

WORKING PAPER

IRPPS WP121

Survey on Smart Working within Research Institutions During the Covid-19 Emergency: A Gender Perspective

NOVEMBRE 2020

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2020, p. 65 IRPPS Working papers 121/2020

Abstract: The report presents the results of the survey on Smart Working (SW) and gender issues in Italian research institutions during the Covid-19 emergency. The survey intends to provide a first analysis of the workloads, the time dedicated to professional tasks and family workloads, and the ways to deal with SW during the pandemic emergency. It aims to investigate ways of reconciling work-life in a gender dimension to highlight if and how the SW activity has influenced the domestic and family dynamics between women and men during the emergency period. For this reason, the analysis focuses on: 1) the division of the workload of domestic and family care tasks; 2) the management of free time after completing the professional activities; 3) the evaluation of the SW activities (positive and negative aspects, technological difficulties, the perception of the quality of work and the factors that could be improved); and 4) the evaluation of the SW experience also in relation to the Covid-19 emergency. The results showed a general positive attitude towards the SW. Among the negative aspects identified there is above all the loss of sociability with colleagues resulting from working from home.

Keywords: Smart Working, Gender dimension, Research institutions, Covid-19

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Indagine sullo Smart Working e questioni di genere negli enti di ricerca italiani durante l'emergenza Covid19

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Sommario: Il rapporto presenta i risultati dell'indagine sullo Smart Working (SW) e questioni di genere negli enti di ricerca italiani durante l'emergenza Covid-19. L'indagine intende fornire una prima analisi dei carichi di lavoro, dei tempi dedicati a compiti professionali e carichi familiari, delle modalità per affrontare lo SW in un momento emergenziale. In particolare, essa si propone di indagare le modalità di conciliazione vita-lavoro in una dimensione di genere per evidenziare se e come l'attività di SW abbia influenzato le dinamiche domestiche e famigliari tra donne e uomini durante il periodo emergenziale. Per questo motivo oggetto di analisi sono stati: 1) la divisione del carico di lavoro di cura domestica e familiare; 2) la gestione del tempo libero dopo aver concluso le attività professionali in SW; 3) la valutazione delle attività di SW (aspetti positivi e negativi, difficoltà di natura tecnologica, la percezione della qualità del lavoro e i fattori potenzialmente migliorabili 4) la valutazione dell'esperienza di SW anche in relazione all'emergenza Covid19. I risultati hanno evidenziato in generale un atteggiamento positivo dei rispondenti nei confronti dello SW. Tra gli aspetti negativi individuati c'è soprattutto la perdita di socialità con i colleghi derivante dal lavorare da casa.

Parole chiave: Smart Working, Dimensione di genere, Enti di ricerca, Covid-19

Citare questo documento come segue:

Marco Cellini, Maria Cristina Antonucci, Sveva Avveduto, Cristiana Crescimbene, Ilaria Di Tullio, Daniela Luzi, Lucio Pisacane, Fabrizio Pecoraro, Roberta Ruggieri (2020). *Survey on Smart Working within Research Institutions During the Covid-19 Emergency: A Gender Perspective*

Consiglio Nazionale delle Ricerche – Istituto di Ricerche sulla Popolazione e le Politiche Sociali. (*IRPPS Working papers n. 121/2020*).

Redazione: Marco Accorinti, Daniele Archibugi, Sveva Avveduto, Massimiliano Crisci, Fabrizio Pecoraro, Roberta Ruggieri, Tiziana Tesauro e Sandro Turcio.
Editing e composizione: Cristiana Crescimbene, Luca Pianelli, Laura Sperandio

La responsabilità dei dati scientifici e tecnici è dei singoli autori.

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Introduction

The English term smart working (SW), translated into Italian as agile work, denotes a practice of remote working that eliminates the concept of a fixed workplace in favour of wider flexibility according to what is needed in a given moment (D'Amato 2014). Therefore, the Italian SW can be considered a pseudo-Anglicism since in English, as well as in the international context, what in Italy is rendered with the term SW is commonly called 'home working' or 'working from home', reserving to the term SW a meaning linked to 'flexible working methods with improved processes using technologies and tools that make work more functional' (Corbolante 2020).

SW in the English meaning should therefore reconsider spaces, times, hours, and work tools for the benefit of greater freedom and responsibility granted to the worker (Chiaro, Prati and Zocca 2015). SW differs from teleworking, which simply provides for the workers to carry out work her/his activities from home, becoming a model of employment. The worker, in agreement with the employer, can independently decide the places and times of her/his work. The adjective "smart" is therefore used to describe more advanced forms of work organization in which the worker has the opportunity to operate on production processes and to be evaluated not on the basis of the amount of time dedicated to working, but rather on the basis of the achievement of specific results (Matalucci 2014).

The term SW is being also employed in Italy for several years: nevertheless, what in our country is commonly called SW, in most cases, rather refers to teleworking, which merely is working from home. Even in Italy, there are examples of SW intended in its original meaning, an example is the case of the multinational General Electrics, which has used this model of work organization for several years, even if for company managers only (Gianni, 2017). However, such experiences pertain to a minority of cases in the Italian context.

Adopted in formal and informal ways, in 2019 the SW in Italy involved 58% of large-sized enterprises, 12% of small and medium-sized enterprises, and 16% of the public administration sector, for a total of 570.000 workers (Smartworking Observatory 2019).

The situation has radically changed since March 2020 when, following the COVID-19 emergency and the need to implement social distancing rules, the Government issued the decree of March 1, 2020, de facto establishing, then extended with subsequent decrees, the possibility to apply SW to any subordinate employment relationship, even in the absence of individual agreements, until the end of July 2020.

As of April 29, 2020, according to the Ministry of Labour's data, a total of 1.827.792 workers resulted in SW mode, 1.606.617 of which were started following the epidemiological emergency (Ministry of Labour and Social Policies, 2020).

Companies have used SW as one of the systems for reorganizing staff's work: compared to 1.20% of staff engaged in remote working activities in the period immediately preceding the lockdown, January-February 2020, the share rises overall to 8.8% in the period March-April with peaks of 31.40% in large-sized companies and 48.0% in the information and communication services sector (ISTAT 2020).

Such an increase in SW activity and the political discussion on the opportunity of extending and promoting the use of this working organization mode, even beyond the COVID-19 emergency, makes it necessary to understand how SW is perceived and experienced by workers, also understanding how it affects family dynamics. This is important in order to outline its strengths and weaknesses and to be able to develop new forms of SW that, on the one hand, allow the worker to be more productive and, on the other hand, let her/him carry out her/his work adequately. Moreover, it is important to take into account and to address issues that may arise in the transition from working in presence to SW. In this context, these considerations are relevant not only for policymakers, but also for the top management of research institutions who will have to decide, soon, whether and how to implement these new models of work organization.

However, it is essential to point out that the exceptional time, characterized by a series of measures and restrictions never occurred before, may have influenced workers' perceptions about SW. In this sense, with all the limitations derived from the uniqueness of the situation and related massive use of SW, this report does not provide an evaluation of SW as a new method of work organization, but rather intends to offer food for thought from which a more aware and informed discussion could arise.

The survey stems from the desire to understand SW's influence on the division of domestic and family care tasks between men and women employed in Italian research institutions. Starting from the 1960s, the issue of the gender division of domestic and family care tasks has been vigorously explored by sociological literature, particularly in the field of gender studies. With the increase of working women, the literature has tried to understand the reasons why the division of domestic (unpaid) work continued to present an unequal distribution between men and women, despite the latter are increasingly engaged in paid jobs too (Berk, 1985; Blood and Wolfe 1960; Oakley 1974). Recent studies show that women continue to have a more significant role in jobs related to home and family care, despite greater equality in access to education, a changed socio-cultural context, and an increase of gender equality's laws at the workplace (Coltrane 2000; Lachance-Grzela and Bouchard 2010; Bianchi, Sayer, Milkie and Robinson 2012).

The effect of SW on the division of domestic and family care work is, instead, way less investigated. For this reason, the survey has been developed and elaborated to explore if and how SW can influence the gender dynamics related to the division of domestic and family-care tasks. Even in this case, understanding these dynamics appears extremely important not only for expanding the related literature but also, and perhaps most importantly, from the perspective of policymakers.

Sample's characteristics

This report elaborates and describes the results of the "Smart working and gender issues in Italian research institutions during the Covid-19 emergency". The survey carried out through a questionnaire administered online from April 6, 2020, to the workers of the leading Italian research institutions. The survey, ended on June 10, 2020. It used the Limesurvey application to collect data by sending a link, both through mailing lists and through its

dissemination on social networks, which referred to the questionnaire hosted on the CNR's servers.

The questionnaire was filled in by 2.721 employees of several Italian research institutions, including researchers, technologists¹, technical and administrative staff. Most of the answers were provided by the employees of the National Research Council (CNR) and the National Institute of Geophysics and Volcanology (INGV), respectively 2.403 and 225. At the same time, the remaining sample of respondents (93) is composed of workers of 32 distinct Italian research institutions and universities.

It is important to stress that, while in the case of the CNR and INGV, the sample represents a significant part of the total workforce, respectively 27.9% and 23.7%, concerning the other research institutions, the sample was relatively lower, ranging from 0.04% to 1.60% of the respective workforces.

Table 1 shows the frequencies and percentages of the questionnaire's respondents by institutions' membership.

Table 1 – Frequencies and percentages of valid cases by institution, SW survey

Research Institution	Frequency	Percentage of the sample	Number of employees²	Percentage of employees
A.S.I.	1	0.04	258	0.39
Other	30	1.1	N/A	N/A
CNR	2,403	88.31	8,600	27.94
CREA	24	0.88	1,500	1.60
ENEA	1	0.04	2,555	0.04
INA.F	8	0.29	1,400	0.57
INDAM	1	0.04	2,500	0.04
INFN	10	0.37	1,792	0.56
INGV	225	8.27	951	23.66
IIT	1	0.04	1,500	0.07
IIZZSS	1	0.04	N/A	N/A
ISFOL	4	0.15	416	0.96
ISPRA	2	0.07	1,211	0.17
ISS	5	0.18	1,523	0.33
ISTAT	3	0.11	2,493	0.12
Stazione	2	0.07	240	
Zoologica				0.83

Source, SW survey, CNR Irpps, 2020.

¹ A technologist is a high-level employee with expertise in technical, technical – scientific and data processing areas.

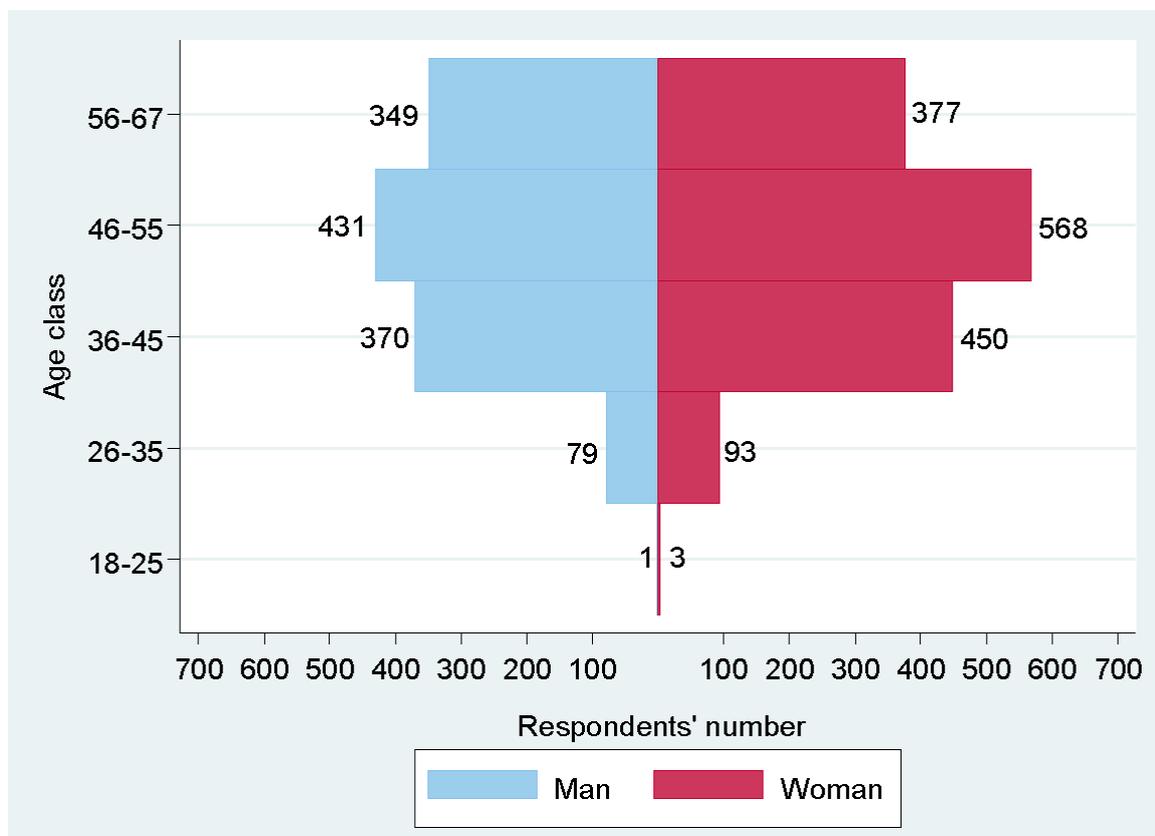
² The data related to the number of employees of the various institutions are retrieved from the related web Wikipedia pages.

Socio-demographic characteristics of the interviewees

Among the questionnaire’s respondents, 45.20% (1230 in absolute values) are represented by men, while 54.80% (1.491 in absolute values) by women.

Figure 1 shows the distribution of respondents by gender and age class. As shown by the data, women outnumber men in all age groups, while the age class 46-55 is the most numerous one for both genders.

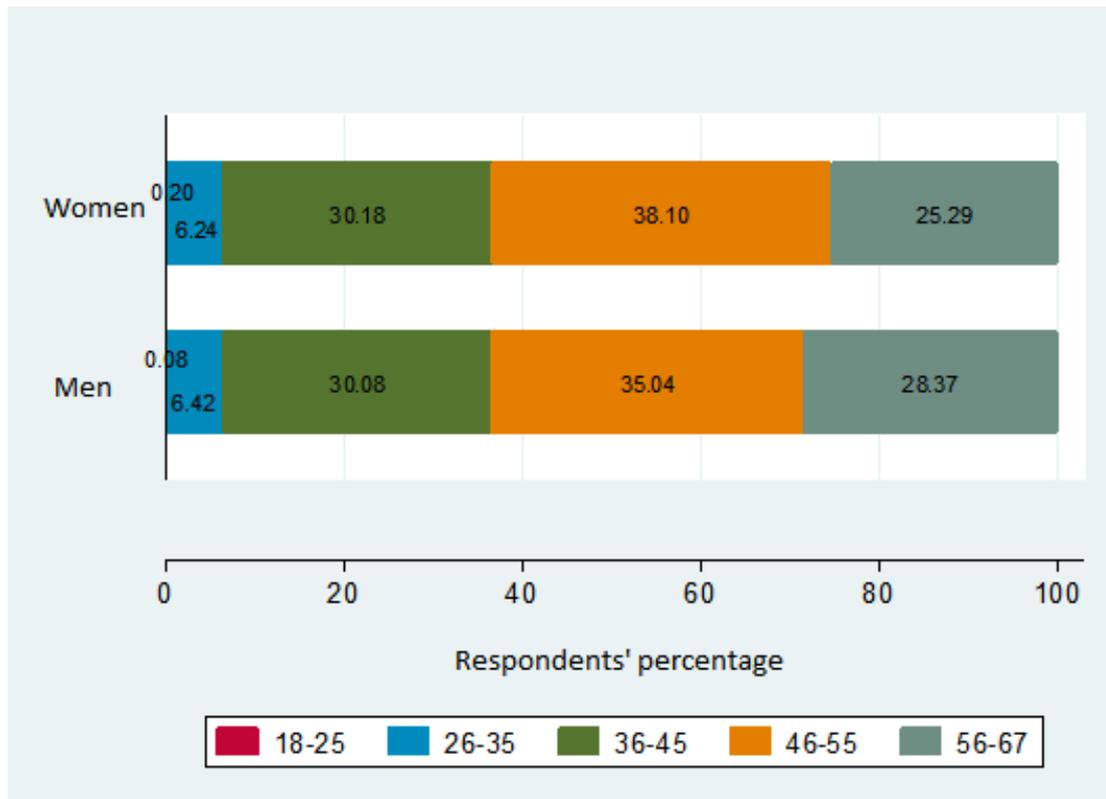
Figure 1 – Distribution of SW survey’s respondents by gender and age class, absolute values, SW survey



Source, SW survey, CNR Irpps, 2020.

Considering the gender differences between age classes in percentage values (Figure 2), data show how the two distributions are substantially identical in the central age classes, while there are more marked differences in the more extreme ones. Among men, the percentage of respondents in the age class 18-25 is over one-third of women, while in the age class 56-67, the share of men compared to that of women is about four percentage points higher.

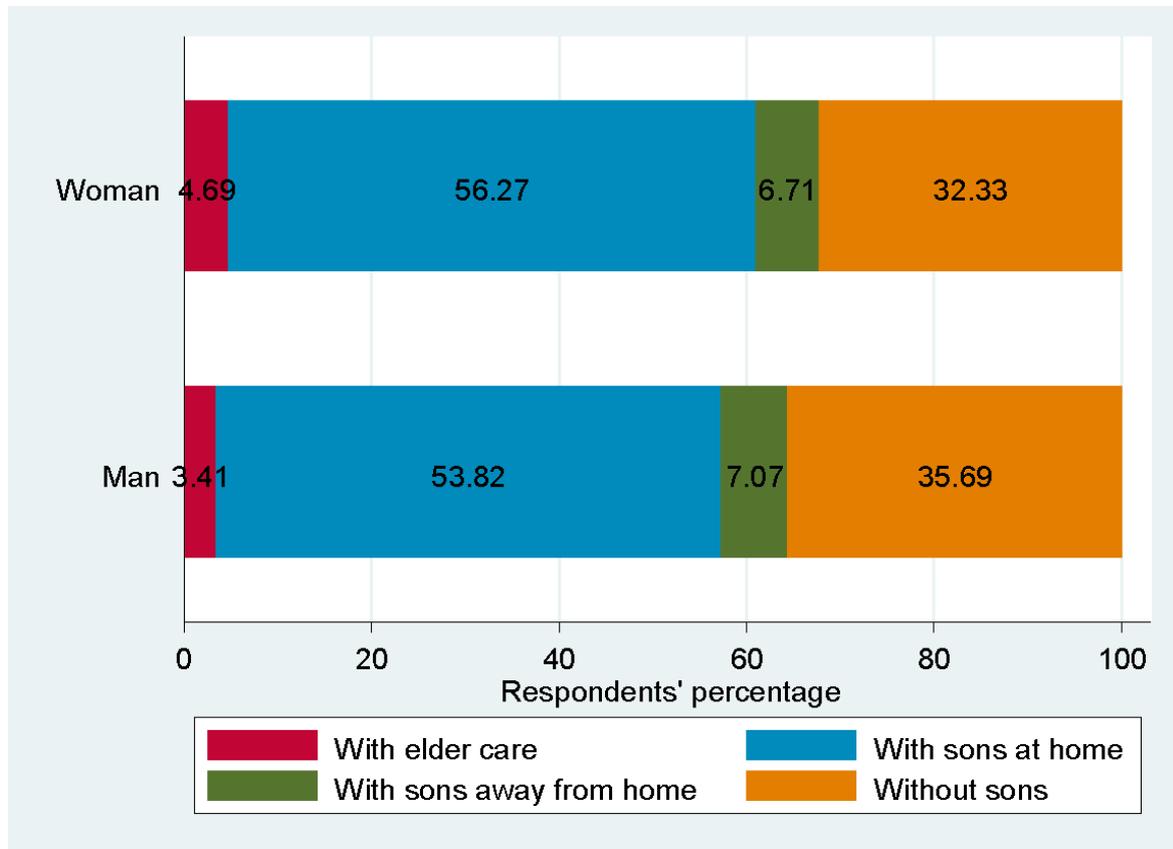
Figure 2 – Survey’s respondents by gender and age class, percentage values, SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 3 shows the data related to the respondents’ household composition divided by gender. Data show that the share of respondents living with elderly needing care is greater for women, as well as when considering living with children at home. On the contrary, among men, there is a greater share of childless respondents.

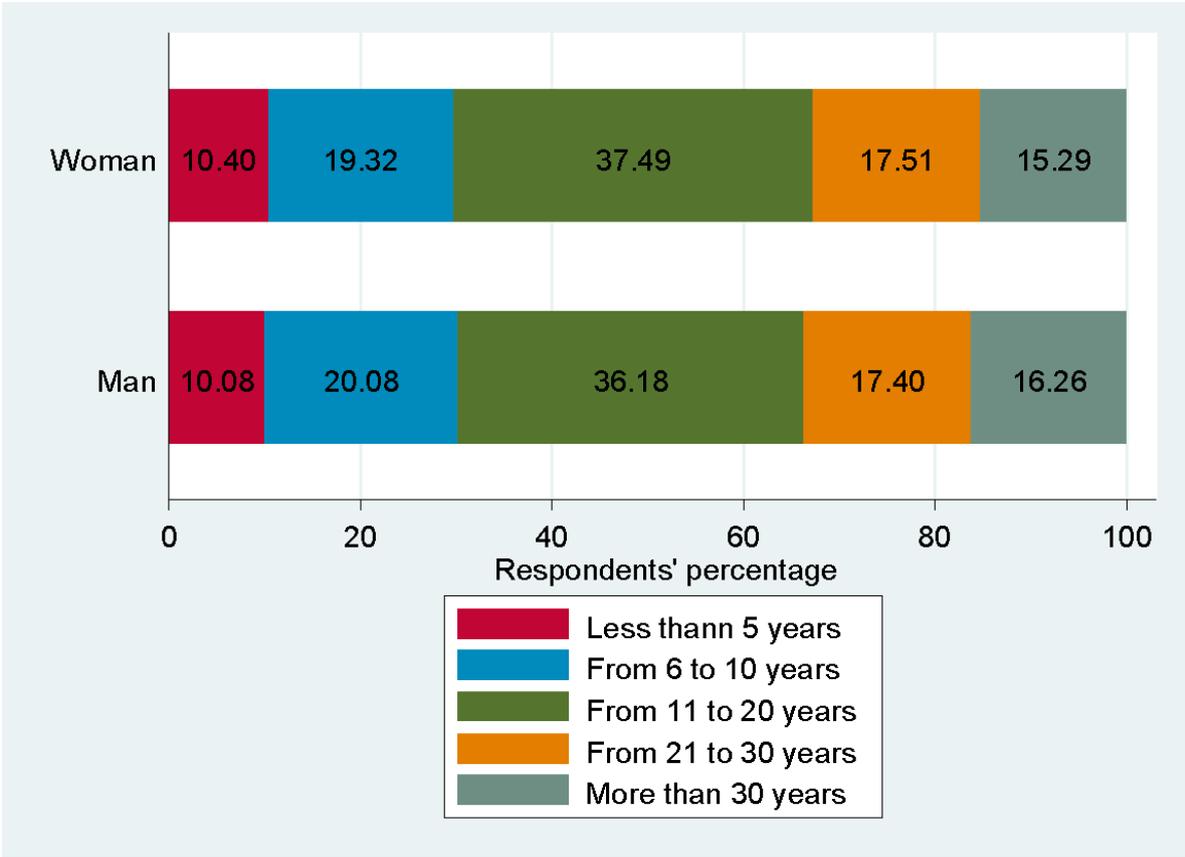
Figure 3 – SW survey’s respondents by gender and household composition, percentage values, SW survey



Source, SW survey, CNR Irpps, 2020.

Concerning the respondents’ length of service, Figure 4 shows how the percentage between the two genders is substantially similar for all the categories considered and that for both of them, the most frequent category is that of those who work in their research institution from 11 to 20 years.

Figure 4 – SW survey’s respondents by gender and length of service, percentage values, SW survey

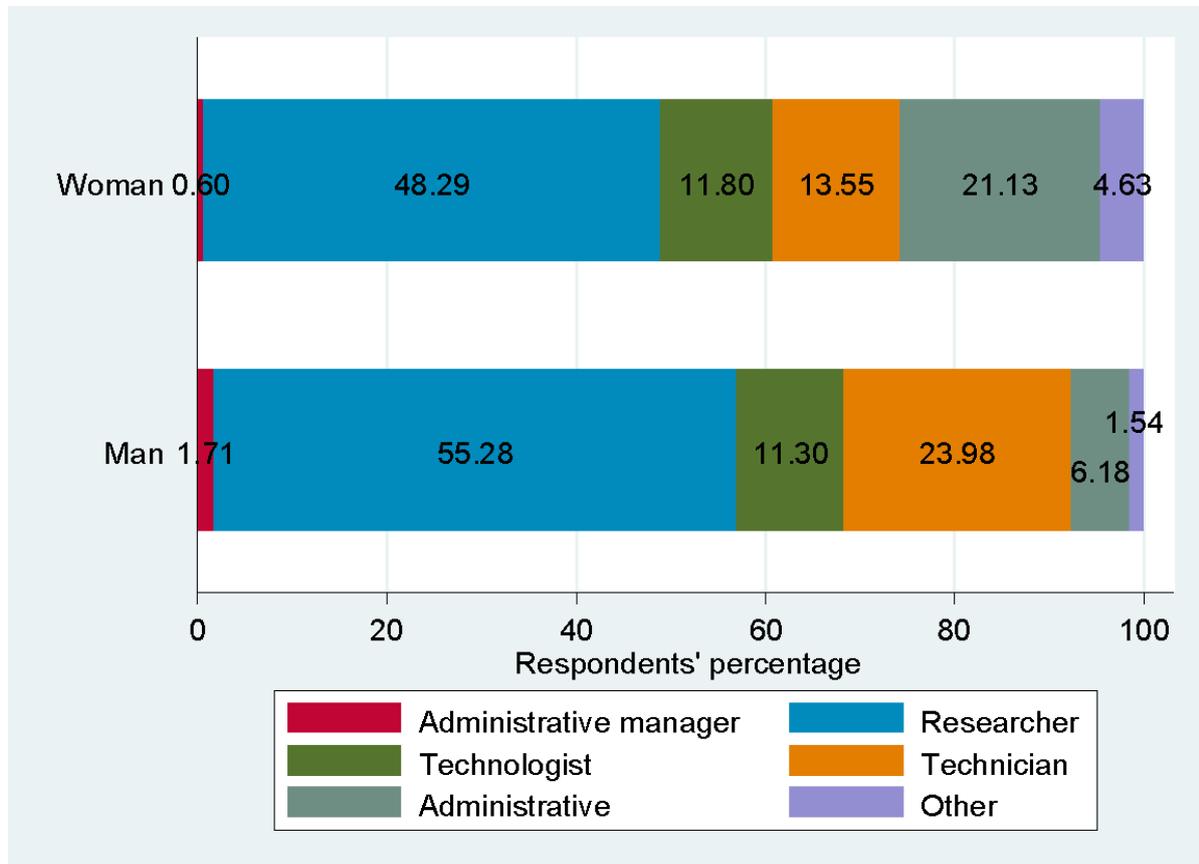


Source, SW survey, CNR Irpps, 2020.

Figure 5 describes the data related to the professional role of women and men who took part in the survey. Data show that most respondents, both women, and men, perform the role of researcher. At the same time, however, data also show that the share of female researchers is significantly lower than that of men, being respectively 48.29% and 55.28%.

Furthermore, significant differences between genders are also found concerning technicians and administrative staff, where the first category is relatively more numerous among men while the second is somewhat more numerous among women.

Figure 5 – SW survey’s respondents by gender and professional role, percentage values, SW survey



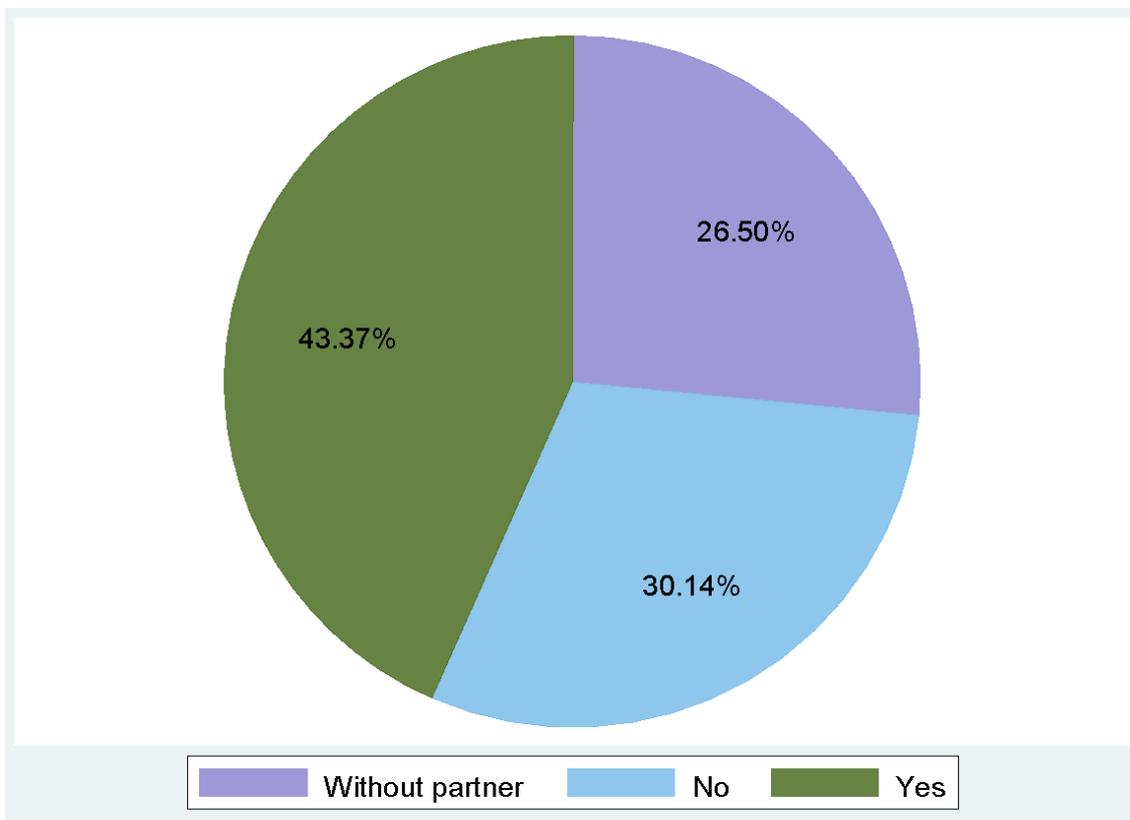
Source, SW survey, CNR Irpps, 2020.

Division of home and family care workload

Among the questionnaire’s respondents, the majority carried out SW activities throughout the period defined by the COVID-19 emergency, while a small minority carried out SW only occasionally, alternating SW with working at the usual workplace. There are no significant gender differences among the two groups, with 95.71% of women and 94.72% of men belonging to the first group, while 4.29% of women and 5.28% of men belonging to the second one.

One of the main aspects which was a particular focus of our attention is the distribution of home and family care workload among cohabiting partners, before and during the period of the COVID-19 emergency. For this purpose, one of the questions aimed at providing a picture of the number of respondents who were living with the partner and of those who had partners who were in turn in SW. Among the questionnaire’s respondents, 73.51% (2,000 respondents in absolute value) were living with their partner while 26.49% were not. Figure 6 shows the breakdown of non-cohabiting and cohabiting respondents, who in 43.37% of cases were also in SW or retired, while in 30.14% of cases continued to carry out their work outside the home.

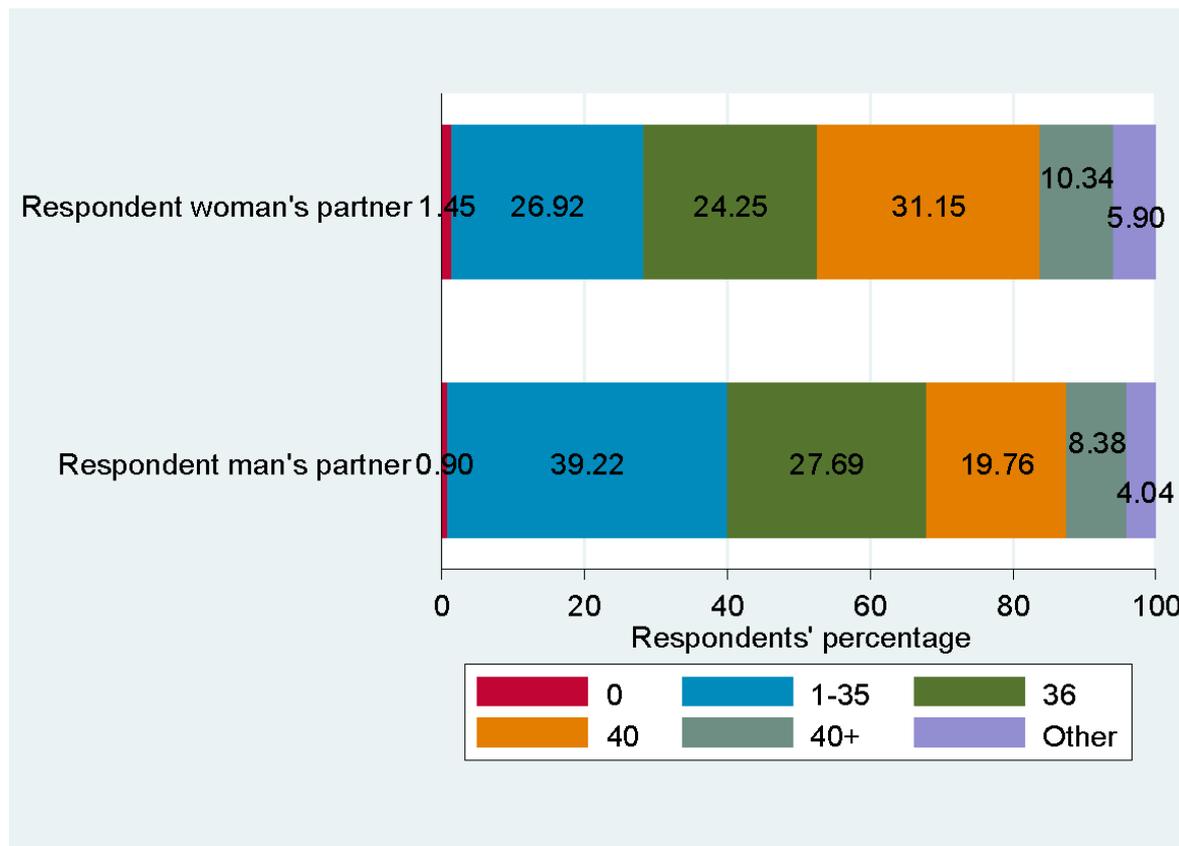
Figure 6 – Response to the question “Was the partner in smart working during the smart working period?”, Percentage values, SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 7 shows the hours worked by the partners of the 2,000 respondents who declared that they were cohabiting, whether the partner was in SW or not. Concerning women respondents' partners 41.49% had worked 40 or more hours per week, while concerning men respondents' partners those who worked 40 or more hours per week were only 28.14%. Data show, therefore, that man respondents' partners worked on average fewer hours than women respondents' ones.

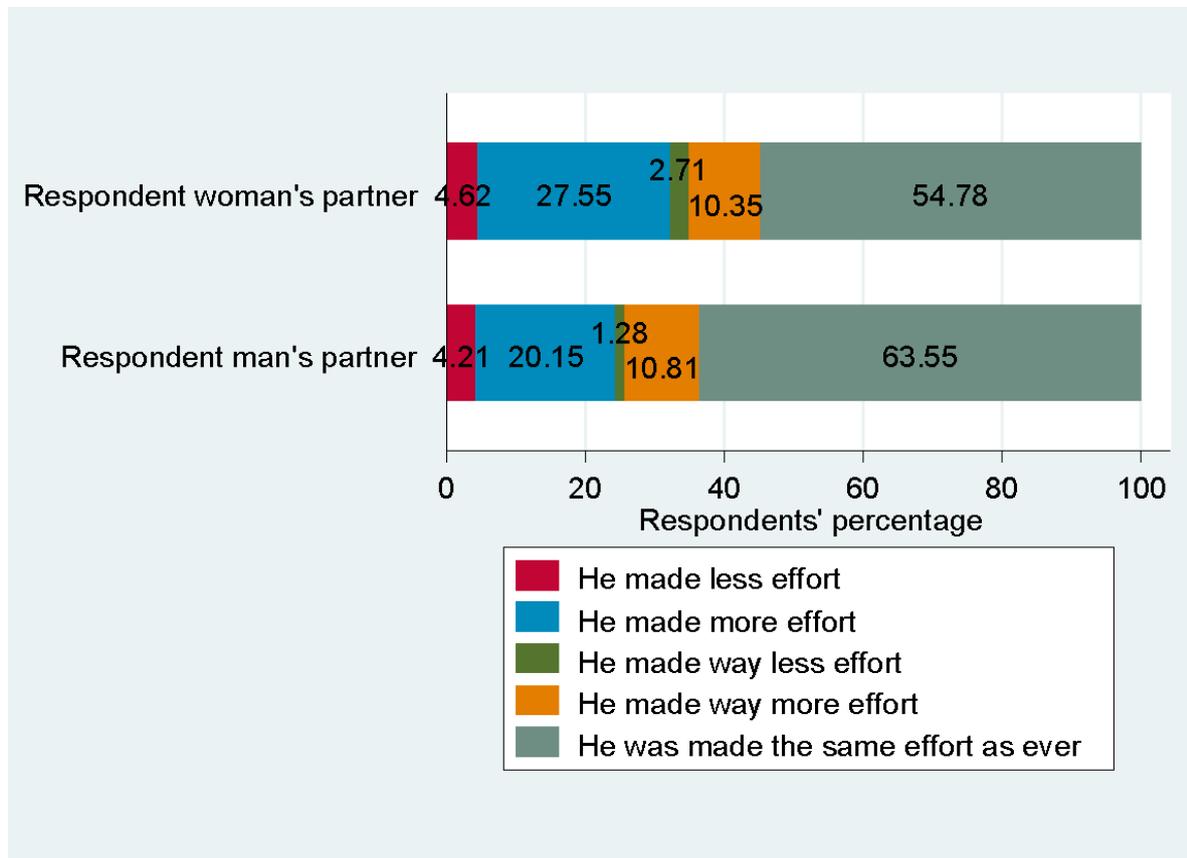
Figure 7 – Response to the question “During the smart working period, how many hours did the partner work (in smart working or not)?”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 8 shows the data concerning the perception of respondents with respect to the difference in the partner’s commitment related to home and family care, before and during the period of the COVID-19 emergency. Results are related to partners who were in SW. Most of both female and male respondents stated that the partner made the same effort as usual (54.78% women and 63.55% men). At the same time, however, 27.55% of women and 20.15% of men claimed that the partner made more effort than usual. An interesting difference is found in the category “He made way less effort” which, despite being a less numerous category, reports a notable gender difference. In fact, the share of men declaring that the partner was engaged much less in home and family care works is less than half of that provided by women respondents.

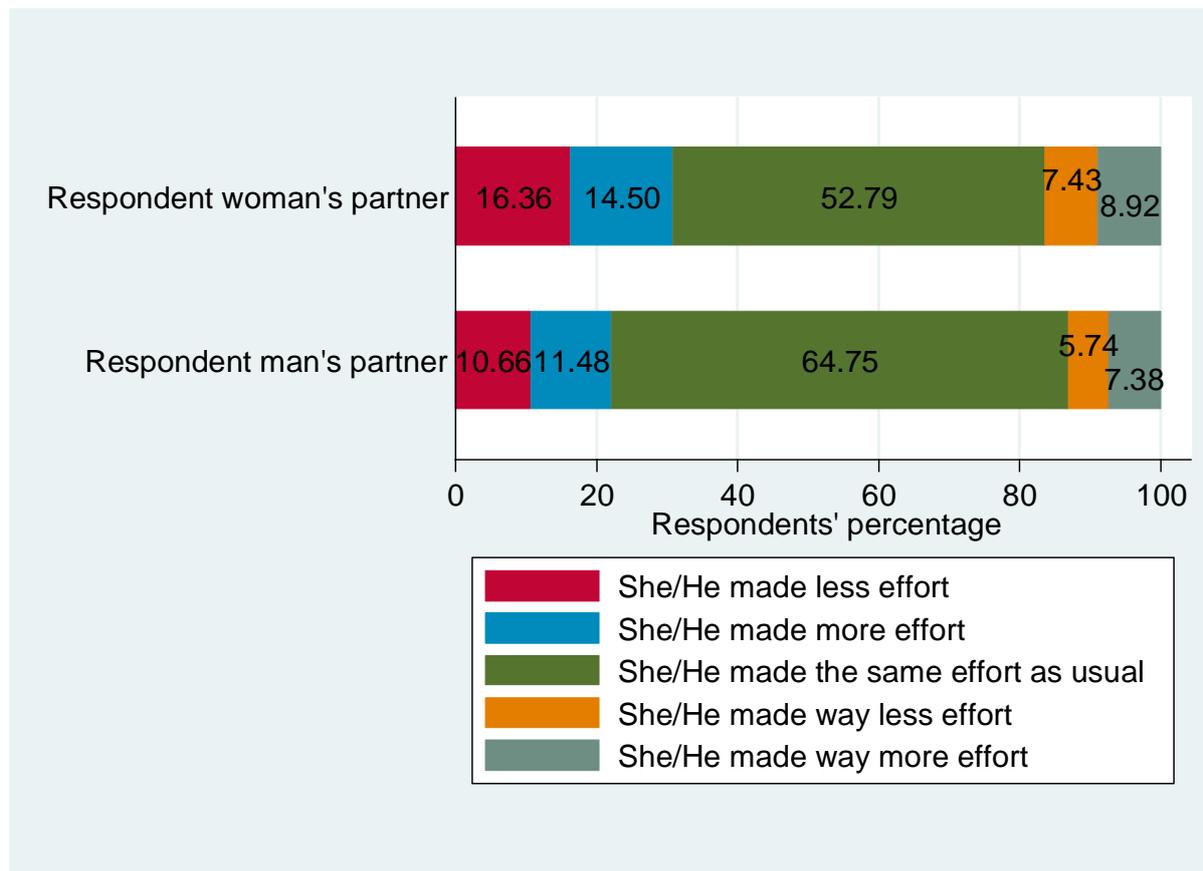
Figure 8 – Response to the question “To what extent the partner who was in smart working with you, during the smart working period, committed him/herself to sharing home and family care activities compared to the period before the COVID-19 emergency?”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

When considering the partners who continued to carry out their work outside the home, a rather similar picture is shown by the data related to the perception of respondents with respect to the difference in the commitment in home and family care, before and during the period of the COVID-19 emergency. (Figure 9). Again, most respondents did not notice any difference between the two periods, however, women more than men, 16.36% and 10.66% respectively, perceived less or much less commitment from their partners.

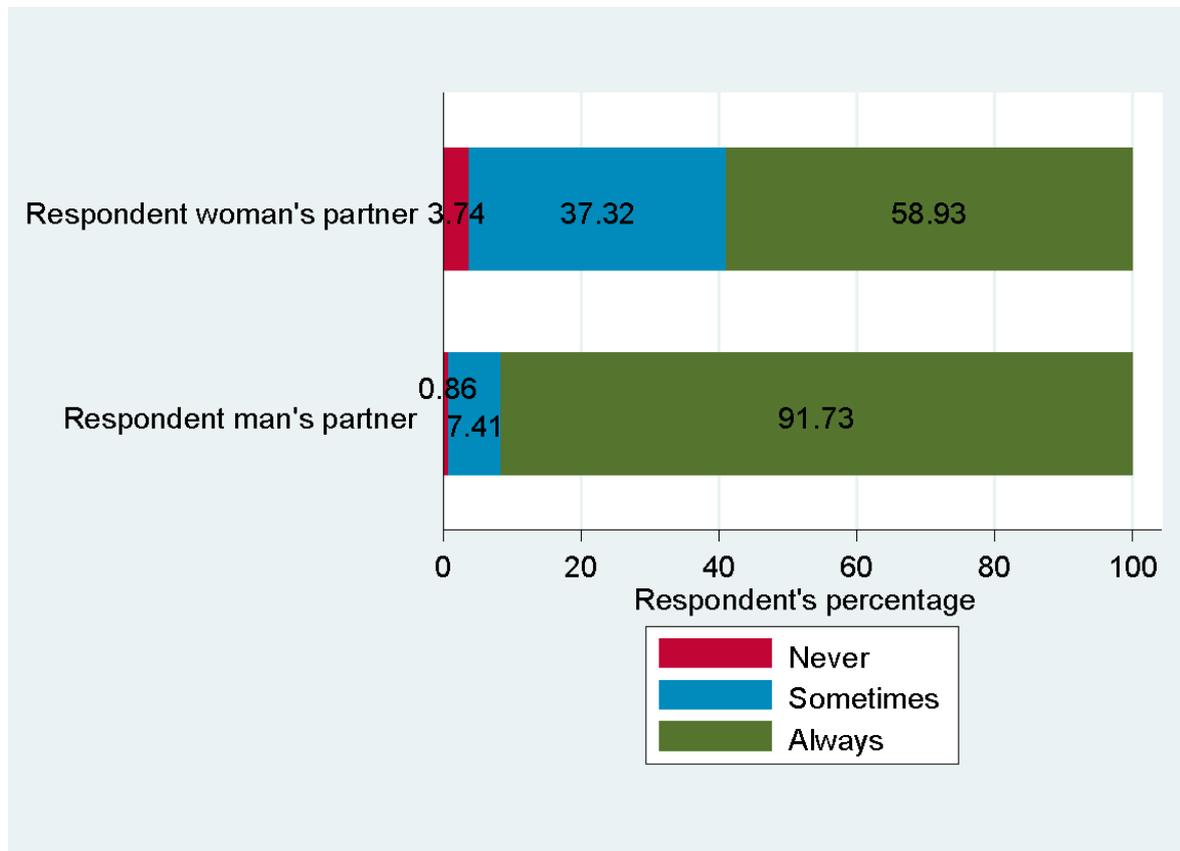
Figure 9 – Response to the question “During the smart working period, to what extent was the partner, who was regularly carrying out his/her work outside the home, engaged in sharing home and family care activities compared to the period before the COVID-19 emergency?”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 10 reports the data related to the frequency with which the partners of the questionnaire's respondents collaborated in home and family care activities before the lockdown due to the COVID-19 emergency. In this regard, it is noted that while 91.73% of men's respondents claimed that the partner always collaborated in the division of the domestic workload, for women the percentage drops to 58.93%. On the contrary, while only 7.41% of men reported that the partner collaborated only occasionally, in the case of women the share rises to 37.32%. Same sign is shown in the case of the total absence of collaboration reported by 0.86% of men and 3.74% of women. These data indicate that even among employees of research institutions, who on average have a higher level of education and social capital than the general population of the country, there is still a distribution of domestic workloads linked to a traditional view of gender roles.

Figure 10 – Answer to the question “Before the smart working period, did the partner collaborate in carrying out home and family care activities?”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Figures 11 to 19, below, show the data related to the division of domestic work between respondents and their partners, who were also in SW during the period defined by the COVID-19 emergency.

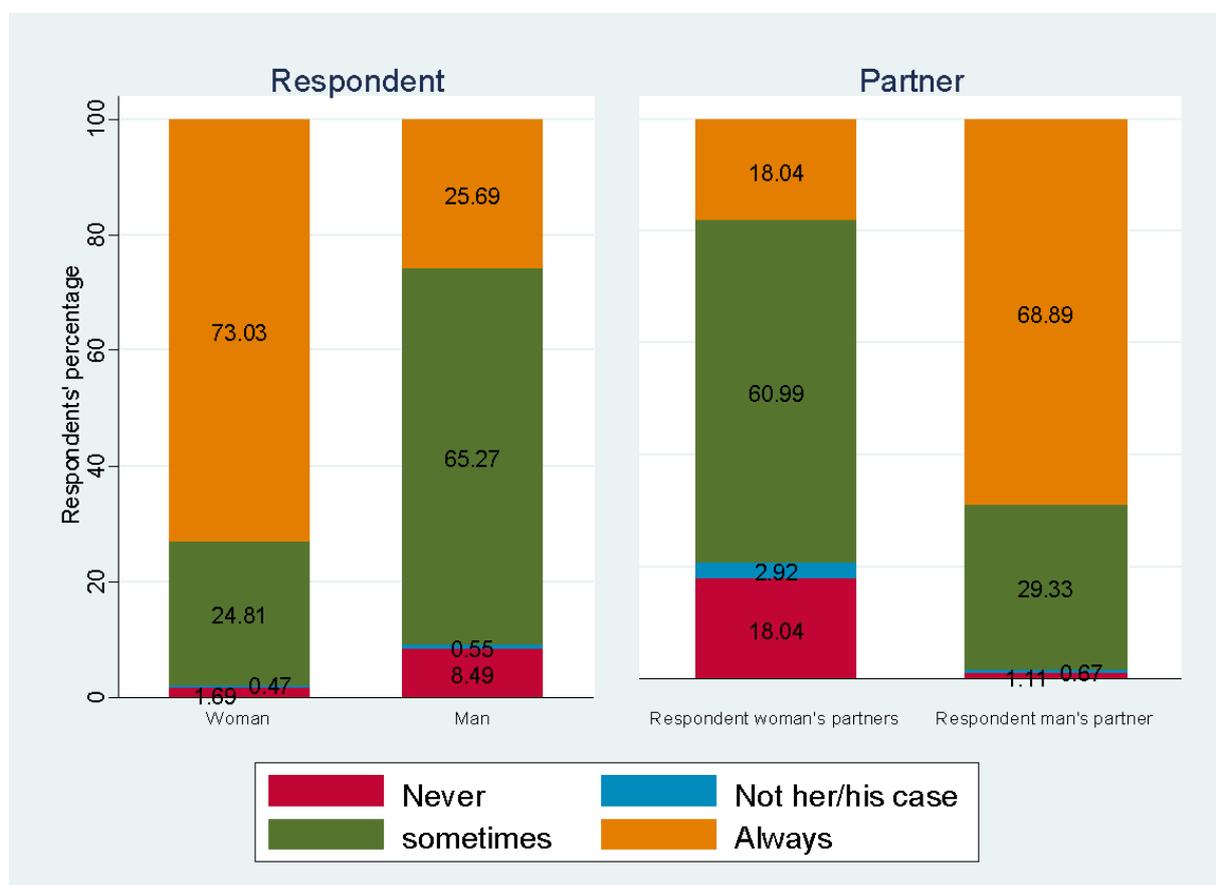
Each figure describes the breakdown of the household workload related to a specific activity:

- cleaning.
- grocery shopping.
- childcare.
- remote support for school activities.
- elderly care (cohabiting elderly or not).
- bureaucracy and bills payment.
- minor home repairs.
- meal preparation.

For each graphical representation, respondents’ data are shown in the left part of the figure while the data about their partners are shown in the right part.

Figure 11 refers to the division of the household workload related to cleaning activities. Data clearly show how this is still an activity mainly carried out by women, who claimed to always deal with it in 73.03% of cases, against 25.69% of men. On the contrary, women said that they never deal with it only in 1.69% of cases, while men in 8.49% of cases. Concerning partners, the situation appears rather symmetrical, although the percentages vary considerably. In fact, while men who declared that their partner never takes care of cleaning amount to only 1.11%, the percentage of women who declared the same with respect to their own partners rises to 18.04%.

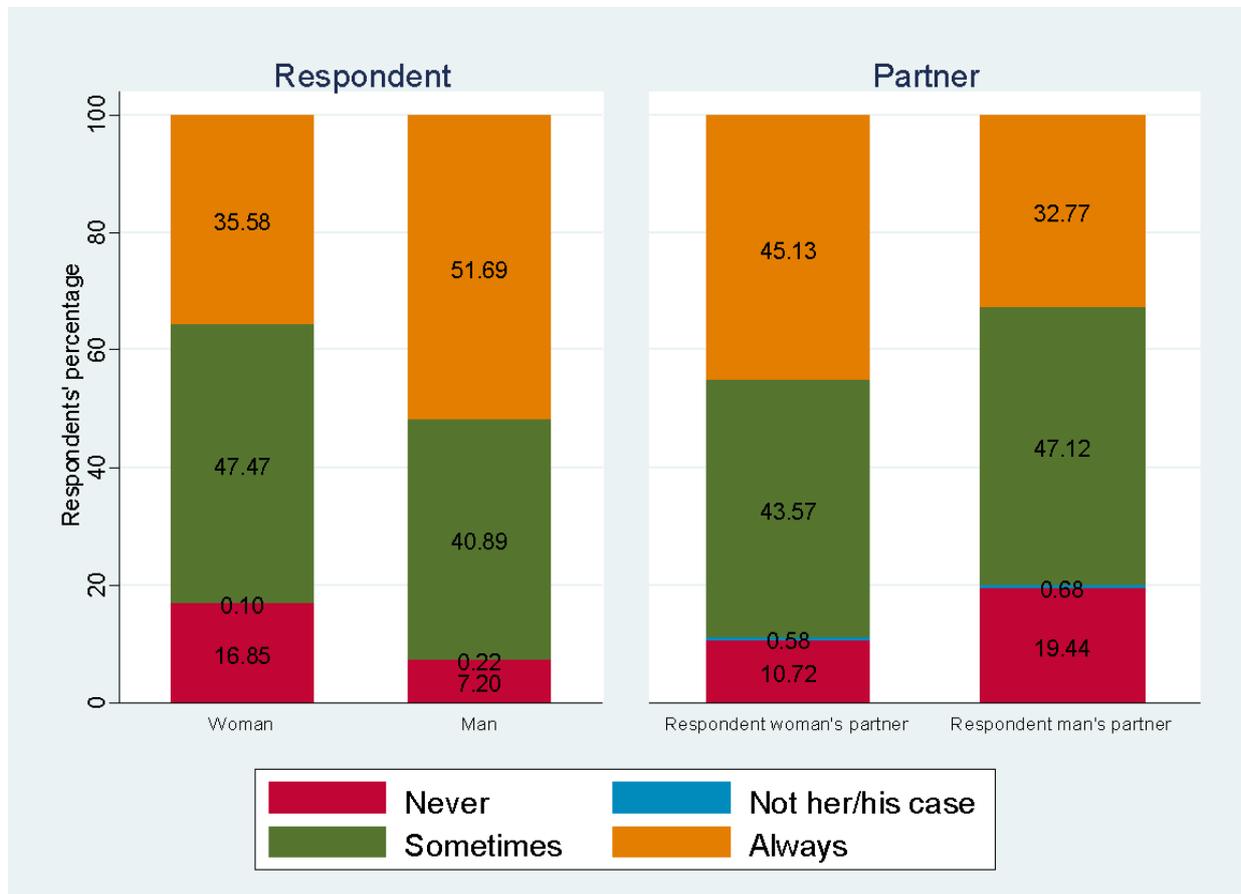
Figure 11 – Response to the question “During the smart working period, indicate which home and family care activities were carried out by the respondent and by the partner”, percentage values by gender [cleaning], SW survey



Source, SW survey, CNR Irpps, 2020.

On the other hand, the activities related to grocery shopping, as shown in Figure 12, seem to be mostly carried out by men. In this case, in fact, women declared that they always go shopping in 35.58% of cases while men in 51.69% of cases. In line with these claims, women reported that their partners always do grocery shopping in 45.13% of cases, while men reported that their partners always do it in 32.77% of cases.

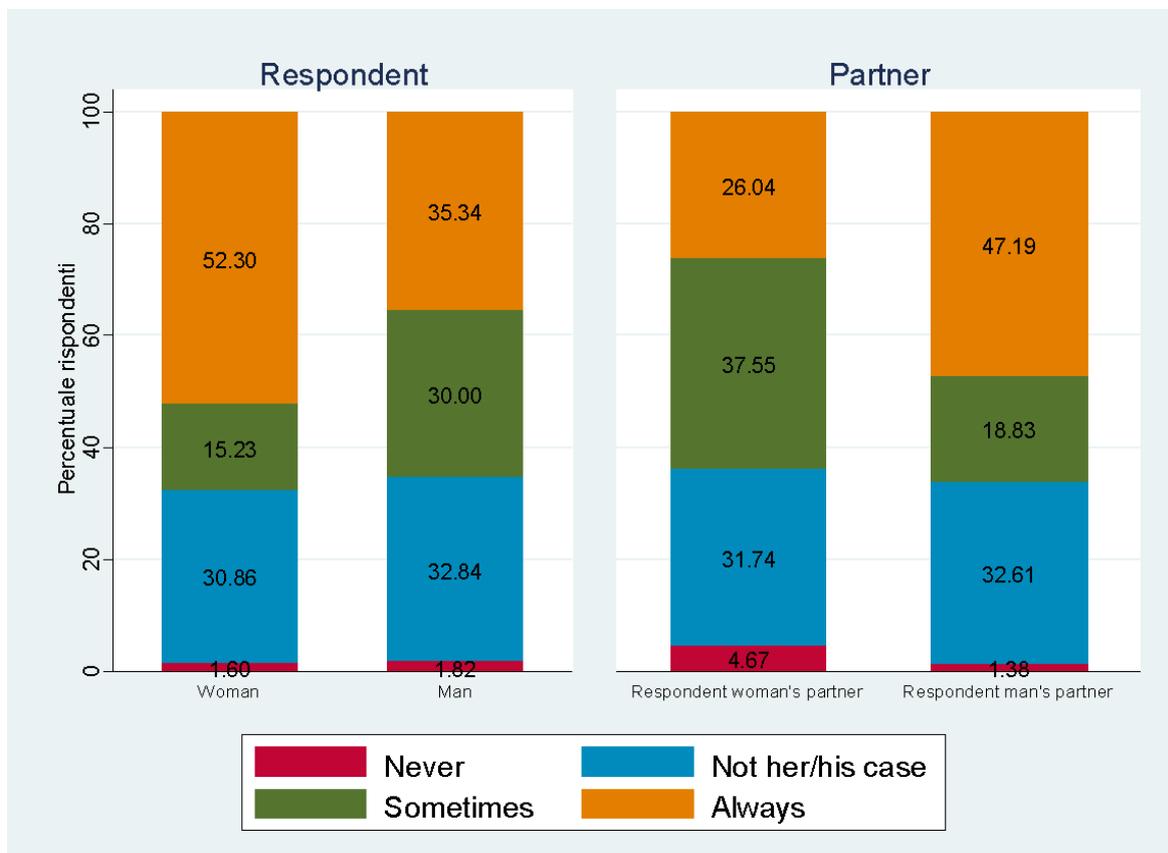
Figure 12 – Response to the question “During the smart working period, indicate which home and family care activities were carried out by those who answered the questionnaire and by the partner”, percentage values by gender [grocery shopping], SW survey



Source, SW survey, CNR Irpps, 2020.

Another activity that again seems still to be a firm women’s priority is childcare (Figure 13). Women, in fact, declared to always take care of children in 52.30% of cases, against 35.34% of men. Even in this case the percentages of respondents are also reflected in their partners. Women declared that their partners always take care of children only in 26.04% of cases, while men declared that their partners always take care of children in 47.19% of cases. Even in this case, data indicate a certain persistence of a rather traditional vision of the gender division of domestic tasks that, even among the population groups with higher levels of education, is evidently still well rooted.

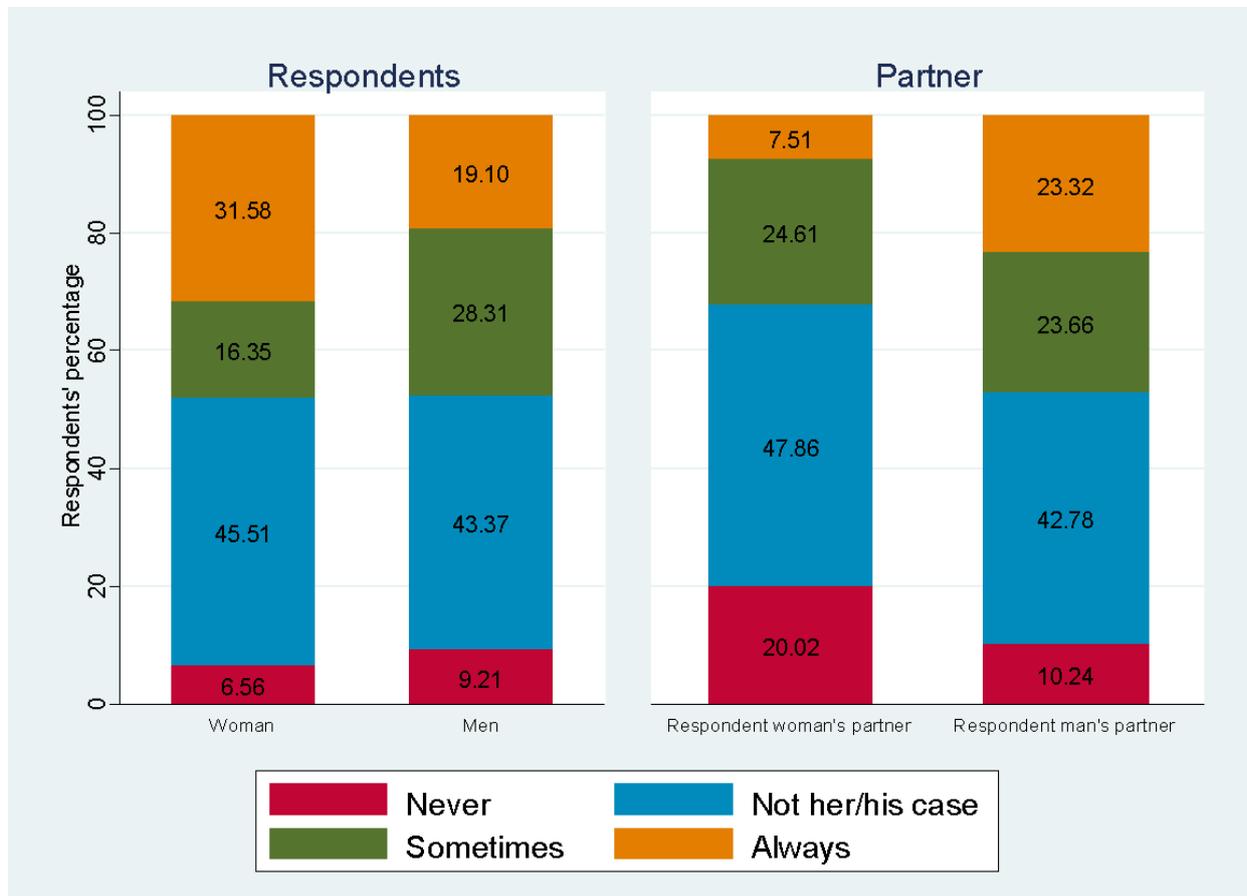
Figure 13 – Response to the question “During the smart working period, indicate which home and family care activities were carried out by the respondent and by the partner”, percentage values by gender [childcare], SW survey



Source, SW survey, CNR Irpps, 2020.

Consistently with previous data, even remote school support (Figure 14) seems to be a task mainly carried out by women, 31.58% of whom claimed to always take care of it, compared to 19.10% of men. Also in this case, in proportion, the values of the partners mirror those of the respondents, in fact, women’s partners always take care of children school support only in 7.51% of the cases, while men’s partners take care of them in 23.32% of cases.

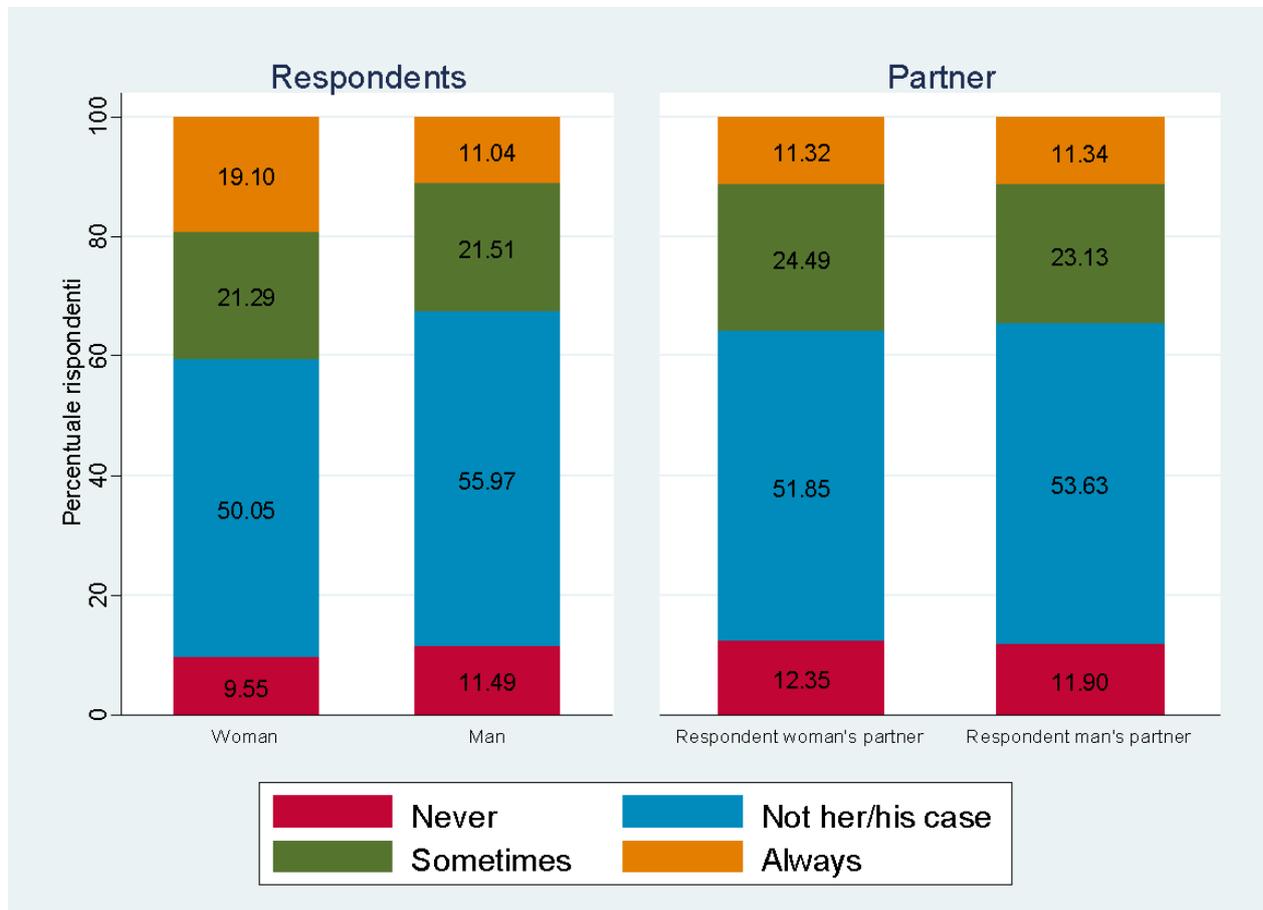
Figure 14 – Response to the question “During the smart working period, indicate which home and family care activities were carried out by those who answered the questionnaire and by the partner”, percentage values by gender [support for remote school activities], SW survey



Source, SW survey, CNR Irpps, 2020.

The workload related to elderly care (whether cohabiting or not), instead, seems to be more balanced than the activities considered above (Figure 15). The distribution between the possible answers “never”, “sometimes” and “always”, in fact, is almost identical in the case of both the respondents and their partners, deviating only by a few percentage points.

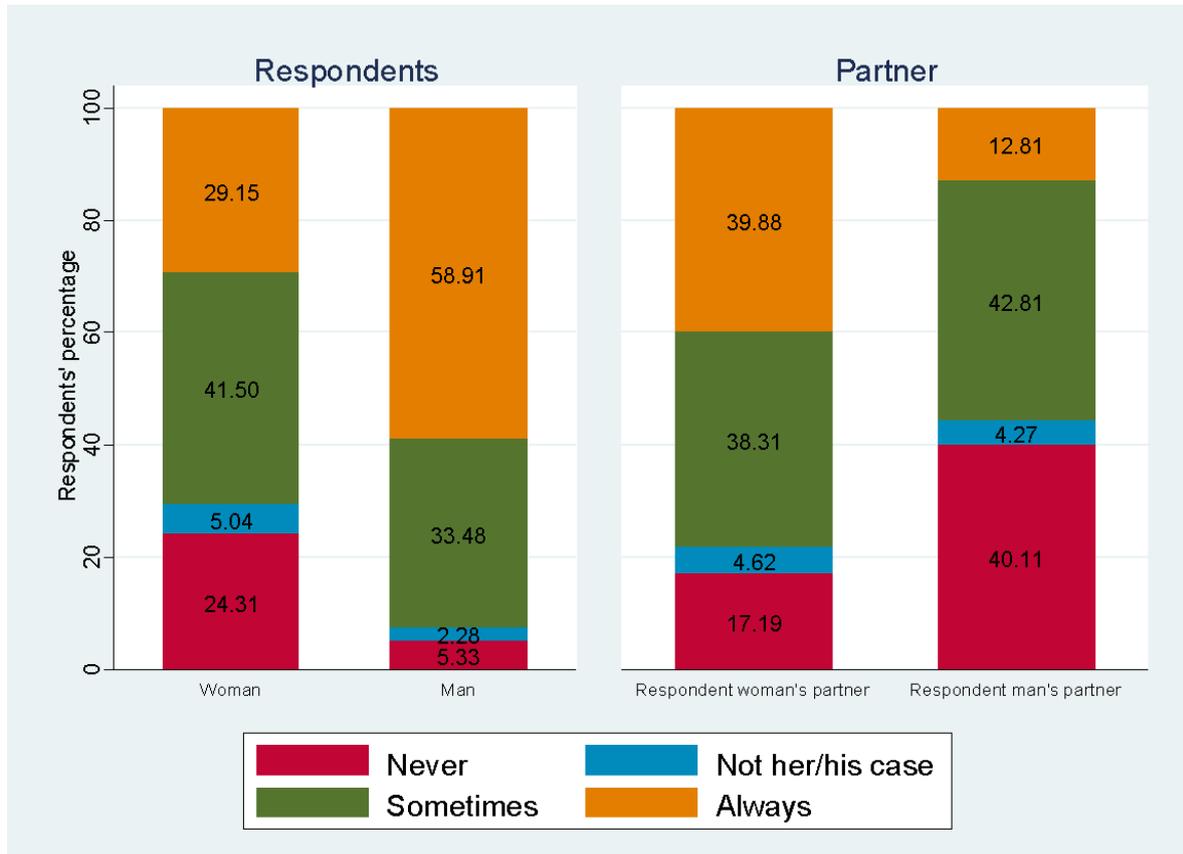
Figure 15 – Response to the question “During the smart working period, indicate which home and family care activities were carried out by the respondent and by the partner”, percentage values by gender [elderly care (cohabiting or not)], SW survey



Source, SW survey, CNR Irpps, 2020.

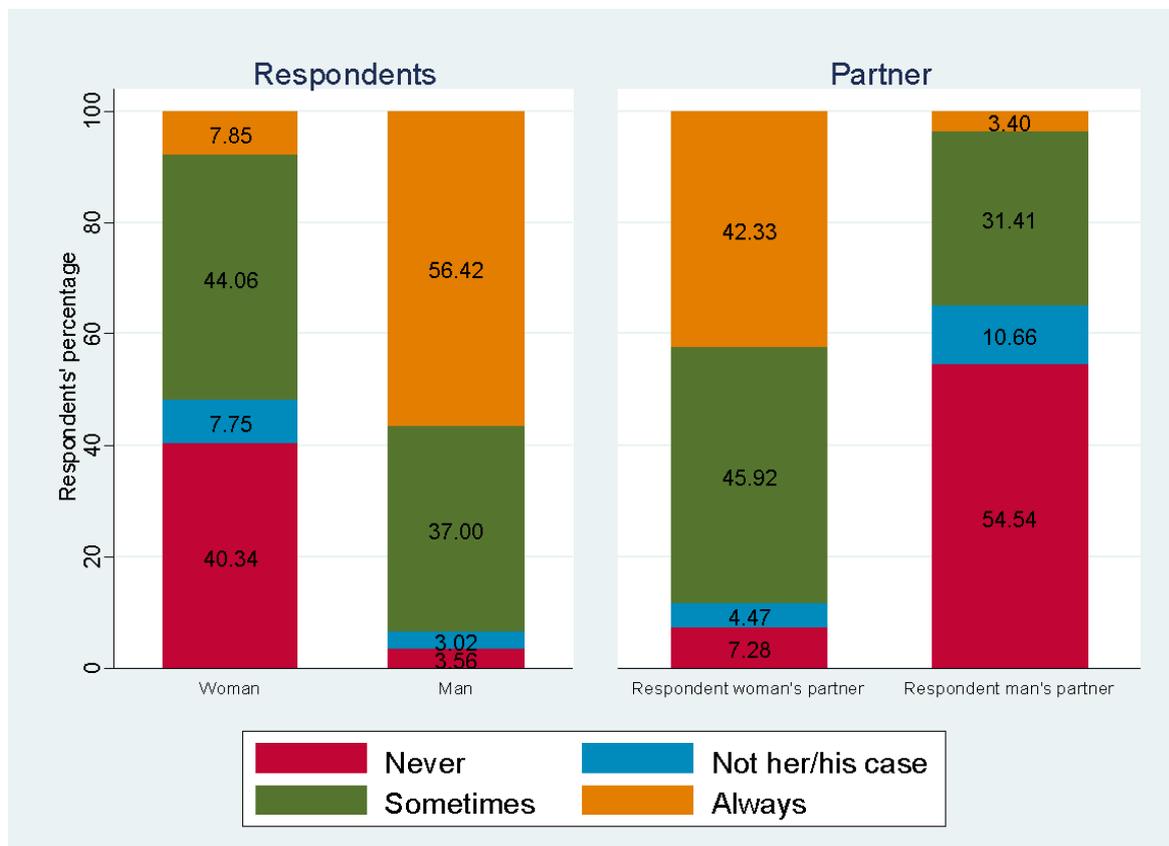
The handling of bureaucracy and bills payment (Figure 16) and small domestic repairs (Figure 17) are mainly carried out by men. The former is always carried out by men in 58.91 % of cases and by women in 29.15 % of cases, while it is never carried out by men only in 5.33% of cases and by women in 24.31% of cases. At the same time, in the case of the respondents' partners, 39.88% of women declared that their partner always carries out the activities related to bureaucracy, while only 12.81% of male respondents declared the same of their partner. Similarly, with even more polarized values, the latter is always carried out by men in 56.42% of cases against 7.85% of women. Compared to the partners, women said that their partners always perform small repairs in 39.88% of cases, while men claimed the partner to do so only in 12.81% of cases.

Figure 16 – Response to the question “During the smart working period, indicate which domestic and family care activities were carried out by those who answered the questionnaire and by the partner”, percentage values by gender [bureaucracy/bill payments], SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 17 – Answer to the question “During the period of working smart, indicate which domestic and family care activities were carried out by those responding to the questionnaire and the partner”, percentages by gender [domestic small repairs], investigation SW

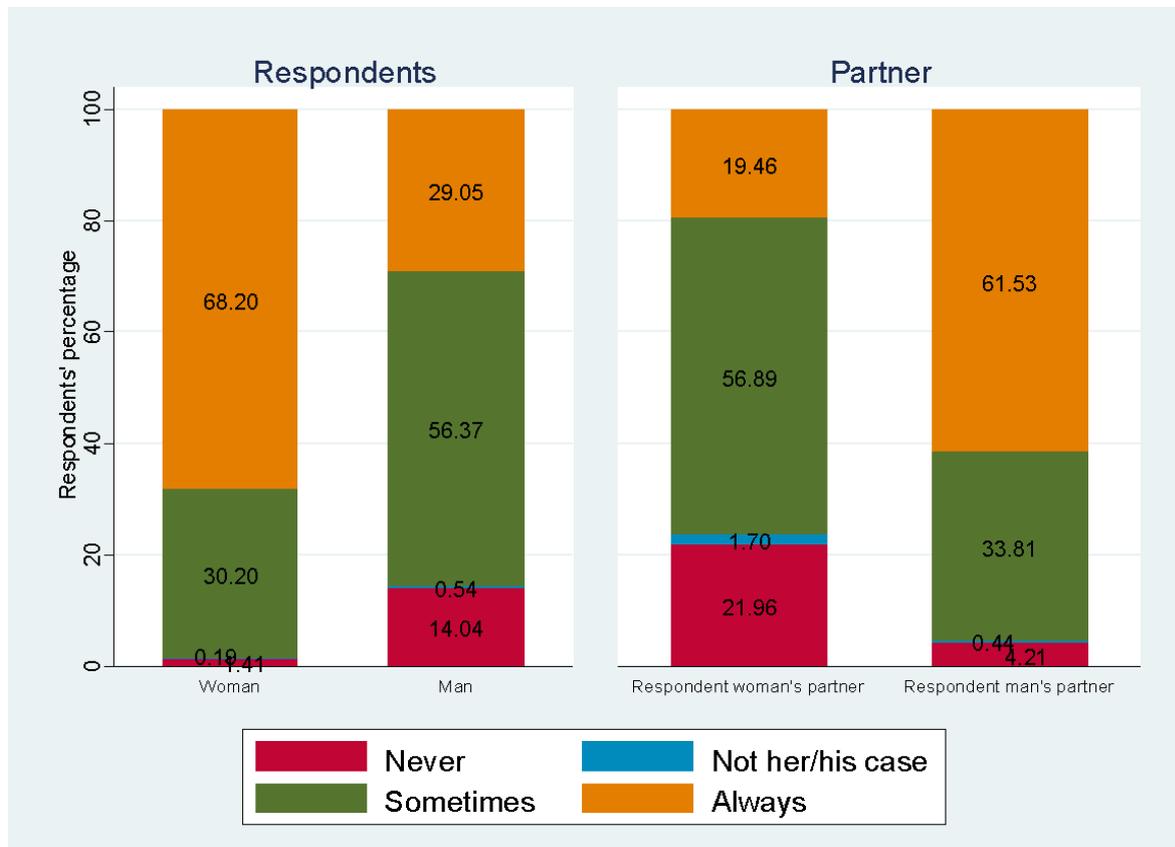


Source, SW survey, CNR Irpps, 2020.

Finally, the last domestic activity considered, namely meals’ preparation (Figure 18), remains an activity carried out mainly and significantly by women. 68.20% of female respondents declared that they always take care of meals, while only 29.05% of male respondents did the same. Turning to partners, women declared that their partner always takes care of meals in 19.46% of cases while male respondents declared the same in 61.53% of cases.

Data on domestic work and family care show that tasks related to cleaning and preparing meals are more often carried out by women, while those related to the handling of bureaucracy and minor household repairs are more often the prerogative of men, thus indicating a very traditional model of gender division of domestic tasks. However, it is likely that especially in the emergency context in which the investigation took place this distribution is also linked to the frequency and ease in the handling of tasks by men and women.

Figure 18 – Response to the question “During the smart working period, indicate which home and family care activities were carried out by the respondent and by the partner”, percentage values by gender [meals’ preparation], SW survey



Source, SW survey, CNR Irpps, 2020.

Smart Working, home/family life and leisure

The figures below show how women and men who answered the questionnaire used their free time. Figures 19 to 27, in fact, show the answers related to a series of activities proposed in the questionnaire:

- taking online courses.
- reading, music, cinema.
- carrying out major house cleaning and tidy up papers and documents.
- cooking experimentation
- taking care of personal well-being, both physical and spiritual.
- aiding relatives and friends who needed it.
- doing online shopping.
- getting a larger dose of rest.
- playing sports at home.

Table 2 summarizes the percentage values of men and women who reported having carried out each of these activities

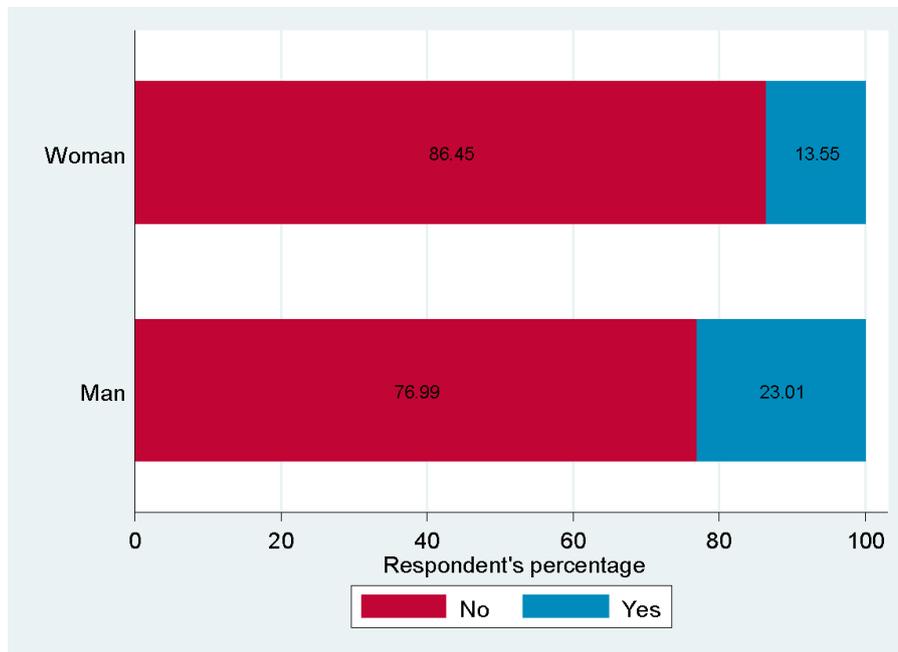
Table 2 – Summary of percentage values on the use of men’s and women’s free time

Activities	Women	Men
Taking online courses	13.15	23.01
Reading, listening to music, watching films and TV series	42.79	54.55
Carrying out major house cleaning and tidy up papers and documents	49.23	33.41
Cooking experimentation	39.03	26.34
Taking care of personal well-being, both physical and spiritual	18.24	18.86
Aiding relatives and friends who needed it	17.91	14.15
Making online shopping	4.36	8.94
Getting a larger dose of rest	14.62	15.85
Playing sports at home	34.81	29.27

Source, SW survey, CNR Irpps, 2020.

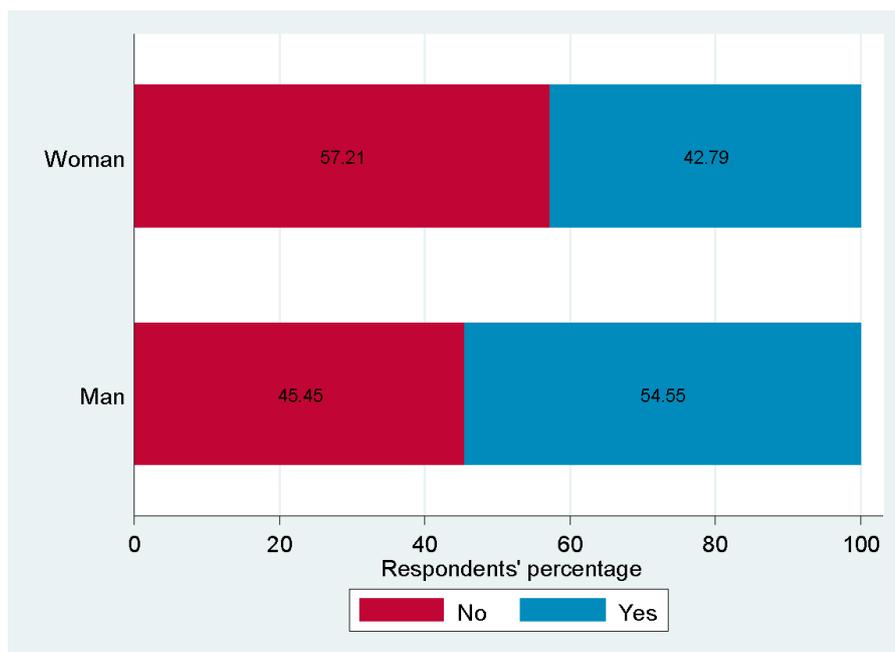
Collected data show that a higher share of women, compared to men, preferred to spend their free time to tidying up home, carrying out extensive cleaning and tidying up papers and documents; experimenting in the kitchen; to the care and assistance of relatives and friends who needed it as well as practicing sports at home. On the other hand, a higher share of men than women preferred activities such as participating in in-depth courses online; reading, listening to music and watching movies and TV series as well as doing online shopping. Almost identical percentages between women and men are found for the activities of physical and spiritual well-being and for getting longer rest. In this sense, the lockdown has strengthened a gender division not only of domestic and family workloads but also of free time spent at home.

Figure 19 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I took the opportunity to follow some in-depth courses online], SW survey



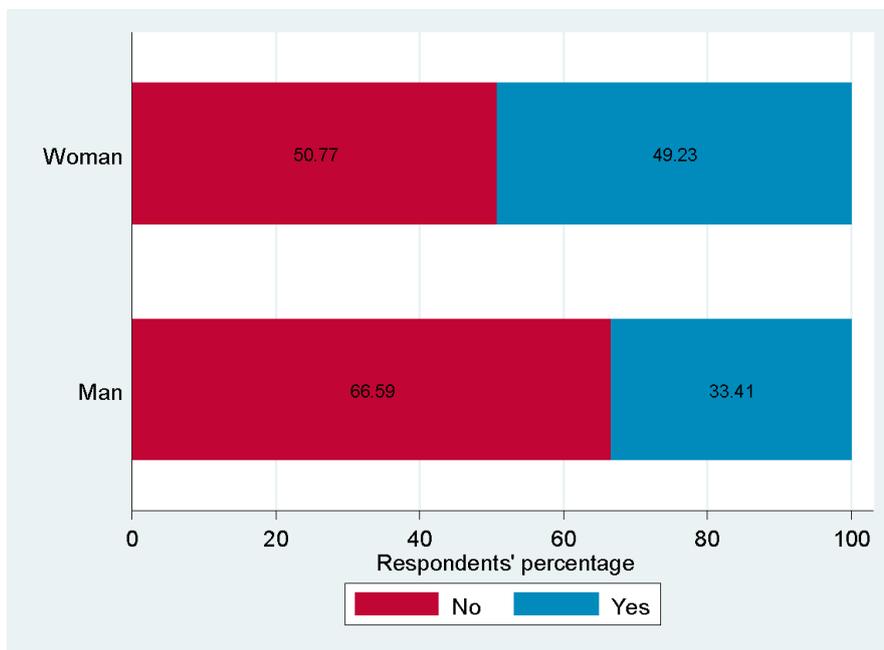
Source, SW survey, CNR Irpps, 2020.

Figure 20 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by genre [I dedicated myself to reading, music, cinema], SW survey



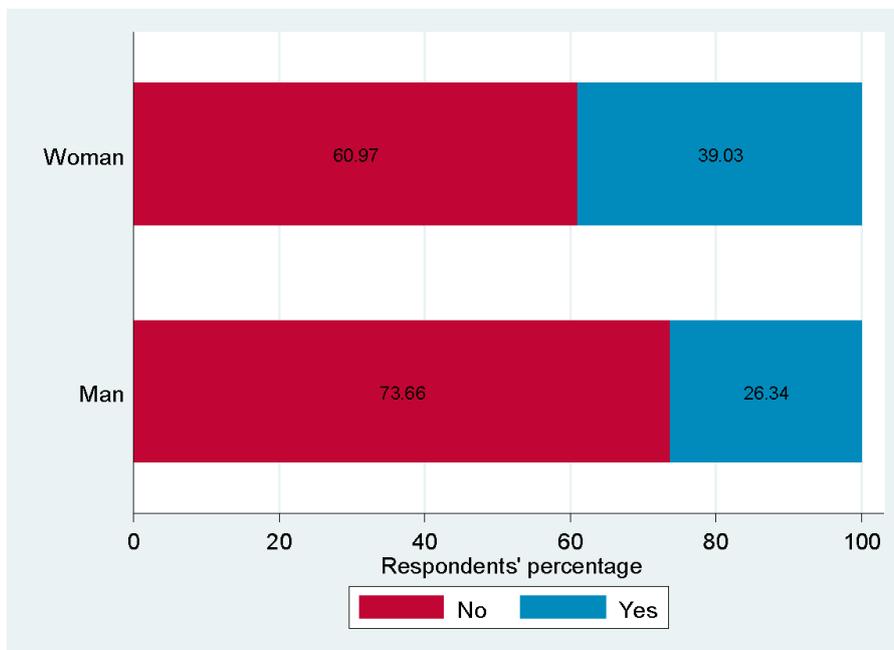
Source, SW survey, CNR Irpps, 2020.

Figure 21 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by genre [I carried out major house cleaning and rearranged papers and documents], SW survey



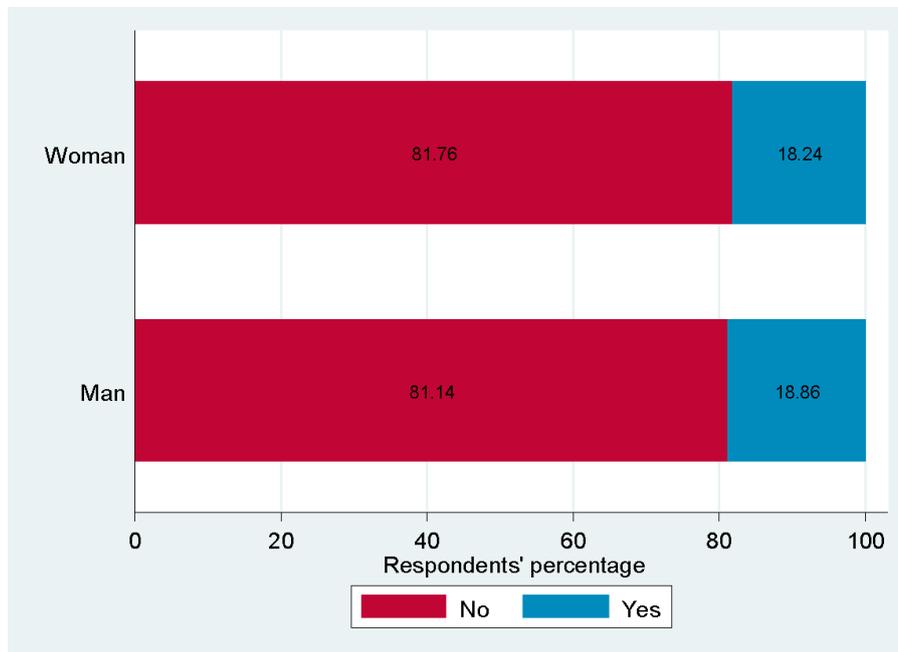
Source, SW survey, CNR Irpps, 2020.

Figure 22 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I experimented in the kitchen], SW survey



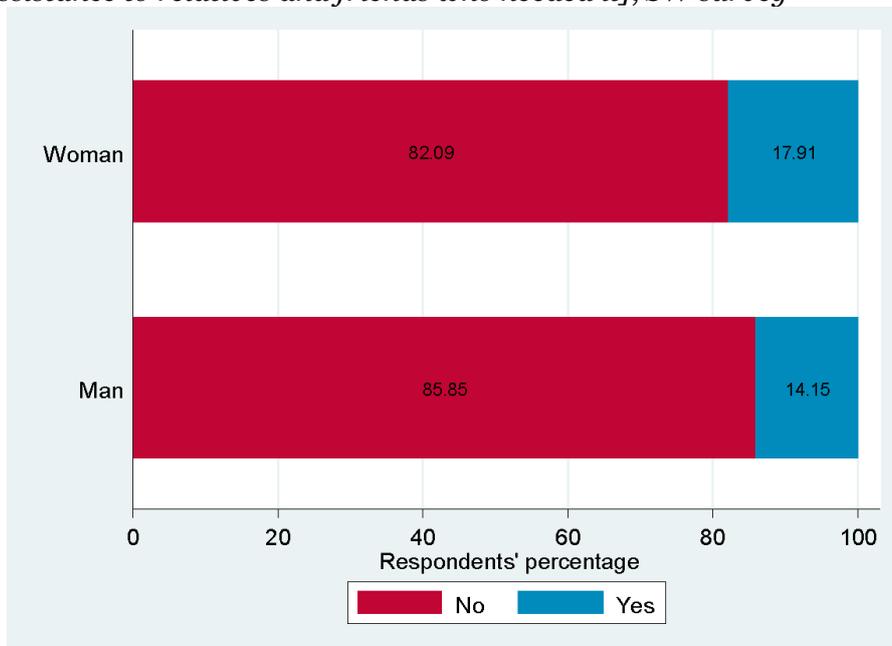
Source, SW survey, CNR Irpps, 2020.

Figure 23 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I took care of personal well-being, both physical and spiritual], SW survey



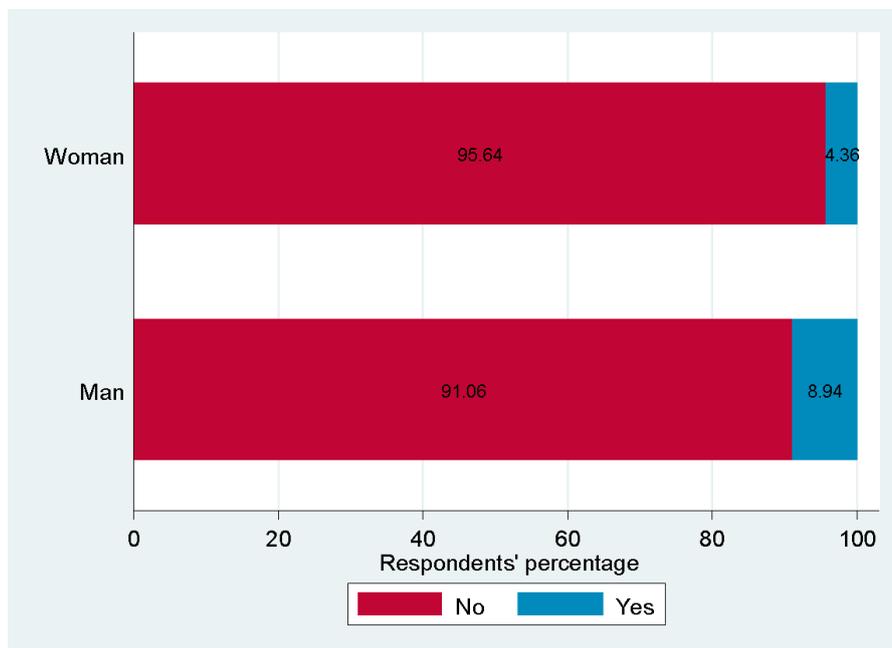
Source, SW survey, CNR Irpps, 2020.

Figure 24 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I have provided assistance to relatives and friends who needed it], SW survey



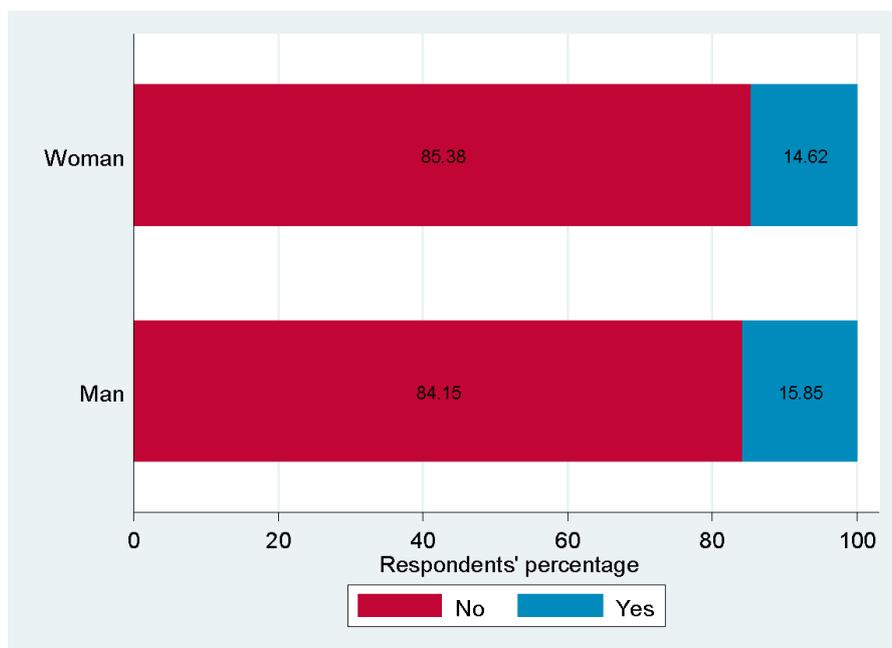
Source, SW survey, CNR Irpps, 2020.

Figure 25 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I did online shopping], SW survey



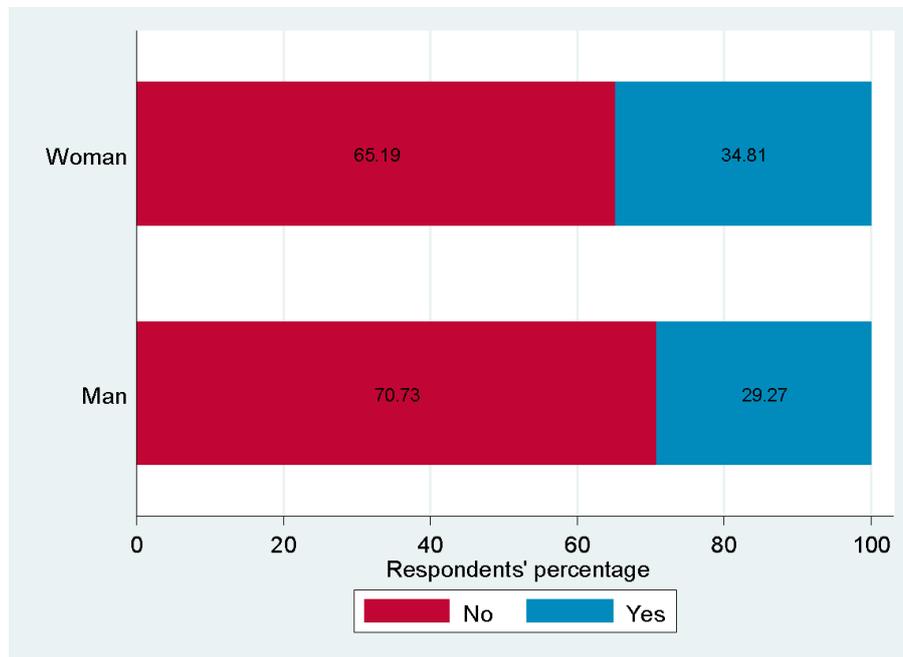
Source, SW survey, CNR Irpps, 2020.

Figure 26 – Answer to the question “After completing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I reserved for myself a higher dose of rest], SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 27 – Answer to the question “After finishing your professional activities in smart working, how did you manage your time at home?”, percentage values by gender [I played sports at home], SW survey



Source, SW survey, CNR Irpps, 2020.

However, it is interesting to note that most respondents, both women and men, stated that they did not engage in any of the proposed activities. This could simply indicate that some specific activities carried out by respondents in their free time were not included in the questionnaire, but it could also indicate that the extraordinary and emergency situation has generated a certain apathy among individuals, affecting both SW and free time.

So far we have analysed how men and women managed the division of household and family workload and how they managed their free time, Figure 28, on the other hand, describes how and to what extent the respondents managed to reconcile working with home and family care activities.

The figure in question presents some interesting results. First, it shows how only a modest minority of men and women, 5.13 and 5.19% respectively, found it extremely difficult to reconcile work and family life in the condition in which they found themselves working from home.

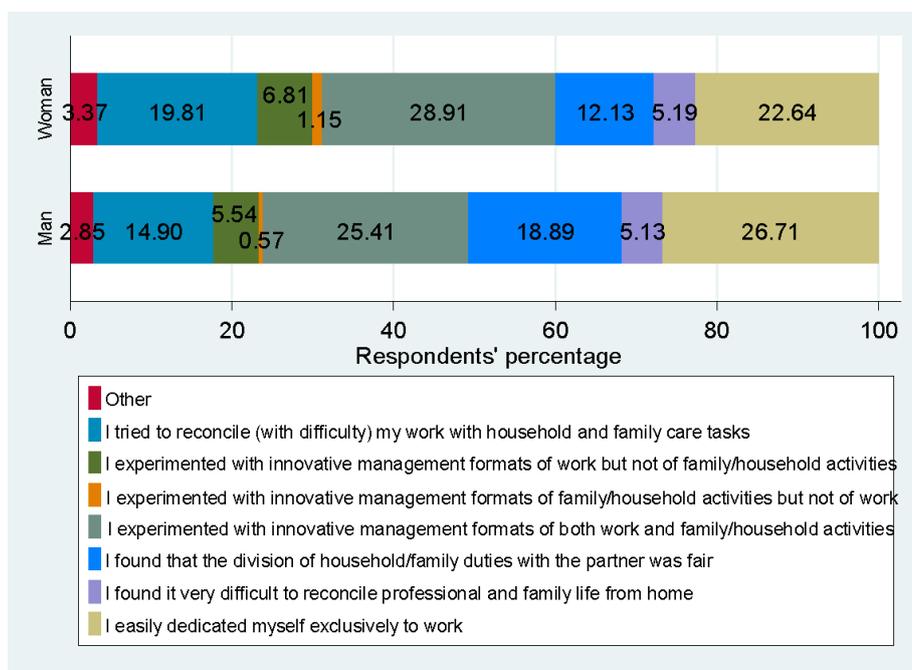
A higher percentage of respondents, instead, tried to reconcile the two aspects of their daily life, but still found it difficult to do so. 19.81% of women and 14.90% of men fall into this group. Women, therefore, seem to have faced more difficulties than men to reconcile work and family life in a smart working situation, probably due to the emergency context in which the survey took place. This is not surprising when these data are read in conjunction with previous data on household workload distribution, which show that tasks such as housekeeping, childcare, meal preparation and care for the elderly are mostly carried out by

women. And in this regard, in fact, compared to 18.89% of men, only 12.13% of women found that the division of domestic and family tasks with the partner was fair.

Women to a greater extent than men, respectively 36.87% and 31.52%, are also the respondents who experimented with newer and more innovative forms of managing work and domestic and family activities. In this sense, in a substantial number of cases, SW (especially in the exceptional condition in which it was implemented) could have constituted an important stimulus pushing female researchers, and to a lesser extent male researchers, to rethink, design and experiment with innovative models of reconciliation between work and family life, which in the daily routine would not have been taken into consideration.

Finally, men more than women are those who have easily dedicated themselves exclusively to work.

Figure 28 – Response to the question “In the period in which you worked in smart working you dedicated yourself to”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

As we have seen, although, several respondents found difficulties in reconciling work and family activities in the SW context, Figure 29 shows how the vast majority of women and men who answered the questionnaire positively or very positively evaluated the SW experience.

72.07% of women and 72.69% of men, in fact, declared that this experience has been positive or very positive and that they have managed, in a discrete or optimal way, to reconcile work and domestic and family care activities. A substantial part of the respondents, 14.78% of women and 17.15% of men, on the other hand, evaluated the experience in a neutral way, neither negatively nor positively.

At the other extreme, while representing a minority, 7.56% of women and 6.26% of men evaluated their experience negatively or very negatively, declaring to have experienced a

worsening of the management of work and home and family care activities, being unable to reconcile the two types of activities.

Figure 29 – Answer to the question “How do you rate your smart working experience?”, Percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Smart Working’s positive aspects

The following figures, from Figure 30 to Figure 36, show data related to the questionnaires’ responses concerning SW’s positive aspects. To understand what the positive aspects were, a series of WS characteristics were proposed for which respondents had to indicate whether they considered them a positive aspect.

The characteristics taken into consideration are:

- flexibility of working hours.
- the possibility of working from the home.
- the possibility to carry out work and home and family care activities at the same time.
- saving commuting time.
- the greater concentration capacity allowed by the domestic environment.
- lower expenses avoiding travel and meals outside the home.
- the opportunity to spend time with cohabiting relatives while working.

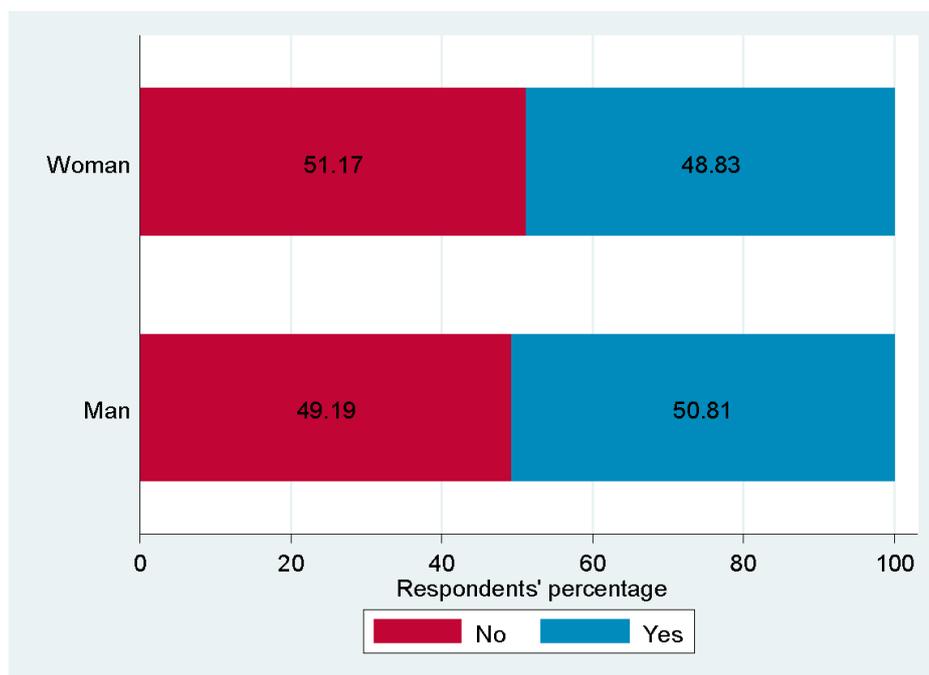
Table 3 summarizes the percentage values of men and women who considered the different aspects as positive aspects of SW.

Table 3 – percentage values of smart working aspects considered positively by men and women

Aspects	Women	Men
The flexibility of working hours	48.83	50.81
The possibility of working from the home	16.63	23.74
The possibility to carry out work and home and family care activities at the same time.	41.92	35.12
Saving commuting time	67.34	66.10
The greater concentration capacity allowed by the domestic environment	27.30	28.21
The lower expenses avoiding travel and meals outside the home	20.86	26.50
The opportunity to spend time with cohabiting relatives while working	16.90	13.58

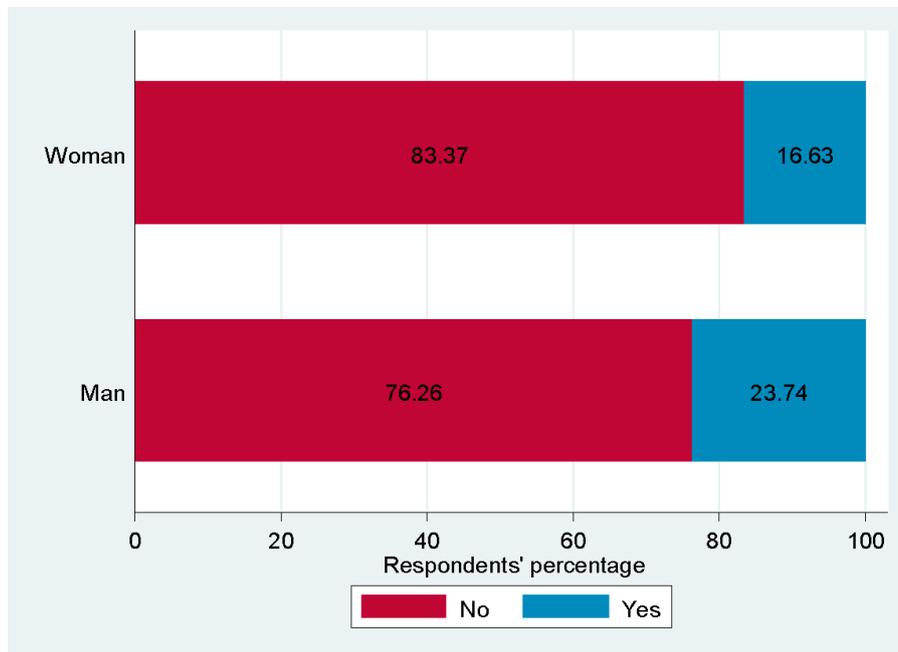
Source, SW survey, CNR Irpps, 2020.

Figure 30 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [the flexibility of working hours], SW survey



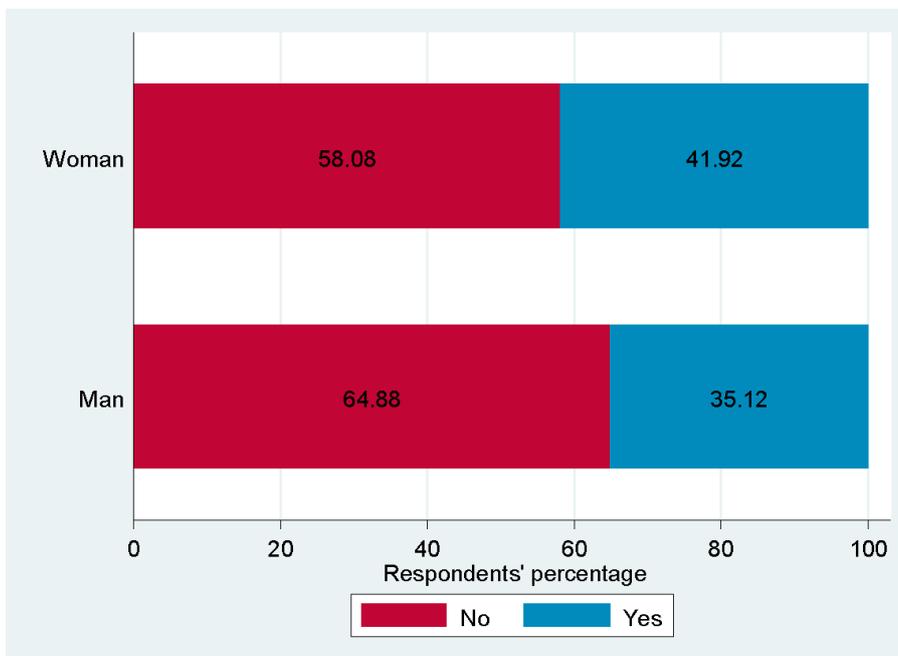
Source, SW survey, CNR Irpps, 2020.

Figure 31 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [the possibility of working from home], SW survey



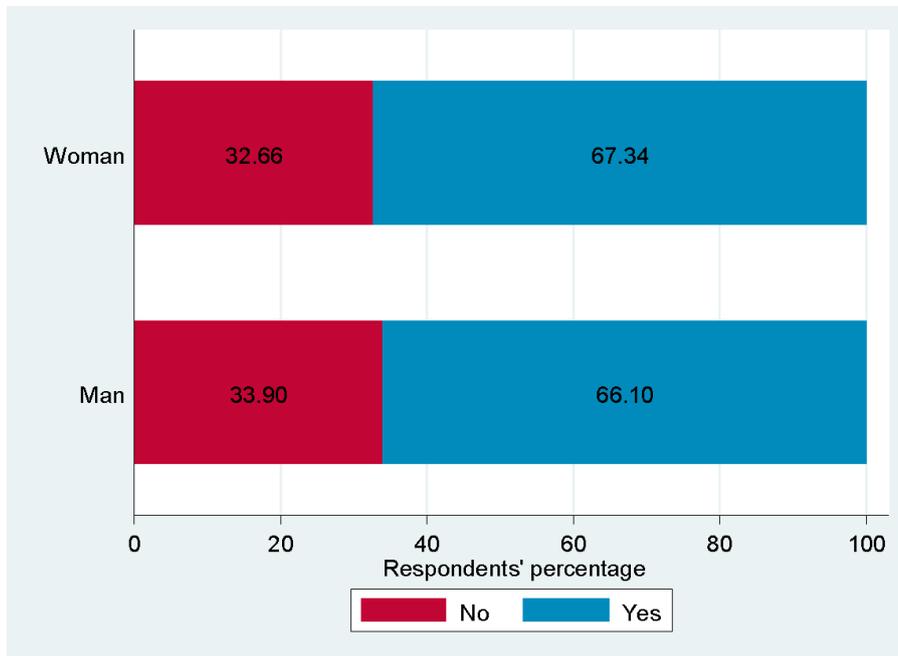
Source, SW survey, CNR Irpps, 2020.

Figure 32 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [the opportunity to carry out work and home and family care activities at the same time], SW survey



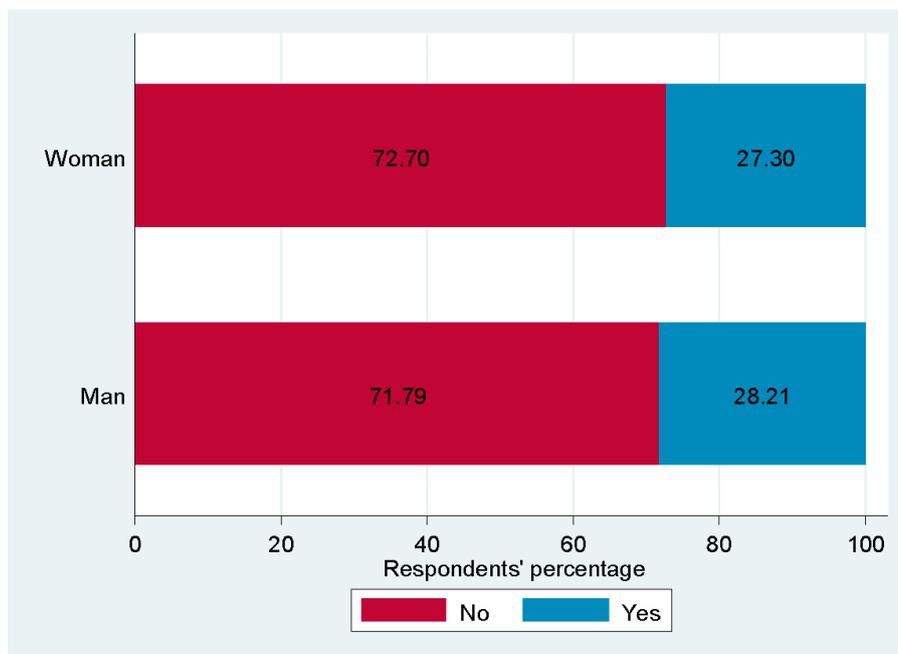
Source, SW survey, CNR Irpps, 2020.

Figure 33 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [saving commuting time], SW survey



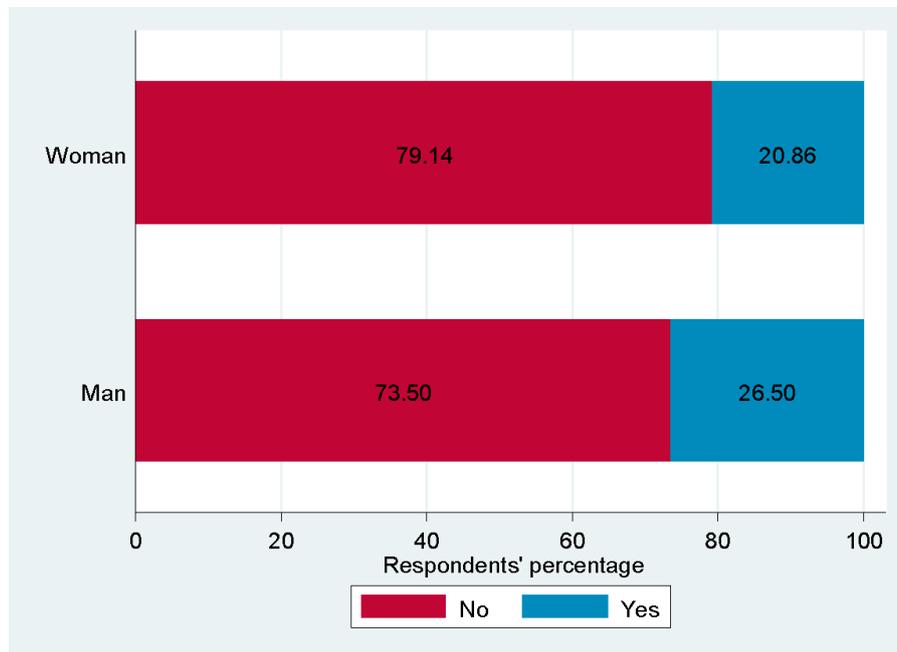
Source, SW survey, CNR Irpps, 2020.

Figure 34 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [the greater ability to concentrate allowed by the domestic environment], SW survey



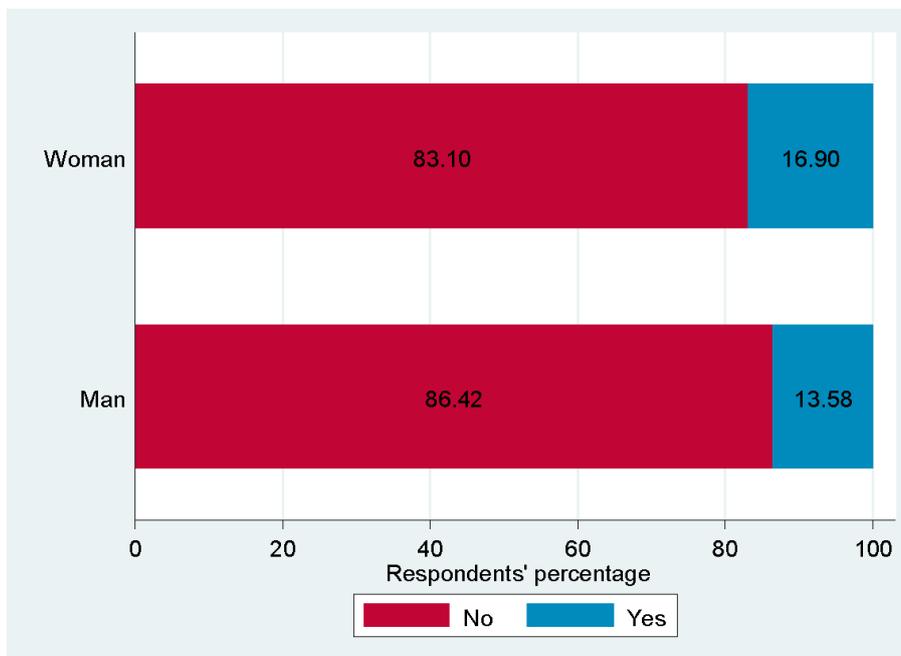
Source, SW survey, CNR Irpps, 2020.

Figure 35 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [the lower expenses avoiding travel and meals outside the home], SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 36 – Answer to the question “What are, in your experience, the main positive aspects of smart working?”, percentage values by gender [the possibility of spending time with cohabiting relatives while working], SW survey



Source, SW survey, CNR Irpps, 2020.

Among the proposed aspects, the one considered most positively by both women and men is the saving of commuting time (Figure 33), considered positive by 67.34% of women and 66.10% of men. Considered as a positive aspect by 48.83% of women and 50.81% of men, is the flexibility of working time (Figure 30), namely the possibility of self-management of one's working hours. In the third place, but with significant gender differences, is the possibility of carrying out work and home and family care activities at the same time (Figure 32), considered positive by 41.92% of women and 35.12% of men.

The other aspects proposed, on the other hand, were reported as positive only by a minority of respondents, but with some significant gender differences. The greater ability to concentrate allowed by the home environment (Figure 34) is reported as a positive factor only by 27.30% of women and 28.21% of men. The lower costs due to missed trips and meals not consumed outside the home (Figure 35) were reported as positive by 20.86% of women and 26.50% of men. A marked difference between the two sexes is recorded, also, with respect to the possibility of working from the home (Figure 31), which is considered a positive aspect by 23.74% of men and only by 16.63% of women. Finally, the possibility of spending time with cohabiting relatives while working (Figure 36) was reported as a positive aspect only by 16.90% of women and 13.58% of men.

Smart Working's negative aspects

The following figures, from Figure 37 to Figure 44, report the data related to the questionnaire's participants responses concerning SW's negative aspects. Again, a series of SW characteristics were proposed for which respondents had to indicate whether they considered them negative aspects.

The characteristics taken into consideration were:

- the loss of social relations with office colleagues.
- the feeling of being confined at home.
- the loss of the division of working and free time.
- the fragmentation of work and home and family care activities.
- the slowdown in work activities with no deadline.
- the difficulty of carrying out complex tasks operating remotely.
- the complexities of remote dialogue with colleagues and managers.
- the difficulty in acting in a remote technical environment, without any assistance support in presence.

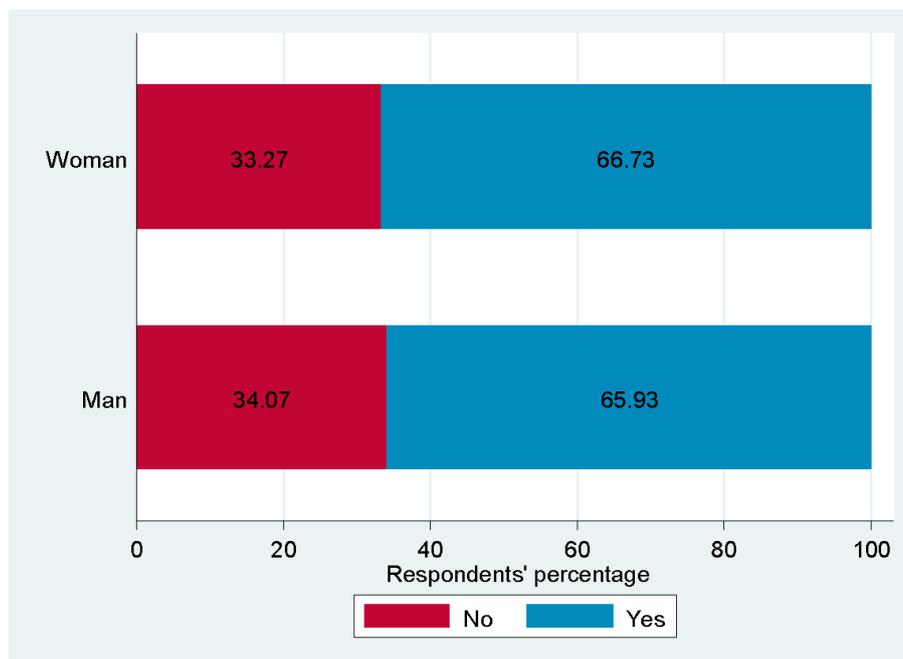
Table 4 summarizes the percentage values of men and women who considered the different aspects as SW's negative aspects.

Table 4 – percentage values of smart working aspects considered negatively by men and women

Aspects	Women	Men
The loss of social relations with office colleagues	66.73	65.93
The feeling of being confined at home	25.35	23.58
The loss of the division of working and free time	26.22	23.66
The fragmentation of work and home and family care activities	18.65	13.98
The slowdown in work activities with no deadline	11.27	12.03
The difficulty of carrying out complex tasks operating remotely	17.77	23.25
The complexities of remote dialogue with colleagues and managers	17.57	18.13
The difficulty in acting in a remote technical environment, without any assistance support in presence	9.32	10.41

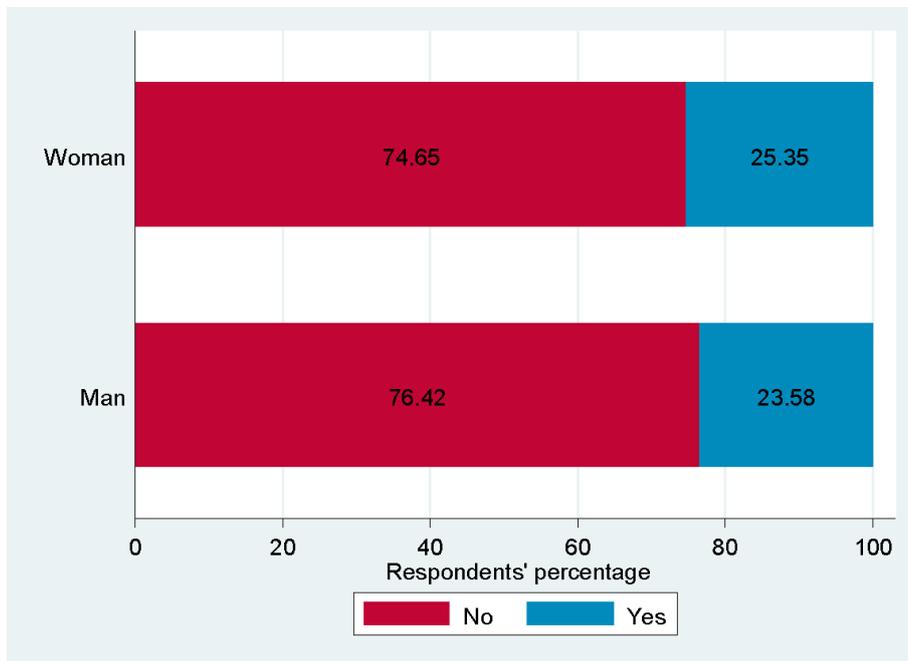
Source, SW survey, CNR Irpps, 2020.

Figure 37 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentage values by gender [the loss of social relations with office colleagues] SW survey



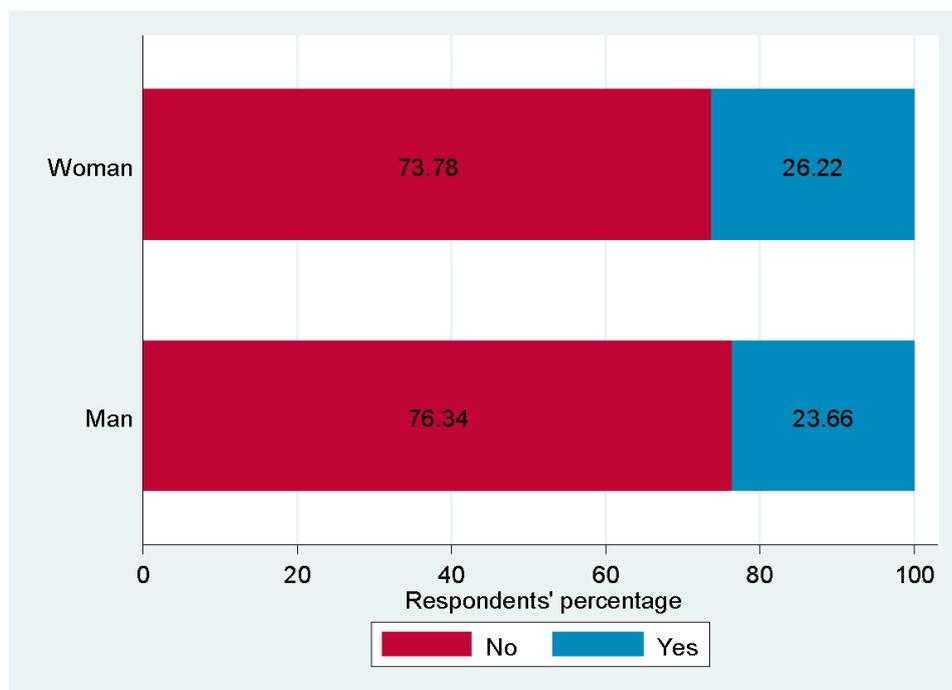
Source, SW survey, CNR Irpps, 2020.

Figure 38 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentages by gender [the feeling of being confined at home], SW survey



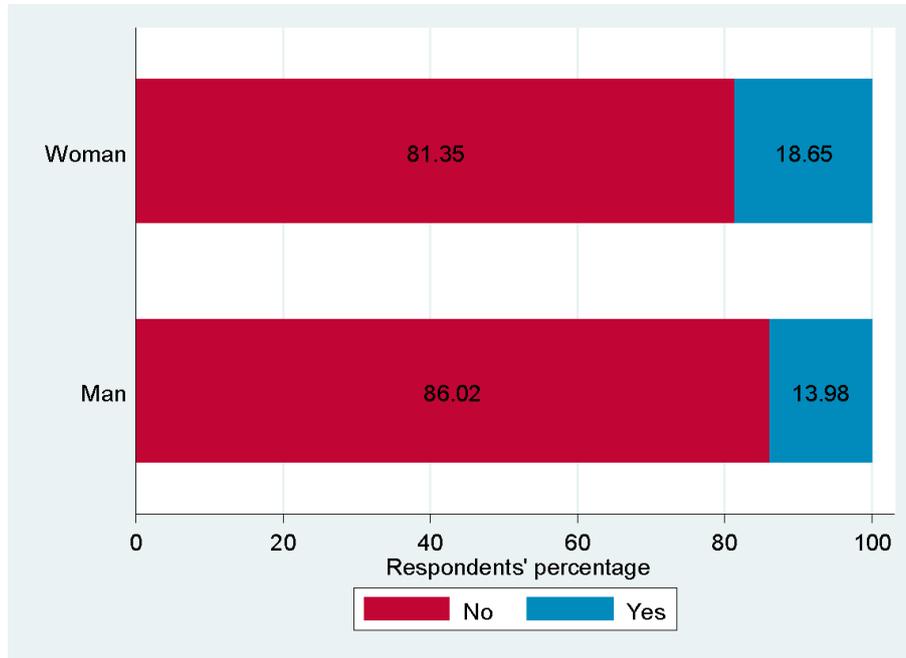
Source, SW survey, CNR Irpps, 2020.

Figure 39 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentage values by gender [the loss of the division of working and free time], SW survey



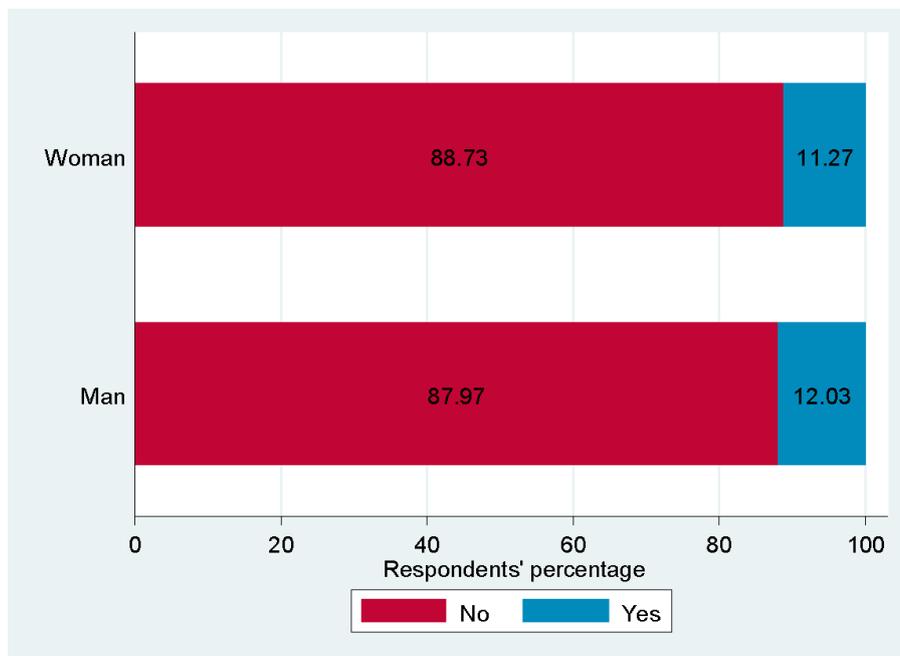
Source, SW survey, CNR Irpps, 2020.

Figure 40 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentage values by gender [the fragmentation of work and home and family care activities], SW survey



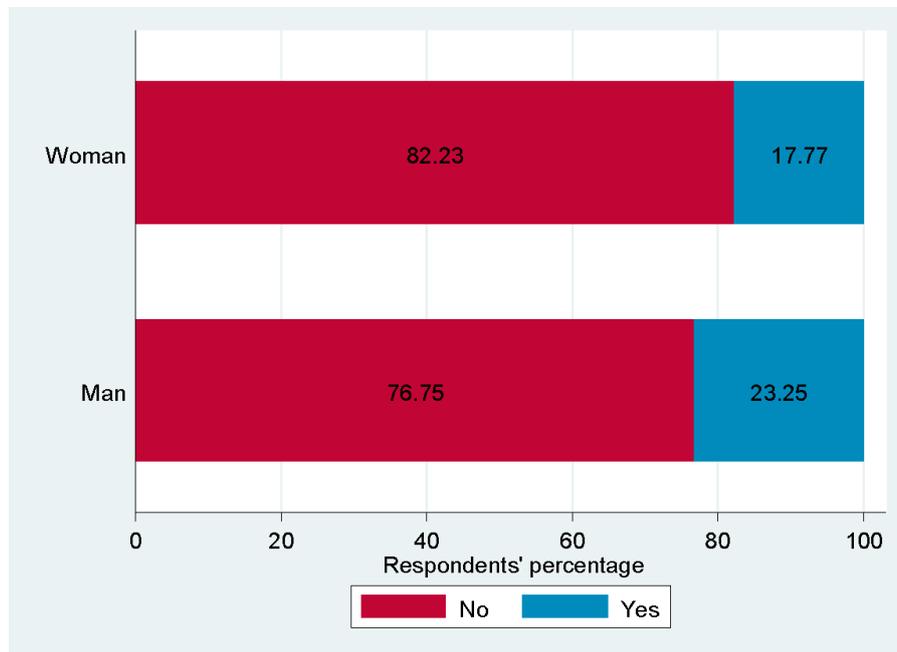
Source, SW survey, CNR Irpps, 2020.

Figure 41 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentage values by gender [the slowdown in work activities with no deadline], SW survey



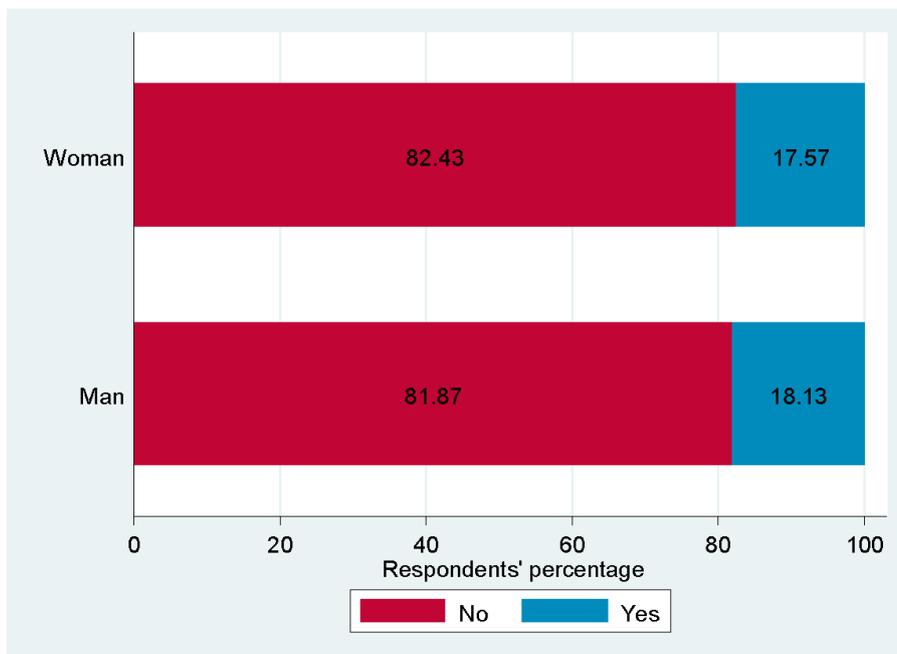
Source, SW survey, CNR Irpps, 2020.

Figure 42 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentage values by gender [the difficulty of carrying out complex tasks operating remotely], SW survey



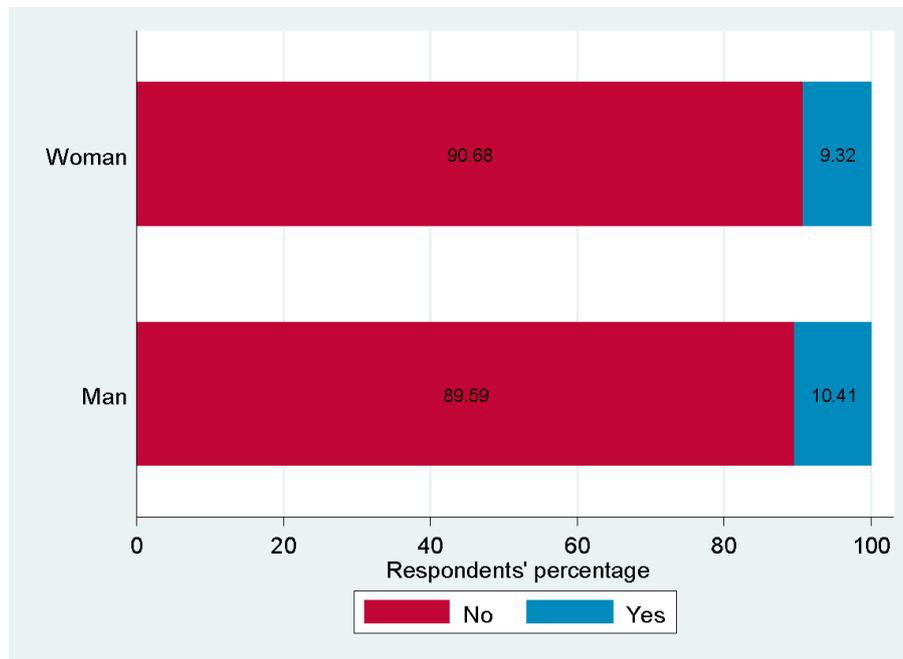
Source, SW survey, CNR Irpps, 2020.

Figure 43 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, percentage values by gender [the complexities of remote dialogue with colleagues and managers], SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 44 – Answer to the question “What are, in your experience, the main negative aspects of smart working?”, Percentage values by gender [the difficulty in acting in a remote technical environment, without any assistance support in presence], survey SW



Source, SW survey, CNR Irpps, 2020.

Among the aspects proposed, the one that was considered undoubtedly the most negative is the loss of social relations with office colleagues (Figure 37), reported as a negative by 66.73% of women and 65.93% of men.

In all the other cases, the proposed aspects were considered negative by a minority of respondents. About a quarter of respondents reported the feeling of being confined at home as a negative aspect (Figure 38). Another negative aspect for about a quarter of the sample, precisely 26.22% of women and 23.66% of men, was the loss of the division of the daytime into working and free time (Figure 39). However, it should be noted that the three aspects considered negatively are only partly a direct consequence of SW's activity and that, certainly, these aspects have been sharpened by the social distancing rules issued by the Government at the beginning of March and by the lockdown, which severely limited travel? movements from private homes.

A smaller share of respondents, 18.65% of women and 13.98% of men, considered the fragmentation of work and home and family care activities to be negative (Figure 40). The difficulty of carrying out complex operations with one or more working groups operating remotely (Figure 42), on the other hand, was a negative aspect for 17.77% of women and 23.25% of men, while the complexities of remote dialogue with colleagues and managers (Figure 43) were respectively 17.57% and 18.13% of women and men. Finally, the slowdown in work activities without deadline (Figure 41) and the difficulty in acting in a remote technical environment, without any assistance support in the presence (Figure 44) were reported as a negative aspect only by about 10.00% of men and women.

Technological difficulties related to smart working

After having seen the main aspects considered positively and negatively by the questionnaires' respondents, Figures 45 to Figure 51 show the technological difficulties encountered by the respondents in carrying out their work activities in SW. As above, a series of characteristics were proposed for which respondents had to indicate whether they considered them as a technological difficulty.

The characteristics taken into consideration were:

- too slow Internet connection designed for family and non-professional uses.
- the inadequacy of domestic equipment (insufficient workstations for everyone, obsolescence of equipment).
- the general overload of the lines, slowing down the possibility of working continuously.
- excessive consumption of mobile data.
- the difficulty of finding home technical assistance in case of breakage of devices/interruption of service.
- the inability to remotely access office PCs (with documents, data, programs necessary for the job).
- the lack of a laboratory/institute work mood, which cannot be reproduced remotely.

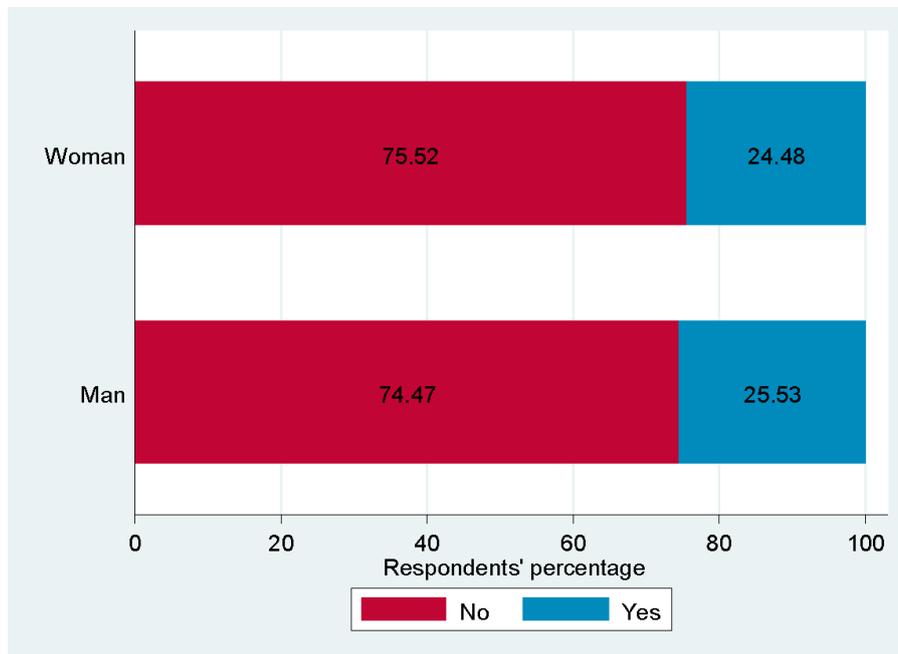
Table 5 summarizes the percentage values of men and women who considered the various technological characteristics to be problematic.

Table 5 – percentage values of the technological characteristics that represented a difficulty in smart working by men and women

Activities	Women	Men
Slow Internet connection designed for family and non-professional uses	24.48	25.53
The inadequacy of domestic equipment	24.55	23.66
The general overload of the lines, slowing down the possibility of working continuously	21.73	17.72
The excessive consumption of mobile data	9.19	9.76
The of finding home technical assistance in case of breakage of devices/interruption of service	13.48	11.14
The inability to remotely access my office PCs	22.33	19.35
The lack of a laboratory/institute working mood, which cannot be reproduced remotely	4.91	45.20

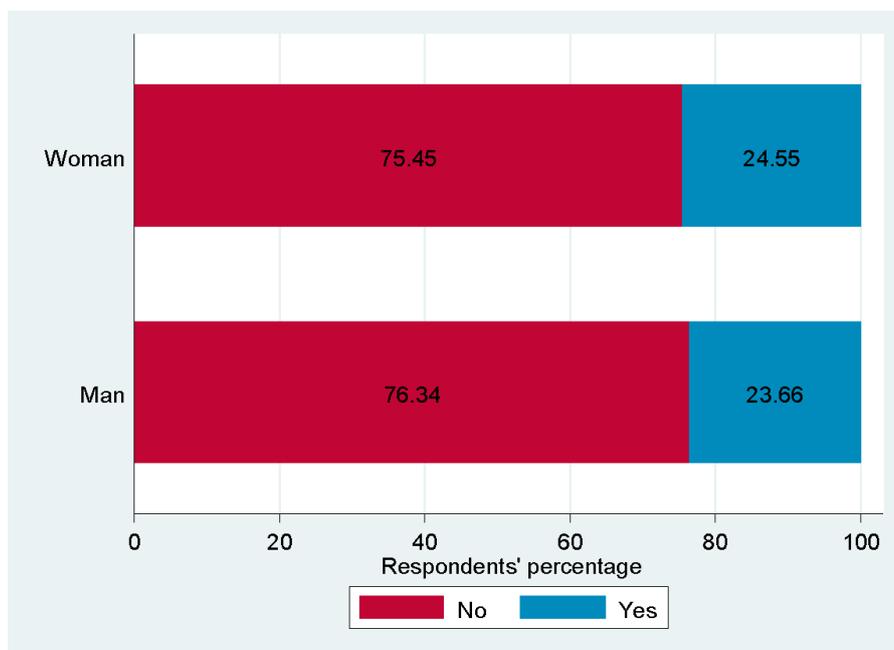
Source, SW survey, CNR Irpps, 2020.

Figure 45 – Response to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [too slow Internet connection designed for family and non-professional uses], SW survey



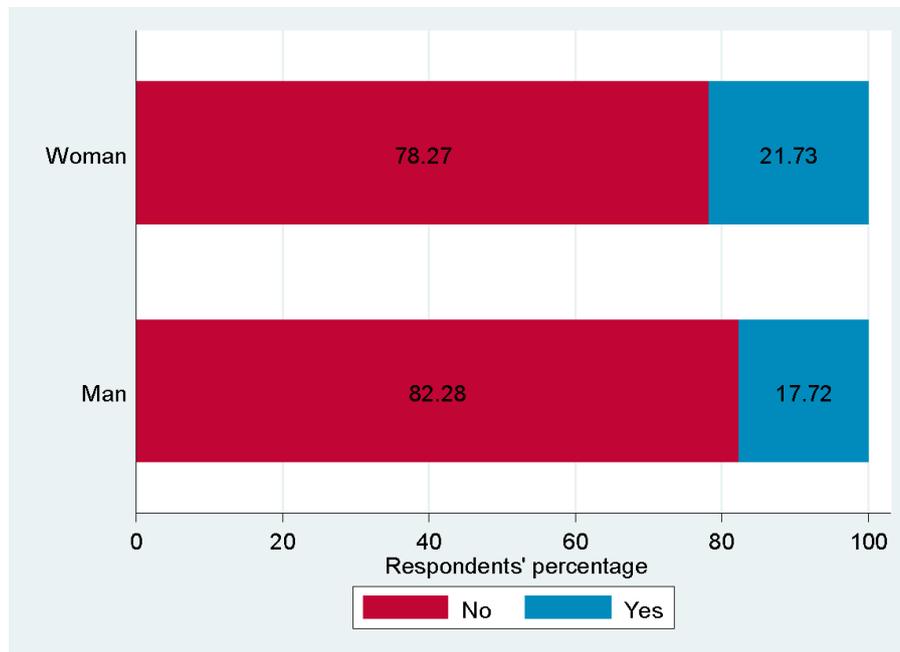
Source, SW survey, CNR Irpps, 2020.

Figure 46 – Answer to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [the inadequacy of domestic equipment], SW survey



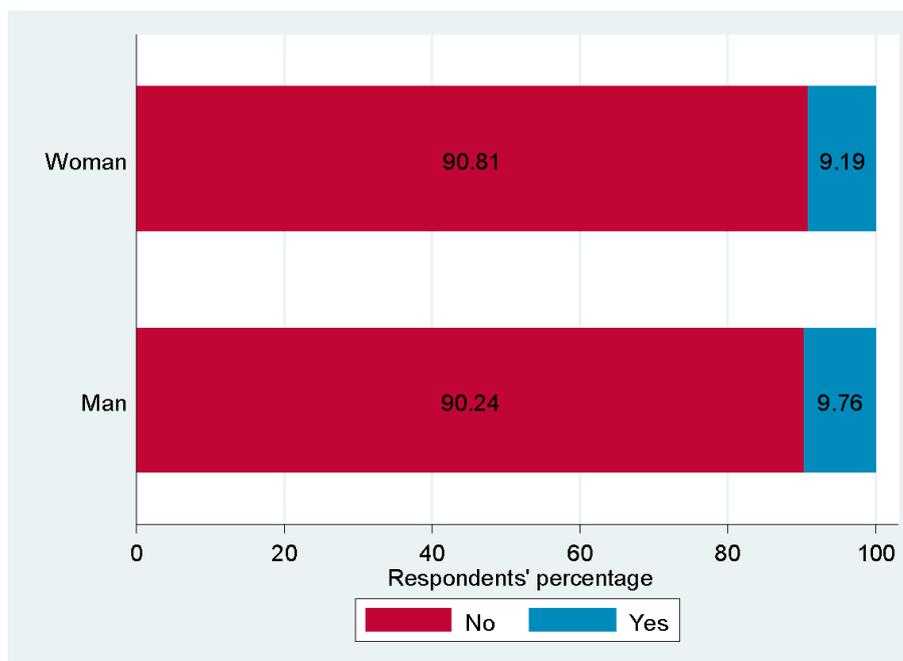
Source, SW survey, CNR Irpps, 2020.

Figure 47 – Answer to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [the general overload of the lines, slowing down the possibility of working continuously], SW survey



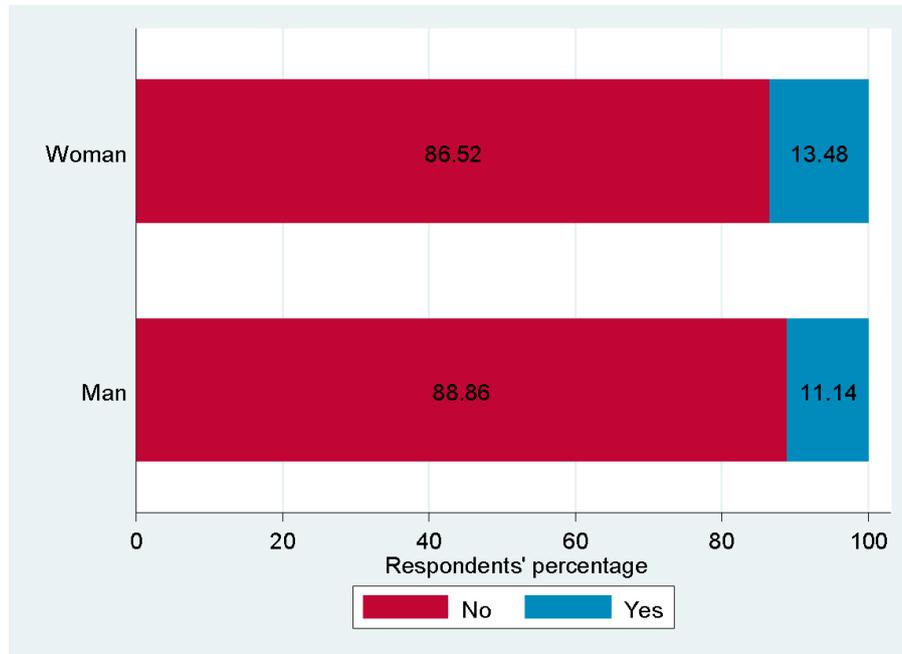
Source, SW survey, CNR Irpps, 2020.

Figure 48 – Answer to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [the excessive consumption of mobile data], SW survey



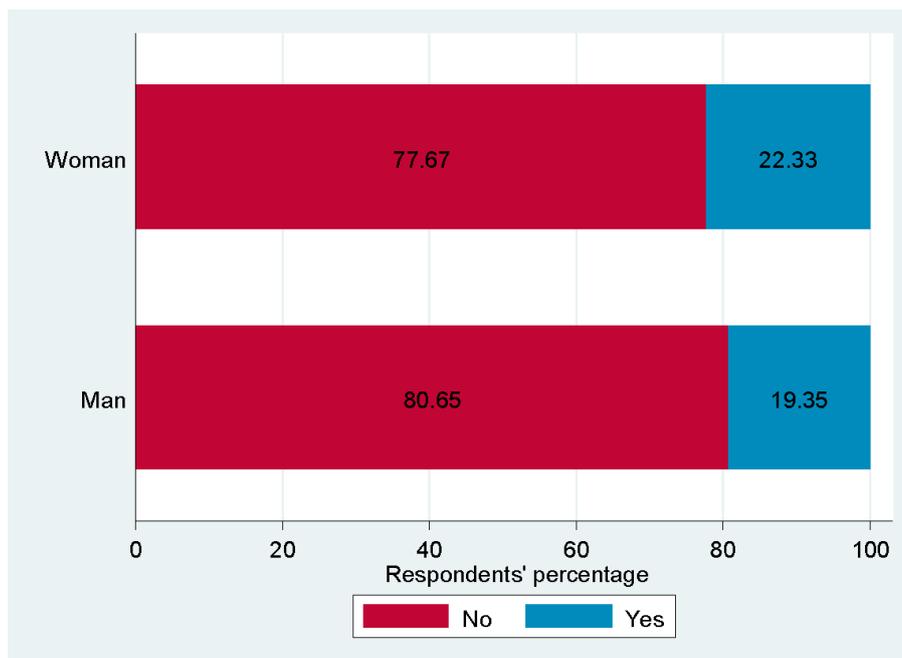
Source, SW survey, CNR Irpps, 2020.

Figure 49 – Answer to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [the difficulty of finding home technical assistance in case of breakage of devices/interruption of service], SW survey



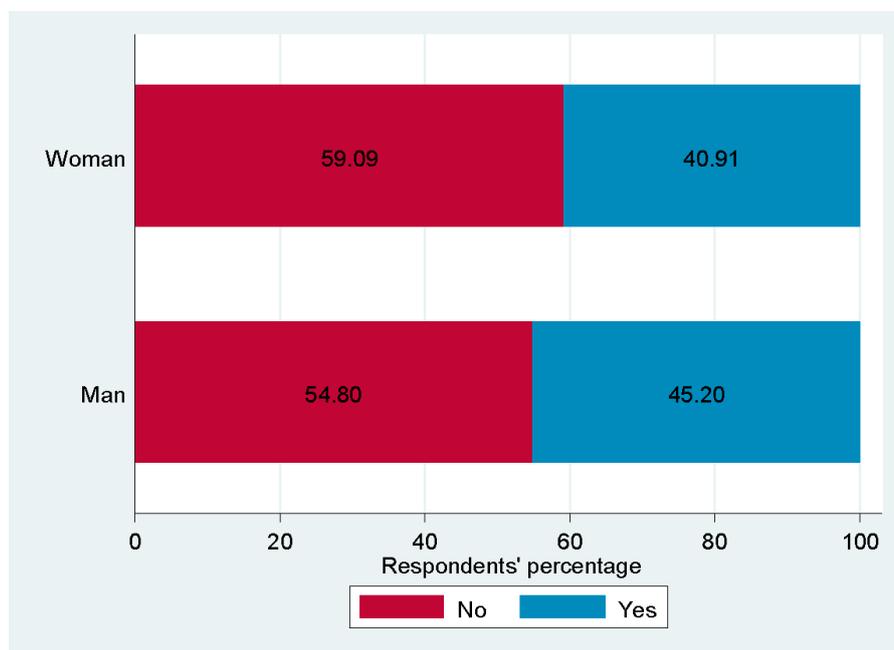
Source, SW survey, CNR Irpps, 2020.

Figure 50 – Response to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [inability to remotely access office PCs], SW survey



Source, SW survey, CNR Irpps, 2020.

Figure 51 – Answer to the question “What do you think were the main technological difficulties of this smart working period?”, percentage values by gender [the lack of a laboratory/institute work mood, which cannot be reproduced remotely], SW survey



Source, SW survey, CNR Irpps, 2020.

Among the aspects proposed, none was considered as a technological obstacle by most respondents and it can therefore be said that in the period considered there were no particular problems of technical/technological nature.

The aspect mostly considered as a technological difficulty, namely the lack of a laboratory/institute working mood that cannot be reproduced remotely (Figure 51), in fact, is clearly more linked to the way of working at distance rather than to technological/technical issues. Obviously, SW does not allow to virtually recreate those dynamics that are the basis of the interpersonal collaboration characterizing an office or a laboratory. This data also confirms the previous result concerning the negative aspects of SW, in which most of men and women reported the loss of sociality with colleagues as a negative side. However, even in this case, it should be emphasized that the exceptional conditions in which this type of work organization has been implemented have exacerbated these aspects. Under normal conditions, in fact, SW is not a way of working in which the worker is confined at home, but a way of organizing the work in such a way that it is the worker who decides the times and ways of accessing his/her office.

Moving on to the difficulties most concretely linked to the technology used to carry out SW activities, what emerges is that there were no significant differences between men and women. In particular, about a quarter of the respondents, of both sexes, reported as difficulties: the slowness of the home Internet connection, which very often does not have optical fibre and is not designed for professional use (Figure 45); the inadequacy of domestic equipment such as PCs and tablets, which were often insufficient (Figure 46), especially in

the context in which children had to participate in remote lessons and therefore needed a device capable of supporting such activities; the general overload of the lines, which slowed down the possibility of working continuously and which often resulted in sudden connection losses (Figure 47); and the inability to remotely access their PCs located in the office (Figure 50) where workers very often had copies of documents present only on those PCs.

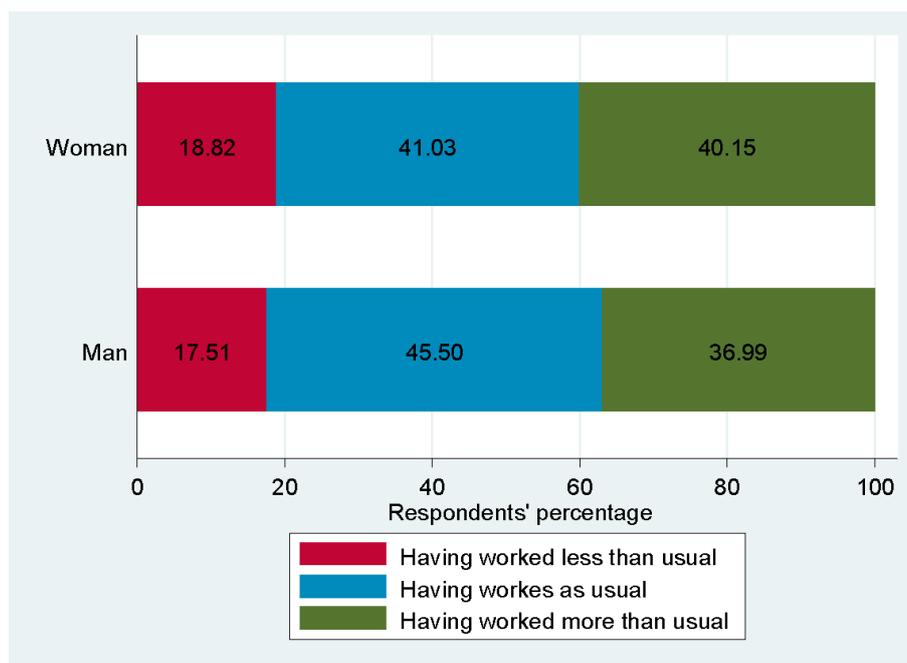
On the contrary, the problems related to the consumption of mobile data were less relevant (Figure 48) and the difficulty of finding home technical assistance in the event of device breakdown/service interruption (Figure 49), is reported as a problem only for about 10.00% of respondents.

Smart working and work's perceptions

In order to evaluate the overall experience of the SW activity carried out in the period defined by the COVID-19 emergency, it is necessary to understand how the workers perceived the quality and quantity of the work performed.

Figure 52 reports the results of the question related to the perception of the amount of work carried out during the SW period compared to the normal workload carried out with classic office work methods. Data do not show marked gender differences, in fact, the respondents of both sexes in the majority of cases claimed that they felt they had worked as usual, or more than usual, during the period in which they were in SW. While only a minority, namely 18.82% of women and 17.51% of men, perceived that they had worked less than usual.

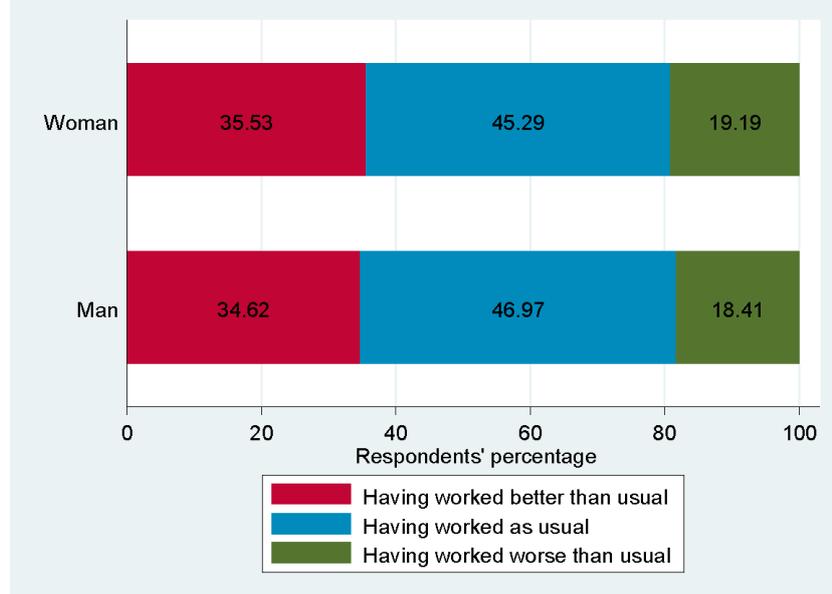
Figure 52 – Response to the question “During the period in which you carried out smart working and with reference to your normal workload, you had the perception of”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Similar proportions are shown in Figure 53, which describes the results of the question related to the perception of the quality of work in SW. Most of the respondents, 35.53% of women and 34.62% of men, in fact, stated that they worked better than usual, while 45.29% of women and 46.97% of men reported having worked as usual. And even in this case, only a minority of respondents said they worked worse than usual, specifically 19.19% of women and 18.41% of men.

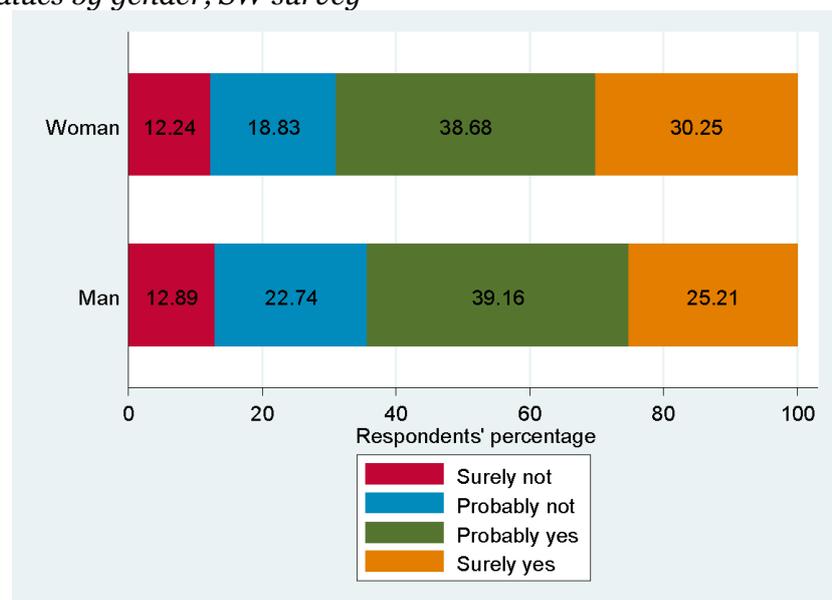
Figure 53 – Answer to the question “During the period in which you carried out smart working you had the perception of”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

In this regard, however, it should be noted that, as shown in Figure 54, most of men and women believed, certainly or probably, that their perceptions have been in some way modified by the emergency nature of the situation, characterized by various restrictions on travel and outdoor activities and social distancing, that they were experiencing.

Figure 54 – Answer to the question "Do you think that the fact that you have worked in smart working in exceptional conditions (Covid19 emergency, closure of all the main services reserved for families) may have influenced the perception of smart working", percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Smart working’s potentially improvable aspects

Within the “Smart working and gender issues” questionnaire, an attempt was also made to understand if and to what extent the respondents believed that there were aspects in the SW activity that could be improved.

Figures 55 to Figure 60 show several aspects for which respondents had to indicate whether they thought they could be improved.

The factors taken into consideration were:

- integration between home working and office working.
- welfare support in managing home and family care activities while working from home.
- definition of working time and time reserved for home and family activities.
- collaboration with managers and colleagues.
- coordination with partners/family members for the performance of home and family care activities.
- flexibility in working hours.

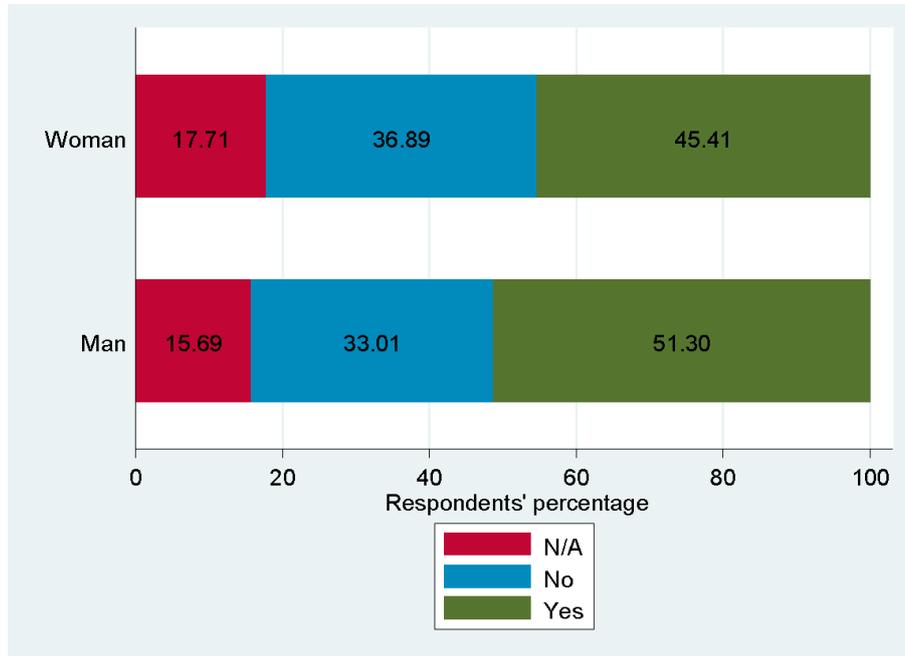
Table 6 summarizes the percentage values of men and women who considered the various factors to be improved.

Table 6 – Percentage values of the aspects considered potentially improvable by men and women

Activities	Women	Men
Integration between home working and office working	45.41	51.30
Welfare support in managing home and family care activities while working from home	19.52	19.11
Definition of working time and time reserved for home and family activities	18.91	15.61
Collaboration with managers and colleagues	15.36	18.29
Coordination with partners/family members for the performance of home and family care activities	13.68	8.70
Flexibility in working hours	13.68	15.04

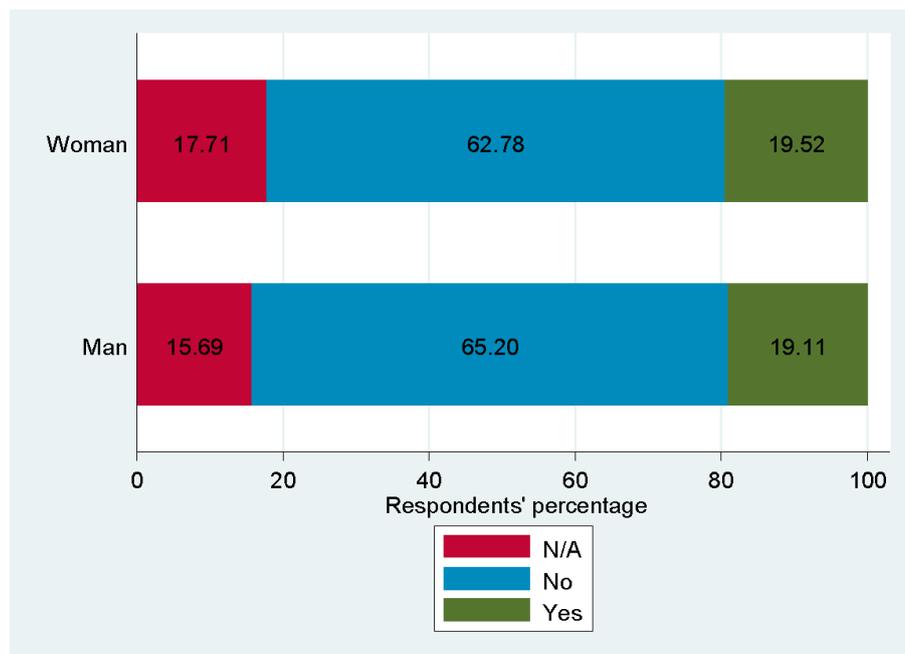
Source, SW survey, CNR Irpps, 2020.

Figure 55 – Answer to the question “What do you think the factors that could be improved in smart working are?”, percentage values by gender [integration between home working and office working], SW survey



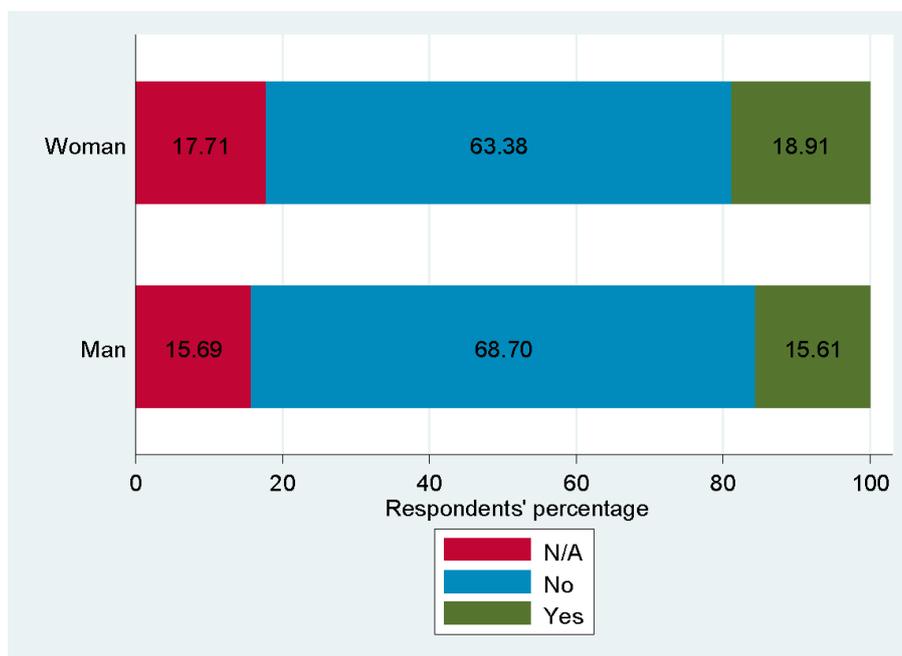
Source, SW survey, CNR Irpps, 2020.

Figure 56 – Answer to the question “What do you think the factors that could be improved in smart working are?”, percentage values by gender [welfare support in managing home and family care activities while working from home], SW survey



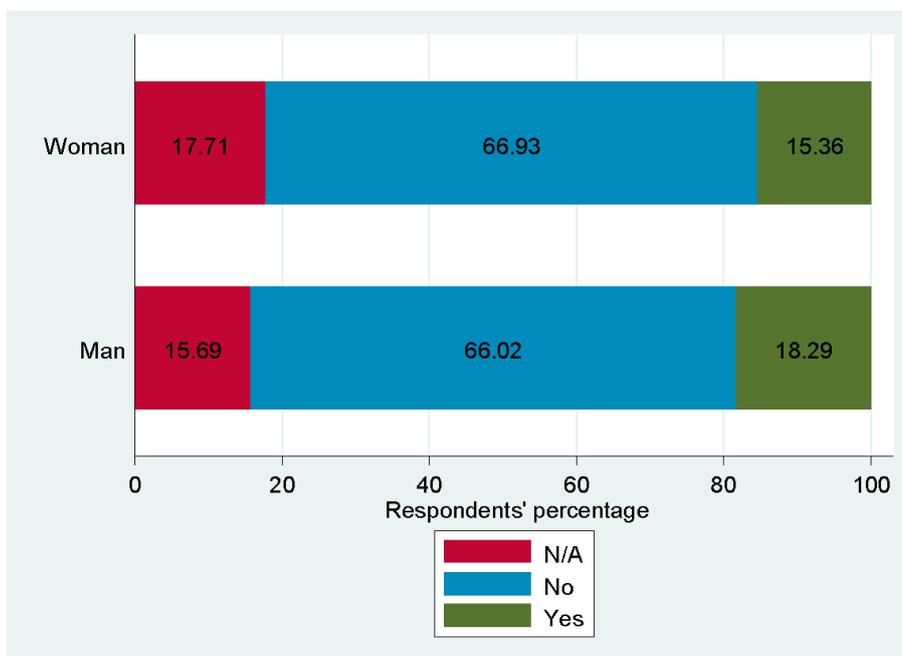
Source, SW survey, CNR Irpps, 2020.

Figure 57 – Answer to the question “What do you think the factors that could be improved in smart working are?”, percentage values by gender [definition of working time and time reserved for home and family activities], SW survey



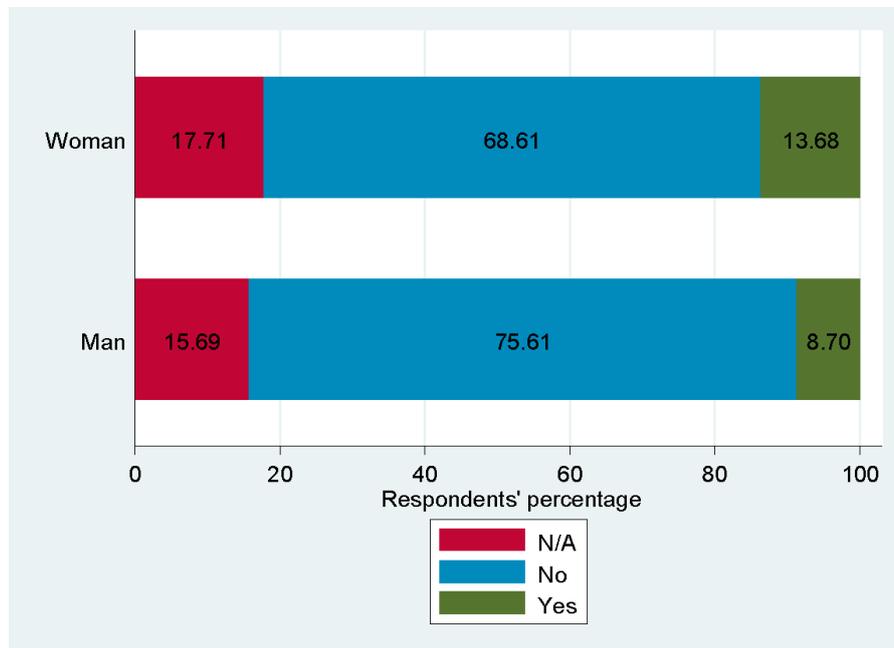
Source, SW survey, CNR Irpps, 2020.

Figure 58 – Answer to the question “What do you think the factors that could be improved in smart working are?”, percentage values by gender [collaboration with managers and colleagues], SW survey



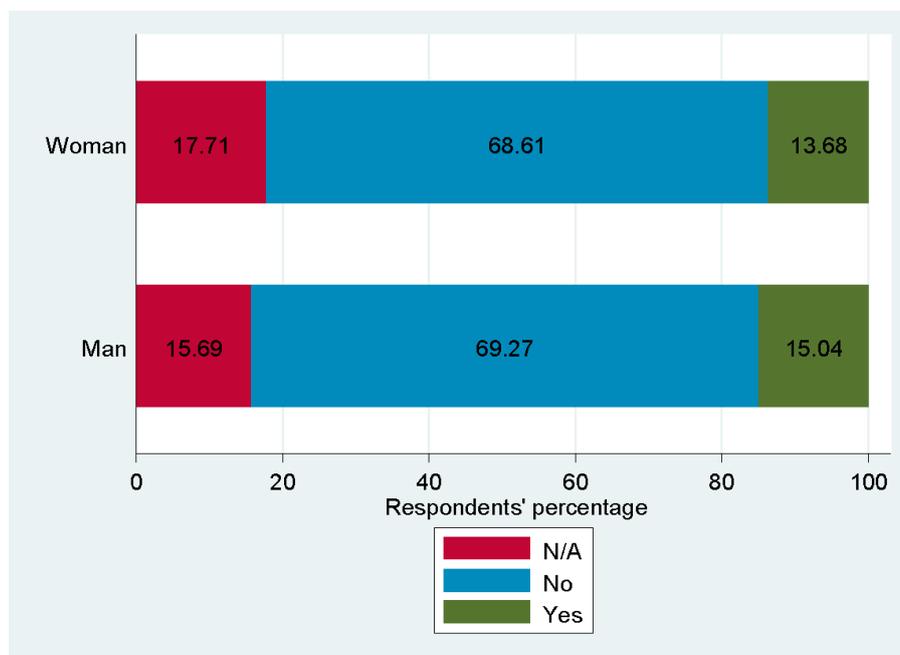
Source, SW survey, CNR Irpps, 2020.

Figure 59 – Response to the question “What do you think the factors that could be improved in smart working are?”, percentage values by gender [coordination with partners/family members for the performance of home and family care activities], survey SW



Source, SW survey, CNR Irpps, 2020.

Figure 60 – Answer to the question “What do you think the factors that could be improved in smart working are?”, percentage values by gender [flexibility in working hours], SW survey



Source, SW survey, CNR Irpps, 2020.

The factor that was most considered improvable by the questionnaires' respondents is related to the integration between home and office working (Figure 55), considered to be improved by 45.41% of women and 51.30% of men.

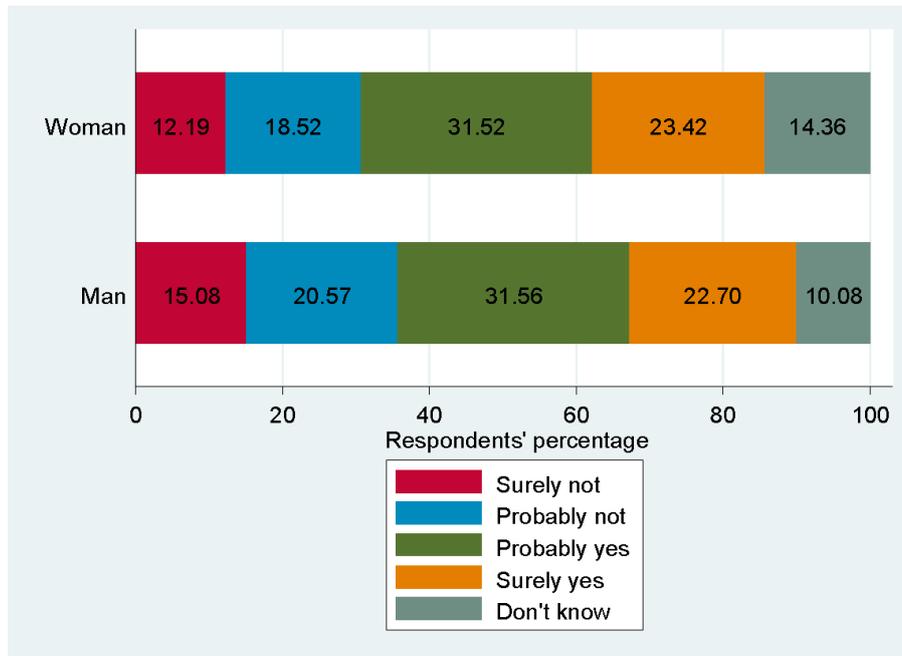
All the other factors, on the other hand, were considered unimprovable by the vast majority of respondents, without showing significant gender differences.

Evaluation of the smart working experience

Finally, the survey participants were asked to express an opinion on the possibility of requesting an extension of the SW once the emergency phase will be over.

Figure 61 presents the distribution of responses by gender. First, data show that most of the respondents, 54.94% of women and 54.26% of men, certainly or in any case probably, will request an extension of SW. On the contrary, only a minority of respondents declared, instead, that they definitely or probably will not do so. In this second group, however, a certain difference should be noted between women and men who replied that they were certainly not willing to request an extension of the SW respectively in 12.19% and 15.08% of cases.

Figure 61 – Response to the question “At the end of this smart working period, do you think you will request an extension of the possibility of working in this way?”, percentage values by gender, SW survey



Source, SW survey, CNR Irpps, 2020.

Conclusions

The COVID-19 emergency made it necessary, at least temporarily, to resort to the extensive implementation of SW, both in the private and in the public sectors. As a result, SW employees increased from 57.000 units in 2019 (Smartworking Observatory 2019) to 1.827.792 as of April 29, 2020 (Ministry of Labour and Social Policies, 2020).

The substantial increase in the use of the SW that in the public sector, through various Prime Minister's decrees, has been extended until the end of July 2020, has launched a public discussion on the SW itself. This discussion, which involved public decision makers, political commentators, mass media and, obviously, the workers involved personally, focused on the functioning of SW, on the opportunity to use it more consistently even after the conclusion of the COVID-19 emergency, and on the evaluation of the SW itself as a new work model.

A discussion on these points, however, requires a better understanding of how SW is perceived and experienced by workers, as well as of its strengths and weaknesses, in order to be able to develop forms of SW that, on the one hand, allow the worker to be more productive and, on the other hand, allow him/her to carry out his/her work adequately, thus taking into account and addressing the problems that may arise in the transition from office to home working.

This report elaborates and describes the results of the “Smart working and gender issues in research institutions” survey, carried out through a questionnaire administered online from April 6 to June 10 2020 to the workers of the main Italian research institutions. The main objective of the survey is to quantify and describe whether and how SW's activity has influenced the domestic and family dynamics between women and men during the period defined by the COVID-19 emergency. The survey, however, also aims at offering food for thought from which a more informed discussion on SW can arise, thus contributing to the public debate on SW itself.

It should be noted that, as discussed in the section of the report concerning the survey sample, while in the case of the CNR and the INGV the sample represents a significant part of the relative reference universe, respectively 27.94% and 23.66% of the total employees, for the other research institutions the sample was much lower, ranging from 0.04% to 1.60% of the respective reference universes.

Although not generalizable to the entire population of Italian workers in SW nor to the entire universe of Italian research institutions' workers, we analysed a large sample of two of the largest Italian research institutions by number of employees (CNR and INGV). Therefore, the results of this survey represent a useful snapshot of the impact and perception of SW on the world of research in Italy. Indeed, the peculiarity of the sample offers very important food for thought also on the domestic/family gender dynamics.

A total of 2,721 employees of Italian research institutions took part in the survey, including researchers, technologists, and technical and administrative staff. 45.20% (1,230 in absolute values) of the sample is represented by men, while 54.80% (1,491 in absolute values) by women. The average age of employees, calculated as a weighted average with respect to the

frequency of responses by age group, was 49 years old. Most of the respondents (60.09% of women and 66.58% of men) work with the qualification of researcher or technologist, and the majority (70.29% of women and 69.84% of men) work in their research institution since more than eleven years. Among the respondents to the questionnaire, the vast majority carried out SW activities during the entire period defined by the COVID-19 emergency, 95.71% of women and 94.72% of men, while a small minority carried out SW only occasionally. Furthermore, 73.51% (2,000 respondents in absolute value) found themselves living with their partner while 26.49% were not.

The survey took into consideration eight different aspects that were analysed separately: 1) the division of home and family care workload; 2) smart working, home/family life and leisure; 3) SW's positive aspects; 4) SW's negative aspects; 5) SW's technological difficulties; 6) SW and works' perception; 7) SW's potentially improvable factors; and 8) evaluation of the SW experience.

Through the Development Center's Social Institutions and Gender Index (SIGI), the OECD reports how in all OECD countries women carry out family care jobs about 10 times more than men, employing two to four hours per day in unpaid work more than men (OECD, 2020). Concerning the division of domestic and family care workload, the analysis conducted on the survey's respondents (with the considerations already formulated in the paragraph "Characteristics of the sample") showed, first of all how, the presence of a certain gender difference in partner's commitment to home and family care activities between those who were in SW with the respondents and those who continued to carry out their functions as usual at their offices. Within the first group, most of men and women reported that their partners made the same commitment as ever, however women (27.55%) more than men (20.15%) noted that their partners made more effort, while an equal percentage of men and women reported that partners made less effort. Even in the second group, most of men and women reported that their partner was committed to the same extent as ever. However, in this case, women (16.36%) more than men (10.66%) noticed less commitment from the partner, probably due to the circumstance of a stronger work commitment in a context made difficult by the pandemic and the lockdown. Beyond these clarifications on the activity of respondents' partners, in SW or not, it seems reasonable to affirm that the roles and activities carried out by the partners refer to a concept and very traditional family organization (with the prevalence of women preparing meals and cleaning, while men are more engaged in shopping and providing home repairs). In this sense, the division of duties, however traditional, cannot be traced back to a real cultural change in the division of duties within the couple, but rather to the circumstances that pandemic and lockdown have forcibly changed rhythms and routines, pushing, in fact, to a division of roles that seems to respond more to the needs of planning activities for both partners than to a real project of revision of roles in the management of domestic workloads. The exceptionality of the circumstances, despite having produced an increase in SW, also has a significant albeit not measurable weight in determining the gender effects in the management of home and family work time in respondents' couples.

More significant are the data related to the frequency with which partners, before the SW, collaborated to carry out home and family care activities. In fact, while 91.73% of male respondents declare that the partner always collaborated in the division of the domestic workload, in the case of women the percentage drops to 58.93%. On the contrary, while only 7.41% of men report that the partner collaborated only occasionally, in the case of women the percentage rises to 37.32%. Same sign in the case of the total absence of collaboration reported by 0.86% of men and 3.74% of women. These data offer an important starting point for reflection, showing how, even among employees of research institutions, who on average have a level of education and social capital higher than the country's general population, the distribution of domestic and family workloads remains linked to a traditional view of gender roles.

Equally significant are the results of the analysis of domestic and family care, between men and women, concerning the specific activities proposed in the questionnaire: cleaning; grocery shopping; childcare; support for remote school activities; elderly care; bureaucracy and bill payment; minor home repairs; and meal preparation. The analysis reveals that the distribution of domestic and family workloads among employees of research institutions continues to be strongly linked to a very traditional division of roles between men and women. Women, in fact, deal more frequently than men with activities such as housekeeping, childcare, support for remote teaching activities, elderly care, and meals preparation. Men, on the other hand, are more frequently involved than women in activities such as grocery shopping, handling bureaucracy, and small household repairs. The concept of work-life balance for women in science and academia has been the subject of recent analyses (Ecklund and Lincoln 2016), which have highlighted the strong need for reconciliation expressed by scientists, researchers, and teachers. In the case of limited and only recent policies concerning/dealing with this aspect, the questionnaire shows how the social system on its own cannot overcome the issues faced by women active in the world of public research, while the division of gender tasks remains anchored to a partial and rather traditional model also for men and women with scientific and cultural skills above the average of the Italian population.

The analysis of data concerning leisure showed that an higher share of women than men preferred to devote their free time to tidying up the home, carrying out major cleaning and tidying up papers and documents; to cooking experimentation; to the care and assistance of relatives and friends; and to sports practiced at home. Men, on the other hand, in a higher percentage than women spent their free time in participating in in-depth courses online; in reading, listening to music and watching movies and TV series as well as in online shopping. Almost identical percentages between women and men, instead, are found for the activities of physical and spiritual well-being and for resting. The analysis, therefore, reveals how the lockdown has apparently strengthened a traditional gender division not only regarding domestic and family workloads but also with respect to activities carried out during free time. However, it should be emphasized that most respondents, both women and men, declared that they had not carried out any of the proposed activities. As already mentioned, these data could be linked to the simple lack of specific activities listed in the questionnaire's options,

but it could also signal the onset of a general apathy due to the extraordinary and emergency situation in which the respondents were living. These considerations seem to refer to the more consolidated literature on the gender gap in the management of working women's leisure (Bittman and Wajcman 2000), which probably applies also to research careers. In this sense, the “double burden” of working and taking care of the family in non-working time (with major cleaning, experimentation in the kitchen, caring for relatives and friends) leads women to take on more oriented domestic and family tasks even in their free time. Thus, leaving to men “freed” from such tasks, the choice between online courses, listening to music, reading, and watching films and TV series. This gender difference in the management of free time, whether it is the result of a socially transmitted culture or the result of free female choices, makes this part of women's life time much less oriented to the development of themselves, whereas the opportunity for men to deepen one's interests with online readings and training courses contributes to self-enhancement, offering potential career opportunities.

Despite the presence of a certain gender imbalance in the division of domestic and family care workload, and despite an apparent apathy in free time, only a modest minority of respondents, respectively 5.19% of women and 5.13% of men, found great difficulty in reconciling work with domestic and family care activities. On the contrary, a consistent share of respondents (36.87% of women and 31.52% of men) claimed that they had experimented with innovative formats for managing work and domestic and family care activities. These data appears relevant as they indicate that in a substantial number of cases the SW (especially in the exceptional condition in which it has been implemented) could have constituted an important encouraging factor pushing female researchers, and to a lesser extent male researchers, to rethink, design, experiment and implement innovative models of reconciliation between work and family life that, in the normal daily routine between home and office, would not have been taken into consideration. These data on the implementation of innovative forms of reconciliation between work and home and family care activities are consistent with the scientific literature on the subject (Gastaldi et al., 2014). According to it, the processes of empowerment of workers with respect to the objectives, the management of means and tools to achieve the individual and collective professional goals, constitute the main lever for the innovation produced by SW. In this, the results highlighted by the questionnaire confirm SW's function as a catalyst of organizational innovation, thanks to the independent creative contribution of male and female workers, also in the context of public scientific research.

In any case, even if 19.81% of women and 14.90% of men claim to have found some difficulties in reconcile the two aspects of their daily life, the vast majority of respondents, 72.07% of women and 72.69% of men, declare that this experience has been positive or very positive and that they have succeeded in a discreet or optimal way to reconcile work and domestic and family care activities.

To better understand the perceptions and needs of the researchers who were in SW, respondents were asked to evaluate some possible positive and negative aspects of SW itself, as well as the main technological difficulties that they might have faced.

As for the positive aspects, among those proposed, the most reported one, for women (67.34%) and men (66.10), was the time saved avoiding to travel from home to the usual place of work, followed by the flexibility of working hours (48.83% of women and 50.81% of men) and the possibility of carrying out work and home and family care activities at the same time. The latter aspect, however, reported a certain difference between women (41.92%) and men (35.12), further highlighting how home and family care activities continue to be considered more important by women than by men.

Concerning SW's negative aspects, the only aspect among those proposed to be considered negatively by the majority of women (66.73%) and men (65.93%) was the loss of sociability with colleagues resulting from home working. Lower but still considerable shares were achieved also in aspects related to the feeling of being confined to the home environment and the loss of the division of the day into working and free time. It is important to consider, however, that all three aspects considered most negatively are only partly a direct consequence of SW's activity. Certainly, they have been exacerbated by the social distancing rules issued by the Government at the beginning of March and the subsequent lockdown measures, which severely limited movements from private homes. This perception of teamwork breakdown, derived from the lockdown rather than by the SW, is consistent with the establishment of teamwork within the research and science communities. As has been observed (Salas, Reyes and McDaniel, 2018) the establishment of science as a product of groups of individuals collaborating on projects highlights the importance of the participation in a group to stimulate the creativity of research results, to keep the group constantly engaged with the objectives, to solicit the serendipity approach deriving from the constant attendance, even informal, that is created within the teams. In this sense, it is necessary to reflect, also in perspective, on how to combine the scientific advantages of working in presence, with the possibilities opened up by the massive application of SW.

The survey's respondents, on the other hand, did not experience significant technological difficulties during the SW period. In fact, the only aspect reported as a technological difficulty, namely the lack of a laboratory/institute working mood that cannot be reproduced remotely, rather than linked to technology, is clearly linked to the remote working condition. SW does not allow, indeed, to virtually recreate those dynamics that are the basis of personal collaboration within an office or laboratory. This data also confirms the previous results, concerning SW's negative aspects, showing how most men and women reported the loss of sociality with colleagues as the most negative consequence of SW. However, even in this case, it should be stressed that the exceptional conditions in which SW has been implemented have of course exacerbated these aspects. Under normal conditions, in fact, SW is not a way of working in which the worker is confined at home, but a way of organizing the work in such a way that it is the worker who decides the times and ways of accessing his/her offices.

Although male and female workers experienced some difficulties in managing their work as well as managing home and family care activities, respondents perceived that during the SW period they worked as usual, or that they worked more than usual, compared to the pre-SW period. Only a minority, namely 18.82% of women and 17.51% of men, felt they had worked less. Furthermore, most of respondents, 35.53% of women and 36.62% of men,

claimed that they worked better, while 45.29% of women and 46.97% of men reported having worked in the same way. Even in this case, only a minority of respondents said they worked worse than usual, specifically 19.19% of women and 18.41% of men. Most respondents, however, claimed that their perception of SW was biased by the emergency nature of the situation they were experiencing.

Respondents also highlight a factor that in their opinion needs to be improved to ensure a better management of SW: greater integration between home and office working, considered to be improvable by 45.41% of women and 51.30% of men. All the other factors proposed (better welfare support in managing home and family care activities while working from home, better definition of working hours and time reserved for home and family, better collaboration with managers and colleagues, greater coordination with partners/family members for carrying out domestic and family care activities, greater flexibility in working hours) were instead considered not needing to be improved by the vast majority of respondents, without reporting, even in this case, relevant gender differences in the answers.

Finally, survey's respondents expressed their opinion on the possibility of requesting an extension of SW once the emergency phase is over. In this regard, despite all the difficulties encountered by the workers of the research institutions (e.g. difficulties directly related to the SW as well as those more directly attributable to the exceptional situation and the limitations of freedom of movement), data showed that most respondents, 54.94% of women and 54.26% of men, think they will request, surely or in any case probably, an extension of SW. On the contrary, only a small minority of respondents stated that they certainly or probably will not require such an extension.

As we have seen, therefore, the workers of the Italian research institutions have judged the SW experience during the COVID-19 emergency in a predominantly positive manner. The emergency nature that characterized this experience obviously highly influenced their perceptions and assessments and, consequently, public decisions on the opportunity to use SW as a form of work organization should not be based solely on the analysis of this peculiar period. In fact, to make a precise and coherent assessment, it is necessary to deepen the study of the perceptions and needs of employees who find themselves working in SW in a non-emergency situation.

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