

COVID-19...Who Will Wash the Dishes and Change the Diapers? Evidence from A Post COVID-19 Time Use Survey on Egypt

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Abstract

This paper contributes to the discussion on the restructure of workers' time use -female workers in particular- as a result of COVID-19 and the subsequent impact this restructure might have on labor supplies. The subject matter of the study is hence to study the effect of COVID-19 on market and within-household labor supplies- namely for women who used to work before the outbreak of COVID-19 in Egypt which took place mid-March of the year 2020. To document and discuss the shifts in time use towards more home-based activities and implications such shifts might have on women's market employment-related decisions, we construct time-use profiles using the newly collected time-use survey from CETUS20. The main findings of the paper show that workers in general – females with children in particular- have restructured their time use as a response to the COVID-19 health crisis. Longer hours on domestic work (housework and child-care), particularly with the closure of daycare services and educational institutions, have been the highlight for the surveyed females with children. The never-married working population allocated more time for paid work (both remote and on-site) compared to their ever-married peers. Regardless the marital status, women generally work less hours in the labor market than men; this gender gap in time spent on paid work is larger within the ever-married population, of around 100 and 70 minutes for the ever-married and never-married groups respectively. The paper's analyses show as well that both the presence and the age of children significantly increases the women's time allocated to child-care.

Keywords: Time-use, Covid-19, CETUS20

JEL classification: D13, J22, C33

ملخص

تساهم هذه الورقة في المناقشة حول إعادة هيكلة استخدام الوقت للعمال - العاملات على وجه الخصوص - كنتيجة لـ COVID-19 والتأثير اللاحق لإعادة الهيكلة هذه على إمدادات العمالة. موضوع الدراسة هو دراسة تأثير COVID-19 على إمدادات العمالة في السوق وداخل الأسرة - وبالتحديد للنساء اللاتي اعتدن العمل قبل تفشي COVID-19 في مصر الذي حدث في منتصف مارس من العام 2020. لتوثيق ومناقشة التحولات في استخدام الوقت نحو المزيد من الأنشطة المنزلية والآثار التي قد تحدثها هذه التحولات على القرارات المتعلقة بتوظيف المرأة في السوق ، نقوم بإنشاء ملفات تعريف استخدام الوقت باستخدام مسح استخدام الوقت الذي تم جمعه حديثاً من CETUS20. تظهر النتائج الرئيسية للورقة أن العمال بشكل عام - الإناث مع الأطفال على وجه الخصوص - أعادوا هيكلة استخدام وقتهم كاستجابة للأزمة الصحية COVID-19. كانت ساعات العمل الطويلة في المنزل (الأعمال المنزلية ورعاية الأطفال) ، لا سيما مع إغلاق خدمات الرعاية النهارية والمؤسسات التعليمية ، هي أبرز ما في الدراسة من الإناث اللاتي لديهن أطفال. خصص السكان العاملون الذين لم يتزوجوا وقتاً أطول للعمل بأجر (سواء عن بعد أو في الموقع) مقارنة بأقرانهم المتزوجين. بغض النظر عن الحالة الزوجية ، تعمل النساء بشكل عام ساعات أقل في سوق العمل من الرجال ؛ هذه الفجوة بين الجنسين في الوقت الذي يتم قضاءه في العمل بأجر أكبر بين السكان المتزوجين على الإطلاق ، حيث تبلغ حوالي 100 و 70 دقيقة للمجموعات المتزوجة وغير المتزوجة على التوالي. تظهر تحليلات الورقة أيضاً أن كلاً من وجود الأطفال وعمرهم يزيدان بشكل كبير من وقت المرأة المخصص لرعاية الأطفال.

I. Introduction

With the closure of care facilities (including childcare, elderly care and persons with limited abilities) and schools and the more fluid boundaries between leisure time and work time (Kowalski & Jung 2020), it is important to examine how this has affected the number of hours spent on market work, housework and within-household care activities and how do workers – female ones in particular- restructured their time use as a response to the COVID-19 health crisis.

This paper contributes to the discussion on the consequences of COVID-19. In addition to the health implications of this pandemic: the dramatic human losses and shrinkage of economic activity, there are also the indirect effects: changes in the demand for office space (Financial Times, 2021) and an aggravation of inequalities between men and women and, between skilled and unskilled workers (Adam-Prassel et al., 2020) among others.

Post COVID-19 work arrangements' trends (possibility of working from home, more remote work and flexible arrangements) are relatively new to Middle East and North African contexts. "Some of the less obvious effects of the Covid-19 pandemic on time use is the growing hybridization of time when both work and leisure take place at home, the relative undervaluation of leisure time (in its present restrained, home-based form of activities) and change in the perception of home as the quiet place which shields from work-related stresses" (Jung & Kowalski 2021).

In this paper, we assess the restructure of workers' time use -female workers in particular- as a result of COVID-19 and the subsequent impact this restructure might have on labor supplies. The subject matter of the study is hence to study the effect of COVID-19 on market and within-household labor supplies- namely for women who used to work before the outbreak of COVID-19 in Egypt which took place mid-March of the year 2020.

The main hypothesis of this study is that the increase in the hours spent on care and household activities as a result of the COVID-19 crisis and related restrictions, has not been equally shared among Egyptian couples, leading to a significant increase in the double burden faced by Egyptian working women and consequently to a decrease in female's labor supply.

To document and discuss the shifts in time use towards more home-based activities and implications such shifts might have on women's market employment-related decisions, we construct time-use profiles using the newly collected time-use survey from CETUS20.

The provided results intend to highlight how differences in care, household chores and leisure can lead to larger post-shock gender differences in the Egyptian labor market. Specifically, we aim to quantify the response of within-household and market labor supplies to the COVID-19 crisis.

The outline of this paper is as follows: Section 2 reviews the existing literature the topic. Section 3 presents the measures undertaken by the Egyptian government to increase women's labor force participation, namely post the COVID-19 crisis. In section 4, we present some theoretical considerations related to the study of intrahousehold resource allocation and participation in the labor market. In section 5, we describe the data and methodology used. Section 6 provides a discussion of the results. And, section 7 concludes.

II. Literature Review

Women exert as much as triple the hours in domestic work than men spend which puts more pressure and stresses them out. With no autonomy in their choice of what and where to spend their time, women are under the risk of higher mental health issues and decreasing wellbeing over time. This brings into the table the urgent need to address how genders allocate and divide their time and what factors influence their decisions (Seymour et al., 2020).

In Egypt, despite the significant increase in women's educational attainment, employment gains have been slowing down over the past years, although we can witness a general convergence (Constant et al., 2020). One of the most important obstacles challenging Egyptian working women is the amount of time they spend on household and care work (Hendy 2015). Women are still considered as the main responsible for household duties, including childcare (Assaad et al., 2020). This creates a massive burden on women trying to establish a work-life balance. While women seeking work-life balance in developed countries shifted to part-time jobs, women in Egypt and the Middle East continued to look up for public sector jobs being the most family friendly type of jobs. The rate of female participation in the government sector in Egypt is around 45% (Asaad & Barsoum, 2019). Although this may have presented a relief for women seeking work while still providing unpaid work for the family, employment in the public sector has generally stagnated, and the rate of government employment has fell compared to the private sector (Hendy et al., 2018). Regardless of their employment status, women spend the same amount of time on unpaid work (housework and care activities). Married women spend seven times as much time on unpaid care work as married men; while unmarried women spend 6.5 times as much as unmarried men (Selwaness & Helmy, 2020). All these conditions have generally discouraged Egyptian women to continue looking for work, even if they are able and willing to work. The literature refers to these women as the population of discouraged workers. The latter are counted in the 'out of the labor force' population. Assaad (2020) shows that- if these discouraged workers were counted- the female labor force would be 8.3% bigger.

The literature distinguishes between care needs and care services, which limits women's ability to enter the labor market. These conditions can explain the low presence of women in managerial or executive roles. In Egypt, 53% of the companies do not have any women on their board of directors and 25% of them have only one woman, even though presence of women on the board has shown to improve financial performance (IFC, 2019).

While the conditions for female employment in Egypt were already severe and barely improving, the COVID-19 pandemic has exacerbated this situation. A report by UN Women (2020) highlighted the potential issues that will challenge women in the post-pandemic era, including lower access to healthcare, a disproportionately higher participation in care work, which makes them more vulnerable and more exposed to risks related to the pandemic.

One important milestone in measuring and understanding time use was the work of Sen on the idea of capability. The critique was that when deciding criteria for judging the quality of a system is by using material means such as income for examples. This constitutes a fallacy as it overlooks the extent to which individuals are actually capable of deciding what to do and what to be. The context which includes one's social status, gender roles and the degree of liberty to live a life that is desired and well is what governs people's actions and the limit of their deeds and intentions. That is why material aspects of phenomena should not be the only valid judgment of merit or not (Robeyns, 2002).

As a consequence, feminist scholars have long advocated for looking beyond the realm of numbers and income. Even as women are let more into the public sphere, many questions remain unasked. Power dynamics remain in control of how women allocate their time and limit what they are capable of, this overburdens them with work in both the public and the private spheres alike (Vizard et al., 2011).

An intriguing argument is that women naturally enjoy domestic activities, especially childcare, even more than men do. Using data from the American Time Use Survey and data on wellbeing, Connelly & Kimmel (2015) studied the difference in happiness levels between fathers and mothers when they are engaged in different activities with their children.

They find that both fathers and mothers report levels of happiness and enjoyment when spending their time in childcare. This refutes the common saying that mothers are better at this because they love it more than fathers. Rather, they argue that when measuring the levels of stress and wellbeing, mothers report higher levels of fatigue and tiredness than fathers when engaged in childcare activities (Connelly & Kimmel, 2015).

Many reasons could be attributed to these feelings, one of which is the unequal labor market environment that women are facing every day. One other reason is the social construct that typically expects females to prefer family life over work and become better caregivers than their male partners (Connelly & Kimmel, 2015).

In their study, (Gálvez-Muñoz et al., 2011) used data from the Harmonized European Time-Use Survey (HETUS) data to analyze how unpaid care work is a prevailing inequality among citizens

in the EU. This survey was conducted in 15 European countries from 1998 to 2004. The samples' age ranged from 20 to 74 and they answered questions related to them as individuals and to their families.

It also looks into the value that work outside the marketplace adds to countries. The idea that when one decides on what to allocate their time on, they do that according to their preferences, obligations and the context in which they exist. As a result, women are expected to do most, if not all, of the care work along with their paid jobs if they have one (Gálvez-Muñoz et al., 2011). They define "unpaid care work" as "all the unpaid services provided within a household for its members, including both care for children, the elderly, or the disabled and care for able-bodied adults, including housework." (Gálvez-Muñoz et al., 2011).

Findings acknowledge that more women are joining the marketplace; however, this doesn't come hand in hand with fewer responsibilities when it comes to non market place activities, such as care work. Therefore, women are spending, on average, more than men when it comes to work, either in the public or the private spheres. In the same manner, men are spending more time in the realm of paid work, which makes them contribute less to care work. This suggests that women have less free time as they take care of their families. It is found that women as much as twice as men in care work, things even get worse when we view Mediterranean countries such as Italy. Women in Italy spend as much as three and half times more than men on unpaid care work(Gálvez-Muñoz et al., 2011) .

Further investigation suggests that these patterns of behavior are seen in younger age, as girls have more share of care work than boys when they are young. Later, the same pattern is reproduced when they are older. To sum, women's workload is indeed higher than that of men, taking into account both the public and the private spheres (Gálvez-Muñoz et al., 2011) .

A way to stop this cycle is by looking at the bargaining power that women gain when they become active in the marketplace. Studies show that, generally, the time given to care work decreases as the person engages in a paid job. Of course, the percentages differ between men and women, but it is a good starting point. As the authors state "Men spend an average of three-quarters of their time on paid work, whereas paid work accounts for only 55 percent of women's total working time, with an average of 2 hours more than men invested in unpaid care work across all EU countries." (Gálvez-Muñoz et al., 2011).

Researchers advocate that unpaid care work should be incorporated in national economies as it constitutes a valuable source in it. It is important to highlight that some Scandinavian countries were an exception to women being overexploited in paid and unpaid work. This might be due to the social policies and facilities that these governments are offering both men and women to guarantee their wellbeing and health (Gálvez-Muñoz et al., 2011).

Berik and Kongar (2013) study the effects of the financial crisis in 2007-9 on time use for married men and women when it comes to paid and unpaid work, in addition to activities not related to work such as leisure time and so on. They used the “individual-level data from the 2003– 10 American Time Use Survey (ATUS).”

Following the work of Diane Elson and Joseph Lim, it has been proved that emergencies in developing countries rather amplify the workload on mothers and females generally. Women become victims who lose their jobs, consequently a great portion of their bargaining power and economic independence. With this diminishing presence in the public realm, women also take their traditional roles of caregivers with their other domestic work. This happens especially when even adults need more care during setbacks (Berik & Kongar, 2013).

In the USA, there was a trend of more female engagement in the workplace before the financial crisis. As women’s hours spent in paid work increased, their time to unpaid one decreased over time. Previous literature also gives insight that fathers and mothers had almost equal numbers of working hours in paid work. As the stagnation went on, fathers who decreased their paid working hours were more engaged in unpaid work domestically. It is also thought that even as fathers take more time in household work, and mothers are more present in paid work, the proportional time allocation between both of them is not equal (Berik & Kongar, 2013).

Despite the fact that more mothers spent time in paid work, figures reflect that their time spent in the household was more than that spent by fathers in activities like shopping, childcare and household chores. However, during the recession, fathers’ time spent with their children increased by 0.7 hours per week. Also, with time, these same hours were allocated to more engagement in housework. As promising as it seems, it is estimated that fathers’ unpaid work did not increase proportionally on all aspects. On the contrary, they simply shifted their focus from one task to the other but not all tasks together (Berik & Kongar, 2013).

While mothers’ overall unpaid work time decreased, they were charged with more responsibilities of taking care of adults during the Great Recession. Even when fathers allocated their lost time of paid work into the unpaid one, they only dedicated one-fifth of it for that and the rest for other personal activities. On the other hand, we find that mothers’ unpaid work load did not decrease. Mothers replace their unpaid work with one that is paid or changes the kind of unpaid activity with another one without an actual decrease in the workload (Berik & Kongar, 2013).

In their study, Gracia-Mainar et al (2011) aimed at investigating the time allocated to childcare in five European countries and what factors play part in the parents' decision to allocate time to their kids. Using data from the European Community Household Panel (ECHP) for five consecutive waves, they have found that mothers spend significantly more time than fathers in childcare. For

example, fathers spend on average 8 hours per week in Italy while mothers spend around 30 hours. The only exception was Denmark, where fathers spent around 20 hours per week.

Childcare time is considered under the category of unpaid housework, as women allocate their time between their paid work, the unpaid one and leisure time. This comes handy when we look into the relationship between the number of hours of paid work and the number of hours allocated to childcare. The literature finds evidence that the more one works in paid work, the less they are allocating to childcare. As a consequence, the more hours their partner has to devote. However, this is true when it comes to men, but not women. Accordingly, it is found that more paid work for women indeed decreased their time allocated to housework and leisure, but not to the one assigned to childcare. Data from the American Time Use survey supports such claims. Ultimately, increased wages for women do not shift the burden of childcare more on men, unlike it does when fathers are getting paid higher than before (García-Mainar et al., 2011).

Of the factors suggested to be affecting the time devoted to childcare, they found that the children's age and number are the ones most relevant. As the children are young and the parents are as well, more time is allocated from the parent in childcare. They also found that as the mothers are more educated, hence more paid, the time given to child care increases for the two partners. On the other hand, in France, for instance, the higher the education of the fathers is, the less time spent by both parents on childcare (García-Mainar et al., 2011).

Of equal importance is looking at how much power mothers have to bargain on the time allocated to childcare. In this matter, research suggests that the higher their power the less time they spend on childcare. In Germany, this is met with increased time for fathers. They have also discovered that a new child increases childcare for both parents but at higher rates for mothers than fathers (García-Mainar et al., 2011).

The study found that Denmark is often an exception to the other countries, where women have not just been given a space in paid work, but also found policies for maternity leave and child services offered to fathers and mothers. This entails that opening the door for women at work with flexible schedules is not the only matter that would empower them. Rather there should be a set of regulations and policies that ensure women are also being taken care of when it comes to child bearing and raising (García-Mainar et al., 2011).

An important factor to be seen when looking into time use between men and women in the idea of time poverty, this means that someone is rather forced to overwork or they risk more poverty. In developing countries, where women work in the house, in the fields, and might have a paid job somewhere in the market, women are at risk of being more stressed and less productive due to working too much. This should be differentiated from someone willingly choosing to work more than they need to acquire a certain amount of wealth. However, time poverty stands for choosing

between two evils. If one doesn't overload themselves with work, this means that they are at risk of becoming even poorer than they are with all this work (Bardasi & Wodon, 2010).

Several voices in the feminist literature have advocated including the sector of subsistence to measure time allocation and time poverty for women. These include "fetching water and wood, food production, and other subsistence activities." This problem is deepened when women enter the market place, as they now have more than one sector of work to fulfill and even to be productive at. This could potentially cause exertion and fatigue. It could also affect their physical health and hurt those around them (Bardasi & Wodon, 2010) .

Generally, women work more than men, in both rural and urban areas. We even find that more men than women are not working with 9.9 percent of men not working against 6.4 percent of women who don't. The burden is higher on women in rural areas than those in urban ones, for instance the average working hours is 48.6 while it is 36.2 in urban ones. Within these figures, women work significantly more than men. These figures are true for Sub-Saharan where females are burdened with activities to sustain their family, their sources of income in their fields or with their cattle and they, sometimes, even work in paid jobs. All this remains not enough to save them from poverty as the quality of the jobs and the wages earned do not substitute or provide better living standards (Bardasi & Wodon, 2010).

An important aspect of a human's health and wellbeing is what activities they spend their time on. More important than that is even their freedom to choose what to do with their time. Societies where people are poorer than they are rich or lack high skills and educational attainment usually perceive spending time not working is a luxury that they cannot afford (Qi & Dong, 2018). This effort is often doubled or even tripled when the worker is a female. Women more than men carry the burden of both paid and unpaid work in their homes. Hustling between caregiving, housework and other domestic work along with their paid work pressures women leaving them feeling more stressed than relieved. It also narrows the time allocated to their personal care and leisure time, which negatively affects their wellbeing and overall health (Qi & Dong, 2018) .

Using data from the 2008 China Time Use Survey (CTUS) and the 2008 China Household Income Project (CHIP), Qi and Dong (2018) investigate time poverty rates between Chinese men and women in urban areas.

In China, work-life is already hard as they work extensively and are keener on taking extra hours of work. It is found that women work more than men in paid and unpaid work combined 8.7 more hours weekly. Even within the two genders, poorer men and women work more hours per week than those who aren't, as men work around 79 hours and women work around 78 hours. Although women's number of hours is less than that of men, they work longer unpaid work as mentioned before (Qi & Dong, 2018).

As for the demographics, married women suffer from time poverty more than those who are unmarried. Things get more intense when there are children to be taken care of as well. Two age groups go through this exertion and workload more than others; those of 25-54 and 35-54 who are in the age of being mothers or grandmothers. However, the better a woman's education is the higher her chances not to be in the zone of time poverty (Qi & Dong, 2018).

On the other hand, it is of common knowledge that economic and health crises cause disruptions when it comes to gender roles. It affects the realm of paid work, which determines the allocated time for the unpaid care work, and eventually either re-creates new gendered time uses or enforces existing ones. With this in mind, the extent of effect depends on the gender roles in that economic system and the amount of paid and unpaid work that men and women have (İlkkaracan & Memiş, 2021).

Looking back at one of the most devastating financial emergencies in the 2007-9 financial crisis, for instance, in the USA, hours spent on paid work for fathers declined and those spent on unpaid care work increased. The same thing happened with mothers, as their time devoted to unpaid care work decreased with increasing hours spent on paid work to substitute for the loss in the family income (İlkkaracan & Memiş, 2021) .

In Turkey and the Philippines, as more men became unemployed, the gap between men and women was declining. On the contrary, women were increasingly given the burden of unpaid care work, even when they were working in paid jobs. Although these are different results from that of the USA, it is important to mention that the increase in men's unpaid work and decline in their paid working hours was not proportionate to women's less unpaid work and more paid work (İlkkaracan & Memiş, 2021) .

The literature on health related shocks already highlights the severity of the situation where women are set with the role of performing more care-related activities in these times. What makes COVID-19 different from previous health crises is in fact that it forced both men and women to stay home regardless of their social class or income level. Informal labor were hit more than others and suffered tremendously during the lockdown, along with the service sector. Both of them are saturated with women (İlkkaracan & Memiş, 2021) .

In addition to that, as fathers are forced to spend more time at home, they are exposed to performing more unpaid care work than ever. Women were still performing the majority of the workload which amounts to around a one-third increase during the crisis (İlkkaracan & Memiş, 2021).

They focus on the Turkish context during the lockdown as the country already suffers from high rates of gender inequality. In 2019, they had the lowest percentage of women employment of 32.2

percent compared to the average of 61.3 in the OECD. As for the share of unpaid work, Turkish women exert four and a half times more than men. The aim of their research was to discover whether this situation of staying at home has indeed increased men's participation in unpaid work or not (İlkkaracan & Memiş, 2021).

The results indicate that more women than men have the duty of housework and child care. While 41% of men reported an increase in their unpaid work, 67% of women did. These percentages increase depending on whether they have small children or not. When asked about their partner's unpaid work, more than 50% of men stated that their partner's share has grown, compared to less than 40% of women reporting that their partner's allocated time shifted more towards unpaid housework (İlkkaracan & Memiş, 2021).

The main reasons stated for this increase in the household load was because the schools and childcare facilities were closed (for parents with children) or due to the shutdown of service providers such as restaurants and so on. Another reason was mentioned was that related to ensuring that the house was under the required hygiene and safety measures. This task was mainly ensured by women more than men (İlkkaracan & Memiş, 2021).

In fact, during the pandemic, men's average hours of unpaid work has increased more than four times because of the pandemic reaching 1.13 hours per day. While women's average hours have almost doubled, becoming 4.49 hours per day. In spite of this, "the gender gap in unpaid work time increased from 2.58 hours/day pre-pandemic to 3.36 hours/day during the pandemic." (İlkkaracan & Memiş, 2021)

A general trend is the increase in women's share of working hours for paid work compared to men. Women's average working hours reached 6.50 h/d while for men; it decreased from 5.06 before the pandemic to 3.31. "This represents a 78 percent reduction in the paid work gap among employed women and men, substantially more than the decrease in the overall gender gap in paid work (33 percent from -3.46 hours/day to -2.32 hours/day), which was also triggered by job losses. Employed women's unpaid work hours increased by 1.17 hours/day from 1.52 to 2.69, versus a 0.75 hours/day increase among employed men." (İlkkaracan & Memiş, 2021)

It is also noticed that among women who worked at the workplace, there is an increase in the hours spent on paid and unpaid work of 10.09 hours per day, as for those who worked from home reached 8.65 hours per day. With the highest two places, men who continued to work at their workplace spent 7.64 hours per day while those who switched to working from home spent an average of 6.25 hours per day (İlkkaracan & Memiş, 2021).

This gives insight into the fact that even when men were more present in household work; it was due to the measures taken by the government not due to a mind shift or beliefs of equality.

Therefore, it is important to understand how this can be part of everyday life, not just a temporal thing during a worldwide crisis. Another important thing is that women are spending more time working both paid and unpaid work due to the pandemic. Even with increasing rates of men's involvement, women still have higher shares (İlkkaracan & Memiş, 2021) .

Looking into another context, the Australian labor market is characterized by more part-time jobs for women and more full-time ones for men. Women in part-time employment constituted more than 60% in Australia. In addition to that, the majority of these jobs are precarious in nature; it doesn't provide for the social benefits or adequate leaves or any other form of entitlements provided by the traditional form of employment (Craig & Churchill, 2021).

Often women are found in the following sectors “in the care sector (73 percent), retail (55 percent), and accommodation/food services (54 percent).” Most of them choose this kind of instability and relatively low-paying and low-quality jobs to be able to accommodate their working schedules with their house-related duties. Many women also resort to being self-employed to overcome this stalemate of having to accommodate their professional and their personal lives (Craig & Churchill, 2021) .

Around a third of workers did try online work before the lockdown, their reasons for that different according to their gender. As men tried to optimize their time and keep up with their workload, they were able to separate between their work-related time and their participation in unpaid work. On the contrary, women mostly worked remotely to keep pace of their role at home, with less paid work when they decided to work from home, unlike their male counterparts (Craig & Churchill, 2021).

As men engage more in unpaid work when they work from home, the research aimed at investigating whether the lockdown policies would yield higher rates of male engagement. That is why researchers surveyed 2772 Australians during the lockdown in 2020. Results reflect that the gender gap in paid work was cut down for more part-time jobs. However, a slightly higher percentage of women had to work outside their homes more than men (27% to 23%) (Craig & Churchill, 2021).

Even as men engage more in household related tasks, women have also witnessed increases in their time allocated to the same tasks, even more than men themselves. As per childcare, while fathers' engagement increased by an average of an hour, women spent an average of an hour and twenty minutes more (Craig & Churchill, 2021).

Before the pandemic, women who reported to have felt “always” frustrated amount to 15% of the sample, while men were around 7%. No change has been noticed in women's frustration levels, while the numbers doubled for men after they were forced to work from home and share household

responsibilities. About 35% of women answered that they “never have too much spare time” but for men, it increased from 26% to 30% (Craig & Churchill, 2021) .

The percentage of men who were “extremely or somewhat dissatisfied” increased almost 50% from 20% to 29% during the lockdown. “Under lockdown, the proportions feeling extremely or somewhat satisfied fell to 49 and 40 percent of men and women, respectively, still a difference of about 10 percentage points.” (Craig & Churchill, 2021)

Indeed the COVID-19 has put pressure on both men and women, but there remains some differences that could be depicted. The most important variation between men and women is that men often have the privilege of choosing what tasks exactly to contribute to. Hence, they were more active in terms of childcare than household related chores. Men also report higher rates of stress and feeling of dissatisfaction compared to before the pandemic. On the other hand, women’s share of unpaid responsibility increased with the lockdown and their workload incorporated more taking care of their family members, especially during sickness (Craig & Churchill, 2021).

Covid-19 has definitely introduced new work arrangements and highlighted the issues of unpaid domestic work that women have been shouldering for centuries. The importance of the care economy should be put on the governmental agendas and use our experiences during the pandemic to further develop policies that tackle time use and unpaid domestic work (Craig & Churchill, 2021)

Focusing on Delhi National Capital Region (Delhi NCR) in India, Desai et al. () wanted to study the different effects of Covid-19 on working men and women in both urban and rural areas. What distinguishes this study is that it captured the changes in employment status and conditions of households before and during the pandemic (Desai et al., 2021).

Men were more affected when it comes to job loss during the crisis, however, these results do not reflect that women were better off. A deeper look would yield that men are more likely to work in waged work than women with 52% of men to 36% of women. This means that women are usually self-employed; around two-third of employed women. This could be viewed from the angle that women are less able to join the wage labor market and are often confined to working in the fields and at homes (Desai et al., 2021).

During the lockdown in India, mobility was confined especially in areas where the pandemic was widespread. Jobs that require “physical movement” were the ones that declined, but “only essential workers – those working in the police, in communications services, in hospitals, and in the food distribution network – were able to continue working.” These are occupations that are not typically for women in India. As a consequence, “women who worked as domestic help were particularly negatively affected as most resident welfare associations closed their gates to staff not living on

the campus, and maids and cooks were not allowed to enter the buildings for fear of carrying contamination.” (Desai et al., 2021)

Self-employment for women means that they probably work in agriculture. This is problematic because revenues of such occupations are not rewarding such as wage employment. In addition to that, the income from this work is usually shared among all family members, not just women. There were even variations when gender intersected with other characteristics, such as religion and social class (Desai et al., 2021).

Using the China Health and Nutrition Survey from 1991 to 2006, Chang et al. (2011) inspect the impact of different developmental policies on the share of hours allocated to both paid and unpaid work in China. This is related to the idea of feminization of labor as more women are introduced to the labor market as part of the economic developmental trend that started in the 1970s.

Their four economic development factors are “income growth; structural change in output and employment, typically with a relative decline in the agricultural sector; urbanization and rural–urban migration often related to increased employment in manufacturing, which is typically disproportionately located in urban areas; and infrastructure improvement.” While work domains are that in farms, “off farms” and “domestic work.” (Chang et al., 2011)

According to the study, both men and women in China witnessed increased time spent working due to migration and mobility. Moreover, as more women became active in the paid realm of work, their work in unpaid farm work decreased over time along with their male counterparts. As a result of this general trend, there were no major gender gaps between Chinese men and women (Chang et al., 2011).

Despite the fact that women are more present in the public sphere now which gives them more autonomy and leverage when it comes to economic decisions in the household, this decline in domestic and unpaid farm work was substituted with more work. This puts pressure on both women specifically, such as risks on their mental and physical wellbeing and health. The last important remark is concerned with the quality of jobs and the ability to move to get better jobs. This is relatively easier for Chinese men than it is for women. As a consequence, this puts men in better positions as they are more free to pursue better quality jobs and higher wages (Chang et al., 2011).

III. Post COVID-19 Measures Undertaken by the Egyptian Government Towards Increasing Women’s Labor Force Participation

The COVID-19 pandemic has destructed the social and economic well-being of individuals around the globe. In Egypt, women constitute an important share of the health care workforce and- in parallel- they also continue to be considered by the society as the main responsible for providing

unpaid work and care for the household. Previous research showed that Egyptian women do a fixed quantum of home-based work (housework and care activities) regardless of their working status (working or not-working) (Hendy 2015).

Post the outbreak of COVID-19, women spend longer hours at home taking care of the household and on childcare due to the ‘working from home’ and the closure of schools. Women in Egypt are also challenged by the high risks of domestic violence as well as increased risks of job and income losses. Thus, with all this social and economic burden on Egyptian women, the government has been quick to act, to mitigate these effects.

Starting March 14th of 2020, a presidential decree allocated EGP 100 billion to fund the comprehensive coronavirus response plan and precautionary measures involved. The more the potential socioeconomic impact of the extended national lockdown become visible, the government moves to implement a series of measures to mitigate the effects on the Egyptian population. Nurseries, schools and universities were initially suspended for two weeks, and have been extended to a larger time period (UN Women, 2020). In April 2020, the UN Women Egypt expressed great appreciation for the Egyptian Government’s efforts to ensure that the COVID19-response is as effective as possible for everyone, especially for women and girls. The health sector in Egypt is a female intensive one with around 42.4% of doctors, 91.1% of nursing staff working for the Ministry of Health and Population (MoHP) and, 73.1% of nursing staff in hospitals and therapeutic facilities in the private sector being women (UN Women, 2020).

Women working in the health sector have a higher chance of being exposed to the virus and are also being exposed to enormous stress and mental health issues, all while balancing between their paid and unpaid work roles. In order to mitigate such impact of COVID-19, On March 29th of 2020, the Egyptian President issued a decision to increase the monthly allowance for medical professionals working in isolation, fever, chest hospitals and central laboratories by 75% and establishing a ‘risk fund’ to benefit medical professionals (UN Women, 2020). Furthermore, on April 2nd of 2020, economic protection for health workers was expanded with the provision of additional support through increasing bonuses for medical interns in university hospitals under the Ministry of Higher Education and Scientific Research and Al-Azhar University hospitals, increasing from a monthly amount of EGP 400 in December of 2019 to EGP 2200 (UN Women, 2020).

With these negative effects on the health system and children having online schooling, women all over the country have suffered from the added household-related burden, from home-schooling to caring for children, the elderly and the sick, to performing household chores and ensuring increased cleanliness and sterilization. These increased household and work responsibilities have negatively affected women’s income levels (UN Women, 2020). The Egyptian government imposed important policies to ease such burdens on the Egyptian women. On March 16 of 2020,

Decree No. 719 granted working mothers in the public sector- with children under 12 years old- an exceptional leave, as well as special leave for working mothers caring for children with special needs (UN Women, 2020). On March 22nd of the same year, in celebration of the Egyptian Women's Day, the Egyptian President conveyed several messages to confront the risks of COVID-19 and issued a set of economic and social protection resolutions to support and protect all social groups. In his speech, he recognized the role and the status of Egyptian women and the importance of continuing their supportive roles during this crisis (UN Women, 2020).

The COVID-19 pandemic is not only a health crisis but also an economic and employment one. The female labor force participation rate stands at 23.8% in Egypt, where 33.9% of Egyptian women are more likely to work in the informal sector, where they have poor working conditions and limited health and social insurance (UN Women, 2020). This consequently makes women's jobs vulnerable to lay-offs during an economic downturn such as the COVID-19. This situation is aggravated single mothers and women-headed households who represent 18.1% of Egyptian households (UN Women, 2020). As a way to mitigate the negative effects of COVID-19 on women- namely working ones- a decree was issued on the 16th of March 2020 that grants pregnant employees and working mothers whose children are under the age of 12 years old, and those caring for children with special needs an exceptional leave throughout the decree (UN Women, 2020). This was followed by another policy on the 22nd of March, where the Ministry of Social Solidarity (MoSS) increased the monthly income for rural women leaders, from EGP 300 to EGP 900 per month – a potent signal of their important role (UN Women, 2020).

To summarize, the COVID-19 crisis forced governments to initiate aggressive social and economic policies to reduce its negative impacts on the society. A stimulus package of USD6.4 billion was injected and several other measures were taken such as rate cuts and tax exemptions. The Egyptian national council for women published a policy paper suggesting the up scaling of social support programs such as Takaful and Karama and supporting women who suffer from domestic violence as a potential implication of the lockdown measures. As a reaction to this, the Egyptian government expanded the Takaful and Karama program to reach a larger number of Egyptian families. Women received a significant support from the government yet most of it was an indirect support. For example, irregular workers, 40% of whom are women, received cash allowances of 500 Egyptian pounds per month for three months. Medical workers- namely those working in the public sector- received allowances of around 75% of their wages.

While most of the government initiatives were relatively general and not directed to a specific group, women were at the center of these governments' initiatives. According to the Egyptian National Council of Women, the support given to women during the pandemic was exemplary.

IV. Some Theoretical Considerations

This section presents some theoretical considerations in the areas of Intrahousehold resource allocations and labor market participation. Earlier research has developed multiple theories as an attempt to explain the patterns of the household members regarding their labor market participation and resource allocation while maximizing their utilities. The first theoretical applications relied on the unitary model by Gary Becker in 1965. In this model, the household is considered as one entity which only interacts with the outside society and world economy. Another theoretical model was proposed by Chiappori in 1988, where the author proposed a collective model that assumes that each household member has his/her own utility function and that the decisions taken by each individual results in Pareto-efficient outcomes.

In the 1960's, some economists started to develop time use models. Gary Becker (1965) in his famous 'A Theory of the Allocation of Time' aimed to provide 'a basic theoretical analysis of choice that includes the cost of time on the same footing as the cost of market goods'. Becker argues that consumers maximize utility defined over commodities which are produced with market goods and time by a consumer who is facing both budget and time constraints. The basic unitary framework is also referred to as the 'inefficient household modeling' due to the income pooling assumption which has largely been opposed in previous studies (Hendy & Sofer, 2010).

Becker also notes that economists before him frequently accounted for foregone earnings from allocating time to human capital investment rather than working but 'economists have not been equally sophisticated about other non-working uses of time' (Becker, 1965, pp. 493–94).

Becker was not the first economist to consider within-household time use. Jacob Mincer (1962), considered a married woman's time tradeoff between housework and paid work. The unique aspect of the Becker's model is the merging between the consumption of goods and the time used in the production of household utility. Previous labor supply models considered consumption and leisure as distinct goods. Becker, however, emphasized on the different methods of time use, as so there are different types of consumption goods; and those different types of time use and consumption goods combine in different ways to yield commodities, e.g., prepared meals, from which we get utility. Becker later draws in his analysis a variety of important implications from the observation that various types of time use and consumption combine into a single household objective function with a single overall budget constraint. While doing so, Becker (as well as Mincer) designed the foundational modelling framework for effectively all modern household-level analysis of consumption and time use, which was referred to as the 'New Home Economics'.

Many economists provided extensions to Becker's theory of time allocation. For instance, DeSerpa (1971) and Evans (1972) attempted to improve time allocation models through adding extra constraints and redefined the commodities. Also, Pollak and Wachter (1975) discussed issues related to time-use models such as the absence of joint production, i.e., Multitasking, and the need

to adding constant returns to scale to the production of each commodity. Furthermore, Gronau (1977) used a very simple theoretical model to give interesting insights and interpretations of real situations which were supported by empirical evidence. However, Gronau's model considers only one commodity, where some of the main critiques pointed out by Pollak and Wachter (1975) were avoided in that setting. More research on time-use modeling was provided by Juster and Stafford (1991), where the authors provided a survey paper of both theoretical and empirical research. The authors reviewed inter-temporal models that include time use, which are considered as a theoretical improvement.

The 'time availability' theory suggests that time spent on unpaid work is inter-related to the time spent on market work; as more time spent in the labor market implies less time spent on unpaid work (Presser, 1994). As this theory is gender neutral, any exogenous change in the working time should have similar outcomes on both men and women. Several empirical studies show that the time individuals spend on unpaid work is negatively associated with the time they spend on paid employment (Bianchi et al., 2000). This theory has been criticized for neglecting the fact that housework and childcare are gender segregated to begin with. As such men usually reinforce their male identities through doing more paid work and less unpaid work, while on the other hand, women perform more unpaid housework and care activities. Thus, this 'gender display' can help understand why women - even when single and without children, still spend more time on unpaid housework than their males' counterparts.

This standard unitary model does not allow for the study intra-household allocation-related issues (Hendy & Sofer, 2010).

Due to the limitations of this unitary model, a growing literature on the collective modeling of the household which is also known as 'the individualistic approach', was introduced by Chiappori (1988, 1992), as well as by Apps and Rees (1988). The main assumption of the collective model is that the behavior of the household members can be interpreted as the outcome of a pareto-efficient equilibrium. Additionally, the testable implications of the collective model are proven to be less restrictive compared to the unitary model a la Becker (Hendy & Sofer, 2010).

Chiappori (1988, 1992) originally suggested a collective labor supply model that stems from the standard assumption that individuals divide their time between market work and leisure. Interestingly, this model provides a better fit of household labor supply data than the unitary model. Moreover, Chiappori's (1997) model includes household production, where the model assumes a setting with a single market good and a single domestically produced good and where both goods are privately consumed. The sole inputs for the domestic good are illustrated as the spouses' time allocated to its production. Thus, the model does not allow for public consumption in a direct manner. As in Becker (1965), the underlying assumption is too restrictive: not all non-market work can be considered as pure leisure time due to the underlying fact that time is also spent on

household production. Also, Apps & Rees (1996) suggested a model with a simple dichotomization of time into leisure and market work which resulted in false welfare recommendations.

Another important aspect to our analysis is considering caring parents. Parents care for their children and these care activities affect their decisions related to both time use and consumption. Blundell, Chiappori and Meghir (2005; henceforth BCM) presented a collective labor supply model that accounts for caring parents, and that has a number of attractive theoretical and conceptual features.

IV. Data and Methods

A. The Egypt 2020 COVID-19 Employment and Time Use Survey (CETUS20)

The Egypt 2020 COVID-19 Employment and Time-Use Survey (CETUS20) is funded by the Swiss National Science Foundation. Data was collected using phone interviews carried out to monitor the effect of the COVID-19 crisis on Egyptian households, particularly provision of labor (number of working hours and the intensity of their work), time allocation and jobs' preferences. The survey also includes an economic impact questionnaire on male and female working populations (who used to be employed prior to COVID-19, with a particular focus and modules on employment, time-use and job search behavior. The data was fielded over the months of August through November of the year 2020.

The sample consist of residents of Egypt, males and females between the age of 18 and 64 years old (i.e. the working age), with a mobile telephone and/or a landline. All respondents have worked for at least an hour during the month of February (i.e. before the outbreak of COVID-19 in Egypt). CETUS20 deliberately oversampled females, who were employed prior to COVID-19; a focus group which is expected to be among the most prone and vulnerable to the COVID-19 shock and its related restrictions.

The sample consists of a total of 1787 completed interviews (1254 females and 533 males). Interviews were developed through a random digit dialing system (mobile phones and landlines) to be nationally representative of those, with mobile phones and landlines, who were employed (at least an hour) during the period February 1st and March 11th, i.e. before the COVID-19 situation in Egypt.

The CETUS20 data includes a module capturing detailed time use profiles post COVID-19 as well as the change in time use compared to before the outbreak of the virus. A list of 14 time use activities are available in the data. Table 1 presents the full as well as the aggregated lists of time use activities from CETUS20.

Table 1. Full versus aggregated list of time use activities

Aggregated list of time use activities	Full list of time use activities
1. Sleeping	1. Sleeping
2. Work	2. Work (either from work place or from home)
3. Child care	3. Child care only (teaching; Physical care; supervision of child; reading, playing and talking with child) 4. Caring for your Child/children while doing something else at the same time
4. Caring for an elderly/sick household member	5. Caring for an elderly/sick household member
5. Housework	6. Cooking 7. Cleaning and Dish washing 8. Laundry and Ironing 9. Construction and Repairs (Making, repairing and maintaining equipment or vehicle) 10. Farming/Fishing 11. Collecting water and collecting firewood 12. Vegetable gardening and animal husbandry
6. Physical Exercise	13. Exercising
7. Leisure	14. Leisure (Reading; Watching TV; listening to radio)

Source: Constructed by the authors based on the CETUS20 data.

The questionnaire also includes detailed questions about employment designed to capture the impact of COVID-19 on the general labor market status of the individual, as well as the detailed job characteristics. This includes the sector of employment, formality of the job (contract and social insurance), regularity of the job, commuting distance, working hours, income.

An important value of the CETUS20 data is that it provides information about non-monetary job attributes such as possibility to work on a part-time basis, work from home, and the flexibility in working hours, etc. These are important labor market variables that we account for when studying changes in time use profiles of both men and women post COVID-19.

Our analysis distinguishes between 1) those who work both before (February 2020) and after the outbreak of COVID-19 (at the time of the interview) and, 2) those who quite employment at some point between mid-March of 2020 and the interview date. The analysis also gives special attention to currently married women and men and distinguishes between those with children below 12 years of age and others without.

We investigate the time use of individuals working in the different sectors: public, private as well as formal and informal sectors.

B. Methodology

We estimate a series of tobit models on a continuous outcome variable indicating the different types of labor supply (market work, housework and care work). We estimate separate models for currently-married men and women with children below the age of 12 and those without. We also estimate separate models those who continued to work after COVID-19 (either in same or different job as before the outbreak of the pandemic) and those who have quit employment (either temporarily or permanently) post COVID-19. The explanatory variables we include in these models are age and age squared; education (four categories); region (including the urban/rural distinction); father’s education (four categories) and dummy variables indicating the presence in the household of children under 12 years of age. We also include controls for the spouses’ level of education (four categories) and employment status post-covid. In addition to this, we include proxies for both the wealth and technological literacy level of the individual/household through dummy variables indicating whether the individual has access to internet, computer and email address as well as access to time use devices within the household such as washing machine, dish washer, microwave and care/motorcycle.

We also include controls for proxies of job flexible arrangements (possibility of working on a part-time basis, working from home, having flexible working hours) to investigate the effect of these on market and within-household labor supplies.

In this version of the paper, we only use the CETUS20 data to study the post COVID-19 time use profile. In the next version, we aim to add to the analysis the use of the 2018 Egypt Labor Market Panel Survey (ELMPS) to capture the pre COVID-19 Egyptians’ use of time. This will help us identify any potential restructure in time use that occurred as a result of COVID-19. Table 2 presents the summary statistics of the explanatory variables we use in the analysis.

Table 2. Summary Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
Age	1,787	36.99	10.95	18	64
Age_sq	1,787	1488.22	863.09	324	4096
Female (d)	1,816	0.69	0.46	0	1

Presence of children below 12 (d)	1,816	0.49	0.50	0	1
Educ.: below primary (d)	1,816	0.10	0.30	0	1
Educ.: primary/ preparatory (d)	1,816	0.15	0.35	0	1
Educ.: secondary (d)	1,816	0.29	0.45	0	1
Educ.: above secondary (d)	1,816	0.46	0.50	0	1
Urban (d)	1,816	0.58	0.49	0	1
Ever-married (d)	1,816	0.76	0.42	0	1
Empl. status: regular wage work (d)	1,788	0.47	0.50	0	1
Empl. status: irregular wage work (d)	1,788	0.19	0.39	0	1
Empl. status: employer/self-empl. (d)	1,788	0.11	0.31	0	1
Empl. status: not employed (d)	1,788	0.23	0.42	0	1
Part-time (d)	1,816	0.35	0.48	0	1
Work from home (d)	1,816	0.18	0.38	0	1
Flexible working hours (d)	1,816	0.33	0.47	0	1
Employed before & after COVID-19 (d)	1,814	1.52	0.85	1	3
Father's educ: below primary (d)	1,816	0.45	0.50	0	1
Father's educ.: primary/ preparatory (d)	1,816	0.16	0.37	0	1
Father's educ.: secondary (d)	1,816	0.16	0.37	0	1
Father's educ.: above secondary (d)	1,816	0.23	0.42	0	1
Father's empl. status: regular wage work (d)	1,783	0.42	0.49	0	1
Father's empl. status: irregular wage work (d)	1,783	0.22	0.42	0	1
Father's empl. status: employer/self-empl. (d)	1,783	0.24	0.43	0	1
Father's empl. status: not employed (d)	1,783	0.11	0.31	0	1
Spouse's educ: below primary (d)	1,816	0.12	0.32	0	1
Spouse's educ.: primary/ preparatory (d)	1,816	0.10	0.30	0	1
Spouse's educ.: secondary (d)	1,816	0.19	0.39	0	1
Spouse's educ.: above secondary (d)	1,816	0.59	0.49	0	1
Spouse's empl. status: regular wage work (d)	1,184	0.29	0.45	0	1
Spouse's empl. status: irregular wage work (d)	1,184	0.16	0.36	0	1
Spouse's empl. status: employer/self-empl. (d)	1,184	0.08	0.27	0	1
Spouse's empl. status: not employed (d)	1,184	0.47	0.50	0	1
Asset: washing machine (d)	1,783	0.89	0.32	0	1
Asset: dish washer (d)	1,783	0.05	0.21	0	1
Asset: microwave (d)	1,783	0.20	0.40	0	1
Asset: car/moto (d)	1,783	0.23	0.42	0	1
Internet	1,783	0.46	0.50	0	1
Laptop	1,783	0.30	0.46	0	1
Email	1,783	0.38	0.49	0	1

Source: Constructed by the authors using the CETUS20 data.

V. Data Analysis

We first study the time use profile for both men and women. It is important to note that this analysis is based on a sample of females who all used to work before (February 2020) and after (at the time of the interview: around 6 months after the outbreak of the pandemic) COVID-19.

Table 3 shows the means and standard deviations for the daily time (in minutes) spent on 14 time use activities separately for ever versus never married men and women. We observe that never-

married men and women work longer – on average- than their ever-married counterparts. We define work here as the total time spent on paid work either done from home or from the work place. Regarding the difference by gender, men tend to work more than women regardless on their marital status. Yet, this gender gap is larger within the ever-married population, with a gender gap of around 100 and 70 minutes for the ever-married and never-married groups respectively.

Women – ever and never-married ones- always spend longer hours on within-household caring activities (both child care and caring for the elderly or sick). Women spend almost double the number of hours that men spend caring for the elderly and/or sick, with 92 and 141 minutes per day for ever-married men and women respectively and, with 18 and 34 minutes per day for never-married men and women.

For housework activities, women seem to be the main responsible of this type of activities. They spend significantly larger number of hours than men on cooking, cleaning and laundry-related activities; which goes in line with previous studies on time use in Egypt (Hendy 2015; Assaad et al., 2015; Selwaness & Helmy, 2020). This is also the case for never-married women. However, men spend more time on the other housework activities such as construction and repairs, farming/fishing, collection of water and firewood and vegetable gardening and animal husbandry. Interestingly, Egyptian men seems to spend more time exercising than women with a gender gap of around 100 and 70 minutes per day for ever-married and never-married groups.

To our best knowledge, this is the first time use survey on Egypt collecting information about leisure time. We find that men have a slightly longer leisure time than women.

Table 3: Post COVID-19 means and standard deviations of time use activities by marital status and gender (in minutes/day)

<i>Time Use Activities</i>	Ever-Married		Never-Married	
	Males	Female	Males	Females
Sleeping	403.79	392.16	432.47	428.21
	<i>120.91</i>	<i>117.38</i>	<i>148</i>	<i>121.88</i>

Work (either from work place or from home)	436.86	331.41	473.35	400.48
	<i>267.07</i>	<i>212.78</i>	<i>260.97</i>	<i>242.61</i>
Child care only (teaching; Physical care; supervision of child; reading, playing and talking with child)	145.65	178.28	32.83	53.32
	<i>228.97</i>	<i>216.04</i>	<i>82.89</i>	<i>124.41</i>
Caring for your Child/children while doing something else at the same time	92.01	141.5	18.05	34.95
	<i>181.66</i>	<i>217.02</i>	<i>49.19</i>	<i>116.52</i>
Caring for an elderly/sick household member	63.79	66.13	67.05	71.55
	<i>141</i>	<i>161.7</i>	<i>130.33</i>	<i>174.31</i>
Cooking	18.42	89.81	24.81	68.23
	<i>41.48</i>	<i>60.78</i>	<i>116.45</i>	<i>69.11</i>
Cleaning and Dish washing	7.61	66.49	24.09	51.45
	<i>26.45</i>	<i>68.92</i>	<i>115.82</i>	<i>65.77</i>
Laundry and Ironing	7.64	80.96	13.05	55.56
	<i>26.45</i>	<i>92.92</i>	<i>32.82</i>	<i>70.1</i>
Construction and Repairs (Making, repairing and maintaining equipment or vehicle)	27.74	4.58	15.75	8.07
	<i>72</i>	<i>23.4</i>	<i>38.85</i>	<i>54.61</i>
Farming/Fishing	82.44	5.54	84.15	7.13
	<i>174.99</i>	<i>39.87</i>	<i>169.88</i>	<i>47.85</i>
Collecting water and collecting firewood	16.89	3.29	16	4.36
	<i>65.02</i>	<i>22.16</i>	<i>95.54</i>	<i>35.66</i>
Vegetable gardening and animal husbandry	29.89	14.49	42.12	19.01
	<i>82.06</i>	<i>58.44</i>	<i>128.62</i>	<i>57.13</i>
Exercising	437.29	333.54	476.58	403.72
	<i>264.77</i>	<i>213.8</i>	<i>261.23</i>	<i>244.16</i>
Leisure (Reading; Watching TV; listening to radio)	89.24	86.91	108.24	103.65
	<i>97.26</i>	<i>123.63</i>	<i>215.8</i>	<i>123.55</i>
Sample Size <i>n</i>	387	984	113	242

Note: Standard deviations in italic.

In Table 4, we show the time use profiles for the ever-married men and women and we distinguish between those with children below the age of 12 and those without. Within men, those with children below 12 years old spend- on average- around 100 minutes more per day on market work compared to those without young children. And, we observe exactly the opposite for women. Having children below the age of 12 make women work around 80 minutes less that not having young children.

Having at least one child below the age of 12 makes men and women spend on child care around 90 and 160 more minutes per day for men and women respectively compared to their counterparts who don't have young children.

Another interesting finding is that women without children below 12 have more leisure time than men of their same group. However, women having at least one child below 12 has – on average – less leisure time than her male counterpart.

Looking at married couples where both work for pay before and after COVID-19. We can conclude from Tables 4 and 5 working married women seems to have the same time use profiles regardless of the working status of their spouse.

Table 4. Post Covid-19 means and standard deviations of time use activities ONLY for Ever-Married by gender and presence of children below 12 years of age (in minutes/day)

	Ever-Married			
	With Child<12		Without Child<12	
	Males	Female	Males	Females
Sleeping	409.13	392.0135	386.89	392.38
	<i>122.22</i>	<i>111.2037</i>	<i>115.71</i>	<i>126.34</i>
Work (either from work place or from home)	439.77	324.3367	427.68	342.16
	<i>274.61</i>	<i>212.8573</i>	<i>242.85</i>	<i>212.49</i>
Child care only (teaching; Physical care; supervision of child; reading, playing and talking with child)	167.40	242.1549	76.90	81.25
	<i>235.70</i>	<i>219.8125</i>	<i>191.70</i>	<i>169.22</i>
Caring for your Child/children while doing something else at the same time	108.89	192.0168	38.63	64.76
	<i>197.46</i>	<i>236.5509</i>	<i>102.45</i>	<i>154.77</i>
Caring for an elderly/sick household member	60.78	62.90404	73.32	71.05
	<i>115.21</i>	<i>151.4879</i>	<i>202.54</i>	<i>176.21</i>
Cooking	17.98	89.80471	19.78	89.81
	<i>41.02</i>	<i>53.04612</i>	<i>43.09</i>	<i>71.03</i>
Cleaning and Dish washing	6.73	65.6532	10.38	67.76
	<i>21.79</i>	<i>58.7177</i>	<i>37.54</i>	<i>82.14</i>
Laundry and Ironing	6.81	84.58249	10.27	75.45
	<i>25.92</i>	<i>93.99923</i>	<i>28.06</i>	<i>91.10</i>
Construction and Repairs (Making, repairing and maintaining equipment or vehicle)	28.86	4.744108	24.20	4.34
	<i>75.79</i>	<i>17.88878</i>	<i>58.68</i>	<i>29.92</i>
Farming/Fishing	84.67	6.102694	75.42	4.68
	<i>183.48</i>	<i>41.98094</i>	<i>145.67</i>	<i>36.47</i>
Collecting water and collecting firewood	15.19	3.580808	22.26	2.86
	<i>60.99</i>	<i>22.67382</i>	<i>76.47</i>	<i>21.38</i>
Vegetable gardening and animal husbandry	30.11	9.259259	29.22	22.46
	<i>86.46</i>	<i>30.83367</i>	<i>66.72</i>	<i>84.12</i>
Exercising	439.29	326.6751	430.97	344.00
	<i>271.35</i>	<i>213.7916</i>	<i>244.18</i>	<i>213.67</i>
Leisure (Reading; Watching TV; listening to radio)	87.12	72.6633	95.95	108.66
	<i>92.11</i>	<i>90.68475</i>	<i>112.24</i>	<i>159.16</i>
Sample Size <i>n</i>	294	593	93	391

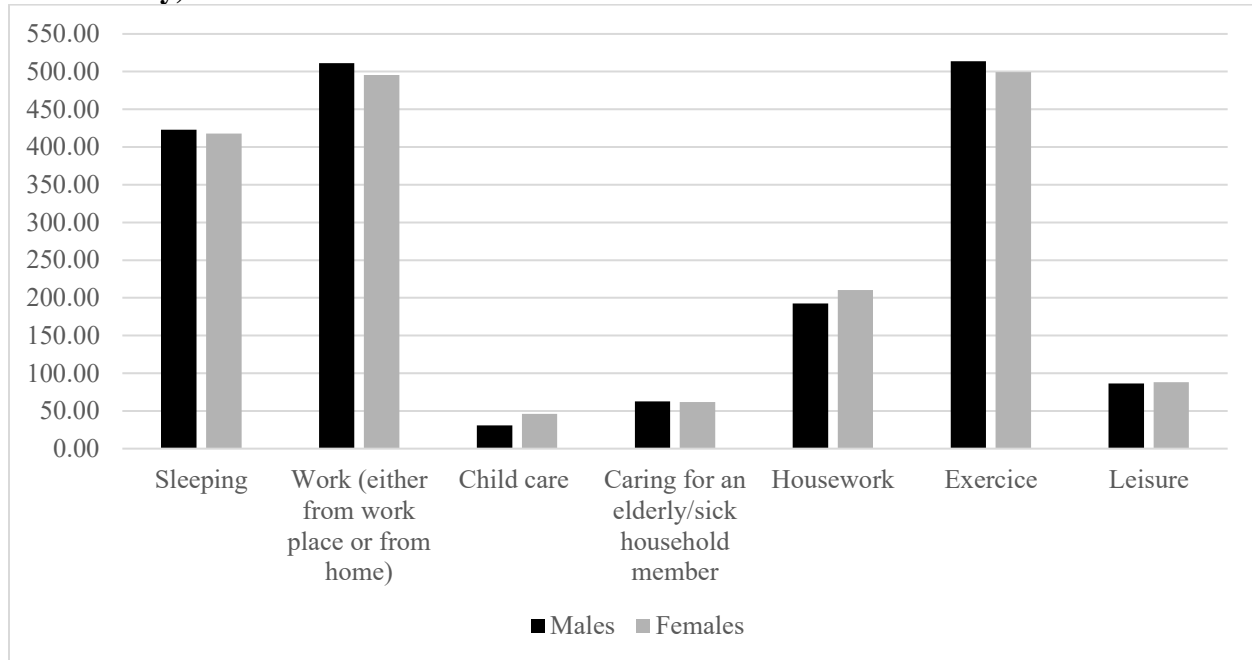
Note: Standard deviations in italic.

Table 5. Post COVID-19 means and standard deviations of time use activities ONLY for currently married working couples by gender and presence of children below 12 years of age (in minutes/day)

	Currently Married Couples working before & after			
	With Child<12		Without Child<12	
	Males	Female	Males	Females
Sleeping	402.67	399.38	387.97	377.79
	<i>114.72</i>	<i>108.80</i>	<i>109.24</i>	<i>118.65</i>
Work (either from work place or from home)	482.62	375.18	477.97	391.81
	<i>262.86</i>	<i>173.99</i>	<i>213.46</i>	<i>169.11</i>
Child care only (teaching; Physical care; supervision of child; reading, playing and talking with child)	163.21	227.11	68.12	79.95
	<i>228.59</i>	<i>197.98</i>	<i>185.19</i>	<i>167.88</i>
Caring for your Child/children while doing something else at the same time	118.16	184.82	31.24	65.29
	<i>212.38</i>	<i>222.05</i>	<i>66.61</i>	<i>162.92</i>
Caring for an elderly/sick household member	56.63	62.44	44.71	79.77
	<i>113.27</i>	<i>154.85</i>	<i>81.80</i>	<i>204.17</i>
Cooking	17.40	90.31	14.49	97.80
	<i>41.03</i>	<i>50.32</i>	<i>34.01</i>	<i>82.42</i>
Cleaning and Dish washing	5.22	65.75	4.85	74.08
	<i>19.11</i>	<i>56.71</i>	<i>17.47</i>	<i>87.30</i>
Laundry and Ironing	4.88	88.03	9.63	78.05
	<i>19.49</i>	<i>101.33</i>	<i>25.49</i>	<i>103.29</i>
Construction and Repairs (Making, repairing and maintaining equipment or vehicle)	29.88	4.39	28.03	4.55
	<i>81.34</i>	<i>16.92</i>	<i>65.14</i>	<i>37.57</i>
Farming/Fishing	88.13	8.40	80.06	4.21
	<i>184.83</i>	<i>50.86</i>	<i>150.25</i>	<i>36.83</i>
Collecting water and collecting firewood	16.04	4.68	25.15	1.93
	<i>64.51</i>	<i>26.95</i>	<i>81.73</i>	<i>13.62</i>
Vegetable gardening and animal husbandry	33.64	8.64	35.50	24.73
	<i>94.45</i>	<i>27.30</i>	<i>73.74</i>	<i>89.29</i>
Exercising	481.52	377.55	480.44	394.05
	<i>258.73</i>	<i>175.45</i>	<i>214.41</i>	<i>170.76</i>
Leisure (Reading; Watching TV; listening to radio)	78.49	67.78	91.31	93.37
	<i>80.04</i>	<i>90.75</i>	<i>82.35</i>	<i>149.30</i>
Mean total minutes/day	1978.50	1964.47	1779.46	1767.38
Mean total hours/day	32.97	32.74	29.66	29.46
Sample Size n	226	387	68	221

Note: Standard deviations in italic.

Figure 1. Time use of never-married men and women working Pre and Post Covid-19 (in minutes/day)



Source: Constructed by the authors using the CETUS20 data.

Turning our attention to the Tobit model estimations. Table 6 presents the determinants of market time and childcare time for men and women separately.

Table 6. Post COVID-19 time use estimations

	Market work time (in minutes per day)		Child care time (in minutes per day)	
	Males	Female	Males	Female
Age	-3.34	3.16	8.94	8.828**
	-8.15	-3.83	-6.66	-4.03
Age squared	0.03	-0.06	-0.12	-0.160***
	-0.10	-0.05	-0.08	-0.05
Reference: below primary level				
Educ.: primary/ preparatory (d)	20.50	4.66	7.92	31.78
	-41.39	-22.29	-33.83	-23.48
Educ.: secondary (d)	-7.37	-18.66	32.04	24.29
	-38.31	-20.65	-31.31	-21.75
Educ.: above secondary (d)	-69.08*	-24.99	20.02	54.44**
	-41.34	-21.27	-33.78	-22.40
Urban (d)	-29.65	24.95**	4.38	-10.10
	-23.51	-11.48	-19.21	-12.10
Ever-married (d)	-21.31	-60.60***	95.89***	164.1***
	-35.76	-17.24	-29.23	-18.18
Reference: Father below primary level				
Father's educ.: primary/ preparatory (d)	80.83**	-5.59	-46.93*	28.46*

	-32.39	-15.91	-26.47	-16.76
Father's educ.: secondary (d)	31.16	-2.22	-33.79	4.94
	-37.89	-16.67	-30.97	-17.56
Father's educ.: above secondary (d)	32.49	-33.18**	-45.42	26.73
	-36.86	-16.40	-30.12	-17.28
Reference: Father regular wage work				
Father's empl. status: irregular wage work (d)	15.58	-0.92	-17.59	-16.66
	-32.30	-15.65	-26.40	-16.48
Father's empl. status: employer/self-empl. (d)	-41.49	-14.78	22.59	-12.34
	-29.99	-14.29	-24.51	-15.06
Father's empl. status: not employed (d)	19.74	1.48	-5.04	2.58
	-38.55	-17.89	-31.51	-18.84
Internet	33.40	2.93	42.37*	-6.60
	-26.59	-11.74	-21.73	-12.37
Asset: washing machine (d)	-10.36	17.01	10.71	-0.86
	-29.49	-18.90	-24.10	-20.00
Asset: dish washer (d)	147.0***	-7.94	58.49	-25.51
	-49.12	-27.96	-40.15	-29.45
Asset: microwave (d)	-31.11	24.35*	40.16	-1.74
	-30.00	-14.43	-24.52	-15.21
Asset: car/moto (d)	23.66	-24.94*	-58.10***	20.18
	-25.36	-14.37	-20.73	-15.14
Laptop	-1.33	26.25**	23.84	-7.73
	-29.88	-12.75	-24.42	-13.44
Email	39.53	-6.93	-44.06*	2.63
	-27.70	-12.93	-22.64	-13.64
Part-time (d)	16.75	-0.46	7.12	-19.18*
	-24.65	-10.94	-20.15	-11.53
Work from home (d)	-35.18	-26.34**	-19.30	40.86***
	-43.55	-13.10	-35.59	-13.80
Flexible working hours (d)	-23.13	-11.13	-22.24	-3.36
	-24.11	-11.51	-19.70	-12.12
Reference: regular wage work				
Empl. status: irregular wage work (d)	-71.44**	-33.62*	20.71	-0.58
	-30.00	-17.29	-24.51	-18.21
Empl. status: employer/self-empl. (d)	-43.28	-58.96***	-31.20	-12.97
	-36.28	-20.53	-29.65	-21.62
Empl. status: not employed (d)		-285.6***	20.12	51.49***
		-13.62	-26.39	-14.35
var(e.market work time)	-228.4***	33,131***	39,418***	36,751***
	-32.29	-1338.00	-2496.00	-1484.00
Constant	612.2***	438.7***	-122.60	-112.50
	-157.30	-75.87	-128.60	-79.94
Pseudo R2	0.01	0.03	0.01	0.01
Log likelihood	-3448.96	-8126.49	-3348.26	-8183.43
n	499	1227	499	1227

Notes: i. Standard errors in parentheses; ii. *** p<0.01, ** p<0.05, * p<0.1

Source: Constructed by the authors using the CETUS20 data.

We also estimate the time use profiles for ever-married men and women with and without children below the age of 12 (see results in Table A.1 in the appendix).

VI. Concluding Remarks

This paper aims to assess the restructure (if any) of workers' time use -female workers in particular- as a result of the COVID-19 health crisis and the subsequent impact this restructure might have on labor supplies. We use data from the 2020 Egypt COVID-19 Employment and Time Use Survey (CETUS20) to construct the time use profiles of both men and women pre and post the outbreak of the pandemic. The CETUS sample consists of individuals who used to work before COVID and follow their employment status and characteristics after the crisis e.g around 6 months after the outbreak of the virus. The analyses are based on reported time-use profiles constructed from reports of daily-time (in minutes) by ever and never married male and female individuals, sampled in the CETUS20 survey, on 14 distinct time-use activities (pre and post-COVID).

In the analysis, we distinguish between ever and never-married individuals. We also distinguish between those with and without children below the age of 12 to evaluate the impact of special treatment provided by the Egyptian government to those women having young children below 12. Our main hypothesis here is that with the closure of care facilities (including childcare, elderly care and persons with limited abilities) and schools and the more fluid boundaries between leisure time and work time, it became more challenging to women in particular to set boundaries between the time dedicated to market work, care activities and housework; which potentially affected employment related decisions.

The main findings of the paper show that workers in general – females with children in particular- have restructured their time use as a response to the COVID-19 health crisis. Longer hours on domestic work (housework and child-care), particularly with the closure of daycare services and educational institutions, have been the highlight for the surveyed females with children. The never-married working population allocated more time for paid work (both remote and on-site) compared to their ever-married peers. Regardless the marital status, women generally work less hours in the labor market than men; this gender gap in time spent on paid work is larger within the ever-married population, of around 100 and 70 minutes for the ever-married and never-married groups respectively. The paper's analyses show as well that both the presence and the age of children significantly increases the women's time allocated to child-care.

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Appendix

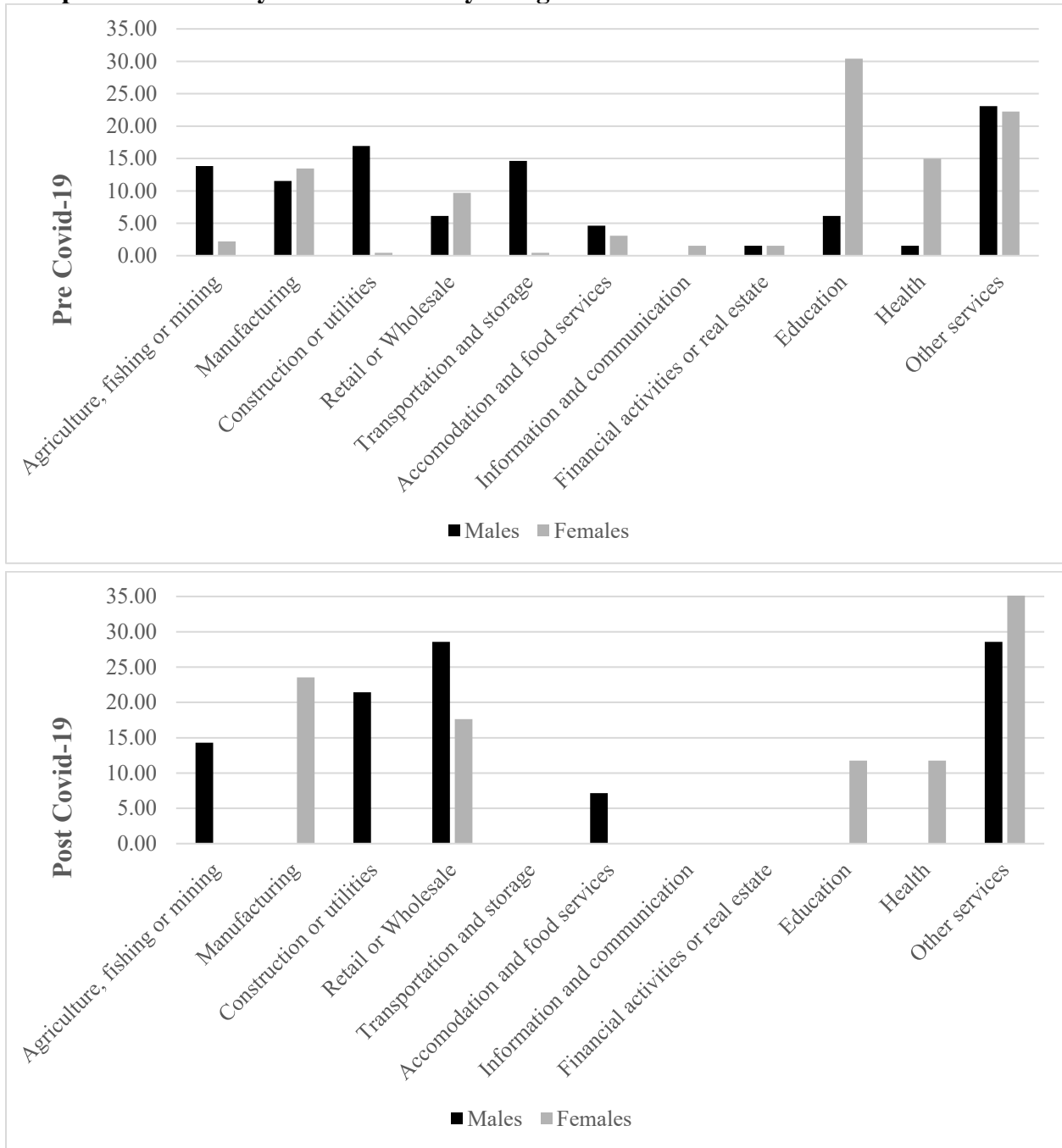
Table A.1: Time use estimations for ever-married men and women by the presence/not of children below the age of 12

	Market work time (in minutes per day)				Child care time (in minutes per day)			
	With Child<12		Without Child<12		With Child<12		Without Child<12	
	Males	Female	Males	Females	Males	Female	Males	Females
Age	-12.26	6.45	-0.31	1.76	4.47	-7.23	14.29	21.37***
	-14.29	-8.91	-16.67	-7.39	-12.52	-10.79	-13.91	-6.98
Age squared	0.16	-0.06	0.00	-0.08	-0.07	0.05	-0.12	-0.250***
	-0.18	-0.12	-0.19	-0.09	-0.16	-0.15	-0.16	-0.08
Reference: below primary level								
Educ.: primary/ preparatory (d)	-15.39	-11.57	229.0***	65.35	-1.92	0.20	73.45	-5.77
	-54.38	-34.23	-83.55	-42.15	-47.65	-41.49	-69.71	-39.82
Educ.: secondary (d)	20.49	-42.21	-10.01	81.26**	32.62	28.72	143.2**	-20.43
	-51.70	-33.41	-83.01	-39.00	-45.31	-40.49	-69.25	-36.84
Educ.: above secondary (d)	-95.08*	-29.64	29.42	54.30	-12.21	39.46	118.70	36.53
	-56.90	-35.35	-96.66	-43.01	-49.86	-42.84	-80.65	-40.64
Urban (d)	-65.25**	14.36	15.64	7.69	-29.56	22.65	47.38	20.94
	-31.69	-16.56	-48.47	-23.68	-27.77	-20.07	-40.44	-22.37
Reference: Father below primary level								
Father's educ.: primary/ preparatory (d)	113.4***	-3.73	161.1**	-31.81	-27.50	32.75	-67.49	-36.74
	-42.14	-24.36	-65.51	-29.92	-36.93	-29.52	-54.66	-28.26
Father's educ.: secondary (d)	59.46	-16.84	8.88	-6.34	-80.21	-20.97	30.29	26.84
	-58.71	-25.06	-93.93	-33.41	-51.45	-30.37	-78.37	-31.57
Father's educ.: above secondary (d)	10.26	-25.96	-26.79	-93.01***	-23.82	6.84	-84.74	39.01
	-54.26	-24.63	-78.99	-31.18	-47.55	-29.85	-65.91	-29.45
Reference: Father regular wage work								
Father's empl. status: irregular wage work (d)	25.29	12.51	92.62	-11.01	-40.65	-50.57*	-107.7**	46.20
	-46.18	-23.80	-63.37	-29.83	-40.47	-28.84	-52.87	-28.18
Father's empl. status: employer/self-empl. (d)	-23.03	-36.26*	-63.49	30.50	32.30	-19.31	-87.99*	0.30
	-42.02	-21.72	-61.94	-27.07	-36.82	-26.32	-51.68	-25.58
Father's empl. status: not employed (d)	71.39	-18.74	118.2*	-21.36	-16.23	-14.74	-109.0*	9.01
	-55.37	-26.37	-67.46	-36.54	-48.52	-31.95	-56.29	-34.52
Reference: Spouse below primary level								
Spouse's educ.: primary/ preparatory (d)	44.03	15.92	-73.98	53.26	-57.14	19.15	-18.76	6.15
	-49.47	-30.44	-98.40	-38.52	-43.35	-36.89	-82.10	-36.39
Spouse's educ.: secondary (d)	74.64	11.41	-106.30	-67.17*	-6.93	10.90	-143.5**	36.47
	-45.64	-27.38	-72.92	-36.88	-39.99	-33.18	-60.84	-34.84
Spouse's educ.: above secondary (d)	115.4**	14.68	-103.70	-31.88	-30.58	76.58**	-126.10	17.39
	-55.45	-29.76	-90.44	-38.32	-48.60	-36.06	-75.45	-36.20
Reference: Spouse regular wage work								
Spouse's empl. status: irregular wage work (d)	-100.40	8.90	-	-10.49	-184.40	-8.57	-	52.88*
	-172.20	-21.51	-	-32.27	-150.90	-26.06	-	-30.48
Spouse's empl. status: employer/self-empl. (d)	-122.90	-13.28	-121.10	-23.74	-72.58	-42.31	102.10	46.32
	-277.50	-24.95	-169.90	-41.63	-243.20	-30.24	-141.80	-39.33

Spouse's empl. status: not employed (d)	60.93	10.63	-112.90	34.47	12.57	15.07	13.88	16.37
	-89.57	-23.87	-76.01	-26.58	-78.50	-28.92	-63.42	-25.11
Internet	14.97	18.43	14.39	-0.73	111.3***	11.41	1.32	-16.30
	-37.93	-17.37	-52.56	-23.55	-33.24	-21.04	-43.85	-22.25
Asset: washing machine (d)	-2.31	16.22	-124.1**	33.57	-8.20	-34.42	26.65	36.20
	-39.97	-27.34	-58.81	-39.71	-35.03	-33.13	-49.07	-37.51
Asset: dish washer (d)	280.8***	-35.52	-97.56	138.9**	34.78	5.09	131.00	-41.95
	-83.91	-50.15	-98.97	-56.68	-73.54	-60.77	-82.57	-53.55
Asset: microwave (d)	-75.54	47.83**	-46.09	1.70	68.97*	8.46	74.53	-60.41**
	-45.82	-21.48	-57.04	-28.56	-40.16	-26.03	-47.59	-26.99
Asset: car/moto (d)	-7.57	-31.16	20.88	33.62	-80.25***	19.87	-117.0**	63.97**
	-34.38	-21.28	-54.23	-28.33	-30.13	-25.78	-45.24	-26.77
Laptop	-0.88	24.41	21.75	51.35*	17.05	-31.80	55.45	-2.97
	-42.85	-19.33	-58.32	-26.48	-37.55	-23.42	-48.66	-25.02
Email	76.33**	15.70	106.1*	-47.82*	-57.01*	18.30	-53.58	-38.42
	-37.31	-18.73	-62.25	-26.12	-32.70	-22.69	-51.94	-24.68
Part-time (d)	1.17	-14.08	83.40	43.56*	15.50	-24.98	-10.13	7.70
	-32.45	-16.38	-50.66	-22.12	-28.44	-19.85	-42.27	-20.90
Work from home (d)	-11.69	-25.91	108.30	-30.25	-16.95	51.68**	-163.4*	8.09
	-66.34	-19.02	-110.00	-28.24	-58.14	-23.05	-91.76	-26.68
Flexible working hours (d)	-43.19	-16.59	-36.44	6.73	6.69	-22.34	-55.58	4.34
	-33.93	-17.30	-44.36	-22.89	-29.73	-20.96	-37.01	-21.62
Reference: regular wage work								
Empl. status: irregular wage work (d)	-87.12**	-54.70**	-119.2*	-48.91	28.12	51.07	-73.59	-38.47
	-38.99	-25.62	-61.60	-37.11	-34.17	-31.04	-51.39	-35.06
Empl. status: employer/self-empl. (d)	-28.89	-39.40	-160.3**	-150.0***	-84.46*	-0.04	-2.11	-36.35
	-49.57	-28.03	-69.91	-45.15	-43.44	-33.97	-58.33	-42.65
Empl. status: not employed (d)	-211.5***	-246.8***	-233.5***	-306.3***	22.24	103.6***	22.97	17.18
	-44.20	-20.63	-68.30	-29.02	-38.74	-25.00	-56.98	-27.42
var(e.market work time)	58,340***	30,445***	30,942***	26,703***	44,804***	44,706***	21,540***	23,833***
	-4879.00	-1883.00	-4691.00	-2249.00	-3747.00	-2765.00	-3266.00	-2007.00
Constant	639.7**	243.90	680.40	428.4**	127.80	368.6*	-213.30	-432.7***
	-292.20	-166.90	-411.00	-173.20	-256.10	-202.20	-342.90	-163.60
Pseudo R2	0.02	0.03	0.05	0.04	0.01	0.01	0.04	0.01
Log likelihood	-1975.10	-3441.75	-573.23	-1837.29	-1937.35	-3542.21	-557.48	-1821.25
n	286	523	87	282	286	523	87	282

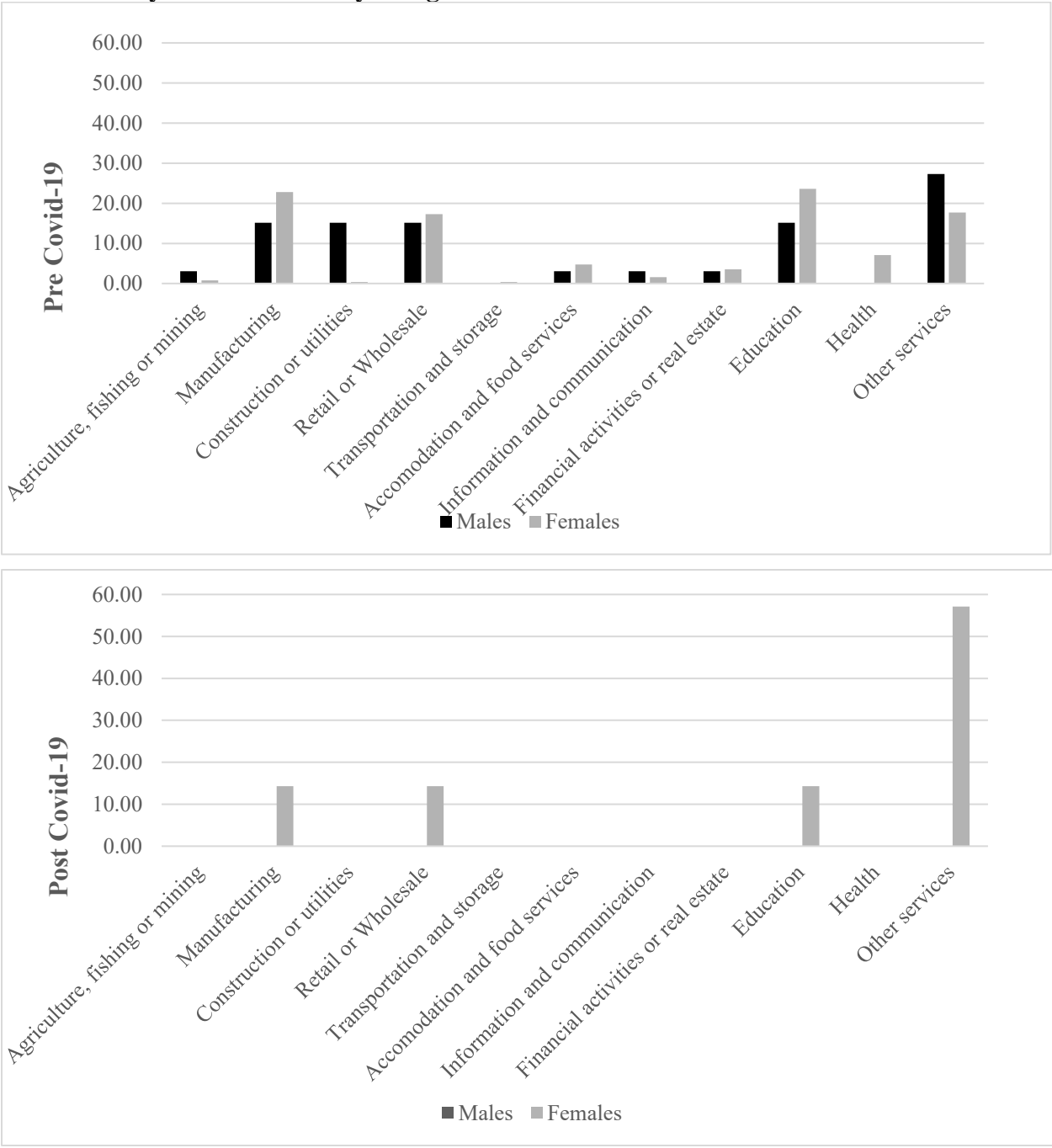
Notes: i. Standard errors in parentheses; ii. *** p<0.01, ** p<0.05, * p<0.1

Figure A.1: Pre versus post COVID-19 shares of workers having the possibility of working on a part-time basis by economic activity and gender



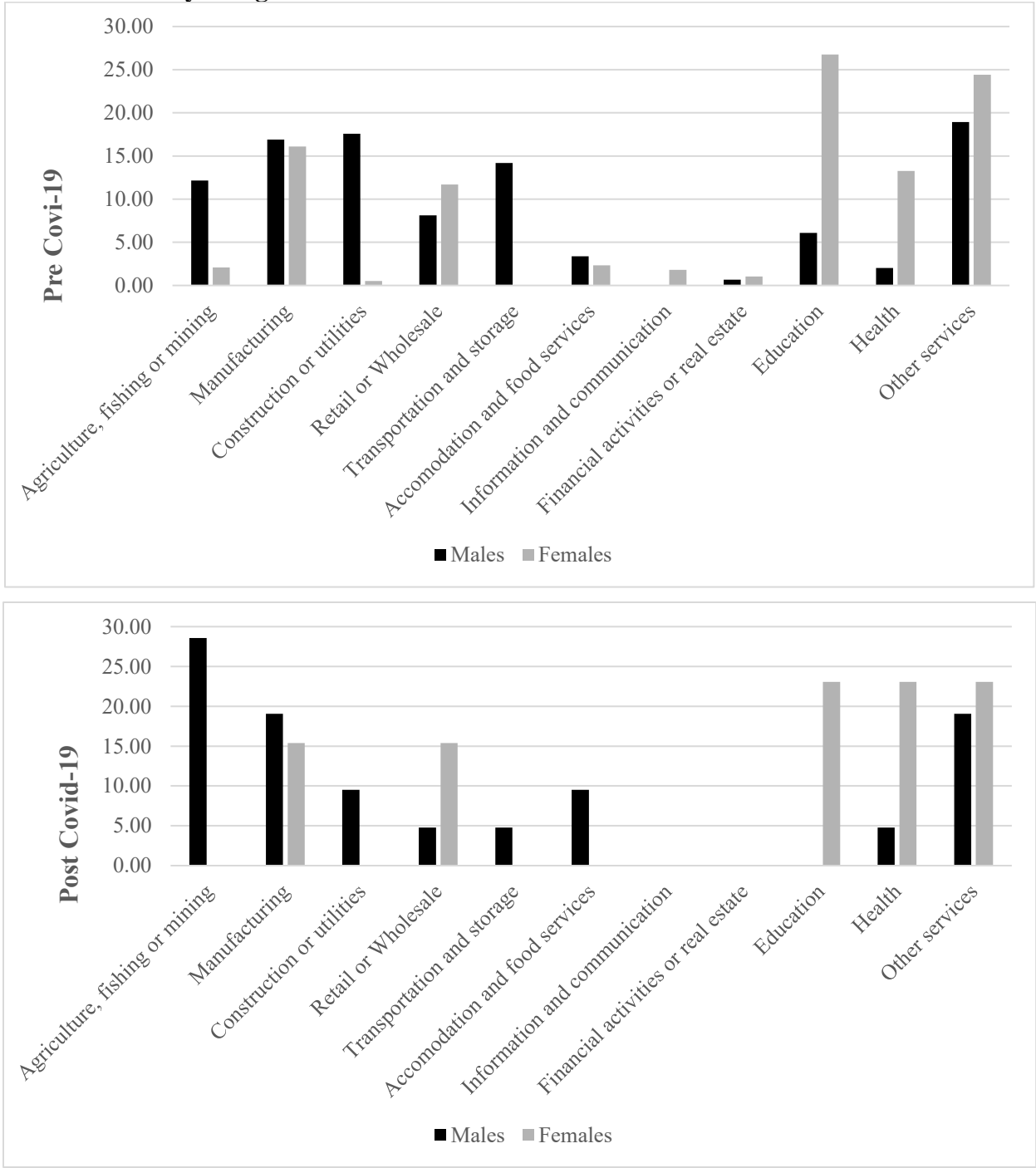
Source: Constructed by the authors using the CETUS20 data.

Figure A.2: Pre versus post COVID-19 shares of workers having the possibility of working from home by economic activity and gender



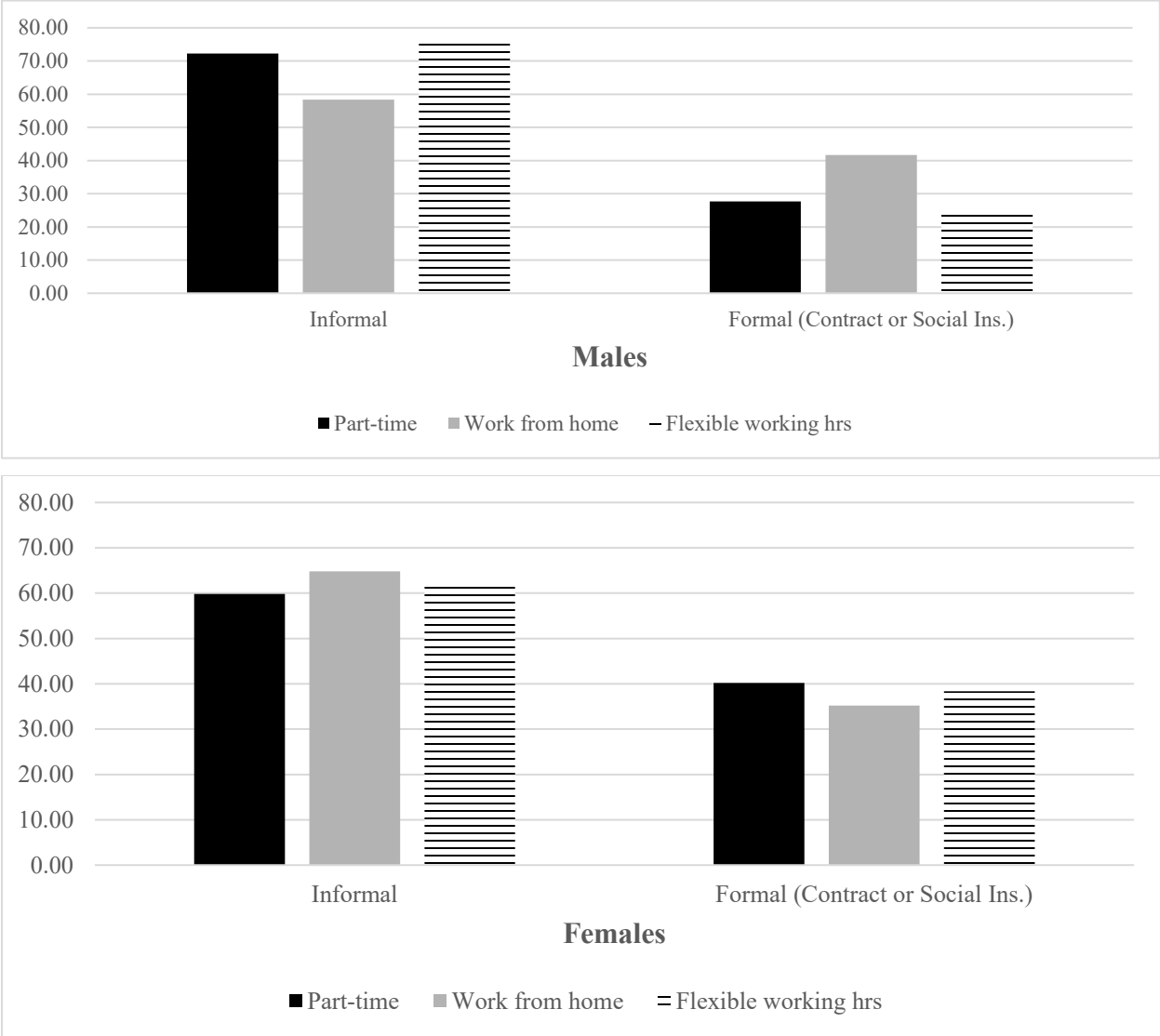
Source: Constructed by the authors using the CETUS20 data.

Figure A.3: Pre versus post COVID-19 shares of workers having flexible working hours by economic activity and gender



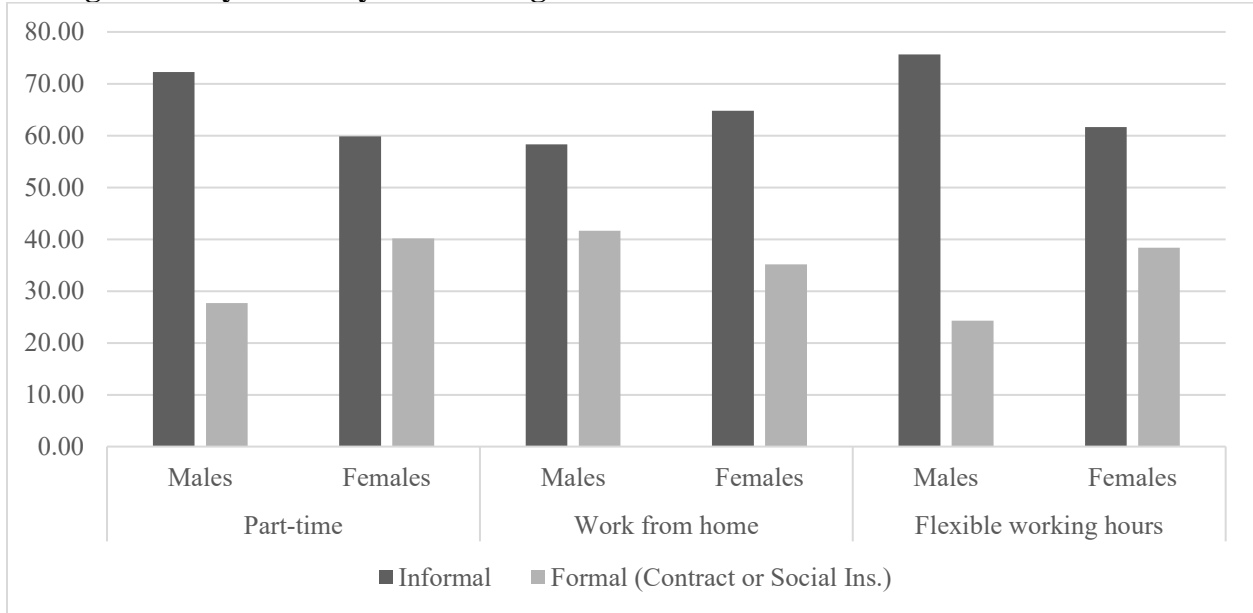
Source: Constructed by the authors using the CETUS20 data.

Figure A.4. Pre COVID-19 shares of workers having flexible working arrangements by formality status and gender



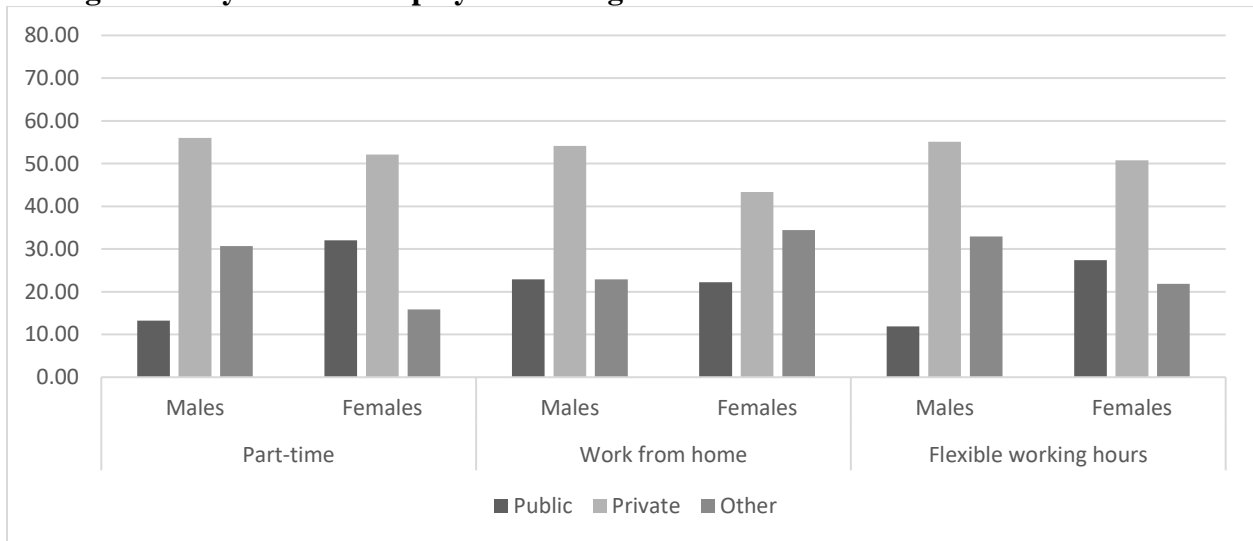
Source: Constructed by the authors using the CETUS20 data.

Figure A.5. Pre versus post COVID-19 shares of workers with flexible working arrangements by formality status and gender



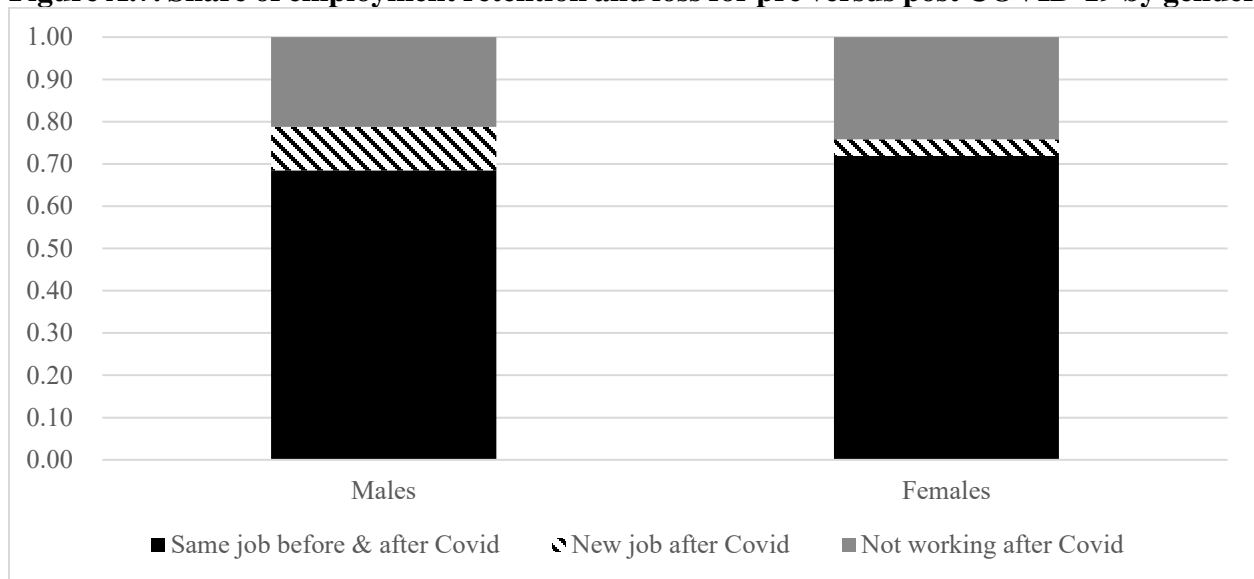
Source: Constructed by the authors using the CETUS20 data.

Figure A.6. Pre versus post COVID-19 shares of workers with flexible working arrangements by sector of employment and gender



Source: Constructed by the authors using the CETUS20 data.

Figure A.7. Share of employment retention and loss for pre versus post COVID-19 by gender



Source: Constructed by the authors using the CETUS20 data.