

FOR BETTER OR FOR WORSE: THE EFFECTS OF NONSTANDARD WORK  
SCHEDULES ON SELF-RATED HEALTH ACROSS MARITAL STATUS

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A THESIS

Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
for the degree of

Sociology—Master of Arts

2015

## ABSTRACT

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Nonstandard work schedules are increasingly common in today's economy. Work during these irregular hours has a negative health impact. Scholars investigating work schedule have yet to explore how marital status, which is linked with better health, may protect the health of U.S. nonstandard shift workers. This study analyzes pooled data from the National Study of the Changing Workforce (N=6774) to test if marital status and gender variations occur in the relationship between work schedule and health. The findings show that cohabiting and divorced or separated nonstandard workers have lower odds of reporting better health than married individuals working standard schedules. A gender difference is also present, with nonstandard shifts being worse for the health of divorced or separated women than for married women. The results indicate a significant interaction between gender and marital status exists and should be considered when examining the health of the nonstandard working population.

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## INTRODUCTION

The United States is now a service economy that is open 24 hours each day of the week. This economic change contributes to nonstandard work schedules for about twenty percent of the working population (Enchautegui 2013). While research shows that full-time employment is beneficial to worker's health (Ross and Mirowsky 1995), irregular shift work does not have the same advantages (Fenwick and Tausig 2001; Gordon, Cleary, Parker, and Czeisler 1986; Kleiner and Pavalko 2010; Mellor 1986). United States-based studies that examine the link between nonstandard work schedule and health find that various aspects of health are jeopardized for these workers (Chung, Wolf, and Shapiro 2009; Presser 2003). Some physical health risks include increased smoking behavior, more work-related accidents, and interference with regular sleep and eating schedules which results in fatigue and disrupted stomach and intestine functioning (Finn 1981; Geiger-Brown, Lee, and Trinkoff 2012). Nonstandard shift workers' mental health is compromised as these workers can be more stressed and suffer greater emotional problems (Fenwick and Tausig 2001; Gordon et al. 1986; Kleiner and Pavalko 2010). Additional studies that examined this topic used data from other countries and found similar results. In places such as Finland or Japan employees with nonstandard schedules either reported worse health or experienced greater health problems (Kivimaki, Kuisma, Virtanen, and Elovainio 2001; Nakata 2012). However, previous studies do not consider how marital status moderates the relationship between nonstandard work schedules and self-rated health in the United States.

The prevalence of nonstandard schedules varies across marital status. People who are divorced, separated, widowed, or single are more likely to have nonstandard work arrangements than people who are married (Presser 2003a). Several studies compare these groups in aggregate, and they each find that individuals who are not married more frequently work outside of standard employment hours (Enchautegui 2013; Presser 1995; Wight, Raley, and Bianchi 2008). Among

married couples where both spouses are working, women more often work nonstandard schedules than men (Kalleberg et al. 1997). If both spouses do shift work, it is uncommon for a husband and wife to work the same nonstandard shift (Presser 1995).

Health outcomes also vary across marital statuses. This link is widely documented in the social science literature, with examinations of diverse sample sets demonstrating that married individuals have better health than their non-married counterparts (Ross, Mirowsky, and Goldsteen 1990). Various pathways by which married individuals report better health have been proposed. Although some scholars argue that selection into marriage occurs for healthier individuals, others suggest that marriage causes a healthier lifestyle which is complimented by a decrease in health-risk behaviors (Lillard and Waite 1995; Ross et al. 1990). There is evidence in support of each explanation, and the two relationships can exist in tandem (Lillard and Waite 1995). Still, we know little about whether and how the effect of work schedule on health varies across different marital contexts. This is an important association to consider, given that both nonstandard work schedule and health vary by marital status.

To address this research gap, this study explores the following research questions: does working a nonstandard work schedule impact employees' self-rated health, do the effects of nonstandard work schedules on self-rated health vary by marital status, and do these relationships differ for men and women? The importance of this topic is highlighted by the rapid job growth in nonstandard work occupations expected to occur in future years (Enchautegui 2013).

## BACKGROUND

### *Theoretical Framework*

Employees can gain social support from their workplace, and the continuity and coherence of a regular work schedule is favorable for an employee's mental and physical condition (Sorensen and Verbrugge 1987). The lack of social regulation that may accompany a nonstandard shift leaves a worker feeling socially and institutionally isolated (Durkheim [1894] 1997; Kleiner and Pavalko 2010). The decreased amount of social support and regulation common to nonstandard schedules predicts these workers' lower health levels.

Marriage functions as a mechanism for social integration, and it encourages beneficial health behaviors and deters harmful ones (House, Landis, and Umberson 1988; Umberson 1987). Marriage increases social integration because it provides entrance into the social networks of one's spouse's family and friends. This connection is beneficial, as individuals who are more greatly integrated into society have reduced mortality rates (Seeman 1996). Given that married individuals are in a legally-bound partnership that can keep them more socially connected, they may enjoy better health than their unmarried peers (Waite 1995). Hence, among nonstandard workers, married people will be healthier than all other marital status groups.

Additional theories about marriage and health further explain why various marital statuses would have different health outcomes among nonstandard workers. Social control theory links social integration to well-being (Umberson 1987). The social support gained in marriage is beneficial to health because it increases the social control of health behaviors (Umberson 1992). In general, married individuals have the lowest mortality rates of all the marital statuses and enjoy better health (Ross et al. 1990; Waite and Gallagher 2000). The related marital protection hypothesis argues that the institution of marriage is protective because it causes healthier

behavior that fosters better overall well-being (Waite and Gallagher 2000). This social causation model is useful in explaining the relationship between work schedule and health across marital statuses as it contends that employment improves health (Ross and Mirowsky 1995). The benefit that social ties have on well-being is applicable to work schedule and is displayed differently across marital status. This investigation draws upon social integration, social control theory, and the marital causation model to predict that the integration benefits gained in marriage promote better health for spouses than all their unmarried peers when both groups are employed in nonstandard work schedules.

### *Work Schedule and Health*

Paid employment is positively associated with better health for both men and women (Bartley, Popay, and Plewis 1992; Bird and Fremont 1991; Repetti, Matthews, and Waldron 1989; Ross and Mirowsky 1995; Springer 2010). While full-time workers are healthier than part time workers, individuals who are unemployed report the worst health (Ross and Mirowsky 1995; Kaleta, Makowiec-Dabrowska, and Jegier 2008). The health benefits that come from employment can vary on how job demands interact with an employee's family life and work preferences. In particular, women's education and employment gains over the past decades have contributed to their work time and detracted from time they may have previously spent caring for children. Although there are arguments about causality, as healthy workers could be more likely to be and remain employed, there is strong evidence that being employed full-time fosters better health than part-time employment (Ross and Mirowsky 1995).

### *Nonstandard Work Schedules and Health*

Definitions of regular work schedules include those shifts that are recurrently scheduled from Monday through Friday, generally between the hours of 6 a.m. and 6 p.m. (Enchautegui



2013; McMenemy 2007; Presser and Ward 2011). Yet economic and demographic changes in the United States, as well as advances in technology, contribute to the increase of work schedules that occur outside of these times (Presser 1995). Such nonstandard work schedules are those that include night or evening shifts, rotating schedules, and weekend work (Presser 2003a; Presser and Ward 2011). Workers employed with these schedules choose to do so for a variety of reasons, making nonstandard workers largely a self-selected population (Davis, Goodman, Pirretti and Almeida 2008; Harrington 2001). There are employees who primarily work part-time and use the nonstandard shift to balance childcare responsibilities (McMenemy 2007; Presser 2003; Wight et al. 2008). Students represent a sizeable number of nonstandard workers, and many select these shifts to accommodate their class schedule (McMenemy 2007; Presser, Gornick, and Parashar 2008). A minority of workers indicate that they prefer shift work because of wage benefits, although a comparison of jobs with similar characteristics shows that standard work schedules yield better pay (Kalleberg et al. 1997; McMenemy 2007). Economic changes demand that businesses remain open or services are available outside the standard work hours. Therefore, workers in these industries, such as food service, entertainment, or transportation, report that they engage in nonstandard work schedules because it is the requirement of their job rather than being their choice (McMenemy 2007; Presser 1995).

Studies that investigate how work schedules are related to health report a variety of results which demonstrate that working a nonstandard schedule has negative health effects (Costa 1996; Fenwick and Tausig 2001; Geiger-Brown et al. 2012; Gordon et al. 1986; Kleiner and Pavalko 2010; Mellor 1986; Presser 2003a). This happens in part because shift work leads to schedules that are irregular or hours that are longer than standard schedules, and because it does not have the same benefits of regular, full-time employment (Costa 1996; Ross and Mirowsky

1995). For example, nonstandard work shifts likely result in a decreased provision of health insurance and lower wages, plus jobs demanding irregular schedules are often of lower quality (Enchautegui 2013; Kalleberg et al. 1997).

The negative characteristics of nonstandard schedules lead to health behaviors that have physical and mental health consequences. Nonstandard workers have variable sleep cycles which are disruptive to the body's circadian rhythm and contribute to gastrointestinal complications, body temperature deregulation, and hormone imbalances (Presser 1999; Presser et al. 2008). As for mental health, employees that have more choice over their work schedule can feel more encouragement and pride toward their work (Harrington 2001), yet nonstandard shift workers often lack control over their work schedule (Fenwick and Tausig 2001). Those who work only part-time are left with less job satisfaction, displeasure from having little control over their variable shifts, and discontentment with their changing work hours (Kleiner and Pavalko 2010). These outcomes foster lower mental well-being which can contribute to inferior overall health for nonstandard workers.

Different international studies report similar results for the effects of nonstandard work schedule on health. In an examination of Japanese workers, Nakata (2012) found that employees who worked more than eight hours a day reported poorer health, and the main association between the extra hours and poor health was lack of sleep. A study of Finnish nurses revealed that those who worked nonstandard shifts had higher rates of smoking and obesity than those who worked standard shifts, and the authors reported that their findings parallel the health behaviors of nurses in the United States (Kivimaki et al. 2001). To my knowledge, however, no studies have been conducted using data from U.S. samples to determine the effect of nonstandard work schedules on self-rated health. Taken together, I expect that:

*Hypothesis 1:* Individuals who work a nonstandard work schedule will report lower self-rated health than those who work a standard work schedule.

*Nonstandard Work and Health across Marital Status*

Studies about nonstandard work schedules often explore the descriptive characteristics of these employees rather than focus on how the abnormal scheduling is linked to other variables (Presser 2003a). Because of this, it is less clear whether the effect of nonstandard work on health varies across marital status. Health can be influenced by a variety of biological and social factors. Marital status is one of the most important social indicators that provides a variety of health benefits, including a protection against mortality (Gove 1973; Hemstrom 1996; Umberson 1987). Marriage presumes a long-term commitment that allows partners to plan for the future, it allows spouses to combine their resources, and it fosters integration with other social groups—all of these promote better health (Waite 1995).

Specific outcomes found in literature on both marriage and work schedule document health differences across marital statuses. First, workers with nonstandard schedules have higher rates of cardiovascular disease than standard shift workers (Presser 2003a). This ailment is also more common among divorced and widowed people, as they have higher death rates from heart disease than married people (Ross et al. 1990). Even though nonstandard shift workers have a greater risk of contracting cardiovascular disease, married nonstandard shift workers may be more protected from unhealthy outcomes because of the support and control marriage provides (Berkman, Glass, Brissette, and Seeman 2000; Waite and Gallagher 2000; Umberson 1987). Likewise, there is more variability in the sleep schedules of nonstandard shift workers than standard shift workers (Presser 1999; Presser et al. 2008). Married and unmarried shift workers experience sleep irregularity, but the social control that a married shift worker receives from

their spouse may influence them to adopt a better sleep cycle than an unmarried shift worker who does not have a spouse to encourage better health behaviors (Umberson 1987). Furthermore, nonstandard workers have worse mental health with regard to stress and emotional problems (Fenwick and Tausig 2001; Gordon et al. 1986; Kleiner and Pavalko 2010). Married shift workers may be protected from worse psychological outcomes because marriage and living with another person fosters emotional support (Ross et al. 1990). Given these findings, I expect that:

*Hypothesis 2:* The effect that work schedule has on self-rated health is stronger among the married than the unmarried.

#### *Gender Differences between Work Schedule, Marital Status and Health*

The prevalence of nonstandard work schedules varies by gender. A disproportionate amount of women work these schedules because they are concentrated in jobs that more greatly require working nonstandard hours, such as nursing or home healthcare, cashier, or sales (Presser 1999). The concentration of women in service jobs that are less desirable than production sector jobs is common across industrialized economies (Presser et al. 2008). It is additionally more frequent for men to work full-time jobs while women work more part-time, often nonstandard, jobs (Presser et al. 2008; Zeytinoglu and Muteshi 2000).

The relationship between marital status and health also varies by gender. While the self-assessed health of unmarried individuals has improved in recent years, married people still have comparably better health, and this relationship is different for men and women (Liu and Umberson 2008). The health benefit from marriage is stronger for men than women because men's lifestyles prior to marriage are more detrimental to their health while women's involved less health risks to begin with (Umberson 1987). Additionally, because women more often engage in relationships with family or friends, married men reap benefits from this increased

social integration compared to unmarried men (Lillard and Waite 1995). Among women, those who are married report a greater improvement in their health compared to those who are widowed, separated, or divorced (Liu and Umberson 2008). This is largely due to the increased financial reward that marriage brings (Lillard and Waite 1995).

Because gender is an essential piece in the literature on marriage and health and women are more likely to work nonstandard schedules, I anticipate that stratifying the analysis by gender will demonstrate that the effect marital status has on the relationship between work schedule and health will be a particular concern for women. This leads to my third hypothesis:

*Hypothesis 3.* The moderating effect that marital status has for work schedule on self-rated health will be stronger for women than for men.

#### *Other Covariates Related to Work Schedule and Health*

Previous studies demonstrate the demographics of individuals who are most likely to have a nonstandard work schedule. Age is an important factor because many of these workers are younger, and they are often college students balancing a job outside of the standard school hours (Wight et al. 2008). Younger people may have less age-related health problems, so accounting for age is an important consideration. Gender and race differences are also present between standard and nonstandard workers. Although women are more concentrated in nonstandard shifts, male workers outnumber female workers in such jobs, and Black workers are more likely than White workers to be employed in these shifts (McMenamin 2007; Presser 2003; Wight et al. 2008). Individuals who identify as Hispanic or of some other race are also more present in nonstandard jobs than White workers (Presser 2003). Finally, people who are less educated are more likely to work outside of standard hours (McMenamin 2007; Presser and Cain 1983). A link between education and health exists, and individuals with greater educational attainment

report better health (Ross and Wu 1995). Thus, nonstandard shift workers are more likely to be young, Black, and male, have low education levels, and work part-time in service sector jobs.

Furthermore, the majority of all nonstandard workers come from low-income households (Enchauegui 2013). Low-income shift workers are often employed in low-skilled service industry jobs that can be detrimental to health. Self-employment is another considerable factor in this instance because many self-employed individuals work nonstandard shifts. However, as owners of their business, they have a greater interest in performing work outside of the regular work time because they will gain greater economic rewards (Presser 1995). Their health may not suffer as much as an individual working a nonstandard shift for a company they do not own. The presence of children also affects a person's work shift, particularly because childcare options are limited for working parents and nonstandard employment hours restrict the time parents spend with their children (Presser et al. 2008). Childcare for single, nonstandard-scheduled parents is especially difficult and may be more pronounced among women because of their concentration in nonstandard jobs (Presser 1999). These variables are accounted for in the following examination of the relationships between work schedule and health.

## METHOD

### *Data and Sample*

This study analyzes data from the National Study of the Changing Workforce (NSCW), a nationally representative sample of the working population collected by the Families and Work Institute since 1992 (Families and Work Institute 2004). A cross-sectional analysis was conducted using pooled data from the 2002 and 2008 surveys. Only these years could be used due to limited availability of the self-rated health variable.

This study was specifically interested in individuals who were working either standard or nonstandard shifts. Respondents who indicated that they were working some other schedule, did not know what their schedule was, or refused to answer were therefore excluded from the sample. Additionally, many of the covariates were categorical variables, and some had a minimal percent of missing cases. Missing information for these variables, which included self-rated health, marital status, self-employment status, race, and parental status, was dropped. The age and family income variables had larger numbers of missing cases, about 1% and 8% of the sample, respectively. Rather than dropping these respondents, I imputed the missing value for age based on the other covariates, and I imputed family income per year at the mean. The final sample size was 6,774 respondents, with 3.31% of the original sample lost due to the previously stated reasons.

### *Measures*

*Self-rated health* is the dependent variable. Respondents could select from four different categories to rank their current health, and these were recoded to reflect the worst to best ratings: poor, fair, good, or excellent health.

*Work schedule* is the main independent variable. It is measured dichotomously, with standard schedule workers consisting of respondents with a regular daytime schedule and nonstandard schedule workers consisting of respondents who work any other shift. This nonstandard schedule was composed of a number of shifts, including regular evening, night or rotating shifts, a split shift, or having a variable on call schedule.

*Marital status* is the moderating variable. It is composed of five categories that reflect the respondent's current marital status: married, cohabiting, single and never married, divorced or separated, and widowed. Individuals that are widowed or divorced or separated are not cohabiting with a partner.

*Additional demographic and socioeconomic variables* are included to control for any effect they may have on the main relationship. Race is categorized into three groups: White, Black or African American, and other race. Education refers to the respondent's highest level of education achieved. It is broken into three categories, those with a high school diploma or below, those with some college education, and those with a college degree or beyond (this includes an Associate's degree). Age is a continuous variable, ranging from 18 to 99 years. Family income is divided into quintiles that distribute the total sample into fairly equal groups. The lowest quintile represents families whose yearly income is \$32,000 or less, the next quintile is those with \$32,001 to \$54,000, the following group has incomes between \$54,001 and \$80,000, the penultimate group includes incomes from \$80,001 to \$100,000, and the final group's income is \$100,001 or more. Measures for self-employment and parental status are included as well. Self-employment simply codes respondents dichotomously as being self-employed or not, and parental status categorizes respondents as either being a parent or guardian of any person or not.

#### *Statistical Methods*



The relationships between self-rated health, nonstandard work schedule, and marital status are analyzed using ordinal logistic regression. This method compares the odds of an outcome being in a higher rather than a lower category by grouping the outcome categories differently. The present analysis compares those with poor health to those with fair, good and excellent health, those with poor and fair health to those with good and excellent health, and those with poor, fair, and good health to those with excellent health. There are three nested models used to test the hypotheses, with the final model adding interaction variables for marital status by work schedule. The likelihood ratio test indicated that each of the new models were significantly better than the earlier one. A separate analysis stratifies these models by gender to test the third hypothesis.

## RESULTS

### *Descriptive Statistics of Study Sample*

Table 1 lists descriptive statistics which describe the sample as being majorly composed of White, college-educated parents with an average age of about 45. There are more women than men in the sample and a good amount of the respondents are financially well-off, with about 40% having yearly family incomes above \$80,000. A minority of respondents are self-employed, and about a quarter work nonstandard schedules. Most respondents indicate that they have good or excellent health, and the better part of the sample is currently married.

<b>Table 1.</b> Descriptive Statistics of Variables (Pooled 2002 and 2008 National Study of the Changing Workforce), N=6774			
Variable	Percentage	Variable	Percentage
Self-rated health		Employment Type	
Poor ( <i>ref</i> )	1.68	Self-employed ( <i>ref</i> )	15.63
Fair	15.85	Not self-employed	84.37
Good	49.73	Education	
Excellent	32.73	College graduate ( <i>ref</i> )	52.07
Work Schedule		Some College	22.35
Standard ( <i>ref</i> )	72.41	HS diploma or less	25.58
Nonstandard	27.59	Parental Status	
Marital Status		Not a parent ( <i>ref</i> )	34.84
Married ( <i>ref</i> )	59.57	Parent	65.16
Cohabiting	6.20	Family Income	
Single, never married	15.63	\$32,000 of less ( <i>ref</i> )	20.74
Divorced/Separated	15.22	\$32,001 - \$54,000	19.40
Widowed	3.38	\$54,001 - \$80,000	21.69
Sex		\$80,001 - \$100,000	18.20
Male ( <i>ref</i> )	45.78	\$100,001 and higher	19.97
Female	54.22	Year	
Race		2002 ( <i>ref</i> )	50.00
White ( <i>ref</i> )	82.74	2008	50.00
Black	8.70	Age	
Other	8.56	Mean: 44.81 (SD: 12.89)	

### *Ordinal Logistic Regression Results*

The estimated odds ratio results of ordinal logistic regression in Model 1 of Table 2 indicate that the predicted odds of reporting better health is 10.3% lower for individuals who work nonstandard schedules than those who work standard shifts. Respondents who are cohabiting, divorced or separated, and widowed have a significantly lower odds of reporting good health compared to married respondents.

Model 2 of Table 2 suggests that these relationships generally remain significant when the demographic and socioeconomic variables are added, although the relationship for widowed respondents reporting worse health than married respondents becomes insignificant. Results from Model 2 also suggest that men more than women and Whites more than Blacks have significantly higher odds of reporting better health. Furthermore, as respondents get older, their odds of reporting better health decreases. Given the link between socioeconomic status and well-being, it is not surprising that respondents with a college degree report better health and that respondents in the lowest quintile of yearly family income report worse health. Finally, those who are self-employed or parents have lower predicted odds of reporting better health than those who are not self-employed or child free.

Model 3 tests the second hypothesis by including interaction terms between marital status and work schedule. The significant interaction terms in Model 3 show that the relationship between work schedule and health varies by marital status. Although the effect of nonstandard work schedule on health is not significant among the married (indicated by the nonsignificant main effect of work schedule), this effect tends to be negative among the cohabiting and divorced/separated (indicated by the significant interaction effects). The odds of reporting better health is 34.7% (i.e.,  $(1-0.994*0.657)*100$ ) lower for cohabiting nonstandard workers than

<b>Table 2.</b> Odds Ratios of Ordinal Logistic Regression of Nonstandard Work on Self-Rated Health (N=6774)			
Variables	Model 1	Model 2	Model 3
Nonstandard Work Schedule	0.897*	0.898*	0.994
Cohabiting	0.688***	0.692***	0.789
Single, never married	0.894	0.935	0.921
Divorced/Separated	0.669***	0.848*	0.956
Widowed	0.640**	0.936	0.961
Cohabiting X NSWS			0.657*
Single X NSWS			1.018
Divorced/Separated X NSWS			0.640**
Widowed X NSWS			0.889
Female		0.878**	0.878**
Race: Black		0.776**	0.775**
Race: Other		0.876	0.876
Age		0.990***	0.990***
Education			
Some College		0.764***	0.760***
HS Diploma or less		0.648***	0.650***
Not self-employed		0.849*	0.859*
Is a parent		0.853**	0.855**
Family Income			
\$32,300 - \$54,000		1.207*	1.208*
\$55,000 - \$80,000		1.286**	1.295**
\$81,000 - \$100,000		1.576***	1.582***
\$100,030 and higher		1.700***	1.711***
Year: 2008		0.729***	0.727***
Cut 1	68.74	160.74	153.39
Cut 2	5.49	12.52	11.92
Cut 3	0.56	1.20	1.14
AIC	14503.52	14295.74	14291.57
BIC	14558.09	14438.98	14462.09
LR Test prob>chi <sup>2</sup>		0.000	0.0161
Notes: Two-tailed tests: ***p<0.001 ** p<0.01, * p<0.05 NSWS = Nonstandard work schedule; AIC = Akaike information criterion; BIC = Bayesian information criterion			

<b>Table 3.</b> Odds Ratios of Ordinal Logistic Regression of Nonstandard Work on Self-Rated Health by Gender						
Variables	Males			Females		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Nonstandard Work Schedule	0.919	0.904	0.917	0.869*	0.894	1.092
Cohabiting	0.743*	0.744	0.870	0.654**	0.667**	0.755
Single, never married	1.031	1.000	0.890	0.787**	0.895	0.971
Divorced/Separated	0.736**	0.863	0.994	0.657***	0.842	0.951
Widowed	0.437**	0.562*	0.463*	0.731*	1.053	1.142
Cohabiting X NSWS			0.626			0.640
Single X NSWS			1.372			0.747
Divorced/Separated X NSWS			0.624			0.616*
Widowed X NSWS			1.730			0.718
Race: Black		0.825	0.823		0.746**	0.747**
Race: Other		1.021	1.02		0.762*	0.765*
Age		0.988***	0.989***		0.992**	0.992**
Education						
Some College		0.689***	0.686***		0.819*	0.821*
HS Diploma or less		0.628***	0.631***		0.648***	0.651***
Not self-employed		0.843	0.853		0.852	0.868
Is a parent		0.852	0.849		0.880	0.880
Family Income						
\$32,300 - \$54,000		1.19	1.210		1.221*	1.210
\$55,000 - \$80,000		1.244	1.264		1.332**	1.342**
\$81,000 - \$100,000		1.461**	1.483**		1.689***	1.696***
\$100,030 and higher		1.703***	1.728***		1.708***	1.732***
Year: 2008		0.640***	0.636***		0.811**	0.809**
Cut 1	0.01	0.01	0.01	0.02	0.01	0.01
Cut 2	0.17	0.06	0.07	0.19	0.11	0.12
Cut 3	1.75	0.70	0.80	1.84	1.11	1.20
Sample Size	3101	3101	3101	3673	3673	3673
AIC	6536.9	6435.6	6432.9	7962.7	7873.4	7873.4
BIC	6585.3	6556.4	6577.9	8012.3	7997.6	8022.4
LR Test prob>chi2		0.000	0.031		0.000	0.090
<i>Notes:</i> Two-tailed tests: ***p<0.001 ** p<0.01, * p<0.05 NSWS = Nonstandard work schedule; AIC = Akaike information criterion; BIC = Bayesian information criterion						

cohabiting standard workers. Similarly, the odds of reporting better health are 36.4% (i.e.,  $(1 - 0.994 * 0.640) * 100$ ) lower for nonstandard workers who are divorced or separated than their standard working counterparts. These results also suggest that the relationship between nonstandard work schedule and health is not significantly different between the single/widowed and the married.

To test my third hypothesis, I separate the analysis by men and women. The results in Table 3 suggest that among men, there are no significant interaction relationships. This means that male, unmarried nonstandard shift workers have the same odds of reporting better health as their married counterparts. There is also no evidence that work schedule affects men's health. Only the main effect for men who are widowed remained a significant predictor of reporting worse health across all the models. This finding is supported in the literature; for men in particular, entering widowhood also means losing the health protections marriage provides and increases their mortality risk (Waite and Gallagher 2000). Although the link between work schedule and health does not seem to be influenced by men's marital status, there is a significant impact among women. Working a nonstandard shift is worse for the health of divorced or separated women than married women. The odds of reporting better health is 32.7% (i.e.,  $(1 - 1.092 * 0.616) * 100$ ) lower for divorced or separated female nonstandard workers than divorced or separated female standard workers.

## DISCUSSION

Considering both theoretical perspectives and previous findings, I predicted that nonstandard work schedules would have a negative impact on a worker's reported health. Because marital status influences health in a diversity of ways, I anticipated that the relationship between work schedule and self-rated health would vary by marital status. I further predicted that the effect of this moderating relationship would be stronger for women than for men due to the gender differences that exist for work schedules and marital status. The results indicate support for all of these hypotheses.

Individuals who work nonstandard schedules have lower odds of reporting good health. This is expected given that the harm of these irregular shifts on workers' health can manifest as biological, psychological, and behavioral consequences. For example, nonstandard shift workers' poor quality sleep can contribute to ill health (Chung et al. 2009; Geiger-Brown et al. 2012; Presser 2003a). The disrupted sleep schedules that nonstandard workers experience can change their circadian rhythm which upsets hormone levels and body temperature (Presser 2003a). Both men and women employed in shift work have increased alcohol use and are at greater risk of being obese (Gordon et al. 1986; Kleiner and Pavalko 2010). Nonstandard shift workers are also at greater risk of having cardiovascular health problems (Harrington 2001; Presser 2003a). Female shift workers have a larger chance of contracting breast cancer as well as experiencing menstrual cycle disruptions (Chung et al. 2009). Obviously the work one does will influence their health, but nonstandard shift workers risk a greater health disadvantage than individuals working standard shifts.

The relationship between work schedule and health does depend on marital status. The results indicate that nonstandard workers who are cohabiting and divorced or separated are less

likely to report good health than married workers. This finding was anticipated. Individuals who are pre- or post-marriage engage in more hazardous behaviors. Divorced people have a greater likelihood for smoking, drinking, fighting, and substance use, but for both men and women who enter into marriage, this behavior subsides (Umberson 1987; Waite and Gallagher 2000). People who are divorced, widowed, or single are additionally at greater risk than married people of dying from various health problems, ranging from cardiovascular disease to cancer to murder and suicide (Waite and Gallagher 2000).

The moderating effect of marital status is strong for divorced or separated nonstandard workers. These respondents have lower odds than cohabiters of being unhealthy compared to married workers which is not surprising given the adverse effect that ending a marriage can have on health. Williams and Umberson (2004) found that the better health of married persons is more the result of not experiencing marital dissolution rather than gaining health benefits from marriage. Individuals who go through divorce are more likely to engage in activities that are harmful to their health, such as alcohol or drug abuse, and, along with widows, they are less likely to have regular daily schedules (Umberson 1987). People who are not married display more mental ailments, worse physical health conditions, and report lower levels of self-assessed health than their married counterparts (Ross et al. 1990).

The marital relationship is also changing as an increased amount of people cohabit either before marriage or in place of it. Cohabiting does share some marriage benefits that minimize detrimental health outcomes, such as sharing resources or expanding one's social network. However, married people still enjoy a well-being benefit over cohabiters. Although both groups see relationship quality decrease over time, cohabiting is not as advantageous to well-being as being married (Musick and Bumpass 2012). Similar findings are echoed in a study of



nonstandard working parents, where married shift workers had greater positive well-being than their cohabiting counterparts (Liu, Wang, Keesler, and Schneider 2011). My results reflect these findings. Cohabitors may reap more social support from living together than divorced or separated people, but they still have lower odds of reporting better health than married people.

This study indicates that the effect that marital status has on the relationship between work schedule and self-rated health is stronger for women than men. When stratified by gender, the moderating effect of marital status is only present among women; there is no marital status difference for men. The health of unmarried women is more greatly affected when working nonstandard shifts. Specifically, having a nonstandard work schedule is more harmful for the health of divorced or separated women than married women. Women without the combined resources and social integration gained from marriage are less likely to be healthy when working nonstandard schedules.

Not only do unmarried women lack this social support, but the presence of children is potentially a key factor to explain why the health of divorced or separated nonstandard working women is affected significantly more than other unmarried women. Children affect a parent's decision to engage in a nonstandard work schedule. Female nonstandard shift workers frequently report that they do shift work due to childcare reasons, and low-income women with young children are more likely to work a nonstandard shift (Enchautegui 2013; Presser 2003). The ability to rely on one's partner for childcare during a nonstandard shift is a more probable option for married women. When a wife works a different shift from her husband, he is primarily responsible for taking care of the children (Presser 1999; Presser et al. 2008). For nonstandard workers, divorced or separated women's lower odds of being healthy could be due to the

decrease of social support from severing their marriage or the presence of children that limits their better well-being.

Overall, the results suggest that the dynamics between work and health go beyond a biological relationship. Both physicians and employers need to adopt a biopsychosocial approach so that when they consider the connection between employment schedule and health they include marital status as a significant indicator of a worker's well-being. Social interaction and support gained from marriage provide health benefits or protection for nonstandard workers, and the social support and connection that cohabiting and divorced or separated individuals lack when they are not married is harmful for nonstandard workers' health.

Additionally, a gendered understanding of this relationship is needed, as divorced or separated women with nonstandard work schedules have particularly worse health. These findings are problematic because more women are in the labor force and many are concentrated in nonstandard jobs. Women without standard work schedules are at a health disadvantage already, but those who work these shifts and are not married are doubly disadvantaged. Scholars examining the social complexities of work schedule need to consider marital status in their research, and more complex studies would also be attuned to gender differences.

#### *Limitations and Future Research*

The logistic regression analysis of this data demonstrated the significant role that marital status and gender play in determining the health of nonstandard workers. Still, there are several limitations to this dataset. Of primary importance is that this sample is only representative of the working population. This skews some of the descriptive statistics and restricts any conclusions to be made about the overall United States population. Additionally, the cross-sectional nature of the NSCW limits the ability to study trends over time and investigate causation. This would be

an important aspect to include in related studies, particularly because certain time-sensitive variables, such as how long an employee has worked a nonstandard schedule or if a person has transitioned into or out of marriage, could influence one's health. Self-rated health is a better predictor of well-being than medical health measures (Idler and Benyamini 1997), but there are also a variety of health behavior variables missing from the dataset that would be relevant to include in this study, such as amount of exercise, smoking and drinking behavior, diet, and having preexisting health conditions. Nonstandard workers are a self-selective population, and controlling for these behaviors could help better explain shift worker's health (Harrington 2001).

The demographic, technological, and economic changes that moved the United States from a production to a service economy contributed to a rise in nonstandard work schedules (Presser 1999). As companies continue to hire workers to fill these less desirable shifts, they need to consider factors that will help protect their workers' well-being. Furthermore, the current tension in the United States regarding government-funded healthcare raises the importance for employers to consider not only biological but also social factors that could compromise the health of their employees. It is important for future studies to include marital status and gender when examining how nonstandard work schedules influence health.

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