

The Global Villagers

Comparing Internet Users and Uses Around the World

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Abstract

As the Internet evolves, its users and uses grow and diversify globally. Data from a National Geographic web survey enables us to compare how people in different parts of the world use the Internet. The widest digital divide is between North America and the rest of the world, and secondarily between other developed countries and developing countries. Substantial differences exist between who uses the Internet and how long they have been using it. The lower the percentage of people using the Internet in a region, the more elite the people using the Internet. However, newcomers to the Internet throughout the world are less likely to be elite and are more likely to resemble the diverse nature of North American Internet users. By contrast to regional differences in the characteristics of users, the Internet is used in similar ways worldwide. Throughout the world, frequent users tend to use the Internet in multiple ways – socially, instrumentally, and recreationally – and to combine it with face-to-face and telephone contact. Moreover, frequent users of the Internet have a more positive sense of online community with friends and family.

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Exploring the Internet Globally

Uncharted and uneven terrain

As the Internet evolves, its users and uses grow and diversify globally.¹ Social research about the Internet has followed the spread of the Internet itself. With the Internet born and raised in the USA, most research has been American. With Internet use increasing in other developed countries, research about their situations has been on the rise (for example, see the chapters by Anderson and Tracy; Hampton and Wellman; Miyata; Wagner, Pischner, and Haisken-DeNew). However, there has been little research about how Internet use fits into the everyday life of developing countries (see Davidson, Sooryamoorthy, and Shrum's chapter). Furthermore, international comparisons are almost non-existent. Those comparative studies that do exist have focused on the size of the population using the Internet ("penetration rate") and market potential rather than on social characteristics associated with Internet use. These studies have had to rely on statistics gathered with different methods in each country. The result has been uneven data and conflicting results (Jordan, 2001; Norris, 2001).

Two projects have been addressing the need for systematic comparative data. One, the UCLA World Internet Project is an international undertaking to study changes associated with the Internet. Researchers in 24 countries administer a standard set of 30 questions (plus additional modules reflecting local and national interests) in an annual longitudinal study.²

We are part of the second project which uses data from *Survey 2000*, gathered at the National Geographic Society website. We draw on the

1 There are no reliable estimates of the number of worldwide Internet users. Some plausibly indicative ones report 900,000 in 1993 (ACNielsen, 2001); 25 million in 1995 (Pew Research Center for People and the Press, 1995); 83 million in 1999 (Intelli-Quest, 1999 as cited in DiMaggio, Hargittai, Neuman, and Robinson, 2001) and 429 million in 2001 (ACNielsen, 2001).

2 For details, see Cole et al. 2001. Lunn and Suman's chapter (19) provides American data from an early survey.

happy circumstance that Survey 2000 attracted respondents from 178 countries to report on who they are and how they use the Internet. Although the nature of the sample limits generality, it is truly global. Moreover, we believe that this is the first scholarly study to compare systematically worldwide data about the users and uses of the Internet.

We use the data to address five questions about the worldwide users of the Internet and the uses they make of it. Our principal comparison is between North America, other economically developed countries in the Organization for Economic Cooperation and Development (OECD), and other, often developing, countries. We also compare seven geographically defined regions. We ask:

- 1 What are the profiles of users? What is the nature of the global digital divide?
- 2 How long have people been using the Internet? Is there a temporal digital divide in the length of people's Internet experience?
- 3 What do people do online? To what extent is their activity instrumental, recreational, and social?
- 4 Does Internet affect people's sense of online community with friends and family? Are they enthusiastic or alienated?
- 5 Where in the world are the widest digital divides? Are other economically developed countries more similar in their Internet users and uses to North America or to developing countries?

The global digital divide

The worldwide debate about the Internet's impact on both societies and individuals is not only a scholarly matter. Policymakers see the Internet as a catalyst for broad socioeconomic development, while corporations see the Internet as a profit source. Those accessing the Internet use different levels of technology and make different uses of it. Comparing Internet users and their Internet use inevitably directs attention to the global digital divide at the intersection of international and intra-national differences: socioeconomic, linguistic, and technological (OECD, 2001; Jordan, 2001).

The "digital divide" originally denoted unequal access to the Internet because of characteristics such as gender, age, race, ethnicity, education, income, geographic location, English-language ability, and physical and cognitive disability (NTIA, 1995). Early studies found

that users were disproportionately young, white, university-educated, English-speaking, middle/upper-class, male North Americans. By the end of 2001, more than half of the North American population had come online, and gaps of gender, age, and geographic location have decreased. The socioeconomic threshold of Internet access continues to sink with the influx to cyberspace of newcomers from less-privileged social groups (see the chapters by Katz and Rice; Howard, Rainie, and Jones; see also Fong, Wellman, Wilkes, and Kew, 2001).

The expansion of the term "digital divide" to "global digital divide" points to differences in Internet access and use between countries, as well as within countries. Such inequalities have led to "a substantial asymmetry in the distribution and effective use of information and communication resources between two or more populations" (Wilson, 2000). As Manuel Castells notes, "Differences in Internet access between countries and regions in the planet at large are so considerable that they actually modify the meaning of the digital divide, and the kind of issue to be discussed" (2001, p. 248).

There are substantial differences in Internet use within countries as well as between them. For instance, China has a relatively large number of Internet users, 22.5 million, but they are less than 3 percent of its population. Almost 7 out of 10 Chinese users are men, 6 out of 10 are under 30 years old, about two-thirds are single, and 93 percent have been educated beyond high school in a country where only a minority have post-high school education (CNNIC, 2001). As in many developing countries, the bulk of Internet users are located in large urban centers: Beijing, Shanghai, and Guangdong account for more than 30 percent of Chinese Internet users, with 23 percent of the homes in these cities connected to the Internet. The distribution of Internet users is so urban-centric that only 0.8 percent of the users in this largely agrarian country are farmers (CNNIC, 2001). Similarly, 35 percent of Russian Internet users are located in Moscow and St Petersburg, cities containing only 12 percent of the Russian population (Varoli, 2001).

The global digital divide reflects the broader context of international social and economic relations. The between-countries divide represents a center-periphery order marked by North American dominance. Although 5 percent of the world's population is online, more than 60 percent of the online population is North American (ACNielsen, 2001). Other developed countries vary in the percentage of their populations using the Internet, with their penetration rates

ranging widely from as high as those in North America to substantially lower. The percentage of Internet users in developing countries is far lower than in developed countries. Hence, developing countries account for 85 percent of the world's population, but only 20 percent of Internet users (*Economist*, 2000). For instance, while the total African online population is no greater than the online population of New York or Tokyo (ABC News, 2000), Africa probably has fewer email addresses allocated to it than the Massachusetts Institute of Technology (McTaggart, 2002).

Issues

A social divide

International differences in the Internet's development are social as well as technological and commercial. The digital divide is not just a matter of differences in access to Internet service providers, broadband, and reliable electric and communication systems. It is a matter of who is going to use the Internet, for what purposes, under what circumstances, and how this use affects other social and economic activities. There are international variations in physical, financial, cognitive, content, and political access (Wilson, 2000). In particular, developing countries have large segments of the population whose poverty and lack of literacy make Internet access unthinkable, and where even those who want to go online live in rural or impoverished urban areas without useful electrical and communication systems.

Use, not just access

Internet use is not just a simple matter of Internet access, although marketers often report only the number of people who have access to the Internet and what they are likely to buy online. Yet, Internet use is not as simple as a binary yes/no access question. "What is at stake is not access to ICT in the narrow sense of having a computer on the premises, but rather in a wider sense of being able to use ICT for personally or socially meaningful ends" (Warschauer, 2003, chapter 2, paragraph 6).

The issue is not if people have ever glanced at a monitor or put their hands on a keyboard; it is if they regularly use the Internet and for what purpose. Having access to the Internet and having the ability to

use the Internet effectively are two very different aspects of the digital divide (see also Jung, Qiu, and Kim 2001).

While academic, government, and commercial research have focused on the issues of access, we know less about the effects of the Internet on people in different corners of the global village. Essential elements include price, quality, bandwidth, computer skills, and online content. Cost is more salient outside North America because Internet connection charges, even in developed countries, are more expensive. In the developing world, nearly half of the 228 Internet service providers in Africa are connected via satellite, making the access cost almost prohibitive for most people living in this continent. For example, the cost in some African countries is US\$60 for 5 hours a month plus telephone connection charges (United States Internet Council and ITTA, 2001).

Content barriers affect how the Internet is used, for example, English-language dominance and the lack of local information and culturally appropriate material. As Anatoly Voronov, the director of the Russian Internet service provider, Glasnet, exclaims:

It is just incredible when I hear people talking about how open the Web is. It is the ultimate intellectual colonialism. The product comes from America so we either must adapt to English or stop using it . . . This just makes the world into new sorts of haves and have-nots. (quoted in Crystal, 1997, p. 108)

Most Internet content targets well-off, well-educated, English-speaking users. An estimated 78 percent of all websites are in the English language, even though just over 50 percent of Internet users are native English speakers, and only 10 percent of the world population use English as a first language. Indeed, the predominant standard for computer characters has difficulty using non-English characters: ASCII (the *American Standard Code for Information Interchange*). So far, English-language dominance of the Internet has not been extensively challenged by the worldwide growth of Internet users who natively read other languages (Jordan, 2001). Yet, lack of appropriate content is a reason why the digital divide looms in both developed and developing countries.

The growth of the Internet may even exacerbate existing knowledge disparities and lead to the further social exclusion of disadvantaged groups. DiMaggio, et al. (2001) identify five dimensions of digital inequality: equipment, autonomy of use (location of use), skill, social

support, and the purposes of using the Internet. Indeed, access does not always mean continued use. Some Internet users drop out because of frustration with cost, content, or technology (see Katz and Rice, chapter 3).

Newbies and veterans

Most research has focused on comparing users and non-users. Less attention has been paid to comparing different types of users, especially the ways in which newcomers to the Internet (“newbies”) and veteran users differ from each other and how those differences might mediate the impact of the Internet. Yet, the length of Internet experience may play a critical role in users’ online behavior and their evaluation of the Internet (see the chapter by Quan-Haase and Wellman). For instance, Pittsburgh newbies became alienated and less sociable when they first went online. Yet these negative effects disappeared by their third year online, as they gained more experience and the world became more Internet-literate. Extroverts especially flourish online. (Compare Kraut, Patterson, Lundmark, Kiesler, Mukhopadhyay, and Scherlis, 1998 with Kraut, Kiesler, Boneva, Cummings, Helgeson, and Crawford, 2002; see also LaRose, Eastin, and Gregg, 2001).

The widening and deepening digital divide

The digital divide may be wider and deeper within developing countries than within developed countries: wider in the sense that few people actively use the Internet and deeper in the sense that the consequences for not being online may be greater when moving beyond a subsistence level. In developed countries, people are rapidly becoming newbies, and newbies are becoming veterans. The Internet has become an integral part of everyday life for a great many who use the Internet as a medium to communicate and pursue personal interests. Because the technology has become so pervasive, low costs, training and mentoring afford users the time and experience needed to use the Internet effectively. Non-users can usually find a friend, neighbor, or child to work the Internet for them.

By contrast, high costs in developing countries may mean that users have less of the experience needed to use the technology to their advantage. They are less likely to find help locally in dealing with the online world. If pre-existing inequalities deter people in developing countries from using the Internet, these inequalities may increase as the Internet becomes more central to global life: from keeping in

contact with migrant kin, to acquiring information, to engaging in farm-to-market commerce. Hence, rather than socially including marginal people and countries, the embedding of the Internet in everyday life can enhance and deepen power relations underlying existing inequalities.

Research Questions

Who is using the global Internet?

Is the profile of international users recapitulating the socio-demographic development of North American users? If so, would the recent bulk of global Internet users represent the same male, urban, educated, and upper/middle-class profile that was prevalent until recently in North America?

A second possibility is that users outside North America are even more of an elite than the early North American adopters of the Internet were. The preponderance of elite users is because of the high level of poverty in most developing countries and the higher cost of Internet use in almost all countries except for North America. The global digital divide would be widest within those developing countries with much socioeconomic inequity and poverty. This possibility suggests the importance of the digital divide, both culturally and economically, within countries as well as between countries.

A third possibility is that Internet use has become so globally popular that a wide range of people are flocking to use it as needed, including women, rural folks, and those with low socioeconomic status. They overcome their poverty by using facilities in community centers or storefront cybercafes.

Who are the newbies?

If the social demographic profile of users in the global village provides a picture of the spatial divergence of Internet access, the characteristics of newbies should illustrate the temporal dimension of Internet diffusion across countries. A higher percentage of Internet users outside North America are newbies due to the recency of Internet deployment there. Hence, current newbies will be the predominant international Internet users of the near future. To know the current characteristics of newbies is to peek into the future characteristics of many Internet users. Are newbies the same or different around the world, in their characteristics, enthusiasms, and Internet uses?

*Do different parts of the world vary in their uses
of the Internet in everyday life?*

When users start using the Internet comfortably, they move from being toddlers making their first online keystrokes to being walkers and runners in the global village. What Internet uses are common or different around the world? What social characteristics are associated with different uses? Are differences only temporal, in that it takes time for newbies to become old hands? We know a good deal about how North Americans use the Internet, but do users in other developed and developing countries use it in similar ways?

Does the Internet build sociability and a sense of community?

How does the Internet affect community, in general and online? Although there have been concerns for more than a century about the possible decline of community, the rise of the Internet has increased these fears as well as created new hopes for increased community (reviewed in Wellman, 1999; Wellman and Gulia, 1999; Quan-Haase and Wellman, chapter 10). The debate about the Internet's impact on community has been fierce, with scholars suggesting that Internet use increases, decreases, or transforms community (Quan-Haase and Wellman's chapter (10) sets forth the debate). Evidence from many studies in this book suggests that the Internet may be modestly increasing interaction with friends and relatives at a distance, has mixed local effects, and may be diverting people from household interactions. The Internet can be leading people away from in-person and telephone encounters, and it can substitute for them. It can even increase other forms of contact by intensifying relationships and facilitating meeting arrangements. We examine here the relationship between Internet use, having a sense of online community, and the frequency of social contact – both face-to-face and by telephone.

Surveying the Global Village

The virtual expedition

The *National Geographic* magazine and society publicized Survey 2000 worldwide and featured it on their popular website, September to November 1998. Visitors to the site were encouraged to answer the

survey on the spot. The survey collected data from Internet users in 178 countries about activities they carried out both online and offline.³

Twenty thousand (20,282) adults (18+ years) completed all the questions that are of interest to us. The ten largest sources of survey respondents include four predominantly English-speaking countries: United States (67.4 percent), Canada (9.5 percent), Australia (3.4 percent), and United Kingdom (3.1 percent), each with populations with high Internet use (from 40 percent for the United States to 21 percent for the United Kingdom; figures from 1999). The next six largest sources are Mexico, New Zealand, Germany, Hungary, South Africa, and Italy, but numbers in the sample drop markedly with Mexico comprising 1.1 percent of the sample, and Italy, 0.7 percent of the sample (table 2.1).

The web-based data collection method for Survey 2000 was innovative, convenient, cost-effective, wide-ranging, and produced a large sample. Yet, it was not based on random sampling that permits researchers to generalize reliably to the characteristics of Internet users around the world. As the *National Geographic* appeals to a literate, family-oriented readership, it is probable that the survey over-sampled well-educated and well-off respondents. However, it is precisely the well-educated who are apt to use the Internet, especially in less-developed countries. Hence, there are discrepancies between the percentage of each country's population using the Internet and the percentage of the sample coming from each country.

National representation in the sample roughly reflects a complex combination of population size, Internet penetration rate, English-language use, and interest in the US-oriented content dominating the web. There are also some unusual over- and under-representations. For example, active recruiting led Hungary to be the third most represented European country, after the United Kingdom and Germany and ahead of Italy, Spain, the Netherlands, and France (in that order). Hungary accounts for half (52 percent) of the small East Europe sample, India accounts for 87 percent of the South Asia sample, while

3 Details of Survey 2000 are at <http://survey2000.nationalgeographic.com>. Witte, Amoroso, and Howard (2000) discuss the development and administration of the survey. May (1999) presents preliminary results to the general public. See Quan-Haase and Wellman's chapter (10) for more detailed analyses of the North American data obtained from this survey. Although the magazine itself is published in many languages, Survey 2000 was only available in English. Data from the newer, multilingual Survey 2001 are not yet available. Survey 2001 itself is at <http://survey2001.nationalgeographic.com/ngm/servlet/Page1>

Table 2.1 Country ranking, grouping, number of respondents, and Internet penetration rate, 1999

Country	Category	No. of respondents	% of sample	% population using Internet in 1999 ^a
US	North America	13,665	67.4	40
Canada	North America	1,934	9.5	36
Australia	Other OECD	690	3.4	32
UK	Other OECD	619	3.1	21
Mexico	Other OECD	221	1.1	3
New Zealand	Other OECD	190	0.9	18
Germany	Other OECD	181	0.9	19
Hungary	Other OECD	158	0.8	6
South Africa	Non-OECD	155	0.8	N/A
Italy	Other OECD	134	0.7	9
Singapore	Non-OECD	134	0.7	29
Spain	Other OECD	129	0.6	7
Netherlands	Other OECD	113	0.6	19
France	Other OECD	112	0.6	10
Greece	Other OECD	106	0.5	N/A
Malaysia	Non-OECD	100	0.5	7
Israel	Non-OECD	93	0.5	16
Argentina	Non-OECD	84	0.4	3
Sweden	Other OECD	82	0.4	41
Ireland	Other OECD	79	0.4	12
India	Non-OECD	77	0.4	0.2
Hong Kong	Non-OECD	72	0.4	25
Belgium	Other OECD	70	0.3	14
Japan	Other OECD	67	0.3	15
Norway	Other OECD	65	0.3	45
Brazil	Non-OECD	60	0.3	2
Switzerland	Other OECD	59	0.3	25
Finland	Other OECD	53	0.3	33
Portugal	Other OECD	48	0.2	7
Colombia	Non-OECD	41	0.2	1
Denmark	Other OECD	38	0.2	28
Puerto Rico	Non-OECD	35	0.2	N/A
Croatia	Non-OECD	34	0.2	N/A
Venezuela	Non-OECD	34	0.2	2
Philippines	Non-OECD	32	0.2	1
Chile	Non-OECD	31	0.2	4
Austria	Other OECD	27	0.1	10

^a Source: World Employment Report 2001. *Life at Work in the Information Economy*. International Labor Office, Geneva, Switzerland, 2001.

South Africa dominates the African sample (87 percent), and Australia comprises 77 percent of Oceania. East Asian respondents are from relatively developed countries, with Japan, Singapore, and Hong Kong accounting for 57 percent of the sample. By contrast, only 11 respondents from China are in the final sample. Clearly, the National Geographic survey's map of the online world does not look like a map of the world's population.

Despite its limitations, Survey 2000 provides useful signposts alerting us to the nature of Internet users and uses worldwide at a time when there is a paucity of survey research analyzing the global diversity of Internet users. Even with sample discrepancies, these data are congruent with the globally uneven access to the Internet. In fall 1998, the Internet was still North American centric. More than three-quarters of the respondents lived either in the US or in Canada, and less than 10 percent lived in non-OECD countries that usually have lower levels of economic development.

Mapping the Global Internet

Grouping the global villagers

In what follows, we examine how the nature of Internet users and uses is related to a variety of social and individual characteristics, including gender, age, language spoken at home, education, marital status, household size, employment status, use of more conventional media (e.g. newspapers/magazines, and television), and the place of Internet access. We examine these variations worldwide, and also compare three categories of countries that differ in Internet centrality and economic development:

1 As *North America* has been the prime source of Internet technology and use, to capture the effects of early adoption, we compare North American respondents (77 percent of sample) with other "international" respondents. We operationalize "North America" as only the United States and Canada because of Mexico's lower Internet involvement and economic development.

2 To explore the importance of economic development on Internet use and access, membership in the Organization for Economic Cooperation and Development (OECD) is a useful indicator to distinguish developed countries from developing ones, although the typology

leaves out some relatively developed countries such as Singapore. Nevertheless, this typology is useful for this first report. Hence, the economically developed countries that are members of the OECD are classified into one group, excluding the U.S and Canada (listed in appendix 2.1). This *other OECD* group represents 15 percent of the sample.

3 All other countries are grouped into the category of *non-OECD* countries (8 percent of the sample).

In each section, we first present findings for the total global sample, and then compare the similarities and differences of the three categorical divisions. As North America comprises the great majority of the sample, its statistics are similar to the overall sample. However, they provide interesting comparisons with the other OECD and non-OECD countries. To see if geographical regions vary in different ways than the aforementioned economic development groupings, in each section we also compare seven geopolitical regions: North America, Latin America, European Union, (the formerly socialist) East European countries, Asia, Africa, and Oceania. As the sample size is so large, statistical significance does not mean substantive significance. Hence, our analysis focuses on the strongest findings, and we only flag in the tables those few associations between variables that do not reach statistical significance.

Inhabitants of the Internet

Who in the world is using the Internet?

The overall demographic profile (table 2.2) of *National Geographic* survey respondents on the Internet shows that they are predominantly male (54 percent), over 30 (mean = 37 years), speak English at home (75 percent), and usually access the Internet from home (63 percent). The respondents have at least an undergraduate university education (58 percent), a full-time job (59 percent), often read newspapers and magazines (88 percent), and often watch television (67 percent).⁴

The lower the percentage of Internet users in a region, the more elite the respondents. A higher percentage of international respondents have a graduate education and work full-time than do North

4 Respondents were asked how often they read newspapers and magazines, and watch TV: "never," "sometimes," and "often."

Table 2.2 Social profile of Internet users in different national categories (%)

	<i>World</i>	<i>North America</i>	<i>Other OECD</i>	<i>Non- OECD</i>
Women	46	50	34	37
Age (mean)	37	38	33	33
Single	39	37	46	52
English not spoken at home	26	14	60	75
Education				
High school or less	11	9	17	17
Some college	31	33	26	23
Undergraduate	32	34	24	29
Graduate school	26	24	33	31
Employment				
Full-time	59	59	62	62
Part-time	6	6	6	5
Unemployment	8	8	5	6
Retired	5	6	2	2
Student	22	21	25	26
Traditional media use				
Frequent print media user (newspaper, magazine)	88	87	89	90
Frequent TV watcher	67	66	71	72
Place of access				
Home	63	66	53	59
Workplace	29	27	36	33
School	5	5	7	5
Community centers, etc.	3	3	3	3
Newbie (<1 year Internet experience)	19	18	23	22
Internet activity				
Number of Internet activities (mean)	6	6	6	6
Instrumental Internet use scale (mean)	16	16	15	15
Recreational Internet use scale (mean)	2	2	1	2
Sense of online community	22	22	23	24
Sense of online kinship	8	8	7	8
Weekly + contact with kin within 50 km				
Personal visit	33	32	37	35
Telephone	43	42	47	46
Email	16	16	12	14
Weekly + contact with friends within 50 km				
Personal visit	61	60	64	60
Telephone	70	69	74	72
Email	48	49	44	48
Weekly + contact with kin beyond 50 km				
Personal visit	4	3	4	5
Telephone	44	46	42	31
Email	37	40	25	31
Weekly + contact with friends beyond 50 km				
Personal visit	4	4	5	5
Telephone	17	17	18	16
Email	39	40	35	40
Number of survey respondents	20,282	15,599	3,079	1,604

Americans (table 2.2). There is an ordered set of differences between North American, other OECD, and non-OECD respondents. The percentage of male, young, better-educated, multilingual,⁵ single, and full-time working respondents is generally highest for the non-OECD respondents and lowest for the North Americans with the other OECD respondents somewhere in between. The data provide information about six socio-demographic dimensions of differences in who uses the Internet. Taken separately and together, they help map the terrain of the digital divide between North America, other OECD, and non-OECD countries.

Gender

The proportion of female respondents outside North America is much lower than the approximately equal gender balance of the North Americans. Only 34 percent of users in other OECD countries and 37 percent in non-OECD countries are women. The gender gap is especially marked in South Asia, Latin America, and East Europe where less than 30 percent of the respondents are women. However, even in the developed European Union, only 34 percent of the respondents are women.

Age

With a mean age of 38, North American respondents are the oldest, while respondents from both other OECD and non-OECD countries have a mean age of 33. A 5-year difference means that while the age gap between younger and older users is diminishing in North America, younger users predominate elsewhere. East European and South Asian respondents have the youngest mean age (28), 10 years younger than the North Americans.

Marital status

The proportion of singles is higher outside North America than in North America. While 37 percent North American users are single, 46 percent of respondents from other OECD countries, and 52 percent from non-OECD countries are single.

5 As the survey was in English, we crudely classify respondents as “multilingual” if they report speaking a language other than English at home.

Multilingualism: language used at home

Not surprisingly, the proportion of users who use English at home is much less higher in North America (86 percent) than elsewhere. Forty percent of the respondents from other OECD countries and 25 percent from non-OECD countries primarily use English at home. Only a small percentage of those respondents living in some regions primarily use English at home: Latin America (8 percent), Eastern Europe (14 percent), and Asia (6 to 14 percent). African respondents, of whom 87 percent were from South Africa, are likely to use English at home (44 percent).

Socioeconomic status (education)

Education is the only indicator of socioeconomic status available in Survey 2000. The respondents are well educated: 58 percent worldwide have at least an undergraduate (first) university degree. Internet respondents outside North America tend to have more education: 33 percent of respondents from other OECD countries and 31 percent from non-OECD countries have a postgraduate (master's or doctorate) degree, compared with 24 percent of the North Americans. By region, at least one-third of those outside North America have a postgraduate degree (except for the regions of Eastern Asia, 23 percent, and Oceania, 21 percent). Those with the highest level of education are African: 47 percent have a postgraduate degree, while only 9 percent have less than a high school education.

Employment

A majority of the respondents, almost six out of ten respondents (59 percent) work full-time, while another 22 percent are students. The proportion of unemployed or retired respondents is low around the world. Outside North America, Internet use is strongly associated with working full time or being a student. There is an increase in the share of full-time workers and students from North America (80 percent) to other OECD countries (87 percent) and non-OECD countries (88 percent). To put it another way, one-fifth of North Americans get online without the economic advantage of being able to use the Internet while studying or working full time.

There are some regional variations in this. Almost half (47 percent) of East European respondents are students. East Europe also has the

lowest percentage of respondents employed full time (50 percent). East Asian respondents tend to be employed full time (60 percent) or students (31 percent). Only a small minority of respondents is neither a student nor employed full-time. Africa has the highest percentage of full-time workers (78 percent) and the lowest percentage of students (13 percent). This is probably the result of low income, low percentage of the population attending university, and the possible lack of Internet connectivity at schools and universities.

Place of use

Around the world, nearly two-thirds (63 percent) of the respondents primarily use the Internet at home. This compares with 29 percent from their workplace and only 8 percent from community centers, cyber cafés, and other locales. Sixty-six percent of North American respondents primarily use the Internet at home. By contrast, only 53 percent from other OECD countries and 59 percent from non-OECD countries do so.

There are marked regional variations in these global tendencies. Middle Easterners (71 percent) and Oceanians (70 percent) primarily use the Internet from home. East Europeans are the least likely to use the Internet from home (only 30 percent do so), followed by South Asians (42 percent) and Africans (44 percent). A relatively high 15 percent of East Europeans and 13 percent of South Asians are principally connected to the Internet at school.

The temporal digital divide

How long have people in different parts of the world been using the Internet?

Not only do a lower percentage of the population use the Internet outside North America, a somewhat higher percentage of the non-North American respondents in this survey are “newbies,” defined here as people using the Internet one year or less. While 18 percent of North American respondents are newbies, 23 percent of the respondents from other OECD countries and 22 percent from non-OECD countries are newbies. Compared with North American users, respondents from other OECD and from non-OECD countries are 1.3 times as likely to be newbies (table 2.3, model 2). However, there are regional variations. There are high percentages of newbies in Oceania

Table 2.3 Who are the newbies? (logistic regression)

Independent variables	Global (model 1)		Global with regional controls (model 2)		North America (model 3)		Other OECD (model 4)		Non-OECD (model 5)					
	B	SE	B	SE	B	SE	B	SE	B	SE				
Gender (male = 1)	-0.422	0.039	0.656	0.039	0.631	-0.496	0.046	0.609	-0.457	0.095	0.633	-0.172 ^a	0.13	0.842
Age (reference = older than 65)														
18-29	-0.730	0.139	0.482	0.140	0.441	-0.973	0.150	0.378	0.506 ^a	0.723	1.658	-0.047 ^a	0.636	0.954
30-9	-0.297	0.135	0.743	0.136	0.705	-0.415	0.144	0.660	0.816 ^a	0.722	2.261	0.085 ^a	0.632	1.089
40-9	-0.199 ^a	0.135	0.819	0.136	0.803	-0.301	0.143	0.740	0.943 ^a	0.725	2.567	0.319 ^a	0.636	1.376
50-65	-0.117 ^a	0.128	0.890	0.128	0.874	-0.192 ^a	0.135	0.825	0.953 ^a	0.713	2.592	0.274 ^a	0.621	1.315
English not spoken at home	0.204	0.045	1.226	0.051	0.930	-0.092 ^a	0.069	0.912	-0.098 ^a	0.093	0.906	-0.007 ^a	0.144	0.993
Education (reference = high school or less)														
Some college	-0.404	0.057	0.668	0.058	0.711	-0.470	0.069	0.625	-0.060 ^a	0.130	0.941	-0.048 ^a	0.196	0.953
Undergraduate degree	-0.900	0.061	0.407	0.061	0.434	-1.019	0.073	0.361	-0.424	0.139	0.655	-0.223 ^a	0.199	0.800
Postgraduate	-1.167	0.066	0.311	0.066	0.320	-1.309	0.080	0.270	-0.870	0.143	0.419	-0.505	0.210	0.604
Single	-0.028 ^a	0.044	0.972	0.044	0.953	0.019 ^a	0.053	1.019	-0.197	0.105	0.821	-0.388	0.157	0.678
Household size	0.043	0.011	1.044	0.011	1.035	0.043	0.015	1.044	0.007 ^a	0.024	1.007	0.038 ^a	0.024	1.039
Employment status (reference = retired)														
Working full-time	-0.174	0.097	0.840	0.098	0.816	-0.193	0.104	0.825	-0.077 ^a	0.366	0.926	-0.035 ^a	0.523	0.965
Working part-time	-0.087 ^a	0.113	0.916	0.114	0.871	-0.158 ^a	0.124	0.854	0.113 ^a	0.390	1.119	-0.031 ^a	0.573	0.970
Unemployment	-0.160 ^a	0.111	0.853	0.112	0.849	-0.217	0.120	0.805	0.277 ^a	0.401	1.319	0.055 ^a	0.570	1.057
Student	-0.673	0.111	0.510	0.111	0.506	-0.733	0.123	0.480	-0.409 ^a	0.382	0.664	-0.100 ^a	0.547	0.905
Traditional media use														
Heavy print media use	0.035 ^a	0.057	1.036	0.057	1.010	-0.002 ^a	0.066	0.998	0.055 ^a	0.143	1.056	0.003 ^a	0.210	1.003
Heavy TV watcher	0.028 ^a	0.040	1.028	0.040	1	-0.037 ^a	0.046	0.964	0.065 ^a	0.099	1.068	0.214 ^a	0.142	1.238
Place of access (reference = Community center, etc.)														
Home	-0.089 ^a	0.103	0.914	0.104	0.919	-0.056 ^a	0.124	0.946	-0.086 ^a	0.243	0.917	-0.292 ^a	0.332	0.747
Workplace	-0.689	0.110	0.502	0.111	0.490	-0.730	0.132	0.482	-0.638	0.256	0.528	-0.815	0.353	0.443
School	-0.223 ^a	0.141	0.800	0.142	0.814	-0.247 ^a	0.178	0.781	-0.142 ^a	0.297	0.868	-0.127 ^a	0.425	0.881
National groups (reference = North America)														
Other OECD			0.655	0.055	1.926									
Non-OECD			0.603	0.074	1.828									
Constant	0.085 ^a	0.169	1.089	0.170	1.120	0.332	0.192	1.394	-0.835 ^a	0.724	0.434	-0.618 ^a	0.707	0.539
Cox and Snell R ²	0.055		0.063		0.067				0.061			0.033		

^a Not significant because p > 0.10.

(29 percent of Oceanian respondents), South Asia (28 percent), and the Middle East (26 percent). The low percentages of newbies are in East Asia (13 percent), East Europe (15 percent), and North America (18 percent).

Who are more likely to be newbies?

Newbies are on the wrong side of the temporal digital divide. They are people who have used the Internet for a short time and often are less comfortable with it (Kraut et al., 1998). After a year, they either join the main body of veteran users or stop using the Internet. Hence, when newbies comprise a sizeable portion of users, their characteristics are leading indicators of how the nature of Internet users is changing. In addition to differences between countries and regions, personal characteristics such as gender, age, and education may affect the likelihood of respondents being newbies. A series of logistic regressions show that education, the place of Internet use, and age are associated worldwide with respondents being newbies or veterans (see table 2.3, model 1):

- Respondents with less *education* are more likely to be newbies. Compared with those with a postgraduate degree, respondents with high school or less are twice as likely to be newbies, those with some college education 1.7 times, and those with a university degree 1.2 times.
- *Older* respondents are more likely to be newbies. For instance, those who are more than 65 years old are 1.5 times as likely to be newbies as those who are younger than 30.
- People who use the Internet primarily at *community centers* or similar public places are 1.5 times as likely to be newbies as those who use it at their workplace. Such community centers appear to serve as initiating points to Internet use.

The characteristics of newbies are not the same around the world. In North America, the influential characteristics are education and age (model 3): e.g., respondents with a high school education or less are 2.2 times as likely to be newbies, compared with those with a postgraduate degree. They are 1.7 times as likely to be newbies, compared with those with a university degree. Respondents more than 65 years old are 1.7 times as likely to be newbies, as compared with those younger than 30 years.

As in North America, education is also a predictor of being a newbie in other OECD countries (model 4) and non-OECD countries (model 5). However, age is not a strong predictor while workplace use is. In other OECD countries, respondents with a high school education or less are twice as likely to be newbies as those with a postgraduate degree and 1.4 times as likely as those with a first university degree. The effect of education on the likelihood of being newbies is real, but smaller, in non-OECD countries, where respondents with a high school degree or less are 1.4 times as likely to be newbies than those with a postgraduate degree.

The importance of Internet use at work increases from North America to other OECD countries to non-OECD countries. Compared with those who primarily use the Internet at work, North American respondents using the Internet from community centers or other public places are 1.5 times as likely to be newbies, respondents from other OECD countries are 1.6 times as likely, and those from non-OECD countries are 1.8 times as likely.

Using the Internet around the World

No Internet user is an island. But, how is their online connectivity related to use of other means of communication? We examine here the frequency with which the respondents report keeping in touch with their relatives and friends by using three different kinds of media: face to face, telephone, and email. We ask separately about contact within and beyond 50 kilometers (30 miles): a crude measure of “nearby” and “far-away” (see table 2.2).

Contact with kin within 50 kilometers

Worldwide, email is used less often than face-to-face and telephone to communicate with nearby relatives, even among this sample of Internet users. Only 16 percent of all respondents communicate with nearby kin at least weekly, with slightly lower percentages in other OECD countries (12 percent) and non-OECD countries (14 percent) than North America. The telephone is the most-used medium for contact with nearby kin: 43 percent worldwide have at least a weekly phone conversation. Face-to-face contact is the second most used medium: 33 percent worldwide meet a nearby relative at least once per week. Belying fears that high email use will be associated with less

contact by other means, the frequency of email contact is positively correlated with the frequency of both face-to-face contact ($r = 0.31$) and telephone contact ($r = 0.38$). By contrast to North Americans' slightly greater use of email, respondents in other OECD and non-OECD countries are slightly more likely to have weekly phone or face-to-face contacts with nearby kin.

Contact with friends within 50 kilometers

Compared with social contact with nearby kin, a much higher percentage of respondents worldwide use email for weekly contact with nearby friends: 48 percent vs. 16 percent. As is the case for nearby relatives, a slightly higher percentage of North Americans email at least weekly (49 percent) than other OECD (44 percent) and non-OECD respondents (48 percent).

Despite the high percentage of respondents who email nearby friends weekly, an even higher percentage (70 percent) telephone weekly. Weekly telephone contact with friends is slightly more common than email contact in other OECD countries (74 percent) and non-OECD countries (72 percent) than in North America (69 percent). The percentage of people having weekly face-to-face contact with their friends is the highest for other OECD respondents (64 percent), and slightly lower for North American and non-OECD respondents (60 percent).

In short, the telephone > face-to-face > email ordering holds for weekly contact with nearby friends and relatives in all parts of the world. The communication patterns of North American, other OECD, and non-OECD respondents are similar despite differences in socio-demographic characteristics, email access, transportation facilities, and population density.

Contact with kin beyond 50 kilometers

More than twice as many respondents worldwide use email at least weekly to contact relatives living more than 50 kilometers away (37 percent) than relatives living within 50 kilometers (16 percent). There are marked differences between the percentage of North American respondents having weekly contact with far-away kin (40 percent) and the percentage of other OECD (25 percent) and non-OECD respondents (31 percent). This may reflect the higher Internet use by North Americans (more far-away kin are online) and the greater distances separating North American kin.

The telephone remains important in all three categories of countries. It is used somewhat more than email by North Americans (46 versus 40 percent), appreciably more by other OECD respondents (42 versus 25 percent) and by the same percentage of non-OECD respondents (31 percent). Only a small percentage of respondents anywhere (3–5 percent) have weekly face-to-face visits with far-away kin.

Contact with friends beyond 50 kilometers

Compared with contact with far-away relatives, far-away friends predominantly use email to communicate. Worldwide, 39 percent of the respondents are in frequent contact with far-away friends. Email is much more popular than telephone (17 percent) or face-to-face interaction (4 percent). The patterns are similar in North America, other OECD, and non-OECD countries.

Communicating online and offline

These data do not support contentions that frequent email contact is associated with less frequent face-to-face and telephone contact. To the contrary, the positive correlations suggest that those who frequently use one means of communication also use the others frequently (see also Quan-Haase and Wellman's chapter (10); Katz and Aspden, 1997). These positive correlations appear for all three categories of countries, for contact with kin and with friends, and for relationships that are nearby or more than 50 kilometers away. Surprisingly, distance does not appear to weaken the association between frequent face-to-face and email contact (see table A2.1).

To be sure, the strongest correlations are between face-to-face and telephone contact (Pearson's r coefficients range from 0.50 to 0.77). However, the worldwide correlations between face-to-face and email contact are positive (ranging between 0.23 and 0.32), while the correlations between telephone and email contact are even stronger (ranging between 0.31 to 0.44). Throughout the world, the correlations are strongest between the frequency of face-to-face and telephone contact and are weakest between the frequency of face-to-face and email contact. The three means of communication are most closely associated in North America. By contrast, the weakest (but still significant) correlations are between face-to-face and email contact for other OECD countries (ranging between 0.18 to 0.28) and non-OECD countries (ranging from 0.10 to 0.20).

In sum, the telephone continues to be the medium most used to contact friends and relatives, except for far-away friends where email predominates. Email is used more to contact friends than relatives, regardless of distance. These data suggest that the norms, demands, and joys of kinship interaction are more apt than friendship to call forth the greater social presence of face-to-face or telephone conversations. Moreover, because people have many more friends than relatives, email enables them to keep in contact with a number of them at a distance (see also Hampton and Wellman's chapter). Yet, wherever they live, sociable people use all three means to communicate.

Instrumental and recreational use

What do people from different parts of the world do online? To what extent is instrumental and recreational use of the Internet related to demographic, social and media-use characteristics? A more complex picture of the global digital divide emerges if we look beyond the basic matter of Internet access to the more differentiated matter of Internet use.

Ten questions in Survey 2000 asked how often respondents carry out different types of activity online. Exploratory factor analysis revealed two distinct sets of activities. Seven items form a scale, ranging from 0 to 35, indicating the extent of using different *instrumental activities* on the Internet to obtain information, goods and services. Based on these seven items, the mean amount of instrumental use for all respondents appears as 16 points, indicating an appreciable instrumental use of the Internet. Three items form a scale, ranging from 0 to 15, indicating the extent of different *recreational activities* on the Internet. Based on these two items, the mean amount of recreational use for all respondents is only 2 points, indicating that few respondents make much recreational use of the Internet (other than web-surfing and email socializing).⁶

6 We use principal axis factor analysis with quartimax orthogonal rotation. Each activity item is coded "0, never," "1, rarely," "2, about monthly," "3, about weekly," "4, a few times a week" to "5, daily." The *instrumental activity* items are: sending / receiving email, participating in mailing lists, using online libraries and other sources of information, taking online courses, online shopping, surfing websites, and participating in Usenet newsgroups. Scores could range from 0 to a maximum of 35 (5 × 7). The *recreational activity* items are: chatting, collective role-playing ("MUDs," etc.), and playing multi-user online games. Scores could range from 0 to a maximum of 15 (5 × 3).

Instrumental use

North American respondents use the Internet slightly more for instrumental reasons (mean score = 16) than those from other OECD and non-OECD countries (mean score = 15; see also table 2.4, model 2). When other variables are controlled in a multiple regression, the data show that respondents in the developing non-OECD countries tend to use the Internet more instrumentally than those in the developed other OECD countries do (see table 2.4, model 2).

- Multiple regression shows that three variables are substantially associated with extensive instrumental use: the strongest association is that the more that people use the Internet *recreationally*, the more they use it instrumentally (table 2.4, model 1). Active users of the Internet use it both instrumentally and recreationally. Perhaps, the two forms of Internet uses reinforce one other.
- The *place of Internet use* is also associated with the extent of instrumental use. Not surprisingly, respondents who use the Internet at their workplaces, use it the most for instrumental reasons (3.9 points higher than community centers), followed by those who use it at home (2.5 points higher) and at school (1.7 points higher).
- *Veteran users* (those who have been on the Internet for at least one year) report nearly 4 points more instrumental use than newbies.

Instrumental use is strongly associated in all three country categories with the recreational use of the Internet, the place of Internet use, and the length of Internet experience (table 2.4, models 3, 4, and 5). The main differences are that age and gender are more strongly associated with instrumental use outside North America. Although age plays a marginal role in North America, there is a clear age divide outside North America. Middle-aged users make more instrumental use in other OECD countries, while instrumental use increases with age (up until 65) in non-OECD countries. Men make comparatively more instrumental use of the Internet in other OECD countries and even more so in non-OECD countries.

Recreational use

North American respondents make slightly more recreational use of the Internet than non-OECD respondents, while other OECD respondents make the least (table 2.5, model 2). There are also regional variations, with East Asians, South Asians, and Latin Americans

Table 2.4 Demographic variables and instrumental Internet usage (multiple regression)

Independent variables	Global (model 1)		Global with regional controls (model 2)		North America (model 3)		Other OECD (model 4)		Non-OECD (model 5)	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
Gender (male = 1)	1.196	0.102	1.260	0.107	1.141	0.097	1.640	0.133	1.748	0.154
Age (reference = older >65)										
18-29	0.333 ^a	0.027	0.476 ^a	0.038	0.261 ^a	0.020	2.448	0.208	2.247	0.205
30-9	0.904	0.069	0.996	0.076	0.882	0.066	2.667	0.209	2.307	0.188
40-9	1.076	0.076	1.113	0.078	0.939	0.068	3.061	0.190	2.410	0.155
50-65	0.882	0.055	0.910	0.056	0.765	0.050	2.503	0.125	2.428	0.121
English not spoken at home	-5.37E-02 ^a	-0.004	0.390	0.029	0.446	0.026	0.231 ^a	0.019	0.284 ^a	0.022
Education (reference = high school or less)										
Some college	1.156	0.091	1.047	0.083	1.181	0.094	0.553	0.042	0.972	0.075
Undergraduate degree	1.485	0.118	1.363	0.109	1.494	0.120	0.637	0.046	1.607	0.133
Postgraduate	1.983	0.149	1.927	0.145	2.066	0.151	1.245	0.100	2.223	0.188
Single	-7.99E-02 ^a	-0.007	-4.06E-02 ^a	-0.003	1.47E-02 ^a	0.001	-0.333 ^a	-0.028	-0.182 ^a	-0.017
Household size	-0.230	-0.065	-0.215	-0.061	-0.230	-0.059	-0.211	-0.065	-0.155	-0.066
Employment status (reference = retired)										
Working full-time	-0.126 ^a	-0.011	-8.47E-02 ^a	-0.007	4.82E-02 ^a	0.004	-1.447	-0.120	-0.899 ^a	-0.080
Working part-time	-0.518	-0.021	-0.439	-0.018	-0.337 ^a	-0.014	-1.743	-0.073	-0.988 ^a	-0.039
Unemployment	-2.39E-02 ^a	-0.001	-1.34E-02 ^a	-0.001	0.168 ^a	0.008	-1.521	-0.056	-1.526 ^a	-0.064
Student	0.545	0.038	0.548	0.039	0.752	0.052	-0.785 ^a	-0.059	-1.002 ^a	-0.081
Traditional media use										
Heavy print media use	0.958	0.054	0.995	0.056	1.039	0.060	0.854	0.046	0.697	0.038
Heavy TV watcher	-4.39E-03 ^a	0	3.96E-02 ^a	0.003	0.131 ^a	0.011	-0.175 ^a	-0.014	-0.435	-0.036
Place of access (reference = community Center, etc.)										
Home	2.479	0.205	2.474	0.204	2.450	0.199	2.868	0.245	1.944	0.175
Work	3.955	0.306	3.990	0.309	3.867	0.292	4.690	0.386	3.605	0.310
School	1.671	0.063	1.653	0.062	1.413	0.051	1.803	0.080	3.753	0.145
Newbies	-3.822	-0.257	-3.740	-0.251	-3.813	-0.249	-3.744	-0.271	-3.108	-0.236
Internet recreational use	0.871	0.350	0.861	0.346	0.843	0.343	0.982	0.361	0.855	0.362
National groups (reference = North America)										
Other OECD			-1.089	-0.067						
Non-OECD			-0.923	-0.043						
(Constant)	9.413		9.353		9.324		7.890		8.226	
Adjusted R ²	0.262		0.266		0.253		0.322		0.288	

^a Not significant because p > 0.10.

Table 2.5 Demographic variables and recreational Internet usage (multiple regression)

Independent variables	Global (model 1)		Global with regional controls (model 2)		North America (model 3)		Other OECD (model 4)		Non-OECD (model 5)	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
Gender (male = 1)	0.154	0.033	0.167	0.035	0.157	0.033	0.213	0.047	0.152 ^a	0.032
Age (reference = older >65)										
18–29	0.713	0.143	0.740	0.149	0.773	0.148	0.403 ^a	0.093	9.70E–02 ^a	0.021
30–9	0.292	0.055	0.313	0.059	0.36	0.066	-1.45E–02 ^a	-0.003	-0.493 ^a	-0.095
40–9	8.60E–03 ^a	0.002	2.08E–02 ^a	0.004	6.50E–02 ^a	0.012	-0.331 ^a	-0.056	-0.674 ^a	-0.103
50–65	-7.34E–02 ^a	-0.011	-6.41E–02 ^a	-0.010	-1.91E–02 ^a	-0.003	-0.356 ^a	-0.048	-0.868 ^a	-0.102
English not spoken at home	8.07E–02	0.015	0.140	0.026	0.118	0.017	0.108 ^a	0.025	0.266	0.049
Education (reference = high school or less)										
Some college	-0.384	-0.076	-0.400	-0.079	-0.480	-0.094	-0.295	-0.060	-0.304	-0.055
Undergraduate degree	-0.979	-0.194	-0.999	-0.198	-1.150	-0.228	-0.558	-0.111	-0.581	-0.114
Postgraduate	-1.119	-0.209	-1.126	-0.210	-1.297	-0.232	-0.705	-0.154	-0.722	-0.144
Single	0.313	0.065	0.315	0.065	0.313	0.063	0.328	0.076	0.240	0.052
Household size	5.11E–02	0.036	5.09E–02	0.036	5.48E–02	0.035	3.51E–02	0.030	3.76E–02	0.038
Employment status (reference = retired)										
Working full-time	-1.02E–03 ^a	0	4.57E–03 ^a	0.001	1.10E–02 ^a	0.002	-2.56E–03 ^a	-0.001	0.226 ^a	0.047
Working part-time	9.58E–02 ^a	0.010	0.110 ^a	0.011	0.103 ^a	0.010	0.314 ^a	0.036	-0.101 ^a	-0.010
Unemployment	0.132 ^a	0.015	0.134 ^a	0.015	0.102 ^a	0.012	0.341 ^a	0.034	0.264 ^a	0.026
Student	1.87E–02 ^a	0.003	2.01E–02 ^a	0.004	-5.27E–02 ^a	-0.009	0.208 ^a	0.042	0.665 ^a	0.126
Traditional media use										
Heavy print media use	-0.222	-0.031	-0.215	-0.030	-0.194	-0.027	-0.315	-0.046	-0.203 ^a	-0.026
Heavy TV watcher	0.137	0.027	0.143	0.029	0.142	0.028	9.94E–02 ^a	0.021	0.229	0.044
Place of access (reference = community center, etc.)										
Home	8.62E–02 ^a	0.018	8.65E–02 ^a	0.018	0.173	0.034	0.113 ^a	0.026	-0.771	-0.164
Work	-0.524	-0.101	-0.513	-0.099	-0.432	-0.080	-0.435	-0.097	-1.430	-0.291
School	-0.405	-0.038	-0.400	-0.037	-0.181 ^a	-0.016	-0.516	-0.062	-2.084	-0.190
Newbies	0.114	0.019	0.123	0.021	8.77E–02	0.014	0.177	0.035	0.226	0.041
Instrumental Internet use	0.151	0.0376	0.150	0.0373	0.149	0.0366	0.151	0.410	0.161	0.381
National groups (reference = North America)										
Other OECD			-0.219	-0.033						
Non-OECD			-3.14E–02 ^a	-0.004						
(Constant)	-0.565		-0.560		-0.551		-0.697 ^a		0.162 ^a	
Adjusted R ²	0.207		0.208		0.203		0.225		0.239	

^a Not significant because $p > 0.10$.

making the greatest recreational use of the Internet. Multiple regression shows four variables to be substantially associated with extensive recreational use:

- High involvement in online *instrumental* activities is the most strongly related variable to high recreational use (table 2.5, model 1), revealing again the interplay between recreational and instrumental use.
- *Educational attainment* is negatively associated with recreational use (opposite to that for instrumental use). For example, respondents with a postgraduate degree are the lowest recreational users of the Internet, scoring 1 point lower than those who have high school or less education.
- *Age* is associated with recreational use of the Internet. For example, respondents younger than 30 years old make the most recreational use (0.3 points).
- Using the Internet at *workplaces* (-0.5 points) or at *schools* (-0.4 points) is associated with low recreational use of the Internet. Community centers are the places where the most recreational use takes place.

To summarize, respondents with higher educational attainment make the most instrumental use of the Internet while those with less education make the most recreational use. Not surprisingly, people make the most instrumental use from their workplaces and the most recreational use from their homes and community centers. North American respondents use the Internet more for both instrumental and recreational reasons than users in other parts of the world. However, there is no simple rank order of use by economic development and Internet penetration. Respondents in the non-OECD countries make more instrumental and recreational use than those living in the other OECD countries.

The digital dividend: sense of community online

How does the Internet affect people's sense of online community? Do the diverse community, kinship, transportation, and communication arrangements in North America, other OECD countries, and non-OECD countries have different impacts on people's sense of online community? To ascertain this, we asked respondents to report if they agreed or disagreed with ten statements about the impact of the Inter-

net on their social life (see appendix 2.2). Exploratory factor analysis of these statements suggested two scales based on two distinct sets of items: a six-item online community scale and a two-item online kinship scale. Each item in these scales has Likert-type scoring, with values ranging from 1 (for highly negative responses) to 7 for highly positive responses. See also Quan-Haase and Wellman's chapter (10) for additional analysis of the North American data.

Sense of online community

The sense of online community scale contains items such as "we feel a sense of community with the people we've met on the Internet." Scores range from 6 to 42, with a worldwide mean of 22 indicating a moderate sense of online community. Lower economic development is slightly associated with a higher sense of online community. Respondents from non-OECD countries have the strongest sense of online community (mean score = 24). Respondents from other OECD countries feel slightly less sense of online community (23), followed by North American respondents (22; see also table 2.6, model 2). Regional-level comparison also confirms that respondents in East Europe, East Asia, and Oceania report a greater sense of online community than their North American counterparts.

The more involved people are with the Internet, the greater their sense of online community. Multiple regression shows that three linked measures of Internet involvement – the *amount of overall, instrumental, and recreational Internet use* – are the most strongly associated variables worldwide with having a sense of online community (table 2.6, model 1). The more people use the Internet, the stronger their sense of online community. For instance, a one-point increase in *instrumental* use means almost a half-point increase in a positive sense of online community, while a one-point increase in *recreational* use of the Internet means almost a one-point increase in a sense of online community. In addition, the more *diversified* the Internet activities engaged in, the greater the sense of online community. An increase of one type of Internet activity is associated with a nearly one-point increase in the sense of online community index.

Educational attainment is negatively associated with a sense of online community. For example, respondents who have a high school or less education score almost 2 points higher on the sense of online community scale than those with a postgraduate degree. This suggests that the Internet can empower the disadvantaged by increasing their sense of community.

Table 2.6 Demographic variables, Internet use, and online sense of community (multiple regression)

Independent variables	Global (model 1)		Global with controls (model 2)		North America (model 3)		Other OECD (model 4)		Non-OECD (model 5)	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
Gender (male = 1)	0.241	0.013	0.123 ^a	0.007	0.096 ^a	0.005	0.223 ^a	0.012	0.563 ^a	0.033
Age (reference = older >65)										
18-29	-1.549	-0.080	-1.792	-0.093	-1.918	-0.094	-3.807	-0.220	2.019 ^a	0.124
30-9	-0.949	-0.046	-1.102	-0.054	-1.084	-0.051	-3.750	-0.200	2.403 ^a	0.133
40-9	-0.685 ^a	-0.031	-0.740 ^a	-0.033	-0.701 ^a	-0.032	-3.617	-0.152	2.541 ^a	0.111
50-65	-0.060 ^a	-0.002	-0.102 ^a	-0.004	-0.151 ^a	-0.006	-2.336 ^a	-0.079	3.032 ^a	0.102
English not spoken at home	1.244	0.059	0.401	0.019	0.406	0.015	0.015 ^a	0.001	1.366	0.073
Education (reference = high school or less)										
Some college	-0.568	-0.029	-0.383	-0.019	-0.563	-0.028	0.226 ^a	0.011	-0.141 ^a	-0.007
Undergraduate degree	-1.688	-0.086	-1.491	-0.076	-1.677	-0.085	-0.988	-0.049	-1.114	-0.062
Postgraduate	-1.884	-0.091	-1.806	-0.087	-2.063	-0.095	-1.164	-0.064	-0.833 ^a	-0.048
Single	0.897	0.048	0.811	0.043	0.809	0.042	0.560	0.032	0.598 ^a	0.037
Household size	-0.013 ^a	-0.002	-0.045 ^a	-0.008	-0.121	-0.020	0.054 ^a	0.011	0.077 ^a	0.022
Employment status (reference = retired)										
Working full-time	-0.554	-0.030	-0.629	-0.034	-0.693	-0.037	-0.070 ^a	-0.004	0.152 ^a	0.009
Working part-time	0.371	0.010	0.240 ^a	0.006	0.336 ^a	0.009	0.450 ^a	0.013	0.092 ^a	0.002
Unemployment	1.215	0.035	1.197	0.035	1.345	0.040	0.798 ^a	0.020	0.543 ^a	0.015
Student	-1.637	-0.074	-1.644	-0.074	-1.732	-0.075	-0.875 ^a	-0.044	-0.870 ^a	-0.047
Traditional media use										
Heavy print media use	-0.955	-0.035	-1.033	-0.037	-1.069	-0.039	-0.756	-0.027	-1.287	-0.048
Heavy TV watcher	0.152 ^a	0.008	0.070 ^a	0.004	-0.128 ^a	-0.007	0.870	0.046	0.424 ^a	0.023
Place of access (reference = community center, etc.)										
Home	0.683	0.036	0.664	0.035	0.781	0.040	0.696 ^a	0.040	-1.029 ^a	-0.062
Workplace	-0.101 ^a	-0.005	-0.201 ^a	-0.010	-0.077 ^a	-0.004	-0.582 ^a	-0.033	-1.141 ^a	-0.066
School	-0.146 ^a	-0.004	-0.106 ^a	-0.003	0.013 ^a	0	-0.150 ^a	-0.005	-1.373 ^a	-0.036
Newbie (<1 year Internet use)	0.391	0.017	0.279	0.012	0.301	0.012	0.021 ^a	0.001	0.272 ^a	0.014
Number of Internet activities	0.995	0.256	1.005	0.259	1.025	0.263	1.007	0.252	0.795	0.227
Instrumental Internet use	0.441	0.283	0.452	0.290	0.467	0.294	0.446	0.303	0.301	0.203
Recreational Internet use	0.995	0.256	1.005	0.259	1.025	0.263	1.007	0.252	0.795	0.227
National groups (reference = North America)										
Other OECD			1.797	0.071						
Non-OECD			2.111	0.062						
Constant	13.522		13.573		13.817		16.524		13.338	
Adjusted R ²	0.283		0.288		0.294		0.284		0.208	

^a Not significant because p > 0.10.

It is not only the disadvantaged who are more apt to find community online. *Men*, and people who primarily *use the Internet at home*, have a stronger sense of community online. For example, people who use the Internet from their homes score 0.7 points higher than those who use it from community centers.

The pattern that Internet involvement and lower educational attainment are the most closely associated with a sense of online community is common to all three categories of countries (table 2.6, models 3, 4, and 5). Respondents who do not use English at home also feel a stronger sense of online community in all three categories of countries, although most markedly in non-OECD countries. In North America and Other OECD countries, older respondents tend to have a greater sense of online community. However, this age effect is not apparent in non-OECD countries.

Sense of online connection with kin

Having a sense of online connection with kin is another important dimension of the Internet's relationship to feelings of community. As kinship ties are more apt to be active despite physical separation (Wellman and Tindall, 1993), this reflects the potential of the Internet for linking kin wherever they may live.

The index of the Internet's effects on a sense of online kinship connection consists of two items, each using a 1–7 point Likert scale (see appendix 2.2). The index of online kinship ranges from a minimum of 2 to a maximum of 14, with a mean of 8. Overall, there is a moderate sense of online connection with kin around the world, although respondents from other OECD countries (mean = 7) have slightly less sense of online kinship than those from non-OECD countries and North America (8).

Analysis at the global level (table 2.7, model 1) shows that:

- The more *instrumental use*, the more positive the sense of online kinship connectivity. A one-point increase in the instrumental use index means a 0.1-point increase in the online kinship index.
- *Older* people report a higher sense of online kinship connectivity than younger adults. Respondents older than 65 score 1.3 points higher in the online kinship index than those younger than 30.
- *Women*, historically the kin-keepers (Wellman and Wortley, 1989), report a stronger sense of online kinship connectivity than men.

Table 2.7 Demographic variables, Internet use and sense of online connection with kin (multiple regression)

Independent variables	Global (model 1)		Global with controls (model 2)		North America (model 3)		Other OECD (model 4)		Non-OECD (model 5)	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
Gender (male = 1)	-0.943	-0.118	-0.880	-0.110	-0.868	-0.111	-1.005	-0.120	-0.776	-0.094
Age (reference = older >65)										
18-29	-1.290	-0.153	-1.156	-0.137	-1.182	-0.138	-0.368 ^a	-0.046	-0.563 ^a	-0.071
30-9	-1.274	-0.142	-1.169	-0.130	-1.166	-0.131	-0.524 ^a	-0.061	-0.622 ^a	-0.070
40-9	-1.180	-0.122	-1.116	-0.116	-1.155	-0.125	-0.330 ^a	-0.030	-0.420 ^a	-0.037
50-65	-0.587	-0.054	-0.540	-0.049	-0.659	-0.064	0.663 ^a	0.049	0.535 ^a	0.037
English not spoken at home	-0.389	-0.043	-0.131	-0.014	-0.086 ^a	-0.008	-0.045 ^a	-0.006	-0.479	-0.052
Education (reference = high school or less)										
Some college	0.343	0.040	0.267	0.031	0.324	0.039	0.369	0.041	-0.260 ^a	-0.027
Undergraduate degree	0.760	0.089	0.658	0.077	0.707	0.085	0.752	0.081	0.285 ^a	0.032
Postgraduate	0.536	0.059	0.496	0.055	0.584	0.064	0.458	0.054	0.131 ^a	0.015
Single	-0.565	-0.069	-0.561	-0.069	-0.537	-0.066	-0.613	-0.077	-0.819	-0.103
Household size	-0.064	-0.027	-0.068	-0.028	-0.087	-0.034	-0.012 ^a	-0.005	-0.048 ^a	-0.028
Employment Status (reference = retired)										
Working full-time	-0.418	-0.051	-0.393	-0.048	-0.372	-0.047	-0.712 ^a	-0.087	-0.329 ^a	-0.040
Working part-time	-0.323	-0.020	-0.256 ^a	-0.015	-0.255	-0.016	-0.694 ^a	-0.043	0.406 ^a	0.022
Unemployment	0 ^b	0	0.010 ^a	0.001	-0.044 ^a	-0.003	0.059 ^a	0.003	0.546 ^a	0.032
Student	-0.569	-0.059	-0.562	-0.058	-0.701	-0.072	-0.179 ^a	-0.020	-0.369 ^a	-0.041
Traditional media use										
Heavy print media use	0.043 ^a	0.004	0.069 ^a	0.006	0.070 ^a	0.006	0.030 ^a	0.002	0.058 ^a	0.004
Heavy TV watcher	-0.128	-0.015	-0.101	-0.012	-0.066 ^a	-0.008	-0.210 ^a	-0.024	-0.392	-0.044
Place of access (reference = community center, etc.)										
Home	0.624	0.076	0.624	0.076	0.687	0.083	0.562 ^a	0.071	0.515 ^a	0.064
Workplace	-0.062 ^a	-0.007	-0.017 ^a	-0.002	0.008 ^a	0.001	0.087 ^a	0.011	0.082	0.010
School	0.543	0.030	0.574	0.032	0.743	0.040	0.179 ^a	0.012	0.028 ^a	0.001
Newbie (<1 year Internet use)	-0.313	-0.031	-0.270	-0.029	-0.249	-0.024	-0.318	-0.0331 ^a	-0.035	-0.003
Number of Internet activities	0.132	0.065	0.132	0.065	0.157	0.078	0.110	0.055	0.006 ^a	0.003
Instrumental Internet use	0.111	0.163	0.107	0.157	0.107	0.160	0.084	0.125	0.133	0.184
Recreational Internet use	0.037 ^a	0.022	0.031	0.018	0.032	0.020	0.023 ^a	0.012	0.026 ^a	0.002
National groups (reference = North America)										
Other-OECD			-1.073	-0.097						
Non-OECD			0.023 ^a	0.002						
Constant	7.207		7.238		7.037		5.988		7.769	
Adjusted R ²	0.089		0.097		0.081		0.056		0.064	

^a Not significant because p > 0.10.

- Women score almost 1 point higher than men in having a positive sense of online kinship.
- *Higher educational attainment* is associated with a stronger sense of online kinship connectivity. For instance, those who have a university degree score 0.7 points higher than those with a high school education or less.

Comparing the three categories of countries reveals common patterns worldwide (models 3, 4, and 5). First, greater *instrumental* use of the Internet is associated with a stronger sense of online family ties. This association is strongest in non-OECD countries. Second, *women* everywhere have a stronger sense of online connection with kin. However, different dynamics do affect the sense of online kinship in the three settings. Although older people tend to feel more the positive effect of the Internet on bringing family ties closer than young people in North America, age does not play a significant role outside North America. Furthermore, the positive relation between educational attainment and a sense of online kinship is significant in North American and other OECD countries. By contrast, marital status in non-OECD countries plays a more important role. Although the general trend is that singles feel less of a sense of online kinship than couples, this is especially the case for singles from non-OECD countries.

To summarize, high Internet users have a strong sense of online community in general and with kin. Better-educated respondents have a strong sense of online kinship, while less-educated respondents have a strong sense of online community. North Americans have the strongest sense of online kinship, while other OECD respondents have the least. By contrast, OECD respondents have the strongest sense of online community, while North Americans have the least. Perhaps the more veteran, heavier-using North Americans are more inclined to see the Internet as just a routine part of everyday life and not as a special universe.

Scouting Report on the Global Village

Summary

The primary goal in this chapter has been to examine the profiles of Internet users around the world and to ascertain the ways in which they use the Internet. While many digital divide studies look only at

the dichotomy of access/non-access, we have had the privilege of working with an international survey that provides information about behavior online and offline. We have found both noteworthy similarities and differences in the characteristics of the respondents from North America, other OECD countries, and non-OECD countries.

At the time of the 1998 data collection, North American domination of the Internet was reflected in the preponderance of North American residents in the *National Geographic* sample. Moreover, North Americans generally have been online longer, use the Internet more frequently, and do more kinds of activities online. North America has continued to be the "primate region" of the Internet whose influence and activity outweighs the rest of the world combined.

Ontogeny is recapitulating phylogeny. The profile of respondents outside North America looks similar to that of North American Internet users a half-decade earlier. They are apt to be male, well-educated, and younger adults. Where North American Internet use has become broadly based, international use is more restricted to elites, especially in the developing countries.

There are substantial differences between the characteristics of North American respondents and those from other OECD and non-OECD countries. North American respondents are more likely to be veteran users, women, older, married, less educated, use English at home, and to use the Internet from their homes. Except for multilingualism, these characteristics of North American respondents are more similar to those of the world population than to those of other OECD and non-OECD respondents. This suggests that as the penetration rate of the Internet increases outside North America, the characteristics of Internet users will more closely resemble the characteristics of the population itself.

Respondent profiles show a gradient reflecting years of active Internet experience: North America is greater than other-OECD, which is greater than non-OECD. This is not always a smooth gradient because in a number of situations the characteristics of other-OECD respondents are more similar to those of non-OECD respondents than they are to North American respondents. This occurs for gender, educational attainment, and being a newbie. The lower the percentage of people using the Internet in a region, the more elite the population using the Internet.

Newbies use a smaller range of Internet services and may not have the experience to integrate it into their everyday lives. The likelihood of being a newbie is almost the same for other OECD and non-OECD

respondents, indicating that the widest digital divide exists between North America and other parts of the world.

In terms of personal characteristics, older adults are more apt to be newbies and to use the Internet to contact friends and family. Married folks, with more kin to contact, especially value the Internet for maintaining kinship ties. The place of use is related to role: newbies are more likely to use community centers, people making extensive instrumental use of the Internet are more likely to access it from workplaces, and those with a strong sense of community and kinship online are more likely to access the Internet from their homes.

Community centers introduce some newbies to the Internet. This is especially true outside North America and crucially true in the developing non-OECD countries (Servon and Nelson, 2001). Community centers are the bases for young adults and recreational users of the Internet.

Newbies' personal characteristics are different from pioneering Internet users in North America and veteran users in other OECD and non-OECD countries. Newbies are more apt to be women, older, less educated, not using English at home, and neither employed full-time nor students. Thus, newbies around the world are less likely to be elite and are more likely to resemble the diverse nature of North American Internet users. This recapitulates what has happened in North America, and suggests that the profile of Internet users outside North America will become more similar to the broader population.

At the time of data collection in 1998, the Internet was important for social communication, yet it was not the dominant way in which respondents communicated with friends and relatives, both near and far. Telephone contact was more frequent than Internet contact. In addition, there was appreciable face-to-face contact with nearby friends and family. Email predominated only for contact with far-away friends. As many of the chapters in this book detail, the frequency of email contact has increased since then, but often as a complement to – not a substitute for – telephone and face-to-face contact.

The proliferation of the Internet means that people communicate more, not less. Internet use does not replace other forms of contact: the more people have telephone and face-to-face contact, the more they have email contact.

Just as one form of contact is associated with other forms of contact, one form of use is associated with another form of use. The more people use the Internet instrumentally, the more they use it recreationally.

Moreover, people who make much instrumental use of the Internet have a greater sense of online community and online connectivity with kin. Productive use is associated with positive sentiments. There are gender differences. Men tend to feel a greater online sense of community, while women, the kin-keepers, tend to feel a greater sense of online connectivity with relatives. North Americans are less apt to perceive a positive impact of the Internet on their sense of online community.

Internet use is a positive social experience. People who use the Internet a good deal use it for a wide range of activities, both instrumental and recreational. Rather than turning away from their friends and relatives, they combine their Internet use with face-to-face and telephone contact, and they have a greater sense of online community.

Although respondents in the North American, other OECD, and non-OECD categories have somewhat different personal characteristics, there are many similarities in the ways in which they use the Internet and in the characteristics associated with such use. The characteristics that are consistently associated with Internet use are: education, gender, age, being a newbie, and place of use. By contrast, some characteristics are not as widely associated with Internet use: marital status, employment status, newspaper/magazine reading, television watching, and using English at home.

The penetration rate of a region is related to how the Internet is used in the region. The lower the penetration rate, the more likely respondents are to be newbies, have strong instrumental use of the Internet, and have a more positive sense of online relationships with community and family. Yet, the differences between North America, other economically developed countries, and developing countries are greater for the users of the Internet than for the uses they make of it. Once people become veteran Internet users, they tend to behave similarly around the world.

Conclusions

In 1998, the world of the Internet continued to be bipolar: North America and everywhere else. International respondents were more likely to be younger, better educated, and male. Why this North American exceptionalism? Not only has the Internet been in North America longer than any other part of the world, the percentage of

the population who used the Internet at the time of the study was appreciably higher in North America.

Countries outside North America have wider inequality in access to the Internet and deep inequality in the way the Internet is used. This is not necessarily the only possible outcome when only a small percentage of a population in such countries engages in a skilled activity. For example, professional athletes come from both elite and non-elite backgrounds.

The more economically developed a region, the more developed the Internet in that region and the more experienced its users. North America, the original and continuing home of the Internet, remains ahead of other regions. Developed (other OECD) regions adopted the Internet earlier than developing (non-OECD) regions. Yet, elites in developing countries have long had the capacity and knowledge to go online. That so many of the respondents in developing countries are newbies reveals that such elites are not acting as small quasi-priestly castes of Internet adepts, reserving their skills for themselves. Rather, the Internet is becoming a popular affair in both senses of the word: widespread, and being used by a broad range of people.

These dynamics suggest continued growth in the percentage of the population going online. New users will eventually stop being newbies, just as most people in developed countries now use telephones much more casually than a generation ago. Moreover, the Internet is still diffusing in the developed world, which means that less privileged people in these countries are now adopting the technology.

The Internet is not only a resource to consume, but also a means to access and use opportunities. It can be a gateway to informational, economic, cultural, and social advancement. When elites outside North America disproportionately use the Internet, the socioeconomic digital divide widens worldwide. However, the more demographically representative characteristics of international newbies suggest that in time the Internet may facilitate the narrowing of this divide.

Experience and these data suggest that Internet use worldwide will follow the North American developmental path. In part, this is an outgrowth of North American cultural domination of the content and tools of the Internet. But, it is also a consequence of the clear international trend to have more people – and a greater variety of people – using the Internet. The many international similarities in the uses of the Internet suggest that users behave in similar ways wherever they may live and log on.

Table A2.1 Correlations between the frequencies of face-to-face, telephone, and email contact

	<i>F2F-phone</i>	<i>F2F-email</i>	<i>Phone-email</i>
<i>Worldwide</i>			
Kin within 50 km	0.76	0.23	0.31
Friends within 50 km	0.69	0.31	0.38
Kin beyond 50 km	0.52	0.21	0.39
Friends beyond 50 km	0.63	0.32	0.44
<i>North America</i>			
Kin within 50 km	0.77	0.25	0.32
Friends within 50 km	0.70	0.33	0.39
Kin beyond 50 km	0.50	0.23	0.41
Friends beyond 50 km	0.62	0.38	0.48
<i>Other OECD</i>			
Kin within 50 km	0.71	0.18	0.27
Friends within 50 km	0.66	0.28	0.34
Kin beyond 50 km	0.57	0.16	0.34
Friends beyond 50 km	0.65	0.24	0.37
<i>Non-OECD</i>			
Kin within 50 km	0.73	0.19	0.29
Friends within 50 km	0.63	0.20	0.32
Kin beyond 50 km	0.56	0.10	0.33
Friends beyond 50 km	0.66	0.19	0.30

F2F = Face to Face Communication.

With the spread of the Internet throughout the world, future research should reveal different patterns from those described here. This will stem from the broader diffusion of Internet technologies and practices, the interaction between technology and societies, and the ways in which the impact of new technologies on people's lives is conditioned by social and cultural contexts.

Appendix 2.1

Members of the organization for economic cooperation and development

The 29 members of the OECD are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia,

Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Appendix 2.2

Items for the online sense of community scales

Online sense of community items are: (1) I feel a sense of community with the people I've met on the Internet. (2) I have made new friends by meeting people on the Internet. (3) Talking with people on the Internet is as safe as communicating with people in other ways. (4) The Internet has allowed me to communicate with all kinds of interesting people I otherwise would never have interacted with. (5) I feel I belong to an online community on the Internet. (6) I can find people who share my exact interests more easily on the Internet than I can in my daily life.

Online sense of kinship connectivity items are: (1) The Internet has brought my immediate family closer together; (2) The Internet has brought my extended family closer together.

Each item in these scales has Likert-type scoring, with values ranging from 1 (for highly negative responses) to 7 (for highly positive responses). (See also Quan-Haase and Wellman, chapter 10).

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