

THE DUAL DIGITAL DIVIDE

The Information Highway in Canada

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With funding from
Human Resources Development Canada
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TABLE OF CONTENTS

Executive Summary	1
The Dual Digital Divide	1
Typology of Non-users	2
Summary of Findings	4
Introduction and Methodology	6
Introduction	6
The Internet in Canada	7
Dual Digital Divide	8
Methodology	10
Access and the Canadian Information Highway — Policy Context	11
General Policy Framework	11
Community Access Program	12
Community Learning Networks	13
Overview of Access and the Canadian Information Highway	14
Canadian Communications Household	14
Access and the Internet	18
General Non-user Attitudes and Values	19
Diversity of Choice and Diversity of Life	24
Typology of the “Non-users” in the Digital Divide	27
Summary Dimensions of the Digital Divide	27
Who is Lagging Behind in the Digital Divide and Why?	37
Population Array of Non-users	40
Social Context	46
The Immutability of the Dual Digital Divide	46
Literacy	47
Incomes, Cost and Affordability	49
Diversity of Content	51
Changing Patterns in Consumption	54
U.S. Digital Divide	55
Conclusion	58
References	62

Executive Summary

The purpose of this study was to analyze Canadian households at the margins in terms of access to the Information Highway, generally considered to be the Internet. These households have been described as the “have-nots” or “non-users.” The study provides a better understanding of the attitudes, practices and the needs of those who are not connected to the Internet, and the circumstances under which some of these non-users are likely to go online.

Analysis was based on a number of research questions. These included: How do we account for some members of social sub-groups being online and not others? What are the most important factors or variables that affect decisions by people whether to be online? What are the different types of non-user groups? How important is cost/affordability as a barrier or obstacle to access? What policy options are available to address connectivity problems?

The findings of the report were based on several methodologies. A review was conducted of reports, articles, and other documents from sources which included Industry Canada, Human Resources Development Canada, the Public Interest Advocacy Centre and statistical analysis by Statistics Canada and the National Telecommunications and Information Agency on the issue of the digital divide. In addition, a review and detailed multivariate analysis was undertaken on the results of the 1997-1998 study the *Information Highway and the Canadian Communications Household* to create a typology of non-users (Ekos Research Associates Inc.).

Analysis in this study is correlated with the strategies, goals, and the access and content development models of the federal departments Industry Canada and Human Resources Development Canada (HRDC). These two departments operate major programs that, together, have the goals of facilitating access, individual and community development, and content development on the Internet. The study also identifies the implications and opportunities for other federal departments, such as Heritage Canada and the Treasury Board Secretariat (TBS) and other levels of government to address issues involving access and content.

THE DUAL DIGITAL DIVIDE

Canadians have experienced the burgeoning growth of the Information Highway and the Internet over the past few years. However, the levels of awareness and the use of these new technologies and services are highly polarized along social class and generational lines, creating a digital divide. From 1997 through 1999, higher-income households were three times more likely than lower-income households to have home access. By 1999, about two-thirds of upper-income households had access from home, as compared to about one in four low-income Canadians.

EXECUTIVE SUMMARY

Contrary to the widespread enthusiasm about the Internet, a significant number of Canadians will remain unconnected for many years to come. However, the concept of a digital divide is much more complex than a simple differentiation between those who are connected and those who are not. In addition to the usually understood division of users and non-users (the first divide), non-users are not a homogenous group. They clearly fit into two broad groups (the second divide). Together, the user and the segmented non-user groups form a “dual digital divide.”

Of those not connected, the first group is near-users, those who have varying degrees of interest in being connected, but are unable due to a number of barriers, of which the most important are cost/affordability and literacy. The second group, distant-users, consists of people who have little or no interest in the Internet and online services, or perceive no value in the Internet to meet their everyday economic or social needs. For this latter group, if faced with the need to access the Web in the future, it can be expected that barriers (such as availability of service, cost, literacy and capacity to use, etc.) will become predominant concerns.

Evidence suggests that it is highly unlikely that the dual digital divide will be overcome anytime soon. In future, if the Internet becomes as essential as local telephone service, then depending on market conditions (availability, cost), a public policy response will likely be required to ensure universal access.

The variable levels of connectivity, lack of interest in use, and the lack of perceived need for access are factors that cut across all socio-economic groups. However, barriers and obstacles to access are aggravated for those in the lower social classes who have less resources or skills available to overcome them.

Connectivity to the Internet exhibits a pattern of a differential level of access based on social class, generation, gender and value factors (perceived need and interest). This pattern mirrors the long established differential levels of access of many other products and services in society (e.g., reading materials, education, cable TV, portable phones, etc.). Trends in connectivity suggest that this polarization of access is likely to become the norm in society, at least in the foreseeable future.

Data from research conducted in late 1998 and early 1999 indicates that a plateau in Internet access is developing, whereby at least one in five upper- and upper-middle income households remains unconnected. There is still growth in connectivity with lower- and lower-middle income households. However, with the lower social class, connectivity remains low overall and, comparatively, the digital divide has widened since 1996.

TYOLOGY OF NON-USERS

Using multivariate regression analysis, this study created typologies of non-users. The three typologies that were developed provide insight into the attitudes, values and social circumstances that affect connectivity. These typologies have useful implications for policy to address the communication and information needs of those who will likely remain unconnected.

Type 1 non-users recognize the Internet has some value in meeting some of their needs, but they face the primary obstacles of cost/affordability and technical skill development. This group is considered to be “near users.” Social literacy is also an important factor for these individuals, as well as the other two Types. Public access sites (Community Access Program) and community learning services (Community Learning Networks) have important roles to play in meeting the needs of Type 1 non-users. Public education and awareness initiatives by organizations (community, non-government, government) providing these services would likely facilitate and improve the use of the Internet by this group. Broadly speaking, Type 1 non-users tend to be younger Canadians (aged 44 and younger), but this is not exclusive. There is an important gender gap in the non-user typology (overall 61 percent women, 39 percent men). Women are over-represented in Type 1 by a ratio of two-to-one.

Similarly, **Type 2 non-users** face technical and cost barriers; that said, the perceived or very real lack of personal or social benefit and value of Internet service is as serious a challenge. Improved content (economic, social and cultural), designed and developed to better meet the needs of these non-users, may facilitate greater online activities. Technical skills training, content relevant to social needs, and the availability of public access sites are also important components of an access strategy for this group. There is a tendency (non-exclusive) for the Type 2 non-user to be in the pre-retirement cohort (45-55 years). At the federal government level, major roles exist in access and content activities for HRDC (CLN), Industry Canada (CAP), Heritage Canada (social, cultural content), and TBS (access and government services).

Type 3 non-users are also relatively far removed from online activities, and will remain so, particularly in the near future. They are not likely to see or derive any personal benefit from access, and are not likely to have the resources or social skills and interests to benefit from current Internet access. Broadly speaking, seniors and retired Canadians (55 years and older) make up much of the Type 3 group. For both Type 2 and Type 3 non-users, strategic needs assessments (social needs) combined with content development initiatives may increase the propensity for Net use in the longer term. The proportion of women is slightly higher than men in Type 2 and Type 3 groups. It is important to note that all the non-user types are clearly dominated by women.

From a public policy perspective, the reality is that the majority of non-users will need to be provided with communication and information services in a variety of traditional and standard formats or means, and these services must remain accessible for those with different skill and income levels, for some time to come. The federal departments with mandates in these primarily social policy issues include HRDC, TBS and Heritage.

SUMMARY OF FINDINGS

General:

- For non-users, occasional and regular Internet users, government core policy and program objectives need to be concerned with such issues as: access, technological and social literacy, social capacity and application, and indigenous social and cultural content development. Multiple means of access to, and distribution of, information at comparable levels of quality and service must continue to be made available.

Cost:

- Cost/affordability was found to be the most important barrier or obstacle to connectivity.
- Cost and technological literacy were found to be important factors in the likelihood of use in the future. For about half of all sub-groups, the ability to use the Internet (technical proficiency and understanding) was important.
- Affordability or the cost of Internet service was an important criterion for at least two-thirds of those in the lower- and upper-middle, and upper income segments, and for just over half of those in the lower-income demographic.

Literacy:

- Literacy as a barrier extends beyond reading, writing and technical literacy. It also involves social literacy or social capacity which involves individuals' abilities to understand and to use information in ways that are beneficial and meaningful to their everyday lives. Government initiatives need to incorporate this broader meaning of literacy.
- Access to the Internet will not, on its own, overcome the social and economic inequalities and cleavages in communities or society at large. However, as the Internet joins the mix of mainstream communication technologies, programs that address technological access and social proficiency will be necessary to create opportunities for people to maintain a competent level of participation in society. In the alternative, non-users risk being further disadvantaged over the long term.

Public Access:

- Those in the lower-income groups are more likely than higher-income households to have recently accessed the Internet from a public location, a friend's house, Internet café or some other community location. At the same time, individuals from all social classes have made use of public access locations, whether to learn about the Internet, how to use it, or because home access was not possible.

- There is a need for ongoing government support for the integration of community access and networking initiatives. These community-based networking services create opportunities to effectively address some of the core issues of public access, training and content development.
- Looking ahead, strategic analysis and planning will be needed on such questions as: the appropriate number and locations of public access sites; the development of community networking groups; local management responsibility; quality of service standards; services available to the public; content development; the terms of access for different services; and government funding obligations and responsibilities.
- There is a need to improve communication strategies at the local and national levels, and to increase non-users' awareness of the availability of access sites and of information resources on the Internet that may meet their specific needs and interests.

Content:

- While there is an increasing abundance of commercial content on the Net, a major weakness in Canada is the lack of a diversity of quality socially and culturally relevant indigenous content. Diverse socially and culturally relevant content (local, regional and national) is necessary for individuals to meet their daily social, economic and cultural needs.
- There is a need for more public involvement and support in the development, cataloguing in a Canadian context (standards for access), and dissemination of citizenship and other socially relevant content.

Diversity of Access:

- In an analysis of preference by the public (Net users and non-users) of the use of different technologies to gain access to government for information, the public clearly indicated that a diversity of means of access is required and will continue to be required in the future (i.e., in-person, mail, Internet, phone, fax). The Internet is not displacing these, but it is becoming another component of the mix of means of access.

Introduction and Methodology

INTRODUCTION

The purpose of this study was to analyze Canadian households that are marginalized in terms of access to the Information Highway. These households have been described as the “have-nots” or “non-users.” Preliminary research on Internet access and use has suggested that non-users at the margins were largely comprised of those in the lower social class and included those living in rural locations in Canada. The majority of the other non-users from the middle or upper social strata were considered likely to come online as public awareness and general use of the Internet by others increased over time. This study is intended to provide a better understanding of the access attitudes, practices and needs of those who are not connected, and in particular those in the lower social class segments.

There are several research questions used for this analysis.

- How do we account for some members of a social sub-group (e.g., with shared demographics such as age, income, education, etc.) being online and others not?
- What are the most important factors or variables that affect decisions by people whether or not to be online?
- Are there different types of non-user groups, and if so, what are they?
- What attitudes, practices or other attributes help us to understand the differences that explain why some non-users are likely to go online, while others will not?
- Are there particular barriers arising from these which could be addressed through government policy or programs or by the market in some way to facilitate greater online access?
- How important is cost/affordability as a barrier to online access? How important is this variable in relation to other factors?
- Is cost mainly a problem for low income Canadian households not online? How important is this variable for higher social class segments?
- How important is cost/affordability for those already online?

Analysis addressing these issues is largely based on the baseline research of the *Information Highway and Canadian Communication Household* study conducted from 1997 through 1998.

For comparative purposes, and to help establish a broader sociological context, other research materials have been used in this study. These research materials include information from Statistics Canada, reports for the *National Telecommunications Information Agency* (NTIA) in the United States, and other documents from government and non-government sources in Canada. Analysis in this study is correlated with the strategies, goals and the access

and content development programs of Industry Canada and Human Resources development Canada (HRDC). These federal departments operate major programs that involve facilitating access to and content development on the Internet.

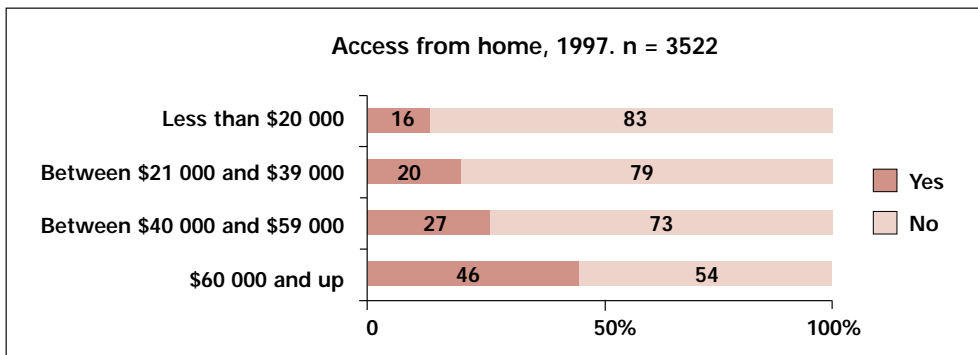
THE INTERNET IN CANADA

Over the past few years, Canadians have experienced the burgeoning growth of the Information Highway. The Information Highway involves a diverse array of information and communication technologies and related applications. While for many the Internet is considered the central communications application, new information, entertainment, financial and economic applications are also being made available through wire-based, terrestrial-wireless and satellite technologies.

At the same time, the patterns of awareness and, in particular, the use of the new technologies and services indicate that a significant polarization exists along social class and generational lines. Results from the baseline study, *Information Highway and the Canadian Communications Household*, found that the use of home computers and the Internet were significantly higher among upper-income households. This research also found that youth and better-educated Canadians tended to have the highest levels of access and use. These differences in access are not, however, unique to the Internet. Beyond the Internet and computers, differential levels of access also exist in other communications technologies. These include standard services such as cable television, and newer services such as cellular or PCS phones, telephone banking and satellite television (Ekos, 1998).

Though the Information Highway consists of many new technologies, the Internet has emerged as its backbone of the Information Highway. From 1996 through 1998, overall access to the Internet from home by Canadians showed fairly rapid growth from 28 percent to 33 percent of households. At the same time, most of this growth occurred with higher social class segments.

Figure 1



Source: Ekos Research Associates Inc., 1998.

INTRODUCTION AND METHODOLOGY

As shown in Figure 1, higher-income households were about three times more likely than lower-income households to have home access. Households in middle-income groups similarly had differential levels of access, which increased with affluence. These results suggest that a polarization or differential level of access — already evident with other communication technologies and other services in Canada, such as health or education — could become the norm for the Internet.

Preliminary research from the 1999 version of the continuing Information Highway and Canadian Communication Household study indicates that while, overall, access to the Internet from home has increased significantly, most of this growth has occurred in upper-middle and upper income groups. Lower-middle and lower income households still lag in access with about the same proportional differences (23 percent access from home for lowest income level and 65 percent access from home for upper-income segment) (Ekos, 2000).

DUAL DIGITAL DIVIDE

When thinking about this digital divide, it is important to note that the notion of a divide is considerably more complex than simply some people being connected and others not. It also extends beyond the ideas of numerous community locations being available to facilitate access when home access is not viable, to such issues as the technical ability or literacy necessary to use this form of communications.

A more accurate or appropriate description of the emerging pattern of access and use of the Internet is that of a “dual digital divide.” In addition to the division of users and non-users (the first divide), non-users fit into two broad groups:

1. those who have varying degrees of interest in being connected (near users), but are unable to due to a number of barriers; and
2. those who have little or no interest at all in the Internet and online services (the second divide).

In the latter group, faced with the need to access the Web at some point in the future, it can be expected that barriers, such as availability of service, cost, literacy and capacity to use, etc., will become predominant factors of concern.¹

The lack of connectivity and the lack of interest in use, or the perceived lack of need for access are factors that cut across all socio-economic groups. There are many possible explanations for these attitudes, including: a genuine disinterest; a lack of perceived value; inability to use technology; and a lack of awareness of the range of services and information available, and how these may meet individual needs. At the same time, there are as many individuals who would like to be connected to and use the Internet but cannot, due to such barriers as cost and lack of skill, knowledge, etc.

¹ *The Canadian Dual Digital Divide*, presentation by Andrew Reddick, October 23, 1999, 1999 Atlantic Association of Sociologists and Anthropologists Conference, Fredericton, Canada.

Again, evidence of these barriers can be found across all the socio-economic groups in many people who are not connected. However, barriers to access are aggravated for those with less resources or skills. These barriers could be aggravated by factors such as employment status, education, regional disadvantages (e.g., economical deprivation), and generational factors, among others. Overall however, these barriers tend to be most significant for those in the lower social class.

Recent research by Statistics Canada also points to the development of a digital divide in Canada. The report, *Canadians Connected*, found that while Internet penetration rates have increased across income quartiles, education, age groups and geographic location, at the same time, the growth in the “haves” has been coming from the higher- as opposed to lower-income groups. Through 1996 and 1997 this gap widened. The report also noted that there was a trend of higher overall rates of growth in access in the less-connected sub-groups; a pattern which, if it holds, could lessen the divide over time.²

This differentiation moves beyond a simplistic notion of a divide between “have” and “have-nots,” conveying a pejorative view of first- and second-class information society citizens. It may be true that those not connected are already, or will be, disadvantaged in some way. And this is arguably the case with many who could realize a benefit through access (e.g., skills development, employment opportunities, literacy, etc.) but are unable to because of a real barrier to access. However, it is also necessary to give the public its due, and recognize that one does not “fail the test” by not being online! Of the approximately 50 percent of Canadians that are not connected, about half see no value, use or purpose in the Internet for them. Whether or not this group has more wisdom than the rest of us about access, they should not be construed or treated *a priori* as second-class citizens, or simply be categorized with the others not online as being socially or economically disadvantaged. Moreover, as a matter of policy, these individuals should not be disadvantaged through the best quality of information and services being available only on the Web, with second-rate content and services provided by other, second-rate means.

The other important consideration in the debate about access and the digital divide is whether Internet service is essential or optional. The Internet, as yet, is still an optional service (as opposed to an essential service, such as basic local telephone service) though this is changing for many (particularly the elite and knowledge workers in society). At the same time, Canada is shifting to an economy and society where communications play an increasingly important role. While the degree to which we are becoming an “information society” is debatable, in the future many Canadians will need access in order to benefit fully economically and socially. From social and economic policy perspectives, the problem associated with not having all or a majority of Canadians connected increases as non-users become truly disadvantaged in some way, or if not being connected has some deleterious effect on the delivery of public services or, perhaps, the viability of some market services. For example, if some government information and services are only available on the Internet in future, it makes some aspects of the Internet an essential service. In this context, the digital divide takes on a new importance, both at individual and social levels.

² P. Dickenson and G. Sciadras, *Canadians Connected* (Statistics Canada, February, 1999), 34.

INTRODUCTION AND METHODOLOGY

This study offers a closer analysis of the different non-user segments, or those at the margins. This analysis provides a deeper understanding of the attitudes and practices of these different segments and considers such questions as: What are the main barriers to access? Are there appropriate policy responses to address these barriers? What may encourage non-users to get online? What other options for service will be necessary to facilitate those who are not likely to come online, even in the long term?

METHODOLOGY

Research and analysis for this report was based on statistical analysis and literature from Industry Canada, HRDC, Statistics Canada, the NTIA in the U.S., as well as other relevant books, articles, documents and reports. Non-user typologies were created using multivariate analysis on the 1997-98 *Information Highway and Canadian Communications Household* study. This multidimensional analysis was based on three steps. Basic “factors” were distilled from the full set of attitudes tested in the surveys. The second step identified parameters for a logistic regression model that estimated the likelihood of a person being an Internet user or non-user. Regression modeling was supported by a demographic profiling of users and non-users. Finally, a typology of non-users was created and an examination was conducted of the differences in the underlying structures of attitudes supported by each segment of non-user.

The first *Information Highway and Canadian Communications Household* study was conducted in three waves from September 1997 through June 1998. The information collected from over 600 variables in this study formed one of the most comprehensive baselines on the communication attitudes and practices of Canadian households and, in particular, in the context of the Information Highway.

The first wave of the study involved a telephone survey with a national sample of 3,522 Canadians aged 18 and over. This was conducted in September 1997. The second wave involved a mail-back diary questionnaire. This questionnaire was completed by 1,271 respondents who had participated in the first wave. This research was conducted between February and April 1998. The final wave, completed in June 1998, consisted of a telephone poll. This involved 1,767 respondents from the first wave and another 434 respondents who participated in the study for the first time.

Access and the Canadian Information Highway — Policy Context

GENERAL POLICY FRAMEWORK

Starting in the 1980s, through policy and regulatory changes, the federal government has been restructuring Canada's communications industry to facilitate economic development, competition and a shift to the electronic production and delivery of economic, social and cultural services. Through the 1990s, the Government of Canada extended these initiatives to lay the groundwork for an Information Highway to facilitate the development of an information society. The general themes guiding this policy framework were to facilitate Canada's transition to a knowledge society, to be the most connected nation in the world, and to realize economic growth and competitiveness domestically and internationally.³

Building on the 1994 Speech from the Throne that introduced the Information Highway strategy, the government, through Industry Canada, formed the Information Highway Advisory Council (IHAC). The strategic framework guiding the work of IHAC (and the complementary programs and initiatives of other federal departments) involved a number of core themes and objectives relating to: universal and affordable access; lifelong learning and skills; job creation; increased competitiveness and economic growth; the development of Canadian cultural content; benefits from electronic commerce; access to government and other public services and information online, among others.

The final IHAC report made a number of recommendations in the area of access to address roles for the government. These recommendations included facilitating rural access; funding for community access initiatives, including libraries and not-for-profit community networks and sites in rural and urban areas; funding to facilitate the development of public and other forms of non-commercial content; and making information and services available in a range of formats to facilitate access.⁴

All federal government departments, in varying degrees, are involved in some way in the achievement of these objectives. The two departments that have been most active in addressing the concerns of access, skills and individual and community use of the Information Highway are Industry Canada (IC) and Human Resources Development Canada (HRDC). HRDC operates a range of programs concerned with youth, literacy, skills, jobs, community and individual development. The Community Learning Network (CLN) initiative combines many of these areas in the context of access. Similarly, Industry Canada undertakes many initiatives to address different dimensions of the Information Highway agenda. These initiatives include the Community Access Program (CAP), SchoolNet, VolNet, and Computers in the Schools. However, the CAP program is most centrally concerned with public access.

³ Canada, *Building the Information Society: Moving Canada into the 21st Century* (Speech from the Throne, September 23, 1997), 16.

⁴ Canada, *Building the Information Society: Moving Canada into the 21st Century* (1996), 3,4; *Preparing Canada for a Digital World* (IHAC, 1997), 46-51.

The CAP program is a technology-based initiative, framed by economic and industrial policy objectives but also facilitating social policy objectives. Economic and industrial policy objectives include stimulating the use of and demand for Information Highway equipment, content and services. Individual, community and national development objectives underlie this aspect of the program. Social policy objectives, while not a core mandate of Industry Canada, are facilitated and encouraged by the provision of facilities or technological platforms and activities to encourage literacy and learning, skills development, employment opportunities and content development.

Building on the existing technical access platforms (sites or network groups) in communities, HRDC's CLN program is concerned with social policy objectives central to the department's mandate. These include the use of technologies as tools to support and enable learning, skills development, employment opportunities, and individual and community development. Much of the CLN program is concerned with content and services.

COMMUNITY ACCESS PROGRAM

Stemming from Canada's objective to become the most connected nation in the world by the year 2000, the government introduced its *Connecting Canadians* agenda in 1998. Featuring six action areas, the Canada On-Line component involves public access to the Internet.⁵

CAP is an initiative developed to help provide Canadians with affordable access to the Internet and the skills to use it effectively. Public locations, such as schools, libraries and community centres, provide local sites for individual access. Initially, CAP was to connect 1,500 rural and remote communities. Under the *Connecting Canadians* agenda, CAP has been designated to establish access sites in 5,000 rural communities and up to 5,000 sites in urban communities by March 31, 2001. CAP is made available on a partnership basis. Partners can include: provincial and territorial governments, community groups, social agencies, libraries, schools, volunteer groups and the business community.

The objectives of the CAP program are to:

1. Provide Canada's rural and urban communities with better and more affordable access to the Information Highway and to raise awareness about its potential for creating jobs and growth;
2. Stimulate the development of new electronic learning tools and services by and for communities;
3. Provide Internet training facilities for local entrepreneurs, employees, educators, students and others interested in improving their information and networking skills; and

⁵ The action areas include: Canada On-Line; Smart Communities; Canadian Content On-Line; Electronic Commerce; Canadian Governments On-Line; and Promoting a connected Canada to the World, see Speaking Notes for the Honourable John Manley, Minister of Industry to the Empire Club, *Connecting Canadians*, February 26, 1998.

4. Stimulate the electronic delivery of government and other services and obtain feedback from citizens about how they would like these presented.⁶

COMMUNITY LEARNING NETWORKS

The CLN program involves time-limited pilot projects involving community partners that offer multiple locations that provide a wide range of learning resources in the community. At a general level, the program is intended to raise awareness about, and participation in, community-based programs and initiatives involving opportunities in learning and skills development. Major goals include enhancing the social and economic development of communities and the lives of individuals in those communities through lifelong learning. A key goal of the program is to make learning opportunities more accessible to Canadians.

This social policy-based program is geared to address the needs of those Canadians at particular risk of being marginalized or left behind in the new information-based society and economy. The program seeks to help those who have specific learning needs to enhance their employability; those who require alternative forms of learning to meet their needs; and those who may be marginalized or become part of the information “have-nots” to gain access. The initiative also creates opportunities for those with special needs, such as seniors and persons with disabilities. The program will spend \$29 million from 1999 through 2002, with up to \$100,000 per year for each project.⁷

The CLN project is also intended to create models for other communities and community-based organizations in the areas of learning, ongoing organizational support and maintenance, and different approaches to learning opportunities.

In a broader context, the CLN program is part of HRDC’s mission that includes enabling Canadians to manage transitions in their lives. An underlying goal is to reduce inequality and to promote growth through the support of social and economic development in the workplace and the community. This includes concerns with: lifelong learning; employment access and adjustment; safe, fair and productive workplaces; equitable participation; and reasonable income security. Recognizing the diversity of circumstances and needs of Canadians, HRDC’s strategy is to provide information and services using the full range of delivery/access modes including: print; telephony; CD-ROMs, television, in-person assisted services and the Internet.⁸

⁶ Backgrounder, Canada’s Information Highway Strategy, Industry Canada, 1997; *Connecting Canadians*, Web page www.connect.gc.ca

⁷ *Community Learning Networks Initiative: Guidelines for Application*, HRDC, 1999; *Frequently Asked Questions, Community Learning Networks Initiative*, 1999.

⁸ *Making a Difference in Human Development: A Vision for HRDC*, 1998; *Practical Vision and Action Plan*, working draft, HRDC, June 22, 1998.

Overview of Access and the Canadian Information Highway

CANADIAN COMMUNICATIONS HOUSEHOLD

While there is much interest in how Canadians will get access (i.e., the choice of infrastructure services), there is much less interest in what they are getting access to, and why. The majority of communication companies are not taking big risks in new services, with the exception of the Internet. Much of the new content offerings tend to be existing products or services that proved their adaptability to other technologies (e.g., business telephone services, broadcasting) or consumer formats (such as newspapers, reference materials, educational content, and home shopping). The products in other formats are repackaged in electronic format with the recreation of these markets online.

As is the norm with new products or services — such as the Internet — communication companies initially focus their efforts on the best market segments in order to recoup the high costs of development. These segments are business, professional and upper-income consumers. The high-end consumer segment, comprising the more advanced communication households, tends to be an early adopter of a wide array of new technologies. This segment also has the greatest disposable income for content services. This means that, at least during the initial development phases, the content and services made available are likely to reflect the demands and needs of this segment, or specialized sub-groups (such as education), as opposed to the general consumer market.

Subsequently, in addition to the novelty factor, the low awareness about new services such as the Internet two to three years ago, and the low value attached to such services by the general public, is explained to some extent through this development strategy.⁹ The public's awareness of the Internet has increased over this period, as has its connectedness. However, use value still tends to be interest-specific as opposed to general and populous, though this too has been changing recently with the proliferation of more general content, including electronic commerce services.

There is a considerable variation in the degree to which Canadian households have different communication products and services. Most households have standard services such as telephone and television. However, clear patterns of differential levels of access exist in households with newer services, such as cellular or PCS phones, Internet, satellite TV, home computers and, even to some extent, with what many consider to be a standard service, cable television.

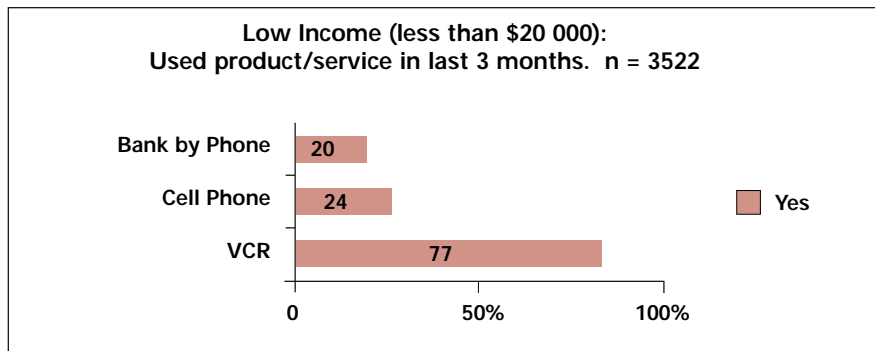
In general, the likelihood for greater levels of connectivity are linked to such variables as income, education, gender, location and technological literacy. Other important variables include need, affordability, and perceived value. Upper social classes (those with better

⁹ A. Reddick, *The Information Superhighway: Will Some Canadians be Left on the Side of the Road?*, (Ottawa: Public Interest Advocacy Centre, 1995).

education and employment), are more likely to have a range of communication technologies and services. Where there tends to be more proliferation of a particular technology or service across social classes, the incidence of use or ownership also tends to be higher with who have a higher income, higher education, and live in an urban area.

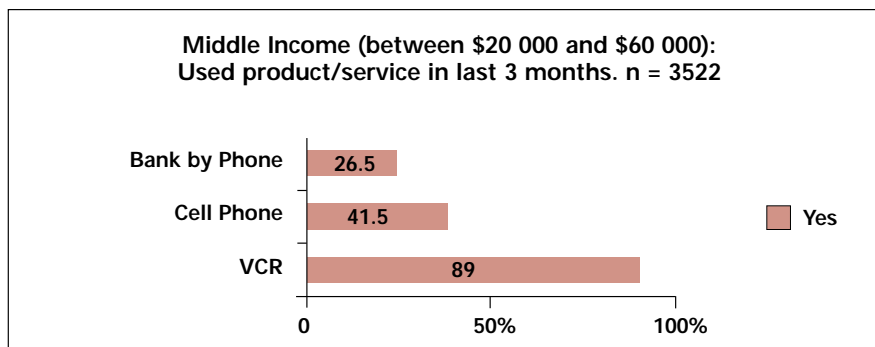
Coupled with this are generational differences. For example, youth are high users of some technologies (e.g., the Internet), and seniors tend to lag considerably behind youth and other segments.¹⁰ Figure 2 through Figure 5 demonstrate some of the differentials in access to and use of a number of technologies by social class, using income as a key indicator.

Figure 2



Source: Ekos Research Associates Inc., 1998.

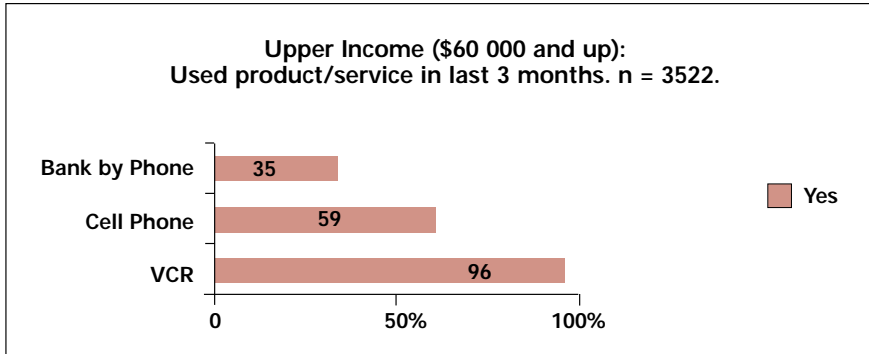
Figure 3



Source: Ekos Research Associates Inc., 1998.

¹⁰ Ekos Research Associates Inc., *The Information Highway and the Canadian Communication Household*, Final Report (1998), 9.

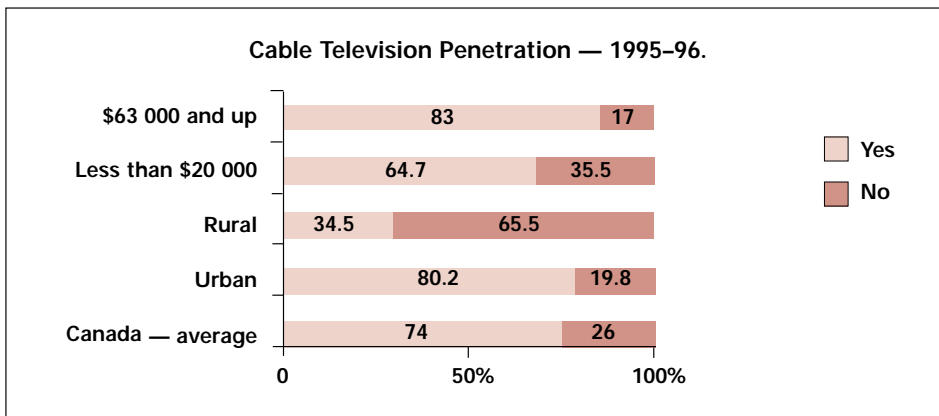
Figure 4



Source: Ekos Research Associates Inc., 1998.

In Canada, as in other developed Western countries, there has been much enthusiasm about how quickly different social segments have subscribed to the Internet as compared to other modern communications technologies, such as cable television and telephone. Enthusiasm about the Internet, divorced from a serious consideration of how it is situated in our broader social and economic relations, risks making unfounded assumptions and expectations about the likelihood of a large majority of Canadians, regardless of social class, being ubiquitously connected from home, and when this may occur. Cable television, available since the late 1950s and early 1960s, provides a useful illustration of this point. Cable TV is generally valued as an information/entertainment communication service by a large number of Canadians. It is also a service that can be described as fairly mature in its development as compared to the Internet.

Figure 5



Source: Statistics Canada, 1997.

However, as demonstrated in Figure 5, after being available for more than 30 years, there still exists substantial differences in cable subscribership based on social class and geographical location. These patterns are not unlike those of the emerging bifurcation

with Internet service. While national cable service penetration averages about three quarters of households (74 percent), there are substantive differences between upper- (83.1 percent) and lower-income (64.7 percent) households, a pattern that has not changed over the last several years. The differentials in rural location are largely technologically based and arise from the unavailability of service in many areas. However, regional affordability and economic disadvantage issues also account for some of these differences.

In the context of other communication services, such as cable television, if Internet pricing remains stable and some value is perceived, it can be expected that there will be continued growth of subscribership from home, particularly in the upper and middle classes. However, at the same time, it can be expected that there may be a lower overall adoption of the Internet in lower-income households and in some social sub-groups, such as seniors. As well, in spite of Net hype and enthusiasm, it would be anomalous if a plateau effect in subscribership didn't start to occur with the Internet over the next few years, as has been the case with other modern communication technologies. Early results from the 1999 Information Highway study (Ekos) suggests that a plateau in Internet use is already occurring with the upper income (\$60 000 and up) and upper-middle income (\$40 000 to \$60 000) segments.

Evidence of differential levels of access as a social norm, based on class and illustrated by such variables as cost and disposable income, is extensive in Canadian society. For example, household expenditures on such items as communications, education and reading materials exemplify this pattern. Table 1 demonstrates these levels of access/use. Upper-income households spend almost three times as much as low-income households on communication services, and four times as much on reading materials and education.¹¹

Table 1: Average Household Expenditures by Income Quintile, 1997.

	Average	Lowest Q	2nd Q	3rd Q	4th Q	5th Q
Communications	\$924	563	753	934	1041	1331
Education	\$659	311	258	531	802	1395
Reading Materials	\$275	120	199	263	306	486

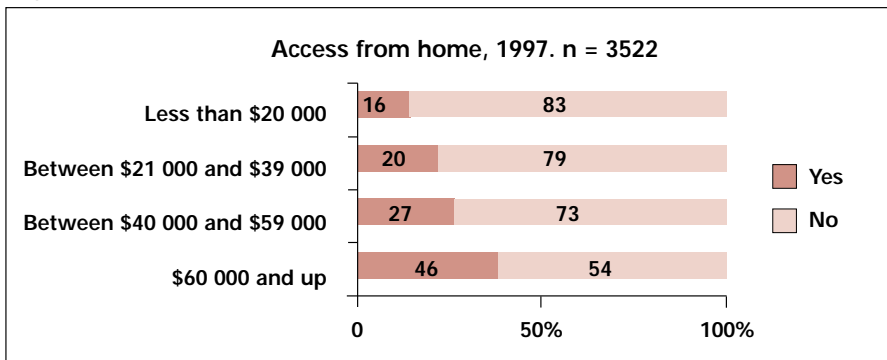
Source: Statistics Canada, *Spending Patterns in Canada*, 1997.

¹¹ *Spending Patterns in Canada* (Statistics Canada, 1997, Cat. No. 62-202-XPB), 34, 36-37.

ACCESS AND THE INTERNET

During the study period, a majority of lower-income households reported that they did not have a home computer (66 percent) or Internet service from home (83 percent). Almost half (48 percent) of lower-middle income households were likely to have a home computer, but only one in five (20 percent) were likely to have a home Internet account. Upper-middle income households were more likely to have a home computer (60 percent), but less than one in three were likely to have home Internet (27 percent). The majority (79 percent) of upper-income households were likely to have a home computer, and almost half (46 percent) had home Internet.¹²

Figure 6



Source: Ekos Research Associates Inc., 1998.

Accounting for the differential levels in access is complex and involves a number of variables. As noted above, the matrix of variables which can bear on whether individuals access the Internet include income, education, gender, location and technological literacy. Research has also shown that as important, if not more so for many, are other variables of need, affordability, and perceived value.

The Internet will not likely be used uniformly among those who are not currently online. Even those online exhibit differential use patterns. For example, while females make up over half of non-users, those online tend to be largely light users. Males, on the other hand, tend to make up the majority of moderate and heavy users. In generational terms, Canadians over the age of 55 account for about one in three non-users (37 percent). Most of the heavy users of the Internet are represented by individuals under the age of 35 (66 percent). In comparison, about one-third (30 percent) of the age demographic are non-users.¹³ There is also a differential in access between urban and rural users. The main reason underlying this difference has less to do with the availability of service, and more to do with perceived value of the service and cost.¹⁴

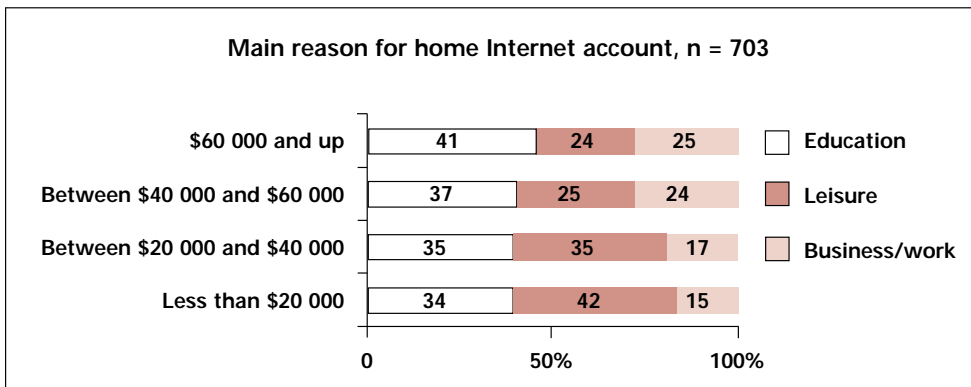
¹² Ekos Research Associates Inc., *The Information Highway and Canadian Communication Household*, frequency tables (1998).

¹³ Ekos Research Associates Inc., *The Information Highway and Canadian Communication Household*, Final Report (1998), 12.

¹⁴ Ekos Research Associates Inc., *The Information Highway and Canadian Communication Household*, frequency tables (1998).

In general terms, there are differences in why people go online. For example, lower-income users are more likely to use the Internet for leisure purposes, whereas higher-income users are more likely to state education as a main reason for home Internet service. At the same time, a significant number of users with lower levels of education see a main use of the Internet as a means to improve their education and skill levels. Beyond these initial justifications, the use of different content on the Internet tends to vary more as users gain greater online experience.

Figure 7



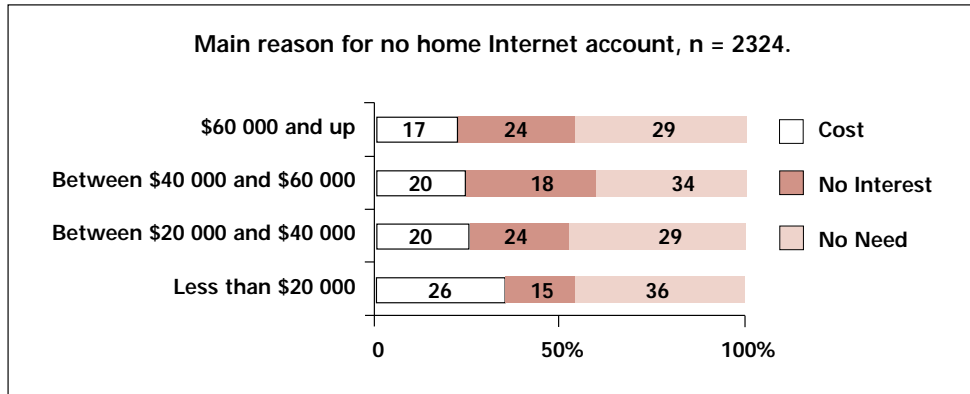
Source: Ekos Research Associates Inc., 1998.

In addition to these types of demographics, which provide some useful generalizations about users and non-users and household communication patterns, more interesting questions tend to involve understanding the attitudes and perceptions of non-users about their reluctance or disinterest in being online, and the barriers faced by non-users who wish to be online. At the same time, it is important to note that non-users do not form simple, homogenous groups of those who are or are not interested in being online.

GENERAL NON-USER ATTITUDES AND VALUES

When queried about home Internet access, the two main non-user groups divide on a perceived lack of need or interest on one hand, and cost or affordability on the other. Interestingly, at this relatively early stage of public awareness about the Internet, close to one in five in all income groups may have had some interest in connectivity, but considered cost to be a barrier. At the same time, roughly the same number had little interest in this service, and about one-third did not see how the Internet had any relevance to their daily information or communication needs (Figure 8).

Figure 8

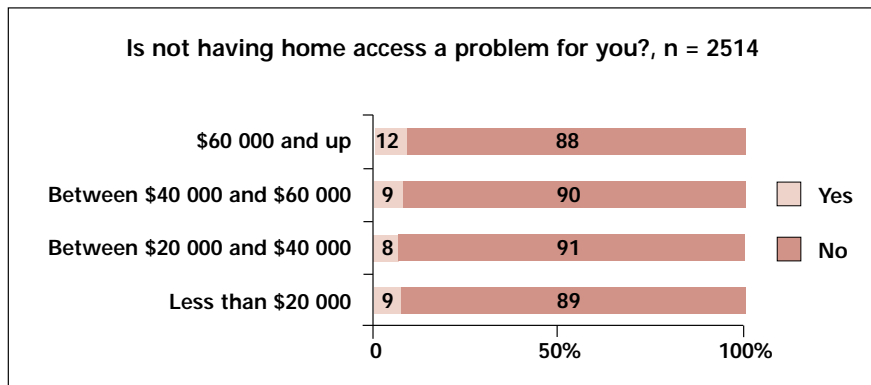


Source: Ekos Research Associates Inc., 1998.

Preliminary data from the 1999 version of this research study suggests that the Internet is being increasingly perceived as an important or necessary service by more Canadians. In this changing context, cost has become a more important barrier for low-income families and some in the middle-income groups. Lack of interest was about the same. However, lack of need as a factor has dropped across segments, and respondents were more likely to identify issues such as no computer, an old computer, or access from another location as explanations for not having service from home.¹⁵

The potential benefits and range of possible uses of the Internet are extensively discussed and described by promoters and users among the information elite in government and industry. The general public, on the other hand, in the context of their everyday lives and activities, did not find the lack of Internet access from home to be problematic (Figure 9).

Figure 9

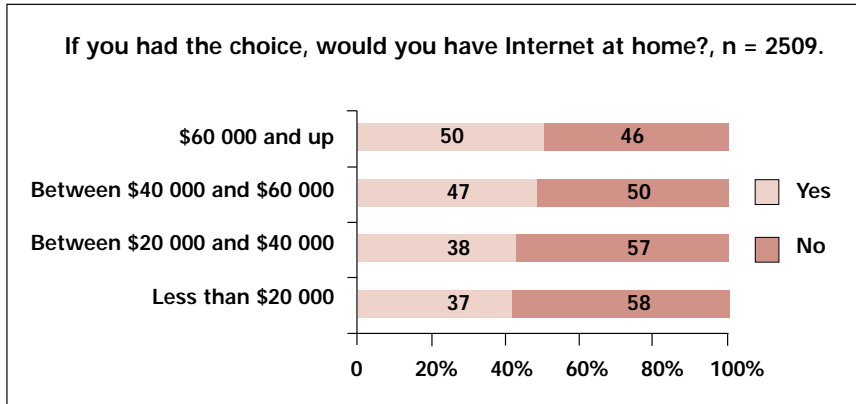


Source: Ekos Research Associates Inc., 1998.

¹⁵ Ekos Research Associates Inc., *forthcoming*.

During the research, deeper probing was conducted with respondents to ascertain the level of interest that existed in the Internet. This research provides a general indication that non-users tend to divide into one group of potential or near-users, depending on a range of variables (e.g., value of content, cost, etc.), and a second group which is quite disinterested. As shown in Figure 10, a slight majority of non-users from all segments with the exception of upper-income households would not have the Internet at home if they had a choice.

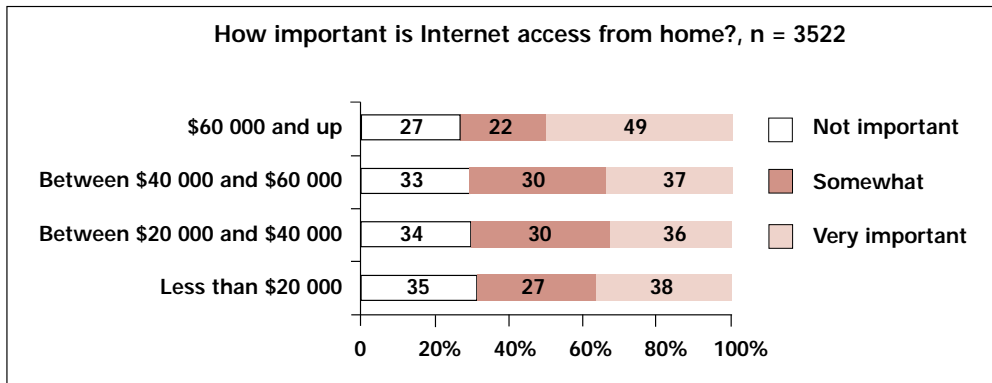
Figure 10



Source: Ekos Research Associates Inc., 1998.

However, an expectation about the potential use and value of Internet service by many respondents was revealed when attitudes involving importance, ease of use and cost of Internet service were explored. A majority of respondents from all social classes felt that Internet access from home would be at least somewhat or very important at some point (Figure 11).

Figure 11

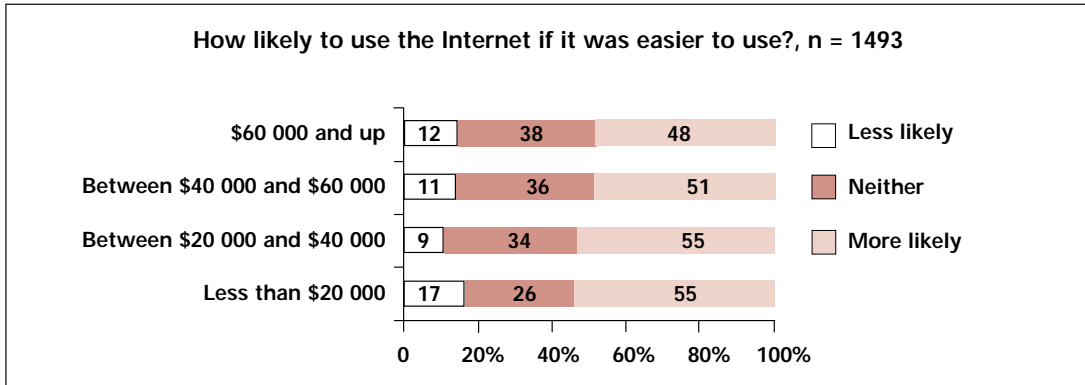


Source: Ekos Research Associates Inc., 1998.

OVERVIEW OF ACCESS AND THE CANADIAN INFORMATION HIGHWAY

Technological literacy and cost were found to be important factors in a consideration of the likelihood of use in the future. For about half of all sub-groups (Figure 12) the ability to use the Internet (technical proficiency and understanding) was important.

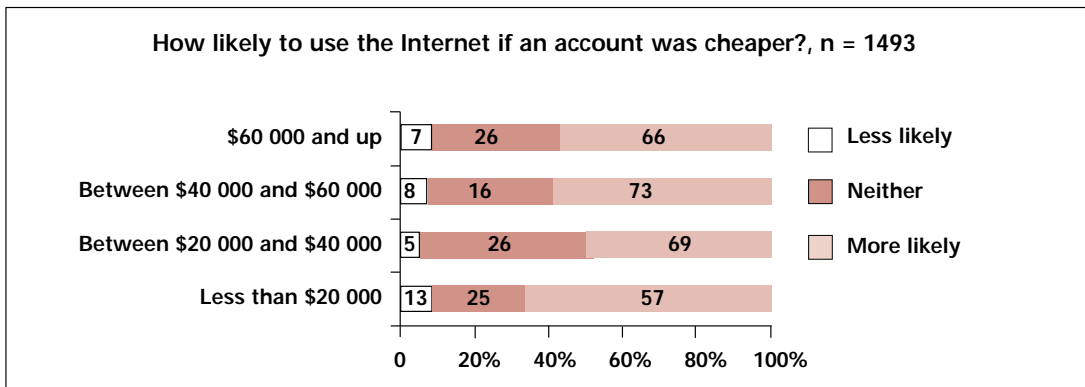
Figure 12



Source: Ekos Research Associates Inc., 1998.

Similarly, affordability or the cost of Internet service was an important criterion for at least two-thirds of those in the lower- and upper-middle, and upper classes, and just over half of those in the lower-income demographic (Figure 13).

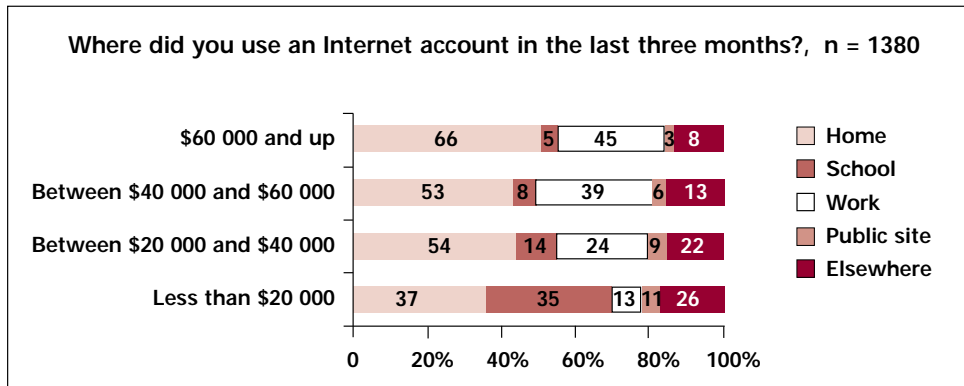
Figure 13



Source: Ekos Research Associates Inc., 1998.

In a review of incidence of use in a previous three-month period, home access was the predominant means, but those in the lower-income groups were more likely than higher-income households to recently have accessed the Internet from a public location, friend’s house, Internet café or other community location. At the same time, some respondents from all social classes made recent use of public access locations, whether to learn about the Internet, how to use it, or because home access was not possible (Figure 14).

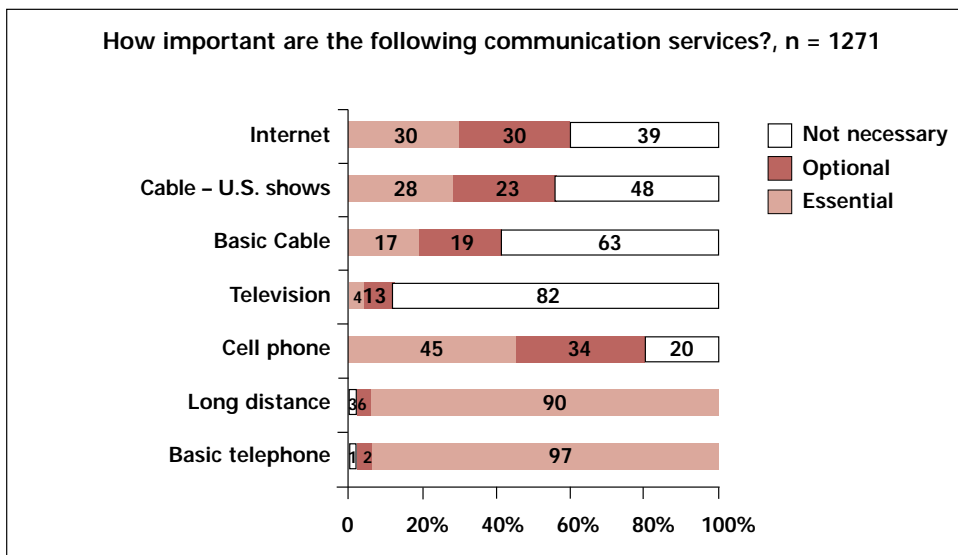
Figure 14



Source: Ekos Research Associates Inc., 1998.

In a comparison of the perceived relative importance of the Internet to other standard communication technologies or services, the Internet tended to be rated fairly high (39 percent). The majority of those that considered the Internet to be an essential service largely represented the upper-income segment of the population, where just over half (53 percent) of this group considering the Internet essential as compared to less than one-third (28 percent) in the low-income category.

Figure 15



Ekos Research Associates, 1998.

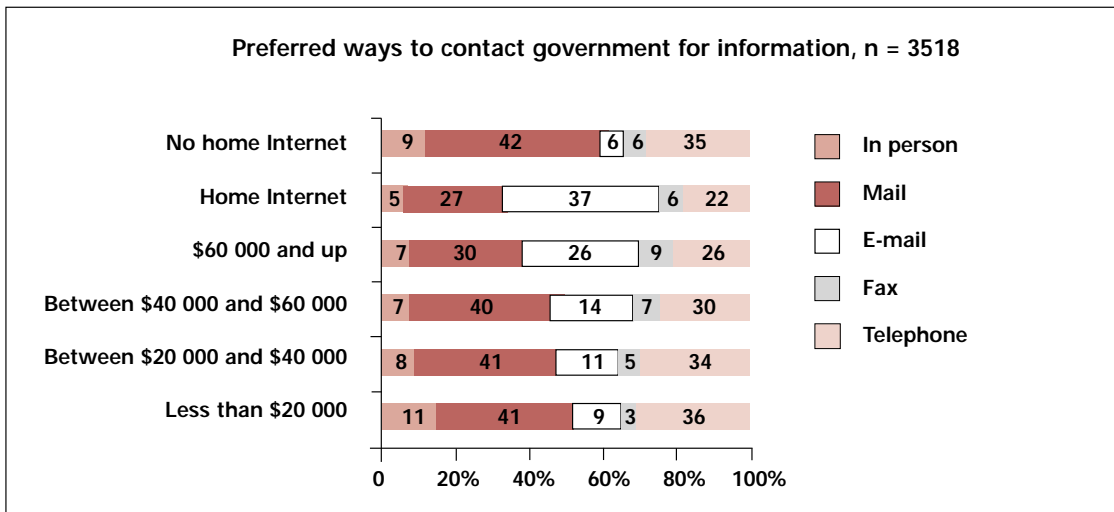
Interestingly, many respondents showed moderate support for basic Canadian and U.S. cable as essential services, with about one in five identifying these as optional services. But, in practice, most cable subscribers receive both cable services, suggesting that perceived importance and value may not always be directly linked to actual use levels.

DIVERSITY OF CHOICE AND DIVERSITY OF LIFE

A clear theme that has emerged from the research is public pragmatism in the use of different technologies to meet different needs. There has been much speculation about the potential for the Internet to displace traditional means of accessing products and services. It may be the case that the public will face increasingly the need to use new communications technologies, such as the Internet, to obtain some products and services, for example new media. In other instances, people may have no choice in how they can access a product or service if a marketing strategy of “product substitution” is employed, for example, the replacement of vinyl records with CDs.¹⁶

In an analysis of preference by the public in the use of different technologies to gain access to government for information, the public clearly indicated that a diversity of means of access is required.

Figure 16



Source: Ekos Research Associates, Inc., 1998.

As demonstrated in Figure 16, the full range of traditional access technologies, in addition to the Internet, were seen as important means of contacting the government. While there was some difference between the income groups, further research indicated that the particular technology employed was closely related to several core factors. These factors are: the needs of the person; the nature of the service being sought (e.g., general information, applying for something, providing or accessing personal or sensitive documentation, etc.); and access to technology and technological literacy. While Figure 16 involves accessing

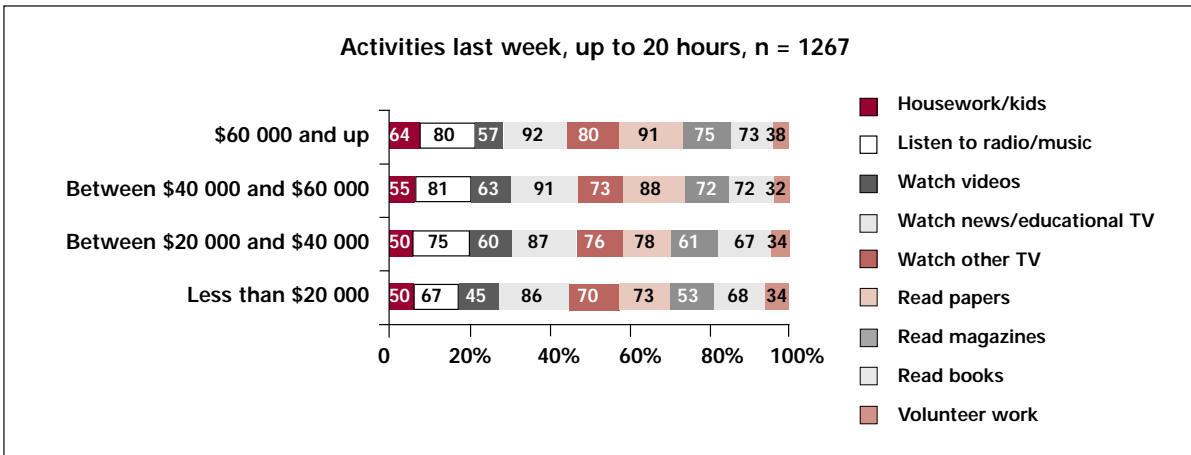
¹⁶ Product substitution is where the market for a product is recreated by supplanting an existing technology with a new and perhaps improved one, but not necessarily for reasons of obsolescence. See A. Reddick, “Access and the Information Highway,” in the *Communications Revolution at Work: the Social, Economic and Political Impacts of Technological Change*, ed. R. Boyce (McGill-Queen’s University Press, 1999).

government information, technological preference will vary considerably for all segments, for other types of information or services.

Internet (e-mail) has become an important access technology in this diverse mix of technological means of access, particularly for those in the higher-income groups. However, it is also used to a minor extent by those who do not have home Internet access. As a general trend, the Internet has become an additional method for transactions, as opposed to a replacement. Beyond government services, this pattern or strategy is also being adopted by the private sector, where Internet browsing and purchasing is an added-on or complementary means of access, in addition to other traditional means, such as in-store, phone, catalogue, etc.

In addition to how the Internet is used from home as part of a basket of consumer information and communication technologies, it is also useful to compare its use in relation to other social and cultural activities.

Figure 17



Source: Ekos Research Associates Inc., 1998.

The Internet has had a definite impact on how individuals allot their time for different activities. About one in four Internet users were watching less television (28 percent) or relying less on newspapers for their news (24 percent) due to the Internet. Another 24 percent were buying fewer books and magazines because some of that material is available on the Net. At the same time, it should not be assumed that the Internet will simply displace how people access media products or other social and cultural activities. As indicated in Figure 17, there is a healthy competition for people’s time from a wide range of daily obligations, responsibilities and leisure activities.¹⁷

The value ascribed by people to these daily activities extends beyond whether they can be done online. Convergence may integrate technologies, such as Internet, television, video and

¹⁷ Ekos Research Associates Inc. (1998).

music, or content, such as books, newspapers and magazines. But the social and familial contexts of these activities are as important, if not more so, than whether delivery through the Internet happens to be technically efficient. The Internet may displace the extent to which individuals devote time to other activities, but in reality it just adds another type of activity to the overall mix. The diversity of the range of activities in which people are involved in their everyday lives also informs an understanding of why many Canadians do not perceive a sufficient value in the Internet to justify being connected from home. In this sense, people should not be faulted or “fail the test” for not being online. This discrimination in tastes and values shows the need for the development of relevant, easy to access and use content on the Internet. This will offer a complement, as well as an alternative, to traditional social, cultural and leisure activities for many connected and still unconnected Canadians.

Typology of the “Non-users” in the Digital Divide

The search for a more complete understanding of Canadians’ attitudes to the digital divide is elusive. The complex and often contradictory nature of beliefs and perceptions makes it difficult to discern the basic patterns. Moreover, simple relationships between attitudes and background characteristics do not easily fit together to produce a coherent “big picture.” To address these limitations, we have produced a multidimensional analysis of the Canadian public. This analysis provides a more realistic and direct tool for arraying different constellations of attitudes, beliefs, behaviours and preferences about the Information Highway.

This multidimensional analysis provides two major advantages. First, it “solves” some of the apparent contradictions in the data. For example, it will show how different demographic characteristics and experiences can come together to yield the highest levels of concern. The overall patterns help explain why certain types of Canadians think and feel the way they do about the Information Highway. Secondly, the multidimensional analysis provides a more meaningful and practical tool for developing policy responses that suit the unique character of different types of Canadians. The Canadian public should not be viewed as a monolith. Any responses that assume this overall similarity are destined to miss the mark.

The multidimensional analysis presented in this section is based on three steps. In the first step, the basic factors were distilled from the variety found in the full set of attitudes tested in the survey. The second step involved identifying parameters for a logistic regression model that estimated the likelihood of a person being an Internet user or non-user. Regression modeling (based on attitudinal factors) is supported by a demographic profiling of users and non-users. The third step was to create a typology of non-users and examine the differences (if any) in the underlying structure of attitudes supported by each segment of Internet non-users.

SUMMARY DIMENSIONS OF THE DIGITAL DIVIDE

The survey questionnaires identify a number of broad attitudes and behaviours on issues surrounding the Information Highway. The initial transformation of the data consisted in creating 16 scaled variables based on the original 83 variables. These scaled variables were introduced in an effort to reduce the volume of information, and to group similar variables under one heading. The scales are a composite of the results from the relevant variables, with “positive” and “negative” responses gaining a higher and a lower value on the scale, respectively. A brief synopsis of the factors is presented in Exhibit 5.1.1. A description of their meaning follows, along with the highlights of some of the key correlations between the dimensions and other social variables.

TYOLOGY OF THE “NON-USERS” IN THE DIGITAL DIVIDE

Exhibit 5.1.1

Tele-Work

LPACT	Impact of working at home on family life
HPAST	Impact of working at home on working hours
EDEST	I am in control of my own economic destiny working at home
APPEA	How appealing do you find the idea of working at home?
FHOME	How often do you think you will conduct work from home in the future?
TPACT	Impact of working at home on time pressures
FPACT	Impact of working at home on finances
NPACT	Impact of working at home on networks/work contacts
HWORK	To what extent do you agree that new technology will make working at home more possible?
WHOME	How often do you conduct work from your home?

Positive Imagery

ATT4	IH Image Positive – Negative
ATT3	IH Image Helpful – Harmful
ATT7	IH Image Liberating – Dehumanizing
ATT14	IH Image Educational – Mindless
ATT2	IH Image Secure – Insecure
ATT12	IH Image Tool – Toy

Concern with Cultural Impact

Q51C	There should be mechanisms in place to ensure there is enough Canadian content on the IH
Q51D	Government should provide additional funding through agencies to ensure strong Canadian content on the IH
COMPA	How important is it to you to ensure the development and availability of Canadian content on the IH?
Q53AM	A good use for the IH would be to provide Canadians with information about what it means to be Canadian

Q51A I am really worried that Canadian identity will suffer as we move towards IH

Technophobia

FAST The government is moving too fast in using new technology to deliver information and services

SERV When dealing with the government, I would rather deal with a person even if it means slower services and greater costs

Q53H I personally know some people who spend so much time at home using the Internet that it has a negative impact on the quality of their family life

EDGE Government is on the leading edge in implementing new technologies

Q53R The IH is reducing the level of privacy in Canada

Competency/Technophilia

Q33D Rate your ability at working with computers

FAM How familiar are you with the meaning of the term Information Highway?

Q53B My knowledge of new technologies gives me the skills to move more easily in today's job market

ACCE2 How important do you think it is to access newer server?

PERSO How important do you think the Information Highway is to you?

Barriers

PBARR How much of a barrier is access to new equipment for you personally?

LBARR How much of a barrier is lack of knowledge how to use technologies for you personally?

Indirect Societal Applications

Q20H How useful is IH for providing information/services to help the growth of small business?

Q20G How useful is IH for improving access to education and training for Canadians?

Q20C How useful is IH for linking similar community based and cultural groups across Canada?

Q20D How useful is IH for individuals to have access to government information?

Q20F How useful is IH for delivery of medical services to rural and remote areas?

TYOLOGY OF THE "NON-USERS" IN THE DIGITAL DIVIDE

- Q20A How useful is IH for individuals to be consulted on local and community affairs?
- Q21B Community networks should be used to help low-income Canadians
- Q20E How useful is IH for individuals to communicate with one another
- Q20B How useful is IH for individuals to vote electronically in elections or referendums
-

Television

- Q2E How important to have access to basic cable service, Canadian channels?
- Q2F How important to have access to basic cable service, U.S./foreign channels?
- Q2D How important to have access to television?
-

Cultural Activities

- ZQ25D2 Over the past 23 months, how many times have you visited a bookstore?
- ZQ25C2 Over the past 23 months, how many times have you visited a public library?
- ZQ25B2 Over the past 23 months, how many times have you visited an art gallery or art museum?
- ZQ25A2 Over the past 23 months, how many times have you visited a museum or archive?
- ZQ26I How many hours did you spend last week reading books?
- ZQ25E2 Over the past 23 months, how many times have you visited a movie shown by a commercial theatre, club?
- ZQ25F2 Over the past 23 months, how many times have you visited a folk, rock, jazz, or country music performance?
- ZQ25I2 Over the past 23 months, how many times have you visited a national park/historic site?
-

Virtual Banking

- Q1E I prefer using banking machines over going into a bank and dealing with a teller
- Q1F I prefer using debit cards over using cash, cheques or credit cards
- Q2G How important to have access to Internet?
-

Telephone Use

- Q27C In the past three months, how often have you used your phone for contacting governments?

Q27B In the past three months, how often have you used your phone for work/business?

Q27C In the past three months, how often have you used your phone for contacting your doctor or other health-related services?

Pop-Culture Activity and Homemaking

Q26E How many hours did you spend last week watching news or educational programs on TV?

Q26F How many hours did you spend last week watching all other types of programming on TV?

Q26D How many hours did you spend last week watching videos?

Q26G How many hours did you spend last week reading newspapers (excluding on-line electronic newspapers)?

Q26H How many hours did you spend last week reading magazines (excluding on-line electronic magazines)?

Q26B How many hours did you spend last week on housework/caring for children?

Concern with Internet Cost and Access

REL Would you be more or less likely to use the Internet if Internet services were more reliable (for example, were always available)?

COST Would you be more or less likely to use the Internet if the cost of an Internet account was cheaper?

RAP Would you be more or less likely to use the Internet if it took less time to find, download information on the Internet?

EASE Would you be more or less likely to use the Internet if the Internet was easier to use?

Informed Consent

BNKGT How likely would you be to do transactions electronically if a bank guaranteed the transaction?

SEC How likely would you be to do transactions electronically if there were adequate security measures to protect personal information such as credit card numbers?

GOVT How likely would you be to do transactions electronically if there was a government framework in place that establishes laws about electronic commerce?

TYOLOGY OF THE “NON-USERS” IN THE DIGITAL DIVIDE

PINF	How likely would you be to do transactions electronically if the business clearly indicated how it will use any personal information collected?
PRIV	How likely would you be to use the Internet if you knew how your personal information would be collected and used?
SECUR	Would you be more or less likely to use the Internet if the Internet was as safe and secure as a bank machine?

Safe E-commerce

ICRD	I would be willing to give my credit card number over the Internet, in order to purchase a product or service
REGI	I do, and would not mind, registering personal information on Internet sites I visit
EXP	I expect that I will buy some products or services over the Internet within the next two years
TCRD	I would be willing to give my credit card number over the phone in order to purchase a product or service

Economic Security

FUTUR	Thinking about your personal economic situation in the next years, do you feel pessimistic or optimistic?
RLTO10	I think there is little chance I could lose my job in the future
SWC	In general, I am very satisfied with my working conditions
RLOS10	I feel I have lost control over my economic future

1. **Tele-work** encompasses attitudes and actions relating to issues that range from the impact of working at home on family life, working hours and, finances, control over economic destiny, time pressures, and networks/work contacts. Tele-work also measures the appeal of working from home, the frequency with which respondents work from home, as well as the likelihood that a respondent will conduct work from home in the future. In a related measure, we also include the respondents’ attitudes towards new technology and the possibility of working from home.
2. The second scaled variable, **Positive Imagery**, measures the extent to which the Information Highway summons constructive descriptions among respondents. This scale includes overall positive imagery, as well as feelings relating to its usefulness, helpfulness, and security. Positive imagery is also revealed by the liberating and educational potential of the Information Highway.
3. **Concern with the cultural impact** of the Information Highway is another theme that is broached in five survey questions. This third scaled variable examines the impact

of the IH on Canadian identity and the mechanisms (government or otherwise) that should be introduced to ensure Canadian content on the IH. We also identify the potential positive impacts of the IH on Canadian culture.

4. The fourth item outlines the variables that are included in the **Technophobia** (fear of technology) dimension. Complementary to the positive imagery variable, this variable measures the attitudes that are linked to the rejection of the use of new technologies, notably in the delivery of government services. The fear of new technology is also linked to the sense of loss of privacy and negative impact the Internet can have on family life.
5. The fifth grouping of variables relates to the ease and comfort respondents demonstrate with regard to the Information Highway. The **Competency/ Technophilia** (at ease with technology) variable takes into account individuals' self-reported ability to work with computers, as well as the value they place on the Information Highway in their lives. The demonstrated ease with computers, new technology and the Information Highway also has an effect on the skills they have to adapt in today's job market.
6. The succinctly named **Barriers**, our sixth dimension, is a composite of two variables that measures the perceived barriers, including access and lack of knowledge, in relation to the Information Highway.
7. The next scaled variable, **Indirect Societal Applications**, is a complex measure that encompasses nine distinct variables. The range of issues is broad, addressing the usefulness of the Information Highway in a variety of social sectors. These include small business, access to education and training, and the delivery of medical services to rural and remote areas. It also looks at the Information Highway in linking community-based and cultural groups, enabling Canadians to communicate with one another, helping low-income Canadians, and providing government information to Canadians. We also examine the applications of the Information Highway in our political system, notably in electronic voting and for consultation between government and its citizenry on local and community affairs.
8. Turning to respondents' attitudes towards **Television**, we reduced three variables related to television and cable services. These address the importance of access to television as well as basic cable service with Canadian and U.S/foreign programming.
9. The **Cultural Activities** dimension gives us a sense of how frequently these types of activities figure in the lives of Canadians. The survey asks respondents to enumerate the number of visits in the past 23 months to a bookstore, public library, art gallery, museum, archive, and national park/historic site. Canadians are also asked to recall the number of times they attended a commercial movie theatre or musical performance. In this measure of cultural activities, we also include the number of hours spent reading books over the course of a week.
10. The tenth dimension, **Virtual Banking**, combines the preference for using new technologies for simple banking and financial transactions with the importance of access to the Internet. This measure is linked to the latent (unrevealed) likelihood of adopting Internet banking as the preferred banking method.

11. Although telephone use is widespread and access is hardly an issue for most Canadians, we include the **Telephone Use** dimension to get a sense of whether the telephone is the preferred method of communication. This scaled variable measures the frequency of telephone use for contacting government, business use and accessing medical services.
12. The **Pop-culture Activity and Homemaking** dimension is an effort to measure time spent on activities inside the home that fall outside of the realm of work, community or volunteer activities. This measure of passive consumerism and time management includes the number of hours spent watching television (including videos), reading newspapers and magazines, as well as the amount of time spent caring for children or doing housework. This dimension conspicuously avoids any mention of time spent on the Internet while at home.
13. We also outline the variables that are used to form an overall scale of **Concern with Internet Cost and Access**. This dimension gauges whether respondents would be more or less likely to use the Internet if barriers to use were reduced or conditions improved. These barriers and conditions include, cost, ease of use, reliability and time.
14. The **Informed Consent** dimension deals with issues surrounding privacy and security of electronic transactions, including electronic banking and shopping. Informed consent also takes into account respondents' attitudes towards the security and use of personal information collected online by businesses. Associated with these issues is the role of the government in establishing laws about electronic commerce.
15. In the same vein as informed consent, we have grouped four variables that touch upon the perception of safe e-commerce. **Safe E-commerce** measures the likelihood of someone giving personal information or making purchases on line or over the telephone, independent of any guarantees of safety or security.
16. Lastly, four variables help give a sense of respondents' feeling of **Economic Security**. We asked Canadians to think about their personal economic situation in the next few years and whether or not they could lose their job in the future. The measure of relative optimism (or pessimism) is enhanced by the sense of control they have over their economic future and their overall satisfaction with their present working conditions.

These 16 dimensions help define the broad outline of attitudes and values among respondents to the Information Highway survey. They are helpful in reducing the number of variables that need to be manipulated and make the data set more accessible. Nonetheless, these dimensions are highly correlated with one another. We cannot use these collapsed dimensions to effectively define the underlying structure of users and non-users of the Information Highway.¹⁸

¹⁸ Applying these dimensions in a multiple regression reveals very high multicollinearity. Most of the 16 explicative variables (dimensions) do not have independent variance: they are basically explaining the same thing. This increases the standard error of the model, thus greatly reducing the explicatory power.

The next step is therefore to re-interpret these 16 dimensions into a set of independent factors. We apply a data reduction technique called factor analysis to regroup the dimensions and extract six principal components.¹⁹ The summary results are presented in Exhibit 5.1.2.

Exhibit 5.1.2 Principal Component Analysis

Dimension	Principal Component					
	1	2	3	4	5	6
Tele-work			+			
Positive Impact on Jobs			+			
Positive Imagery			-			
Concern with Cultural Impact	+					
Technophobia	+					
Competency	-	+	+			
Barriers	+					
Indirect Societal Applications		+	+	+		
Television				+		
Cultural Activities				-	+	+
Virtual Banking	-	+		+		
Telephone Use						+
Pop-culture Activity and Homemaking					+	
Concern with Internet Cost and Access		+				
Informed Consent		+				
Safe E-commerce	-	+				
Economic Security	-					

¹⁹ The number of factors was determined by evaluating the relative contribution of including an additional factor into the model. The sixth factor improved the model while the relative contribution of the seventh factor was insignificant, as revealed by Fisher's statistical test.

In an effort to clarify the results, Exhibit 5.1.2 presents the most important factor loadings (both positive and negative). A positive loading (plus sign) indicates that the strength of the component varies in the same direction as the dimension. A negative loading (minus sign) indicates that a strong positive result in the dimension has an opposite effect on the factor. We see that dimensions can be in more than one component and, likewise, the principal components are comprised of a combination of different dimensions. The next step is to label each of the factors so we have a basic lexicon that we can use to identify the different types of users and non-users of the Information Highway.

Factor 1: Lack of confidence

This factor is described by the lack of confidence in using the Internet and accessing the Information Highway. It is a combination of technophobia and challenges to the use of the Internet. There is a high level of concern with the cultural impact of the Information Highway is associated with lower levels of economic security.

Factor 2: Experience and interest

Factor 2 relies heavily on issues of informed consent, e-commerce, and cost and access to the Internet. Competency loads positively, as do virtual banking and societal applications of the Information Highway. These are all issues that relate to experience and interest in using the Internet.

Factor 3: Practical tool

Factor 3 isolates the effect of the tele-work dimension. We included in the factor analysis a complementary dimension to tele-work, measuring the perceived impact of the Information Highway on jobs. Factor 3 reveals that these two variables vary in the same direction. The overall imagery of the Information Highway is likely to be negative, although competency and societal applications rank high. This is the Internet as a practical tool.

Factor 4: Passive convenience

Factor 4 compares the importance of television to other cultural activities. Watching television is likely to have a negative impact on the number of other cultural activities enjoyed by respondents, but increase the enthusiasm for virtual banking and societal applications of the Information Highway. This factor describes the passive convenience of the Internet.

Factor 5: Leisure, culture and entertainment time

Factor 5 takes into account the number of hours spent consuming pop-culture at home, and cultural activities outside of the home. The leisure, culture and entertainment time factor encompasses the effect of these variables.

Factor 6: Telephone use

Factor 6 picks up the effect of cultural activities and combines it with the number of hours spent on the telephone for work or to contact government/medical services. Because the telephone dimension loads so heavily in this factor (and for lack of a better term) we will refer to Factor 6 as telephone use.

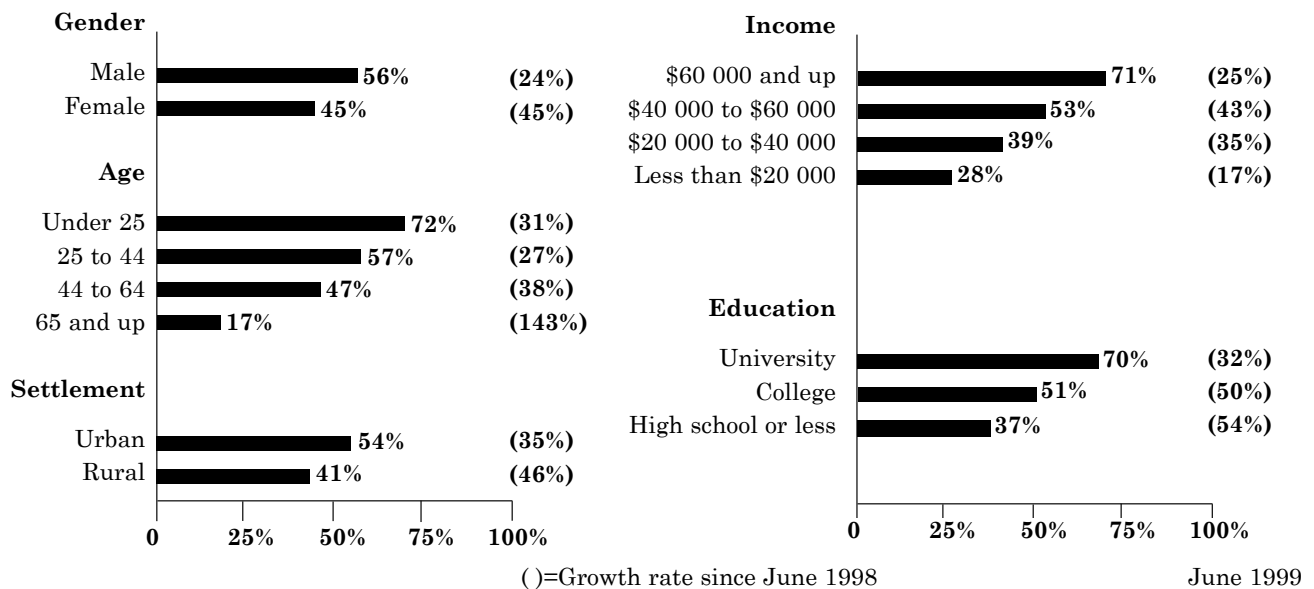
These six factors (lack of confidence, experience and interest, practical tool, passive convenience, leisure, culture and entertainment time, and telephone use) explain at least 50 percent of the total variance. They are, by definition and construction, independent from one another and therefore can be readily applied in a multivariate analysis. The next phase of the analysis is to use these factors in a predictive or explicative model of Internet users and non-users.

WHO IS LAGGING BEHIND IN THE DIGITAL DIVIDE AND WHY?

Exhibit 5.2.1 profiles Internet users based on a number of demographic characteristics. We see that a greater proportion of men than women have used the Internet in the past three months.

Exhibit 5.2.1 : Profile of Internet Users

Percent using the Internet in the past three months



From June 1998 to July 1999, the rate of growth of Internet use among women was almost twice as large as among men. Younger age cohorts, increased income and education levels also indicate higher rates of Internet use. Canadians over the age of 65 have the greatest rise in Internet use from 1998 to 1999, with a staggering 143 percent increase in one year.

Despite this impressive increase, their numbers remain far below the average Internet use among younger Canadians. Rural Canadians also increased the proportion of Internet use from 1998 to 1999. Compared to Canadians residing in urban locations, however, fewer rural Canadians used the Internet in the three months preceding the study.

We applied the demographic variables in a multivariate analysis of Internet use and non-use. A linear model would be inappropriate in this case because we are limited to values no smaller than 0 (non user) and no greater than 1 (user). On a dichotomous dependent variable, we use a logistic regression on the independent (explicative) factors and variables to predict the likelihood of being an Internet user (1) or non-user (0).²⁰ Using age, income, education and gender in the logistic regression, we find that they are all significant parameters in determining the likelihood of Internet use. Exhibit 5.2.2 displays the coefficients of the variables in the model. The model itself still has quite a bit of unexplained variance (pseudo R-squared of 0.21).

Exhibit 5.2.2: Coefficients of logistic regression model

Dependent variable: Internet use in the past three months

Demographic Variables	B	s.e.	Sig.
(Constant)	-0.76	0.14	0.00 ***
Age	-0.41	0.03	0.00 ***
Gender (male)	0.51	0.08	0.00 ***
High Income	0.65	0.08	0.00 ***
Education	0.65	0.05	0.00 ***

*** significant < 0.01; ** significant < 0.05; * significant < 0.10

There are some definite cleavages in the demographic breakdown of Internet users and non-users. But beyond the demographic profile of who is on-line and who is still lagging behind, there may be some useful information that can be applied from the factor analysis in the previous section. The broad attitudes, defined and extracted in the factor analysis, may give us a better sense of the characteristics of Internet users and non-users. The results from the logistic regression are found in Exhibit 5.2.3.

As we see in Exhibit 5.2.3, factors 1, 2, 3, and 5 are significant parameters in determining the likelihood of Internet use in a household. A higher degree of confidence in Internet abilities (negative coefficient on lack of confidence), experience and interest, seeing the

²⁰ Likelihood estimation expresses the probability of Internet use as a function of model parameters. Logistic regression refers to the log-odds of the probability that (Y = 1). Although the probability is non-linear, by taking the natural logarithms of the odds, we can construct a linear function. The probability (P) that (Y=1) = 1/(1+e^{-L}); where L is the logistic regression, a linear function of K variables. L= B₀ + B₁X₁ + B₂X₂ + ... + B_kX_k.

Internet as a practical tool, and increased time for leisure, culture and entertainment are likely to increase the propensity for Internet use. Compared to respondents who did not use the Internet in the three months preceding the study, Internet users have a unique attitude and value set towards the Information Highway.

Exhibit 5.2.3: Coefficients of logistic regression model

Dependent variable: Internet use in the past three months

Variable	B	s.e.	Sig.
Constant	0.13	0.44	0.78
1. Lack of confidence	-1.23	0.15	0.00 ***
2. Experience and interest	0.33	0.13	0.01 **
3. Practical tool	0.51	0.12	0.00 ***
4. Passive convenience	0.14	0.11	0.21
5. Leisure, culture, and entertainment time	0.36	0.12	0.00 ***
6. Telephone use	0.20	0.14	0.16
Age	-0.18	0.10	0.07 *
Gender (male)	-0.15	0.23	0.50
High Income	0.58	0.25	0.02 **
Education	0.10	0.15	0.52

*** significant < 0.01; ** significant < 0.05; * significant < 0.10

Combining attitudinal factors and demographic characteristics, we can provide a more complete picture of the differences between Internet users and non-users. By including age, gender, income and educational level in the regression model, we find that higher incomes have a positive effect on the likelihood of a person being an Internet user. To a lesser (but still significant) extent, respondents in older age cohorts are less likely to be Internet users than their younger counterparts. The effect of the age variable is likely influenced by the sharp decrease in Internet use among respondents over the age of 55. When all other factors are taken into account, gender and education have little or no impact on the propensity towards Internet use.

Not only do income levels affect the likelihood of Internet use, further analysis shows that socio-economic status may also play an important part in determining some of the attitudes expressed towards the Information Highway. Exhibit 5.2.4 summarizes our findings of logistic regression on Internet use (dimensions and demographics) based on income. This evidence supports the hypothesis that socio-economic status is generating a

TYOLOGY OF THE “NON-USERS” IN THE DIGITAL DIVIDE

different set of attitudes towards the Information Highway. Respondents with higher incomes have a different set of parameters that influence the likelihood of Internet use than do respondents with lower incomes. For both groups, the variables point in the same direction; however, the intensity and magnitude of the coefficients vary somewhat between groups. Significant variables for higher-income earners include factors 1, 2, and 3. Among low-income respondents, we find that factors 1, 3, 4, and 5, as well as the age demographic, are significant determinants in estimating the likelihood of Internet use.

Exhibit 5.2.4: Coefficients of logistic regression model based on income

Dependent Variable: Internet use in the past three months

Variables	Income greater than \$60K			Income less than \$30K		
	B	s.e.	Sig.	B	s.e.	Sig.
1. Lack of confidence	-1.07	0.018	0.00 ***	-1.73	0.33	0.00 ***
2. Experience and interest	0.31	0.15	0.04 **	0.26	0.26	0.32
3. Practical tool	0.36	0.15	0.01 **	0.96	0.26	0.00 ***
4. Passive convenience	0.13	0.14	0.36	0.38	0.22	0.08 *
5. Leisure, culture, and entertainment time	0.20	0.14	0.16	0.73	0.26	0.01 **
6. Telephone use	0.20	0.18	0.27	0.32	0.25	0.21
Age	-0.10	0.13	0.44	-0.37	0.19	0.04 **
Gender (male)	-0.04	0.28	0.88	-0.51	0.46	0.27
Education	-0.03	0.17	0.86	0.36	0.30	0.24

*** significant < 0.01; ** significant < 0.05; * significant < 0.10

Having explored some of the differences between Internet users and non-users, particularly the effect of the respondents' socio-economic status, it would be appropriate at this time to explore the different attitudes and beliefs present among non-users of the Internet.

POPULATION ARRAY OF NON-USERS

In the first wave of the questionnaire, non-users were asked to identify the main reason why they do not have an Internet account. Responses were grouped into three broad categories: cost issues, lack of interest, and no apparent need.

There is obviously room in these categories for some overlap. It is easy to imagine that the distinction between the level of interest and the perceived need for an Internet account may be somewhat blurred for a number of respondents. But fundamentally, they are different types of reactions. If we were to change the stimuli (i.e., create a need for Internet use much the same way the telephone has become an indispensable household or personal technology), we might still find a segment of the population that displays no interest in getting an Internet account. Of all identified non-users, approximately one in five indicate cost as the main reason why they do not have an Internet account. An additional 20 percent display no interest in acquiring Internet access. Nearly three in 10 indicate that they do not need Internet access from home.

- Type One: Cost
- Type Two: Interest
- Type Three: Need

We know that users and non-users score quite differently on a number of scaled factors we identified in the previous section of this report. For instance, Internet users are more likely to be keen on tele-work and have a greater sense of confidence in the safety of e-commerce. Across the groups (or typologies) of non-users, we examine whether these factors apply with the same intensity or whether there are significant differences in the characteristics latent to each type of non-user.

Exhibit 5.3.1 provides a summary of the results based on the attitudes and behaviours extracted in the factor analysis. A plus (+) symbol infers that the variable has a positive loading on the factor. In terms of demographics, there are some interesting differences between the identified types of non-users. Exhibits 5.3.2 through 5.3.5 show the distribution within demographic characteristics (column percentages) and across the typology of non-users (row percentages).

Exhibit 5.3.1: Typology of Non-Users

Reasons why no Internet access	Cost/Affordability	No Interest	Don't Need
Factors:			
1. Lack of confidence	+++	++	+
2. Experience and interest	+	--	-
3. Practical tool	+	--	-
4. Passive convenience	-	--	---
5. Leisure, culture, and entertainment time	--	+	-
6. Telephone use	+	--	-

TYOLOGY OF THE “NON-USERS” IN THE DIGITAL DIVIDE

Respondents who identify cost as the main reason why they don't have an Internet account are likely to have a greater lack of confidence in their technical and computer skills. Compared to other types of non-users, they have some interest and experience with the Information Highway, and are more likely to see the societal applications of the Internet. They are less likely to have a lot of time for leisure and cultural activities. Telephone use is highest among this group of non-users.

Respondents with no interest in acquiring an Internet account also have a lack of confidence in their high-tech skills. Particular to this group is their lack of interest and experience; they are also less likely to see the Internet as a practical tool or derive any benefit from its societal applications. They have time to take in entertainment and cultural activities in and out of the home and, among all non-users, are the least likely to have a high telephone use.

The third major type of non-users, respondents who indicate they don't need an Internet account, are not likely to view the Information Highway as passive convenience or having any direct or indirect societal applications. All other indicators are similar to the second type of non-users (no interest), with the exception of the time variable for leisure and entertainment. Like their counterparts who indicate cost as the major barrier, they are less likely to have a positive loading on that factor.

Exhibit 5.3.2 displays the results of typology of non-user by socio-economic status (SES) category. Overall, a majority of non-users (57 percent) are of low socio-economic status. Socio-economic status does not appear to be a factor in the distribution of non-users across two of the three typologies. Only on the issue of cost/affordability of Internet access are low SES respondents over-represented among non-users. Although a plurality of non-users indicate they don't need the Internet, the proportion that indicate cost as a major factor is heavily weighted by a margin of two-to-one among low SES respondents.

Exhibit 5.3.2

Socio-economic Status

	Cost/Affordability		No Interest		Don't Need		Overall	
Low SES	63%	31%	53%	28%	55%	42%	57%	100%
High SES	37%	23%	47%	33%	45%	44%	43%	100%
Overall	100%	27%	100%	30%	100%	43%		

The main reasons for not having an Internet account vary somewhat depending on the age of the respondent. We see in the far right column of Exhibit 5.3.3 the overall distribution of ages among non-users.

Exhibit 5.3.3

Age	Cost/Affordability		No Interest		Don't Need		Overall	
< 25	7%	39%	5%	31%	3%	30%	5%	100%
25-34	22%	35%	13%	24%	15%	40%	16%	100%
35-44	34%	33%	24%	27%	25%	40%	27%	100%
45-54	20%	27%	22%	34%	18%	39%	20%	100%
55-64	11%	19%	16%	32%	18%	49%	16%	100%
65+	4%	7%	19%	41%	18%	53%	15%	100%
Overall	100%	26%	100%	31%	100%	43%		

Aside from the low number of non-users below the age of 25, the distribution of non-users is fairly well spread out across the identified age categories. The proportion in each 10-year age cohort (over the age of 25) ranges from 15 percent (over the age of 65) to 27 percent (35-44 year olds). We know that from overall age sampling and results from the previous section (Factors of Users and Non-users), the oldest age cohort is over-represented among non-users.

The older the respondent, the less likely they are to mention cost as the main factor in why they do not have an Internet account. Conversely, younger non-users are less inclined to indicate they have no interest in accessing the Internet. Close to four out of 10 respondents under the age of 25 site cost/affordability as the main reason. This proportion drops to two out of 10 respondents among respondents aged 55-64, and less than 10 percent among respondents over the age of 65. Older respondents are more likely to indicate that they don't need access to the Internet.

In Exhibit 5.3.4, we see that women are over-represented among non-users. In our multivariate analysis combining demographics and attitudinal factors, the gender of the respondent was not a significant parameter in determining the likelihood of using the Internet. Most of the variance, therefore, was explained by other factors in the model. It is interesting to note that the distribution of men and women across the typologies of non-users is balanced. Men mention cost, interest and need with the same pattern of frequency as women do.

Exhibit 5.3.4

Gender	Cost/Affordability		No Interest		Don't Need		Overall	
Male	37%	24%	39%	31%	41%	45%	39%	100%
Female	63%	27%	61%	31%	59%	42%	61%	100%
Total	100%	26%	100%	31%	100%	43%		

TYOLOGY OF THE “NON-USERS” IN THE DIGITAL DIVIDE

There is little evidence to show that the level of education has a significant effect on the typology of non-users (Exhibit 5.3.5). A majority of non-users have an education level of high school or less, and approximately three in 10 have some post-secondary education.

Exhibit 5.3.5

Education	Cost/Affordability		No Interest		Don't Need		Overall	
High school or less	55%	27%	56%	32%	53%	42%	55%	100%
Some post-secondary	29%	27%	30%	32%	27%	41%	29%	100%
University	15%	24%	15%	27%	19%	49%	17%	100%
Overall	100%	26%	100%	31%	100%	43%		

To summarize, there are some definite attitudinal factors at play in the typologies of non-users. There is also some evidence that age and SES may be factors in determining the main reason why respondents do not have access to the Internet. Fundamentally, there are different types of non-users, each with its distinct characteristics. Any effort made to address the needs of non-users would have to recognize this, either by enabling them to get on-line through alternative means, or simply recognizing that a segment of the population is not interested in acquiring Internet access. The multidimensional analysis provides us with meaningful insights into the different sets of attitudes and demographic characteristics of Internet non-users. This is an especially practical tool for developing policy responses to suit the unique character of different types of Canadians.

There are a number of general basic access, technical training, content development and alternative service delivery implications that should be part of a public policy response.

Type 1 non-users recognize the Internet has some value in meeting some of their needs, but face the primary obstacles of cost/affordability and technical skill development. This group is considered to be “near-users.” Social literacy is an important factor for these individuals, as well as those comprising the other two types. Public access sites (CAP) and community learning services (CLN) have important roles to play in meeting the needs of Type 1 non-users. Public education and awareness initiatives by organizations (community, non-government and government) providing these services would likely facilitate and improve the use of the Internet by this group of non-users. Broadly speaking, Type 1 non-users tend to cluster around younger Canadians (44 and younger), but this is not exclusive. There is an important gender gap in the non-user typology (overall 61 percent women, 39 percent men). Women are over-represented in Type 1 by a ratio of two-to-one.

Similarly, **Type 2 non-users** face technical and cost barriers; that said, the perceived lack of personal or social benefit and value of Internet service is as serious a challenge. Improved content (economic, social and cultural), designed and developed to better meet the existing needs of these non-users, may facilitate greater online activities. Technical skills training, content relevant to social needs and the availability of public access sites are also important components of an access strategy for this group. There is a tendency

(not exclusive) for the Type 2 non-user to be in the pre-retirement cohort (45-55 years). At the federal government level, major roles exist in access and content activities for HRDC (CLN), Industry Canada (CAP), Heritage Canada (social, cultural content), and Treasury Board Secretariat (government services).

Type 3 non-users are also relatively far removed from online activities, and will remain so, particularly in the near future. They are not likely to see or derive any personal benefit from access, and are not likely to have the resources or social skills and interests to benefit from current Internet access. Broadly speaking, seniors and retired Canadians (55 years and older) make up much of the Type 3 group. For both Type 2 and Type 3 non-users, strategic needs assessments (social needs) combined with content development initiatives may increase the propensity for Net use in the longer term. The proportion of women is slightly higher than men in Type 2 and Type 3 groups. It is important to note that all the non-user types are clearly dominated by women.

From a public policy perspective, the reality is that these non-users will need to be provided with communication and information services in a variety of traditional and standard formats or means, and accessible for those with different skill and income levels, for some time to come. The federal departments with mandates in these primarily social policy issues include HRDC, TBS and Heritage.

Social Context

THE IMMUTABILITY OF THE DUAL DIGITAL DIVIDE

During Canada's transition to an "information society" over the coming years, an ongoing tension will exist due to the two types of "have-nots:" those who have no interest in the Internet or other aspects of the Information Highway, and those who desire to be connected (to meet very real educational, literacy, skills, economic and social needs) but face serious obstacles. This tension, evident in much of the discussion about the research findings above, gives rise to several questions. How serious is the digital divide? How can we ameliorate the outstanding cost and skill disadvantages of those who remain unconnected? What are the content dimensions of the divide? Is this divide immutable or subject to resolution through developmental initiatives by government and/or industry?

It is important that the digital divide and the "have-not" problem not be simply underrated because a large number of non-users express little interest in the technology at this relatively early stage of development. Nor should this problem be downplayed based on the argument that more users will be created when there is more content of value in terms of mass appeal and benefit.

Advanced interactive communications will pervade our social and economic activities over the long term, whether this is experienced implicitly or explicitly by individuals. This is much the case now. Central to the core strategies of governance and the market, technological access and proficiency will be necessary for individuals to maintain a competent level of participation in society and to derive the benefits thereof. Access to the Internet will not, on its own, overcome the social and economic inequalities and cleavages in society or communities. In fact, it may aggravate them. But the ability to use the new technologies as tools and resources, and to have a chance to realize potential opportunities, means that some amelioration of some disadvantages and inequalities is possible.

As a matter of policy, both economic and social, it is necessary for government to continue to address the challenges arising from both sides of the dual divide. Access, technological literacy and content development initiatives need to continue over the near term to address the near-user segment of the "have-nots." These initiatives need to evolve over the longer term to address the needs of the distant-users as connectivity becomes more important to their lives. Multiple modes of access to information and services also need to continue to meet the communication needs of all Canadians, whether connected to the Internet or not.

A useful way of understanding some of these trends is to consider how people consume communications. The context of the complexity of our lives and society should not be lost in this exercise. People concentrate their goals and activities in life in different ways. As part of this, people use a variety of communication technologies in different ways and for different purposes. These options are not just based on choice, but also on the means or resources people have available for communications (e.g., affordability, literacy, etc.).

LITERACY

The concept and practice of literacy extends beyond a consideration of whether people can use computer hardware, software or Web pages. As discussed above, about half of non-users indicated that factors such as disinterest, lack of need and the perceived difficulty in using technology were important reasons for not being online (see Figures 8 and 12). The difficulties identified in use indicate that statements about disinterest or lack of need mask other factors such as literacy.

The concept of literacy means more than the basic ability to read and write. Literacy also encompasses individuals' abilities to understand and use information in a way that is beneficial and meaningful to their everyday lives. Literacy levels affect the choices people make, and limit their options in the means they use for gathering information and participating in society. The highly variable levels of literacy in Canada are one explanation for the large number of non-users who have no interest in or need for the Net.

About one in five (22 percent) Canadian adults is at the lowest level of literacy. This means they have difficulty dealing with, or reading, basic printed materials. Another one in four (24-26 percent) has a somewhat improved level of literacy, but is only able to deal with "material that is simple and clearly laid out, and material in which the tasks involved are not too complex."²¹ Literacy, then, means much more than the ability to use a technology. It is the capability to use social and cultural skills in ways that allows individuals to benefit from the use of technology, whether it be Net access, a book, newspaper, television, and so on.²²

Along with cost, and a lack of perceived need and value, literacy is one of the important variables that helps to explain the low level of Internet use by seniors. About six in 10 seniors never completed high school. In 1994, over half the seniors in Canada performed at the lowest level of literacy as measured by the International Adult Literacy Survey (IALS). Just over half (53 percent) were able to perform simple reading tasks. A minority of seniors, nonetheless, have gone online. In 1998, less than one in 10 seniors (nine percent) reported having Internet access at home. Of the seven percent of seniors stating that they had used the Internet somewhere in the previous three months, most (84 percent) had done so from home, with the remainder gaining access through schools (eight percent) and public access sites (five percent). A similar minority of the senior population is involved in some type of education program (five percent or 175,000).²³

In this context, depending on the individual's level of literacy, they may use one or several different technologies to meet their communication and information needs. For example, where someone has difficulty with print or computers/Internet, they may rely instead on television or telephone for their information needs. The preferences expressed

²¹ *Reading the Future: A Portrait of Literacy in Canada* (Statistics Canada, 1996).

²² See, for example, V. Mosco, *Public Policy and the Information Highway: Access Equity and Universality* (2000), for the National Library of Canada; or, A. Sen, *Development as Freedom* (New York: Knopf, 1999).

²³ Statistics Canada, *A Portrait of Seniors in Canada* (1999, Cat. No. 89-519-XPE), 83-84; Ekos Research Associates Inc., *The Information Highway and the Canadian Communication Household* (1998).

by Canadians for the use a number of different technologies to access information and services (see Figure 16) has less to do with unfamiliarity with the Internet, and more to do with the capability to use different technologies to meet needs. To accommodate the range of literacy skills in Canada, and the preferences of the public to use different means of access for different types of information and services, these different means of access must continue to be made available. As well, it is important that the users of these alternative forms of access and distribution are able to receive the same level or quality of service and information that is being made available on the Internet.

There is another disturbing trend involving literacy and the Internet. There tends to be an uncritical optimism and faith on the part of Internet proponents about the reliance on technology and the Internet as a primary tool to overcome literacy, skills and job training challenges. To some extent, this theme is apparent in both the CAP and CLN programs. Such assumptions risk diminishing the need to provide learning, training, skills and literacy materials in other formats and by other means of access (e.g., in-person, print). These options are necessary for individuals' existing capacities and skills, and address obstacles for Canadians who use new services in a basic way, or who could benefit from these services if a combined approach to learning was better employed.

This is not to imply that technology does not have an important role to play as one resource among many. For example, a Statistics Canada study of computer literacy observed that inequalities of access meant that those who could benefit the most from new technology by improving their skills (those with low income, or lower education and the unemployed) risk becoming further marginalized as other Canadians benefit from the development of these new skills.²⁴ But caution in the introduction of and reliance on new technology is important. Historically, when other ostensibly revolutionary technologies, such as film, radio and television, were introduced to society, it was thought that these would not just add new skills, but would also replace traditional forms of learning, and even replace schools. This was not the case, because the conditions and practices of successful literacy, learning, etc. are not technology-centric.²⁵

Research also suggests that another literacy problem may be developing through an over reliance or sole reliance on computers and the Internet for access to information, education and training. The over reliance on computers and network-based learning and training has meant that other forms of learning and social capacity development have been reduced or displaced altogether. Research in education over the past decade has found that a major cost of this technological determinism has been a deskilling or increase in illiteracy in the traditional basic areas of reading and writing, as well as in the capability or capacity of individuals' social, community and general life skills and abilities. In other words, youth, who as a social segment are the major users of the Internet and new technology, while proficient in this, have downgraded skills and abilities in the fundamental practical use of the arts, sciences, and the ability to socially interact and participate in a meaningful way. These involve those many activities in daily life away from the computer and the Internet.

²⁴ Statistics Canada, "Computer Literacy — a growing requirement," *Education Quarterly Review* (1996), 9.

²⁵ R. Upitis, "Impact of the Communications Revolution on Education" in ed. R. Boyce, *The Communications Revolutions at Work* (Montreal: McGill-Queen's University Press, 1999).

While these high-technology users have been exposed to much information, they have not learned it, built the same level of knowledge, or developed the ability to apply it in their daily lives as have preceding generations. So, while it will be important that policy attempts to create technological-based literacy and get more Canadians online, these initiatives must not, as a consequence, erode the standard and socially necessary forms of literacy.²⁶

INCOMES, COST AND AFFORDABILITY

Income creates the greatest divide in Canada for access to the Information Highway. Cost barriers to Internet access are multi-dimensional: they need to be considered in a wider context than only the cost of online service. The affordability of the Net and other goods and services in people's lives depend on individuals' overall circumstances. The trend in recent years has been towards greater financial demands and stress for Canadians. This has implications for which products and services they can spend money on, and which level of service (first- or second-class) they can afford.

In addition to the obvious costs of computer hardware or set-top boxes, there are also the costs of software, and monthly Internet service provider (ISP) charges. These costs present immediate barriers or obstacles for many non-users. For others, the cost of the underlying communication networks necessary to use these Net access technologies and services can also present affordability challenges. For example, many Canadians who have telephone and cable service do not necessarily find these services affordable. However, they take great pains to keep them because they are considered essential and necessary.²⁷

In 1994, Ekos Research Associates Inc. provided a useful typology of the changing class structure in Canadian society. This typology differentiated segments of class in Canada using characteristics and perceptions of Canadians on a range of social, economic and cultural issues. This analysis identified a major schism, most often around core values, between the elite in society and government, and those in the middle- and lower-income groups in society. This research also echoed the findings of Statistics Canada and others showing an emerging class polarization in Canada.

In the Ekos typology, the Elite Insiders (19 percent) forming the upper class represented the information economy knowledge workers. These individuals are generally well educated, highly skilled, and well paid. The middle class was represented by two groups: the Secure Middle (24 percent) and the Insecure Middle (16 percent). The secure middle were economically secure with higher than average education levels, and fairly high incomes. The Insecure Middle reflected the erosion of the middle class in Canada down to the expanding lower class. This group had middle incomes and better-than-average education levels. However, this group was facing an erosion of economic security, jobs and income. The lower class was subdivided into the Disengaged Dependents (22 percent) and the Outsiders (19 percent).

²⁶ Ibid.

²⁷ A. Reddick, *Sharing the Road: Convergence and the Canadian Information Highway* (PIAC, 1995), 43-44.

SOCIAL CONTEXT

The former group are largely detached from the world of work and experience poverty, low literacy and skill levels, unemployment, etc. These Canadians are also the least well educated, but highly value skill development. The Outsiders are largely removed from the mainstream of society and are at the margins of the economy. This group is poorly educated and experiences high levels of unemployment.²⁸

The Information Highway study has shown that with affordability/cost issues and the Internet, Canadians from all classes face some degree of economic stress. This is more aggravated for those in the lower class. Evidence since the *Rethinking Government* (1995) study shows that the erosion of the middle class and the growing income disparities in Canada became even more dramatic in the 1990s.

The shrinking of the middle class and the swelling of the lower class, and the commensurate stagnation or shrinkage of income at both the middle- and lower-class levels suggests that optimism about all Canadians being connected to the Internet is exaggerated. As discussed above, differential levels of access are likely to become a structural feature of the Internet and other new technologies and services in Canada. While this type of structural barrier may be partially overcome by falling prices (temporal barrier) of access fees and access technologies, these trends will not put everyone online. Other structural and class-based barriers, such as literacy and education, or obstacles such as lack of interest or lack of perceived value, will persist.

The shrinking middle class has meant that where 60 percent of families with children under the age of 18 earned between \$24,500 and \$65,000 in 1973, by 1996 this had dropped to 44 percent. At the same time, the core middle class earning between \$37,600 and \$56,000 per annum dropped from 40 percent of the population in 1973 to 27 percent by 1996. Tied to this was a fundamental change in employment, both in terms of types of jobs and hours worked. From the 1970s to the 1990s, the percentage of the labour force working on a full time basis dropped from 66 to 50 percent. Moreover, one in five jobs were part time in the 1990s, roughly double that of the previous generation. The fastest growing segment in the labour force in the 1990s was casual jobs (15 percent of all jobs) with self-employment accounting for about half of all the new jobs created during that period. Employment patterns featured a shift away from a manufacturing to a service economy. Research indicates that many of these new types of jobs do not require, or make available, Internet access as part of the work activities. As such, work as an alternative means of access for those without access at home will not be a broadly based mitigating factor of the connectivity problem.²⁹

In terms of people, by 1997 there were over 5.1 million poor people in Canada, which a poverty rate of 17.2 percent. Unattached individuals (36.3 percent) were three times more likely than families (14.3 percent) to be in poverty. Most of the poor families (82 percent) fit mainstream definitions of a family: married with household head over 65

²⁸ Ekos Research Associates Inc., *Rethinking Government* (1995), 5-6.

²⁹ *The Growing Gap: A report on growing inequality between the rich and poor in Canada* (Centre for Social Justice, October 1998), x, 24.

years old (8.6 percent); married, under 65 with children (11.9 percent); married, under 65 no children (10.3 percent); and single parent mothers (61.4 percent). Added to this number were the working poor. In 1996, over 200,000 people were poor even though they worked 49-52 hours per week.³⁰

Canada tends to be very democratic with the distribution of our poor. In Canada, there are identifiable neighbourhoods, communities and regions in which residents clearly suffer an economic disadvantage. But poverty exists across all neighborhoods and communities, and in both rural and urban areas. In 1997, 681,000 poor families (more than half [57 percent] of all poor families), and 891,000 singles (60 percent of all poor singles), lived in cities with populations of 500,000 or more. In rural Canada, almost one in four (22.4 percent) unattached individuals was poor.³¹

As with literacy, these demographics have implications for the availability of information and services in diverse formats (often more affordable formats, such as print or in-person), and across geographical regions (cities, communities, neighbourhoods, and rural areas), to accommodate those who choose not, or are not able, to gain access through the Internet.

DIVERSITY OF CONTENT

While there is an increasing abundance of commercial content on the Net, a major weakness in Canada is the lack of diverse quality, indigenous, socially and culturally relevant content. The experience of many using the Internet is often frustration at not being able to find information, and not finding quality and useful information. In addition, many non-users indicate that one of the reasons they are not online is that they perceive little content of value to meet their needs.

This is not to say that there is a shortage of information; if anything, the Internet is an information glut! But much of the information is not catalogued in a user-friendly, searchable manner. As well, a considerable amount of information is being increasingly foregrounded on portals and mega sites, whether by industry or government, to reflect the interests of those information providers as opposed to the public user or potential user. With government plans to put information and services online in the next few years, the public's need for quality and diversity of information should be incorporated into information development and dissemination strategies. Without this, the resulting "fire-hose" information provision strategy may get quantity on the Net, but this may not meet the "drinking water quality" needs of the public.³²

In particular, there is a need for more public support in the development, cataloguing in a Canadian context, and dissemination of citizenship and other socially relevant information

³⁰ *Poverty Profile 1996* (National Council of Welfare, Spring, 1998); *Poverty Profile 1997* (National Council of Welfare, Autumn 1999), 10, 16, 17, 19, 52.

³¹ *Poverty Profile 1996*, (National Council of Welfare, Spring, 1998); *Poverty Profile 1997*, (National Council of Welfare, Autumn, 1999), 52.

³² "Wired Canada to cost \$5B: Federal departments' services, information go on Web in 2004," *The Ottawa Citizen* (Sunday, December 12, 1999) A1.

SOCIAL CONTEXT

and content. This support should not be restricted just to the Internet: it is only one means of access. Content development occurs in many forms and at different levels in society. It is this diversity that also requires support in order to contribute the content made available on the Net.

A number of programs already exist as part of industrial policy to support the Canadian big “C” cultural content — commercial infotainment products and services produced for domestic and international markets. However, there is much less support for small “c” content or indigenous content. Small “c” content can generally be described as social and cultural information (local, regional, national) that is necessary for individual Canadians to meet their daily social, educational, economic and cultural needs. This information already exists in other formats, but has been reproduced only partially for online access. As well, this information needs to be designed and offered with a number of accessible interfaces to accommodate different levels of literacy and those with disabilities. At the same time, some information does not lend itself to easy duplication or use on the Internet. Information strategies and policies need to carefully assess the needs and capacities of different interests and segments of society in making decisions about the provision of information in different formats.³³

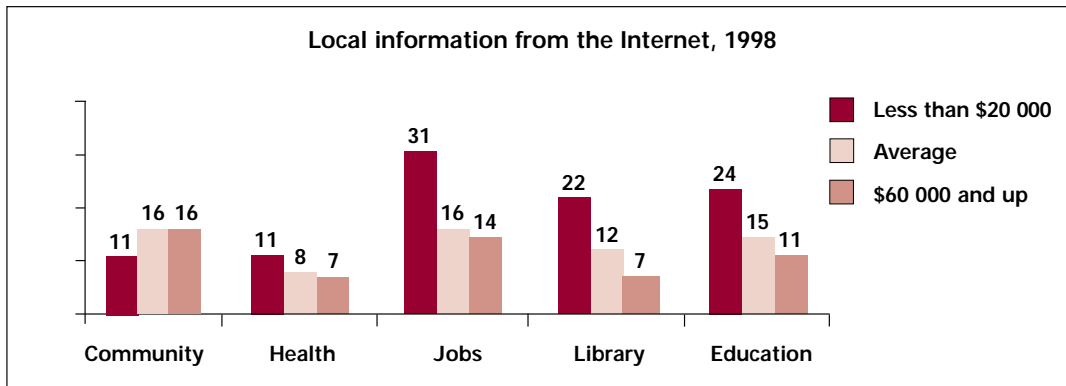
The concept of diversity of content raises the issue of the importance of certain types of information (its availability, how it is packaged, etc.) for different segments of the population, for example, seniors, unemployed, part-time employed, youth, etc. If needed content is one of the criteria for attracting people to the Internet, the quality of this content will be important in keeping them online.

Two of the problems in getting more people to use the Internet are: the development and packaging of information to meet the specific needs of different segments of the population in a way that is of comparative value to other means, and; where such information exists, the lack of awareness by non-users of the range of information that is available and how these resources may meet their needs. The development of relevant information resources is clearly one of the important roles for public policy. The governments and public service organizations involved in promoting and facilitating public access also need to develop better communication strategies to create higher levels of awareness in different user segments about the availability of public access, the types of information available, and the availability of literacy training and related public Internet services. At the same time, it should not be assumed that Web-based content or delivery of content will be a sufficient replacement of this information in other formats.

As Figures 18 and 19 demonstrate, the way different demographic segments use the Internet tells us less about technology and more about needs and the social context or daily lives of individuals. In other words, how relevant is the information or service on the Web for application and benefit in the lives of the users?

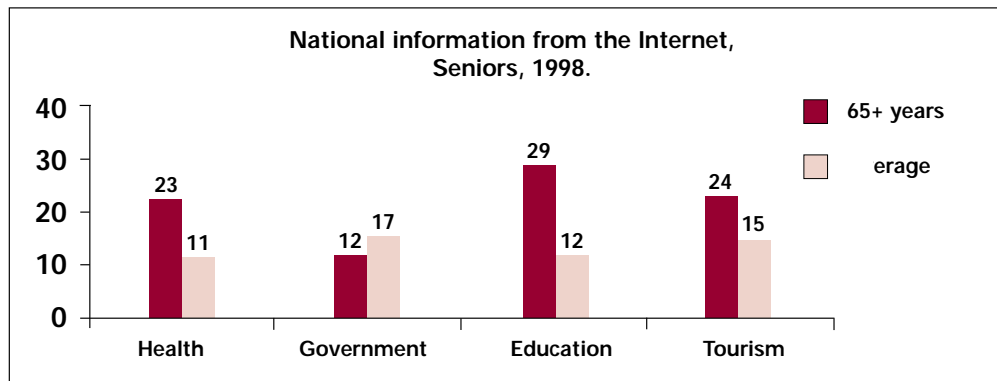
³³ A. Reddick, *Sharing the Road: Convergence and the Information Highway*, (Public Interest Advocacy Centre, 1995).

Figure 18



Source: Ekos Research, 1998.

Figure 19



Source: Ekos Research Associates, 1998.

Social context is important to understanding how readily new technologies are accepted and used. This can create a tension with the emancipatory or revolutionary claims that are sometimes made about new technologies. People generally judge a new technology in relation to the benefits enjoyed from the technologies or services they already know and use, for example, television, cable-TV, automobiles, telephones, catalogues, books, etc. The value of a new technology is often measured by people in relation to its performance, the satisfaction derived, the costs and the degree to which it meets existing needs or improves daily life.

Research in the U.K. on the acceptance and use of the Internet and other technologies demonstrated the importance individuals place on the degree to which a technology benefits existing values or activities (the social value). For example, earlier technological improvements, such as washing machines and the microwave oven, improved some household activities, often by saving time. However, contrary to the promises of the capabilities of the microwave when it was first introduced, cooking by other methods (e.g., stove top, conventional oven) was not displaced. The take-up of new technology by

individuals is not based on the speculative benefits of a technology offered by those promoting it, but on whether the technology satisfies existing needs and can be easily incorporated into an individuals activities. Technological possibility does not necessarily mean social or individual desirability. While the Internet may offer specific communicative benefits in some activities or areas, such as the work place or distance interaction/transaction, its socially transformative capability has yet to be demonstrated as possible, or desirable, for all activities or types of information/services.³⁴

Cost also is tied to use-value assessments by individuals. In the competition at home for consumption of entertainment and communication services, the Internet is at some disadvantage because — unlike the one-time purchasing of radios, televisions, etc. — the costs involve purchasing a relatively expensive computer or digital decoder, as well as ongoing monthly fees. The cost/affordability and social value dimensions of the Internet (let alone quality of content/service) as compared to the existing empirically measurable household or individual activities raise questions about the extensive speculation on the revolutionary potential of the Web.

Social value considerations also offer some insights into why many people choose not to be online, or why many of those online add the Internet to their existing communication practices instead of displacing them. While Web-based content/services will be important, and increasingly so for some, the ability to access and use communication and information resources in a number of formats and through diverse means of access will be more important for the majority of people for years to come.³⁵

CHANGING PATTERNS IN CONSUMPTION

Recent trends in the development of the Internet, such as how it is being made available, accessed and used, suggest ways to think about how the digital divide may change, and how actions to address the issues of access and content may need to evolve. To generalize, the use of the Internet follows three models of consumption: passive, active and work.

Passive consumption is a well-established pattern, the most obvious example being television viewing. With the Internet now a central line of business for media companies, the trend is to produce, package and distribute content in a similar fashion to that of other standard media commodities. Thus, we have programming and channels, selected from electronic shelf space on mega-sites or portals, e.g., AOL. This marketing strategy (information push), combined with the likelihood of the Internet being integrated as a commodity with telephone service, cable television and other video services, creates conditions whereby Internet content can be passively consumed by individuals as viewers instead of as surfers (e.g., click and play, click and watch, click and print, or click and write an e-mail, and click back to TV). The ease of access to, and use of, the Internet in a passive information and entertainment

³⁴ D. Morrison, M. Svennevig, J. Firmstone, "The Social Consequences of Communication Technologies in the United Kingdom," in ed. R. Boyce, *The Communications Revolution at Work* (Montreal: McGill-Queen's University Press, 1999), 63-67.

³⁵ *Ibid.*, 67, 72, 74.

format will create conditions to make this more accessible to a part of the current non-user population. However, interest, literacy, skills and affordability will remain as issues to varying degrees for many non-users. Affordability of service will be a continuing concern to lower-income users.

Active consumption, where one has to make some effort to acquire something, is a second dominant theme of current Internet evolution. This largely involves conducting transactions online, whether this be e-commerce, filing or retrieving forms, documents or other types of information. This overlaps passive consumption to some degree (e.g., e-commerce browsing), but it requires higher levels of technological proficiency and literacy than passive consumption, and the ability to afford access.

The third theme is consumption as work. This will likely remain the purview of information elites and geeks. Consuming the Internet as work involves the often frustrating and time-consuming surf-and-search for a particular bit of information necessary for a specific task or need. In addition to dedication, technological proficiency and possibly more expensive technology than Internet through the TV will likely be required to undertake these tasks.

Issues of the dual digital divide need to be rethought continually in the context of how different types of information and services (particularly those considered essential and necessary), are made available and accessed, given the different ways people consume communication products, and the resources they have available. The actual and potential demand and use of the Internet and its services will not be satisfied for the “have-nots” if important variables such as content value, available time, social context, technological literacy, affordable access and related resources are not addressed.

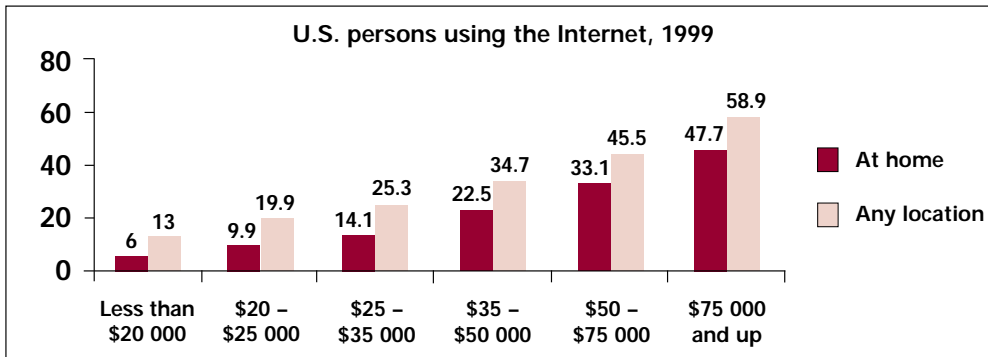
U.S. DIGITAL DIVIDE

As countries at the forefront of the development of information economies and societies, is useful to consider the similarities and differences in Internet usage in Canada and the United States. In general, a similar pattern of Internet connectivity has emerged in both countries.

At the end of 1998, just under half (40 percent) of U.S. households had computers and one quarter (25 percent) had Internet access. As with Canada, there has been remarkable growth in Internet penetration, but again the greatest growth exhibits a social class pattern whereby an information-rich group (higher income, better education, dual-parent households) is clearly differentiated from an information-poor group (younger, lower income and education, minorities, rural and central-city locations). As in Canada, while there is growth in all income segments, the digital divide is widening between upper- and lower-middle income and the lowest income segments. The digital divide based on income group is widening between the upper-income groups and all groups below a \$50,000 income. The gap in access between the highest-income (\$75,000 and more) and the lowest-income (less than \$10,000) segments was 29 percent (from a 42 percent difference to 52 percent). The spread between the upper-income and other lower-income segments also increased during this period. As in Canada, this lag is expected to persist for some years to come.³⁶

³⁶ *Falling Through the Net: Defining the Digital Divide*, (NTIA, July 1999), xiii, 1, 9.

Figure 20



Source: NTIA, 1999.

With numbers similar to those in Canada (see above), the main reasons cited in the U.S. for not having Internet access from home were lack of perceived need (25.7 percent) and cost (16.8 percent). The main cost factors involved the monthly Internet service charge (9.7 percent) and toll fees to reach an ISP. About one in 10 (9.6 percent) respondents indicated that they didn't have home Internet because they could use this service somewhere else, whether at work, school or a public access centre.³⁷

In the U.S., public access is available through Community Access Centres (CACs). CACs are comparable to Canada's community access sites (such as the Community Access Program – CAP). CACs are located in schools, libraries and other community access points. They are seen as playing an important role as part of public policy to ensure everyone has some form of access, until every household can afford access. CACs tend to be used by the unemployed, those with low income and those with lower education to search for jobs and take courses.³⁸

The types of Internet use also varies by social class in the U.S. For example, in the lower-income strata (under \$20,000) about half the users (45 to 50 percent) take courses on the Internet as compared to about a third (35 percent) of those in higher-income groups (over \$25,000). Similarly, while about a quarter (20 to 25 percent) of the lower-income segments use the Internet for job searching, a smaller number (15 to 20 percent) in the over \$25,000 segments use it for this purpose.³⁹

The U.S. policy relies on the promotion of a competitive market and universal service goals as the primary measures to build the country as an information society. The underlying justification for this goal is similar to that of Canada. While the Internet is not currently an essential service (in other words, necessary for survival), nonetheless it is considered to be nearing this status in the U.S. where it, with the telephone and computers, is becoming "necessary for success."⁴⁰

³⁷ Ibid., 38.

³⁸ Ibid., xiv.

³⁹ Ibid., 60.

⁴⁰ Ibid., 77.

The Internet's value is contextualized in how it is being developed and used to change work, communications and consumption. While competition in communications is seen as reducing the problem of a digital divide to some degree, such as through price reductions, it is not considered the only solution. Cost of equipment and service, affordability, and ability to use continue to be obstacles and barriers. In the short term, initiatives including the development and support for CACs, universal service support expenditures, literacy initiatives, language initiatives, product design for those with disabilities, and communication/awareness strategies (awareness of access sites/services for target groups) are identified as necessary ongoing public initiatives.⁴¹

⁴¹ Ibid., 77-79.

Conclusion

The coasts of history are strewn with the wrecks of predictions.
James Bryce, U.K. Ambassador to the U.S., 1893.

As the Internet joins the mix of mainstream communication technologies, the majority of individuals will need some level of access to maintain a competent level of participation in society, particularly where individual economic and social needs are involved (e.g., employment, access to important information and services). Over time, the Internet can be expected to take its place as a complementary means of access with other forms of communication and social interaction, as opposed to displacing these, at least for the foreseeable future.

The social context of people's lives will be the major determinant of how the Internet will be incorporated into the broader mix of communication technologies and practices, and this will be based on such variables as cost, existing needs, the use value of the information and services, etc. People will still go to stores, watch television, read books, meet friends in public, go to concerts, and attend schools. With changes in technology, pricing and related issues, who will be accessing and using this technology on a mainstream basis and by what means remains the subject of some speculation. Currently, the Internet is approaching what is likely to be the maximum penetration levels for upper-middle and upper income households, but with many in the lower social classes and a minority in the upper classes not connected.

The optimism about all Canadians being connected to the Internet is exaggerated. Over time, unless the Internet has features that make it as essential and valuable as local basic telephone service or as affordable, easy to operate and ubiquitous as radio and over-the-air television, a dual divide featuring differential levels of access will persist, as is the norm with most other products and services in Canada, including communications. Differential levels of access are informed by variables such as: needs, income, affordability, perceived value, education, gender, location and literacy.

Income (cost) has the most significant impact on Internet use. Age has a lesser, but still significant effect, with some older-age cohorts less likely to be Internet users than their younger counterparts. Gender and education tend not to have major impacts on an individual's propensity for Internet use, but they still have some importance. Females are over-represented in the non-user population. In addition to income, socio-economic status plays an important part in determining and understanding individuals' attitudes towards the Information Highway, and how this relates to use. Higher-income individuals have a different set of parameters (attitudes) than lower-income Canadians that affect the likelihood of Internet use.

Non-users generally fall into three distinct types. Type 1 non-users are interested in online service, but face obstacles and barriers such as cost and technical literacy. This group can be considered near-users. Improved content, the availability of public access sites (e.g., CAP, CLN) and increased awareness (through promotional initiatives) of the

existence of these public services and the content available may facilitate and improve Internet use by this group. Type 2 and Type 3 non-users similarly face cost and technical literacy obstacles, but other important factors are the lack of relevant content and the perceived lack of personal benefit from and social value of Internet service. Over the longer term, Type 2 non-users may use the Internet more, but this requires some public role through access sites (CAP, CLN), relevant content development, training assistance, etc. Type 3 non-users are far removed from being Internet users. In the mid- and long-term, government and other organizations need to continue to serve and communicate with this group, as well as many in the Type 1 and Type 2 groups, using a variety of existing services, such as in-person, mail, telephone, etc. As with current Internet users, when non-users do start using the Internet, they will most likely be adding this to a mix of communication access methods, rather than displacing all of these.

The speed of the introduction of the Internet, and the central role it is playing in the strategies of industry and government, necessitates a public policy role to facilitate access, technological literacy and the development of relevant and diverse content resources. To this point in time, the Information Highway and the Internet have largely been subjects of “push” strategies by government and industry — the public has not been concerned with home Internet access in any way comparable to that of quality health care, good jobs, fairer taxes, or cheaper gas prices. More recently, demand has become an important factor for some social segments, and in some professions. This may extend further if perceived relevance and value increases. A central role for the Internet in the provision of government information and services to the public, and as part of national industrial, social and cultural development policy, means that, unlike other home-oriented communication technologies which are discretionary in nature, access to the Internet will gain importance such that individuals are able to satisfy particular needs, as discrete as these may be at times, in an effective and timely fashion.

There are many policy options available to resolve the issue of technical access to the Internet. For example, in the United States, a number of companies are offering combinations of free computer/Internet access that are tied to use and advertising commitments. In another approach, La Grange, a city of 27,000 in Georgia, has addressed the digital divide problem by paying for all of its citizens to be connected to the Internet. The city has realized a cost efficiency through a group purchasing approach whereby it costs less than \$10 per year per citizen for broadband connectivity. A similar approach has been employed in Canada by community networks.⁴²

Like La Grange, Sweden has adopted a policy of providing broad band access to everyone in the country. In Canada, the Quebec government recently announced a \$121 million program to subsidize the cost of getting more families on the Internet. The program subsidizes either the rental cost of a computer and Internet service, or Internet services through a PC or the television. The program covers up to 75 percent of the costs to citizens to

⁴² “A Georgia City closes the digital divide by giving its citizens free Internet access,” *Financial Post* (March 23, 2000), C 12; A. Reddick, *Community Networking and Access Initiatives in Canada* (1998).

CONCLUSION

a maximum of \$450 per year.⁴³ However, in the absence of a broadly based policy approach in Canada, whereby different levels of government directly subsidize technical access from the home, there will be an ongoing role for the federal government to provide a large number of public access facilities. A federal role will also exist for literacy and content support.

In this context, for non-users, occasional and regular Internet users, core policy objectives across government departments need to be concerned with such issues as: access; technological literacy; social competency, capacity and application; content development initiatives at different levels of society; and the continued availability of multiple means of access and information distribution. These efforts also need to evolve and change over time as the needs and practices of individuals change, and as technologies develop.

For those who cannot afford, or choose not to access the Internet from home, public access sites will continue to play an important public policy role. The primary purpose of these sites will be to fulfill a public service role as part of the overall federal social and economic policy frameworks as they relate to the Information Highway. Variable public Internet access through public sites conforms with existing social practices and the use of public services in society, for example, using a library, a post office, or a government office, etc. On a forward going basis, strategic analysis and planning needs to address questions such as: the appropriate number and locations of public access sites; community networking models; local management responsibility; quality of service (infrastructure, content, and staffing); services available to the public; the terms of access for different services/uses; and government funding obligations and responsibilities. These should be primary concerns of the federal departments of Industry Canada (CAP program) and HRDC (CLN program), and their municipal and provincial government and community partners.

Regarding content, there is a need for greater cooperation and coordination of activities between federal governmental departments, and between provincial, regional and local partners. In the context of Canadians' social needs and capacities, for federal departments, such as Industry Canada, HRDC, TBS, Heritage, Health, among others, policy and program initiatives will be required to ensure that traditional forms of diverse content (community, regional, national) and a diversity of content in electronic format be developed in complementary ways to meet existing and evolving communication needs.

Where appropriate for communities, governments, as part of their statutory obligations and responsibilities, should support the integration of community access and networking initiatives into formal and informal collaborations and partnerships. Training and local content development support should be included in this. These integration activities should be led by community groups and driven by the needs of individuals and groups in each community. Community groups and organizations have developed extensive expertise over time to meet the needs of their community. As well, they also have established successful working relationships with other groups in their community. These existing strengths and relationships permit the incorporation of computer technology and online communications

⁴³ D. Crane, "Sweden's broad band for all shames Canada," *Toronto Star* (March 23, 2000); "Quebec seeks to bolster Internet penetration with tax credits and subsidies," *Network Letter* (March 27, 2000), 5.

as resources to improve these services. More simplistic options, such as imposing models from outside that may be antagonistic to these experiences and this expertise, or introducing new technology with a view to displacing existing services and expertise, risks ill-serving communities and individuals.

As opposed to technology-centric approaches, initiatives in the development and provision of content and services by community-based organizations and all levels of government need to be undertaken in the context of how information is accessed and used by different social segments to meet different needs. Different content development initiatives will need to evolve, be replaced by others and perhaps even disappear altogether, as online activity moves from the margins to the mainstream. As part of the design and development of electronic content resources, efforts are required to better organize and catalogue socially, culturally and economically relevant Canadian resources. This will facilitate access and create value for users, thereby increasing the attractiveness of service for non-users.

Other problems that affect the low levels of use of public sites are a lack of awareness about the availability of public sites in the community, and the availability of electronic content to meet the specific needs of individuals. Improved communication strategies at the local and national levels, with goals of increasing the public's and specific underrepresented social segments' awareness of the availability of sites and relevant content resources would facilitate increased connectivity. For example, communication strategies may be useful in linking the existing, known needs of population segments, such as seniors, the under employed and the unemployed, those with lower education/skills, etc., with useful information resources on the Internet. The ability for individuals to understand why and how they can integrate the Internet into their daily life to meet their existing needs is likely to prove more successful in encouraging use than rather abstract predictions and promises about the information revolution.

Looking forward, the recognition that a dual digital divide may be a permanent feature of communications in Canada over the long term creates opportunities for governance through policy, programs and other initiatives to ensure that diverse means of information access are available to all Canadians, so they may participate fully in society in meaningful and beneficial ways.

References

- Canada. 1996. *Building the Information Society: Moving Canada into the 21st Century*.
- . 1996. *Reading the Future: A Portrait of Literacy in Canada*. Statistics Canada.
- . 1996. “Computer Literacy — A Growing Requirement.” *Education Quarterly Review*.
- . 1997. *Backgrounder: Canada’s Information Highway Strategy*. Industry Canada, Connecting Canadians Web page www.connect.gc.ca.
- . 1997. *Preparing Canada for a Digital World*. Report of the Information Highway Advisory Council.
- . 1997. *Spending Patterns in Canada*. Ottawa: Statistics Canada, Cat. No. 62-202-XPB.
- . 1999. *Speech from the Throne*. September 23, 1997.
- . 1999. *Community Learning Networks Initiative: Guidelines for Applications*. Human Resources Development Canada.
- . 1999. *Frequently Asked Questions, Community Learning Network Initiative*. Human Resources Development Canada.
- . 1999. *A Portrait of Seniors in Canada*. Statistics Canada, Cat. No. 89-519-XPE.
- . 1998. *Making a Difference in Human Development: A Vision for HRDC, Practical Vision and Action Plan*, working draft. Human Resources Development Canada.
- Centre for Social Justice. 1998. *The Growing Gap: A Report on Growing Inequality between the Rich and Poor in Canada*. Toronto.
- Crane, D. 2000. “Sweden’s broadband for all shames Canada.” *Toronto Star*, March 23.
- Dickenson, P. and G. Sciadas. 1999. *Canadians Connected*. Statistics Canada.
- Ekos Research Associates Inc. 1995. *Rethinking Government*. Ottawa.
- . 1998. *The Information Highway and the Canadian Communication Household*. Ottawa.
- . 2000. *Rethinking the Information Highway: Privacy, Access and the Shifting Marketplace*. Ottawa.
- need author** .2000. “A Georgia City closes the digital divide by giving its citizens free Internet access.” *Financial Post*, March 23, p. C 12.

- Manley, J. 1998. *Connecting Canadians*. Speaking notes delivered by the Minister of Industry to the Empire Club, Ottawa, February 26.
- Morrison, D., M. Svennevig, and J. Firmstone. 1999. "The Social Consequences of Communication Technologies in the United Kingdom," in *The Communications Revolution at Work: the Social, Economic and Political Impacts of Technological Change*, ed. R. Boyce. Montreal: McGill-Queen's Press.
- Mosco, V. 2000. *Public Policy and the Information Highway: Access, Equity and Universality*. National Library of Canada.
- need author.** 2000. "Quebec seeks to bolster Internet penetration with tax credits and subsidies." *Network Letter*. March 27, p. 5.
- National Telecommunications and Information Administration. 1999. *Falling Through the Net*. Washington, July.
- need author.** 1999. "Wired Canada to cost \$5B: Federal departments' services, information to go on Web in 2004." *Ottawa Citizen*, December 12, p. A1.
- National Council of Welfare. 1998. *Poverty Profile, 1996*. Ottawa, Spring.
- . 1999. *Poverty Profile, 1997*. Ottawa, Autumn.
- Reddick, A. 1995. *Sharing the Road: Convergence and the Canadian Information Highway*. Ottawa: Public Interest Advocacy Centre.
- . 1995. *The Information Superhighway: Will Some Canadians be Left on the Side of the Road?*. Ottawa: Public Interest Advocacy Centre.
- . 1998. *Community Networking and Access Initiatives in Canada*. Ottawa: Public Interest Advocacy Centre.
- . 1999. "The Dual Digital Divide." Presentation at the 1999 Atlantic Association of Sociologists and Anthropologists Conference, St. Thomas University, Fredericton, New Brunswick, October 23, 1999.
- . 1999. "Access and the Information Highway." In *The Communications Revolution at Work: the Social, Economic and Political Impacts of Technological Change*, ed. R. Boyce. Montreal: McGill-Queen's Press.
- Sen, A. 1999. *Development as Freedom*. New York: Knopf.
- Upitis, R. 1999. "Impact of the Communications Revolution on Education." In *The Communications Revolution at Work: the Social, Economic and Political Impacts of Technological Change*, ed. R. Boyce. Montreal: McGill-Queen's Press.