

Supplemental Tables and Figures

Supplemental Table S1. Prevalence of shiftwork and leisure-time physical inactivity (LTPI) by race-sex subgroups - National Health Interview Survey (NHIS), United States, 2010 and 2015.

Race-sex subgroups	Shiftwork		LTPI	
	Prevalence (95% CI)	PR (95%CI) ¹	Prevalence (95% CI)	PR (95%CI) ¹
White adults				
Male	26.4 (25.3 – 27.7)	1.13 (1.06 – 1.20)	21.4 (20.3 – 22.7)	0.93 (0.87 – 1.00)
Female	24.9 (23.8 – 26.1)	Referent	23.2 (22.0 – 24.4)	Referent
Black adults				
Male	38.0 (35.1 – 41.1)	1.37 (1.22 – 1.54)	28.4 (25.6 – 31.4)	0.71 (0.63 – 0.79)
Female	29.7 (27.4 – 32.1)	Referent	39.3 (36.6 – 42.1)	Referent
Hispanics				
Male	29.2 (27.3 – 31.3)	1.45 (1.32 – 1.60)	37.2 (34.8 – 39.8)	0.99 (0.89 – 1.09)
Female	22.5 (20.7 – 24.4)	Referent	36.5 (34.4 – 38.8)	Referent
Other/Asian				
Male	24.9 (22.0 – 28.0)	1.03 (0.88 – 1.21)	23.6 (20.5 – 27.0)	0.98 (0.83 – 1.14)
Female	26.3 (23.4 – 29.4)	Referent	26.1 (23.5 – 28.9)	Referent

¹Prevalence ratio (PR) adjusted for age, education, marital status, health behaviors (smoking, alcohol use, BMI), and job characteristic (work hours per week).

Supplemental Table S2. Prevalence of leisure-time physical inactivity (LTPI) by shift schedule and shiftwork status among employed civilian U.S. workers 18 years and older stratified by sex— National Health Interview Survey (NHIS), United States, 2010 and 2015.

Group		Sample Size (n) ^a	Estimated U.S. Population ^b	% ^c	Prevalence of LTPI (95% CI) ^d	P-value ^e	Sex differences in prevalence of inactivity (female vs. male): PR (95%CI)	
							PR ^f	PR ^g
All	Shift schedule					<0.0001		
	Regular Daytime	24,984	102,099,853	73.3	25.5 (24.7 – 26.4)		1.03 (0.98 – 1.09)	1.02 (0.96 – 1.09)
	Regular Evening Time	1,678	7,282,357	5.2	31.5 (28.4 – 34.7)		1.45 (1.19 – 1.77)	1.31 (1.07 – 1.60)
	Regular Nighttime	1,300	5,252,011	3.8	33.8 (30.4 – 37.2)		1.10 (0.90 – 1.33)	1.08 (0.88 – 1.33)
	Rotating Shift	4,710	18,752,221	13.5	25.5 (23.8 – 27.3)		1.29 (1.13 – 1.47)	1.31 (1.15 – 1.50)
	Some Other Schedule	1,311	5,864,385	4.2	23.1 (20.4 – 26.1)		0.99 (0.78 – 1.24)	1.00 (0.80 – 1.26)
	Total	33,983	139,250,825	100	26.0 (25.2– 26.8)			
	Shiftwork status							
	Daytime	24,984	102,099,853	73.3	25.5 (24.7 – 26.4)	0.0112	1.03 (0.98 – 1.09)	1.02 (0.96 – 1.07)
	Non-daytime	8,999	37,150,972	26.7	27.4 (26.1 – 28.9)		1.25 (1.14 – 1.37)	1.23 (1.12 – 1.35)
Males	Shift schedule					0.0050		
	Regular Daytime	12,035	52,983,304	72.1	25.1 (24.0 – 26.2)			
	Regular Evening Time	848	3,897,088	5.3	26.0 (22.1 – 30.3)			
	Regular Nighttime	665	2,878,047	3.9	32.4 (27.8 – 37.2)			
	Rotating Shift	2,467	10,386,582	14.1	22.6 (20.6 – 24.7)			
	Some Other Schedule	718	3,362,592	4.6	23.3 (19.5 – 27.5)			
	Total	16,733	73,507,612	100	25.0 (24.0– 26.0)			
	Shiftwork status					0.6839		
	Daytime	12,035	52,983,304	72.1	25.1 (24.0 – 26.2)			
	Non-daytime	4,698	20,524,308	27.9	24.7 (23.0 – 26.5)			
Females	Shift schedule					<0.0001		
	Regular Daytime	12,949	49,116,549	74.7	26.0 (24.9 – 27.0)			
	Regular Evening Time	830	3,385,269	5.2	37.8 (33.3 – 42.5)			
	Regular Nighttime	635	2,373,964	3.6	35.4 (30.9 – 40.3)			
	Rotating Shift	2,243	8,365,639	12.7	29.0 (26.3 – 31.9)			
	Some Other Schedule	593	2,501,793	3.8	23.0 (19.5 – 26.9)			

Total	17,250	65,743,213	100	27.2 (26.2– 28.2)	
Shiftwork status					< 0.0001
Daytime	12,949	49,116,549	74.7	26.0 (24.9 – 27.0)	
Non-daytime	4,301	16,626,664	25.3	30.8 (28.8 – 33.0)	

^a Unweighted sample size. ^b Population estimates after application of sampling weights. ^c Weighted population proportions.

^d According to the 2008 Physical Activity Guidelines for Americans, leisure-time physical inactivity (**LTPI**) is defined as <10 minutes per week of moderate intensity physical activity (i.e., those who did not report any moderate or vigorous intensity physical activity beyond basic movement from daily life activities). Weighted prevalence and 95% confidence intervals (CIs) are shown.

^e p-value testing for any significant difference in prevalence across the 5 shift schedule categories or between the two shiftwork status categories.

^f unadjusted prevalence ratio (PR). ^g multivariable adjusted PR (adjusted for basic demographic factors (age, sex, race/ethnicity), education, marital status, health behaviors (smoking, alcohol use, BMI), and work hours per week.

Derivation of proxy measure of caregiving for Supplemental Figure S1 and Supplemental Table S3.

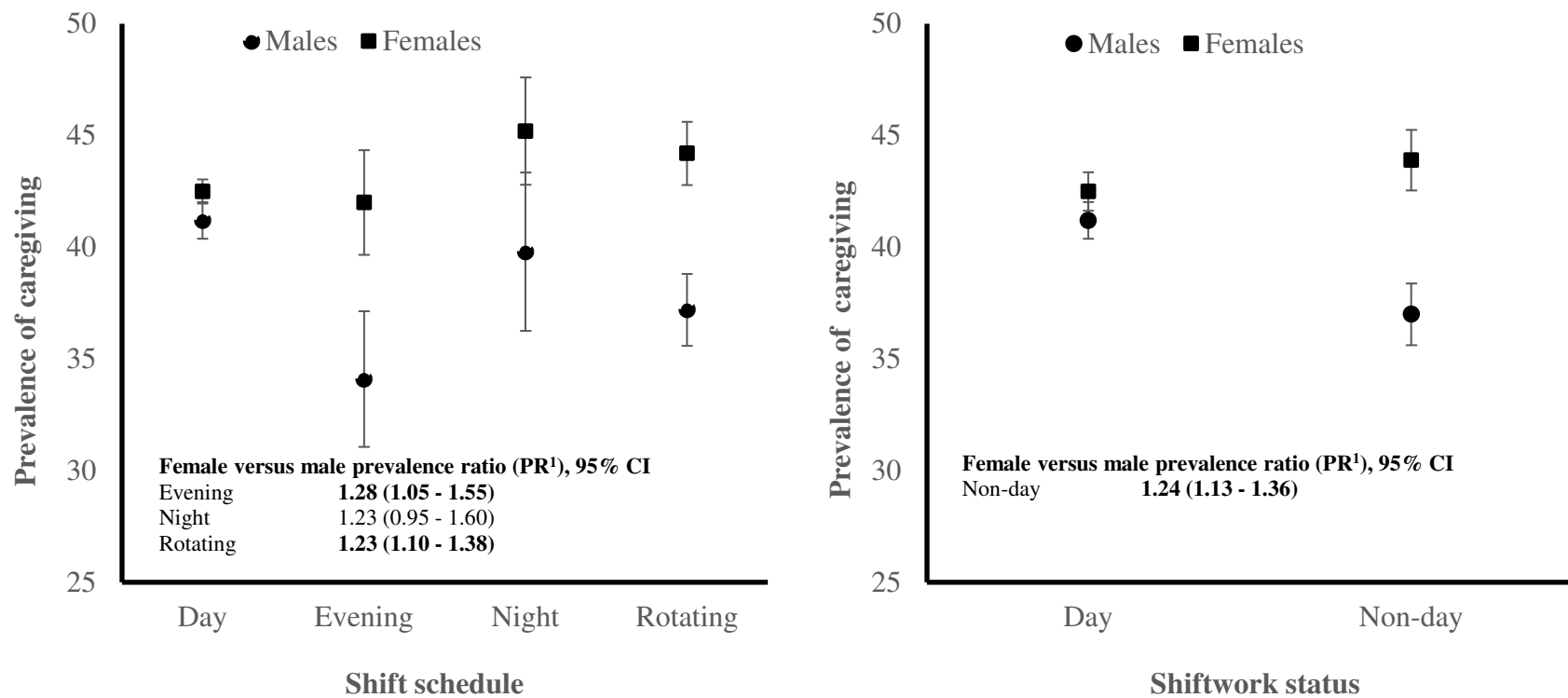
A proxy measure of caregiving was available only in the 2015 NHIS. The 2015 NHIS data had a variable called “PAR_STAT” which is labelled or defined as “Sample adult is parent to 1+ child(ren) in the family”. This variable had three choices:

- 1= Yes, the Sample Adult is a parent of a child residing in the family (n=6,249)
- 2= There are minor children residing in the family, but the Sample Adult is not their parent (n=741)
- 3= There are no minor children residing in the family (n=11,870)

A binary variable for being a parent to at least one minor child in the family (yes/no) was created by combining the first two groups (PAR_STAT=1 and PAR_STAT=2) as the YES group.

Inclusion and Exclusion criteria for the 2015 NHIS data: N = 33,672 adults surveyed in 2015, N = 19,150 employed at the time of the survey, N = 18,860 with complete data on shift schedule and LTPA (Analytic sample size).

Supplemental Figure S1. Prevalence of being a parent to 1+ minor children in the household (proxy measure of caregiving available only in 2015 survey) by shift schedule (five nominal categories) and shift work status (yes/no) in male and female workers - National Health Interview Survey (NHIS), United States, 2015. ¹Prevalence ratios (PRs) were adjusted for sex, race/ethnicity, age, education, marital status, health behaviors (smoking, alcohol use, BMI), and job characteristic (work hours per week). Prevalence estimate (marker symbol) $\pm$ standard error is shown.



Supplemental Table S3. Impact of adjustment for caregiving on the association of shift schedule and shiftwork status with leisure-time physical inactivity (LTPI) among employed civilian U.S. workers 18 years and older stratified by sex - National Health Interview Survey (NHIS), United States, 2015.

		Prevalence ratio (PR) and 95% confidence interval (CI)	
		Males	Females
Model A	Shift schedule		
	Regular day time	Referent	Referent
	Regular evening time	1.01 (0.81 – 1.26)	1.28 (1.09 – 1.51)
	Regular night-time	1.17 (0.94 – 1.45)	1.24 (1.01 – 1.53)
	Rotating shift	0.85 (0.75 – 0.96)	1.04 (0.90 – 1.20)
	Shiftwork status		
	Daytime	Referent	Referent
	Non-daytime	0.93 (0.84 – 1.03)	1.13 (1.02 – 1.25)
Model B	Shift schedule		
	Regular day time	Referent	Referent
	Regular evening time	1.01 (0.81 – 1.26)	1.28 (1.09 – 1.51)
	Regular night-time	1.17 (0.94 – 1.45)	1.24 (1.01 – 1.53)
	Rotating shift	0.85 (0.75 – 0.96)	1.04 (0.90 – 1.20)
	Shiftwork status		
	Daytime	Referent	Referent
	Non-daytime	0.93 (0.84 – 1.04)	1.12 (1.01 – 1.25)

Model A: PRs were adjusted for basic demographic factors (age, sex, race/ethnicity), education, marital status, health behaviors (smoking, alcohol use, BMI), and job characteristic (work hours per week).

Model B: PRs were adjusted for covariates in model A plus being a parent to 1+ minor children (proxy measure of caregiving available only in the 2015 survey).