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Research Article

Older Workers With Unpredictable Schedules: Implications for Well-Being and Job Retention

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Abstract

Background and Objectives: A substantial portion of the service sector workforce is middle-aged or older, but little is known about the scheduling conditions of these older workers. This study describes the quality of work schedules in the service sector by age and tests associations of unpredictable schedules with well-being and job retention among workers ages 50–80.

Research Design and Methods: The Shift Project collected survey data on detailed working conditions and health from 121,408 service sector workers, recruited in 2017–2020 using social media advertisements. Survey weights aligned sample demographics with the American Community Survey, and multiple imputation addressed missingness. Ordinary least squares regression models were used to examine associations between age and schedule stability, and ordinary least squares, ordinal logit, and logit regression models tested associations between schedule stability and well-being and job retention outcomes for older workers.

Results: Scheduling conditions were more stable and predictable for older compared to younger workers; however, more than 80% of workers ages 50–80 experienced one or more types of routine schedule instability. Among workers ages 50–80, unpredictable schedules were associated with psychological distress, poor-quality sleep, work–family conflict, economic insecurity, job dissatisfaction, and intentions to look for a new job. Canceled and back-to-back closing and opening ("clopening") shifts were most strongly associated with negative outcomes.

Discussion and Implications: Policies aimed at improving scheduling conditions hold promise to benefit older service workers' well-being. As the population ages, improving work schedules in the years approaching retirement may be important to longer working lives.

Keywords: Mental health, Shifts, Work, Work–family conflict, Workforce issues

As the U.S. population ages, many researchers and policymakers have pointed to longer working lives as a solution to economic security in old age, the solvency of the Social Security program, and the productivity of the national economy. Policies that incentivize later retirement are predicated on the assumptions that workers have decent quality jobs and the capacity to stay employed at advanced ages. However, a large portion of middle-aged and older workers, especially those without college degrees, face poor working conditions that prohibit or disincentivize

remaining in the labor force. In this paper, we focus on the unpredictable and precarious schedules common in the service sector and examine their association with well-being and indicators of job retention among workers aged 50–80.

Background

While workers in low-wage service jobs are often assumed to be teenagers and young adults, 13% of workers employed in food preparation and service occupations and 25% of workers employed in sales and related retail occupations were ages 55 or older in 2020 (U.S. Bureau of Labor Statistics, 2021a). In fact, a full 15% of workers ages 55 years or older (over 5 million people) are employed in the service sector (U.S. Bureau of Labor Statistics, 2021b). A great deal of research has documented the conditions of hourly workers in the service sector, but little is known about the unique challenges for middle-aged and older adults.

Service workers' schedules are characterized by few days of advance notice, substantial changes week-to-week in shift timing, back-to-back closing and opening ("clopening") shifts, and having shifts changed, canceled, or added at the last minute (Schneider & Harknett, 2019a). Such just-in-time scheduling tactics maximize employers' control over labor to enable lean staffing while offloading risks onto workers (Lambert, 2008; Rubery et al., 2005). These practices are enabled by algorithms and thus have become more common as part of a larger technological shift in the workplace (Kellogg et al., 2020). Previous research has shown that financial and temporal aspects of unpredictable and unstable schedules are associated with job dissatisfaction, turnover, financial stress, poor sleep quality, and psychological distress (Choper et al., 2021; Harknett & Schneider, 2020; Schneider & Harknett, 2019a; Williams et al., 2019). An intervention to increase scheduling predictability at Gap Inc. resulted in significant improvements in sleep quality and reductions in stress for subgroups such as parents and second-job holders (Williams et al., 2019).

The Job Strain Model provides an overarching framework for understanding the negative health impacts of jobs with high work demands, low job control, and low social support (Karasek & Theorell, 1990; Lovejoy et al., 2021) such as those in the service sector. A recent update to this model highlighted schedules as a key aspect of both job control and job demands in the modern workplace, particularly for low-wage workers (Lovejoy et al., 2021). For the aging workforce in particular, demanding caregiving responsibilities and declining health may make unpredictable schedules especially challenging. However, prior research on unstable scheduling has either grouped workers of all ages together (i.e., Schneider & Harknett, 2019a) or focused on the parents of young children (i.e., Schneider and Harknett, 2022).

To address open questions about how older workers fare in the service sector, this paper uses data from The Shift Project on 121,408 U.S. service sector workers, surveyed between 2017 and 2020. First, we document and describe scheduling conditions for older workers relative to younger workers. Next, we examine how unstable scheduling conditions are associated with well-being and indicators of job retention, specifically for older workers, independent from wages and household income.

Older workers may enjoy better scheduling conditions than younger workers because their experience and maturity confer respect and better treatment. Evidence suggests that employers assume older workers will be reliable (Bal et al., 2011), as they may be better able to meet employers' expectations of the "ideal worker" with fewer competing demands. It is also possible that older workers select into industries, positions, or employers with better scheduling conditions. Further, older adults in the service sector may be positively selected if only those older workers who experienced success remain in these jobs. **Hypothesis 1: We expect older workers will have better scheduling conditions than younger workers.** A competing hypothesis is that these forces are offset by age discrimination or by poor health and fatigue in older workers, which interfere with actual or perceived productivity.

Chronic disease, chronic pain, frailty, cognitive decline, and other aspects of worsening health associated with increasing age may make older workers sensitive to the effects of unpredictable schedules on physical and mental well-being. While much of the research on family outcomes related to precarious schedules has focused on those raising young children (Dunifon et al., 2013; Morsy & Rothstein, 2015; Schneider & Harknett, 2022; Williams et al., 2019), older workers may also experience conflicts between work schedules and family obligations given rising rates of caregiving (Abramson, 2015; Butrica & Karamcheva, 2018). There have been explicit calls to expand research on work–family conflicts into late life as the U.S. plans for a rapidly aging workforce (Bianchi & Milkie, 2010). **Hypothesis 2: For older workers facing unpredictable schedules, we expect these conditions to be associated with diminished well-being, consistent with the updated Job Strain Model and previous research on precarious schedules.**

Prior research has shown that poorer working conditions, defined in line with the Job Strain Model as high job demands and low decision authority, are associated with earlier retirement (Carr et al., 2015). Untenable schedules may "push" workers into early retirement due to decreased job satisfaction, high levels of distress, inadequate economic stability to justify staying, and conflicts between family obligations and work shifts (De Preter et al., 2013). **Hypothesis 3: We expect poor scheduling conditions to be negatively related to indicators of job retention.**

Despite the gradually increasing age of eligibility for full Social Security benefits (Quinn et al., 2011), those with low educational attainment remain at increased risk of exiting the labor force earlier than planned and preferred (Abrams et al., 2022a; Solem et al., 2016). At age 55, 90% of men with college degrees were employed compared to 80% with

high school degrees and 65% without high school degrees (Truesdale, 2020). Unexpected labor force exits around retirement age have been found to be associated with depressive symptoms (Abrams et al., 2022b). Early retirement can be especially consequential without savings, and half of workers making less than $40,000 annually have no retirement savings and no defined benefit pensions (Ghilarducci et al., 2017). Therefore, it is critical to identify aspects of the workplace that can be modified to promote health and workforce participation for middle-aged and older workers.

Method

Data/Sample

Data for this study came from a repeat cross-sectional survey conducted as part of The Shift Project. The Shift Project uses targeted advertisements on Facebook and Instagram to recruit workers employed at large retail and food service firms in the United States. The advertisements invite workers to participate in a survey about their work and family life, offering a lottery incentive. Interested workers take an online Qualtrics survey with detailed measures of work schedules, health, and household financial security. Social media profiles provide a sampling frame with similar coverage to landlines, but with the advantage of being portable, durable, and verified for hard-to-reach and transient populations like service sector workers (Schneider and Harknett, 2019b). Schneider and Harknett (2019b) provide further details about the data, including comparisons that show that The Shift Project generates results similar to probability samples from the Current Population Survey and National Longitudinal Survey of Youth 1997. This study was approved by Harvard University's Institutional Review Board (Protocol number IRB20-0877).

This analysis drew on survey data collected across six waves in 2017–2020, including 121,408 retail and food service workers employed at 133 large companies (listed in Supplementary Table S1). Respondents were ages 18–80, with a weighted mean age of 36 years. About 20% of the weighted sample was ages 50–80 years old, with a mean age of 58.6 among this oldest age group. Other sample characteristics can be found in Supplementary Table S2. We observed missingness due to item nonresponse when respondents skipped certain questions. However, attrition was the main cause of missingness, when respondents started but did not complete the survey, leaving all of the following items missing (see Supplementary Table S2). We multiply imputed the data to address the possibility that those missing responses might be systematically different from those who completed all items, introducing bias. We used R's Amelia package to create 10 imputations using 57 variables, including dependent variables because the random components of multiple imputations avoid any bias (Allison, 2001). Ten imputations provided efficiency in point estimates, with standard errors varying up to 12%; results were consistent in robustness checks using 50 imputations, which allows standard errors to vary by only 5% (von Hippel, 2020). We analyzed the imputed data using Stata's mi: prefix. We weighted data according to the distribution of age, gender, race/ethnicity, and industry among workers in the same sectors in the American Community Survey. More details on these procedures can be found in Schneider and Harknett (2019b).

Measures

Unpredictable schedules were operationalized as a scale from zero to five based on summing indicators of: typically receive less than 2 weeks' notice of work schedule, and, in the past month, was asked to be on-call for work, worked a back-to-back closing and then opening ("clopening") shift, experienced a shift cancelation, and experienced last-minute shift timing changes. When comparing schedules across age, we grouped ages 18–29 (young workers), 30–49 (middle-aged workers), and 50–80 (older workers).

We examined four well-being outcomes—psychological distress, sleep quality, work–family conflict, and economic security. To measure psychological distress, we drew on responses about how often in the past month respondents felt so sad that nothing could cheer them up, nervous, restless, hopeless, and that everything was an effort. These are five of the six items that comprise the Kessler-6 scale of psychological distress (Kessler et al., 2002) and were asked in all survey waves. As a robustness check, we estimated models using the full six-item Kessler scale in a subset of survey waves in which respondents were asked the sixth indicator (Supplementary Table S3). Responses ranged from 0 (*none of the time*) to 4 (*all of the time*) and were summed to create a scale ranging from 0 to 20 (Cronbach's alpha of 0.81). When dichotomizing the outcomes for comparability, respondents were considered high distress if they scored 11 or higher.

Our measure of sleep quality was derived from the question, "During the past month, how would you rate your sleep quality overall?" In dichotomous analyses, we categorized sleep quality as fair or poor (3 or 4) versus very good or good (1 or 2). Work–family conflict captured respondents' agreement with the following statement: "In my work schedule at [*employer name*], I have enough flexibility to handle family needs." In dichotomous analyses, we compared responses of sometimes or never true (3 or 4) to always or often true (1 or 2).

To measure economic insecurity, we combined reports that week-to-week household income "goes up and down a lot," it is very difficult to pay all expenses and bills, probably or certainly could not pay for an unexpected $400 expense, and the following financial hardships: received free food/meals, went hungry, did not pay utilities, moved in with others, stayed in a shelter or other temporary housing, deferred medical care, or received informal loan. These items created a 0–10 scale and respondents were considered economically insecure in dichotomous analyses if they scored 3 or higher.

To capture indicators of job retention, we included measures of job satisfaction and workers' intention to look for a new job in the next 3 months. Job dissatisfaction was an indicator of being "not too satisfied" or "not at all satisfied" (3 or 4) with current job compared to "very" or "somewhat" satisfied (1 or 2). Respondents were asked: "Taking everything into consideration, how likely is it you will make a genuine effort to find a new job within the next 3 months?" We grouped "very likely" and "somewhat likely" responses (2 or 3) and compared them to respondents "not at all likely" to look for a new job (1).

Covariates in our analyses included age in years, gender (male, female), race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic other, or two or more race/ethnicities), and educational attainment (no degree, high school diploma/General Education Development, some college, Associate degree, Bachelor's degree, Master's degree, or higher). To focus on unpredictable and precarious schedules separate from wages and income, we controlled for household income (cutoffs: $15k, $25k, $35k, $50k, $75k, $100k, $150k+) and hourly wages. We adjusted for job characteristics including the number of usual weekly hours, years of tenure in current job, manager role, union membership, industry (building supplies/hardware, department/discount store, grocery store, auto parts, clothing, furniture or home furnishings, electronics, restaurants and other food services, pharmacies and drug stores, and sporting goods, hobby, and toy stores), job title (manager, cashier or clerk, salesperson, customer service, waiter/waitress/server, cook, baker, butcher/meat cutter, sandwich artist or other food preparation, delivery person, other), and employer fixed effects (listed in Supplementary Materials). One model included self-reported health, defined as excellent, very good, good, fair, or poor. We also controlled for survey year (2017–2020).

Statistical Analyses

To test Hypothesis 1, we characterized schedules in the overall sample and by three age groups (18–29, 30–49, 50–80). We tested for statistical significance of overall age group differences using univariate model *F*-statistics. Next, we examined the adjusted association between more specific age groups (18–29, 30–39, 40–49, 50–59, 60–80) and the unpredictable schedule scale while controlling for year, sociodemographic covariates, household income, and hourly wages (Model 1). We used 10-year age groups with the exception of the oldest ages where sample size was smallest. In Model 2, we additionally included usual number of weekly hours, tenure in job, manager role, union membership, industry, job title, and employer. Model 3 also controlled for self-reported health.

To test Hypotheses 2 and 3, we restricted the sample to older workers (ages 50–80) and examined the adjusted relationships between the unpredictable schedule scale and a series of well-being and job retention outcomes. As a sensitivity analysis, we ran interaction models comparing associations in ages 18–29 and 30–49 to those at 50–80. We used ordinary least squares regressions to model distress and economic insecurity and used ordinal logit regressions to model sleep quality, work–family conflict, job dissatisfaction, and likelihood of looking for a new job. To aid interpretation, we also modeled all dichotomized outcomes using logistic regressions, calculated average marginal effects, and plotted marginal predictive probabilities. All models adjusted for the variables included in Model 2 as well as continuous age in years. We did not include self-reported health, which may be on the causal pathway between unpredictable schedules and outcomes. Finally, to understand the differential impact of specific aspects of scheduling conditions, we tested the associations between each item of the unpredictable schedules scale, independently and jointly, with each dichotomized outcome while adjusting for covariates. All analyses were conducted in Stata 16 with survey weights applied.

Results

Schedule Predictability by Age

Table 1 provides comparisons of scheduling conditions by age. Consistent with Hypothesis 1, schedules were the most stable and predictable among the oldest workers (ages 50–80) and were the most unstable and unpredictable among youngest workers (age 18–29) on all measures. For example, older workers were least likely to be asked to work on-call, to have a shift canceled or changed, and to receive their schedule with less than 2 weeks' notice. On the unpredictable schedule scale, 8% of older workers reported at least four of five attributes of unpredictable schedules compared to 15% of middle-aged workers and 19% of young workers.

Table 2 shows schedule unpredictability declining monotonically with age. In Model 1, workers ages 50–59 reported almost a half point lower on the 5-point schedule unpredictability scale and workers ages 60 and older reported 0.7 points lower compared with their 18- to 29-year-old counterparts. In Model 2, additionally adjusted for job characteristics, older workers continued to have significantly lower reports of schedule unpredictability compared with younger workers. Model 3 added self-reported health and the association between older ages and better schedules grew slightly stronger. This is evidence of negative confounding, as poor health, which occurred more in older workers (Supplementary Table S2), was associated with worse scheduling conditions (Supplementary Table S4).

Importantly, despite the relative advantage of older compared to younger workers, in absolute terms, the schedules of respondents ages 50–80 were nevertheless highly unpredictable (Table 1). About 20% of older workers reported being asked to work on-call, 13% had a shift canceled in the past month, 51% had a shift's timing

Table 1. Work Schedule Attributes by Worker Age Group

Work schedule attributes	Total *N* = 121,408	18–29 48.7%	30–49 31.5%	50–80 20.0%	*p* Value
Unpredictable schedule items					
On-call	28.1%	31.3%	28.6%	19.5%	$p < .001$
Canceled shift	18.0%	20.0%	18.0%	12.9%	$p < .001$
Timing change	65.6%	73.7%	62.3%	51.2%	$p < .001$
Schedule notice					$p < .001$
0–2 days	18.6%	19.6%	19.3%	14.8%	
3–6 days	17.4%	18.1%	17.7%	15.1%	
1–2 weeks	27.9%	29.9%	26.2%	25.7%	
2–3 weeks	20.2%	20.0%	19.1%	22.4%	
3–4 weeks	10.1%	8.0%	10.8%	14.1%	
4+ weeks	5.9%	4.4%	6.8%	7.9%	
Clopening shift	44.7%	50.1%	43.5%	33.3%	$p < .001$
Unpredictable schedule scale					$p < .001$
0 (most predictable)	8.6%	5.2%	8.9%	16.7%	
1	21.2%	17.2%	22.4%	29.1%	
2	30.0%	30.3%	30.3%	28.8%	
3	24.8%	28.3%	24.0%	17.2%	
4	12.3%	15.0%	11.7%	6.5%	
5 (most unpredictable)	3.1%	4.0%	2.8%	1.6%	

Notes: Clopening shift = a back-to-back closing and then opening shift. Unpredictable schedule scale sums indicators: less than 2 weeks' notice of schedule, on-call shift in past month, clopening shift in past month, canceled shift in past month, shift time changed in past month. Significance test for overall age group differences come from univariate model *F*-statistics. Sample varies between 121,408 and 121,436.

Table 2. Unpredictable Schedule Scale Regressed on Age Groups and Covariates (*N* = 121,408)

Unpredictable schedule scale	Model 1 Demographics and SES Coef.	*p* > *t*	95% CI	Model 2 + Job attributes Coef.	*p* > *t*	95% CI	Model 3 + Self-reported health Coef.	*p* > *t*	95% CI
Age groups (ref. 18–29)	$F(3,124.4) = 310.60$, $p < .001$			$F(4,147.5) = 190.04$, $p < .001$			$F(4,146.8) = 205.68$, $p < .001$		
30–39	−0.15	0.00	−0.18, −0.13	−0.14	0.00	−0.17, −0.12	−0.15	0.00	−0.18, −0.13
40–49	−0.29	0.00	−0.32, −0.26	−0.25	0.00	−0.28, −0.22	−0.26	0.00	−0.30, −0.23
50–59	−0.46	0.00	−0.49, −0.43	−0.36	0.00	−0.39, −0.33	−0.38	0.00	−0.41, −0.34
60+	−0.71	0.00	−0.76, −0.67	−0.51	0.00	−0.55, −0.47	−0.53	0.00	−0.57, −0.49
Year	✓			✓			✓		
Gender	✓			✓			✓		
Race/ethnicity	✓			✓			✓		
Educational attainment	✓			✓			✓		
Cohabitation	✓			✓			✓		
Household income	✓			✓			✓		
Hourly wages	✓			✓			✓		
Usual weekly hours				✓			✓		
Tenure in job				✓			✓		
Manager				✓			✓		
Union				✓			✓		
Industry				✓			✓		
Job title				✓			✓		
Employer				✓			✓		
Self-reported health							✓		

Notes: CI = confidence interval, SES = socioeconomic status. Unpredictable schedule scale sums indicators: less than 2 weeks' notice of schedule, on-call shift in past month, clopening shift in past month, canceled shift in past month, shift time changed in past month. Coefficients for all model variables can be found in Supplementary Table S4. Sample varies between 121,408 and 121,436.

changed, and 56% received their work schedule with less than 2 weeks' notice.

Schedule Unpredictability, Well-Being, and Job Retention

Consistent with Hypothesis 2, unpredictable schedules among older workers were significantly associated with distress, low-quality sleep, work–family conflict, and economic insecurity (Table 3). Each incremental increase on the unpredictable schedule scale was associated with a 0.64-unit increase on the 0–20 distress scale and a 0.28-unit increase on the 0–10 economic insecurity scale. These results using five distress items were similar to the subsample that received all six items (Supplementary Table S3). A unit increase on the unpredictable schedules scale was also significantly associated with a 0.18 increase in the log odds of poorer-quality sleep and a 0.32 increase in log odds of reporting work–family conflict.

Figure 1, which plots the predicted probabilities of dichotomized outcomes, shows that even older workers with the most stable schedules were vulnerable to poor sleep (reported by around half of respondents), economic insecurity, and work–family conflict (reported by 1 in 3), and, to a lesser extent, high distress (reported by 1 in 10). However, older workers with highly unpredictable schedules reported much worse well-being. For instance, among older workers who experienced all five types of unpredictable schedules, 6–7 out of 10 reported work–family conflict, fair or poor sleep, and economic insecurity, and the probability of high distress nearly tripled to 3 in 10. Among the four well-being outcomes, work–family conflict appeared particularly sensitive to unpredictable scheduling. All of these associations were above and beyond the influence of low wages, which were held constant along with continuous age and all demographics, socioeconomic covariates, and job attributes controlled in Model 2 of Table 2.

Table 3 and Figure 1 show that schedule unpredictability was also associated with job retention outcomes, consistent with our third hypothesis. Each increase in the unpredictable schedule scale was associated with a 0.35 increase in log odds of more job dissatisfaction and a 0.33 increase in log odds of being more likely to look for a new job soon. Among older workers with the worst schedules, there was a 0.6 predicted probability of making a genuine effort to find a new job within the next 3 months compared to 0.2 for workers with the most predictable schedules.

The relationship between schedules and each outcome did not significantly differ at ages 18–29 and 30–49 compared to 50–80, with the exception of a slightly smaller association between unpredictable schedules and looking for a new job at ages 30–49 and a slightly larger association between unpredictable schedules and distress at ages 18–29 (Supplementary Table S5).

Table 4 shows the adjusted average marginal effects of independent aspects of unpredictable schedules on dichotomized well-being and job retention. Canceled shifts were the strongest predictor of psychological distress (+7 percentage points), economic insecurity (+12), job dissatisfaction (+13), and looking for a new job (+14). This is not surprising given that canceled shifts often involve commuting to work only to be sent home without work or pay. Canceled shifts were not the most common form of schedule unpredictability for older workers, but when they did occur, they were strongly related to worker well-being and indicators of turnover.

Low-quality sleep and work–family conflict were strongly associated with clopening shifts (+8 and +14 percentage points, respectively). This finding is expected given that clopening often allows insufficient time for rest in between shifts and makes it particularly hard to attend to family needs. Patterns were similar in the lower panel in which all schedule unpredictability items are included in the model together.

Table 3. Continuous and Ordinal Well-Being and Job Retention Outcomes Regressed on Unpredictable Schedule Scale Among Older Workers (50–80 Years Old)

Outcome	Mean (95% CI)	Unpredictable schedule scale coefficient (95% CI)	Unpredictable schedule scale coefficient, log odds (95% CI)	*T* (*p*)
Well-being outcomes				
Distress (0–20)	8.35 (8.30, 8.41)	0.64 (0.57, 0.71)		18.71 ($p < .001$)
Poor-quality sleep (1–4)	2.88 (2.87, 2.89)		0.18 (0.15, 0.21)	11.15 ($p < .001$)
Work–family conflict (1–4)	2.38 (2.37, 2.39)		0.32 (0.29, 0.34)	24.14 ($p < .001$)
Economic insecurity (0–10)	2.78 (2.76, 2.80)	0.28 (0.26, 0.31)		20.20 ($p < .001$)
Job retention outcomes				
Job dissatisfaction (1–4)	1.97 (1.96, 1.98)		0.35 (0.31, 0.38)	21.03 ($p < .001$)
Likelihood of looking for new job (1–3)	1.72 (1.71, 1.72)		0.33 (0.29, 0.37)	17.02 ($p < .001$)

Notes: CI = confidence interval. Distress and economic insecurity modeled with ordinary least squares regression. Sleep quality, work–family conflict, job dissatisfaction, and likelihood of looking for a new job modeled with ordinal logit regression (coefficients represent log odds). Models adjusted for continuous age in years, year of survey, gender, race/ethnicity, educational attainment, marital/cohabitation status, household income, hourly wages, usual number of weekly hours, industry, tenure, manager, union, job title, employer. Samples vary between 23,881 and 24,376.

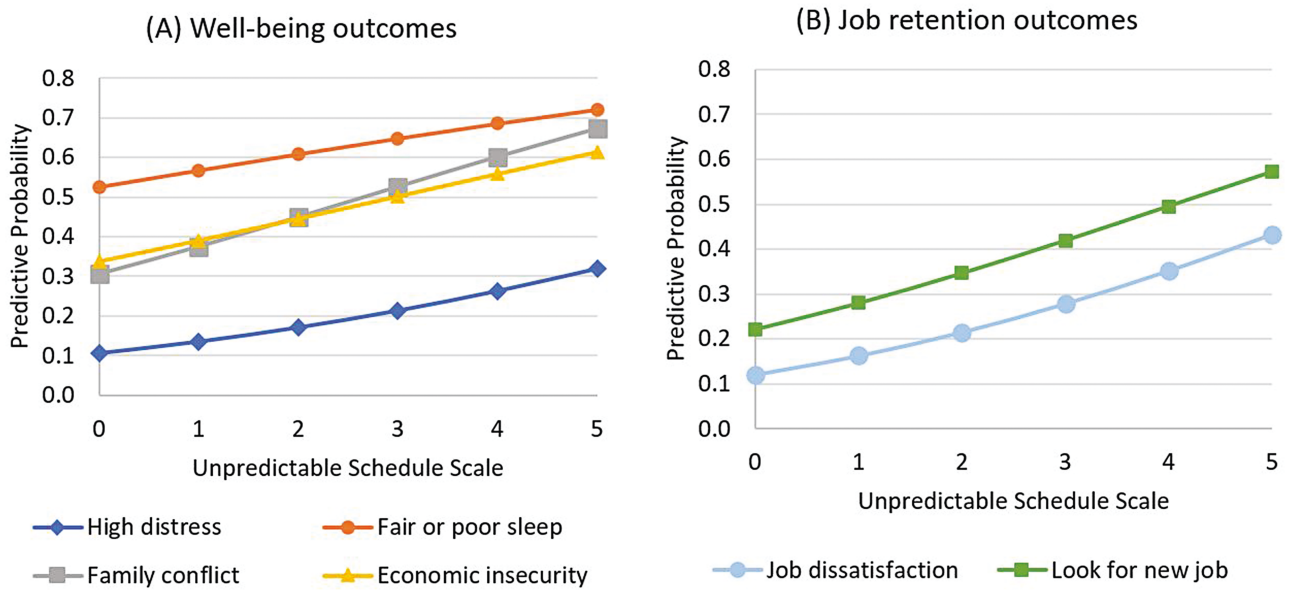

Figure 1. Predictive margins of dichotomized well-being and job retention outcomes by unpredictable schedules scale among older workers (50–80 years old). *Notes*: Models adjusted for continuous age in years, year of survey, gender, race/ethnicity, educational attainment, marital/cohabitation status, household income, hourly wages, usual number of weekly hours, industry, tenure, manager, union, job title, employer. The unpredictable schedules scale is a sum of the following indicators: (1) typically receive less than 2 weeks' notice of work schedule, and, in the past month, (2) was asked to be on-call for work, (3) worked a back-to-back closing and then opening ("clopening") shift, (4) experienced a shift cancelation, and (5) experienced last-minute shift timing changes. Higher values indicate more unpredictable schedules. Samples vary between 23,881 and 24,376.

Table 4. Well-Being and Job Retention Dichotomous Outcomes Regressed on Unpredictable Schedule Items and Scale Among Older Workers (50–80 Years Old): Average Marginal Effects Shown

Items	High distress	Fair or poor sleep	Family conflict	Economic insecurity	Job dissatisfaction	Likely to look for new job
Items in model individually						
Two weeks' notice	0.033***	0.033**	0.076***	0.036**	0.056***	0.068***
On-call	0.050***	0.042*	0.066***	0.090***	0.055***	0.065***
Cancel shift	0.073***	0.058***	0.115***	0.117***	0.125***	0.142***
Clopening	0.058***	0.080***	0.140***	0.083***	0.085***	0.109***
Timing change	0.053***	0.061***	0.106***	0.070***	0.074***	0.088***
Items in model together						
Two weeks' notice	0.024**	0.024*	0.058***	0.022*	0.041***	0.052***
On-call	0.030**	0.020	0.025*	0.063***	0.023*	0.027*
Cancel shift	0.056***	0.039**	0.082***	0.092***	0.104***	0.115***
Clopening	0.043***	0.066***	0.115***	0.061***	0.064***	0.086***
Timing change	0.036***	0.045***	0.075***	0.045***	0.049***	0.059***

Notes: Models adjusted for continuous age in years, year of survey, gender, race/ethnicity, educational attainment, marital/cohabitation status, household income, hourly wages, usual number of weekly hours, industry, tenure, manager, union, job title, employer. Samples vary between 23,755 and 23,971. *$p < .1$, **$p < .01$, ***$p < .05$.

Discussion

This study found that the scheduling conditions of older service workers were relatively more predictable than those of their younger counterparts. Still, older service workers experienced considerable schedule instability at large service sector employers. Further, older workers who experienced schedule unpredictability bore substantial costs. Policies aimed at improving work schedules, especially eliminating canceled and clopening shifts, have potential to improve older workers' well-being and job retention.

Older workers' relative protection from unpredictable work schedules persisted after adjusting for job characteristics such as job tenure, union membership, industry, job title, and employer. One reason for this persistent age advantage could be that older workers are held in higher esteem by managers or that they are rewarded for being

reliable employees. Selection may play a role if older workers with unpredictable schedules leave the service sector at a higher rate than younger workers with similar conditions. It seems that better scheduling conditions are not offered as accommodations for older adults' poor health, as poor health was associated with worse schedules, serving as a countervailing force to the association between old age and better schedules.

Consistent with younger ages in our sample and with prior research on adults of all ages (Harknett & Schneider, 2020; Schneider & Harknett, 2019a; Williams et al., 2019), unpredictable schedules were negatively associated with a broad range of outcomes in older workers. The updated Job Strain Model dictates that work is detrimental to health when it entails a combination of high work demands (e.g., long hours, pressure to be available at any time) with low job control (e.g., low schedule flexibility and predictability; Lovejoy et al., 2021). The association between schedules and psychological distress in older workers is a concern given the large role of distress in quality of life (Atkins et al., 2013) and established links between distress and other health outcomes in old age such as dementia progression (Simard et al., 2009) and cardiovascular morbidity (Brotman et al., 2007). Good-quality sleep is similarly important to healthy aging, as it promotes metabolism, immune function, cognitive function, and other essential processes (Diekelmann & Born, 2010; Luyster et al., 2012). The sleep schedules of shift workers have been linked to increased risk of cancer and cardiovascular disease (Luyster et al., 2012). Life-course research suggests that sleep quality improves around retirement age due to reductions in work-related distress (Lemola & Richter, 2013).

Despite potentially appearing to managers or employers as having fewer competing demands outside of work, older adults still face challenges in navigating both family and work roles (Bianchi & Milkie, 2010). Compared to other outcomes, schedules were most strongly associated with the ability to meet family needs given work demands. A growing portion of older adults in the United States play a caregiving role for spouses, adult children, grandchildren, and aging parents (Abramson, 2015; Vlachantoni et al., 2020). Work–life conflicts have been found to be associated with physical and psychological symptoms, as well as poor work-related attitudes (Bohle et al., 2010). While balancing work and family needs, middle-aged and older workers are trying to save for their own retirement. We observed unpredictable schedules to be associated with economic insecurity while holding constant wages and household income. The selection of economically insecure individuals into service sector work may be especially strong at older ages, when exiting the labor force is tenable for wealthier peers (Fisher et al., 2016).

There have been calls for rigorous research into the potential benefits of improving schedules of older service workers (Bohle et al., 2010), and our findings can inform the priorities of relevant policy initiatives. Reducing canceled shifts, which disrupt both temporal and financial aspect of work, holds promise for improving psychological well-being, economic security, job satisfaction, and intentions to stay in the role. Eliminating clopening shifts or requiring more rest between shifts could go far in improving workers' sleep quality and reducing conflicts between work schedules and family needs.

Recent legislation at the city, state, and federal levels aim to regulate exactly these practices (Golden & Dickson, 2021; Wolfe et al., 2018). The Schedules That Work Act reintroduced by Representative Rosa DeLauro and Senator Elizabeth Warren in February 2022 proposes, among other things, pay for last-minute schedule changes and reasonable breaks between shifts (*S.3642—117th Congress (2021–2022): Schedules That Work Act*, 2022). Prior ordinances in San Francisco, Seattle, Philadelphia, and New York City similarly regulate the amount of advance notice that must be provided to workers and mandate predictability pay for last-minute changes or cancelations. Such laws appear effective in fostering greater schedule stability and recent research finds that worker outcomes improved following the implementation of Seattle's ordinance (Harknett et al., 2021). Internationally, the European Council has issued a directive on transparent and predictable working conditions that sets new rights for all workers to greater schedule predictability and stability (European Parliament, Council of the European Union, 2019). While these policies do not target workers by age, our results indicate the potential of improved schedule regulations to benefit older workers. There is also a business case for such policies, as improvements in the consistency and predictability of workers' hours have been shown to increase store sales and generate a high return on investment (Williams et al., 2018). Accommodating employee scheduling is associated with significantly lower turnover, which translates to more productive and less error-prone employees (Ben-Ishai, 2014; Choper et al., 2021).

Considering broader questions about the length of working life, these findings demonstrate how work schedules may stand in the way of continued labor force participation for older workers. Early involuntary retirement is associated with worse mental and physical health (Dave et al., 2007; König et al., 2019; Mosca & Barrett, 2016; Segel-Karpas et al., 2018) and economic hardship (Seligman, 2014). Such labor force exits can mean more beneficiaries on Social Security and Medicare who have the capacity to work if job conditions were better. Our study captures indicators of job retention and does not directly assess retirement transitions. Future research should longitudinally examine how unpredictable schedules relate to retirement intentions and behaviors and test the mediating mechanisms of job satisfaction, economic insecurity, poor health, and work–family conflicts.

A limitation of this analysis is that the cross-sectional design prevents any causal conclusions, and some observed associations could be bidirectional. In addition, this analysis does not provide insights into scheduling conditions

and their consequences outside of the United States. Findings also may not be generalizable to workers in small firms that were not included in this sample. While data collection for this study used a nontraditional sampling frame and recruitment methods, the data were imputed and weighted to handle missingness and nonrepresentativeness and have undergone extensive validity checks (Schneider and Harknett, 2019b). Despite these limitations, this research makes important contributions to the literature on working longer. First, it contains detailed measures of working conditions not often available in public surveys on older adults. It focuses on a policy-relevant exposure that represents a modifiable risk factor for poor health and labor force exits. Also, this work concentrates on low-wage older workers who have not been the center of research and discourse on working longer.

Longer working lives will not be realized without high-quality jobs for older adults. This study highlights important and understudied aspects of job quality that policymakers could target in initiatives to improve working conditions and retain older workers in the labor force.

Supplementary Material

Supplementary data are available at *The Gerontologist* online.

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Conflict of Interest

None declared.

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