gamma_{jt}$  represents the fixed-effect for the administrative zone  $j$  at time  $t$ . These fixed-effects control for any (observed and unobserved, measureable and immeasurable) factors that may affect the subjective wellbeing of all individuals in the same administrative zone at the same time (Nov. 2020 or Feb. 2021). These factors include but are not limited to formal and informal institutions, culture, religion, average demographic characteristics of an administrative zone, institutional qualities (like government capacity), government response to the pandemic, infrastructure (like the healthcare availability). Since administrative zones are within a country, these fixed effects are stronger than country fixed-effects and capture within-country differences as well. There are 12 administrative zones in Jordan, 12 in Morocco, 24 in Tunisia, and 27 in Egypt (total of 75). In addition, since these administrative zone fixed-effects are time-specific, they capture any time varying variable at the country and sub-country level, such as country and local level policies to COVID-19 over time.  $\varepsilon_{ijt}$  is the error term. As we discuss below, Table 5 shows the results of this regression.

## Results and Discussion

Some of the most important factors that affect wellbeing are employment status, income, and the burden of work at home (for women, in particular). Therefore, we first review the changes in individuals' employment status, households' income, and the burden of work at home in the pandemic (compared to Feb. 2020).

Figure 1 lists the shares of respondents who chose various jobs/activities as their main job before the pandemic. Over 55% of women were housewives, 8.9% were employed by the private sector, 7.3% were employed by the government, 2.5% were self-employed/business owners, 8.8% were unemployed, 8.5% were full-time students, and about 1% were unpaid family workers. Men, however, were predominantly (34.8%) employed by the private sector. 16.9% of them were employed by the government, 14.7% were self-employed/business owner, 9.8% were unemployed, 6% were full-time students, 5.6% were farmers (owned a farm), and 1.2% were unpaid family workers.

Panel A of Table 2 shows what share of the population was employed before the pandemic and in the first and second waves of the survey by sex and country. The largest decline in employment to population ratio was experienced by men in Egypt. It was 80% in Feb. 2020 but declined to 59% by June 2020 and eventually rose to 66% in February 2021 (still significantly below its pre-pandemic levels). For women, in comparison, employment to population ratios were relatively stable over this period. They declined the most in Morocco by about seven percentage points by

Nov. 2020 but went up by five percentage points by Feb. 2021. Interestingly, Tunisian men and women experienced an increase in their employment to population ratio during the pandemic.<sup>7</sup>

The unemployment to population ratio, however, significantly increased during the pandemic, particularly for women. Panel B of Table 2 depicts these rates. Egyptian and Jordanian women were particularly hit hard as their unemployment ratios tripled. For Moroccan and Tunisian women, the situation was not substantially better. Their unemployment ratios almost doubled during the pandemic. Among men, Egyptian men were affected the most, while unemployment ratios did not change for Tunisian men.

The rise in unemployment ratios, particularly for women, could be a response to the loss in household income. When household income is reduced, more members of the household enter the labor force to find new sources of income. As a result, unemployment (and potentially employment) ratios may increase. In fact, during the pandemic, 48% of households in Jordan, 41% of households in Egypt, 62% of households in Morocco, and 47% of households in Tunisia experienced a reduction in their income. We do not have the actual income of the households before or during the pandemic in the data but we know whether household income before the pandemic was below or above the median.<sup>8</sup> Table 3 reports the percent of households who experienced a decline in their income by their income category (below and above the median) in Feb. 2020. It shows that a larger share of households whose income was below the median before the pandemic experienced a decline in their income than households whose income was above the median. Some households, particularly in Morocco, did not know or refused to report their income before the pandemic. Therefore, although these results make sense, one should take these results with a grain of salt. Because of the large number of missing values for this variable (household income in Feb. 2020), it is not possible to use it in other analysis, for example, regressions.

Although we do not have households' actual incomes, the data reports the monthly salary of wage-earners. Figure 2 reports the distribution of wages by sex before and during the pandemic. The wage distributions shifted to the left during the pandemic. Further analysis shows that the average wage for men declined by about 10% and for women by about 15% (these declines are statistically significant at 0.1%.) The decline was slightly larger for men employed in the private sector vs. the government (10% vs. 8%) but it was larger for women employed by the government rather than the private sector (24% vs. 10%).

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<sup>7</sup> Further analysis shows that 23% of Tunisian women who were not employed before the pandemic but became employed during it chose self-employment/business-ownership, and 70% chose wage-earning in the private sector, the remaining 7% became mostly employed in the government. For Tunisian men, these numbers were 43%, 49%, and 8%.

<sup>8</sup> The approximate income quartile of households are reported in the data, but since these four quartiles are approximate, we prefer to split the households into only two groups: below and above median to get more accurate results.

In addition to the labor market outcomes, we can use the women module in the November 2020 and February 2021 waves of the survey to understand the burden of housework and care for women. Culturally, men in the countries of our study are not involved in childcare or housework. So, the burden of work falls on women, and the surveys asked such questions to women only. Table 4 shows the percent of women who spent more time caring for children and doing housework during the pandemic compared to February 2020. The results show that about 40% of women increased the time they spent taking care of children during the pandemic. This is quite consistent across countries. In Morocco, however, this number declined to about 28% in February 2021. Similarly, about 30 to 40% of women reported that they increased the amount of time they spent doing housework during the pandemic. These clearly show that not only did women experience worse labor market outcomes, they also experienced more burden of work at home.

Considering all the burdens that the pandemic created, particularly for women, it is interesting to see its impact on the subjective wellbeing of individuals. To understand what factors are associated with the SWB index, we run regressions based on Equation (1) for the whole sample and several sub-samples. To easily interpret the coefficients of the regressions, we normalize the SWB index by dividing it by its standard error<sup>9</sup> and use the Normalized SWB (NSWB) index as the dependent variable. Hence, the size of the coefficients depict the change in subjective wellbeing in terms of standard deviation.

Table 5 reports the results of these regressions. In each regression, we include *Household income decreased*, which is a binary variable equal to one if household income declined relative to Feb. 2020 and zero otherwise, *Unemployed* and *Out of labor force* binary variables, which represent two of the three employment categories (the third one is being employed and is omitted from the regression), *More childcare*, which is a binary variable equal to one if a respondent spent more time caring for children vs. Feb. 2020 and zero otherwise, *More housework*, which is a binary variable equal to one if a respondent did more housework vs. Feb. 2020, education dummies (three binary variables representing *Basic education*, *Secondary education*, and *Higher education*; *Less than basic* is the omitted category), age dummies (three binary variables representing 30-39, 40-49, and 50-64 age groups; 18-29 is the omitted age group), *Married* (a binary variable), *Urban* (a binary variable), and household size.

Administrative Zone  $\times$  Time fixed effects are included to capture any factor that affects all respondents in an administrative zone (within a country) in Nov. 2020 or Feb. 2021. These fixed effects are stronger than country fixed-effects and capture within-country differences as well.

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<sup>9</sup> Which is 1.708659.

Column (1) contains the result for the whole sample (men and women combined). It shows that a decline in household income is associated with a 0.21 standard deviation decline in the SWB index. That is about a 10% decline from the average SWB. Comparing Columns (2) and (3), we observe that the decline in SWB is larger for men than women (0.26 standard deviation vs. 0.14). In Column (4), we add two explanatory variables to the sample for women (because these were asked of women only). They are whether a woman spent more time on childcare compared to Feb. 2020 and whether she spent more time on housework vs. Feb. 2020. The coefficient of *household income decreased* in Column (4) remains the same as Column (3), showing that the association between household income and subjective wellbeing is robust to the inclusion of the burden of work at home.

We then explore the results for various subsamples of women. Columns (5) and (6) have urban and rural women, respectively. They show that the decline in household income is associated with a decline in SWB for urban women only. We do not find evidence of that in rural areas, potentially because the decline in household income in rural areas may have little to do with the pandemic per se. In general, the pandemic might not have disrupted rural life at all. Hence, we turn our focus to urban women in Columns (7)-(9).<sup>10</sup> We divide the sample of urban women based on their labor force participation status into three groups: 1) employed, 2) unemployed, and 3) out of the labor force. The results are reported in Columns (7) through (9), respectively. They show that the negative association between the decline in household income and the subjective wellbeing is only pronounced for urban women who were employed or out of the labor force, but there is no evidence of that for unemployed women (although the coefficient is negative but is statistically insignificant). This could be because employed women and women who are out of the labor force could not do anything to increase household income to pre-pandemic levels. This lack of agency creates unhappiness. Unemployed women, however, are hopeful that by finding a job, they can compensate for the decline in household income (they have not lost their agency (hope) yet). Therefore, their subjective wellbeing was still unaffected. If their hope does not materialize, they have to leave the labor market (and join the women out of the labor force). This may lead to unhappiness about the decline in household income.

Unemployment of a respondent was negatively associated with the SWB index, but this association is only pronounced for men and does not exist in any of the subsamples of women. Being out of the labor force has no association with the subjective wellbeing of men or women.

Columns (4) through (9) show that women who spent more time on childcare during the pandemic vs. Feb. 2020 did not experience a change in their subjective wellbeing. More time spent on housework, however, is associated with about 0.1 standard deviation decline in subjective wellbeing for an average woman. Analyzing the subsamples show that this negative association

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<sup>10</sup> The sample for rural women does not produce any statistically significant results.

exists for women in urban areas only and is particularly pronounced for women out of the labor force. This negative association makes sense as household chores are rarely exciting or inspiring. Taking care of children, however, can have positive returns and can be fulfilling. Therefore, although the increase in childcare created a burden for women, particularly mothers, its fulfilling aspect and the motherly love for their children balanced its impact on subjective wellbeing.

The results for education dummies in Columns (1) and (2) show that as education increases subjective wellbeing increases as well. This positive association, however, only exists for men. We hardly find any association between education and subjective wellbeing for women. Interestingly, we do not find any association between other controls (age, marital status, living in an urban area, and household size) and subjective wellbeing (for men or women) also.

## **Conclusion**

In this study, we explored the effects of the COVID-19 lockdown and the related changes in employment status and income on the subjective wellbeing of both men and women in four countries in the Middle East: Egypt, Jordan, Tunisia and Morocco. We find that increased unemployment and a decline in average wage, which are globally documented repercussions of the COVID-19 onset of the pandemic and the lockdowns of 2020, had similar impact in the countries under study. For women, these economic hardships have also been associated with an increase in the time they spend taking care of children during the pandemic. This is quite consistent across the four countries included in the study. The toll of these changes on the subjective wellbeing of individuals is quite significant. The decline in household income is associated with a 0.21 standard deviation decline in the SWB index. That is about a 10% decline from the average SWB. This is particularly the case for urban women.

Not surprisingly, the unemployment of a respondent was negatively associated with the SWB index, but this association is only pronounced for men and does not exist in any of the subsamples of women. Being out of the labor force has no association with the subjective wellbeing of men or women. However, more time spent in taking care of children did not have a negative impact on SWB, as opposed to housework. It is probably the case that keeping busy at a time of such intensity is helpful for one's subjective wellbeing.

As education increases subjective wellbeing increases. This positive association, however, only exists for men. We hardly find any association between education and subjective wellbeing for women. We also do not find any association between other controls (age, marital status, living in an urban area, and household size) and subjective wellbeing for both men and women.

Further research is needed to situate the data from this sample in the global context and using more larger scale surveys.

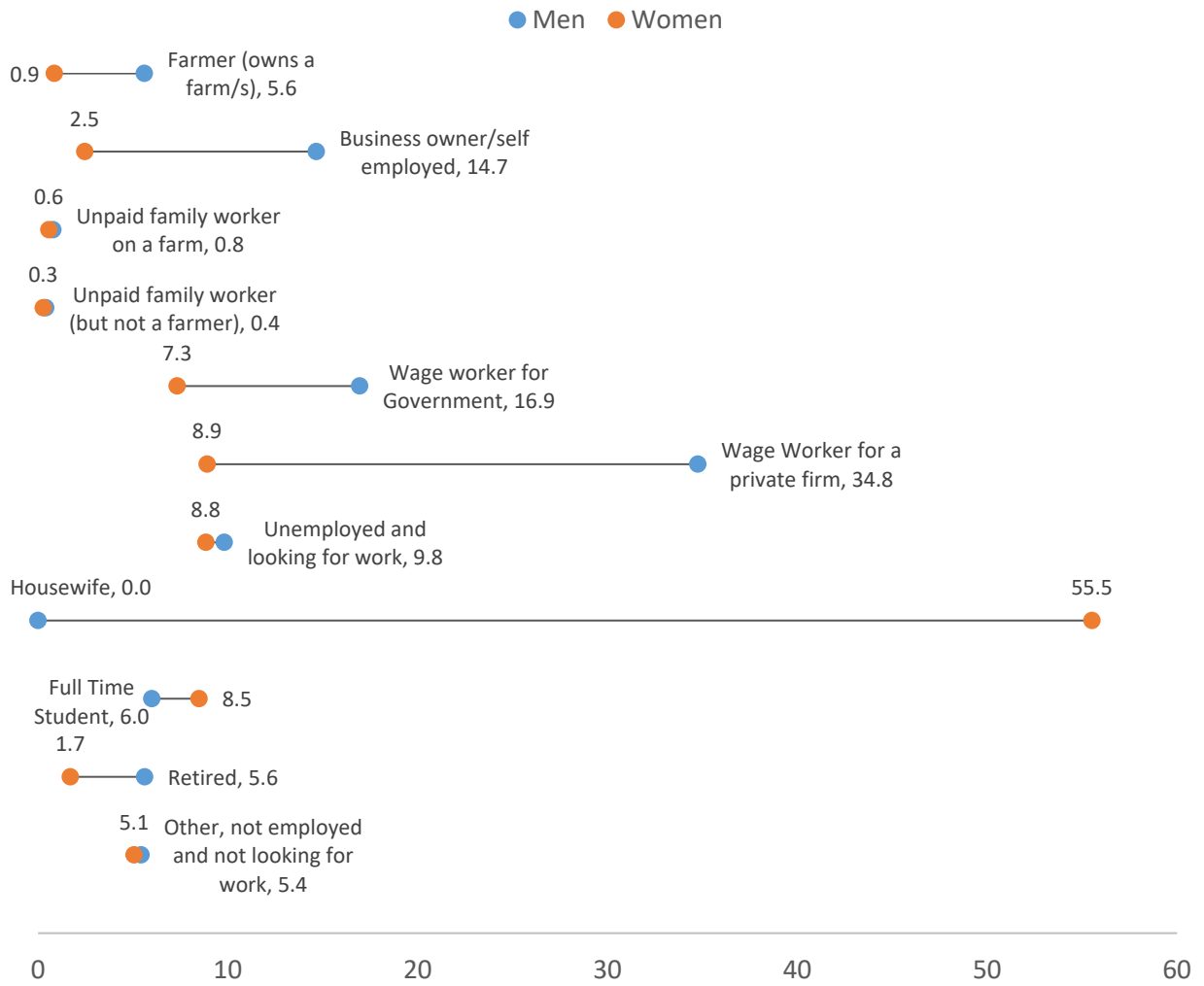


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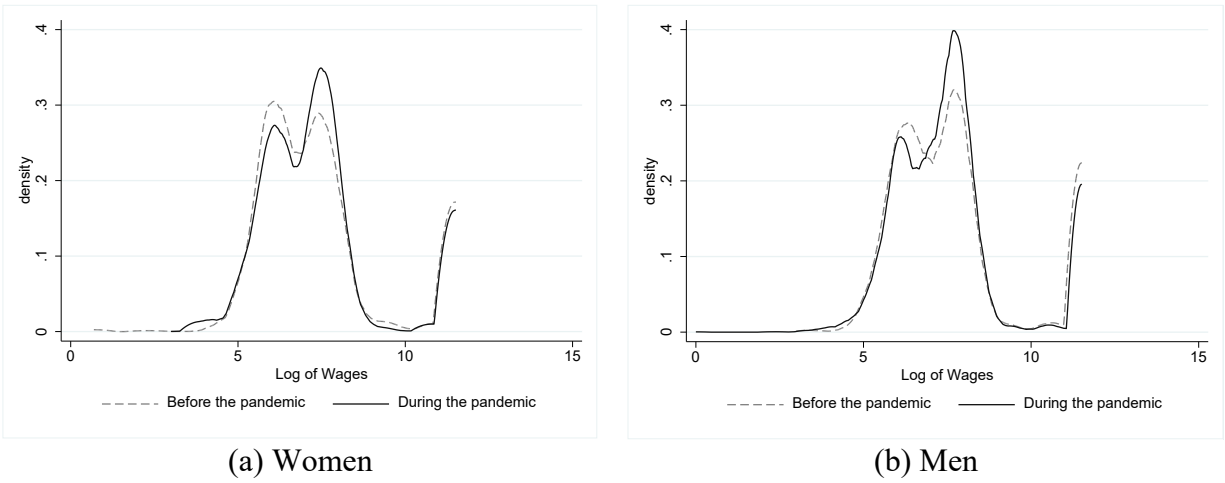
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**Figure 1. Main job/activity in Feb. 2020 (before the pandemic), by sex**



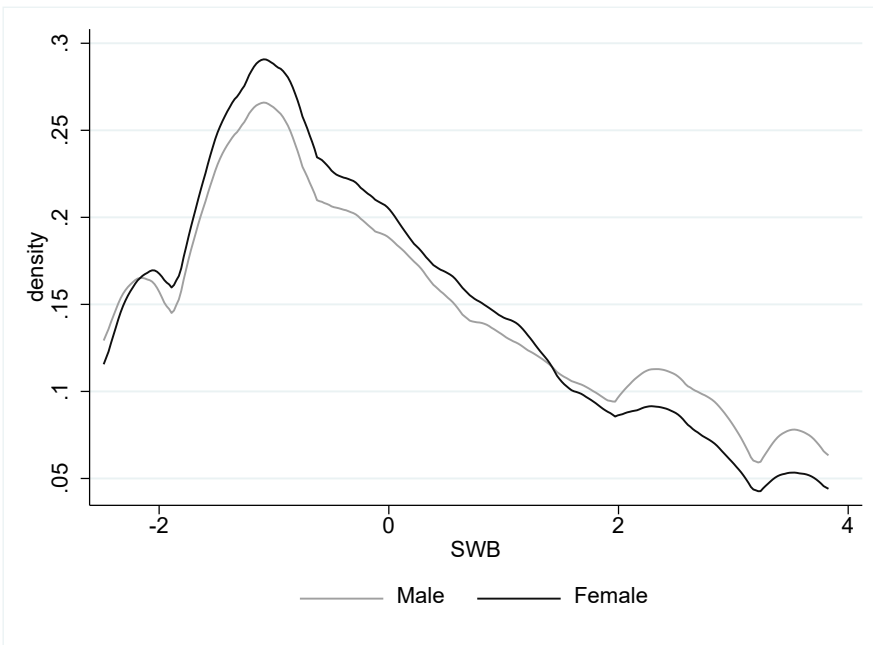
Note: Authors' calculations based on variable cor18.

**Figure 2. Distribution of log of wages, by sex**



Note: Authors' calculations based on variables named wor7 and wor8.

**Figure 3. Distribution of Subjective Wellbeing Index by Sex**



Note: Authors' calculations.

**Table 1. Summary Statistics (N = 12,614)**

Variables	Mean	Median	St. Dev.	Min	Max
Subjective wellbeing index	0.00	-0.35	1.71	-2.48	3.83
Normalized subjective wellbeing index	0.00	-0.21	1	-1.45	2.24
Household income decreased	0.53	1	0.50	0	1
Labor Force Status					
Employed	0.51	1	0.50	0	1
Unemployed	0.22	0	0.42	0	1
Out of labor force	0.27	0	0.44	0	1
Education					
Less than basic	0.27	0	0.44	0	1
Basic	0.18	0	0.39	0	1
Secondary	0.32	0	0.47	0	1
Higher education	0.23	0	0.42	0	1
Age	37.00	35	12.16	18	64
Married	0.65	1	0.48	0	1
Urban	0.70	1	0.48	0	3
Household size	4.87	5	2.35	1	54
More childcare vs. Feb. 2020*	0.27	0	0.44	0	1
More housework vs. Feb. 2020*	0.33	0	0.47	0	1

Note: Subjective Wellbeing Index is formed from principal component analysis of five variables described in Tables A1-A5. Household Income Decreased is a binary variable that is one if household' income declined and zero otherwise. Employed, Unemployed, and Out of labor force are binary variables that are equal to one if a respondent was employed, unemployed, or out of labor force, respectively, and zero otherwise. Less than basic, Basic, Secondary, and Higher education are binary variables equal to one if a respondent's education is at the associated level and zero otherwise. Married is a binary variable equal to one if a respondent was married at the time of the survey and zero otherwise. Urban is a binary variable equal to one if a respondent lives in an urban area.

\* More childcare vs. Feb. 2020 and More housework vs. Feb. 2020 are binary variables equal to one if a woman spent more time on these activities in the week prior to the survey relative to Feb. 2020. Since these questions are only asked of women, the number of observations for those is 5,100.

**Table 2. Employment-to-population and Unemployment-to-population ratios before and during the pandemic**

Panel A – Employment-to-Population Ratios (in %)						
	Women			Men		
	Pre-Pand.	Wave 1	Wave 2	Pre-Pand.	Wave 1	Wave 2
Jordan	15		16	62		57
Egypt	20	19 <sup>†</sup>	21	80	59 <sup>†</sup>	66
Morocco	22	15	20	74	69	77
Tunisia	23	27	28	72	74	76

Panel B – Unemployment-to-population ratios (in %)						
	Women			Men		
	Pre-Pand.	Wave 1	Wave 2	Pre-Pand.	Wave 1	Wave 2
Jordan	7		18	10		18
Egypt	6	4 <sup>†</sup>	18	4	6 <sup>†</sup>	11
Morocco	13	16	21	15	19	19
Tunisia	10	19	18	10	10	10

<sup>†</sup> Wave 1 in Egypt was collected in June 2020, but it was collected in November 2020 in Morocco and Tunisia. So the Egyptian employment to population ratios in wave 1 are not comparable to those of Morocco and Tunisia.

Note: Employment and Unemployment to population ratios in the pre-pandemic time were created based on the variable named cor18 (anyone who did the first six activities in Figure 1 is considered employed in Feb. 2020 and anyone who reported activity #7 in Figure 1 is considered unemployed in Feb. 2020.) Employment and Unemployment status in waves 1 and 2 are based on the variable named emp in the data.

**Table 3. Percent of households whose income declined during the pandemic by income group**

Income before the pandemic (Feb. 2020)	Egypt	Jordan	Morocco	Tunisia	All
Below the median	46% (1,984)	52% (1,541)	64% (2,546)	50% (1,363)	55% (7,434)
Above the median	36% (1,584)	43% (886)	35% (387)	44% (1,764)	41% (4,621)
Don't know/Refused	31% (355)	47% (122)	61% (1,076)	49% (244)	55% (1,797)

Note: Numbers of observations are in parentheses.

**Table 4. Percent of women who spent more hours doing the following activities during the pandemic compared to Feb. 2020 (in %)**

Activities	Egypt	Jordan	Morocco		Tunisia	
	Feb. '21	Feb. '21	Nov. '20	Feb. '21	Nov. '20	Feb. '21
Caring for children*	39	42	44	28	41	37
Housework	30	33	35	27	44	40

\* Only women who lived in a household with children responded to this question. So we report the percent of women in households with children who spent more time caring for children. Housework, however, is for all women. These questions were not asked in the June 2020 Egyptian survey (Egypt's first wave.)

**Table 5. Regressions of the Normalized SWB Index**

	All (1)	Men (2)	Women (3)	Women (w. hw.) (4)	Women Only		Urban Women only		
					Urban (5)	Rural (6)	Employed (7)	Unemp. (8)	Out of LF (9)
Household income decreased	-0.210** (p<0.001)	-0.257** (p<0.001)	-0.142** (p<0.001)	-0.136** (0.001)	-0.161** (p<0.001)	-0.094 (0.240)	-0.234** (0.023)	-0.101 (0.205)	-0.207** (p<0.001)
Unemployed	-0.252** (p<0.001)	-0.313** (p<0.001)	-0.102 (0.169)	-0.093 (0.210)	-0.113 (0.261)	-0.0374 (0.705)			
Out of labor force	-0.0517 (0.261)	-0.0796 (0.283)	0.104 (0.190)	0.107 (0.178)	0.112 (0.216)	0.109 (0.393)			
More childcare vs. Feb. 2020				-0.001 (0.981)	-0.032 (0.626)	0.138 (0.117)	0.136 (0.213)	-0.030 (0.770)	-0.123 (0.249)
More housework vs. Feb. 2020				-0.106** (0.038)	-0.126** (0.031)	-0.049 (0.559)	-0.053 (0.607)	0.074 (0.338)	-0.278** (0.001)
Basic education	0.089* (0.070)	0.170** (0.017)	-0.025 (0.700)	-0.023 (0.720)	-0.075 (0.347)	0.209 (0.102)	-0.302 (0.145)	-0.221** (0.0282)	0.0497 (0.670)
Secondary education	0.137** (p<0.001)	0.207** (p<0.001)	0.030 (0.572)	0.038 (0.478)	-0.017 (0.803)	0.172 (0.141)	-0.225 (0.336)	0.0920 (0.454)	-0.00692 (0.952)
Higher education	0.158** (p<0.001)	0.203** (p<0.001)	0.094 (0.143)	0.104 (0.105)	0.083 (0.299)	0.238* (0.075)	-0.0176 (0.944)	0.0789 (0.512)	0.0997 (0.384)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Zone—Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	12,614	7,514	5,100	5,100	3,701	1,399	955	993	1,753

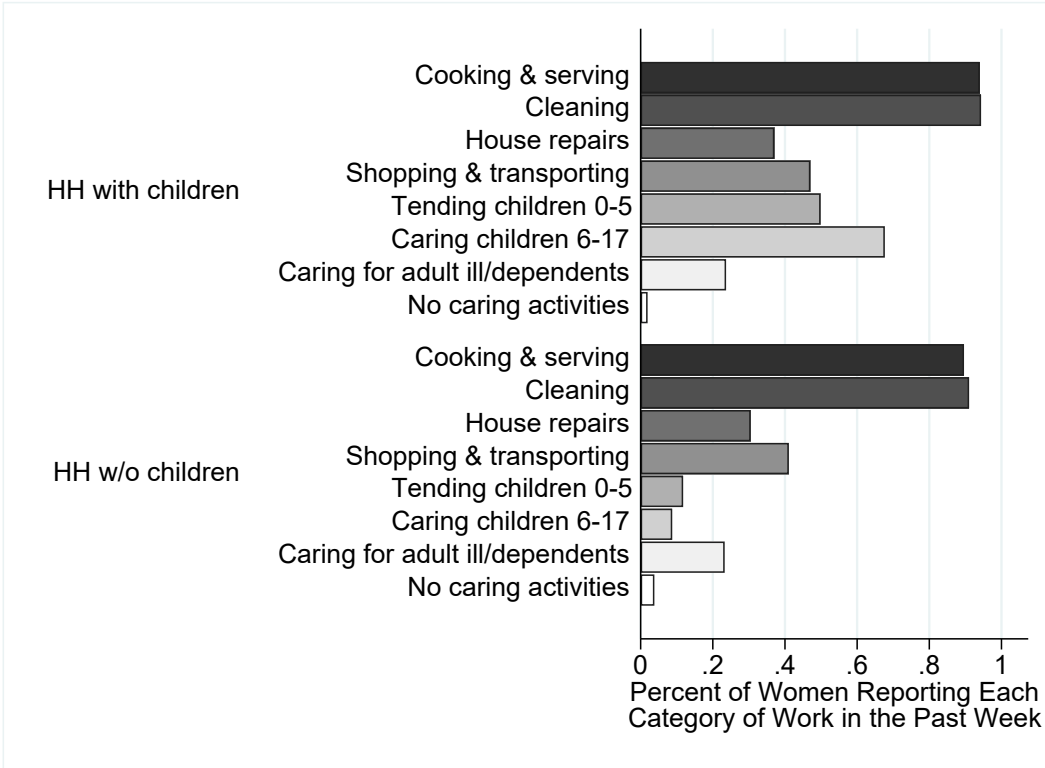
Note: All variables reported in this table are binary variables equal to one if what the variable name represents is true and zero otherwise. “Less than basic education” is the omitted group for education. Other controls include age (three binary variables representing age between 30 and 39, 40 and 49, and 50 and 64; 18-29 is the omitted group), married (a binary variable), urban (a binary variable), and household size. Almost all of these controls are statistically insignificant at 10% level. P-values, clustered at the administrative zone level, are in the parentheses. There are 75 administrative zones in the sample.

\*\* p < 0.05, \* p < 0.10



## Online Appendix Figures & Tables

**Figure A1. Proportion of women reporting each category of work in the past week (during the pandemic)**



Note: Authors' calculations based on variables wor7\_1 through wor7\_8.

**Table A1. Percent reported various frequencies for how often they felt cheerful and in good spirits during the pandemic, by country and sex (in %)**

Activities	Egypt		Jordan		Morocco		Tunisia	
	Women	Men	Women	Men	Women	Men	Women	Men
All of the time	6	11	6	10	14	19	9	12
Most of the time	15	10	18	13	14	15	11	8
More than half the time	4	6	8	7	9	8	7	9
Less than half the time	16	15	10	11	11	13	12	14
Some of the time	36	33	31	26	30	27	35	26
At no time	22	24	28	33	22	18	26	31

\* Only women who lived in a household with children responded to this question. So we report the percent of women in households with children who spent more time caring for children. Housework, however, is for all women. These questions were not asked in the June 2020 Egyptian survey (Egypt's first wave.)

**Table A2. Percent reported various frequencies for how often they felt calm and relaxed during the pandemic, by country and sex (in %)**

Activities	Egypt		Jordan		Morocco		Tunisia	
	Women	Men	Women	Men	Women	Men	Women	Men
All of the time	5	10	6	8	15	19	8	11
Most of the time	11	11	16	15	14	16	9	7
More than half the time	5	9	8	8	9	9	6	9
Less than half the time	18	17	13	14	9	11	12	13
Some of the time	40	33	29	23	30	27	32	25
At no time	21	20	29	32	22	18	32	34

\* Only women who lived in a household with children responded to this question. So we report the percent of women in households with children who spent more time caring for children. Housework, however, is for all women. These questions were not asked in the June 2020 Egyptian survey (Egypt's first wave.)

**Table A3. Percent reported various frequencies for how often they felt active and vigorous during the pandemic, by country and sex (in %)**

Activities	Egypt		Jordan		Morocco		Tunisia	
	Women	Men	Women	Men	Women	Men	Women	Men
All of the time	10	18	9	11	15	19	10	15
Most of the time	9	11	20	18	14	16	12	9
More than half the time	9	13	10	10	9	9	8	11
Less than half the time	20	17	13	14	9	11	15	14
Some of the time	34	28	26	21	32	27	30	24
At no time	16	14	22	25	21	18	25	27

\* Only women who lived in a household with children responded to this question. So we report the percent of women in households with children who spent more time caring for children. Housework, however, is for all women. These questions were not asked in the June 2020 Egyptian survey (Egypt's first wave.)

**Table A4. Percent reported various frequencies for how often they woke up feeling fresh and rested during the pandemic, by country and sex (in %)**

Activities	Egypt		Jordan		Morocco		Tunisia	
	Women	Men	Women	Men	Women	Men	Women	Men
All of the time	7	12	6	8	16	19	13	15
Most of the time	9	9	20	19	15	17	11	8
More than half the time	5	11	8	9	8	8	6	9
Less than half the time	22	20	16	13	9	11	13	17
Some of the time	38	30	26	21	31	28	32	23
At no time	18	18	25	30	22	18	26	28

\* Only women who lived in a household with children responded to this question. So we report the percent of women in households with children who spent more time caring for children. Housework, however, is for all women. These questions were not asked in the June 2020 Egyptian survey (Egypt's first wave.)

**Table A5. Percent reported various frequencies for how often their daily lives filled with things that interest them during the pandemic, by country and sex (in %)**

Activities	Egypt		Jordan		Morocco		Tunisia	
	Women	Men	Women	Men	Women	Men	Women	Men
All of the time	24	25	16	15	12	16	35	23
Most of the time	14	14	19	17	16	15	12	11
More than half the time	11	11	9	9	4	6	12	11
Less than half the time	17	16	12	11	7	8	8	16
Some of the time	26	26	18	21	22	19	21	22
At no time	8	7	25	27	39	36	12	17

\* Only women who lived in a household with children responded to this question. So we report the percent of women in households with children who spent more time caring for children. Housework, however, is for all women. These questions were not asked in the June 2020 Egyptian survey (Egypt's first wave.)

**Table A6. Summary Statistics for Women and Men in the Sample**

Variables	Women (N = 5,100)		Men (N = 7,514)	
	Mean	St. Dev.	Mean	St. Dev.
Subjective wellbeing index	-0.11	1.61	0.08	1.77
Normalized subjective wellbeing index	-0.06	0.94	0.04	1.04
Household income decreased	0.52	0.50	0.54	0.50
Labor Force Status				
Employed	0.24	0.43	0.69	0.46
Unemployed	0.28	0.45	0.19	0.39
Out of labor force	0.48	0.50	0.12	0.32
Education				
Less than basic	0.29	0.45	0.25	0.43
Basic	0.16	0.37	0.19	0.40
Secondary	0.29	0.45	0.34	0.47
Higher education	0.26	0.44	0.22	0.41
Age	37.23	12.30	36.83	12.07
Married	0.68	0.47	0.63	0.48
Urban	0.73	0.45	0.66	0.47
Household size	4.73	2.03	4.97	2.54
More childcare vs. Feb. 2020*	0.27	0.44		
More housework vs. Feb. 2020*	0.33	0.47		

Note: Subjective Wellbeing Index is formed from principal component analysis of five variables described in Tables A1-A5. Household Income Decreased is a binary variable that is one if household' income declined and zero otherwise. Employed, Unemployed, and Out of labor force are binary variables that are equal to one if a respondent was employed, unemployed, or out of labor force, respectively, and zero otherwise. Less than basic, Basic, Secondary, and Higher education are binary variables equal to one if a respondent's education is at the associated level and zero otherwise. Married is a binary variable equal to one if a respondent was married at the time of the survey and zero otherwise. Urban is a binary variable equal to one if a respondent lives in an urban area.

\* More childcare vs. Feb. 2020 and More housework vs. Feb. 2020 are binary variables equal to one if a woman spent more time on these activities in the week prior to the survey relative to Feb. 2020. Since these questions are only asked of women, the number of observations for those is 5,100.