BLS WORKING PAPERS

U.S. Department of Labor
U.S. Bureau of Labor Statistics
Office of Employment and Unemployment Statistics

Teleworking and Remote Schooling During the Pandemic

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Working Paper 574
December 2024

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Abstract

The pandemic resulted in a very large increase in teleworking. In addition, school closings led to a large number of students attending school remotely. An NLSY97 COVID-19 pandemic supplement in the spring of 2021 makes it possible to examine the relationship between these two occurrences. My findings indicate that remote schooling by a parent's child led to a sizable increase in the likelihood of working at home 10 hours or more. The responsiveness of teleworking to remote schooling depended crucially on how suitable an individual's job was to teleworking. Remote schooling had a quite substantial effect on the likelihood of teleworking in jobs that were well suited for teleworking and no effect in jobs that were poorly suited. The effect of remote schooling on the likelihood of teleworking was much larger for women than for men and the effect for women was magnified when a spouse or partner was absent from the household. While parents no longer need to contend with remote schooling, the results in this paper suggest that the flexibility allowed by jobs that are well suited for teleworking enables individuals to better meet the demands of childcare and other household responsibilities.

I am grateful to Alison Aughinbaugh, Donna Rothstein, Hugette Sun, Keenan Dworak-Fisher, and Harley Frazis for helpful discussions and comments. Donna Rothstein was very helpful in setting up the dataset. I am responsible for any possible errors. All views are my own and do not necessarily reflect those of the U.S. Bureau of Labor Statistics

I. Introduction

The Covid-19 pandemic triggered a large increase in the amount of time that employees spend working at home. For example, analyzing data from the American Time Use Survey (ATUS) and the 1979 cohort of the National Longitudinal Survey of Youth (NLSY79), Dey, Frazis, Loewenstein, and Sun (2020) estimate that immediately prior to the pandemic only a little more than 10 percent of workers teleworked one or more days per week. In comparison, an analysis of a COVID-19 supplement of the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97) by Aughinbaugh, Groen, Loewenstein, Rothstein, and Sun (2023) finds that during February to May 2021, 46 percent of workers teleworked at least some of the time during the week before they were interviewed while 25 percent teleworked the entire week. Teleworking rates have fallen from their height at the start of the pandemic, but teleworking is still far more common than before the pandemic.[1] There is little doubt that telework rates will remain far above their pre-pandemic rates.[2]

[1] According to the estimate in the Bureau of Labor Statistics' Current Population Survey, 23.8 percent of workers teleworked at least some hours during the August 2024 survey week There is little doubt that telework rates will remain far above their pre-pandemic rates.

[2] Pabilonia and Vernon's analysis of pre-COVID-19 ATUS data finds that teleworking provides workers with greater flexibility in scheduling their hours and enables them to spend more time with their family. In their survey of Americans, Barrero, Bloom, and Davis (2021), find that many workers have a strong preference for being able to work at home and feel they are more productive than at the worksite. Aksoy et al. (2022) find that workers on average value the option to work from home 2-3 days per week at 5 percent of pay and that this option is higher for women and for individuals with children under 14. As has often been pointed out, there is a potential cost to remote work resulting from reduced worker interactions. As noted by Aksoy, Barrro, Bloom, Davis, Dolls, and Zarate (2022), the solution and the developing norm appears to be a hybrid model where workers work at home some of the time and in office some of the time. Case studies by Emanuel and Harrington (2023); Gibbs, Mengel, and Siemroth (2023); and Emanuel, Harrington, and Pallais (2023) point to lower productivity when workers are fully remote. Studies by Bloom, Liang, Roberts, and Ying (2015) and Choudhury, Foroughi, and Larson (2021) find higher productivity when work arrangements are hybrid.

Another important feature of the pandemic was remote learning to limit the spread of COVID-19. All U.S. public school buildings were closed by March 25, 2020.[3] [4] School disruptions continued well into the following school year. As indicated by the National Assessment of Educational Progress Monthly School Survey, in February 2021 only 49 percent of public schools with fourth or eighth grade were open full time and in person for all students. By May 2021, this percentage was still only 63 percent.

In spring 2021, the NLSY97 fielded a supplement on the effects of the COVID-19 pandemic. The supplement interviews were conducted from February to May 2021. The supplement data include information on employment, telework, health, and children's schooling. NLSY97 respondents were between ages 36 and 41 at the time of the supplement. Aughinbaugh, Groen, Loewenstein, Rothstein, and Sun (2023) provide a detailed description of the supplement.[5] For present purposes, key pieces of information collected by the survey are the hours that individuals worked and teleworked in the week prior to the survey, whether children

[3] "The coronavirus spring: the historic closing of U.S. schools (a timeline)," *Education Week*, July 1, 2020, https://www.edweek.org/leadership/the-coronavirus-spring-the-historic-closing-of-u-s-schools-a-timeline/2020/07.

[4] Heggenes (2020) finds that at the start of the pandemic, women with school age children in states where schools shut down by March 12 experienced a significant fall in employment.

[5] Aughinbaugh, Groen, Loewenstein, Rothstein, and Sun (2023) show that the incidence of working at home and the incidence of remote schooling are positively correlated. However, they shy away from causal estimates because of the concern that both variables are endogenous. I provide a more thorough investigation of the relation between remote schooling and teleworking, in the process addressing the endogeneity issue in the analysis that follows.

attended school in person or remotely, and job characteristics that determine how suitable an individual's job is for teleworking.[6]

The NLSY97 COVID-19 survey offers a unique opportunity to study the relationship between remote schooling and teleworking. While parents no longer need to contend with remote schooling, an analysis of the relationship between remote schooling and parents' teleworking decision provides insights into how the flexibility allowed by teleworking enables individuals to better manage the demands of childcare and other household responsibilities. This flexibility may be especially important for women. Furthermore, the advantages of teleworking are not available to all workers. Only a minority of jobs are well suited to working at home; the majority must be performed on site. Generally, teleworking is more feasible in the more highly skilled, higher paying jobs. The NLSY97 COVID-19 survey enables one to examine how the characteristics of individuals' jobs determine their ability to use teleworking to cope with remote schooling, and by implication other household demands on their time.

The next section provides a description of the data in the NLSY97 supplement as well as of additional data that I bring in from other sources. Teleworking and remote schooling equations are then presented in Section III. My primary interest is in the effect that remote schooling had on teleworking. In light of the fact that in the spring of 2021, a substantial number of children with the option to attend school in person may have chosen to attend remotely, endogeneity of remote schooling is a potential issue.[7] However, after estimating a Two Stage

[6] For a detailed discussion and look at the task information in the NLS, see Dey, Loewenstein, and Sun (2021).

[7] Analyzing data from the Understanding America Study, Saavedra, Rapaport, and Silver (2021) report that 30% of the sample indicated that their child was attending remotely during April-May 2021. Among individuals who had a child attending remotely, only 10% responded that their child was remote because their child's school did not have an in-person option. Almost half

Least Squares equation, I am able to rule out the endogeneity of remote schooling. I complete the empirical analysis by examining how parents' response to remote schooling by their children depended on how suitable their jobs were to teleworking and whether the response differed if only one parent was present in the household. Concluding remarks follow in the final section.

II. Data Description

The analysis in this paper is based on individuals who participated in both the NLSY97 COVID-19 Supplement and the previous NLSY97 round 19 data collection. The ages of individuals in this sample range from 36 to 41. After deleting observations with missing data and where the individual did not work during the week prior to the survey, the schooling subsample has 2,589 observations.

Table 1 presents summary statistics for the variables used in this paper. Here I highlight several variables that are key to the analysis or that come from sources other than the NLSY97. The teleworking variable used throughout this paper is the number of hours the respondent worked at home in the week prior to the interview. In the analysis that follows, I use as a teleworking variable an indicator variable that equals 1 when the respondent worked at least 10 hours at home in the week prior to the survey. There is admittedly some arbitrariness to the choice of any cutoff, but I want to exclude incidental teleworking of just a few hours.[8]

indicated that remote learning was safer. Substantial numbers of parents (22% and 25%) reported that their child was at least as happy attending remotely or at least as well off academically.

[8] Another candidate for a cutoff value would be 8 hours. I chose 10 hours because there is more bunching at 10 than 8 hours. The key results are virtually identical if one chooses an 8 hour cutoff. The results are also similar if I choose a cutoff of 20 hours.

The survey has information on whether any children in the household were enrolled or educated in a public school, a private school, or a home school. In addition, the survey has information on whether children in the household attended any classes in person and whether they attended any classes remotely.[9] The NLSY97 has useful information on the composition of the respondent's household. I use variables indicating whether there are children younger than 6 and between ages 6 and 17 in the household.

Information on how suitable an individual's job is for working at home comes from three sources. First, in the previous round 19 data collection, individuals were asked about the tasks they performed on the job. For example, there is information on whether half their day or more is spent doing physical tasks and whether there is a great deal of face to face contact with people other than co-workers or supervisors.[10] Second, the NLS has information on an individual's occupation. Using O*NET, Dey, Frazis, Loewenstein, and Sun (2020) have applied the Dingel-Nieman framework to create a 0-1 variable indicating an occupation's suitability for telework. I refer to this indicator as teleworkable1. Third, Dalton, Dey, and Loewenstein (2023) use the Bureau of Labor Statistics' Business Response and Occupational Employment and Wage Surveys to estimate the proportion of workers in an occupation that teleworked in the summer of 2021. I call this variable teleworkable2.

I bring in two additional pieces of information from other sources. Google cell-phone location data that provides information on visits to workplaces in the respondent's round 19

[9] A child may have attended some classes in person and some classes remotely, in which case remote schooling and in person schooling would both take on the value 1. Both indicator variables will also take on the value 1 if some children in the household attended solely remotely and others attended solely in person. The same comment applies to public, private, and home school.

[10] A detailed description an analysis of the task information can be found in Dey, Loewenstein, and Sun (2021). The task variables that I use in the current analysis are the same as the ones appearing Table 1 in Dey, Loewenstein, and Sun (2021), except I drop the math use variable.

county of residence allows one to measure the change in county level activity at workplaces between a baseline period before the COVID-19 pandemic (January 3, 2020, to February 6, 2020) and the period of the supplement interview (February to May 2021).[11] Greater reductions in the activity at workplaces in the spring of 2021 was associated with increased COVID related restrictions and greater reluctance on the part of employees to head into the worksite. Consequently, the change in county level activity should be negatively correlated with teleworking.

Safe Graph cell phone data provides a measure of reduced school activity. In my analysis, I use a countywide measure of the percentage of "schools closed" that has been made available by Parolin and Lee (2021). [12] This measure counts a school as closed if calls from it in the spring of 2021 have fallen by 50% or more from the pre-Covid period. Note that while there is reduced school activity at a school that is counted as "closed", there may still be some in-person learning taking place. I will therefore refer to this variable as the proportion of schools that are partially closed. Naturally, the greater the proportion of schools with at least partial closure, the greater the likelihood that a respondent's children attended school remotely.

III. Data Analysis: Basic Specification

It is helpful to express telework incidence *T* as depending on remote schooling incidence *R*, job characteristics *JC* and all other variables *X* :

[11] "See how your community moved differently due to COVID-19," *COVID-19 Community Mobility Reports* (Google), https://www.google.com/covid19/mobility/. The reports are not updated after 10/15/22. I have divided the work activity variable by 10.

[12] U.S. School Closure and Distance Learning Data Base. Contributors Zachary Parolin and Lee. https://osf.io/tpwqf/

(1) $T = a + b_0 R + b_1 X + b_2 JC + e.$

The results of estimating equation (1) are presented in column 1 of Table 2. [13] The coefficient on remote school is positive and highly statistically significant, indicating that parents of children attending schooling remotely were 8 percent more likely to telework than parents of children attending schooling in person. [14] As expected, the county level change in workplace activity is also negative and statistically significant.

The coefficients on *Teleworkable1* and *Teleworkable2* are positive as expected and statistically significant. The task variables also generally have the expected sign. For example, teleworking is less likely in jobs that involve a lot of physical tasks or face to face contact. It will be helpful for the analysis that follows to construct a single variable that captures all of the available information on how suitable a job is for teleworking. I do this by using the estimated coefficients on the *JC*. Specifically, let

$Teleworkable = \hat{b}_2 JC$, where $\hat{b}_2$ are the coefficient estimates for b_2.[15] By construction, if one estimates

(1') $T = a + b_0 R + b_1 X + bTeleworkable + e,$

[13] I choose to present the OLS results for expositional and analytical convenience. There is debate whether the OLS linear probability model is preferable to logit and probit - for example, see Angrist and Pischke. In any event, I find that logit and probit estimations yield similar results to the OLS results that I present here.

[14] Surprisingly, the estimated coefficient on the variable indicating that children were enrolled in school is negative, but this coefficient is imprecisely estimated and is not statistically different from zero. Note too that the positive coefficient shows up in the equation for males, but not for females.

[15] Besides the task measures and *Teleworkable1* and *Teleworkable2*, the variables in the *JC* vector used to calculate *T* also include education and AFQT score (which measures cognitive skill) since these may may also capture information about the types of jobs that individuals are in. The results are not sensitive to the inclusion or exclusion of education and AFQT.

the estimate of the *Teleworkable* coefficient *b* will equal 1 and the estimated coefficients b_1 on *R* and *X* will be exactly the same as the estimated coefficients on *X* in equation (1).

Columns (3) and (5) show the estimated teleworking equation for the female and male subsamples. The results are broadly similar. However, the coefficient on remote schooling is substantially larger in the female equation. In fact, the estimated coefficient is not statistically significant in the male equation. I examine the female and male responses in more detail in the next section.

Parents who teleworked may have found remote schooling more manageable and therefore may have been more likely to choose remote schooling for their children when given the option. If so, then the estimated coefficient on remote schooling in the teleworking equation is biased upward.[16] Another obvious variable affecting the likelihood that a child attends school remotely is the countywide school partial school closure rate. Letting *Clos* denote the school closure rate, the incidence of remote schooling can be written as

(2) $R = k + c_1 Clos + c_2 X + c_3 T + u$.

Substituting (1') into (2) yields the reduced form equation

(2') $R = k' + c_1' Clos + c_2' X + c_3' Teleworkable + u,$

where $c_3' = (c_3 b)/(1 - b_0)$.

[16]Alternatively, parents who teleworked may have found that remote schooling interfered with their work and therefore may have been less likely to choose remote schooling for their children when given the choice. Actually, one could make a similar argument with respect to the teleworking decision. Parents concerned about children interfering with their work at home could conceivably forego teleworking when their children attend school remotely, but one would expect that a desire to provide supervision and needed help to their children would generally be the dominant factor.

If teleworking makes remote schooling more likely, the coefficient c_3' on *Teleworkable* should be positive. The results of estimating (2') are presented in Table 3.[17] The school closure rate is an excellent instrument as indicated by its large statistically significant coefficient. Other coefficients of note are the positive coefficients on the presence of children aged 6 to 17 and the Black indicator and the negative coefficients on the central, southern, and western region indicators. However, the estimate of c_3' is wrong signed and statistically insignificant, providing evidence that remote schooling can be taken as exogenous in the teleworking equation. Further evidence is provided by the two stage least squares estimates presented in Table 2. While the coefficient on remote schooling is positive, but not quite statistically significant given the high standard error, the Durban chi-squared and Wu-Hausman F tests fail to reject exogeneity of remote schooling at any conventional confidence level.

Estimates of the reduced form remote schooling equation for the female and male subsamples are presented in Table 3 and estimates of the corresponding two stage least squares equations can be found in Table 2. The results for the subsamples are in accord with those for the overall sample. In the remainder of the paper, I focus on the subsamples.

IV. Remote Schooling Interactions

Not all parents were equally able to work at home when their children attended school remotely. Individuals in jobs more suitable for teleworking would have been better able to work at home in response to the demands on their time brought about by remote schooling. One would also expect the effect of the change in workplace activity to depend on how suitable an

[17] The remote schooling variable always takes on the value 0 for individuals who do not have children enrolled in school. These individuals are therefore omitted from the reduced form and subsequent two stage least squares estimations. The coefficient on Teleworkable is not constrained to equal 1 in the two stage least squares regression, but reassuringly still turns out to be very close to 1.

individual's job is for teleworking. For the sake of generality, I add interactions of *Teleworkable* with the other explanatory variables as well, so that the telework incidence equation becomes

(3) $T = a + b_0R + b_1X + bTeleworkable + d_1TeleworkableR + d_2TeleworkableX + e,$

Columns 1 and 3 of Table 4 shows the results of estimating (3) for the female and male subsamples. The only statistically significant coefficients in both the male and female equations are *Teleworkable*, remote schooling for sufficiently high values of *Teleworkable*, and the change in the county level activity at workplaces.. From the estimation results it is clear that parents' response to remote schooling depended crucially on how suitable their jobs were for teleworking. The estimated effect of remote schooling on the telework incidence of females is small and not statistically different from zero at the 10th percentile of the *Teleworkable* variable, but increases sharply with *Teleworkable*. At the median value of *Teleworkable,* remote schooling leads to a roughly 12 percentage point increase in the likelihood of teleworking. At the 75th percentile of *Teleworkable*, the increase is 17 percentage points.

Remote schooling by their children had a smaller effect on the telework incidence of male parents than female parents. At the median value of *Teleworkable*, the estimated effect of remote schooling on the likelihood that men teleworked is small and statistically insignificant. However, the estimate effect is larger for higher values of Teleworkable. At the 75th percentile of Teleworkable, remote schooling led to a 12 percentage point increase in the likelihood that men teleworked.

. The flexibility provided by teleworking in responding to remote schooling may have been especially useful to single parents having sole responsibility for childcare. To test this

possibility, I interact remote schooling with *Absence*, an indicator for whether the spouse/partner was present in the household and estimate[18]

$$(6) \quad T = a + b_0 R + b_1 X + bTeleworkable + d_1 TeleworkableR + d_2 TeleworkableX, \\ + d_3 AbsenceR + d_4 TeleworkableAbsenceR + e.$$

Estimation results are presented in columns 2 and 4 of Table 4. The estimation results in column 2 indicate that the absence of a spouse/partner magnified the effect of remote schooling on mothers' telework incidence, with the impact being larger the more suitable the job for teleworking. At the median value of *Teleworkable,* remote schooling led to a 22 percentage point increase in the likelihood of teleworking when the spouse was absent, compared to a 9.5 percentage point increase when the spouse was present. At the 75th percentile of *Teleworkable*, the corresponding amounts are 38 and 13 percentage points.

The estimated interaction of spousal/partner absence with remote schooling is quite imprecise for men. The estimated interaction is actually wrong signed, but not statistically different from zero.

V. Conclusion

The pandemic resulted in a very large increase in teleworking. In addition, school closings led to a large number of students attending school remotely. An NLSY97 COVID-19 pandemic supplement in the spring of 2021 makes it possible to examine the relationship between these two occurrences. Thirty-two percent of parents in the sample whose children were enrolled in school worked at home 10 hours or more in the week prior to the time they were surveyed. My estimates indicate that remote schooling attendance by children increased the

[18] Note that the noninteracted Absence is already included in the vector X.

likelihood that parents worked at home.[19] The estimates are not terribly precise, but the general pattern is quite clear.

Not surprisingly, the responsiveness of teleworking to remote schooling depended crucially on how suitable an individual's job was to teleworking. Using information on individuals' occupations and other characteristics of their jobs, I constructed the variable *Teleworkable* as an indicator of how suitable an individual's job is to teleworking. Remote schooling by a child had no effect on the likelihood that a parent teleworked if their job was not well suited for teleworking. However, the estimated effect is substantial when the job was well suited for teleworking. This is especially true for women.[20] For example, my estimates indicate that at the median value of *Teleworkable*, remote schooling increased the likelihood that women teleworked by 11.5 percentage points. At the 75th percentile of *Teleworkable*, this figure is 17 percentage points. In contrast, at the median value of *Teleworkable*, remote schooling had a small and statistically insignificant effect on the likelihood that men teleworked, while at the 75th percentile of *Teleworkable*, remote schooling caused the likelihood of teleworking by men to increase by 9 percentage points.

Women's response to remote schooling by their children depended on whether their spouse was present in the household. For instance, at the median value of Teleworkable, my estimates indicate that remote schooling by their children increased the likelihood that women teleworked by 22 percentage points when the spouse/partner was absent compared to 9.5 percentage points when the spouse was present.[21] The degree to which the absence of a

[19] My analysis has focused on individuals who were working. It's possible that remote schooling by their children may cause some parents not to work at all. However, an analysis of the NLSY97 data shows little, if any, effect of remote schooling on the likelihood of working in the spring of 2021. Heggenes and Suri find that in March 2021, non-college educated mothers in onsite jobs were less likely to be actively working as the result of the pandemic and the associated school closures, but the estimated effect is small. (Counterintuitively, their estimates indicate that college educated mothers in jobs that were compatible with teleworking were even less likely to be actively working.) Similarly, Aaranson and Alba (2021) find the school closures affected the labor force participation for men and women, but again the estimated effect is quite small. In contrast, Hansen, Sabia, and Schaller find that school reopenings had a significant positive effect on the labor supply of married women.

[20] Similarly, Hansen, Sabia, and Schaller (2024) find that school openings occurring after the height of the pandemic "led to a substantial reduction in remote work among married mothers, with larger reductions among college-educated mothers." However, in contrast to my findings, they do not find an effect for unmarried mothers.

[21] Above I noted that at the median value of *Teleworkable*, remote schooling increased women's teleworking by 11.5 percentage points. This estimate is essentially an average of the effects when

spouse/partner magnified the effect of remote schooling was greater for jobs that were better suited for teleworking. For instance, at the 75th percentile of Teleworkable, remote schooling by their children increased the likelihood that women teleworked by 38 percentage points when the spouse/partner was absent compared to 13.5 percentage points when the spouse was present

While parents no longer need to contend with remote schooling, the flexibility allowed by jobs that are well suited for teleworking enables individuals in such jobs to better meet the demands of childcare and other household responsibilities. For example, parents with jobs that allow them to work at home may be able to telework on the days that their children cannot attend school when they are sick or when school is closed due to bad weather or on account of vacation. This consideration may be more important for women, who still seem to bear the majority of household responsibilities, than men. The increased flexibility provided by teleworking may be especially significant for one parent households.

spouse/partners are present and when they are absent. The same comment applies to comparisons at other values of *Teleworkable*.

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Table 1 Summary Statistics

	Mean	Standard Deviation
Outcome		
Hours teleworking	13.78	18.68
Telework 10 hours or more	0.33	0.47
Schooling		
if enrolled in school or home program:		
Any remote schooling	0.65	0.48
Any public schooling	0.9	0.3
Any private schooling	0.12	0.33
Any home schooling	0.03	0.16
Other schooling	0.02	0.13
No children enrolled in school or home program	0.16	0.37
Employment and job characteristics at round 19 interview		
if working at round 19 interview:		
Military	0.02	0.12
Teleworkable1	0.49	0.5
Teleworkable2	0.18	0.19
At least half time on repetitive tasks	0.41	0.49
At least half time on physical tasks	0.41	0.49
At least half time managing or supervising	0.35	0.48
Solve problems of 30 minutes of more at least weekly	0.44	0.5
Typically read documents of 6 or more pages	0.28	0.45
Have a lot of face to face contact (excluding coworkers)	0.52	0.5
not working at round 19 interview	0.05	0.22
Demographics		
Female	0.5	0.5
Black	0.13	0.34
Hispanic	0.12	0.33
Other race/ethnicity	0.01	0.11
AFQT score (if not missing)		
First quartile	0.17	0.37
Second quartile	0.24	0.42
Third quartile	0.28	0.45
Fourth quartile	0.32	0.47
Highest Degree Completed		
GED	0.06	0.23

High school diploma	0.18	0.39
Some college	0.28	0.45
Bachelors or higher	0.44	0.5
Household Composition		
Spouse/partner absent household	0.17	0.37
Children less than 6 in household	0.47	0.5
Children aged 6 to 17	0.79	0.41
Geography at round 19 interview		
Urban	0.76	0.43
Central region	0.25	0.44
Southern region	0.37	0.48
Western region	0.22	0.41
share_all~5	0.41	0
Change in county level activity at workplaces	-2.64	0.85
County school closure rate	0.39	0.26
Health at round 19 interview		
Health condition limits work	0.04	0.2
Sample Size	2,589	

Note: Data are weighted.

Source: U.S. Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1997 Covid-19 Supplement Interview.

Table 2 a. OLS and 2SLS Equations Where Telework Incidence is the Dependent Variable

	Entire Sample			
	OLS		2SLS	
	Coefficient	Robust S.E.	Coefficient	Robust S.E.
Variable				
No children enrolled in school	0.082	0.055		
Any remote schooling	0.08 *	0.019	0.184	0.098
Any public schooling	0.016	0.047	-0.008	0.052
Any private schooling	0.006	0.043	0.019	0.052
Any home schooling	0.008	0.052	0.004	0.043
Spouse/partner absent from household	-0.013 *	0.021	-0.016	0.021
Change in county level activity at workplaces	-0.077	0.012	-0.06 *	0.017
Children less than 6	0.022	0.019	0.028	0.02
Children aged 6 to 17	0.002	0.031	-0.024	0.038
Health limits work	0.01	0.044	0.046	0.044
Female	0.046	0.018	0.047 *	0.019
Black	0.02	0.022	0.018	0.025
Hispanic	0.015	0.025	0.008	0.027
Other race/ethnicity	0.05	0.083	0.06	0.082
Central region	0.033	0.027	0.06	0.032
Southern region	0.005	0.025	0.035	0.032
Western region	-0.026	0.028	0.012	0.03
Urban	0.024	0.021	0.018	0.023
Teleworkable			1.022 *	0.033
Teleworkable1	0.045 *	0.023		
Teleworkable2	0.612 *	0.059		
Not working at round 19 interview	-0.077	0.043		
Military	-0.082	0.071		
At least half time on repetitive tasks	-0.004	0.019		
At least half time on physical tasks	-0.166 *	0.021		
At least half time managing or supervising	0.018	0.018		
Solve problems of 30 minutes of more at least week	0.067 *	0.019		
Typically read documents of 6 or more pages	0.08 *	0.021		
Have a lot of face to face contact (excluding cowork	-0.129 *	0.018		
Second quartile AFQT score	0.039	0.024		
Third quartile AFQT score	0.005	0.025		
Fourth quartile AFQT score	0.01	0.029		
GED	0.046	0.046		
High school diploma	0.039	0.039		
Some college	0.039	0.039		
Bachelors or higher	0.042 *	0.042		
Constant	-0.138 *	0.082	-0.165 *	0.069

R squared	0.36	0.37
Sample size	2,589	2,191
Chi squared statistic (p value)		1.32 (0.251)
F statistic		1.16 (0.281)

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
* indicates statistically significant at the .95 confidence level.

Table 2b. OLS and 2SLS Equations Where Telework Incidence is the Dependent Variable

	Females			
	OLS		2SLS	
	Coefficient	Robust S.E.	Coefficient	Robust S.E.
Variable				
No children enrolled in school	-0.013	0.092		
Any remote schooling	0.123 *	0.029	0.205	0.153
Any public schooling	-0.039	0.081	-0.066	0.1
Any private schooling	-0.063	0.079	-0.071	0.101
Any home schooling	0.052	0.085	-0.064	0.077
Spouse/partner absent from household	-0.005	0.028	0.045	0.083
Change in county level activity at workplaces	-0.077 *	0.014	-0.064 *	0.025
Children less than 6	0.016	0.029	0.021	0.028
Children aged 6 to 17	0.065	0.051	-0.069	0.061
Health limits work	0.02	0.053	0.031	0.054
Female				
Black	0.033	0.035	0.033	0.0347
Hispanic	0.005	0.036	0.033	0.036
Other race/ethnicity	0.059	0.114	0.005	0.1143
Central region	0.038	0.048	0.059	0.048
Southern region	0.012	0.047	0.038	0.0468
Western region	-0.017	0.045	0.012	0.0454
Urban	0.04	0.034	0.017	0.0345
Teleworkat	1.04		0.04	0.0442
Teleworkable1	0.072 *	0.03		
Teleworkable2	0.503 *	0.081		
Not working at round 19 interview	-0.043	0.063		
Military	0.232	0.063		
At least half time on repetitive tasks	-0.04	0.029		
At least half time on physical tasks	-0.014 *	0.031		
At least half time managing or supervising	-0.135	0.027		
Solve problems of 30 minutes of more at least weekly	0.032	0.027		
Typically read documents of 6 or more pages	0.061 *	0.029		
Have a lot of face to face contact (excluding coworkers)	0.089 *	0.028		
Second quartile AFQT score	0.05	0.039		
Third quartile AFQT score	0.065	0.041		
Fourth quartile AFQT score	0.066	0.045		
GED	0.038	0.082		
High school diploma	0.044	0.064		
Some college	0.047	0.063		
Bachelors or higher	0.155	0.067		

Constant	0.011	0.131	-0.014	-0.014
R squared	0.34		0.34	
Sample size	1,450		1,267	
Chi squared statistic (p value)			0.33	(0.565)
F statistic			0.283	(0.595)

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
* indicates statistically significant at the .95 confidence level.

Table 2c. OLS and 2SLS Equations Where Telework Incidence is the Dependent Variable

	Males			
	OlS		2SLS	
	Coefficient	Robust S.E.	Coefficient	Robust S.E.
Variable				
No children enrolled in school	0.101	0.07		
Any remote schooling	0.048	0.029	0.202	0.131
Any public schooling	0.023	0.058	0	0.059
Any private schooling	0.03	0.048	0.057	0.049
Any home schooling	-0.031	0.077	-0.035	0.076
Spouse/partner absent from household	-0.016 *	0.024	-0.005	0.045
Change in county level activity at workplaces	-0.074 *	0.013	-0.045 *	0.024
Children less than 6	0.005	0.022	0.018	0.031
Children aged 6 to 17	-0.001	0.033	-0.06	0.057
Health limits work	0.042	0.05	0.105	0.083
Female				
Black	-0.03	0.034	-0.034	0.043
Hispanic	0.011	0.037	0.003	0.041
Other race/ethnicity	-0.036	0.108	-0.015	0.096
Central region	0.051	0.039	0.068	0.047
Southern region	0.035	0.036	0.064	0.047
Western region	0.037	0.04	0.08	0.044
Urban	-0.023	0.033	-0.047	0.036
Teleworkable			1.019 *	0.05
Teleworkable1	0.031	0.04		
Teleworkable2	0.605 *	0.089		
Not working at round 19 interview	-0.099	0.08		
Military	-0.088	0.1		
At least half time on repetitive tasks	0.019	0.029		
At least half time on physical tasks	-0.212 *	0.035		
At least half time managing or supervising	-0.035 *	0.028		
Solve problems of 30 minutes of more at least weekl	0.033 *	0.029		
Typically read documents of 6 or more pages	0.089 *	0.032		
Have a lot of face to face contact (excluding coworke	-0.078 *	0.026		
Second quartile AFQT score	0.02	0.038		
Third quartile AFQT score	0.013	0.038		
Fourth quartile AFQT score	0.005	0.045		
GED	0.005	0.062		
High school diploma	0.034	0.057		
Some college	0.027	0.056		
Bachelors or higher	0.159 *	0.062		
Constant	-0.018	0.119	-0.018	0.095

R squared	0.38	0.35
Sample size	1,139	924
Chi squared statistic (p value)		1.66 (0.2)
F statistic		1.47 (0.23)

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
* indicates statistically significant at the .95 confidence level.

Table 3a OLS Equations with Remote Schooling Incidence as the Dependent Variable

	Entire Sample		
	OLS		
	Coefficient		Robust S.E.
Variable			
Teleworkable	-0.032		0.043
County school closure rate	0.506	*	0.055
Any public schooling	0.276	*	0.058
Any private schooling	-0.096		0.051
Any home schooling	0.058		0.066
Spouse/partner absent from household	0.023		0.026
Change in county level activity at wor	-0.026		0.018
Children less than 6	-0.046		0.023
Children aged 6 to 17	0.162	*	0.04
Health limits work	-0.002		0.048
Female	0.055		0.021
Black	0.092	*	0.028
Hispanic	0.016		0.026
Other race/ethnicity	0.118		0.072
Central region	-0.11	*	0.034
Southern region	-0.136	*	0.03
Western region	-0.071	*	0.032
Urban	0.059		0.028
Constant	0.011		0.084
R squared	0.21		
Sample size	2,191		

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
* indicates statistically significant at the .95 confidence level.

Table 3b OLS Equations with Remote Schooling Incidence as the Dependent Variable

Females

	OLS Coefficient		Robust S.E.
Teleworkable	-0.08		0.053
County school closure rate	0.446	*	0.069
Any public schooling	0.389	*	0.079
Any private schooling	-0.006		0.072
Any home schooling	0.07		0.088
Spouse/partner absent from household	0.029		0.03
Change in county level activity at workplaces	-0.039		0.023
Children less than 6	0.001		0.031
Children aged 6 to 17	0.166	*	0.057
Health limits work	0.02		0.054
Female			
Black	0.065		0.028192
Hispanic	-0.016		0.026103
Other race/ethnicity	0.058		0.072388
Central region	-0.11	*	0.033976
Southern region	-0.139	*	0.030137
Western region	-0.095	*	0.031536
Urban	0.038		0.027604
Constant	0.111		0.112
R squared	0.2		
Sample size	1,267		

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
* indicates statistically significant at the .95 confidence level.

Table 3c OLS Equations with Remote Schooling Incidence as the Dependent Variable

Males

	OLS Coefficient		Robust S.E.
Teleworkable	0.006		0.067
County school closure rate	0.575	*	0.088
Any public schooling	0.213	*	0.076
Any private schooling	-0.149	*	0.067
Any home schooling	0.041		0.095
Spouse/partner absent from household	0.019		0.05
Change in county level activity at workplaces	-0.005		0.028
Children less than 6	-0.085		0.033
Children aged 6 to 17	0.159	*	0.056
Health limits work	-0.07		0.095
Female			0
Black	0.129	*	0.048
Hispanic	0.045		0.04
Other race/ethnicity	0.173		0.115
Central region	-0.119	*	0.051
Southern region	-0.147	*	0.047
Western region	-0.059		0.049
Urban	0.084		0.041
Constant	0.111		0.118
R squared			0.22
Sample size			924

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
* indicates statistically significant at the .95 confidence level.

Table 4a. OLS Equations Where Telework Incidence is the Dependent Variable and Remote Schooling is Interacted with Teleworkable and Absence of Spouse/Partner

	Females			
	OLS		OLS	
	Coefficient	Robust SE	Coefficient	Robust SE
Variable				
Any remote schooling:				
at 10th percentile of Teleworkable	0.037	0.038	0.042	0.039
at 25th percentile of Teleworkable	0.07 *	0.031	0.065	0.039
at 50th percentile of Teleworkable	0.116 *	0.028	0.096 *	0.032
at 75th percentile of Teleworkable	0.172 *	0.037	0.134 *	0.04
at 90th percentile of Teleworkable	0.22 *	0.052	0.167 *	0.055
Any remote schooling when spuse/partner is absent:				
at 10th percentile of Teleworkable			-0.006	0.057
at 25th percentile of Teleworkable			0.092 *	0.045
at 50th percentile of Teleworkable			0.222 *	0.048
at 75th percentile of Teleworkable			0.381 *	0.076
at 90th percentile of Teleworkable			0.518 *	0.106
No children enrolled in school	0.097	0.102	0.109	0.102
Teleworkable	0.983 *	0.044	0.981 *	0.045
Any public schooling	0.058	0.089	0.057	0.088
Any private schooling	0.013	0.084	0.015	0.083
Any home schooling	0.035	0.084	0.029	0.085
Spouse/partner absent from household	-0.014	0.027	-0.051	0.045
Change in county level activity at workplaces	-0.072 *	0.017	-0.072 *	0.017
Children less than 6	0.006	0.028	0.008	0.028
Children aged 6 to 17	-0.07	0.052	-0.062	0.052
Health limits work	0.03	0.051	0.038	0.051
Black	0.048	0.03	0.045	0.03
Hispanic	0.017	0.034	0.019	0.034
Other race/ethnicity	0.068	0.113	0.072	0.112
Central region	0.021	0.04	0.024	0.039
Southern region	-0.014	0.036	-0.012	0.036
Western region	-0.016	0.041	-0.015	0.041
Urban	0.031	0.031	0.031	0.031
Constant	-0.12	0.141	-0.129	0.14
R squared	0.35		0.36	
Sample size	0.36		1,450	

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
The Telworkable coefficient is evaluated at the means of the other explanatory variables.
The noninteracted spouse/partner absent coefficient is evaluated at the median value of teleworkable and the mean of remote schooling.
The remaining coefficient estimates are calculated at median value of teleworkable.
* indicates statistically significant at the .95 confidence level.

Table 4b. OLS Equations Where Telework Incidence is the Dependent Variable and Remote Schooling is Interacted with Teleworkable and Absence of Spouse/Partner

	Males			
	OLS		OLS	
	Coefficient	Robust S.E.	Coefficier	Robust S.E.
Variable				
Any remote schooling:				
at 10th percentile of Teleworkable	-0.01	0.035	-0.01	0.033
at 25th percentile of Teleworkable	0.003	0.031	0.006	0.031
at 50th percentile of Teleworkable	0.038	0.027	0.037	0.029
at 75th percentile of Teleworkable	0.092 *	0.039	0.118 *	0.045
at 90th percentile of Teleworkable	0.131 *	0.055	0.165 *	0.061
Any remote schooling when spuse/partner is absent:				
at 10th percentile of Teleworkable			0.088	0.072
at 25th percentile of Teleworkable			0.056	0.068
at 50th percentile of Teleworkable			-0.006	0.08
at 75th percentile of Teleworkable			-0.17	0.168
at 90th percentile of Teleworkable			-0.265	0.229
No children enrolled in school	0.057	0.069	0.057	0.069
Teleworkable	0.984 *	0.054	0.978 *	0.054
Any public schooling	-0.02	0.055	-0.018	0.055
Any private schooling	-0.011	0.041	-0.008	0.041
Any home schooling	-0.024	0.076	-0.033	0.076
Spouse/partner absent from household	-0.01	0.044	0	0.059
Change in county level activity at workplaces	-0.053 *	0.016	-0.053 *	0.016
Children less than 6	0.005	0.027	0.006	0.027
Children aged 6 to 17	0.008	0.044	0.007	0.044
Health limits work	0.023	0.089	0.032	0.089
Black	-0.031	0.032	-0.03	0.032
Hispanic	0.031	0.036	0.032	0.036
Other race/ethnicity	-0.122	0.088	-0.127	0.086
Central region	0.041	0.035	0.044	0.035
Southern region	0.037	0.035	0.037	0.035
Western region	0.036 *	0.039	0.036	0.04
Urban	-0.013	0.03	142195	0.03
Constant	0.069	0.089	0.07	0.089
R squared	0.38		0.4	
Sample size	1,139		1,139	

Note: Data are weighted.
Missing indicators for missing values of urban, teleworkable1, teleworkable2, task, education, and afqt score are included in the equation, but not reported in the table.
An indicator for taking the survey online is also included in the equations.
The Telworkable coefficient is evaluated at the means of the other explanatory variables.
The noninteracted spouse/partner absent coefficient is evaluated at the median value of teleworkable and the mean of remote schooling.
The remaining coefficient estimates are calculated at median value of teleworkable.
* indicates statistically significant at the .95 confidence level.