

Telework, Wages, and Time Use in the United States

Sabrina Wulff Pabilonia, Ph.D.
U.S. Bureau of Labor Statistics

Victoria Vernon, Ph.D.
SUNY Empire State College

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Background

- ATUS-LV module 2017–18: 25% of wage and salary workers did some work at home, 13% worked *exclusively* from home at least once every two weeks
- April-May 2020: 35% of employed persons worked from home at some point in the past month ‘because of the pandemic’ (CPS 2020)



Questions

- What is the impact of teleworking on wages?
- Do the time-use patterns of teleworkers and office workers vary in a way that could explain observed differences in wages by telework status?



Data

- American Time Use Survey Leave and Job Flexibilities Module 2017–2018
- Coverage
 - ▶ Wage and salary workers
 - ▶ Main jobs only
- Sample Restrictions
 - ▶ Full-time, non-agricultural workers
 - ▶ Ages 18–64



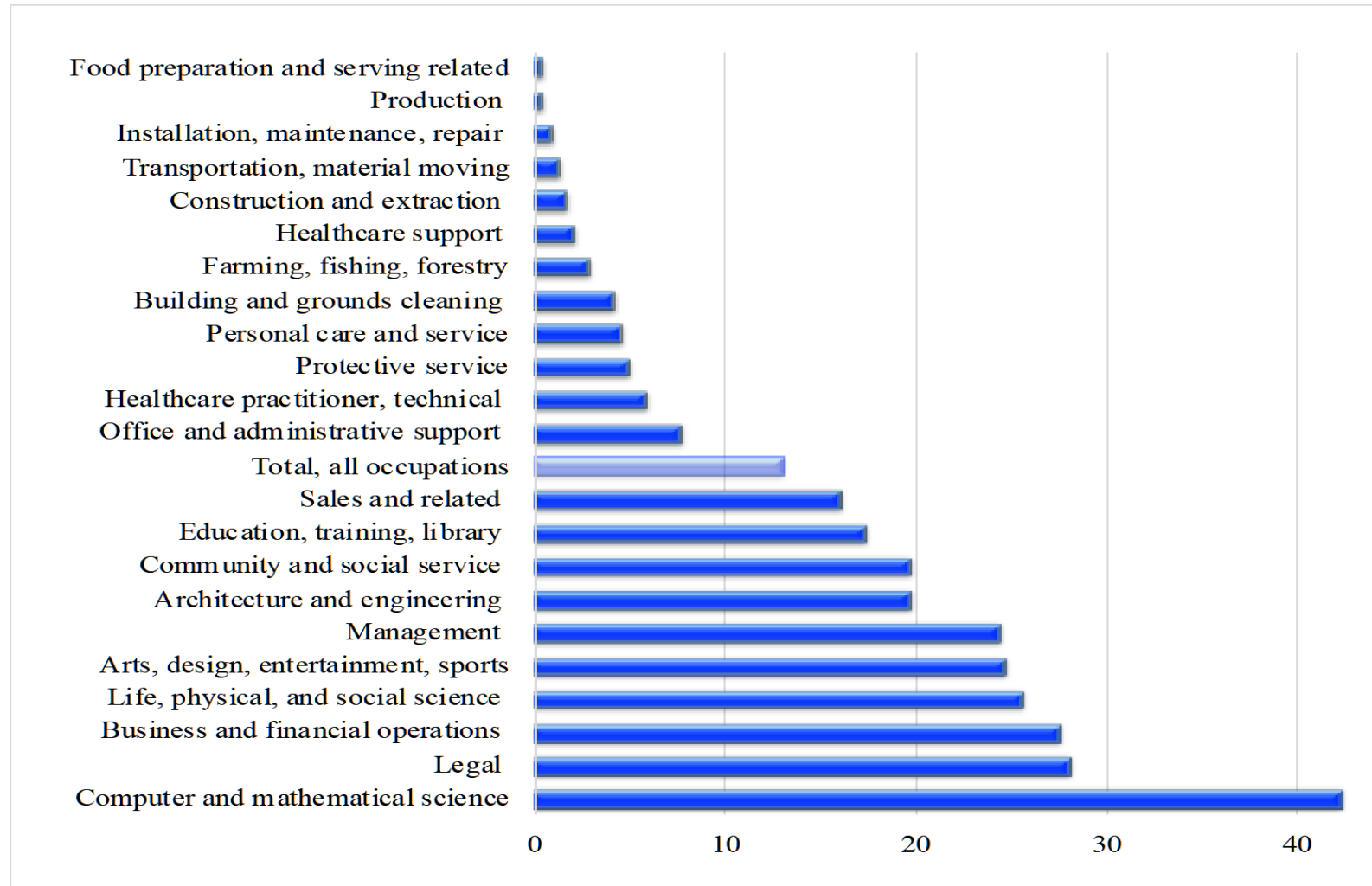
Definitions

- Two type of teleworkers
 - ▶ Occasional teleworker
 - Work *exclusively* from home: 1/month to 2 days/week
 - ▶ Home-based teleworker
 - Work *exclusively* from home \geq 3 days/week
- Office workers
 - ▶ Do not work *exclusively* from home on a regular basis
 - ▶ May bring work home from the office to be completed in the evening or other the weekend

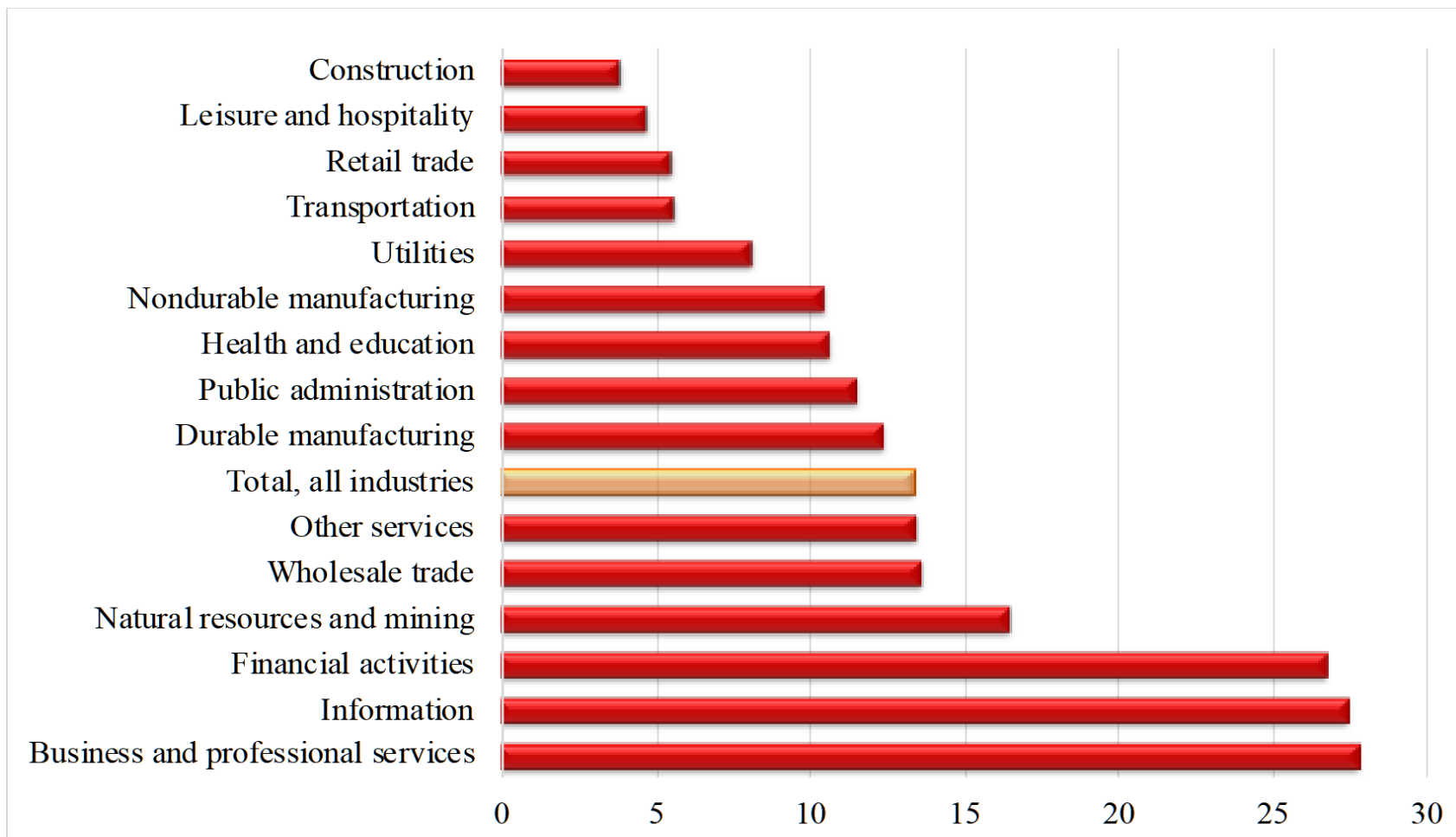
Type of worker	Counts
Home-based teleworkers	341
Occasional teleworkers	844
Office workers	6,870



Prevalence of Telework by Occupation



Prevalence of Telework by Industry



Mean Hourly Wages (Full-time)

MEN			WOMEN		
Home-based teleworkers	Occasional teleworkers	Office workers	Home-based teleworkers	Occasional teleworkers	Office workers
48.00*** (25.27)	49.09*** (28.68)	27.06 (18.82)	29.33*** (15.78)	38.92*** (21.47)	23.43 (16.44)

***indicates differences are statistically significant with respect to office workers at the 0.01 level;

In **bold**: differences between home-based and occasional teleworkers are statistically significant at the 5% level.



Effects of Teleworking on Wages

■ Wage premium

▶ Higher productivity

- Fewer distractions from office
- Less tired if eliminate long commutes
- Happier

▶ Efficiency wages

■ Wage penalty

▶ Lower productivity

- Shirk
- Home distractions

▶ Promotion chances lower

▶ WTP for job amenity (especially women)

■ Selection



Log hourly wage regressions

$$\log W_i = \alpha + \beta_1 \text{Home-based}_i + \beta_2 \text{Occasional}_i + \beta_3 X_i + \varepsilon_i$$

- quartic polynomial in age,
- race (non-Hispanic black, non-Hispanic Asian, Hispanic),
- presence of a spouse or partner,
- spouse or partner is employed,
- education (some college, college, graduate degree),
- children age 0–5,
- children age 6–17,
- presence of another adult age 18–69,
- presence of an elderly person age 70+,
- foreign born,
- disability,
- Census region residence (Midwest, Northeast, West),
- metropolitan residence,
- paid hourly,
- union member,
- Government-sector job,
- survey year,
- 9 industry,
- 4 occupation



Wage Effects of Telework

- Estimate linear regressions using OLS
- Examine all workers separately by gender, by parental status, by major occupation group
- Calculate Oster bounds
 - ▶ Accounts for sorting in to telework
 - ▶ Relates selection on observables to selection on unobservables to place bounds on causal effect
 - ▶ Estimates robust if bounds do not include zero



Bounded Effects of Teleworking on Wages

	MEN (N = 4,207)	WOMEN (N = 3,848)
Panel A. All Workers		
Home-based teleworker	(0.065, 0.186***)	(-0.089, -0.015)
Occasional teleworker	(-0.018, 0.144***)	(0.040, 0.173***)
Panel B. Own children age <18		
Home-based teleworker	(0.086, 0.188***)	(-0.133, -0.033)
Occasional teleworker	(0.030, 0.192***)	(-0.032, 0.113**)
Panel C. No own children age <18		
Home-based teleworker	(0.056, 0.184**)	(-0.067, -0.011)
Occasional teleworker	(-0.036, 0.097**)	(0.094, 0.211***)
Panel D. Occupations: Management & financial operations		
Home-based teleworker	(0.182*, 0.185)	(-0.029, 0.001)
Occasional teleworker	(0.083, 0.154**)	(0.137, 0.219***)
Panel E. Occupations: Professional, technical		
Home-based teleworker	(0.130, 0.157**)	(-0.168, -0.129)
Occasional teleworker	(0.045, 0.114**)	(0.031, 0.082)
Panel F. Occupation: Service, sales, admin support, production		
Home-based teleworker	(0.144, 0.298**)	(0.049, 0.107)
Occasional teleworker	(0.070, 0.174*)	(0.133, 0.241***)

***indicates coefficient is significant at the 0.01 level, **at the 0.05 level, and *at the 0.10

level.

- Men receive premium for home-based work, women do not
- Most men and women receive premium for occasional telework
 - Except men with no children
 - Except mothers



How does telework affect time allocation?

On workdays (work ≥ 4 h) :

$$Y_i = \beta_1 \text{Work at home day for teleworker}_i + \beta_2 \text{Work at office day for teleworker}_i + \beta_3 \text{Work at office day for office worker}_i + \beta_4 X_i + \varepsilon_i$$

In general (all days):

$$Y_i = \beta_1 \text{Home-based}_i + \beta_2 \text{Occasional}_i + \beta_3 \text{Office worker}_i + \beta_4 X_i + \varepsilon_i$$

MEN Time Use Activities	1. Teleworkers on home days	2. Teleworkers on office days	3. Office workers on office days	Differences between groups
N	83	182	1,401	
Work & work-related activities	507	520	543	3>1** 3>2*
Working at main job	490	516	537	3>1*** 3>2*
Work from workplace	-4	485	527	all ***
Work from home	481	23	6	all ***
Work from other place	13	8	4	
Travel time	35	97	82	3>1*** 2>1*** 2>3**
Commuter	5	63	57	3>1*** 2>1***
Nonwork-related	31	30	26	
Personal care	568	578	558	2>3*
Sleep	462	460	459	
Grooming	23	37	41	3>1*** 2>1***
Meals	79	66	57	1>3*** 1>2* 2>3*
Household production	56	44	46	
Food preparation	26	14	16	1>3** 1>2**
Housework	15	18	16	
Buying goods and services	8	8	8	
Household management	8	4	5	
Care	40	21	23	1>3** 1>2**
Primary childcare (fathers)	68	37	38	1>3*** 1>2***
Leisure	235	181	188	1>3*** 1>2***
Social activities	48	31	31	1>3*
Physical activity	10	13	12	
Relaxing	25	24	20	
TV and computer for leisure	150	107	117	1>3** 1>2***
With children <18 (fathers)	245	132	140	1>3*** 1>2***
With spouse/partner (couples)	214	174	161	1>3*** 1>2*
With friends	2	16	17	3>1*** 2>1**
With coworkers/clients	0	415	429	3>1*** 2>1***
Alone	685	329	329	1>3*** 1>2***
Child present during work (fathers)	23	2	2	1>3** 1>2**

Monday-Friday workdays (work ≥ 4h)

WOMEN Time Use Activities	1. Teleworkers on home days	2. Teleworkers on office days	3. Office workers on office days	Differences between groups
N	86	147	1,249	
Work & work-related activities	509	533	521	
Working at main job	507	529	515	
Work from workplace	0	493	507	3>1*** 2>1***
Work from home	501	34	6	all***
Work from other place	5	3	3	
Travel time	33	86	78	3>1*** 2>1***
Commute	1	57	52	3>1*** 2>1***
Nonwork-related	31	29	26	
Personal care	568	569	582	
Sleep	477	460	463	
Grooming	36	57	58	3>1*** 2>1***
Meals	54	52	57	
Household production	103	62	63	1>3*** 1>2***
Food preparation	38	28	28	
Housework	37	17	17	1>3** 1>2**
Buying goods and services	15	10	12	
Household management	12	5	7	1>2*
Care	29	35	31	
Primary childcare (mothers)	51	59	62	
Leisure	200	156	165	1>3*** 1>2***
Social activities	30	28	31	
Physical activity	14	11	9	
Relaxing	26	15	19	
TV and computer for leisure	124	92	94	1>3*** 1>2**
With children <18 (mothers)	270	175	172	1>3*** 1>2**
With spouse/partner (couples)	146	143	148	
With friends	21	19	17	
With coworkers/clients	12	445	443	3>1*** 2>1***
Alone	632	280	282	1>3*** 1>2***
Child present during work (mothers)	46	13	5	1>3**

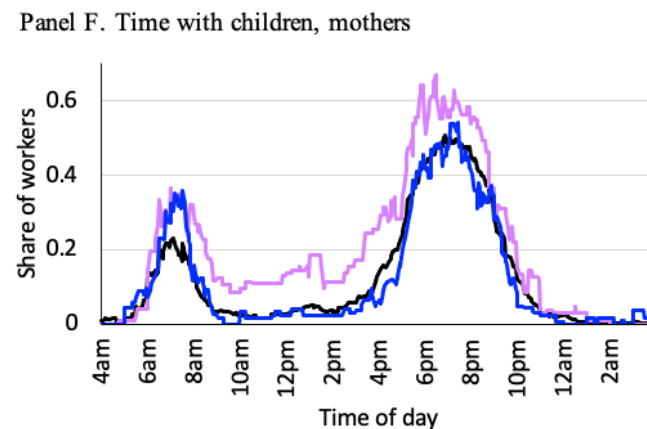
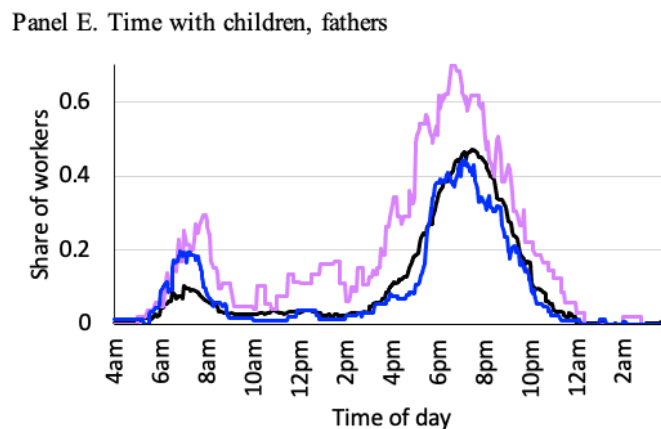
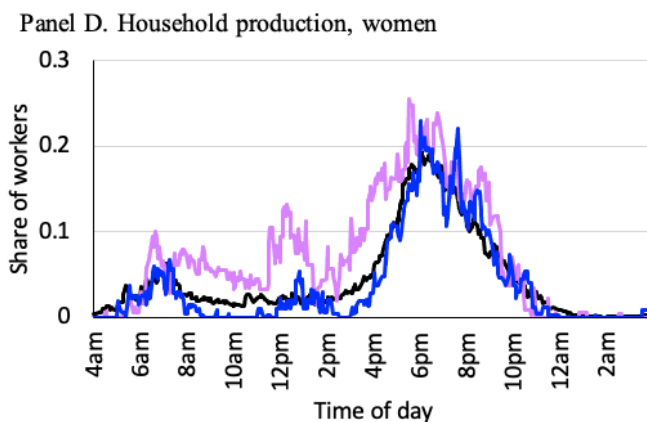
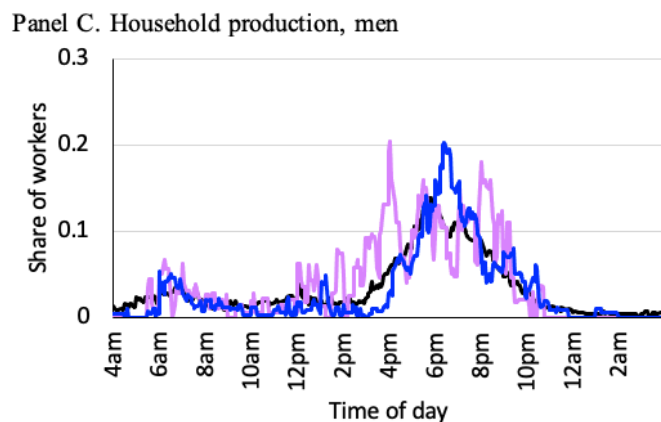
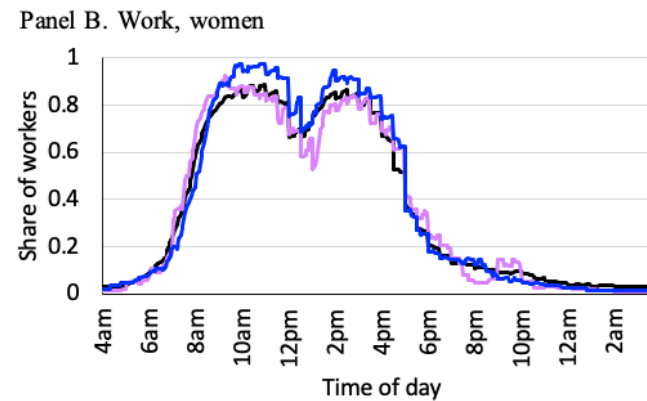
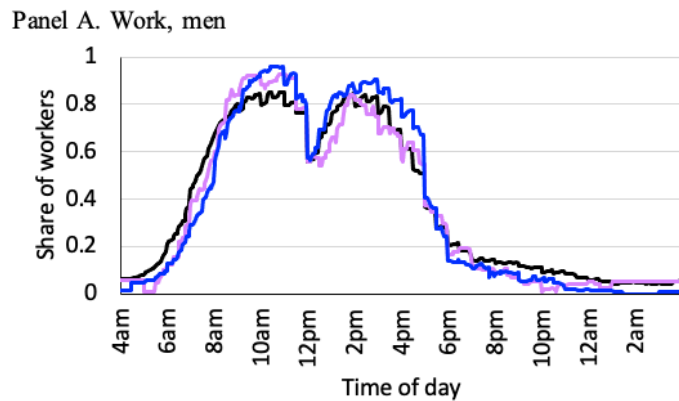
Monday-Friday workdays (work>=4h)

MEN Time Use Activities	1. Home-based teleworkers	2. Occasional teleworkers	3. Office workers	Differences between groups
N	159	458	3,590	
Work & work-related activities	356	351	364	
Working at main job	348	346	357	
Work from workplace	106	275	331	all***
Work from home	205	56	11	all***
Work from other place	32	15	15	
Travel time	69	91	82	2>1*
Commute	18	36	36	3>1*** 2>1***
Nonwork-related	46	51	45	
Personal care	608	615	605	
Sleep	510	497	501	
Grooming	25	36	37	3>1*** 2>1***
Meals	73	73	64	1>3* 2>3**
Household production	84	88	87	
Food preparation	21	21	21	
Housework	39	41	39	
Buying goods and services	18	20	18	
Household management	10	7	8	
Care	41	36	32	
Primary childcare (fathers)	68	55	50	1>3*
Leisure	283	255	271	
Social activities	57	55	57	
Physical activity	19	19	18	
Relaxing	39	28	27	
TV and computer for leisure	152	147	159	
With children <18 (fathers)	281	269	250	
With spouse/partner (couples)	290	274	264	
With friends	29	35	39	
With coworkers/clients	78	250	280	3>1*** 2>1*** 3>2*
Alone	495	329	318	1>3*** 1>2***
Kids present during work (fathers)	11	8	3	

All Days

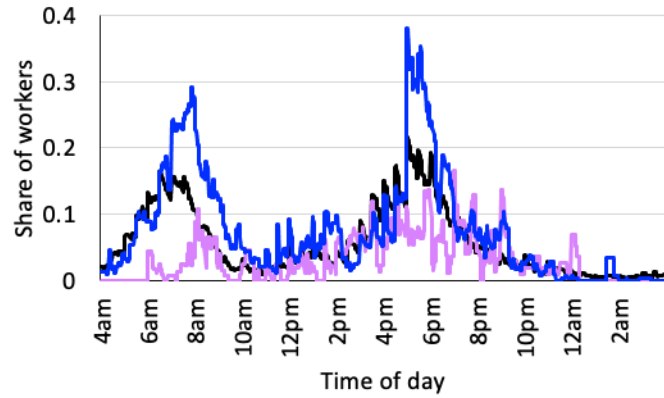
WOMEN Time Use Activities	1. Home-based teleworkers	2. Occasional teleworkers	3. Office workers	Differences between groups
N	182	386	3,280	
Work & work-related activities	351	334	340	
Working at main job	348	330	331	
Work from workplace	44	241	304	all***
Work from home	273	72	11	all***
Work from other place	35	16	16	
Travel time	67	78	79	
Commute	14	29	32	3>1** 2>1*
Nonwork-related	54	50	45	
Personal care	608	620	627	3>1*
Sleep	505	509	506	
Grooming	36	47	53	3>1*** 2>1*** 3>2**
Meals	59	59	62	
Household production	119	118	115	
Food preparation	33	41	36	
Housework	46	42	46	
Buying goods and services	23	25	24	
Household management	15	9	10	1>2*
Care	40	47	44	
Primary childcare (mothers)	66	81	79	
Leisure	257	243	236	
Social activities	69	61	60	
Physical activity	21	11	11	1>3** 1>2**
Relaxing	32	23	25	
TV and computer for leisure	121	137	126	
With children <18 (mothers)	335	293	283	1>3**
With spouse/partner (couples)	249	251	239	
With friends	43	33	31	
With coworkers/clients	40	231	280	all***
Alone	504	309	290	1>3*** 1>2***
Kids present during work (mothers)	20	18	5	1>3** 2>3**

Timing of Activities: Teleworking 9 to 5?

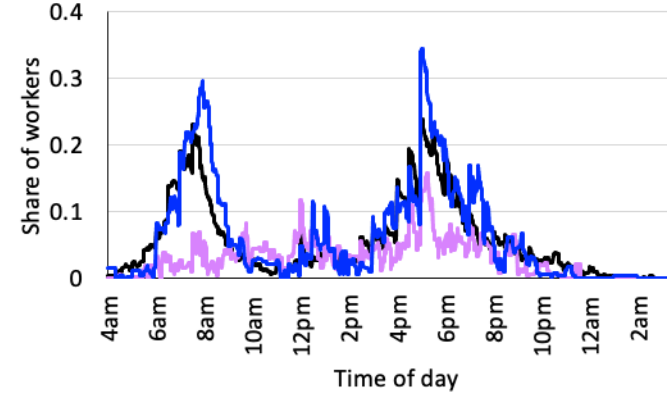


— Office workers on office days — Teleworkers on home days — Teleworkers on office days

Panel G. Travel, men

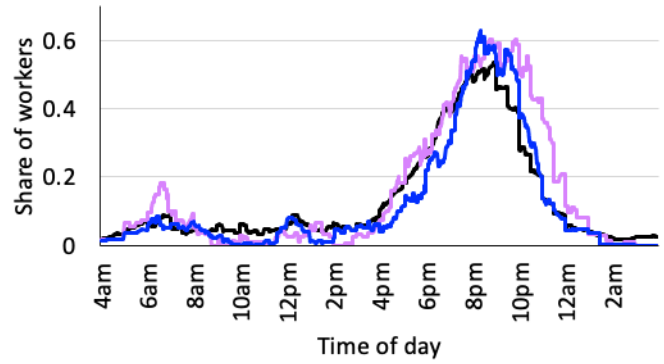


Panel H. Travel, women

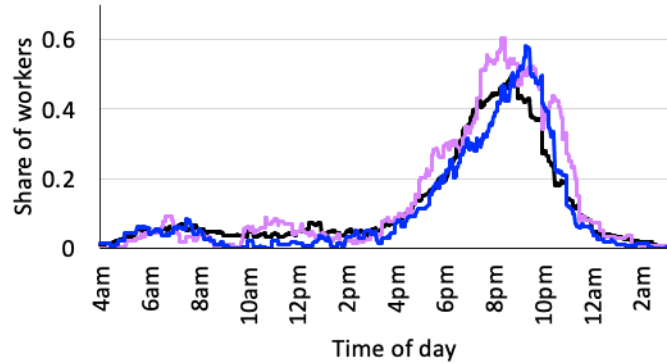


*Timing of Activities:
Teleworking 9 to 5?*

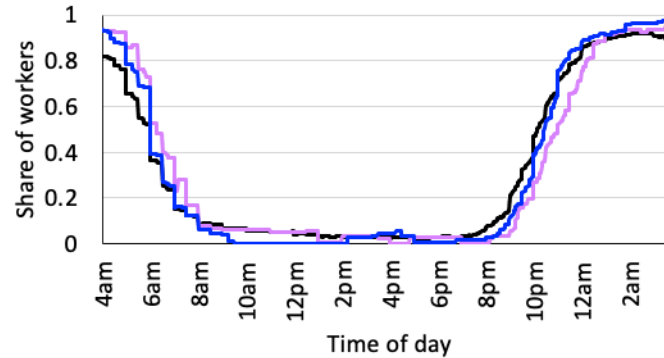
Panel I. Leisure, men



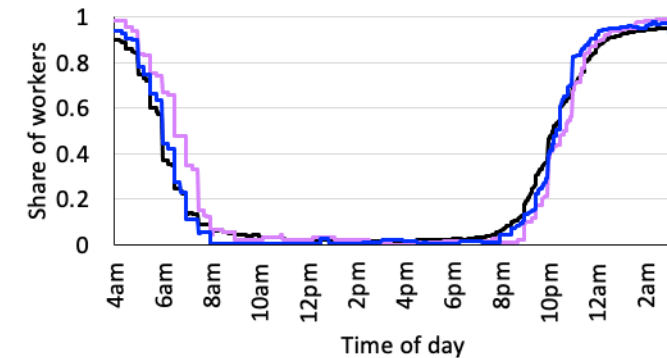
Panel J. Leisure, women



Panel K. Sleep, men



Panel L. Sleep, women



— Office workers on office days — Teleworkers on home days — Teleworkers on office days

Conclusions & Post-COVID Lessons

- Home-based teleworkers
 - ▶ Only males earn wage premium
- Occasional teleworkers
 - ▶ Wage premium for all except mothers and men without children
- Telework won't close the wage gap
 - ▶ Will improve work-life balance for mothers and female home-based workers
 - ▶ May increase labor force participation of mothers

Conclusions & Post-COVID Lessons

- Telework time use story consistent with increased productivity
 - ▶ Reduce commuting and grooming time
 - ▶ No shirking
 - ▶ Not being overworked (similar total work time)
 - ▶ Waking up later
 - ▶ More time with children
- Telework can decrease gender care gap
 - ▶ Fathers who telework spend more time in primary child care

Contact Information

Sabrina Wulff Pabilonia
U.S. Bureau of Labor Statistics
Pabilonia.Sabrina@bls.gov

