

Digital Living

The Impact (or Otherwise) of the Internet on Everyday British Life

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Abstract

This chapter examines the “impact” of the Internet on the everyday lives of UK citizens through the integration of quantitative longitudinal time-use data and qualitative interviews. It shows that there is little significant change in people’s time use that can be associated with their acquisition of an Internet connection and so demonstrates the over-simplicity of the ‘impact’ model for understanding the role of the Internet in everyday life. Instead, it suggests that lifestyle and/or lifestage transitions may trigger adoption of the Internet and, simultaneously, changes in domestic time-use. It also demonstrates that ‘Internet usage’ is too coarse a unit for sensible analysis. Rather, researchers need to consider the patterns of usage of the various applications or services that the Internet delivers.

Authors’ note

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Introduction

The domestic telecommunications market is changing radically and rapidly from one dominated by plain old voice telephony to one where

voice is just one of myriad Internet protocol services and applications available from a socket in the wall or a gadget in the hand. In this climate of technological flux there is considerable public debate about the merits, dangers, and opportunities associated with the perceived shift towards a digitally mediated society. This debate is mirrored in the commercial context by an equally passionate argument about the commercial opportunities that may follow from the digital and Internet revolutions. While a review of these arguments and the literature in which they are found is outside the scope of this paper (for reviews see CACM, 1998; Kraut, Patterson, Lundmark, Kiesler, Mukhopadhyay, and Scherlis, 1998), it is worth noting that these debates are nothing new in sociological terms. For example, Gershuny (1983) argues that a consideration of how households achieve their various 'wants or needs' using the social and technological structures at their disposal can help to understand the social significances of technological innovations. Thus where once remote relatives could only be contacted by letter, then telegram, then telephone, they can now be contacted by email. Thus the "mode of provision" has changed although the end goal (interpersonal social communication) has not. Such changes, according to Gershuny, are indicative of socio-technical change or social innovation in his terms and he specifically looks towards (then) future telecommunications infrastructures as the context for such changes.

In an effort to unravel these changing patterns of social innovation and to understand some of the policy and commercial opportunities they present through disciplined social scientific enquiry, we have created a research programme known as Digital Living which centers on the longitudinal study of some 2,600 individuals living in 1,000 UK households (Anderson, McWilliam, Lacohee, Clucas, and Gershuny, 1999; Lacohee and Anderson, 2001). The individuals in this panel are being studied using a range of methods including questionnaires, time-use diaries, call records, Internet usage logs and qualitative interviews. This triangulation of data sources on the same individuals over time enables us not only to build a rich picture of their everyday lives, but also to study the causal relationships between their acquisition and use of new Information and Communications Technologies (ICTs) and changes in their behavior and their social, symbolic, and economic capital in a way that repeated cross-sectional surveys cannot.

Explicit in this approach is a commitment to people-focused rather than an ICT-focused research because it is apparent from even cursory

fieldwork in domestic contexts that the acquisition and use of particular ICTs cannot be meaningfully separated from the acquisition and use of others. As a result it makes little sense to try to understand the acquisition and use of mobile telephones, personal computers or "the Internet" in isolation from one another (Silverstone and Haddon, 1996). Instead we choose to build understandings of people's activities and the ways in which they use a dynamic range of ICTs to achieve them.

The simplest analytic model one can adopt when considering ICTs and societal change is that technologies 'impact' upon social life. In this view the uptake and usage of information and communication technologies can be seen as a condition variable and any changes in the lives of the people under study can be attributed, in some unproblematic way, to the introduction of ICTs (see, for example, Nie and Erbring, 2000; Kraut et al., 1998; the discussions in Smith and Marx, 1994; and Edwards, 1994; and similar points made in the organizational context by Kling, 2000).

According to this model we might hypothesize that gaining or losing access to the Internet might reduce or increase the time spent on a number of activities such as:

- using existing media such as TV, video, radio, newspapers, books, cinema, theatre;
- existing communication practices such as making/receiving phone calls and visiting/being visited by friends or relatives;
- other informational practices such as learning/education inside and outside the home.

This chapter uses data drawn from the Digital Living study to test these hypotheses. As this analysis unfolds, the limitations of the impact model for understanding the dynamics of the uptake and usage of the Internet in the UK becomes clear. By integrating quantitative and qualitative data the chapter points the way towards a more nuanced analysis which contributes to the understanding of the socially shaped nature of Internet use (Mansel and Silverstone, 1996). This analysis may lead us to suggest that applications and services delivered via the Internet are not changing the way people live their lives in a simple straightforward manner, but are supporting and enhancing their existing lifestyles, whatever those lifestyles might be, through changes in what Gershuny would term their mode of provision.

Table 4.1 Number of respondents in waves 1 and 2 of the digital living panel

| | Wave 1 | Wave 2 |
|---|--------|--------|
| Survey and time-use diary completed | 999 | 682 |
| Repeated survey and time-use diary (i.e. longitudinal sample) | — | 472 |
| Individual survey only | 740 | 947 |
| Time use diary only | 17 | 37 |
| Repeated individual survey only (i.e. longitudinal sample) | — | 547 |

The Digital Living Panel Study

The panel was initiated in July 1998 as a collaboration with the Institute for Social and Economic Research (ISER) at the University of Essex, UK. The longitudinal panel was established and the first wave of survey fieldwork was completed by March 1999. The sample was randomly selected according to UK postal code and in the first wave selection was carried out to ensure that all households had fixed line telephones and 50 percent had computers at home. The second wave of quantitative panel fieldwork was completed in April 2000 and wave 3 was completed in April 2001. The final sample sizes for waves 1 and 2 are shown in table 4.1. The recruitment of the sample and the research instruments used are described in detail in Anderson et al. (1999) and Lacohee and Anderson (2001). The research instruments of relevance to this article are discussed briefly below.

Survey data

This data collection takes the form of a survey and time-use diary for completion by all individuals aged 16 and over which is repeated on a 12-month cycle. A second time-use diary designed explicitly for younger household members is for completion by all individuals aged 9–15. Two questionnaires were used. A household questionnaire was completed by the head of household and individual questionnaires were completed by all individuals over the age of 16. In brief the questionnaires covered ownership of households goods and services, ownership of ICT and socioeconomic data, personal usage of ICT, personal consumption and communication behavior, the extent, nature, and geography of family and other social relationships (social networks), attitudes and socioeconomic data.

The diary splits each day into 96 distinct 15-minute segments and invites panelists to record which of a range of predefined activities they were doing during each 15-minute segment for one week. Respondents were asked to report the main activity they were engaged in (primary activity) and also any other (secondary) activity that they were doing at the same time. Thus respondents could report using the telephone (secondary) at the same time as preparing a meal (primary) or vice versa if appropriate. Younger members of the household (9–15) were asked to complete a similar but differently presented time-use diary.

The quantitative data reported in this chapter were collected during the first and second waves of this panel survey in early 1999 and early 2000 (table 4.1) and derives from two sources:

- the adult (16+) time-use diaries;
- the adult (16+) survey questions related to socioeconomic variables, e.g. age, employment status.

Qualitative interview data

Following the first wave of quantitative survey fieldwork a selection of households were approached for qualitative study. These studies include both structured and unstructured interviews, photo records and prompt-based discussions and repeat visits in what has become a “long conversation” between the qualitative researchers and the selected households (Silverstone et al., 1991).

Altogether the qualitative data is drawn from 104 individual interviews in 70 separate households carried out between December 1998 and October 2000. Ages of participants range from 13 to 67. Of the 104 participants, 55 were male and 49 were female. Forty-three interviews were carried out with individuals from the longitudinal panel; 16 of these focused specifically on the role of the social network in Internet adoption and usage and 27 were more general interviews. These interviewees were selected according to their life stage, the technology they owned and the technology that they reported they were likely to purchase in the near future. The general interviews covered areas such as the social network members, usage of ICT, lifestyle and usage of time and money. General interviews of this nature were also carried out with 14 individuals who were recruited separately from the panel.

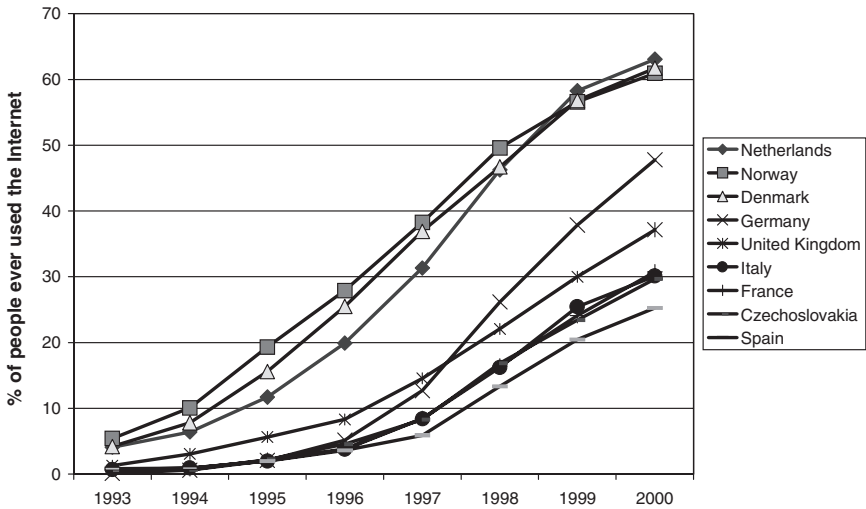


Figure 4.1 Percent of European adults (16+) “who have ever accessed the worldwide web at home or elsewhere”

Source: Mante-Meijer et al. (2001). Used with permission

In addition, similar interviews were conducted with 11 individuals in 8 households who have subscribed to BT’s broadband Internet service in London; 6 interviews were carried out as part of a study of 35 students on their experiences of living in shared accommodation; and 30 interviews of a similar nature to those described above have been carried out under the umbrella of a study of the effects of telework on the quality of life of workers and their households (Akelson et al., 2000).

The State of the Internet in Europe

Before discussing detailed research findings it is worth sketching the current state of Internet access and usage in Europe to provide a context to the chapter. By 2000 about 40 percent of all Europeans aged 16 and over had used the Internet at some time (Mante-Meijer et al., 2001) although of these some 5 percent were no longer users. As with other areas of the world where market forces play some role in Internet access, this penetration is extremely uneven whether considered by gross geography or age as figures 4.1 and 4.2 demonstrate. Among

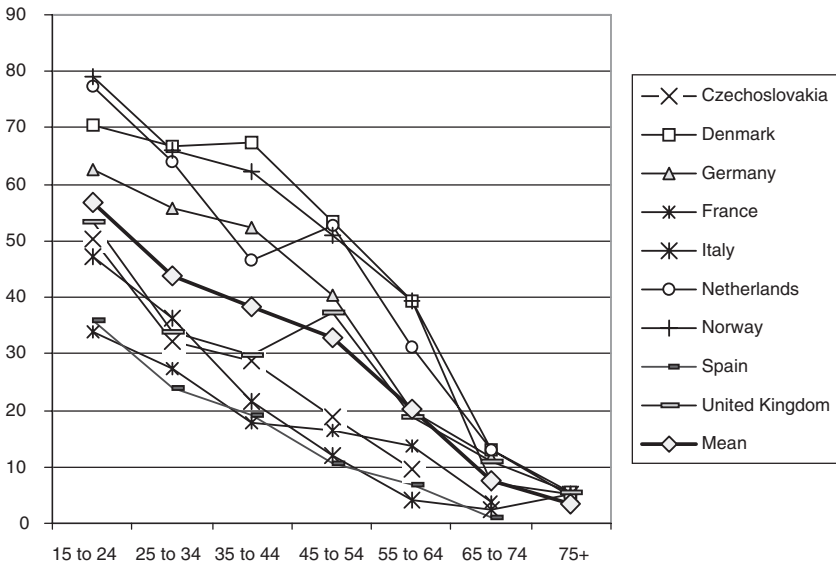


Figure 4.2 Percent of each age group who have ever used the Internet
 Source: Mante-Meijer et al. (2001). Used with permission

the UK population views about the Internet vary considerably, from the converts who feel that they now couldn't live without it: "I love the Internet, I'm a great believer in technology I'm a great believer in the democratising nature of the Internet" (DC), to those who have, at best, hazy knowledge about it: "it made me think of a fax machine, is it something like a fax?" (GE).

Overall, there is the impression that despite all attempts by policy-makers and the IT industries, many in the European population remain cautious about the Internet for reasons that include the security of credit card details, the assumed prevalence of pornography, cost, lack of computer skills and lack of time or interest.

It is in the context of these uneven growth patterns that the debates about exclusion and inclusion, whether by age, economic capital or geography, take place (see for example Patterson and Wilson, 2000). Figures 4.1 and 4.2 demonstrate obvious differences in Internet access for different groups of European citizens and similar patterns exist for socioeconomic status (wealthier people are more likely to have access) and educational level (better-educated people are more likely to have access). Even though the emphasis on *access* is simplistic (there are

many who have access to ICTs who do not or cannot *use* them), there are now significant efforts being made to combat perceived “exclusion” from access at the European level. These efforts include a number of public-policy initiatives based on the notion of an “Information Society For All” or E-Europe.¹ It is interesting to note in this context that many of those who had not yet acquired Internet access in December 2000 saw no reason to do so and most were not considering it (Mante-Meijer et al., 2001). In a similar study an estimated 54 percent of the UK population did not have Internet access and did not want it whilst 16 percent said they did not have it because they could not afford it (JRF, 2000). Thus for the majority of current non-users, the Internet has no obvious place in their lives and is not likely to have in the foreseeable future. If this is true then massive public investment to “overcome” their “economic exclusion” through reductions in the financial cost of access may be open to question. While it is tempting to reify these debates in socioeconomic terms, to do so overlooks the importance of social and cultural capital, and, increasingly, fashion and identity in individual and household level decisions about ICT acquisition (e.g. Silva, 2000; Nafus and Tracey, 2002).

Applications usage

Access to the Internet is, of course, not even half of the picture. What people do with the Internet once they have access (if they do) must also be considered. When considering patterns of usage it rapidly becomes clear that the Internet is not a single entity that can be analysed as such. One reason for this confusion may be the continuing conflation of “the Internet” with “the worldwide web.” Rather, it is a delivery mechanism for a range of services which are continually evolving and which are used differentially by different people.

For example, figure 4.3 shows that average weekly usage of the web or email for the wave-2 diary respondents was not particularly high (between 1 and 3 hours per week). However, while email usage showed no clear pattern with age, usage of the web appeared to be highest in the younger age groups and lowest in the oldest. The youngest group spent less time using email than the web, indeed they spent less time using email than both the 25–34 and 55+ groups.

1 See http://europa.eu.int/information_society/eeurope/index_en.htm

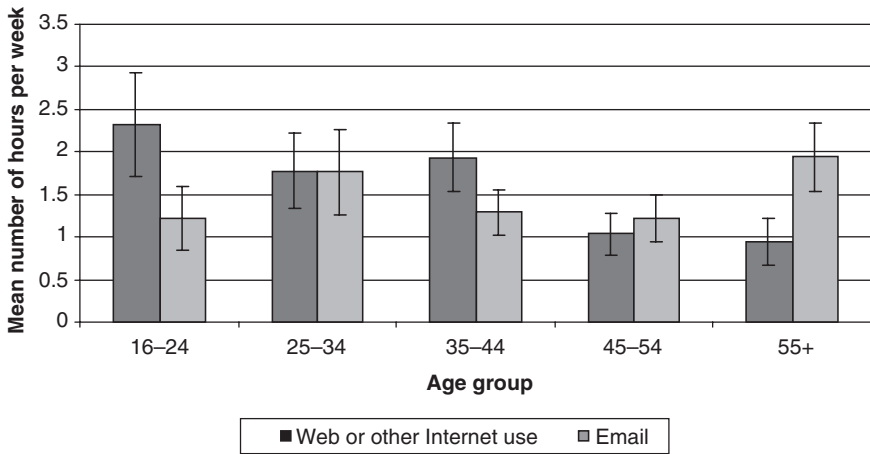


Figure 4.3 Mean number of hours per week spent on “email” or “web browsing or other Internet use” by diary respondents at wave 2 (2000) who reported any Internet use $27 \leq n \leq 38$ for all cells. Error bars are ± 1 standard error of the mean

However this pattern is almost exactly reversed in the oldest group (55+) who used email more than the web. In addition, figure 4.4 shows that there were some people who used the web but not email and some who used email but not the web. While, interestingly, the heaviest web users are the women who hardly use email, the mean hours per week spent emailing by women was 1.72 while for men it was 2.13. However, these differences were not statistically significant ($t = 1.069$, $df = 117$, $p = 0.287$). Mean hours spent using the web were more comparable at 2.39 for men and 2.65 for women and again the difference was not statistically significant ($t = -0.512$, $df = 99$, $p = 0.610$).²

There may be several reasons why some users only use email or the worldwide web. The interviews suggest that some people use the Internet in a very repeated way – they get shown how to use one application and never move on to anything else. Quite often email is perceived as easier to use than searching for information, so some of the users don’t move past the email application: “I don’t use [WWW], they [son and daughter] use it or if there’s anything I want then I tell them

2 Note that all means in this paragraph are calculated for those individuals who recorded this activity in their time-use diary. They are therefore “usage means” rather than “population means.”

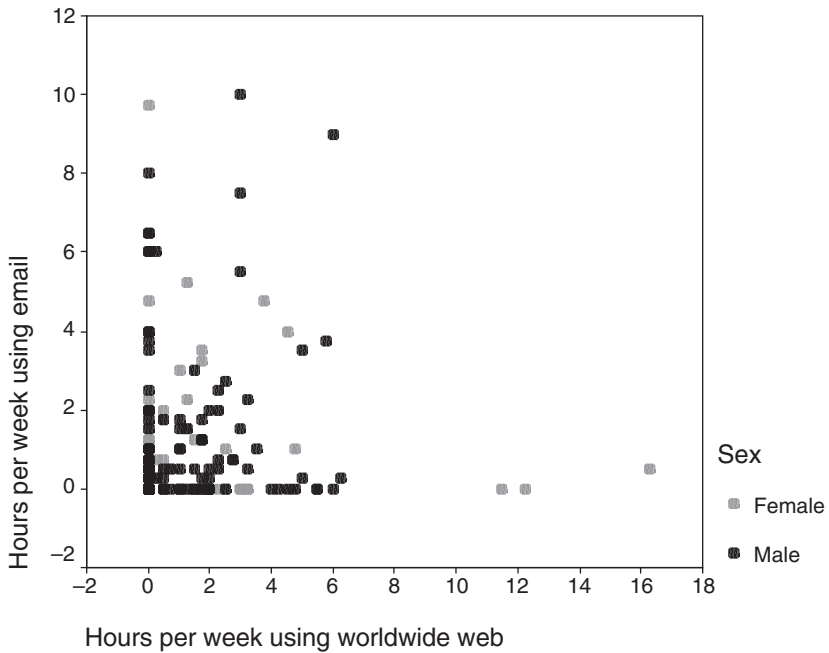


Figure 4.4 Scattergraph of mean hours per week spent on email or web browsing by diary respondents at wave 2 (2000) by sex

to do it for me. I haven't got the confidence to do it. I've used the email so I find that easier" (MC).

Others only perceive a need for one of the applications and so will rarely, if ever, try different things. In the interviews people who had predominantly local social networks tended to perceive less need for email: "it just comes out black and white on a piece of paper and yes it is impersonal... I've never asked for her [local friend] email address, we speak quite regularly on the phone so what would be the point of emailing" (JB).

It should therefore be clear that "Internet usage" cannot be conceived of as a simple unitary activity. People are not simply "Internet users." Different kinds of people make differing uses of the range of applications and services that the Internet supports and probably for differing reasons. Thus "the average Internet user" simply does not exist and until a more nuanced understanding of the reasons for different usage patterns, which can do justice to lifestage and lifestyle

differences is developed any explanation or forecasting of future change is likely to be extremely unreliable.

The Impact of the Internet on Everyday Life in the UK

As noted above an ongoing research debate is the extent to which the Internet is changing people's lives. One way of addressing this question is to look at how or if people's use of time changes when they acquire access to, and start to use the Internet. In the qualitative interviews with Internet users one topic of discussion was the extent to which the Internet had an impact on the way interviewees spent their time and to what extent Internet use displaced other activities. Although this might appear a relatively straightforward question, informants found it extremely difficult to pin down any clear or explicit changes: "It's difficult to say if it [the Internet] displaces one activity or another" (SC).

The range of activities which were reported as possibly being displaced included watching television, spending time in the garden, reading newspapers, magazines and books, going to the supermarket, making telephone calls, going to the pub, doing nothing, writing letters, sleeping, playing computer games and typing on a typewriter. However, no one activity was mentioned by more than a handful of informants and even the heaviest of users felt that any displacement was marginal at best. One possible reason for this may have been the relatively low level of daily or weekly usage in the UK (as mentioned earlier between 1 and 3 hours per week on average) compared to the USA, although even those who spent as much as six hours per week using the Internet in the evenings (such as SC above) couldn't pinpoint any major displacements. The informants' time use appeared to evolve and change continuously, so rather than a straight substitution effect, it appeared that a range of activities were adjusted or multi-tasked to enable Internet use to fit in. In addition, other factors have a significant influence on patterns of time-use. For example, during the summer months one respondent's television viewing, game playing and Internet usage were all displaced by spending time in the garden when the weather was good.

Therefore it might be expected that changes in time use would not be significantly associated with a simple transition such as acquiring Internet access. It might also be expected that an analysis of patterns of changing time use would show that the acquisition of Internet

access is having relatively little immediate impact on people's lives. If so we can conclude that conceptualizing the relationship between technological change and social change in terms of "impact" or time-use "substitution" may be over simplistic.

The two waves of quantitative time-use diary data that are currently available from the Digital Living panel can be used to explore this issue in a relatively straightforward manner because it enables the comparison of time spent on activities before and after an individual may have acquired Internet access. The remainder of this chapter does exactly this.

Data and Analysis Methods

The time-use diaries record the total amount of time an individual spends doing activity X during the week-long self-reporting period. Two totals can be derived for each time-use category, one for that category as a primary activity, and one for the category as a secondary activity. The analysis described below examined changes in time-use for all categories of activities (see table 4.2) but this chapter only reports statistically significant results.

Individuals were allocated to four groups using data from the wave-1 and wave-2 surveys. The four conditions were:

- No_net: no Internet connection in household at either wave.
- New_net: no Internet connection in household at wave 1, but had Internet connection in household at wave 2 and used it.
- Net_both: had Internet connection in household at wave 1 and wave 2 and used it at both.
- Net_dropout: had Internet connection in household at wave 1 and used it, but no Internet connection in household at wave 2.

The sizes of these groups are shown in table 4.3 while the age distributions are given in figure 4.5. The actual size of n for each subsequent analysis varies because not all of these individuals completed time-use diaries in each wave of data collection.

We use simple paired sample t tests to compare the mean hours per week spent on each of the time-use categories by the groups in wave 1 and wave 2. Our Net_both group acts as a control because they did not acquire Internet access and thus any changes in time use in this group must be due to other factors. This method allows us to

Table 4.2 Time-use categories

| | | | |
|----|---|----|---|
| 1 | Sleeping, resting | 19 | Sports participation, keeping fit |
| 2 | Washing, dressing | 20 | Hobbies, games, musical instruments |
| 3 | Eating at home | 21 | Watching TV/cable/satellite TV |
| 4 | Cooking and food preparation | 22 | Watching videos/laser disks |
| 5 | Care of own children or other adults in the home | 23 | Listening to radio, CD, cassette |
| 6 | Cleaning house, tidying, clothes washing, ironing, and sewing | 24 | Reading newspapers, books, magazines |
| 7 | Maintenance, odd jobs, DIY, gardening, pet care | 25 | Being visited by friends, relatives in own home |
| 8 | Travel (to and from work, shops, school, cinema, station, etc.) | 26 | Receiving phone calls |
| 9 | Paid work at workplace | 27 | Making phone calls |
| 10 | Paid work at home (not using PC) | 28 | Playing PC games/games console |
| 11 | Study at home (not using PC) | 29 | Reading/writing email |
| 12 | Courses and education outside the home | 30 | Browsing web, or other Internet use |
| 13 | Voluntary work, church, helping people (not in own home) | 31 | Study at home (using PC) |
| 14 | Shopping, appointment (hairdressers /doctors, etc.) | 32 | Paid work at home (using PC) |
| 15 | Going to concerts, theatre, cinema, clubs, sporting events | 33 | Other PC use |
| 16 | Walks, outings, etc. | 34 | Doing nothing (including illness) |
| 17 | Eating out, drinking (pubs, restaurants) | 35 | Other (please write in) |
| 18 | Visiting or meeting friends or relatives | | |

Table 4.3 Number of individuals in each transition group

| <i>Label</i> | <i>Internet connection</i> | | <i>N</i> | <i>% of longitudinal sample</i> |
|--------------|----------------------------|---------------|----------|---------------------------------|
| | <i>Wave 1</i> | <i>Wave 2</i> | | |
| No_net | No | No | 462 | 43.0 |
| New_net | No | Yes | 220 | 20.5 |
| Net_both | Yes | Yes | 333 | 31.0 |
| Net_dropout | Yes | No | 60 | 5.6 |
| | | | 1,075 | 100.0 |

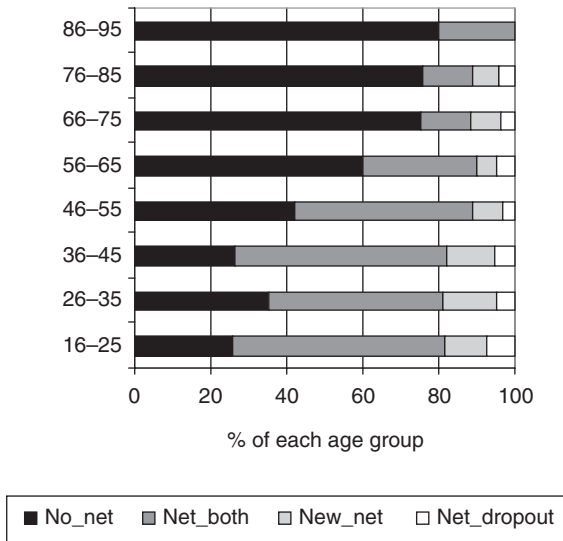


Figure 4.5 Age distribution of transition groups

determine which, if any, changes in time use can be associated with getting and using or losing Internet access in the home.

Analysis and Results

The results suggest that very few of the changes in time spent on primary and secondary activities can be significantly associated with gaining or losing Internet access at home. Table 4.4 shows all the significant results for primary activities. Clearly in most cases (table 4.2) there is no significant change. Our control group (No_net) throws up two interesting results. For reasons that are not clear, it would appear that the population as a whole is spending less time on shopping and appointments and roughly the same amount or more traveling.

The Net_dropout group spent significantly less time eating at home as a primary activity at wave 2. Given that 55 percent of Net_dropout were in paid work at wave 1 it may be that changes in their employment situations (i.e. lifestyle changes) could have led to changes in the amount of time they spent on cooking and food preparation. Simultaneously these lifestyle changes may also have resulted in loss or gain of Internet access.

Table 4.4 Results of paired sample t tests for primary activities

| <i>Time-use category</i> | <i>No_net</i> | <i>Net_dropout</i> | <i>New_net</i> | <i>Net_both</i> |
|--|---------------|--------------------|----------------|-----------------|
| Shopping, appointment (hairdressers/ doctors, etc.) | -0.626* | | | -0.702*** |
| Sports participation, keeping fit | | | | 0.418* |
| Reading/writing email | | | 0.534*** | 0.224* |
| Browsing web, or other Internet use | | | 0.755*** | 0.178* |
| Doing nothing (including illness) | | | | -0.509*** |
| Eating at home | | -1.114* | | |
| Hobbies, games, musical instruments | | | -1.029* | |
| Study at home (using PC) | | | 0.363* | |
| Travel (to and from work, shops, school, cinema, station, etc.) | 0.643* | | | |

Empty cells signify non-significant results. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

For example one interviewee who moved from employment with Internet access to a period of unemployment said:

when I moved here I didn't bother until I left my job in May '98. It was probably only then, yes it would have been only then I took out . . . because I had email at work and I had a laptop I could bring home . . . Then I thought while I'm not working, while I'm deciding what I'm going to do . . . So then I took a subscription to AOL . . . then more and more people I knew started to be on it and I was emailing lots people by then and so it became sort of indispensable. (CF)

This quote, and the one below, also shows the extent to which the maintenance of social networks via email can effectively "lock people in" to Internet access as a key social tool. This implies that a policy that focuses simply on supporting initial uptake is not sufficient. There may well be severe social implications of enforced "Internet drop out" whether through financial or other reasons.

It is plausible that a considerable number of individuals might have changed their educational circumstances during 1999. This may affect both their patterns of time use and their access to the Internet at the same time. For example, school leavers may have moved away from the parental home to a residence without access to the Internet. University leavers who had Internet access during their time spent at university may not feel the need to carry this on post-university, perhaps because they now had Internet access in their place of work. However,

regardless of the changes in their circumstances once the person had begun to use the Internet as part of their daily life, few seemed willing to give up access completely. Students who currently have access on campus may get access at home post-university if the Internet was not accessible at their place of work and it is interesting to note that 13 percent of Net_dropouts had been students in 1999. A student about to leave university said:

I've thought about doing it [getting Internet access] but I just haven't got around to it yet. There's things that I subscribe to that I wouldn't want to lose when I finish at university, things that would be useful for me professionally so I ought to get on with it really . . . I'd have to have access at home if I didn't have it at work because I've got so many friends that I wouldn't be able to contact otherwise. (DW)

Interestingly the results do not suggest that Net_dropouts spend significantly less time either emailing or using the Internet in general. This implies that whilst they may no longer have access at home, they may still have access elsewhere such as at work, at a public access point or some other institution. Clearly, an avenue for future research is more detailed investigation of the transitions undergone by the Net_dropout group.

The New_net group spent significantly less time on hobbies, games, and musical instruments suggesting that those who go online may now be pursuing their hobbies via the Internet because this activity might now be recorded as "using the worldwide web." This suggestion is supported by the some of the qualitative respondents:

Lets say I'm watching TV and there's an interesting programme on, I'm a bit of a foodie, I love to cook and if you're watching something, say a BBC cooking programme . . . and at the end of the programme they give you the BBC or Delia web page, you think "oh, that looks really cool" . . . and you just go and look up Delia Smith and see what's there. (AS)

However it is also plausible that the kind of household transitions referred to above or to others such as becoming a member of a shared household may be contributory factors. This may offer an explanation for the finding that the New_net group spends more time using a PC at home for study (education) than they did at wave 1.

Again our qualitative data supports this. When LA moved in with his new housemate he serendipitously became an Internet user as his new housemate showed him how to use the Internet and set up his

email account. LA then recognized that email could help him manage his recycling business and so he started using email. Prior to this LA had very little interest in technology, but now he feels that, should he move out of the flat, he would find it very difficult to manage his business and his personal life without it.

I was not interested fundamentally in computers and I disliked anything to do with it so it's only been in the last few years that I've become more aware of it. A it's fashionable, B it's incredibly useful. It's only since moving in with [housemate], otherwise I wouldn't have an email address if I didn't live here . . . One of the things I'll miss most about it if I leave is the fact that I have a technological capability that I never had before. (LA)

Similarly retirement from a job that involved computer or Internet access at the place of work can trigger home computer ownership and subsequently access to the Internet. Indeed in some cases they actually took the PC with them from work.

I used the Internet at work before I retired, it saved me a lot of time, I could punch in a couple of words and it would throw up any page from the *Economist* circulating then and from the last ten years . . . I wanted the Internet [at home] because it's manifestly useful and the email aspect is very attractive. (KS)

My other friend was given a computer that the work had finished with, it was a really old thing, an elastic band type of job, black and white screen etc. She was made redundant and then she went on a computer course and she was given this antiquated computer at home. And she's into story writing, she's trying to write a book. But that computer died on her, so this Christmas she treated herself to a new computer. (DR talking about a friend)

Other retirees have acquired Internet access in order to enable them to keep in touch with remote relatives (often grandchildren) on a more regular, but cheaper, basis than the telephone. While this may start as relatively simple email, it often rapidly changes to the exchange of media objects (audio and video clips, photos) of family members. Some of the retirees were relatively unskilled at using the computer, but even if they were not able to scan in or send attachments themselves they were often heavy consumers of material sent by other family members. MC, for example, did not own a scanner and was unaware of how to send attachments, however, she frequently

received photos from relatives who lived abroad: "He'll email pictures, photos of his kids and things like that" (MC, talking about her cousin who works from Singapore).

RA on the other hand was teaching himself how to use the PC and one of his favorite activities was working with photos or pictures on the PC. He then sent his pictures to his grandchildren: "because I did some things [on the PC] for the children with their photographs and I did some pictures and I needed to say that I wanted that back again because I had to recreate it because I hadn't saved it. And so I emailed" (RA).

The *New_net* group spent significantly more time reading and writing email than they had at wave 1. Thus there is, hardly surprisingly, evidence that getting Internet access in the household is associated with spending more time emailing. The *New_net* group also spent significantly more time web browsing or other Internet use than they had at wave 1.

Finally the *Net_both* group also show some interesting results. Individuals in this group spent significantly more time using the Internet in general at wave 2 than they had at wave 1. This suggests that Internet usage increases as people gain more experience with it and the data show that the increase is larger for email than for other Internet usage. This may confirm Kraut et al.'s result that email is a key driver of Internet use (Kraut, Mukhopadhyay, Szczypula, Kiesler, and Scherlis, 2000). For reasons that are not clear, this group spent less time shopping (perhaps related to the "control" results for *No_net*) and doing nothing and more time on outdoor fitness activities at wave 2 compared to wave 1.

Table 4.5 shows all the significant results for secondary activities. Again in most cases (see table 4.2) there is no significant change. Our control group (*No_net*) now appear to be spending more time on walks and outings and more time receiving phone calls as secondary (that is, background) activities. All groups report spending more time listening to the radio, CD, and so on which suggests a population trend, although it is interesting to note that the largest increase (over three hours per week) is for the *Net_dropouts*, a group who also spent more time watching videos at wave 2 than at wave 1.

New_net individuals appear to spend *more* time watching TV as a secondary activity (contrary to most suppositions) than they did before they had Internet access at home whilst *Net_both* individuals also watched more TV suggesting that this effect does not disappear as experience with the Internet increases. *New_net* individuals also

Table 4.5 Results of paired sample t tests for secondary activities

| | <i>No_net</i> | <i>Net_dropout</i> | <i>New_net</i> | <i>Net_both</i> |
|--|---------------|--------------------|----------------|-----------------|
| Walks, outings, etc. | 0.126* | | | |
| Listening to radio, CD, cassette | 1.714*** | 3.288* | 1.331* | 1.270*** |
| Receiving phone calls | 0.383*** | | | |
| Watching videos/laser disks | | 0.258* | | |
| Eating at home | | | 0.297* | |
| Care of own children or other adults in the home | | | | 1.790* |
| Watching TV/cable/satellite TV | | | 0.929** | 0.665* |
| Reading/writing email | | | 0.098* | |
| Browsing web, or other Internet use | | | | 0.158* |

Empty cells signify non-significant results. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

spend more time eating at home as a secondary activity than they did for reasons that are not clear.

Taken together these results suggest that changes to an individual's access to the Internet in their home are having very little immediate and significant impact on the time they spend on other activities. Instead, a plausible explanation for the changes in time use uncovered by this analysis is that alterations in lifestage or lifestyle, such as changing employment or educational circumstances trigger changes in an individual's patterns of time use – a reduction in the time they spend preparing food being one plausible effect. At the same time, those social changes may also trigger changes in their access to, and usage of applications and services delivered via the Internet.

Discussion

In general, what is noticeable about these results is not what has turned out to be significant, but what has not. There is no evidence from this data that individuals who now have Internet access in their household, and who use it, are spending less time watching television, reading books, listening to the radio or engaged in social activities in or outside the household in comparison with individuals who do not (or who no longer) have Internet access in their household. Indeed, in some cases they appear to be doing more of some of these. These results, based on longitudinal data refute those of Nie and Erbring

(2000) which are based solely on cross-sectional data and therefore cannot measure true change before and after a transition. The only time-use changes that can be associated with gaining Internet access are a decrease in time spent on hobbies and an increase in time spent studying at home using a PC, eating at home, watching TV and emailing/web-surfing. The latter of course is a staggeringly obvious result. The only changes which can be associated with losing Internet access are less time eating at home, and more time watching videos.

Interestingly there is no evidence of a decrease in the amount of primary or secondary telephone communication received or initiated by new Internet users (New_net) even though Internet use in these households at this point in time would have used the fixed telephone line and thus prevented simultaneous voice calls.

It is also of note that none of the significant changes for secondary activities were negative. Given that time-use is a zero-sum measure (there are only 24 hours in everyone's day) this implies that the activities which increased "stole" time from a range of other activities rather than one or two in particular. This resonates with our earlier point that interviewees could not really say where their Internet time had come from.

These findings suggest that changes in individual's time use cannot be attributed solely to the change in access to the Internet. As the sections above were careful to state, the significant results can only associate changes in time-use with changes in Internet access because a great deal of other significant events could have taken place in the lives of these individuals between waves 1 and 2. Further analysis is needed to unravel these effects using suitable regression models. It should also be noted that the data analyzed here represent just two points in time separated by one year and major changes in most people's time-use are very unlikely to occur over those time periods unless they undergo a significant life transition. In itself, getting or losing access to the Internet does not appear to be such a transition.

This implies that the simple impact model of Internet access and usage is not a useful explanatory tool. Not only have few significant effects been found but a range of confounding processes and triggers may make this kind of analysis over simplistic. As a result, the impact model does not enable much purchase on the problem of how to understand and explain the place of the Internet in everyday life. As this chapter has tried to demonstrate, this can only come from a deeper understanding of the triggers for and processes of its domestication, and a more detailed examination of how individuals and households

are making sense of and integrating its applications and services into their lives.

As has been suggested above, the qualitative data in the Digital Living study has started to draw out the complex relationship between Internet uptake and usage and an individual's changing personal circumstances in just this way. At the micro-level certain conditions and transitions in an individual's life may be significant triggers of Internet uptake or usage and, simultaneously, causes of change on patterns of time use.

Work-related transitions such as shifting from home-based to office-based work, or the reverse in the case of new teleworkers or new self-employment seem to affect both access to and the style of Internet usage (see also Akselsen et al., 2000). Changes within employment can also trigger Internet adoption through an explicitly or implicitly recognized need to improve work skills or competencies. Retirement also appears to be a significant trigger for household Internet adoption, particularly for those with distributed social networks and for those who have computer or Internet skills that they have learned in their workplace. Other household related transitions that need to be considered are the departure of household members, perhaps to distant universities, to start employment or to set up independent households because they have an impact on both the communication needs of the leaver and those left behind which Internet applications can meet. There is also some evidence from our qualitative data that household formation transitions such as couples forming cohabiting partnerships or the birth of a child also trigger Internet acquisition (or loss of access) and changes in the style of use.

It should be clear that these effects are extremely important in any attempt to understand the role and place of Internet applications and services in people's lives. In particular, it shows that analysis of these sorts of transitions needs to be taken into account when conducting any kind of analysis of the change in people's patterns of activities that may be associated with the adoption of a particular technology.

Conclusion

This chapter has described and analyzed some of the patterns of domestic Internet acquisition and use in the UK at the end of the twentieth century, with a particular focus on how individuals' patterns of time use may or may not change when they acquire or lose Internet

access. It will have become clear that the integration of qualitative and quantitative data sources can be an extremely powerful way to examine both the average or population-level patterns using quantitative data, and the processes that generate them using qualitative data. One is not sufficient without the other. This is perhaps most clearly visible in the quantitative analysis of changes in time use reported which tests the hypothesis that changes in individuals' time use can be attributed to acquiring Internet access and using it. Without the subsequent integration of qualitative data on educational and employment transitions the patterns of changes in time use do not make much sense. With the qualitative findings taken into account a plausible explanation emerges and an important conclusion can be drawn: acquisition of the Internet and usage of its different applications is not necessarily changing individuals' lives but may be embedded within the normal social change of everyday life. As a result, it seems clear that simple replacement effects are unlikely because other significant events are ongoing in individuals' lives.

By conducting analysis in this integrated and iterative manner, the chapter has started to tease out some of the motivations and triggers for Internet acquisition and usage, such as the role of lifestyle and lifestage related transitions, which to date have largely been ignored. A primary avenue for future research must be the further exploration of these factors.

Finally, it could be argued that people are not doing anything particularly new, they are doing old things in new ways and finding that some of those new ways suit their lifestyles better. Thus, as Kling (2000) argues so clearly in the area of organizational information systems, technological change does not have a simple impact on a society. Rather, the opportunities for individual and household social innovation in the domestic arena are bound up with the possibilities the technology affords, the individual's value systems and goals, and the varying rates and degrees of change in their everyday lives. In the household context, this suggests that a second avenue for future research must be to integrate the insights from longitudinal qualitative research with longitudinal quantitative analysis to build on Gershuny's model of social innovation to encompass emotional (e.g. communicative, relationships) and symbolic (e.g. fashion, identity) as well as functional needs.

To conclude, the place of Internet applications and services in people's lives appears to be richly varied but by triangulating data

sources some of the patterns and processes that shape this role start to emerge. Given that this role seems to be context dependent and highly variable within and between households, patterns of participation in “the information society” are not necessarily as simple as might be thought and dot.coms of the future may make money, but at the individual customer level they may never know why.

Appendix 4.1

Respondent profiles

DC: male, single, a graphic designer in his thirties. He used to run his own Internet start-up company and now works in a small design company. He has broadband access to the Internet in his home.

GE: housewife, with 5-year-old daughter, living in central England. She is in her late thirties and is married to KE who is an engineer. The family had neither a PC nor Internet access in the home, though KE uses the Internet at work and they thought they would probably get access at home for their daughter in the future.

MC: female, sixties, retired widow, lives alone, two children away at university. Has had Internet access for some time but only really used it since children left home.

JB: male, twenties, lived with parents. Worked in supermarket but about to start a locally based course. Did not have Internet access at home but used it in his local library (5 minutes walk). Did not use email at all.

SC: male, mid-forties. He is married to MC and works in broadcasting. He was trying to set up his own webpage design company at the time of interview and has broadband access in his home.

CF: female, 45 years. She lives alone and works from home as a management consultant. She has been working for herself for 18 months and has broadband access at home.

DW: male, thirties, lives with girlfriend, social science student in an urban university about to complete a Ph.D.

AS: male, mid-thirties and lives in central London. He works in marketing for an advertising agency, and previously ran his own consultancy business from home for 2 years. He is married and has broadband Internet access at home. Delia Smith is a well-known UK TV cook.

LA: Actor and runs small recycling business. Housemate owns PC and ADSL connection which LA uses during the day as he works mainly in the evenings. LA hadn't used PCs or Internet much if at all before moving in. Now uses it extensively for recycling business.

KS: male, sixties, semi-retired, writes for *The Economist*, married with two children who have left home. Has Internet access but a very slow modem.

DR: female, sixties, retired. Married, two children living away from home. Had Internet access for 3 years, son was a computer science student at university.

RA: male, early retiree, used to be an electronic engineer. Married with children and grandchildren. Had Internet access for less than 6 months and was not a confident user. Used PC/Internet heavily for involvement in civic, council, and local charity activities.

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