

(Extended Abstract) *Overworked and underslept? The changing sleep durations of men and women in Sweden (1990-2010).*

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Abstract

In 2012, people in Sweden worked more hours per week than at any time since 1991, a positive development in many economic respects, but one which may have negative health implications, since hours of paid work and sleep duration are highly and inversely correlated. Short sleep durations are understudied in the work-life balance literature, but when sustained over time, are a major predictor of all-cause mortality and morbidity. Fatigued workers are also less productive and pose a risk to workplace safety. This paper investigates the prevalence of short sleep durations in Sweden, according to gender, weekly work hours, and stage of the family life cycle, using three nationally representative time use surveys from 1990-91, 2000-01, and 2010-11 (N=16,440). Nested logistic regression models are used to identify the determinants of short sleep durations and the most at risk groups, while uncovering changing dimensions between 1990 and 2010. Preliminary results indicate that in each year, men and women working 45+ hours per week are most at risk of short sleep, which is particularly the case for working mothers and fathers of young children. Over time, as women have increased their paid work hours, their risk of short sleep has also increased, which is especially true for mothers. Men with and without children are however no more or less at risk over time. Findings suggest that the recent increase in work hours may have negative health implications for working mothers and gendered consequences at the societal level.

Keywords: division of labour, parenthood, sleep, Sweden, time use, work-life balance

Background and previous research

Women's dual roles as workers and mothers and the dynamics therein between 1990 and 2010 motivate this time use paper. Most studies find that as female labor force participation increased in recent decades, women continued to devote as much or even more time to their children (Bianchi, Robinson & Milkie, 2006). This period has been described as one of intensive parenting norms, where both qualitative (Daly, 2001) and quantitative research suggest parents have been investing considerably more time with their children (Bianchi et al. 2006; Dew 2009).

Mothers have also been found to reduce sleep and leisure time to enable more time with their children (Bianchi 2000), with some researchers suggesting that working mothers “talked about sleep the way a hungry person talks about food (Hochschild & Machung, 2012).” This combination of factors suggest contemporary parents face growing and competing demands on their time, and may possibly forfeit sleep, a biological necessity, as a coping mechanism.

While parents in Sweden are on the leading edge of a gender equal division of household labour (Dribe & Stanfors, 2009; Neilson & Stanfors, 2013), they are also international forerunners when it comes to dual-earning. In 2012, people in Sweden worked more hours per week than at any time since 1991 (Svenskt Näringsliv, 2013). This development, in the aggregate, obscures more nuanced working time changes taking place, such as the greater proportion of women currently working full- relative to part-time than at any time since 1995¹. The *Swedish Time Use Surveys* show the proportion of women working 36 or more hours per week has grown from 47 to 54 percent between 1990 and 2010, and those working 46+ hours has nearly doubled, while more men are working 46+ hours in 2010 compared to 1990², changes which resemble the bifurcation of working time in the U.S., with greater proportions working very long and very short hours (Jacobs & Gerson, 1998). Increased working hours, a positive development in many economic respects, may have negative health implications since hours of paid work and sleep duration are highly and inversely correlated (Chatzitheochari & Arber, 2009). Short sleep in duration is also a major predictor of all-cause mortality and morbidity, although the direction of causality remains in question (Basner et al, 2007; Bin et al., 2013). Fatigue and exhaustion decrease workplace safety, which may be particularly relevant in Sweden, where a high proportion work in service based and cognitively demanding occupations (see Canivet et al. 2010 on 45-64 year olds in Malmö; Tucker et al. 2013 on doctors in Sweden). Recent studies reveal that in the late 20th century, changing patterns in short sleep durations have taken place across a variety of countries (Bin et al., 2013). Evidence from Finland suggests men experienced a gradual sleep decline between 1972 and 2005, although the distribution of extremely short sleepers remained unchanged (Kronholm et al., 2008). In Sweden, a study of two birth cohorts of 38- and 50-year old women in 1968-69, 1980-81 and 2004-05, found the proportion experiencing sleep problems almost doubled over time (Rowshan Raven et al., 2010), and in 2011, 18 percent of men and 23 percent of women reported that they found it hard to sleep because of thoughts about work (Statistics Sweden, *Statistical Yearbook of Sweden 2013*)³.

¹ Eurostat statistical database, own calculations, accessed 2013-10-10.

² Own calculations, using data from 1990-91, 2000-01 & 2010-11 Swedish time use surveys

³ The Work Environment Surveys in Sweden (Arbetsmiljöundersökningen) ask this question every second year; 2011 figures are part of a long-term increasing trend since 1989 for men and women.

These studies suggest that changes in sleep patterns are topical yet require better understanding, especially considering the gendered implications that parenthood may have on sleep outcomes, and their development over time and across the life cycle at the population level.

Data

This paper analyzes three waves of *Swedish Time Use Surveys*, conducted by Statistics Sweden in 1990-91, 2000-01, and 2010-11, focusing on a sub-sample of workers aged 20-64 (N=16,440). The surveys were undertaken on an individual basis but include a small sample of true couples, enabling the study of how couple dynamics (i.e. the division of housework and work schedules) relate to gendered sleep patterns. Nearly all individuals completed time diaries for one weekday and one weekend day, which were reported in 10-minute intervals and included information on how respondents allocated their time across more than 100 possible activities. The surveys were conducted throughout the year and feature a balanced sample per day of the week, thus the empirical analysis controls for seasonal and day of week sleep variation. These time use surveys have several advantages for studying sleep patterns across a society. First, they feature nationally representative samples using the same methodology over time, enabling reliable comparisons between 1990, 2000 and 2010. The measure of sleep duration is embedded within the 24h time diary and is not the surveys' sole focus, which should reduce response bias. To date, no empirical papers exist that focus on sleep using all three *Swedish Time Use Surveys*.

Method

This study investigates the impact of hours worked and parenthood on gendered sleep durations, and how this has changed between 1990-91, 2000-01 and 2010-11. Nested logistic regression models are estimated to determine the changing prevalence of short sleep durations, controlling for demographic and life cycle characteristics, as well as seasonal and day of week variation. Short sleep durations are focused on due to their association with negative health outcomes, since average figures can obscure the extreme ends of the distribution. Short sleep duration is defined using two categorizations for robustness and to appease different literature strands; ≤ 6 hours per night to conform to epidemiological studies (Bin et al, 2013), and < 6.5 hours as often defined by time diary analysts (Chatzitheochari & Arber, 2009). The main variables of interest are weekly hours of paid work (last week), gender, and age of the youngest child in the household, while controlling for demographic and work characteristics (such as age, education and occupational sector) which are empirically established to have an impact on sleep (Canivet et al. 2010; Rowshan Raven et al. 2010). This method enables the determinants of short sleep to be assessed for each year, and to determine how the risks

uncovered in 2010-11 relate to previous years in Sweden. The true couple data enables some disentangling of strategies which are associated with reduced risk of short sleep, such as equally shared housework and flexible working hours. Results are contextualized with the economic and demographic developments that have taken place in Sweden in recent decades.

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