

Does Work From Home Change Work at Home?: An Analysis of Post-COVID Trends in
Gendered Household Labor

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1 Introduction

In March 2020, the world shut down as the COVID-19 pandemic closed schools, workplaces, and businesses. As a direct result of this, many couples were suddenly both around one another and at home 100% of the time. Moreover, as we have exited the pandemic, major aspects of our lives have changed – one of them being the exponential rise of remote and hybrid work. In 2022, 34% of the labor force worked at home some days, and in 2021 that figure was 38% (*American Time Use Survey Summary - 2022 A01 Results*, 2023). Given this sudden and stark change in American life, this paper seeks to answer: how did the increase in time at home created by the COVID-19 pandemic and hybrid work affect the balance of household labor within heterosexual couples?

Inequality in unpaid household labor and childcare has major negative implications for women's financial progression and overall equality (Adda et al., 2017; Erosa et al., 2022; Goldin, 2014). The balance of unpaid labor is also highly personal within each couple, and few policies do (or even *can*) address this dynamic (exceptions being, e.g., paid paternal leave). Therefore, understanding how behaviors changed following COVID – i.e., examining if increased time at home as a result of work-from-home (WFH) increased equity between partners – could speak to a major unintended benefit of remote work.

To examine this question, I use American Time Use Survey data from 2016-2022. This cross-sectional data allows individuals to report on how long they spend on a given task. It also includes critical information on their spouse, including their sex, employment status, and hours worked per week. I isolate this data to heterosexual couples where both individuals work full time and examine trends through both visual graphs and through conducting T-tests on the pre-

and post-COVID period within and across the sexes. I further separate the data by couples with and without children.

I ultimately find that though men and women still have a statistically significant gap in household labor hours, pre- and post-COVID, men increased their hours spent conducting household labor (statistically significant at least at the 10% level) whereas women had a non-statistically significant increase. In 2021 to 2022, the gap between men and women became non-statistically significant for childless couples. Therefore, in the post-COVID period, the sex division of household labor has become marginally more equitable. However, attributing this shift to COVID or WFH is incredibly unlikely. When I further broke down the data into the ten states that had the strictest COVID laws and prevention measures and the ten with the least strict, I found either negligible changes or even *increases* in the household labor gap in states with strict COVID lockdowns.

2 Background and Literature Review

Until the 20th century, women largely did not participate in the labor force outside of the domestic sphere (Yellen, 2020). In just the last 100 years, Western society has made remarkable strides in gender equality – women now have the right to vote, to become educated, and to attain high positions of power in the political and corporate spheres.

Despite these differences, major inequalities remain. One of these occurs in the “domestic sphere” where women historically held domain for centuries.

2.1 The Male/Female Unpaid Labor Gap

Women do more household labor and childcare than men (Blair & Lichter, 1991; Yavorsky et al., 2015). This has major implications for the advancement of women’s equality

because of the inverse relationship between wages/employment and childcare/household labor: Bittman et al. (2003) found that women decrease their household labor as they increase their income and Erosa et al. (2022) found that the decreased free time that women have due to performing household duties systemically contributes to lower wages through occupational choice.

Examinations of situations that might change this dynamic have yielded fascinating results. Patnaik (2019) examines paid paternity leave in Canada and finds that the intense period of shared post-birth childcare reduced gender inequality in household activities not just during the leave but well after. Tamm (2019) comes to a similar conclusion using data from Germany, finding that men, following their paternity leave, continue to contribute more greatly to household labor and childcare. Finally, Leopold & Skopek (2015) use data from Germany and find that following retirement, when neither member of a heterosexual couple is working, the gender gap in household labor is halved.

These studies have major implications for the effects of the COVID-19 pandemic and its potential lasting impacts on parental behavior: even brief changes in gendered dynamics can have lasting effects, and changes in the amount of overall time can contribute to greater time-use equity. Though stay-at-home orders in some parts of the US were relatively short or nonexistent, the increased time at home during 2020 could change male and female behavior through the present, particularly with the lingering impacts of hybrid work.

2.2 “Time Allocation in Hard Times”: The Recession and COVID-19

Behavioral changes in men’s and women’s time allocation are frequently closely related to employment. Berik & Kongar (2013) use the American Time Use Survey (ATUS) to examine

how mothers and fathers shifted their time use during the 2008 recession. They found that because men were more likely to become unemployed in this recession, mothers' paid hours increased and their unpaid hours decreased, whereas fathers' hours decreased in both. By contrast, in the 2020 pandemic, a UK analysis found that mothers were more likely to be unemployed, a statistic that may in part contribute to increased household labor conducted by women due to the COVID pandemic (Andrew et al., 2020). Related to this, some working women did not become unemployed but found the responsibility of childcare falling more heavily on them – and reduced their working hours in response (Collins et al., 2021).

Multiple studies examining the impact of the 2020 pandemic on time use (particularly in household labor and childcare) among heterosexual couples primarily indicate that COVID-19 and stay-at-home orders exacerbated and reinforced household labor along traditional gender boundaries.

Examinations of the ATUS revealed that the time spent on secondary childcare – that is, childcare that occurs while a parent is working on another task, such as laundry or cooking, due to the necessity of supervising children – significantly increased for both mothers and fathers, but by a wider margin for mothers (Aragão, 2022). Abromaviciute & Carian (2022) came to a similar conclusion by analyzing interviews with 62 heterosexual couples: they determined that the social unrest brought about by the pandemic reinforced gender inequality in household labor as individuals sought comfort in known social structures. Haney & Barber (2021) used data from the Canadian Perspectives survey data to closely examine the three months at the beginning of the pandemic: April, May, and June 2020. In line with fellow literature, they found that women were shouldering the bulk of the household labor. However, this survey also reported on personal satisfaction and revealed that women were not dissatisfied with this division. This has important

economic implications when we theorize about where men and women may fall on their respective indifference curves; this will be explored later in this paper.

By contrast to this consensus, Carlson et al. (2022) used novel data to examine trends in household labor and childcare between March-April 2020 and came to the opposite conclusion. Though they find that female partners increase their average work, they find that men did as well, resulting in more equitable division.

With this literature in mind, I take a unique approach by examining changes in gendered household labor post-COVID and through the year 2022. Further, few papers use the ATUS survey, which offers a rich number of observations that could yield greater statistical insight.

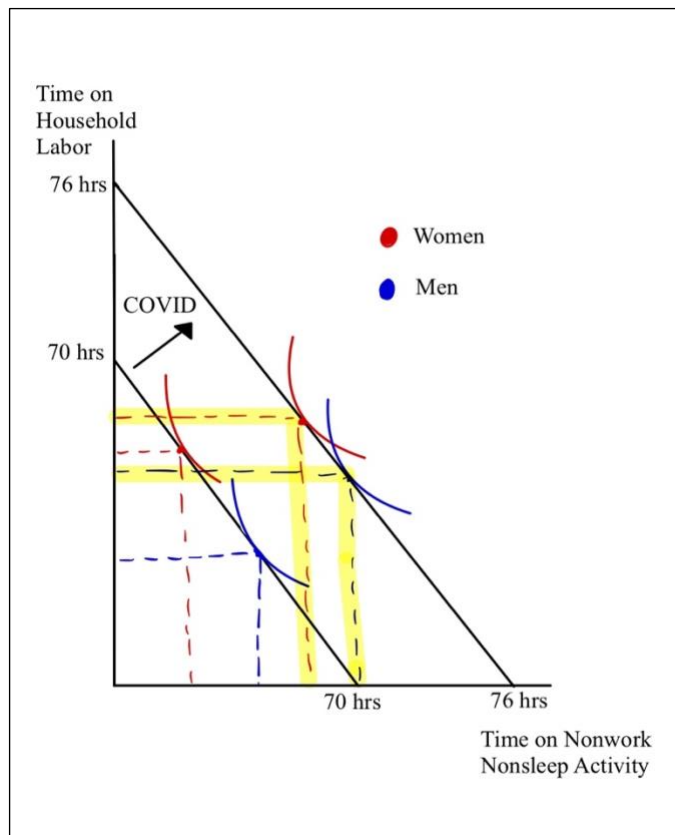
3 Analysis

3.1 Economic Principles: Indifference Curves, Supply and Demand, and Elasticities

The root of this question is that of preferences, and how preferences are shaped by gender. In Figure 1, I have created a visualization of the hypothesis underlying this analysis: as time at home increases for both genders due to hybrid work (prompted by the exogenous event of COVID-19), the gender gap in household labor hours will shift. In an indifference curve model, individuals have preferences between two goods, and they have some budget line constraining their choice. In this theory, an individual will choose the ideal combination of the two items based on their preferences. A single individual may have infinite indifference curves – called such because at any combination along said curve, the person will be “indifferent”, or equally content – but their revealed preferences are constrained by their budget. As their budget increases or decreases, they fall to a higher/lower indifference curve.

In applying this to the question of gender-based differences in indifference curves and the exogenous change in “budget”, i.e., time, we can predict or hypothesize about how indifference curves might shift along a new budget line. If we assume that an average working individual has about 70 hours a week not working and not sleeping, they can divide that time between household labor and anything else they may want to do (entertainment, leisure, personal care, et

Figure 1: Indifference Curves by Sex, Time Use



cetera). In this original state, women, on average, have an indifference curve that results in higher household labor hours; the idea that women have a higher preference for and gain utility from these hours can be validated in Haney & Barber (2021).

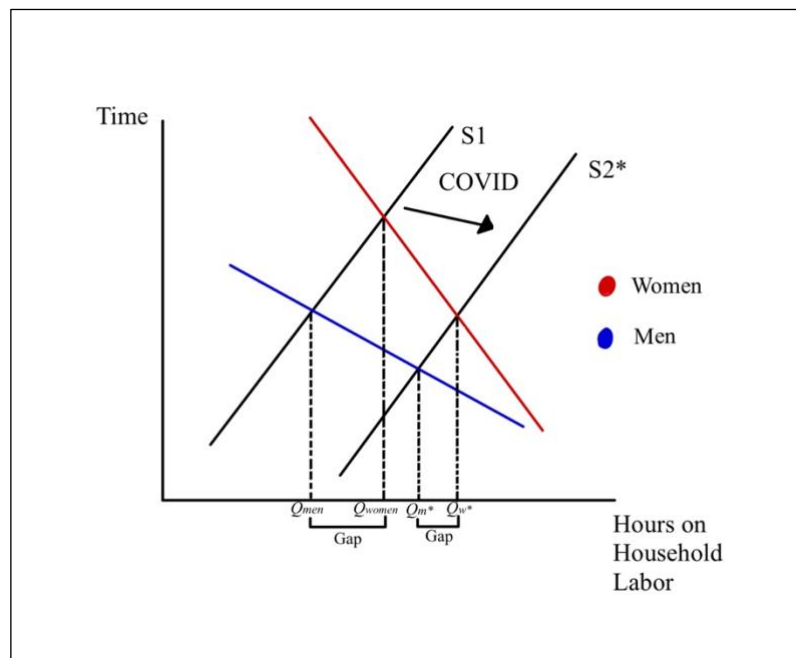
COVID-19 caused a shift for many individuals, increasing their time. 76 hours is an arbitrary estimate based on time saved getting ready for work and commuting; it also builds in time within the work day to spend on either household labor or leisure, depending on the

flexibility of one's job. The more important point is that theoretically, the budget line of free time should shift to the right.

Figure 1 presents a hypothesis that as time increases, the gap between men's and women's time division will narrow, as evidenced in the highlighted yellow dashed lines indicating a post-COVID shift in the time allocation due to new indifference curves. However, a shift in the opposite direction could also occur, with men's indifference curves (on average) falling even lower, heightening the gender household labor gap.

Critically, indifference curves can be used to create demand curves. The demand curve hypothesized in the above indifference curve looks as follows:

Figure 2: Supply of Time and Demand for Household Labor by Sex



The most important elements of this graph is the *supply shock* and the *elasticities* of the demand curves for men and women. I hypothesize that men have a more elastic demand curve than women – meaning, as men have less time, they drop their household labor quicker than

women. However, when time increases, they will increase relatively more than women, reducing the gender gap in time spent on household labor. This supply shock of time was prompted by the COVID-19 pandemic; even individuals who did not lose employment gained more time at home, resulting in increased downtime to potentially fill with household labor such as laundry, dishes, cooking, et cetera.

I will therefore use empirical data to test the validity of this proposed model.

3.2 Data and Methodology

To analyze this question, I use the American Time Use Survey conducted by the US Bureau of Labor Statistics. This is a yearly cross-sectional survey that investigates how Americans of various demographics are spending their time. This paper focuses on the outcome variable ACT_HHACT, which measures the amount of time spent on household activities related to household maintenance – i.e., unpaid household labor. I extracted this data from IPUMS for the years 2016 to 2022 to capture the pre- and post-COVID trends. For individuals with children, I also briefly look at time changes in childcare, which I measure through the variable ACT_CAREHH, which technically captures care for anyone in the household regardless of age; I use it as a proxy for childcare.

Because I am specifically interested in the dynamics of heterosexual couples, I isolate the data to couples who live with a partner of the opposite sex (regardless of marriage status; henceforth, “partnered”). I further isolate it to couples who both work full time (>35 hours a week), don’t work multiple jobs, and don’t have any underlying health issues/disabilities that may underlie differences in household labor. By cleaning my data to this group, I specifically look at dynamics between nominally equitable couples who have the same “budget” line

displayed in Figure 1 – i.e., the couple has the same amount of time in the day to divide amongst various activities.

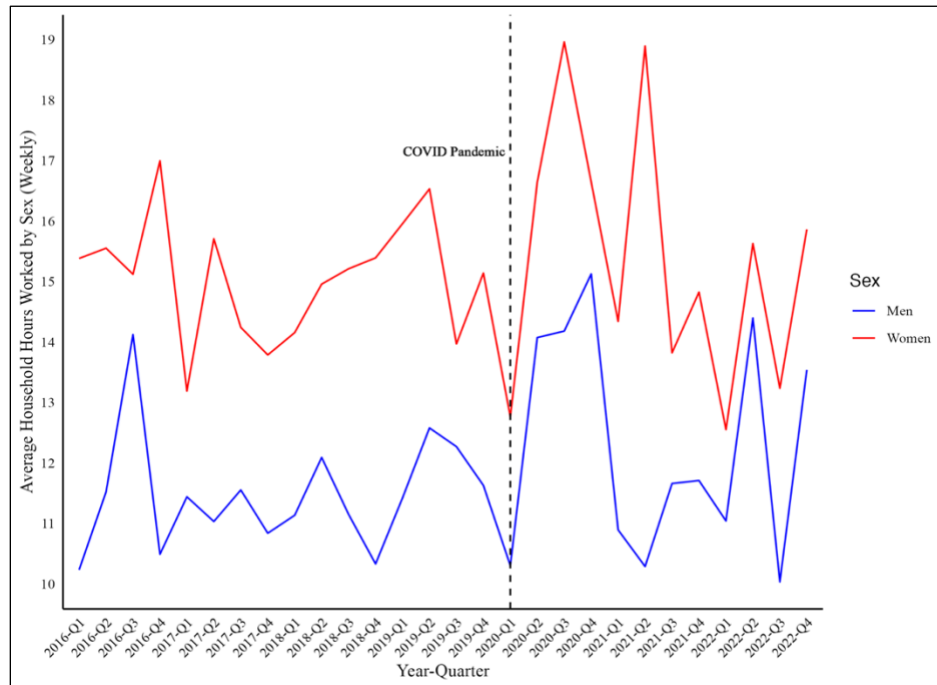
I further separate the data into men and women with children and those without children. The choice to have children may reflect endogenous differences in couples – and moreover, the responsibility of a child may fundamentally change one’s preferences and indifference curves, making it challenging to compare against couples without children. I further examined data isolated to individuals who indicated that they were able to telework post-2020; however, this drastically reduced my sample size and ultimately did not change the results found with the larger sample size, so those results will not be displayed.

Lastly, I examined two subsets of data: the entire nation, and then comparing the ten states with the strictest COVID-19 responses to then ten with the least strict (as defined by Leins (2020)).

3.3 Partnered Men and Women with Children

First, I examined partnered men and women with children under 18 in the house. Figure 3 displays the average hours spent weekly on household duties, by sex, averaged across 3 months (i.e., the quarter of the year). This data subset had 5922 observations, with 2881 men and 3041 women.

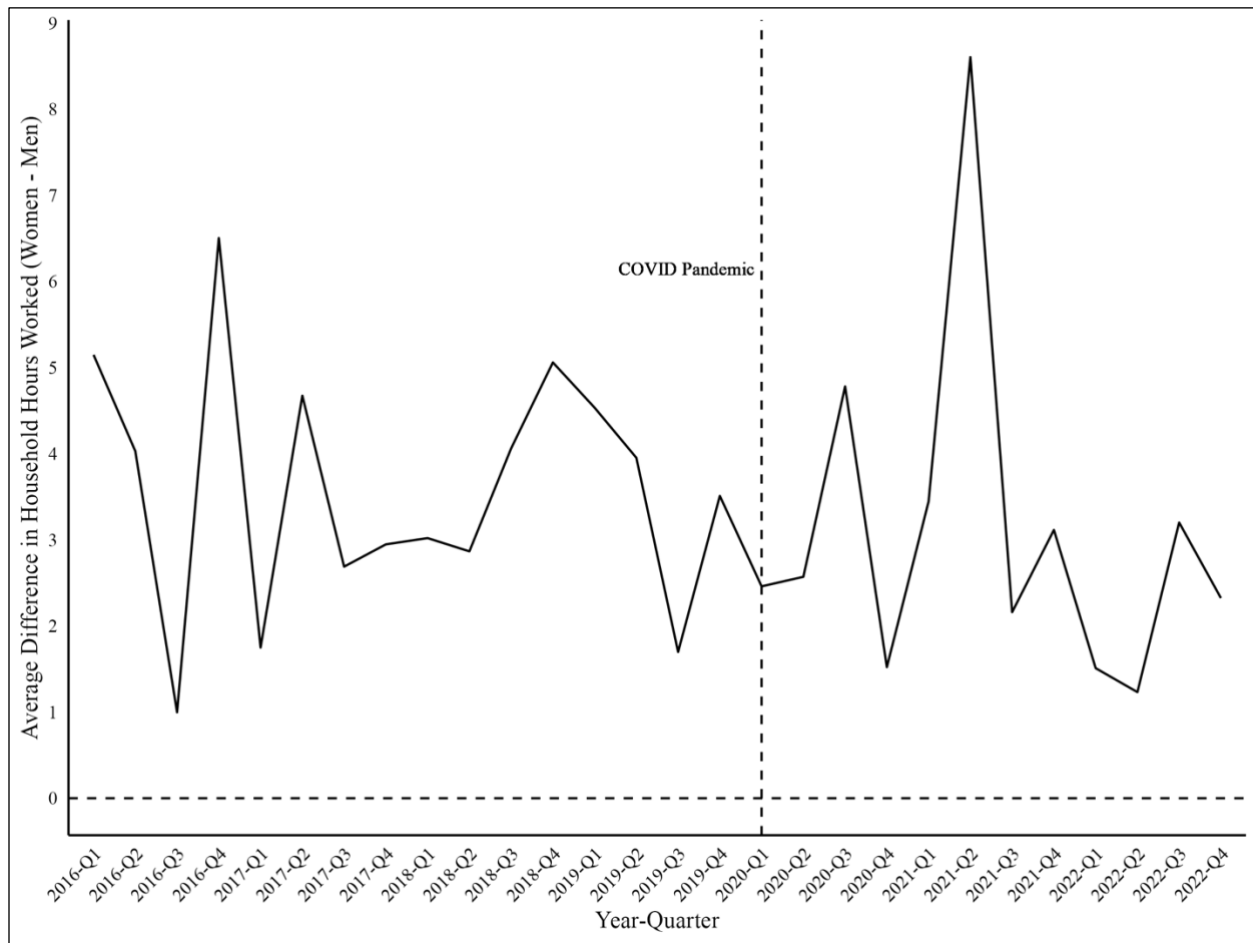
Figure 3: Average Weekly Household Hours by Sex, Mothers and Fathers



As is evident, women consistently work more hours than men. Immediately following the COVID pandemic (defined here as Q1 of 2020 since the pandemic occurred in March 2020 and this quarter can act as a before/after marker), both men and women increased their average hours spent on household labor. However, women remained higher than men.

I was also interested in examining how the *difference* between mothers' and fathers' weekly household labor hours shifted post-COVID.

Figure 4: Difference in Hours Spent on Household Activities (Women-Men), Mothers and Fathers



Line at zero (0) included for clarity.

There is no discernible trend. Women with children consistently spend more time on household activities than men with children; I am not inclined to read into the quarterly changes as any kind of real trend. Though the difference in hours worked peaks in Q2 2021 at 8.6 hours, in 2016 it also reached close to a 7-hours difference, indicating that this peak might be random chance, particularly since it drops in the quarters before and after.

Lastly, I conducted T-test analysis to look at the gaps between men and women pre- and post-COVID as well as how the pandemic affected each sex's hours worked on household activities and childcare.

Table 1: Mothers' and Fathers' Time Use Pre- & Post-COVID (All States)

	<i>Gap: Pre-Covid (Women-Men)</i>	<i>Men's Change Pre-Post Covid</i>	<i>Women's Change Pre- Post Covid</i>	<i>Gap: Post- Covid (Women- Men)</i>
<i>Avg Household Work per Week</i>	3.524*** (0.467)	1.038+ (0.607)	0.628 (0.575)	3.115*** (0.694)
<i>Avg Childhood Labor per Week</i>	2.632*** (0.377)	1.073* (0.478)	0.747 (0.522)	2.307** (0.598)
<i>Avg HH Work Pre-Covid</i>	-	11.422	14.946	-
<i>Avg HH Work Post-Covid</i>	-	12.460	15.575	-
<i>Avg CC Work Pre-Covid</i>	-	8.44	10.31	-
<i>Av. CC Work Post-Covid</i>	-	7.96	11.06	-

All numbers in hours/week. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

For both childcare and for household labor, men saw a statistically significant increase in their hours per week; women saw a slight increase (approximately 45 minutes additional per week) but it was not statistically significant. In the pre-COVID era, men and women had approximately a 3.5 hour gap and a 2.6 hour gap for household labor and childcare, respectively; in general, mothers are performing more unpaid labor than fathers. With the increase in men's labor post-COVID, this gap shrunk to about 3.1 hours and 2.3 hours, respectively. This is not a particularly large shrinkage in magnitude, and the gap between men and women remains statistically significant; nevertheless, the fact that men had a significant increase in hours of labor (whereas women did not) provides fascinating evidence in favor of my hypothesis portrayed in Figures 1 and 2.

However, I also analyzed the data for mothers and fathers in states with strict COVID restrictions versus non-strict states to examine changes. A list of these states can be found in Appendix A.

Table 2: Mothers' and Fathers' Time Use Pre- & Post-COVID (Strict vs. Nonstrict States)

	<i>Gap, Strict States, Pre- Covid</i>	<i>Gap, Nonstrict States, Pre- Covid</i>	<i>Men's Change Pre-Post Covid, Strict States</i>	<i>Men's Change Pre-Post Covid, Nonstrict States</i>	<i>Women's Change Pre- Post Covid, Strict States</i>	<i>Women's Change Pre-Post Covid, Nonstrict States</i>	<i>Gap, Strict States, Post- Covid</i>	<i>Gap, Nonstrict States, Post- Covid</i>
<i>Avg Household Work per Week</i>	2.91** (1.09)	3.88*** (1.11)	0.733 (1.383)	1.04 (1.357)	2.29+ (1.351)	0.0624 (1.375)	4.47** (1.59)	2.90+ (1.58)
<i>Avg Childhood Labor per Week</i>	2.39* (0.952)	3.03*** (0.744)	1.56 (1.29)	1.34 (1.01)	0.959 (1.29)	0.691 (1.148)	1.79 (1.56)	2.39+ (1.34)

All numbers in hours/week. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

When isolating to the ten most strict and nonstrict states, a different trend emerges. Men in both states lose statistical significance for their increase in hours spent on household labor, and women in strict states *gain* significance at the 10% level. The gap for strict states widened, while for nonstrict states, it *shrunk* and lost significance. This validates some of the prior literature that spoke to an exacerbation in household labor gaps caused by strict lockdowns. On the contrary, the gap in time spent on childcare became non-statistically significant, but it is not clear what it was driven by, as neither men nor women lost or gained hours with any significance.

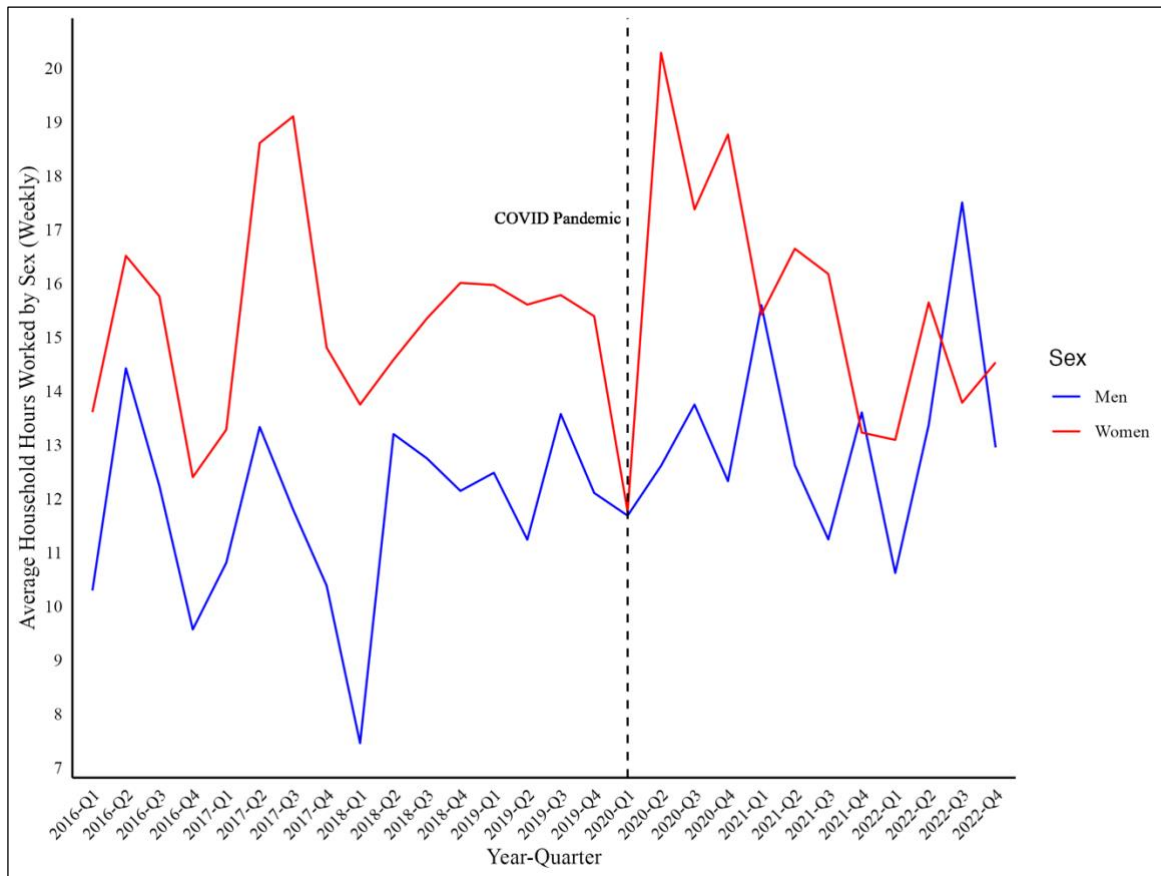
In sum, in examining mothers and fathers, I found that fathers nationwide did increase their household and childcare labor slightly in the post-COVID era, shrinking the gendered gap. However, it did not make the gap between men and women non-statistically significant; women continue to bear the labor. Perhaps more significantly, for the states with the strictest COVID

lockdowns, women saw an increase in hours spent on household labor, widening the gap. This is contrary to my hypothesis.

3.4 Partnered Men and Women without Children

I was also interested in looking at partnered men and women without children. Couples without children may have different values, behaviors, and lifestyles affecting the gap in household labor. As in the group with children, I first examined both the trends in average time spent on household labor by sex and the average difference over time.

Figure 5: Average Weekly Hours by Sex, No Children

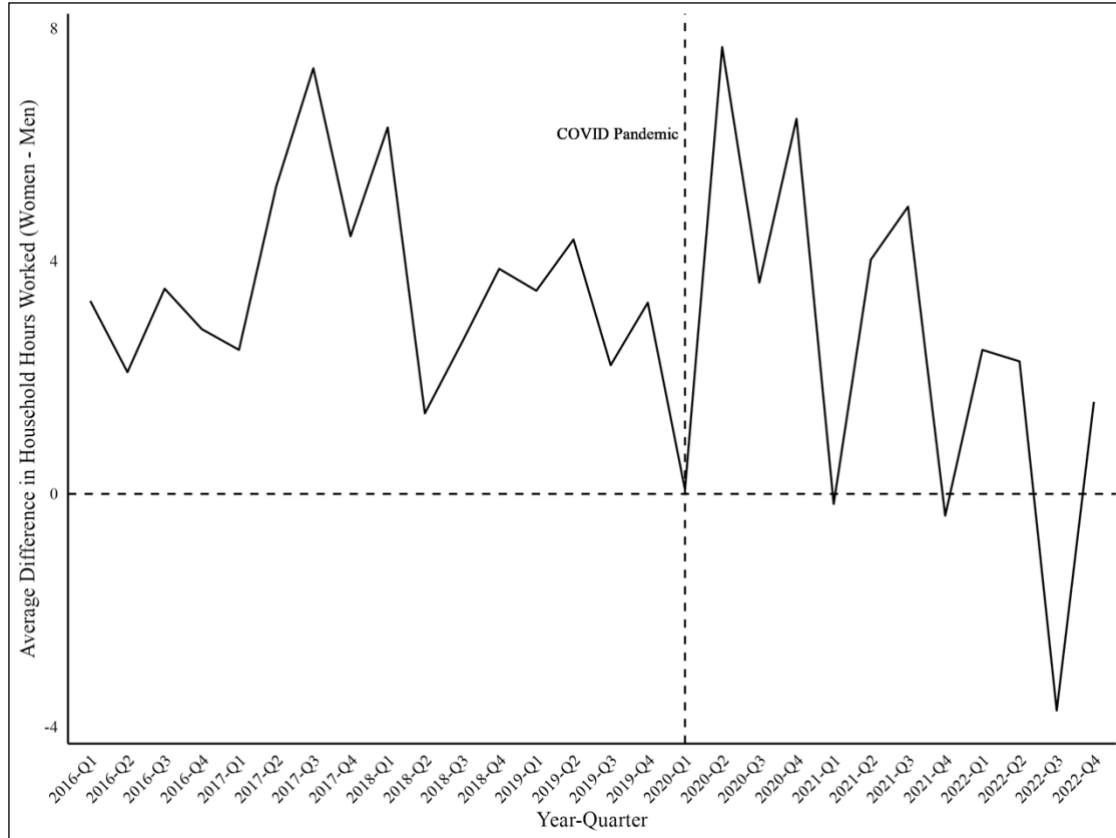


As compared to the group with children, there is a more obvious trend in household labor displayed in Figure 5: in general, the gap between men and women seems to be shrinking, both

due to increased work by men and decreased work by women. Whether this shift was caused by COVID, however, is immediately suspect; the first time men and women spent an equal number of hours on household labor is the quarter right before COVID hit, and immediately in the quarter following, the gender household labor gap increases. Nevertheless, from the start of 2021 onwards, there is a notable merging of average household hours.

This can be seen even more clearly in the chart showing the average difference between genders over time.

Figure 6: Difference in Hours Spent on Household Activities (Women-Men), No Children



Line at zero (0) included for clarity.

Figure 5 more clearly highlights this increase in equity in the post-COVID era. However, a possible alternative hypothesis is that from 2016 onwards the difference was decreasing

anyway. COVID exacerbated the difference between men and women briefly, and then the difference in hours continued the pre-COVID decreasing trend.

I then statistically examined the differences in childless women and men pre- and post-COVID.

As in the group with children, men saw a statistically significant increase in their hours spent on household labor, increasing by 1.58 hours on average. This reduced the gap in childless heterosexual partners from 3.454 hours to 2.5 hours per week. Nevertheless, in the post-COVID era, the gap remained statistically significant.

Table 3: Partnered Men's and Women's Time Use Pre- & Post-COVID, No Children, All States

	<i>Gap: Pre-Covid (Women – Men)</i>	<i>Men's Change Pre-Post Covid</i>	<i>Women's Change Pre-Post Covid</i>	<i>Gap: Post-Covid (Women – Men)</i>	<i>Gap: 2021 onward (Women – Men)</i>
<i>Avg Household Work per Week</i>	3.454*** (0.636)	1.585* (0.728)	0.679 (0.724)	2.547** (0.807)	1.364 (0.946)
<i>Avg. HH Work Pre-Covid</i>	-	11.740	15.194	-	-
<i>Avg. HH Work Post-Covid</i>	-	13.326	15.872	-	-

All numbers in hours/week. Stars indicate significance. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

However, because of the visual analysis indicating that childless men and women are seemingly having more equity in household labor, I created a dummy variable for the year 2021 onward to examine the differences between men and women in 2021 and 2022. Women work on average 1.36 hours more – however, this data point loses statistical significance. This implies that in 2021 and 2022, for heterosexual childless couples, men and women spent roughly the

same amount of time on household labor. This does not provide evidence for my hypothesis about the impact of the COVID-19 pandemic on household labor equity but does speak to a larger trend in childless heterosexual couples: men and women are sharing this labor more equally.

Lastly, as with the mothers and fathers, I examined strict-COVID versus nonstrict COVID states.

Table 4: Partnered Men's and Women's Time Use, No Children, Strict vs. Nonstrict States

	<i>Gap, Strict States, Pre- Covid</i>	<i>Gap, Nonstrict States, Pre- Covid</i>	<i>Men's Change Pre-Post Covid, Strict States</i>	<i>Men's Change Pre-Post Covid, Nonstrict States</i>	<i>Women's Change Pre- Post Covid, Strict States</i>	<i>Women's Change Pre-Post Covid, Nonstrict States</i>	<i>Gap, Strict States, Post- Covid</i>	<i>Gap, Nonstrict States, Post- Covid</i>
<i>Avg Household Work per Week</i>	3.25* (1.41)	2.51+ (1.50)	-0.207 (1.523)	3.03+ (1.776)	1.56 (1.64)	-0.377 (1.569)	5.02*** (1.74)	-0.897 (1.831)

All numbers in hours/week. Stars indicate significance. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table once again reveals results that indicate that the gap between men and women *widened* in states with strict COVID restrictions, and men in strict states decreased their labor whereas men in nonstrict states had an increase with small statistical significance. In the post-period, nonstrict states had a negative and nonsignificant gap, indicating that men on average spent *more* time on household labor than women. These findings reiterate the trends of mothers and fathers and indicate that even if the gap between men and women has decreased on average, COVID and lockdowns certainly did not help.

3.5 Discussion & Connection to ECON 101

Though the gap between men and women with children remains, it has shrunk in the post-COVID era and arguably disappeared for men and women without children (though more recent data from 2023 and 2024 will be necessary to truly shed light on this).

However, data suggests that my hypothesis regarding COVID-19's impact on it was incorrect. For states with strict lockdowns, the gap between men and women widened. Therefore, men do not have a more elastic demand curve; given more time at home, they did not increase their time on household labor and in fact slightly decreased it. Meanwhile, women increased their time; this remains consistent with their demand curve.

4 Conclusion

Based on both visual estimation and t-test analysis, I have found that in the post-COVID era, gender equity in household labor and childcare has improved. This reduction was driven by men's increases in labor. Nevertheless, the gap between women and men remained statistically significant for each pre- and post-COVID analysis.

For heterosexual partners who did not have children, the evidence for more equitable time spent on household labor is much more prominent. Though there was an immediate spike in the difference in household labor hours between genders – implying that in the immediate months following COVID, the gender-based difference in weekly hours spent on household labor was exacerbated – in a t-test, the difference in household hours worked in the post-2020 period was not statistically significant. From this, we can see that for couples without children, it does seem the gender gap in household activities is shrinking – or even disappearing.

However, despite these larger trends in the pre-post COVID periods, analysis of states with strict vs. nonstrict COVID restrictions indicates that these trends are highly unlikely to be caused in any way by COVID lockdowns or increased time at home. For the 10 strictest states, the increase in time spent on household labor was either insignificant or negative; for women, it increased, resulting in a *larger* gap between genders. This is in line with much of the literature.

I further use the framework of the indifference curves and budget lines to conceptualize how behaviors shift with increased time. This hypothesized curve in Figure 1 seems to be refuted by my analysis; men do not have a more elastic demand curve for household labor.

Ultimately, this analysis cannot lead to any policy conclusions. Behavioral preferences are highly personal and divisions of labor within a couple is inherently a private matter; each couple seeking to make their relationship more equitable must fight through layers of gendered socialization, and other couples may simply be comfortable and happy with their division of labor. However, if work from home can truly improve gendered differences in care for children and households, this could result in long-term greater equity and decreased burnout among individuals.

This paper sought to examine how COVID – and underlying COVID, the increased time at home many Americans experience up to today via hybrid work – changed household divisions of labor. Though I found evidence that trends are improving for men and women, I did not find evidence that time at home improved this gap; in fact, it likely exacerbated, especially when comparing trends to the states with the least restrictions. Though we will hopefully not have a pandemic again any time soon, this research thus speaks to the challenges lock-downs pose to heterosexual couples – but it also highlights greater optimism for gender equity nationwide.

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Appendix A (from Leins (2020))**Strictest States:**

Rhode Island

Connecticut

New York

Washington

Massachusetts

New Jersey

Minnesota

Vermont

District of Columbia

Creates a data set of $N = 1070$ for couples with children, and $N = 734$ for couples without children

Least Strict States:

Wyoming

Mississippi

Texas

Nevada

Oklahoma

Missouri

Hawaii

Kansas

Tennessee

Indiana

Creates a data set of $N = 1189$ for couples with children, and $N = 792$ for couples without children