

## **MEDIA USE DIFFERENCES BETWEEN INTERNET USERS AND NONUSERS IN THE GENERAL SOCIAL SURVEY**

ALAN NEUSTADTL  
JOHN P. ROBINSON

### **ABSTRACT** [\(Data Available\)](#)

*The year 2000 General Social Survey (GSS) included old questions on the extent of TV viewing and newspaper reading that provide bivariate support for the conclusion that Internet users watch less TV than nonusers, but that this difference is largely explained by demographic differences between the two groups. On the other hand, Internet users are more likely to read newspapers, and significantly so after multivariate adjustment for demographic predictors—but these differences are not monotonic with extent of usage.*

*The 2000 GSS also asked new questions on the use of the Internet vs. other media for information on health and politics. Analysis of these comparative media questions also provides little evidence of reduced usage of traditional media by those who use the Internet for health or political content, particularly for heaviest Internet users for those purposes. There was more evidence to support the “Newtonian” model of increased media use among Internet users than evidence of any displacement effect.*

---

Alan Neustadtl is a professor of sociology at the University of Maryland, where he conducts research on social networks and political influence.

John P. Robinson is a professor of sociology at the University of Maryland, where he directs the Internet Scholars Program and the Americans' Use of Time Project.

*Grateful acknowledgement is given to the National Science Foundation, Office of Science and Technology for support through grants NSF01523184, NSF0086143, and SBR-9602058.*

One empirical way of understanding the social and behavioral impacts of new information technologies (IT) is to examine daily activity differences between IT users and nonusers. With the diffusion of IT, are people who use new communication technologies less likely to use previous means of communication? Has the growth of IT use among the general population changed patterns of the channels (newspapers, TV, etc.) that people use to seek information?

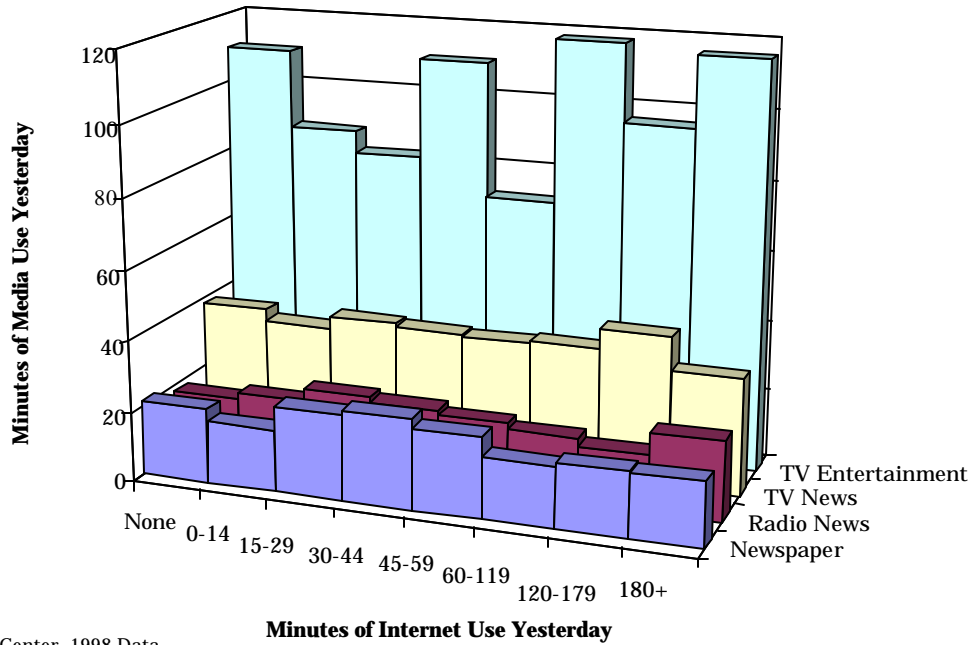
Research about the impact of the Internet has typically focused on social life and interpersonal communication. Two widely publicized studies of early Internet impact reported results consistent with the hypothesis of declines in certain aspects of social life (Kraut et al. 1998; Nie and Erbring 2000).

However, somewhat different conclusions have emerged from other studies, such as the Pew Center for Public Opinion Research national surveys related to the public's use of IT. Its most complete surveys were conducted in 1995 and 1998, with samples of more than 3,600 respondents. A strength of the Pew data is that they asked questions about social activity "yesterday" (as well as more generally), which allows respondents to report on a time period which is most recent in memory, as well as clearly defined in temporal terms. In 1995, Internet users were, surprisingly, *more* likely to use other news media than nonusers (Robinson et al. 1998).

In examining the more recent 1998 Pew data, Robinson et al. (2000) showed that the proportion of Internet users had grown in the interim since 1995, and with somewhat different results. As shown graphically in Figure 1, the four separate media-use questions about yesterday media use asked in the Pew survey generally showed only slightly higher or equivalent media contact among heavier users of the Internet—either in terms of yesterday Internet use (Figure 1A) or longer-term use (Figure 1B).

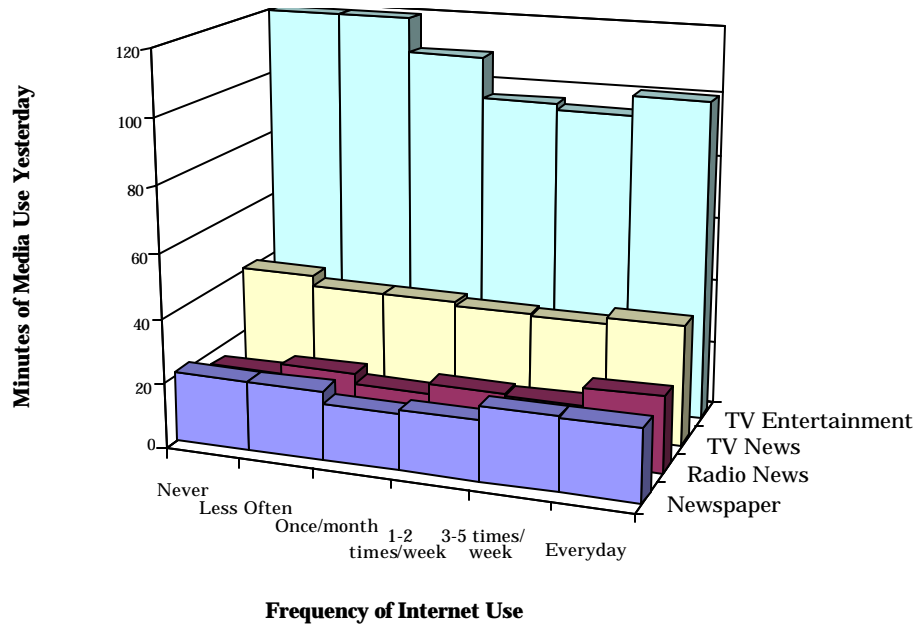
Much the same patterns in Figures 1A and 1B are found for Pew Internet Project data collected two years later in year 2000, as shown in Exhibit 1 in Appendix A. One can note here as well that newspaper use "yesterday" is consistently higher among Internet users (especially lighter users) than nonusers, with virtually no decline in use of TV for news or entertainment—both in terms of percent usage and of minutes viewed. One apparent reason for the change is that more recent Internet users in 1998 and 2000 were less avid in their attention to TV and print media than more seasoned users, such as those who would have been Internet users in the initial 1995 study.

**FIGURE 1A: USE OF MASS MEDIA YESTERDAY AS FUNCTION OF YESTERDAY USE OF THE INTERNET**



Source: Pew Center, 1998 Data

**FIGURE 1B: USE OF MASS MEDIA YESTERDAY AS A FUNCTION OF GENERAL USE OF THE INTERNET**



Source: Pew Center, 1998 Data

Somewhat consistent with that picture are the demographic characteristics of early Internet users—in particular, their greater years of education and their younger ages, which are generally associated with broader and deeper usage of communication media. Indeed, studies of the “digital divide” in government reports (U.S. Department of Commerce 1998 and 2000) have made it clear that these are important characteristics on which Internet users differ from nonusers.

These features are expected from the literature on the diffusion of innovations, as summarized in Rogers’ (1995) classic work on the topic. Early adopters of innovations are notably distinguished by their higher levels of education (this is associated with greater awareness of social changes, mainly by greater attention to media) and higher levels of income (being able to afford purchasing the innovation). In addition to education and income (and often younger age), Rogers noted early adopters’ greater social connections, empathy, and opinion leadership, as well as greater exposure to both mass and interpersonal communication channels. In this view, then, one should expect that earlier Internet users would be more “open” to new channels of communication with others.

In the present analysis, data from the year 2000 General Social Survey (GSS) are examined. The 2000 survey included new questions about IT use for health and political content in relation to traditional media, as well as questions about TV and newspaper contact that had been asked in previous GSS surveys dating back to the early 1970s. The analyses in this examination involve relating these measures of media contact with measures of Internet use, after adjusting for the many demographic and background factors included in the GSS. The research question is whether one will find reduced incidence of other mass communication with increasing Internet use, particularly among those who use the Internet for health and political communication purposes.

### **FIELD PROCEDURES**

The year 2000 GSS was a personal, in-home interview that usually took about 90 minutes to complete with a national probability sample of 2,817 adult respondents aged 18 and older. In each selected household, one adult was interviewed at random, using sampling procedures described below. Interviewing took place between February and mid-June 2000. The GSS survey has been conducted at one to two year intervals since 1972 by the National Opinion Research Center (NORC) at the University of Chicago, and it is generally considered the premier social science instrument for monitoring social life and trends in the United States.

*Sampling:* Like its predecessors, the year 2000 national probability sample was selected in two major stages, with Primary Sampling Units (PSUs) consisting of one or more counties selected at the first stage and segments comprising one or more blocks selected at the second stage. In a few cases,

segments were sub-sampled, a procedure that constituted a third stage of sample selection.

The full-probability GSS samples used since 1975 are designed to give each household an equal probability of inclusion in the sample. Thus, for household-level variables, the GSS sample is self-weighting. In households that are selected, selection procedures within the household give each eligible individual equal probability of being interviewed. Persons living in large households are less likely to be interviewed, because one and only one interview is completed at each pre-selected household.

In general, the GSS samples closely resemble distributions reported in the Census and other authoritative sources. Because of survey nonresponse, sampling variation and various other factors, the GSS sample deviates from known population figures for some variables. The GSS does not calculate any post-stratification weights to adjust for such differences.

*Interviewer Training:* Professional interviewers hired and trained by NORC conducted the interviews. In addition to a 2-3 day general training session before hiring, interviewers went through a mailed training session focusing on the various goals and modules of the year 2000 GSS. Interviewers made repeat visits to households in which no one was home or the designated household respondent was not available. Enough repeat call-backs were made to such households that the main form of nonresponse was respondent refusal. Interviewers were able to complete interviews with 70 percent of designated respondents, compared to most GSS response rates that exceeded 75 percent. The total of 2,817 GSS respondents completed one of the six versions described below and shown in their entirety on the website [www.webuse.umd.edu](http://www.webuse.umd.edu).

## QUESTIONNAIRES

Five of the six different versions or ballots in the year 2000 GSS contained some Internet questions. Ballot 3 ( $n=454$ ) did not include any questions about IT. That left 2,353 respondents eligible for the Internet module questions on five ballots, with each ballot representing a separate (and minimally clustered) random sample of the country. Table 4 in Appendix B shows how the different Internet questions were assigned across the five ballots, using the identification question numbers on ballots 4 and 5. All questions about basic or core electronic mail and World Wide Web usage were asked of all 2,353 respondents across each of the five ballots.

Two of the ballots (4 and 5) contained all of the Internet module questions, including the questions about computer locations and the "benchmark" questions that contain the optional communication channel questions analyzed below. Ballot 6 contained all Internet questions, except for the benchmark and computer-location questions.

*GSS Internet Use Questions:* The main Internet questions used in the present analysis are the usage questions asked of all respondents at the outset of ballots 1, 2 and 6, with the exact questions shown in Appendix C, Section 1. Respondents were first asked if they used a computer at all at home, work or other location in the previous year. If not, they were asked if they had access to the Internet via Web TV. If they said “no” to both questions, they were coded as having zero hours and minutes of both electronic mail and World Wide Web use per week—that is, they were categorized as nonusers in the analyses that follow. Just over half of the 2,353 GSS respondents fell into this category.

Those who said “yes” to either the general use or WebTV question were asked to estimate how many hours/minutes a week they used their computer/WebTV to send or receive electronic mail. They were then asked whether they also used the World Wide Web, outside of the electronic mail use they had just described. If they said “yes,” they were then asked to estimate how many hours/minutes per week they used the Web.

To calculate the total time spent per week for electronic mail and Web use, respondent hour estimates were added to their minute estimates (divided by 60) to arrive at a total hourly amount of use of both features. To arrive at a total amount of Internet usage, the electronic mail use estimates were added to the Web usage estimates. Thus, for respondents who estimated 2 hours of electronic mail use and 25 minutes of Web usage, hourly Internet time was calculated as 4.5 hours. For respondents who used email for 6 hours but reported no World Wide Web usage, their calculated estimate for total Internet time would be 6 hours.

The following categories of weekly usage were created with the approximate number of GSS respondents in each category shown below:

Nonusers	<i>n</i> =1,189
0.1 to 1.9 hours	255
2 to 4.9 hours	260
5 to 9.9 hours	250
10 to 60 hours	324

The total of 2,278 respondents in these categories is smaller than the sample of 2,353 respondents because of missing responses on either the electronic mail or World Wide Web use question. Moreover, the sample sizes in the following analyses are usually smaller than those above because the GSS social behavior questions were usually asked only of subsets of respondents, depending on which version of the GSS questionnaire was employed.

The following analyses examine how the various GSS questions dealing with the extent of mass media use vary by the extent of hourly Internet usage. Do Internet users report more extensive media use than nonusers, or do they

report less use? If there are differences, do they increase *monotonically*, indicating that it is hourly amount of usage that is important, or do the most important differences show up for all users vs. nonusers, consistent with a threshold effect? If the former, this suggests the possibility that Internet effects do vary by degree of use. Regardless, one would need panel data to test for causal linkages, and one has only single-time data here.

**GSS MASS MEDIA CONTACT QUESTIONS**

Of particular interest is the set of media contact questions on TV use and newspaper reading that the GSS has replicated. The GSS questions shown in Appendix C, Section 2 ask respondents how many hours of TV they watch per day, as well as how often they have read newspapers. Responses were assigned frequency weights to calculate the annual averages of newspaper reading in the analyses that follow:

Reading Category	Weight
1. Almost every day	7
2. A few days a week	3
3. Once a week	1
4. Less than once a week	.5
5. Never	0

In the GSS 2000 sample, these weights produced estimated annual averages of 3.5 days of newspaper reading per week. The average estimated TV hours for the sample were 2.9 hours per day, with those estimations more than 16 hours per day coded as 16 hours.

*Demographic Correlates of Traditional GSS Media-Use:* Before describing the relationships of these two media-use variables with Internet usage, it is instructive to understand how these media-use responses vary across the background factors themselves. These differences are shown in Appendix D: Table 6 for *birth* factors (gender, age and race), for *status* factors (education and income) and for *role* factors (marital status and work hours).

The top row and first two columns of Appendix D: Table 6 show the overall averages for the two media. Thus, as noted above, entries in that top row show that GSS 2000 respondents estimated that they spent the equivalent of an average of 3 hours viewing TV per day and 3.5 days of newspaper reading per week. Values that are statistically significantly higher or lower than the overall averages for particular groups are noted with a plus sign (+) or minus sign (-).

The second set of row entries then shows *gender* differences, with women reporting the equivalent of an average of 2.9 hours of daily viewing compared to 3.0 for men, an insignificant difference. Men spent slightly more days reading newspapers (3.5) than women (3.4).

*Age* is a far more important predictor of media use than gender, with younger people being least active—especially those aged 18–34, whose newspaper days were only about half that of those 55 and older. TV viewing was also markedly higher among those 55 and older, presumably because more of them have reached the “empty nest” stage of their life cycle, when their children are no longer at home to restrict their viewing.

There are notable *racial* differences as well, with black respondents reporting 50% more TV use and notably fewer days of newspaper reading. Other minorities also tended to report less newspaper reading than whites, but less TV viewing than blacks.

Large differences are also found by *education* level, with those without a high school degree watching more than 2.5 times more TV per day than those with a graduate degree. In contrast, college-educated respondents reported spending almost double the days reading newspapers as those without a high school degree.

Much the same pattern was found for the related status factor of *income*. More affluent respondents reported spending more time newspaper reading and less time viewing TV. Interestingly, those who refused to answer or who could not answer the GSS income question reported average levels of TV viewing, but above average newspaper reading.

Turning to the *role* factor of marital status, it is first clear that never-married people reported less newspaper reading, presumably because of their younger age. The reverse probably accounts for the above average reading among widowed people, as well as their greater TV viewing. Other previously married (divorced/separated) groups reported about average levels of TV viewing and slightly less newspaper use.

The final role factor of *work hours* shows surprisingly few consistent declines in TV or newspaper usage, except for the hour or so higher TV viewing among those not working at all. Indeed, those working more than the standard 40 hours reported slightly more contact with newspapers.

Many of these background variables are, of course, related to one another, so that one can use Multiple Classification Analysis (MCA) to observe which of these measures is predictive, once the others are taken into account (Andrews, Morgan and Sonquist 1973). Many of the demographics factors listed in Appendix D, Table 6 are also related to hourly Internet usage, so it is important to note that the MCA results presented below adjust for the common correlations of these factors with Internet use.

After MCA adjustment, many of the demographic differences in the two media variables shown in Appendix D: Table 6 are decreased or modified. The marital-status differences, for example, are virtually eliminated after age and

other factors are taken into account. The lower newspaper reading rates for blacks and other minorities also disappear—but not their now 40% higher TV viewing times after adjustment. The higher TV viewing of those 65 and older no longer holds, but their higher newspaper reading does still hold. Education differences in TV hours are reduced by about a third, as are newspaper-reading times; no notable income differences remain after MCA adjustment for TV use. Finally, men emerge as heavier TV viewers after MCA adjustment, but not heavier newspaper readers.

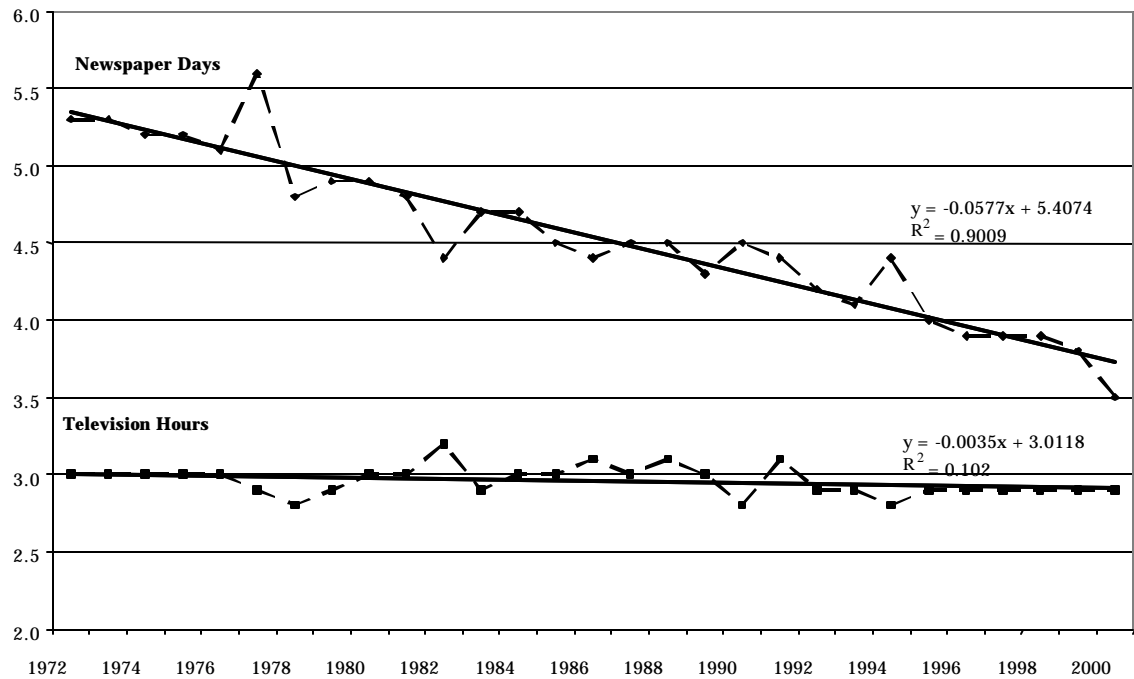
## RESULTS

*Differences by Internet Usage:* The analyses in this section begin with the Table 1 examination of the year 2000 results versus earlier GSS results in the two traditional media-use questions in the GSS. Next is an examination of Internet user versus nonuser differences in these media-contact questions in the year 2000 data shown in Table 2. This is followed by an examination in Table 3 of user- versus-nonuser differences in the new GSS media contact questions for health and politics in year 2000.

*Recent Trends in Frequency of Media Contact:* One way of testing the declining media-contact hypothesis with the GSS data is to determine if overall declines have been observed since the introduction of the Internet circa the mid-1990s. Using the 1993–1996 GSS data as a reference point, it can be seen in Table 1 that the 1998–2000 results are neither consistently nor significantly lower than the 1993–1996 results for TV, but are significantly lower for newspaper reading. To put the media-use data shown in Appendix D into historical perspective, trends in frequency of social contacts from 1972 to 2000 are shown in Figure 2. It can be seen that there are significant declines in frequency of newspaper reading since the 1970s. However, the extent of contact with TV has not changed over this time period.

If one observes overall declines in newspaper reading since the introduction of the Internet in the mid-1990s, then, that would be part of longer-term trends; declines in contact with TV would go opposite to long-term trends, however. In fact, little such change is found pre-post 1997 as shown in Table 1, part A. Contact with newspapers is down about half a day, or 10%, but contact with TV is unchanged; the difference for newspapers is statistically significant, but is also quite consistent with long-run trends since the 1970s, as is evident in the Figure 2 regression line.

**FIGURE 2: TRENDS IN READING NEWSPAPER DAYS AND HOURS WATCHING TELEVISION: 1972-2000**



Source: Cumulative General Social Survey, 1972-2000

(Missing values were interpolated)

Much the same conclusion emerges from a comparison of the year 2000 with year 1998 results, as shown in part B of Table 1. Again, no overall decrease can be found for TV during year 2000, the time at which the Internet was in many more homes and thus taking up much more time. In contrast, there was again a significant decline in newspaper reading of almost half a day in 2000. (Since the new health/political information questions were not asked in earlier GSS surveys, there are no such historical comparisons possible for these questions).

In conclusion, then, no noticeable declines in frequency of TV usage can be found during these periods of significant Internet diffusion, whereas newspaper reading continued its significant long-term decline.

*Year 2000 Internet User-versus-Nonuser Comparisons:* Table 2 shows the differences between the two traditional GSS media-use measures by the extent of Internet use. The raw unadjusted figures are shown first, followed by the results after their adjustment by MCA, using gender, age, race, education, income, marital status, children and work hours as the independent variables.

**TABLE 1: DIFFERENCES IN MEDIA USE ACROSS INTERNET YEARS**

<b>A)</b>	<b>PRE-NET 1993–1996 (n = 5,000)</b>	<b>POST-NET 1998–2000 (n = 3,728)</b>	<b>Difference</b>
TV hours	2.9	2.9	0.0
News days	4.1	3.7	-0.4
<b>B)</b>	<b>EARLY NET 1998 (n = 1,864)</b>	<b>LATER NET 2000 (n = 1,864)</b>	<b>Difference</b>
TV hours	2.8	2.9	+0.1
News days	3.9	3.5	-0.4

**TABLE 2: DIFFERENCES IN FREQUENCY OF MEDIA USE BY OVERALL INTERNET USE BEFORE AND AFTER MCA ADJUSTMENT\***

<b>Internet Use Per Week (hours)</b>		<b>TV Hours MCA Adjusted</b>		<b>News days MCA Adjusted</b>	
		<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>
<b>Total</b>	<b>(n=1,815)</b>	<b>3.0</b>	<b>3.0</b>	<b>3.6</b>	<b>3.6</b>
1. Nonuser	(956)	3.5	3.1	3.5	3.4
2. 0.1–1.9	(197)	2.4	2.7	3.7	3.8
3. 2.0–4.9	(205)	2.4	2.8	3.5	3.4
4. 5.0–9.9	(191)	2.5	2.9	3.7	3.8
5. 10+	(266)	2.5	2.9	3.8	3.7
Difference (5–1)		-1.0	-0.2	+0.3	+0.3
Correlation (eta)		.20	.05	.05	.07
<i>*Control measures include income, age, race, marital status, children, and gender.</i>					

In general, it can be seen that the pattern of raw results tends to hold up after MCA adjustment, but that the differences are often reduced significantly (or “explained by”) the effects of these other predictors. One reason for this reduction, of course, might be that Internet users are younger or better educated or have higher income, and these factors are responsible for Internet users reporting different media-use patterns (again, the MCA results produce the net

effect of a single predictor variable, after removing the effects of other factors besides hourly Internet usage.)

To illustrate with the first example in Table 2 it can be seen that nonusers of the Internet report more TV-hours (3.5) than the overall GSS Internet users (about 2.5), a one-hour per-day difference. Those who use the Internet for the fewest hours (fewer than two hours per week) have an average of 2.4 hours. Users with slightly greater hours of Internet use (2 to 5 weekly hours) also have an average of 2.4 hours. Users who report five or more hours of Internet use have an average of 2.5 hours. Finally, users who reported the greatest hourly Internet usage (10+ hours per week) also had an average of 2.5 hours. Thus, people who report the greatest hourly use of the Internet also report fewer TV-hours than nonusers (a difference of 1.0 hours shown in the next to bottom row in Table 2). The overall correlation is 0.20, which is highly significant at the .05 level with this sample size.

One of the main reasons that the correlation is not higher in the lower figure (2.4 hours) is that the respondents reporting 0.1 to 4.9 hours of weekly Internet use report a lower average TV use than the heaviest Internet users (2.5). Another way to understand this is that the difference between people who report the greatest hourly Internet use and nonusers is revealing, but it fails to capture that the overall differences are not monotonic—they do not show *consistent declines* in TV as the extent of Internet use increases.

The figures in the next column of Table 2 show how this pattern of results for these unadjusted (raw) bivariate numbers is affected when the various background factors in Appendix D: Table 6 are entered into the MCA analysis. It can be seen that after adjustment, the difference between nonusers and the heaviest Internet users decreases from 1.0 (3.5 – 2.5) to .2 (3.1 – 2.9) TV hours, so that the MCA adjusted results are significantly reduced from the simple bivariate analysis at the left. In other words, the original raw results are largely explained by common correlations with the various demographic background factors shown in Appendix D: Table 6. At the same time, the overall value of the correlation coefficient ( $\eta$ ) of .05 remains statistically significant after MCA adjustment, even if the differences are not monotonic.

Overall, Internet usage in Table 2 also shows no consistent patterns of relations with the traditional GSS newspaper measure. In this analysis, heaviest users emerge as having more reading-days (3.8) than nonusers (3.5), but the difference is not significant. The difference does become significant after MCA adjustment, but the relation remains clearly nonmonotonic.

Thus, the traditional GSS media-use questions show no consistent relation with extent of Internet use. The analysis now turns to the new media-use questions in the year 2000 GSS (as shown in Appendix C, Section 3):

*Media Usage for Health and Politics:* The basic percent responses to these questions on health and politics are shown in Appendix C: Table 5. It can be seen there that despite the fact that the Internet is the newest

communication medium and that less than half of GSS respondents had access to it, some 44% of respondents with an interest in health information had used the Internet for health information in the prior year. That was higher than the 28% who had sought information from newspapers, the 34% from radio/TV, the 37% from general interest magazines and the 42% from specialty magazines, and it was only slightly lower than the 48% who sought information from friends and relatives. However, it was only about half of the 85% who sought information directly from doctors or nurses. This ordering largely held true for higher usage levels—that is, for respondents using these media sources three or more times in the previous year.

Turning to the parallel questions for politics, the 40% usage of the Internet for political candidate information is relatively lower than for other media—exceeding only the 38% who sought such information from specialty political magazines. It is a little below the 45% who sought political information from campaign materials and the 50% who used friends or relatives (perhaps the most powerful source reported in the communications research literature). It was notably lower than for newspapers (73%), for general news magazines (61%) or for radio/TV (81%).

The question of interest here, however, is whether there is a displacement effect. That is, do political users of the Internet report lower use of other media? That question is addressed in Table 3, which shows the extent of usage of each of the traditional media by those 215 respondents who never used the Internet for health, the 94 who used it once or twice and the 76 who used it three or more times. The entries refer to the estimated number of times each of these media were used, with a weight of 1.5 given to those who used newspapers or the other media once or twice, and a weight of 4 to those who said three or more times. Thus, those who never used the Internet for health estimated reading newspaper health stories 0.7 times per year on average, those once or twice Internet users averaged 0.5 times per year and those using three or more times averaged 0.6 times—rather small differences. This pattern holds up for most of the other media channels as well, as shown in the top half of Table 3.

These entries are summed in the last column of Table 3 as a way of expressing the overall pattern. It can be seen that that overall pattern is curvilinear, with light users (5.1) being below nonusers (6.2), and well below heavy users (7.0). In other words, heavy users of the Internet for health are heavier users of other media as well, while light Internet users are below average consumers of other media channels.

Much the same pattern emerges for usage of the Internet for political purposes shown at the bottom of Table 3. Again, the heaviest users use other media most (10.9), followed by nonusers (8.9) and then by light users (6.8).

**TABLE 3: DIFFERENCES IN USAGE OF VARIOUS MEDIA FOR HEALTH AND POLITICS  
(IN TIMES PER YEAR)**

	News- paper	Magazine General	Magazine Special	Profes- sional	Friend/ Relative	Radio/TV	TOTAL (MCA)
<b>a) Health WWW Use</b>							
Not at all (215)	0.7	0.8	1.0	2.0	0.8	0.9	6.2 (5.7)
1-2 times (94)	0.5	0.8	0.7	1.6	1.0	0.5	5.1 (5.5)
3+ times (76)	0.6	1.0	1.1	2.1	1.5	0.7	7.0 (7.4)
<b>b) Politics WWW Use</b>							
Not at all (150)	2.3	1.3	0.9	1.1	1.2	2.1	8.9 (8.8)
1-2 times (46)	1.8	1.2	0.7	0.9	0.7	1.5	6.8 (7.0)
3+ times (48)	2.4	2.0	1.0	1.6	1.5	2.4	10.9 (11.3)

The final entries in Table 3 show these differences adjusted for relevant demographics by MCA. The differences are accentuated somewhat and the overall differences are statistically significant. However, the pattern is again not monotonic—with heavier users of the Internet being above average, but light Internet users being below average.

### SUMMARY

The year 2000 GSS results provide little support for the conclusion that greater Internet usage is related to lower TV or newspaper usage. There is no evidence of reduced TV use in relation to levels in comparison to 1998 or to earlier pre-Internet GSS surveys shown in Table 1, and declines in newspaper reading seem mainly a continuation of longer-term trends. Moreover, there is no monotonic difference in the TV use of greater-versus-lesser-versus-non-Internet users shown in Table 2. These differences were neither large nor consistent, even if they were statistically significant. Third, there was also no significant decline shown in Table 2 in the numbers of days of newspaper use among respondents who used the Internet more—indeed, as a rule they read more. The data in Table 2 thus contain more evidence to support the Newtonian model of increased media use among Internet users than evidence of any displacement effect.

Much the same conclusion emerges from the new GSS media-use questions about health and politics, in which the number of users for these purposes often exceeded the audience sizes for traditional media. Moreover, heaviest users for these purposes reported notably above-average usage of these older media (although lighter Internet users reported below-average use of other

media). If anything, then, the Internet is associated with enhanced media use rather than with media displacement.

Of course, the above remain answers from a cross-sectional survey taken early in the diffusion of Internet technology. More definitive conclusions will emerge in future GSS surveys, including panel surveys. Here one may well find that respondents reduce their other media contacts as they make greater (or lesser) use of the Internet. However, as of year 2000, it appeared that the Internet was slightly more of a stimulant to Americans' use of more traditional media, rather than a suppressor of it.

## REFERENCES

- Andrews, F., Morgan, J. and Sonquist, J. 1973. *Multiple Classification Analysis*. Ann Arbor, MI: Institute for Social Research.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T. and Scherlis, W. 1998. Internet Paradox, *American Psychologist*. 53(9), p. 1017–1031.
- U.S. Department of Commerce. 1998. *Falling Through the Net II: New Data on the Digital Divide*. Washington, DC: Economics and Statistics Administration and the National Telecommunications and Information Administration.
- \_\_\_\_\_. 2000. *Falling Through the Net: Toward Digital Inclusion, A Report on Americans' Access to Technology Tools*. Washington, DC: Economics and Statistics Administration and the National Telecommunications and Information Administration.
- Nie, N. and Erbring, L. 2000. *Internet and Society: A Preliminary Report*. February 17. Stanford, CA: Stanford Institute for the Quantitative Study of Society.
- Robinson, J. P. and Kestnbaum, M. 1999. The Personal Computer, Culture and Other Uses of Free Time, *Social Science Computer Review*. Summer, 17(2) pp. 209–216.
- Robinson, J. P., Kestnbaum, M., Neustadtl, A., and Alvarez, A. 2000. Mass Media and Social Life among Internet Users, *Social Science Computer Review*. Winter, 18(4), pp. 490–501.
- Rogers, E.M. 1995 [1962]. *Diffusion of Innovations*, 4<sup>th</sup> ed. New York: The Free Press.

**APPENDIX A: EXHIBIT 1**

**DIFFERENCES “YESTERDAY” IN NEWSPAPER AND TV USE BY INTERNET USE  
(IN PERCENT USING AND MINUTES USING YESTERDAY)**

	<b>Nonuser n= (8265)</b>	<b>Didn't Use (6118)</b>	<b>&lt;15 min (790)</b>	<b>15-29 min (1066)</b>	<b>30-44 min (1428)</b>	<b>45-59 min (1516)</b>	<b>60-119 min (708)</b>	<b>120-179 min (967)</b>	<b>180-239 min (446)</b>	<b>240+ min (825)</b>
% Newspaper	36	37	46	48	52	48	51	47	44	40
% TV news	60	56	62	62	66	66	68	67	65	61
minutes	29	32	25	29	34	41	33	32	33	31
% TV entertain	54	52	48	55	61	59	64	57	64	53
minutes	133	126	110	117	118	128	127	134	128	128

*Source: Pew Internet Project: Year 2000 data*

**APPENDIX B: GSS QUESTION BALLOTS**

**TABLE 4: GSS INTERNET MODULE QUESTIONS AND APPROXIMATE SAMPLE SIZES FOR  
DIFFERENT BALLOTS (QUESTION NUMBERS ARE FOR BALLOTS 4 OR 5)**

<b>Ballot</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>Total</b>
1. Base/core computer use (Q 5-7)	466	478		455	478	486	2,353
2. Benchmark (Q 1-4), with new media questions				455	467		918
				240	260		500
12. Earlier GSS media use questions	465	473		453	473		1,864
Total Sample Size	466	478	454	455	478	486	2,817
Core Internet Questions	466	478		455	478	486	2,353

**APPENDIX C: QUESTION WORDING FOR GSS QUESTIONS**

**SECTION 1: YEAR 2000 CORE INTERNET USE QUESTIONS**

5. Do you personally ever use a computer at home, at work, or at some other location?

Yes..... (GO TO Q.5b).....1

No..... (GO TO Q.5a).....2

a. Do you have access to the Internet or World Wide Web in your home through Web TV?

Yes..... (GO TO Q.5b).....1

No.....(GO TO SECTION G).....2

- b. About how many minutes or hours per week do you spend sending and answering electronic mail or email?

|\_\_|\_\_|\_\_|\_\_| Mins./wk                      |\_\_|\_\_|\_\_| Hrs./wk

6. Other than for email, do you ever use the Internet or World Wide Web?

[INTERVIEWER: TREAT THESE AS THE SAME]

Yes..... (GO TO Q.7).....1

No..... (GO TO Q.8a).....2

7. Not counting email, about how many minutes or hours per week do you use the Web? (Include time you spend visiting regular web sites and time spent using interactive Internet services like chat rooms, Usenet groups, discussion forums, bulletin boards, and the like.)

|\_\_|\_\_|\_\_|\_\_| Mins./wk                      |\_\_|\_\_|\_\_| Hrs./wk

**SECTION 2: TRADITIONAL MEDIA USE QUESTIONS**

89. How often do you read the newspaper--every day, a few times a week, once a week, less than once a week, or never?

Every day	1
A few times a week	2
Once a week	3
Less than once a week	4
Never	5

90. On the average day, about how many hours do you personally watch television?

NUMBER OF HOURS: \_\_\_\_\_

**SECTION 3: NEW GSS QUESTIONS ON COMMUNICATION CHANNELS**

**APPENDIX D: TABLE 5**

1. In the past year, that is, between (INSERT CURRENT MONTH) 1999 and (INSERT CURRENT MONTH) 2000—have you looked for information about a health concern or medical problem?

NO (SKIP TO Q.2) ..... 0 58%  
 1 or 2 times ..... 1 24%  
 3 or more times..... 2 19%

If YES, please tell me if you tried to find such health information from:

	Not at all <b>0</b>	1 or 2 times <b>1</b>	3 or more times <b>2</b>
A. Articles in a daily newspaper	72%	18%	10%
B. Articles in a general-interest magazine	63	24	13
C. Special health or medical magazine or newsletter	58	27	15
D. A doctor, nurse, or other medical professional	15	53	32
E. Friends or relatives	52	32	16
F. Radio or television programs	67	22	12
G. The Internet or World Wide Web	24	56	20

2. In the past two years, that is, between (INSERT CURRENT MONTH) 1998 and (INSERT CURRENT MONTH) 2000—have you looked for information about the views or background of a candidate for political office?

- NO (SKIP TO Q.3)..... 0 73%
- 1 or 2 times ..... 1 12%
- 3 or more times..... 2 15%

If YES, please tell me if you looked for such candidate information from:

	Not at all <b>0</b>	1 or 2 times <b>1</b>	3 or more times <b>2</b>
A. Articles in a daily newspaper	17%	34%	49%
B. Articles in general news magazines like TIME, NEWSWEEK, or U.S. NEWS	39	35	26
C. Special magazine or newsletter with particular policy interest or perspective	62	23	15
D. Radio or Television programs	19	33	48
E. Friends or relatives	50	26	24
F. Campaign materials from campaign worker or candidate	55	23	22
G. The Internet or World Wide Web	61	19	20

**APPENDIX D: TABLE 6**

**BIVARIATE DEMOGRAPHIC DIFFERENCE IN GSS MEDIA QUESTIONS**

		<b>TV hours</b>	<b>Newspaper hours</b>
<b>Total</b>	<b>(1,864)</b>	<b>2.9</b>	<b>3.5</b>
<b>Sex</b>			
Male	(791)	3.0	3.5
Female	(1,073)	2.9	3.4
<b>Age</b>			
18-24	(175)	2.9	2.6-
25-34	(369)	2.7	2.5-
35-44	(448)	2.9	3.1
45-54	(363)	2.7	3.8
55-64	(196)	3.3	4.7+
65+	(73)	3.6+	4.7+
<b>Race</b>			
White	(1,459)	2.7	3.6
Black	(310)	4.2+	2.9-
Other	(95)	2.7	3.1
<b>Education</b>			
Some High	(336)	4.1+	2.6-
High School	(530)	3.0	3.4
Some College	(532)	2.5	3.7
College Grad	(267)	2.5	4.6+
Grad School	(191)	1.6-	4.5+
<b>Income</b>			
\$0.0-14.9K	(330)	4.0+	2.7-
\$15.0-29.9K	(368)	3.1	3.2
\$30.0-49.9K	(368)	2.6	3.3
\$50.0-74.9K	(288)	2.9	3.8
\$75K+	(269)	2.5-	4.2+
Refused	(241)	2.8	4.0
<b>Marital Status</b>			
Married	(836)	2.8	3.7
Widowed	(191)	3.7	4.1+
Divorced	(280)	2.9	3.3
Separated	(79)	3.1	3.2
Never Married	(477)	3.1	2.8

(Continued on next page)

<b>Work Hours</b>			
0	(655)	3.8+	3.5
1-19	(58)	2.9	2.7
20-29	(93)	2.6	3.6
30-39	(137)	2.7	3.8
40	(418)	2.6	3.3
41-49	(185)	2.5	3.7
50-59	(167)	2.2	3.4
60+	(143)	2.6	3.7

*\*Indicates statistically significantly greater than average (<.05).*  
*- Indicates statistically significantly less than average (< .05).*