

## **THE INTERNET AND TIME DISPLACEMENT: A CANADIAN PERSPECTIVE**

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### **ABSTRACT**

*Internet use data were collected in the 1998 time-use survey of Statistics Canada, done as part of their General Social Survey. That survey collected single-day diary data from 10,749 persons aged 15 and older by telephone, during the entire calendar year, with a response rate of 78 percent. Previous Canadian diary results matched U.S. results rather closely.*

*It was found that respondents aged 18–64 who reported IT use in their day's diary reported less sleep than nonusers, but no less time watching TV, and more time reading, corresponding and doing hobbies; these differences largely held up after adjustment for several, demographic predictors. In contrast, when the analysis focused on longer-term users, users watched significantly less TV than nonusers, but sleeping times were the same.*

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*Detailed information on the Canadian time-use surveys can be found on the Statistics Canada web site, <http://www.statcan.ca/>.*

It is well-documented that the first Internet users in Canada, as compared with nonusers, were more educated, mostly professional, better employed, living in more affluent settings, and the like. In other words, the first intensive users of the Internet came from among the upper strata of the active Canadian population. Any subsequent change in usage should be related either to behavioral shifts among these first users, or more probably, to changes in the composition of Internet users due to extension of the populations accessing the Internet, and of course, to the diversification of content available on the Net.

Previous studies have clearly shown how such socio-demographic factors explain a significant part of the relation between various media uses. For example, Robinson and Godbey (1999; p. 160) concluded from a 1995 American survey that "...the new technologies are associated with increased use of other media, not decreasing use." This increased use was particularly true in the case of print media. The intensity of the uses of the new technologies goes along with an increase of the uses of 'traditional' media. However, as this study shows, about half of the variance is explained by demographic factors: an affluent class, which reads more and watches less television, is also more likely to be facile users of computers. A recent survey on arts participation in Quebec survey (n=6,548) replicates the finding that level of schooling is perhaps the key variable that explains the observed relations between reading print media and using a computer. In more general terms, one can say that the nature, quality and intensity of the relations in the uses of the various media are strongly related with some familiar sociological factors. Because the first Internet users were likely to be less intensive TV watchers than nonusers, some early surveys by Nielsen (2000) found few indications that the Internet had impacted television, a reassuring finding for the dominant American TV networks.

However, reading and watching television constitute only a part of the population's daily "cultural time use." Outings and attending cultural events, for instance, compete with media time. Surveys on arts participation reveal that the general strategy of intensive cultural participants (usually well-educated) is to spend less time than previously on certain other activities—mainly television watching and housework, and perhaps shopping and sleeping. Moreover, they are likely to work more, have better jobs and maybe have more opportunity to manage the overall balance of their daily time. Consequently, any time displacement must be put in the context of the changing demographic backgrounds of IT users and nonusers, as well as any shifts in the structure of their work and leisure time. A quick glance at demographic correlates shows Internet users are more likely to have a full-time job than nonusers, with the ratio of IT use almost two times higher in the professional sector and among those with a college or university degree than in the rest of the population.

Other studies suggest that the main medium affected by intensive IT use is television, such as that reported in Scarborough Research 2001, of a major shift in media use of less time devoted to television. Some 23% of their respondents estimated less TV viewing since beginning to use the Internet, a fact particularly

true among young people. This displacement is counter to Nielsen's initial assessment quoted above.

On the basis of a long-term analysis of the trends in the use of leisure time, one can see that the Canadian employed population has been able to maintain the quantity of its daily free time, even while its working time has slightly increased. Although this employed population has maintained close to a steady 110 minutes a day in watching television from 1986 to 1998, *the ratio of TV to leisure* declined from 44% to less than 40%, and for employed men from 46% to 35%. As Robinson and Godbey have documented, the intensive increase of television watching occurred as a phenomenon of the 1970s and 1980s. What is currently being observed is a diversification of both media and media uses. Television now competes with other new media, particularly with the Internet, for information, entertainment, music listening, playing and entertainment—often more efficiently and with greater user control.

In addition, the Internet is still changing patterns of participation in culture. For example, the latest surveys on arts participation show that participants read print media less. But this finding does not mean a decline in overall reading, since the diversification of media should rather induce an increase in readership. One must acknowledge here that 'standard' arts participation surveys remain quite traditional in their measurement of activities. The same applies to gathering information, gaining access to museums via web sites and the like. The various U.S. surveys of arts participation made under the auspices of the National Endowment for the Arts document an almost *doubling* of rates of participation—when adding participation through broadcast and recorded media, (that may literally be called: the media-ization of culture). At the same time, the time-budget studies in Canada show at least a pause, if not some slight decline in daily time devoted to cultural activities. Again, 'culture' is measured by way of only very specific attendance at live events, when considerable 'cultural time' can be found in the uses of Internet and watching television.

### **SURVEY METHODOLOGY**

Time diaries provide an important way to track all the changes that the Internet has brought in its wake. Diary studies done in Canada have shown behavior patterns that generally mirror those in the U.S. Perhaps this similarity is not surprising, given that the two countries share a lengthy border, as well as common history, technological advances and close cultural connections (Robinson and Godbey 1999; Chapter 19).

Statistics Canada completed its third time-budget study in 1999 with 10,749 persons aged 15 years and over. Data were collected evenly across all months from February 1998 to January 1999. The agency had conducted two previous surveys in 1986 and 1992. All three surveys used similar but not identical methodologies.

*Sampling:* In the survey all respondents were contacted by telephone. Households without telephones were therefore excluded, although persons living in such households represent less than 2 percent of the target population. Survey estimates were weighted to account for persons without telephones. Even among the 3 percent of the population with the lowest household income (less than \$10,000), the telephone ownership rate was still 93 percent.

The sample was evenly distributed over the 12 months to control for seasonal variation in daily activities. Each telephone number was assigned a "designated day," although cases were eligible for data collection for 2 days following the designated day. The response rate was 77.6 percent, yielding the 10,749 respondents from whom usable diary information was obtained.

Each of the ten provinces of Canada was divided into strata or geographic areas, with one stratum representing the Census Metropolitan Areas (CMAs) of the province and another representing the non-CMA areas. In each stratum, Random Digit Dialing (RDD) of telephone numbers was used to select the random sample, with replacement of banks from the frame, and then randomly generating the last two digits for each bank to obtain the telephone number. When a private household was contacted, all household members were enumerated and basic demographic information (age, sex, marital status) was collected for each member. A computer algorithm randomly selected an eligible household member age 15 or over and the diary day.

*Interviewing:* Trained interviewers, most of whom already had both computer- and telephone-interviewing experience, collected the data. Statistics Canada's staff gave two days of classroom training in how to use Computer-Assisted Survey Execution System (CASES) software, which displays the survey questions on a computer monitor. Interviewers were also trained in telephone-interviewing techniques. Then, interviewers used centralized telephone facilities in four of Statistics Canada's regional offices, with calls being made from 9:00 AM until 9:00 PM, Monday through Friday, and from noon until 4:00 PM on Saturday and Sunday. Interviewers entered responses to survey questions directly into computers, as the interview progressed.

*Coding:* Interviewers, aided by CATI screens, coded the daily activities during the interview. Diary activities that the interviewer could not code were coded manually later at the head office using write-in information.

To standardize comparisons between Canadian and U.S. data, and to focus on the more homogeneous population of the working-age population, only those aged 18–64 are included in the analyses that follow.

## RESULTS

First, in response to a direct question, almost a third of Canadians aged 18-64 reported using the Internet in the past year for purposes other than work. Responses to that question were used to identify the "long-term" Internet users in the Table 2 analysis below.

*Usage Yesterday:* Table 1 compares the Internet usage reported in the daily diaries of Internet users and nonusers. It can first be seen that the 261 "yesterday" Internet users in the diary first report the equivalent of 12 weekly hours (about 2 hours per day) of IT usage, which means they had more free time than the 5462 nonusers (45 hours vs. 39 hours). In non-free time, users spent much less time at work (presumably because for many it was a day off), and did somewhat less housework, but not after MCA adjustment for other factors. Most importantly, users spent 2 hours less sleeping, and they spent slightly less time on personal care in the form of eating and grooming. They also traveled an hour and a half less.

In terms of their media and other activity, users were significantly more active than nonusers in reading, but not in television viewing or other activities. They reported about a third less socializing of all types in their diaries, about 4-5 hours less social life per week among these Internet users. That is in marked contrast to their higher uses of the mass media, which might be thought to be an area of free time that could be given up to accommodate their usage of the Internet.

Table 1, then, provides rather strong evidence to support the idea that the Internet cuts into sleep and into social life of various types, although not into media use or other activities—and correlates with a significantly higher amount of reading. There is less work reported, perhaps because Internet use days are days off from work.

*Usage Generally:* The Table 1 differences show one pattern of results. A rather different picture emerges, however, when the Internet user group is increased (almost fivefold) to include those who answered "yes" to the long-term usage question. This third of the sample designated as users in Table 2 now shows diary figures more in line with the two-thirds who are not users. For example, respondents reported significantly more time using IT, but only about 1.5 hours a week versus 0.2 hours for those who answered "no" to the usage question. In Table 1 that difference was about 12 hours. In contrast to what is shown in Table 1, however, users reported 3.5 hours less free time than nonusers. A main reason for that is they reported far *more* hours at work, but less time doing housework and in personal care—patterns that are rather different from those in Table 1. After MCA adjustments, however, these differences and the lower free time of Internet users are reduced to insignificance. Also different are the expected lower figures for usage of TV by Internet users, which are reduced by a third after MCA adjustment, but are still significant.

**TABLE 1: ACTIVITY DIFFERENCES BETWEEN IT USERS AND NONUSERS:  
"YESTERDAY" BASIS (YEAR 1998 CANADIAN TIME-DIARY DATA:  
IN EXTRAPOLATED HOURS PER WEEK)**

	<b>Internet Users (n=261)</b>	<b>Nonusers (n=5462)</b>	<b>Difference</b>	<b>MCA Test</b>
<b>Non-Free-Time Activities</b>				
Work/Education	28.9	32.7	-3.8*	-8.6*
Total Family Care	26.2	27.1	-0.9 NS	0.0
Sleep	54.6	56.7	-2.1*	-1.8*
Eat	6.4	6.7	-0.3 NS	0.0
Groom	6.5	6.1	0.4 NS	0.0
Total Personal Care	67.5	69.5	-2.0 NS	
<b>Total Non-Free Time</b>	<b>122.6</b>	<b>129.3</b>	<b>-6.7*</b>	<b>-6.6*</b>
Travel (incl. above)	7.5	8.4	-0.9*	-1.6*
<b>Free-Time Activities</b>				
TV	13.4	13.2	0.2 NS	0.0
Reading	3.7	2.2	1.5*	+0.9*
Stereo	0.3	0.2	0.1 NS	0.0
Fitness	2.4	2.0	0.4 NS	0.0
Hobbies	1.6	2.2	-0.6 NS	0.0
Relaxing, nothing	1.7	1.4	0.3 NS	0.0
Total Media/Other	23.1	22.5	0.8 NS	-----
<b>Total Social</b>	<b>10.4</b>	<b>16.2</b>	<b>5.8*</b>	<b>-5.2*</b>
<b>IT</b>	<b>11.9</b>	<b>0.0</b>	<b>+11.9*</b>	<b>+11.9*</b>
<b>Total Free Time</b>	<b>45.4</b>	<b>38.7</b>	<b>+6.7*</b>	<b>+6.6*</b>
<b>Total Time (Hrs/wk)</b>	<b>168.0</b>	<b>168.0</b>	<b>0.0</b>	<b>0.0</b>
*Difference significant at $p < .05$ level after MCA adjustment for sex, age, education, children and day of week				
NS Not significant				
Source: Statistics Canada, General Social Survey, 1998				

**TABLE 2: ACTIVITY DIFFERENCES BETWEEN INTERNET USERS AND NONUSERS:  
GENERAL, LONG-TERM BASIS (YEAR 1998 CANADIAN TIME-DIARY DATA:  
IN EXTRAPOLATED HOURS PER WEEK)**

	<b>Internet Users</b> (n=1712)	<b>Nonusers</b> (n=3666)	<b>Difference</b>	<b>After MCA</b>
<b>Non-Free Time Activities</b>				
Work/Education	37.2	30.2	+7.0	+1.6*
Total Family Care	25.5	28.0	-2.5	-0.5 NS
Sleep	55.8	56.7	-0.9 NS	0.0
Eat	7.7	7.8	-0.1 NS	0.0
Groom	4.0	5.0	-1.0 NS	0.0
Total Personal Care	67.5	69.5	-2.0	
<b>Total Non-Free Time</b>	131.2	127.7	+3.5	+1.0 NS
Travel (incl. above)	9.2	8.0	+1.2	+0.5 NS
<b>Free-Time Activities</b>				
TV	11.1	14.1	-3.0*	-2.2*
Reading	2.8	2.1	0.7	
Stereo	0.2	0.3	-0.1 NS	0.0
Fitness	3.2	3.1	0.1 NS	0.0
Hobbies	1.9	2.3	-0.4 NS	0.0
Relaxing	1.1	1.6	-0.5*	-0.3 NS
Total Media/other	20.4	23.6	-3.2*	
<b>Total Social</b>	14.9	16.7	-1.8	-0.8 NS
<b>IT</b>	1.5	0.0	+1.5	+1.5*
<b>Total Free Time</b>	36.8	40.3	-3.5	-1.0 NS
<b>Total Time (Hrs/wk)</b>	168.0	168.0	0	0
* Difference significant at <.05 level after MCA adjustment for sex, age, education, children and day of the week NS Not significant Source: Statistics Canada, General Social Survey, 1998				

As in Table 1, Internet users again report more reading. Unlike Table 1 the overall figure for social life is less than one hour per week, and it is not statistically significant after MCA adjustment—scant evidence in support of the idea that the social lives of Internet users and nonusers are that different.

## CONCLUSIONS

In general, few consistent differences can be found in the present analysis of daily activities of Internet users and nonusers. On a daily basis, users work less, sleep less and have more free time, but, instead of using their free time for more television viewing, they use it for IT. In contrast, on a general, long-term basis, Internet users work more, sleep only a little less, have less free time and watch less TV (perhaps as a result). Ironically, the one consistent finding is not that Internet users decrease media time, but that they spend *more* time reading.

However, the long-term increase in TV viewing since the 1960s seems to have ended and may have declined, particularly for the employed segment of the Canadian population and particularly among employed men, whose TV viewing dropped from 2.1 hours in 1986 to 2.0 hours in 1992 to 1.9 hours in the present 1998 survey. Increases in leisure time today now mean less TV watching and more sport and social activities, trends that began prior to the Internet. This pattern represents a rather remarkable shift, occurring during a time of dramatic increase in the numbers of TV channels to view.

The shift suggests that the mass TV market is breaking into tinier audience segments—resulting in a decline of public and traditional commercial television networks as well. Among the active population aged 18-64, the trend is quite noticeable, as is workers' tendency to work a little bit more. In fact, professional workers (more than manual workers) experience an increase in their working time, but not a concomitant decrease in their total available leisure time, because other social times seem compressed to keep leisure time at about the same level. The slight increase of ratio of TV for women means that women have gained some extra leisure time with respect to men.

In overall context, this trend may show society is on the verge of a significant shift, with the Internet, in part, replacing traditional media in terms of information, entertainment and even education. Thus, the decline of TV watching in these diary studies implies a fundamental shift in the ways the Canadian public accesses play, information and culture.

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