



Component of Statistics Canada Catalogue no. 11-008-X
Canadian Social Trends

Article

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by Matt Hurst

April 22, 2008



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Sleep is something we all need. One third of our lives is spent sleeping. When we don't get enough sleep, our productivity and behaviour are affected. This impacts the quality of work we do, and the quality of our family and personal life at home. It affects our ability to get along and network with others, which is considerably diminished if we are "grouchy" from lack of sleep.¹ Sleep also plays an important role in our personal health. Lack of sleep is associated with increased risk of heart disease, stroke, diabetes, obesity and depression.²

So there are numerous reasons why it is important to get a good night's sleep. Quantifying this is tricky because what constitutes a good night's sleep varies quite a bit from person to person. Experts say that most adults need somewhere between 7 and 9 hours of sleep every night to feel refreshed,³ underscoring the variability in what "enough" sleep means for different people.

However, comparing groups of people in different job and family situations can help to identify influences, apart from our bodies' physiology, that affect our sleep.

In this article, we look at how work, family characteristics and time stress affect sleep times of Canadians aged 15 and over. At the same time, we focus on the differences in sleep times consistently reported between men and women.

Men sleep less than women

It may be hard to convince some people that men sleep less than women. The pop culture image of the superwoman, who continues to do many of the traditional "woman's jobs" in the family as well as being an equal breadwinner, suggests that women should have no time to sleep at all. However, studies consistently find that women sleep more than men.

A previous Canadian study based on both the 1998 and 1992 General Social Survey (GSS) results⁴ confirmed this conclusion, as did a recent article on the epidemiology of sleep in the U.S.⁵ There is no standard explanation for why men and women sleep different amounts, although a Finnish study suggested one possible interpretation may be that women's need for sleep is greater than men's.⁶

The 2005 GSS confirms that men sleep less than women. In their sleep diary, respondents aged 15 and over were asked to record the time they fell asleep and the time they woke up. The data from these diaries show that men slept for an average of 8 hours and 7 minutes, about 11 minutes less than women (Table 1).

The belief that women suffer more disturbed sleep because they wake more easily is also confirmed. Indeed, the GSS does show that although

women sleep more than men, they reported a higher rate of trouble falling asleep or staying asleep: 35% of women versus only 25% of men, a 10 percentage point difference (Table 2).

While sleep quality may seem to offer a possible explanation for the difference we see in reported sleep times between the genders, men sleep less than women whether they report having problems sleeping or not. Further research is warranted to explore the impact of quality of sleep on the sleeping habits of Canadian adults.

Working full-time makes a difference

Overall, the more we work, the less we sleep. According to the GSS diary, working full-time translated into 24 minutes less sleep compared to not being in the labour force.

When we look at labour force attachment by gender, it is clear that working full-time is a key factor associated with the gender sleep gap (Chart 1). Indeed, the data confirm that men who work full-time sleep 14 minutes less than women who work full-time, or about 85 hours or 3.5 days less sleep per year. However, for Canadians who work part-time or have no employment, there is no difference between the sexes in terms of sleep time.

Table 1 On average men sleep less than women across most demographic categories

	Both sexes	Men	Women		Both sexes	Men	Women
minutes (480 minutes = 8 hours)				minutes (480 minutes = 8 hours)			
Average	492	487	498*	When you need more time, do you tend to cut back on your sleep?			
Children under 15 years old				No †	498	492	505*
No children †	498	491	503*	Yes	486 ^a	481 ^a	491 ^{a*}
1 child	481 ^a	476 ^a	486 ^a	Exercised			
2 or more children	473 ^a	466 ^a	478 ^a	No †	493	487	499*
Age				Yes	483	485	480 ^a
15 to 24	522 ^a	517 ^a	527 ^a	Shift work			
25 to 39 †	485	483	487	Daytime schedule †	481	474	488*
40 to 59	480	472	487*	Other	488	482	495
60 and over	500 ^a	491	508 ^{a*}	Personal income (\$)			
Marital status				0 to 19,999	510 ^a	509 ^a	510 ^a
Married (includes common-law) †	485	478	493*	20,000 to 39,999 †	484	484	485
Widowed	502 ^a	487	506 ^a	40,000 to 59,999	473 ^a	472	476
Separated or divorced	484	485	484	60,000 or more	470 ^a	466 ^a	479
Single (never married)	509 ^a	506 ^a	513 ^a	Paid work (minutes)			
Time crunch index of time stress related questions				None	507 ^a	505	508 ^a
Low	505 ^a	499 ^a	511 ^{a*}	1 to 240 †	493	498	488
Medium †	489	485	494*	241 to 420	490	477	500
High	476 ^a	464 ^a	486 ^{a*}	421 to 540	478 ^a	473 ^a	484
Do you have trouble falling asleep or staying asleep?				541 and over	452 ^a	450 ^a	455 ^a
No †	495	489	502*	Commute time for workers (minutes)			
Yes	486 ^a	479 ^a	492 ^{a*}	1 to 30 †	483	475	491*
Do you consider yourself a workaholic?				31 to 60	476	472	482
No †	498	493	503*	60 and over	461 ^a	451 ^a	474 ^{a*}
Yes	477 ^a	470 ^a	484 ^{a*}	Day of week			
Do you feel trapped in a daily routine?				Sunday to Thursday †	486	480	493*
No †	495	491	499*	Friday	505 ^a	506 ^a	505
Yes	488 ^a	478 ^a	496*	Saturday	510 ^a	503 ^a	516 ^a
Do you feel constantly under stress?							
No †	499	493	505*				
Yes	481 ^a	472 ^a	487 ^{a*}				

† Reference group.

* Statistically significant difference from men at $p < 0.05$.

^a Statistically significant difference from the reference group at $p < 0.05$.

Source: Statistics Canada, General Social Survey, 2005.

Shift work and problems sleeping

Over one quarter of Canadian workers have non-traditional work schedules, often referred to as shift work. It comes in many forms—a regular evening, night or graveyard shift, rotating or split shift, on call, casual or irregular work schedule—but almost all can affect a person’s health, since the night is the body’s most natural time to heal and regenerate.

Not surprisingly, shift work has a significant effect on worker fatigue,⁷

and affects quality of sleep for both men and women shift workers.⁸ When work schedules creep into the night, they create a non-typical sleep schedule that disturbs the body’s natural pattern of rest and rejuvenation. Multiple studies show that the disruption of natural biological rhythms is related to a variety of physical and mental problems, including cardiovascular disease, hypertension, asthma, diabetes and depression.⁹

While “the most common health complaint of shift workers is lack of

sleep,”¹⁰ the GSS diary results show that the issue is more complex. Workers on a daytime schedule slept 8 hours and 1 minute on average; Canadians with non-typical work schedules slept for a similar amount of time. But it is important to note that the quality of sleep is different. Fully one-third of workers with non-typical schedules said they had problems falling asleep or staying asleep compared to only one-quarter of workers with regular daytime jobs.

Table 2 More Canadian women than men reported problems falling asleep or staying asleep

	Both sexes	Men	Women
	percentage		
Average	30	25	35*
Children under 15 years old			
No children †	30	25	36*
1 child	30	25	35*
2 or more children	27 ^a	25	29 ^a
Shift work			
Daytime schedule †	26	21	32*
Other	34 ^a	31 ^a	38 ^{a*}

† Reference group.
 * Statistically significant difference from men at $p < 0.05$.
^a Statistically significant difference from the reference group at $p < 0.05$.
 Source: Statistics Canada, General Social Survey, 2005.

activities; the large majority also feels rushed more than a few times a week.¹¹ So, it is no surprise that this has an impact on their sleep.

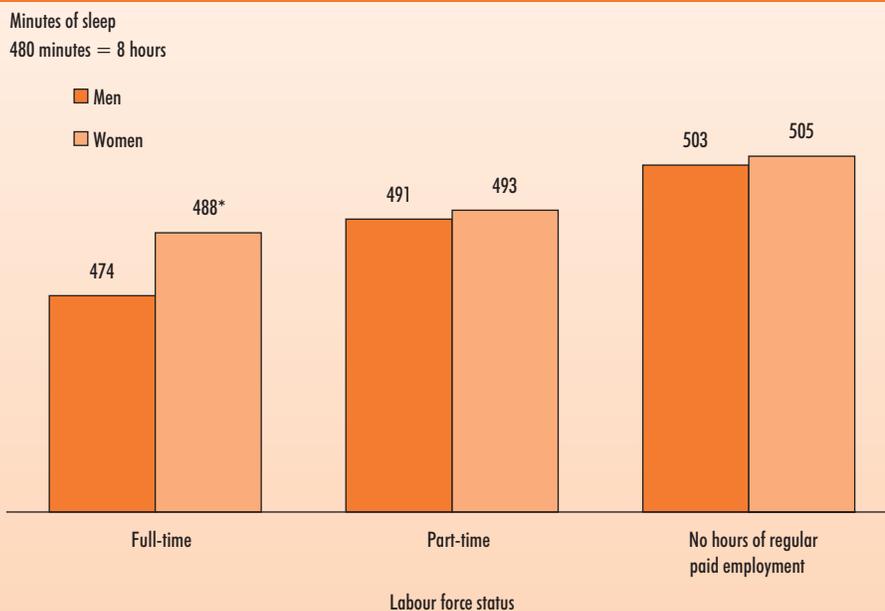
Yet, whatever a person's income, working long hours means getting less sleep. On average, people who had worked for more than 9 hours on the diary day slept for only 7 hours and 32 minutes; this was 41 minutes less per night than people who had worked for less than 4 hours. And it was almost an hour's less sleep (55 minutes) than that reported by people who did not work any paid hours at all.

Among women and men who worked fewer than 9 hours per day, men slept 12 minutes less than the women on average. This difference disappears once workers are putting in more than 9 hours. Men and women who work over 9 hours during the day sleep almost the same amount at night, that is, about 7 hours 30 minutes.

Commuting, as well, has a negative impact on sleep. U.S. researchers were recently surprised to find that some Americans are cutting into their sleep time—not to spend time with family, for leisure activities or even to watch TV—but in order to manage their daily commute.^{12,13}

For Canadians, there is no question that long commuters sleep less than others. People with long commutes of an hour or more per day reported that their sleep lasted about 7 hours and 41 minutes. People with short commutes (1 to 30 minutes) slept on average 22 minutes more. Once again, men tended to sleep less than women.

Chart 1 Working full time makes a difference to men's sleep time



* Statistically significant difference from men at $p < 0.05$.
 Source: Statistics Canada, General Social Survey, 2005.

Less sleep with higher income, longer work days and commuting

According to the 2005 GSS, Canadians with personal income of \$60,000 or more slept 7 hours and 50 minutes on average. In contrast, their lower income counterparts making less

than \$20,000 slept 40 minutes more at night. Supplementary analysis of people in the labour force confirms this trend (results not shown).

High-income Canadians tend to dedicate more time to their paid work, spend less time with their children and less time engaged in leisure

Family and sleep

On the whole, married Canadians (including common-law) sleep less than the unmarried. Specifically, people living with a partner slept about 8 hours 5 minutes a night; single people (never married) slept 8 hours 29 minutes a night, or 24 minutes more; while widowed Canadians slept about 17 minutes more; those separated/divorced slept

about the same as those living with a partner.

Men living with a partner slept 7 hours 58 minutes, 15 minutes less than their women counterparts. There were no differences between the sexes among the unmarried.

Kids deprive parents of sleep

It is an age old truth that kids can deprive their parents of sleep, so raising kids explains why some Canadians sleep less than others. In 2004, data from the U.S. reports that Americans with children under age 11 slept for about 6 hours and 48 minutes a night, slightly less than the 7 hours reported for the population as a whole.¹⁴ This phenomenon is similar to the one we find in Canada with the 2005 GSS.

Canadians with no children in the household got, on average, 8 hours 18 minutes of sleep. In households with children under the age of 15, parents slept less. And the more children they had, the less sleep they got. Those with at least two children slept 25 minutes less, while parents

with only one child slept 17 minutes less.

There was no statistically significant difference in the average amount of sleep mothers and fathers got in households with children. However, when there were no younger children under 15 in the family, men did sleep about 12 minutes less than women, at 8 hours 11 minutes versus 8 hours 23 minutes.

In a similar way, when mothers and fathers spend more time caring for children under 15, they both get less sleep and the gender gap closes. Specifically, when men gave up to 90 minutes of care, they slept less than their female counterparts. When men and women both spent over 90 minutes caring for their children, there was no difference between how much fathers and mothers slept. So, the gender gap closes as men and women spend more time taking care of young children (Chart 2).

Dual-parent families with children under 15 years old slept 16 minutes less than those without children. This is not surprising since families

with children generally have busier schedules that prolong the day and may shorten the time parents have available for sleep. However, the sleep times of unmarried Canadians were the same, whether or not there were younger children in the household.

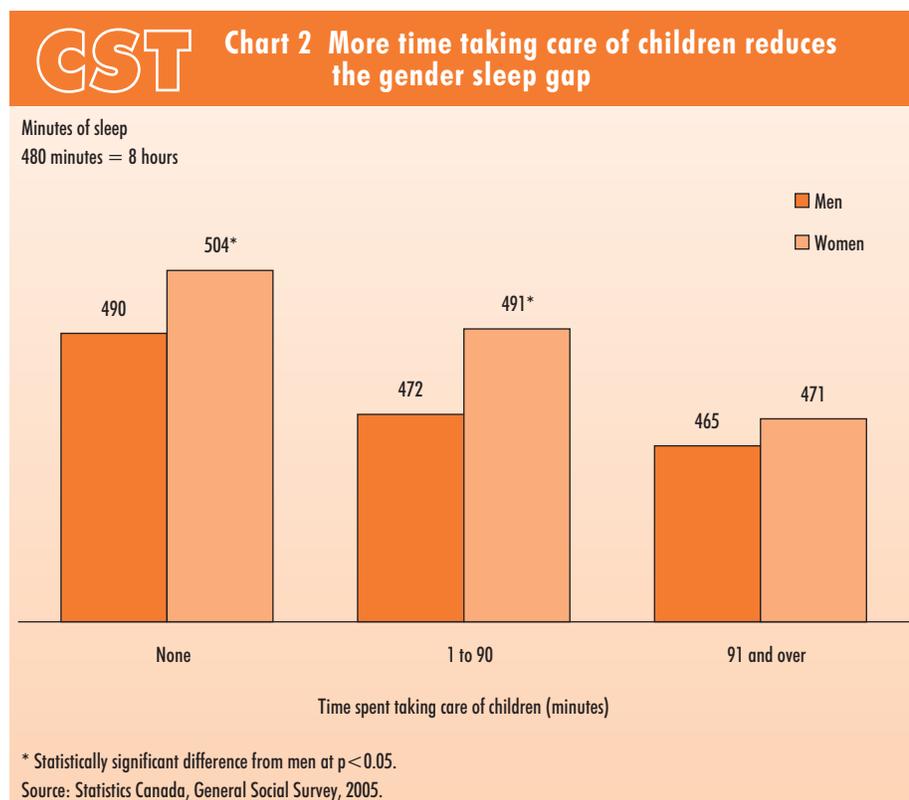
Being stressed for time affects sleep

As common sense would suggest, the GSS finds that people who sleep less are the ones who feel really pressed for time in their daily lives (see “What you should know about this study” for definitions). Canadians who reported feeling highly time-crunched slept almost half an hour less than people who indicated they have a low level of time stress.

Time stress reduces the amount of sleep everyone gets: men who are highly time crunched get 35 minutes less than those who report little time stress; similarly, women get 25 minutes less sleep. On the whole, men still sleep fewer minutes per night than women, regardless of their time stress level.

When we break down the components of the time crunch scale, results for several of the component questions are significant. People who reported that they are workaholics, not surprisingly, sleep about 21 minutes less than non-workaholics, at 7 hours 57 minutes versus 8 hours 18 minutes. This translates into about 130 hours, or almost 5.5 days less per year. Respondents to two other questions—feeling trapped in your daily routine and feeling constantly under stress to accomplish things during the day—reported very similar results to the workaholics.

Almost half of Canadians say they cut back on their sleep when they need more time. They also sleep less—by about 12 minutes—relative to those who do not sacrifice their sleep in an attempt to accomplish more during the day. This finding is similar to results reported for 1998 and 1992.¹⁵



GST What you should know about this study

This article is based on data collected by Statistics Canada's 2005 General Social Survey (GSS). The GSS is an annual survey that monitors changes and emerging trends in Canadian society. For the fourth time in Canada, the GSS has collected national level time use data.

The 2005 GSS asked respondents aged 15 and over living in private households in the 10 provinces to complete a time use diary. Data were collected for over 19,500 respondents representing 26.1 million Canadians. The diary provides a detailed record of the time spent on all activities in which respondents participated on the diary day, including sleep time. Respondents were asked to record the time they fell asleep the evening of the diary day and the time at which they woke up the next morning.

In addition to the time use diary, the 2005 questionnaire covers perceptions of time stress, sleep, social networks, transportation, and cultural and sports activities.

The study selected Canadians who reported being asleep at 4:00 o'clock in the morning after the diary day. Respondents who were not asleep at this time are excluded (4.3%), since no sleep duration data was recorded for them. These people account for approximately 10% of the sample size. Supplementary analysis using other sleep information from the

survey shows this exclusion has no effect on estimates.

Time stress: The GSS asked a series of questions about time stress. By grouping people by the number of yes and no responses, it is possible to look at the sleep levels of low, medium and highly stressed Canadians. People were categorized as having low time stress if they answered yes to 0 to 2 questions, having a medium level of stress if they answered 3 to 5, and a high level of stress if they answered 6 to 10.

Employment: Full-time employment refers to working 30 or more hours a week. Part-time work refers to working less than 30 hours a week. Employment definitions do not include students.

Married: Includes people who are married and those who are living in a common-law relationship.

The unmarried: People who are widowed, separated/divorced or single (never married).

Child care: Includes all activities performed to take care of children, such as getting them ready for school, teaching them, and putting them to bed.

Exercise: Includes yoga, weight lifting and related activities.

Exercise affects how much women sleep

Exercise is a way to relieve stress accumulated during the day. Experts suggest that exercise can improve the body's ability to sleep, as long as it is done more than three hours before bed time.¹⁶ But interestingly, the GSS results for men show no statistically significant difference in sleep times between those who exercised and those who did not: both groups sleep for just over 8 hours a night. However, their quality of sleep does change significantly: the men who exercised had fewer problems sleeping.

Exercise did influence women's sleep times. Women who exercised slept 19 minutes less than those who did not. This result is somewhat curious since we would expect

exercise to lengthen the sleep period, but the explanation is quite simple.

According to the GSS sleep diaries, women who exercised got up earlier in the morning. Perhaps they wake up early to go to the gym or to jog around the neighbourhood. Getting the exercise rather than the sleep may have been worth it since fewer of these women reported they had trouble falling asleep or staying asleep, at 29% compared to 35% of women who did not exercise.

Summary

The amount of sleep we get is important for our health and our ability to interact and be sociable with others. With today's hectic lifestyles, it can be hard to find the time for basic activities—even sleep.

Sleep needs differ from person to person, depending on their unique physiological requirements, so it is impossible to state that any one number is the "right amount of sleep." But, comparing work and family characteristics can pinpoint whether certain groups in Canada are getting more or less sleep than others.

Single (never married) and widowed Canadians had the highest average levels of sleep compared to people living with a partner and those separated or divorced. Compared to Canadians with no children, those with 2 or more children averaged 25 minutes less of sleep.

Working longer hours was associated with sleeping less, as was higher levels of income. In fact, making over \$60,000 per year was

GST Snooze button used more on the weekend

It is common knowledge that many people use the weekend to catch up on sleep they don't get during work nights. In a Canadian study that analyzed how workers spend their weekend, results showed that the majority of full-time employed Canadians sleep in on the weekend.¹

For work weeknights (Sunday through Thursday), the average amount of sleep hovered around the 8 hour 6 minute mark. But when the weekend comes around, we tend to sleep an additional 19 minutes or more. Although men slept 13 minutes less than women on work nights, there is no difference between the sexes during the weekend.

Most people have slept in on the weekend at one time or another. For many, it is a weekly ritual. On Sunday morning, Canadians slept in almost an hour later to 7:50 a.m., compared to the average wake up time for work nights, 6:54 a.m.

Overall, men and women both tended to go to bed at about the same time, (10:56 p.m. for men and 10:55 p.m. for women). Since men slept 11 minutes less on average, they woke up 10 minutes earlier than women. This difference exists for men and women living with a partner, though not for unmarried Canadians.

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	Both sexes	Men	Women
Wake up times in Canada (a.m.)			
Average	7:08	7:03	7:13*
Day of week			
Monday to Friday †	6:54	6:49	7:00*
Saturday	7:33 ^a	7:33 ^a	7:34 ^a
Sunday	7:50 ^a	7:46 ^a	7:54 ^a
Marital status			
Married (includes common-law) †	6:53	6:44	7:01*
Widowed	7:05 ^a	6:48	7:08
Separated or divorced	6:59	6:57	7:01
Single (never married)	7:48 ^a	7:49 ^a	7:46 ^a

† Reference group.

* Statistically significant difference from men at $p < 0.05$.

^a Statistically significant difference from the reference group at $p < 0.05$.

Source: Statistics Canada, General Social Survey, 2005.

associated with sleeping 40 minutes less than people who made less than \$20,000. For workers, commutes over 60 minutes cut sleep back by about 22 minutes on average, compared to workers with shorter commutes of 1 to 30 minutes.

One key demographic difference is between men and women. In 2005,

men slept 8 hours and 7 minutes, 11 minutes less than women. Although women sleep more than men, they reported a higher rate of trouble falling asleep or staying asleep.

The gender sleep difference disappears for people who care for children over 90 minutes a day, for

unmarried Canadians, for part-time workers and people not in the labour force, and for the weekend nights of Friday and Saturday.

The gender gap remains for men and women that fall into the following groups: work full-time; have no children living in the household; and, live with a partner.

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