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INFORMATION AND COMMUNICATION TECHNOLOGIES IN RURAL CANADA

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HIGHLIGHTS

- ◆ **Rurality matters when considering computer ownership and Internet connectivity.**
- ◆ **Computer ownership and Internet connectivity are lower for individuals in older age classes but, within each age class, rural individuals are less likely to own a computer or to be connected to the Internet.**
- ◆ **Computer ownership and Internet connectivity are lower for individuals in lower income classes but, within each income class, rural individuals are less likely to own a computer or to be connected to the Internet.**
- ◆ **Individuals with a lower level of educational attainment are less likely to own a computer or to be connected to the Internet, but, within each educational attainment class, rural individuals are less likely to own a computer or to be connected to the Internet.**
- ◆ **Rural individuals in the higher income provinces (Alberta, Ontario and British Columbia) are more likely to be connected to the Internet than rural individuals in the other provinces.**
- ◆ **Although rural Internet connectivity lags behind urban, both are increasing at similar rates.**

Introduction

Information and communication technologies (ICTs) represent both a 'problem' and an 'opportunity' for rural Canadians. On one hand, rural employment levels are diminished as more services are supplied to rural Canadians by ICTs – the ubiquitous ATMs (automatic teller machines) are one example. On the other hand, ICTs, and particularly the Internet, provide easier access for rural Canadians to target urban markets and provide urban consumers with easier access to rural goods and services.

In this bulletin, the focus is on two indicators of rural adoption of ICTs – the incidence of personal computers within rural households and the use of the Internet from rural households.



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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Background

The continuing increase in use of ICTs is one component of society's ongoing development and adoption of new technologies. Adoption of technology is growing in both urban and rural areas.

In 2000, about "13 million Canadians, or 53 percent of those aged 15 and over, used the Internet at home, at work or at some other location in the 12 months prior to the survey" (Statistics Canada, 2001). The 1999 Household Internet Use Survey found that the number of Canadian households with an Internet connection had quadrupled from 1996 to 1999 to 3.3 million households (April, 2000, p. 1).

Among all Canadians, 45 percent feel it is very important that everyone have access to the Internet (Dryburgh, 2001). What is the level of Internet connectivity in rural areas? How big is the rural-urban gap? Is the gap closing? This paper will examine the differences in Internet connectedness between rural and urban populations.

This bulletin updates and extends the bulletin on "Computer Use and Internet Use by Members of Rural Households" (Thompson-James, 1999) which looked at the increasing use of information technology in rural Canada. Thompson-James used 1997 data from the Statistics Canada Household Internet Use Survey plus data from the 1989 and 1994 General Social Survey.

This paper uses data from the General Social Survey - 2000, Cycle 14 – Access to and Use of Information Communications Technology to compare the situation in rural and urban Canada. This survey was collected by the Housing, Family and Social Statistics Division of Statistics Canada.

Previous findings (see, for example, Thompson-James, 1999) have shown that Canadian households with higher incomes, more education and younger residents are more likely to use the Internet. Another factor is geographical location of the household. For example, residents in provinces with higher average incomes (i.e. Alberta, Ontario, British Columbia) and respondents in Nova Scotia are more likely to be connected to the Internet than in other provinces (Dickinson and Ellison, 2000).

Appendix A lists the survey questions that were tabulated for this bulletin.

Box 1 Definition of 'Rural and Small Town' (RST) areas

Rural and Small Town (RST) refers to the population living outside the commuting zones of larger urban centres - specifically, outside Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs). RST areas have a population of 1 - 9,999 where less than 50 percent of the employed individuals commute to a CMA/CA and less than 25 percent commute from a CMA/CA.

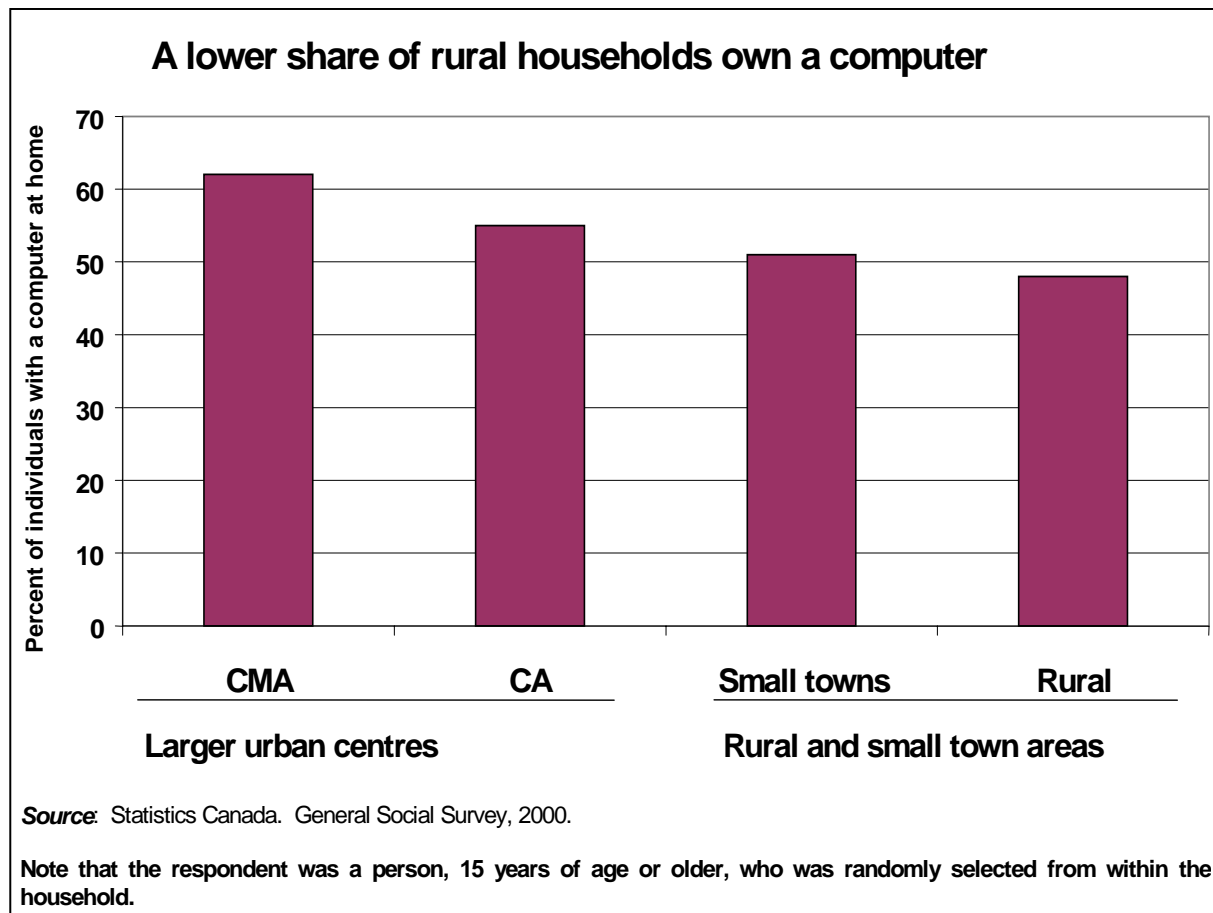
A CMA has an urban core of 100,000 or over and includes all neighbouring municipalities where 50 percent or more of the labour force commutes into the urban core. A CA is an urban core of 10,000 to 99,999 and abides by the same commuting rule as CMAs.

"RST small towns" refers to the population living in towns of 1,000 to 9,999 and outside a CMA or CA. "RST rural" refers to the population living outside centres of 1,000 to 9,999 and outside a CMA or CA.

Rural Households with Computers

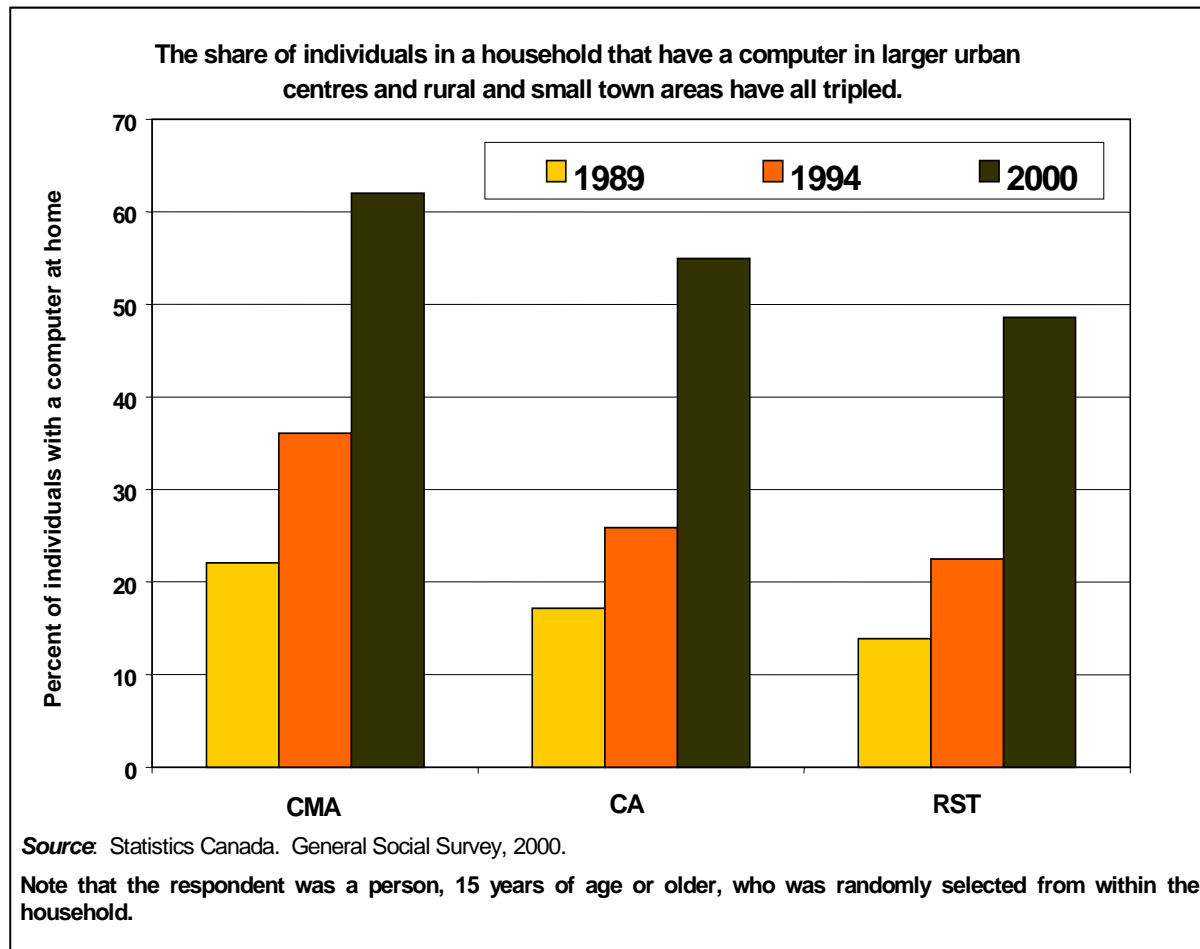
When asked if there was a computer in the home, a lower share of rural and small town individuals (see Box 1 for definition of RST) lived in a household with a computer, compared to their urban counterparts (Figure 1). Approximately one half of RST residents (48 percent of RST rural residents and 51 percent of RST small town residents) responded that they had a computer in the home compared to CMA residents (62 percent) and CA residents (55 percent). Thus, rural households are still "lagging" behind in terms of computer ownership -- the more rural the area, the lower the share of households owning a computer.

Figure 1



The trend toward the adoption of computers within households is continuing. Between 1989 and 2000, the share of households with a computer has approximately tripled -- and this trend exists for rural and urban Canadians (Figure 2). Nevertheless, rural RST areas continue to have a lower share of households with computers. The gap between RST and CMA in terms of the proportion of households with computers was 13 percentage points in 2000 – the same as in 1994.

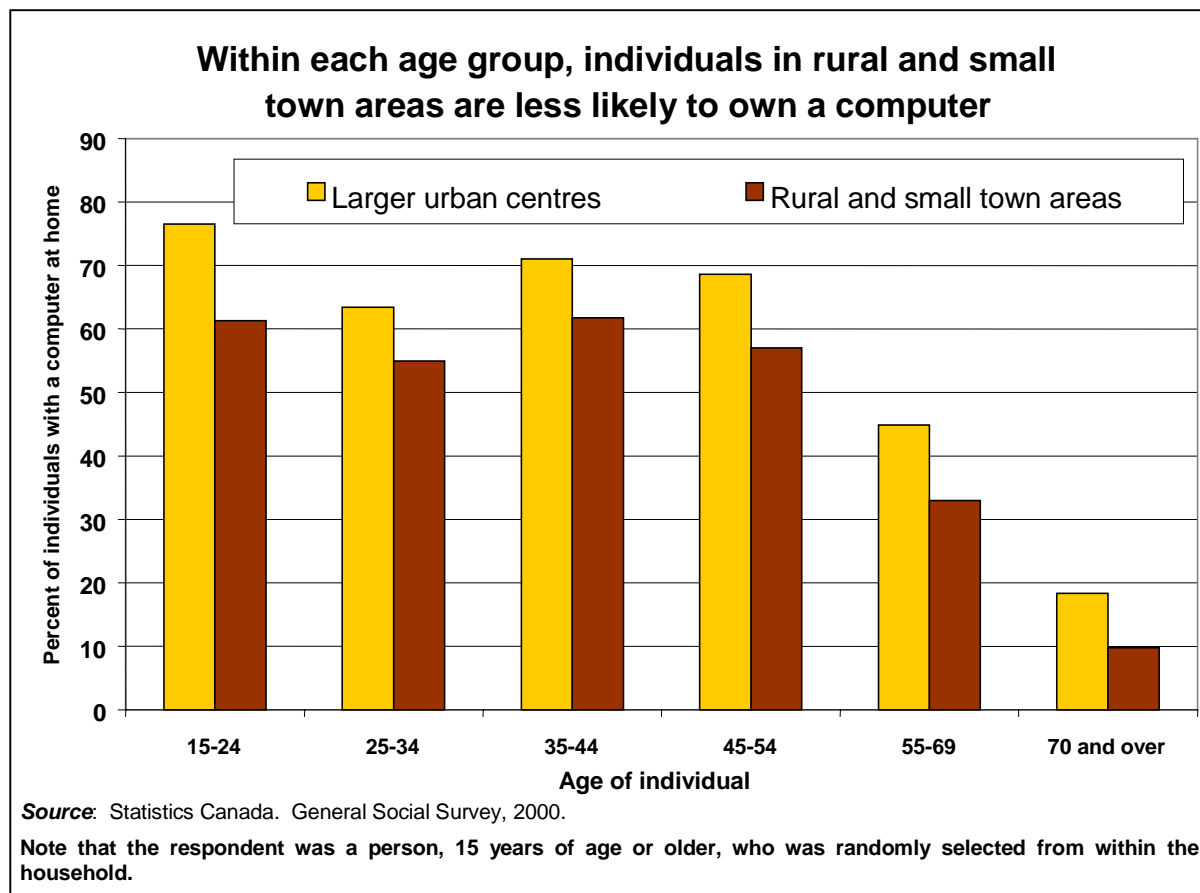
Figure 2



Older Canadians are less likely to have a computer in their household. For RST individuals between 15 and 54 years of age, the share who live in a household with a computer ranges from 55 to 63 percent (Figure 3). For RST individuals 55 to 69 years of age, the share is lower (33 percent) and for RST individuals 70 years of age and older, the share with a computer is 10 percent.

Within each age group, individuals in rural and small town areas are less likely to own a computer, compared to individuals in urban areas. The difference between rural and small town areas and larger urban centres ranges from approximately 9 percentage points to 15 percentage points.

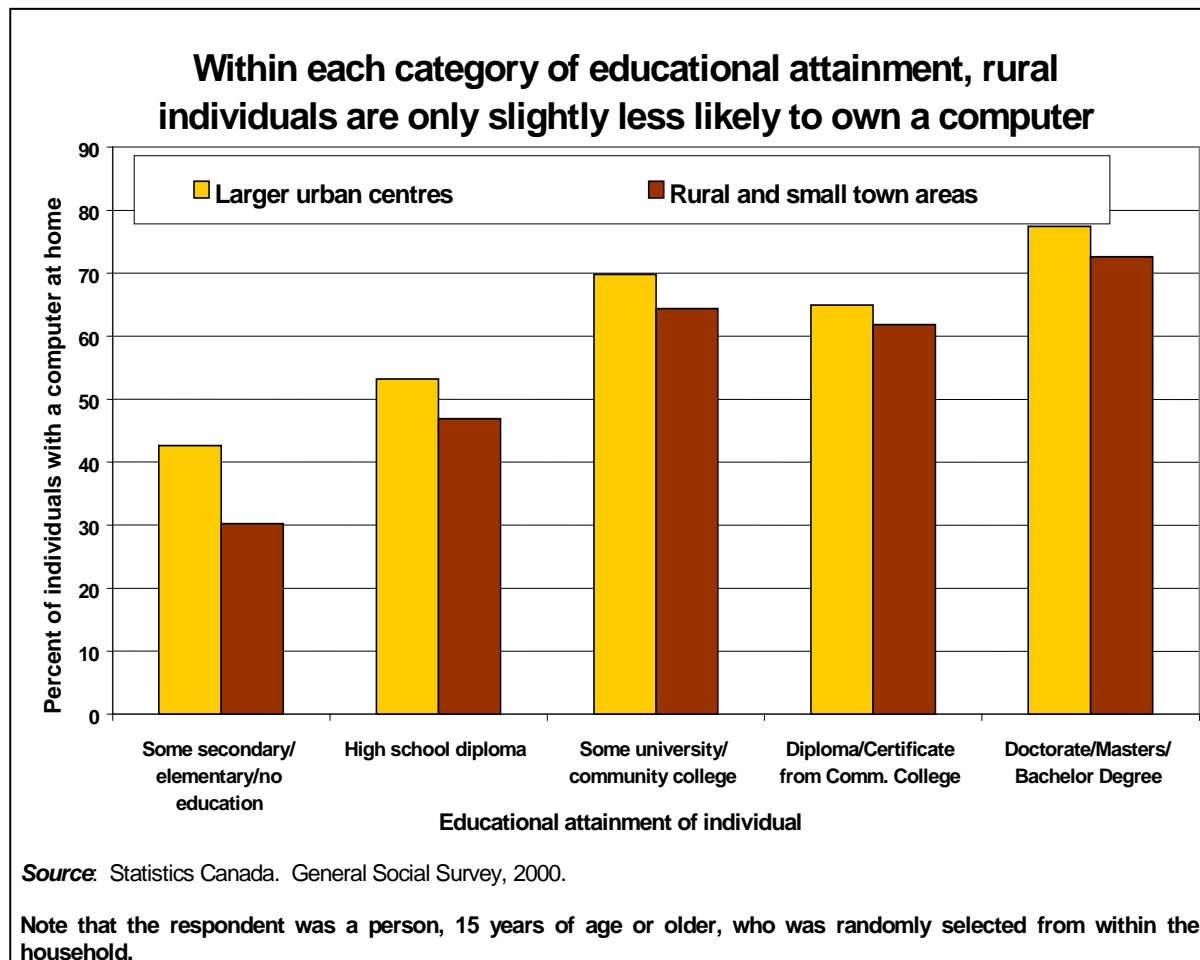
Figure 3



Note that within both rural and urban areas, the individuals in the age group 25 to 34 years of age are less likely to be in a household that owns a computer compared to the individuals in younger or older age groups (see Figure 3). This could be due to the fact that people 15 to 24 years of age are more likely to be in school (which would increase the need for a computer in the home). For individuals 35 years of age and older, they are more likely to have higher earnings (earnings tend to increase in relation to age) and thus more spending power, and/or they may have children (which contributes to an increased likelihood of owning a computer).

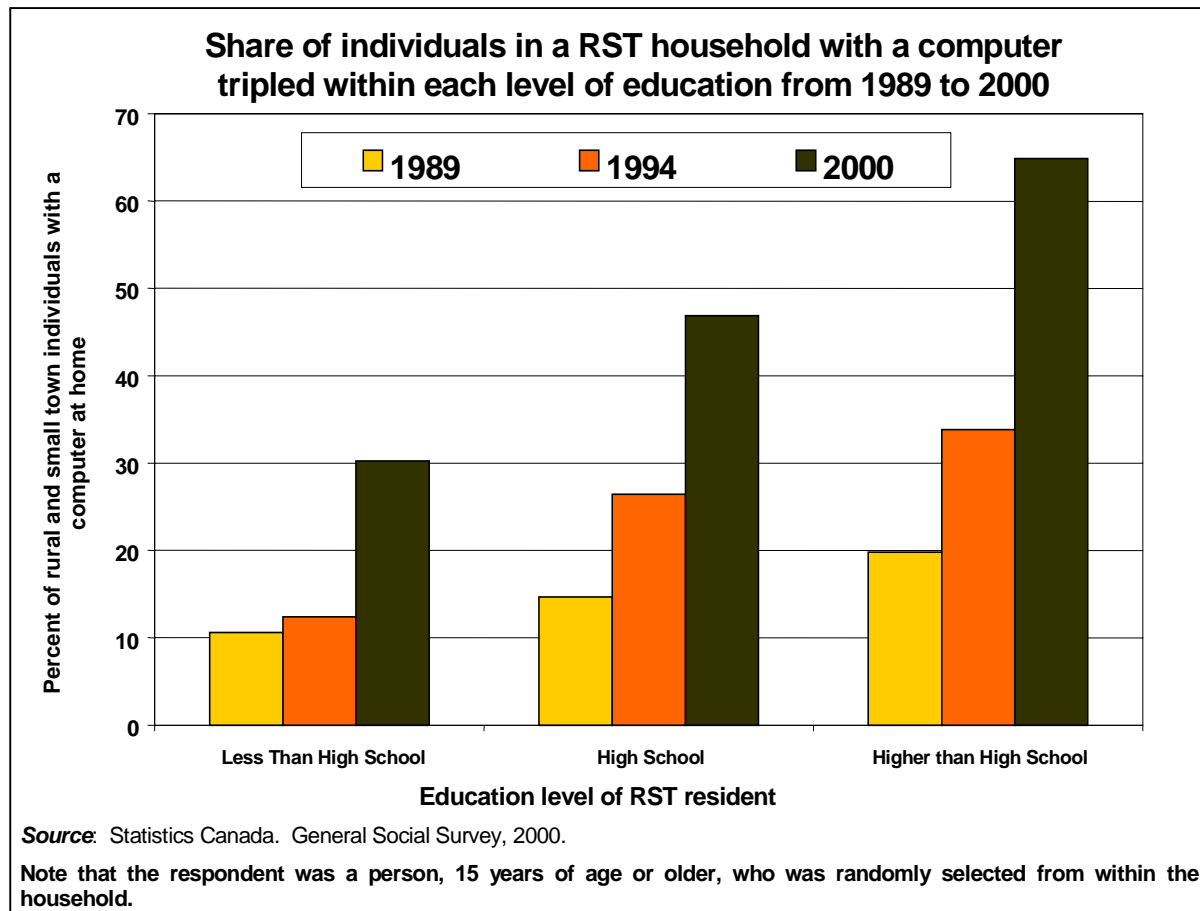
Within each category of educational attainment, rural individuals are only slightly less likely to own a computer (Figure 4). The exception is those with less than a high school diploma where there is a wider rural-urban gap in computer ownership -- approximately a 13 percentage point difference between rural and urban individuals. Education has an effect on whether or not the household will have individuals with a computer. These data are consistent with the findings from a variety of other studies.

Figure 4



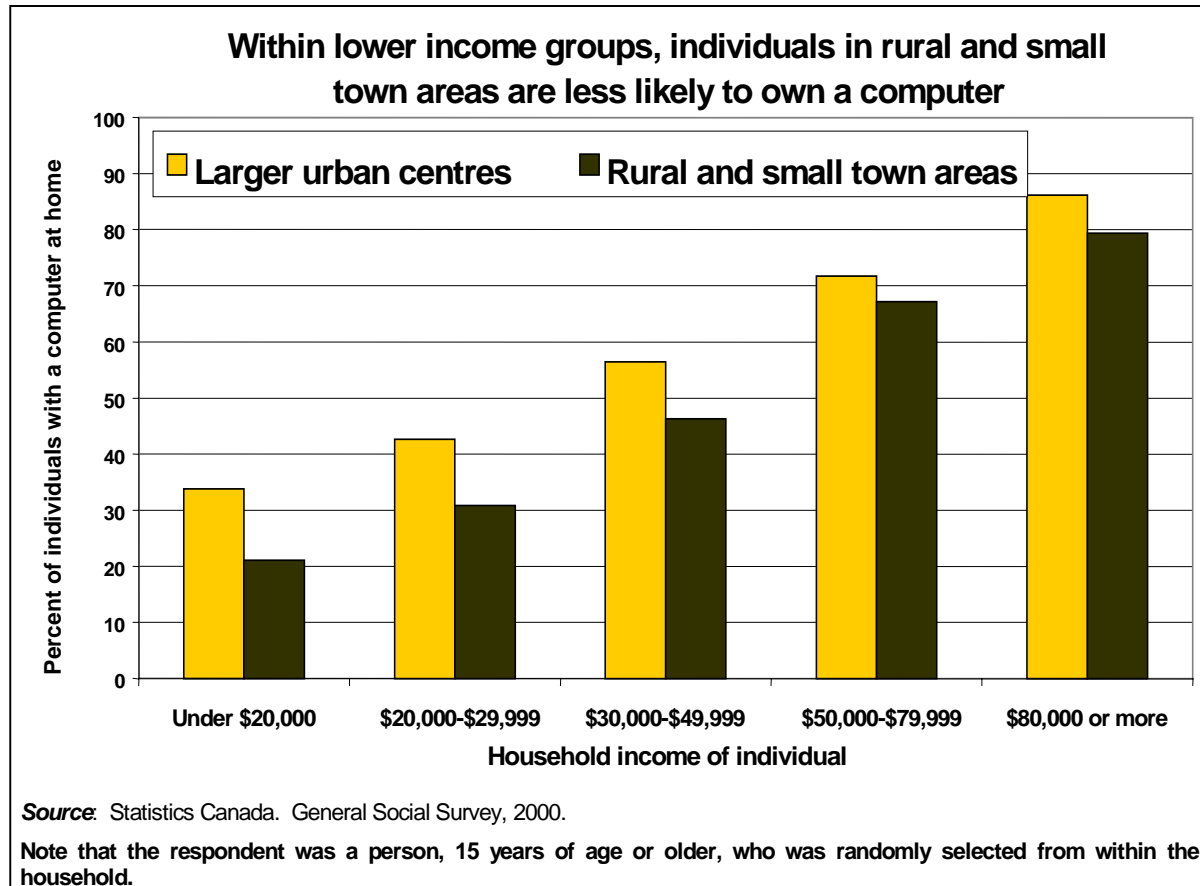
Note from above (Figure 2) that the share of RST individuals with a computer in the household tripled from 1989 to 2000. Here the share tripled in RST areas within each level of educational attainment of the respondent (Figure 5). The earlier pattern of RST computer adoption has not changed – RST individuals with less schooling are less likely to have a computer – RST individuals with some post-secondary education are still twice as likely to own a computer, compared to individuals with less than a high school diploma.

Figure 5



Individuals in households with higher incomes are more likely to have a computer at home (Figure 6). Within each income group, rural residents are less likely to be in a household that has a computer, compared to urban individuals.

Figure 6

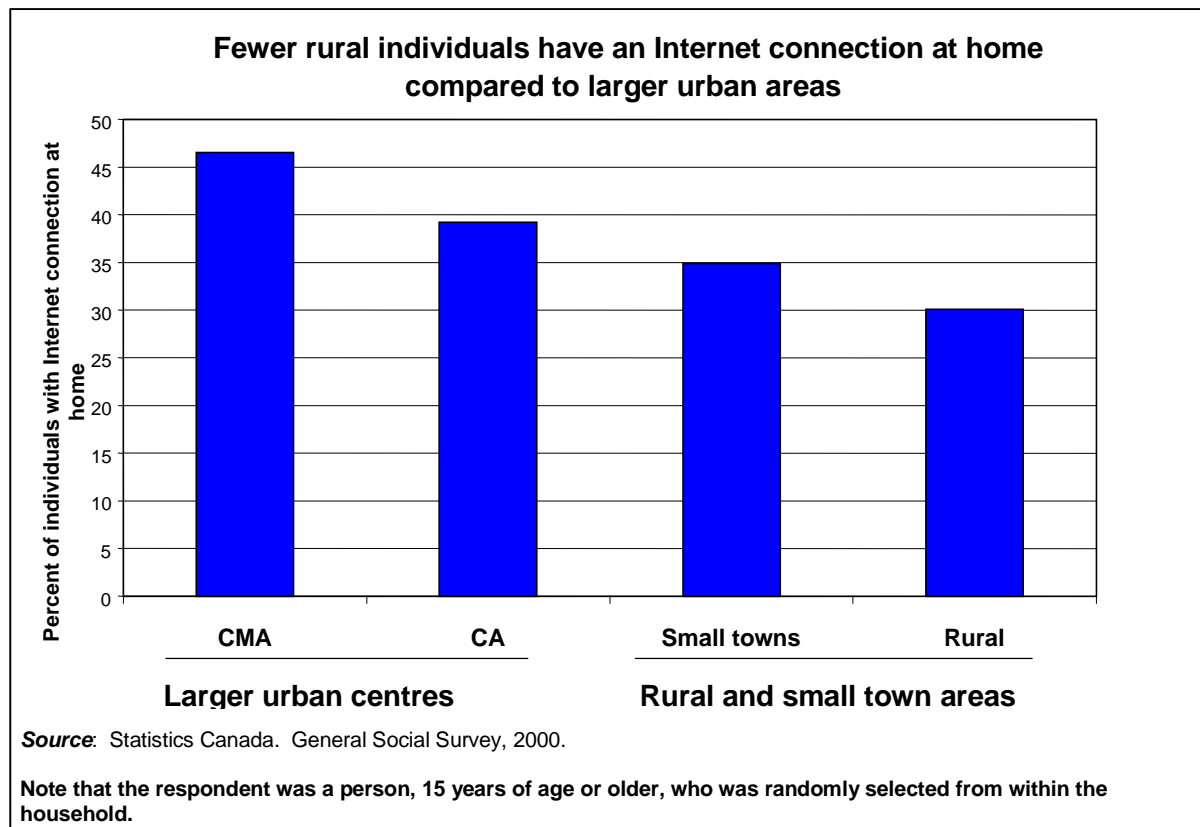


Internet Connectivity

We now consider the characteristics of individuals with Internet access at home. The 2000 General Social Survey indicates that most people access the Internet from home; thus, it should not be surprising that the patterns of Internet use will mirror the patterns of computer use. Consequently, more Canadians, both rural and urban Canadians, are connecting to the Internet over time. Internet users are younger, more educated and less likely to be in a rural area.

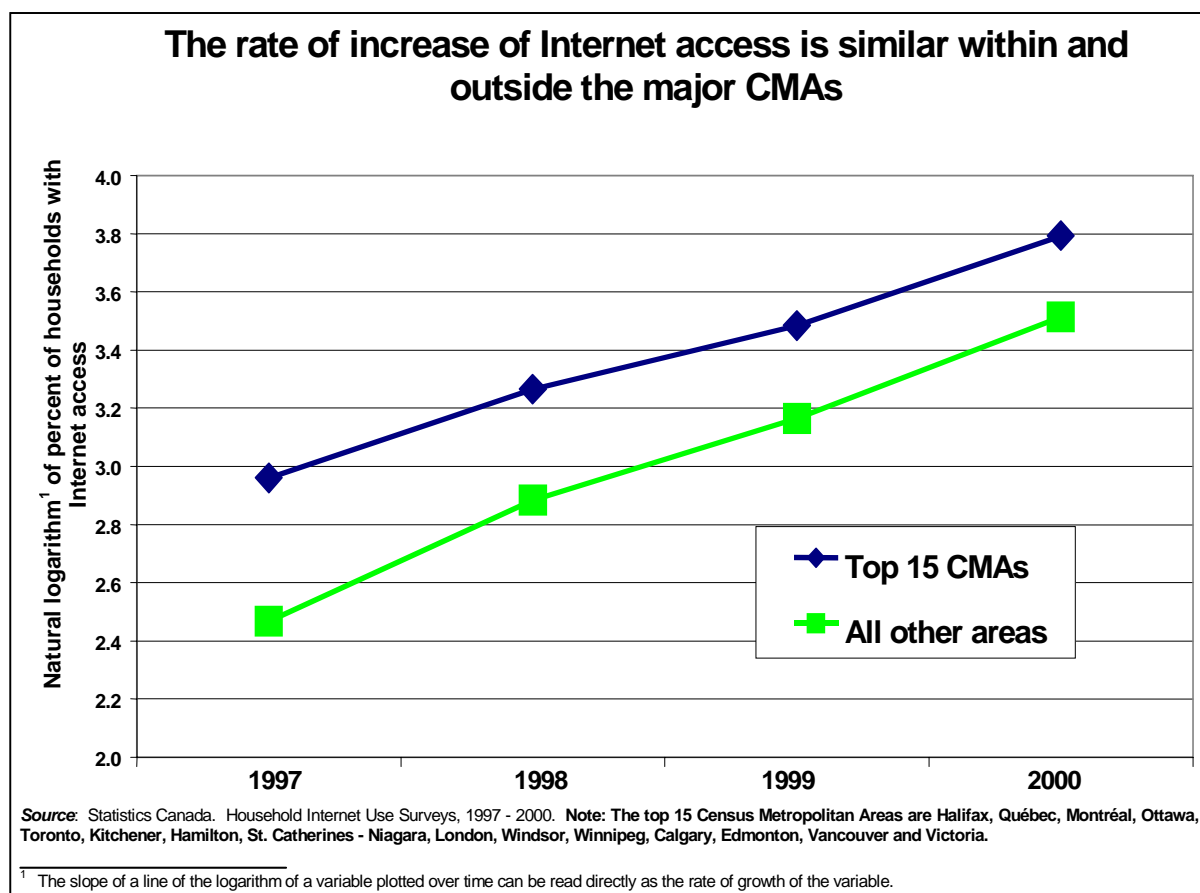
Overall, household Internet connectivity is lower in rural and small town households than in urban (Figure 7). In 2000, over 45 percent of individuals in CMAs (see Box 1 for definition) lived in a household with an Internet connection, compared to 30 percent of individuals in RST rural areas.

Figure 7



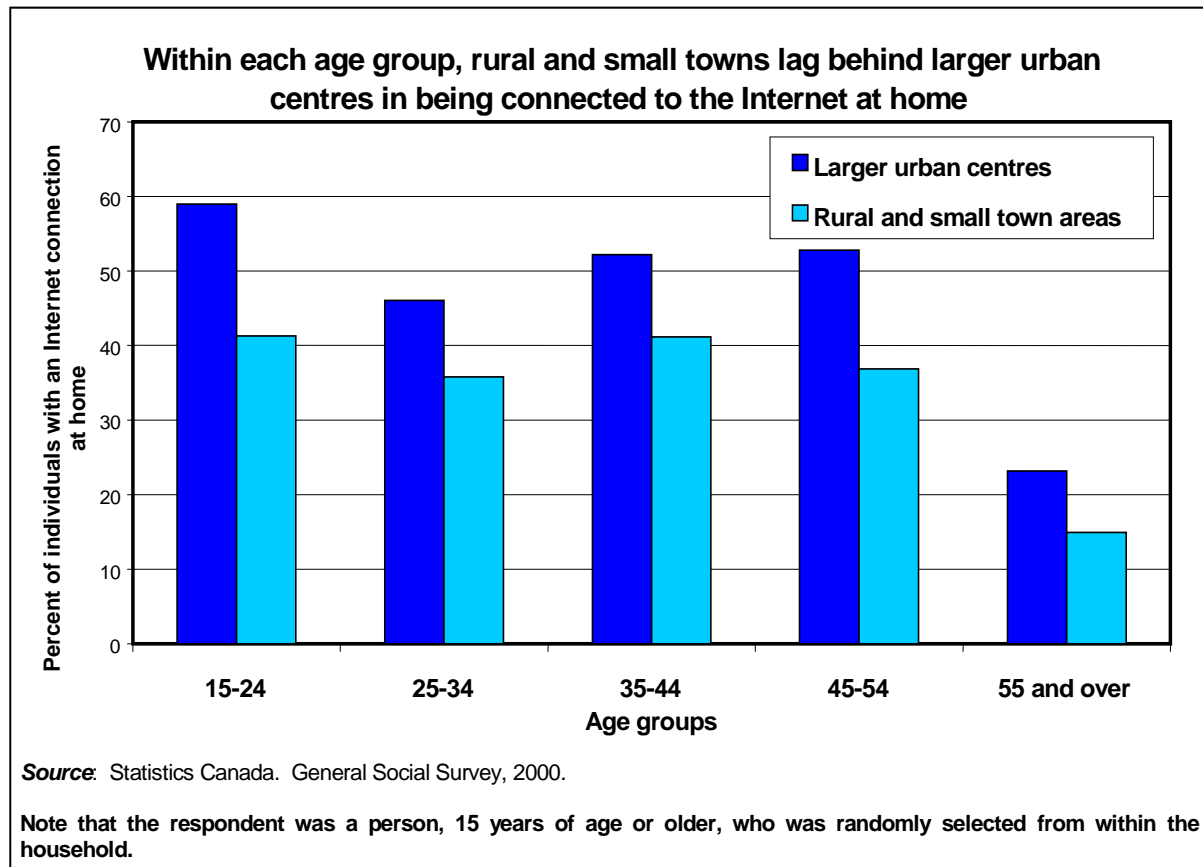
To show the trend in Internet access over time, this paper refers to the Household Internet Use Survey. This survey indicates the rate of growth of the proportion of households with an Internet connection is similar in metropolitan and non-metropolitan households (Figure 8). Note that the non-metro/metro gap does not appear to be closing appreciably. All areas are increasing their rate of adoption of Internet access but metro areas are maintaining a higher Internet adoption rate.

Figure 8



Within each age class, rural individuals are less likely to be connected to the Internet. In general, the older a person is, the less likely the person is to be connected to the Internet (Figure 9).

Figure 9



Analysing the data by education level and geography, again, rural and small town areas lag in terms of the proportion of households connected to the Internet, in comparison to larger urban centres (Figure 10). Breaking the data down more, the rurality influence is emphasised. A lower level of educational attainment and a higher degree of rurality are associated with an individual being less likely to be connected to the Internet (Figure 11).

Figure 10

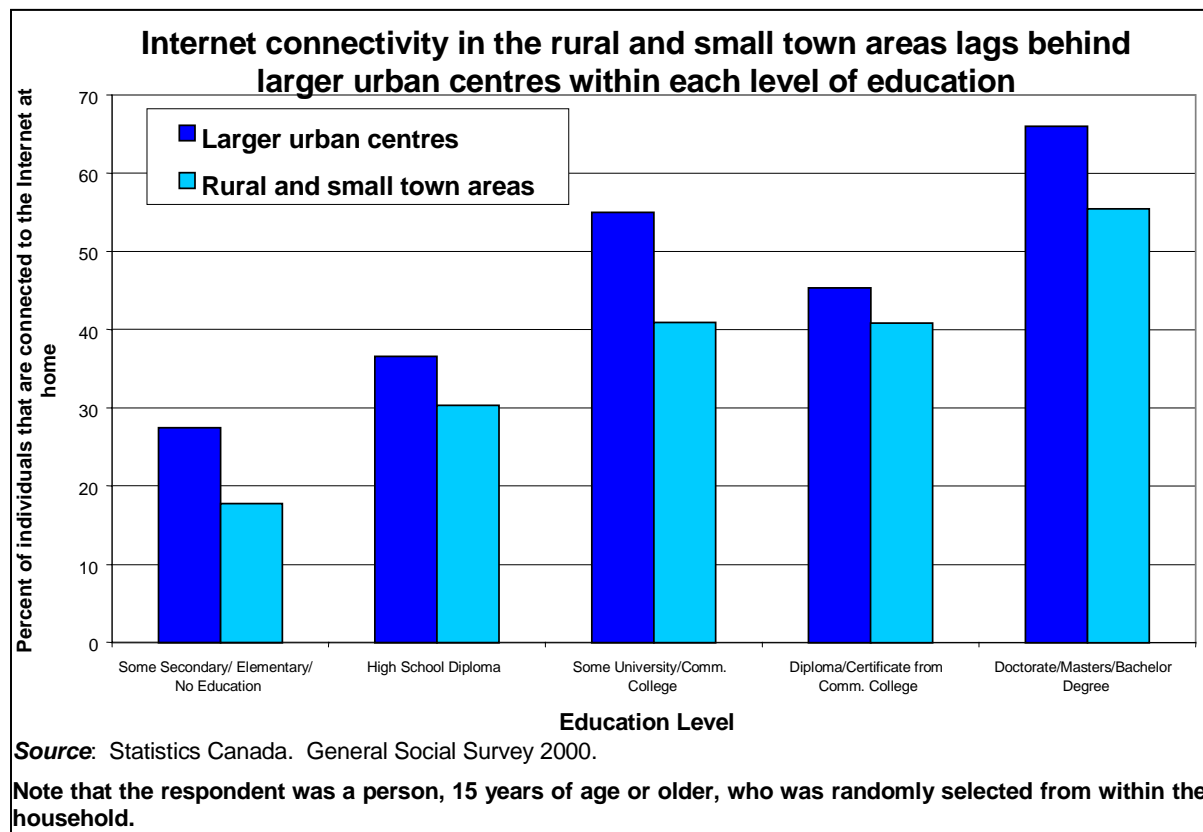
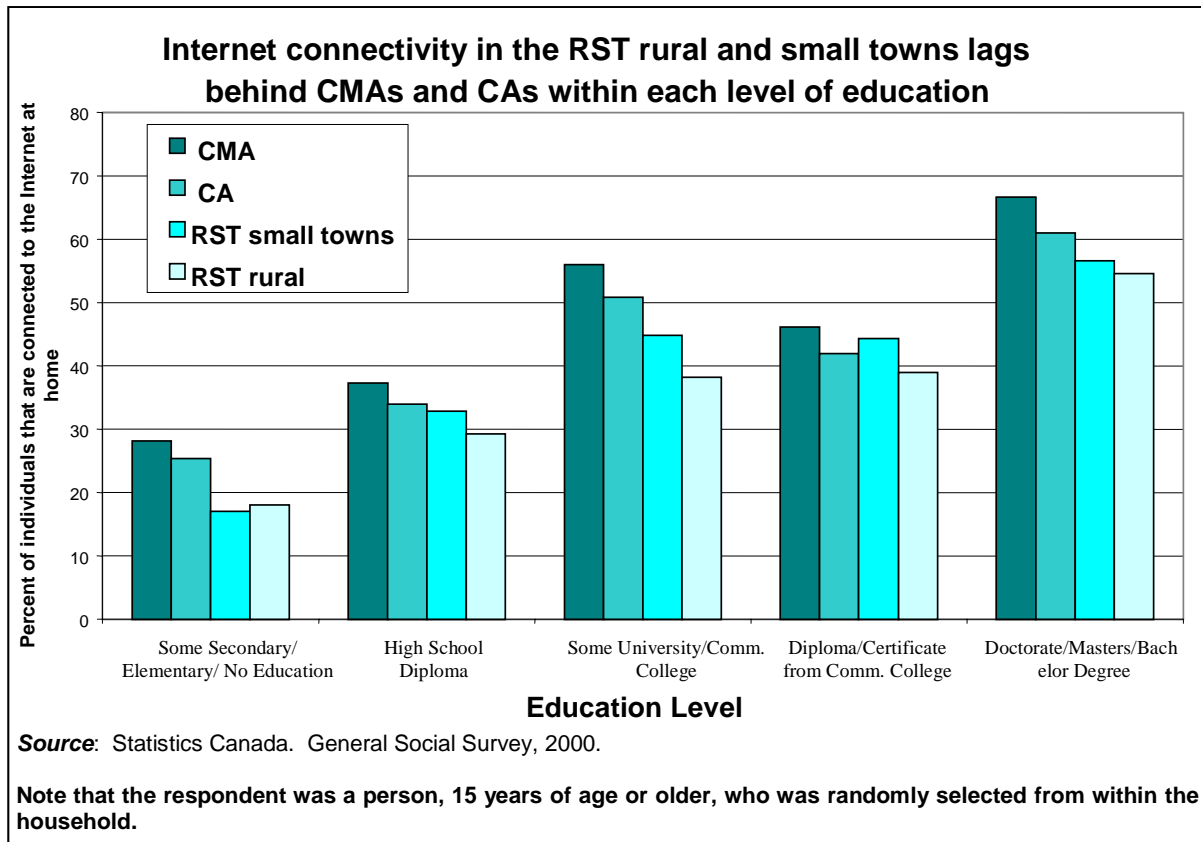
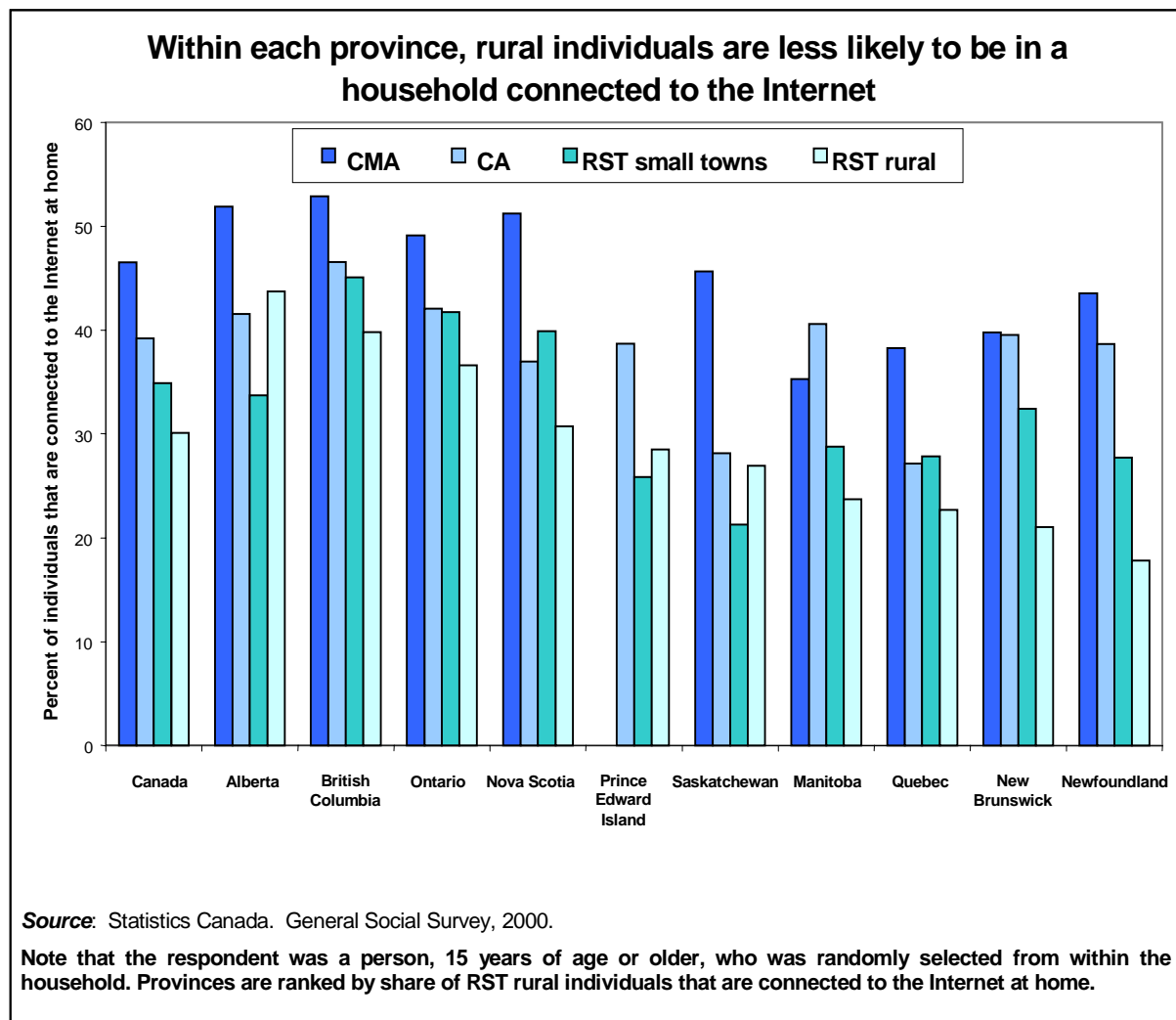


Figure 11



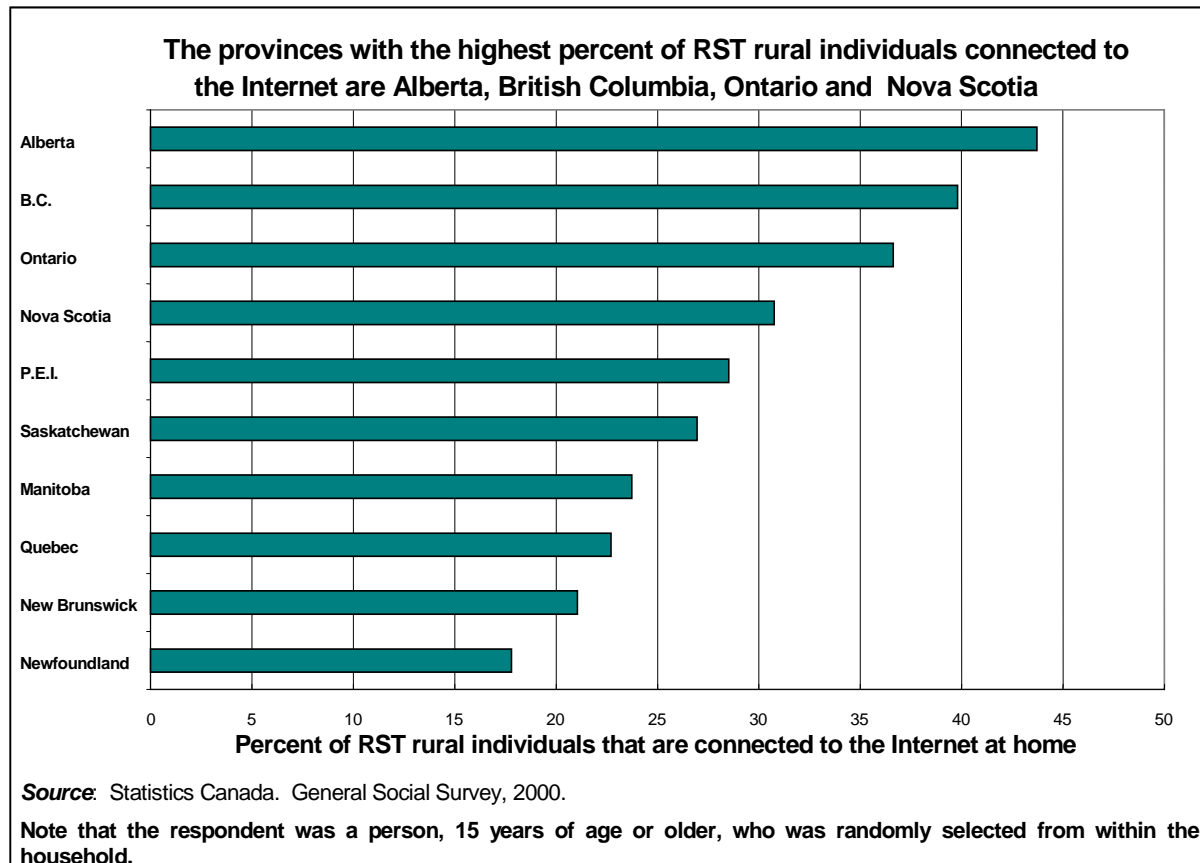
Within each province, rural individuals are less likely to be in a household connected to the Internet, when compared to their counterparts in CMAs or CAs (Figure 12). Note that the provinces with the highest rate of Internet connectivity are Alberta, British Columbia, Ontario and Nova Scotia.

Figure 12



In addition to having the highest overall rates of Internet connectivity, Alberta, British Columbia, Ontario and Nova Scotia are the provinces with the highest proportion of RST rural individuals that have a connection to the Internet in their household (Figure 13). In 2000, Alberta was the leader in terms of percent of RST rural individuals with an Internet connection.

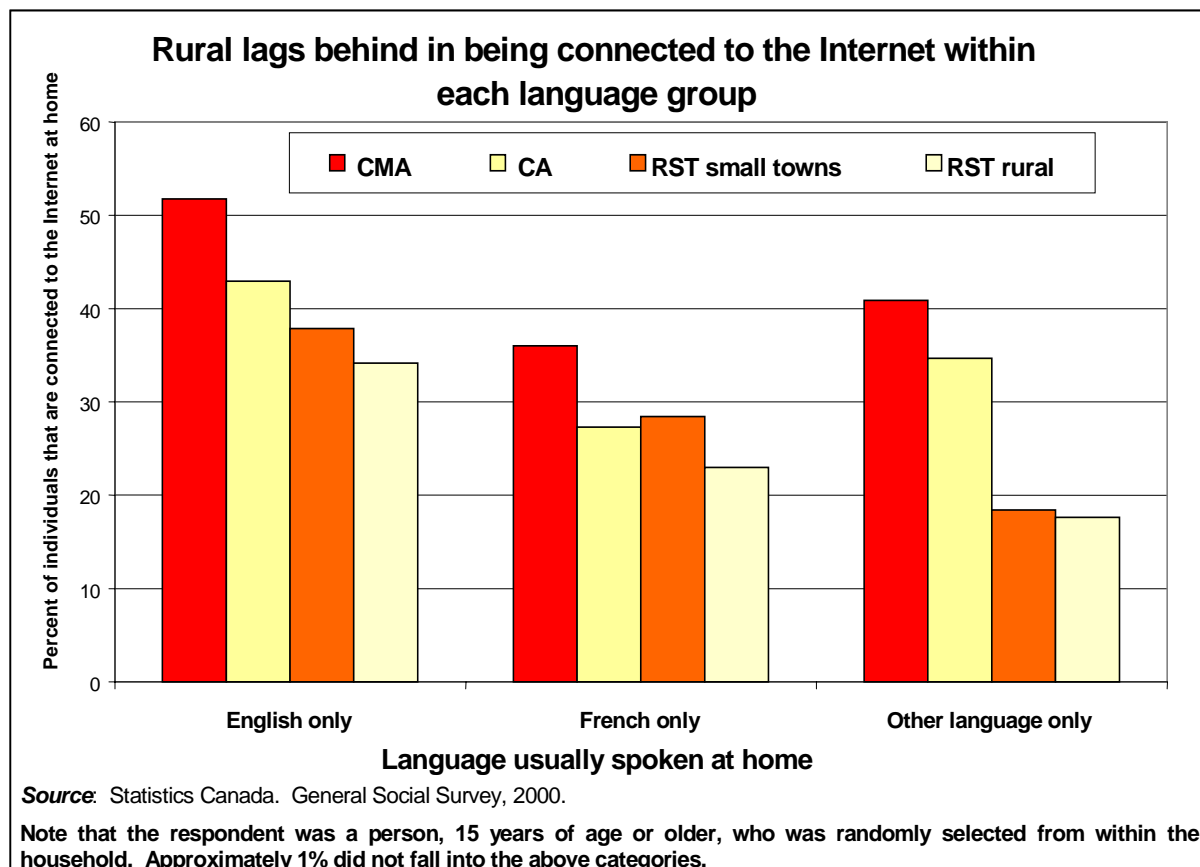
Figure 13



Language is another factor in being connected to the Internet. English only households have a higher incidence of households being connected. Within each language group, rural areas have a lower rate of Internet connectivity.

English was predominant in the early days of Internet development but other languages are now making important progress. As shown above, Internet connectivity is somewhat lower in Quebec which may be due, in part, to the fact that English is still the predominant language on the Internet.

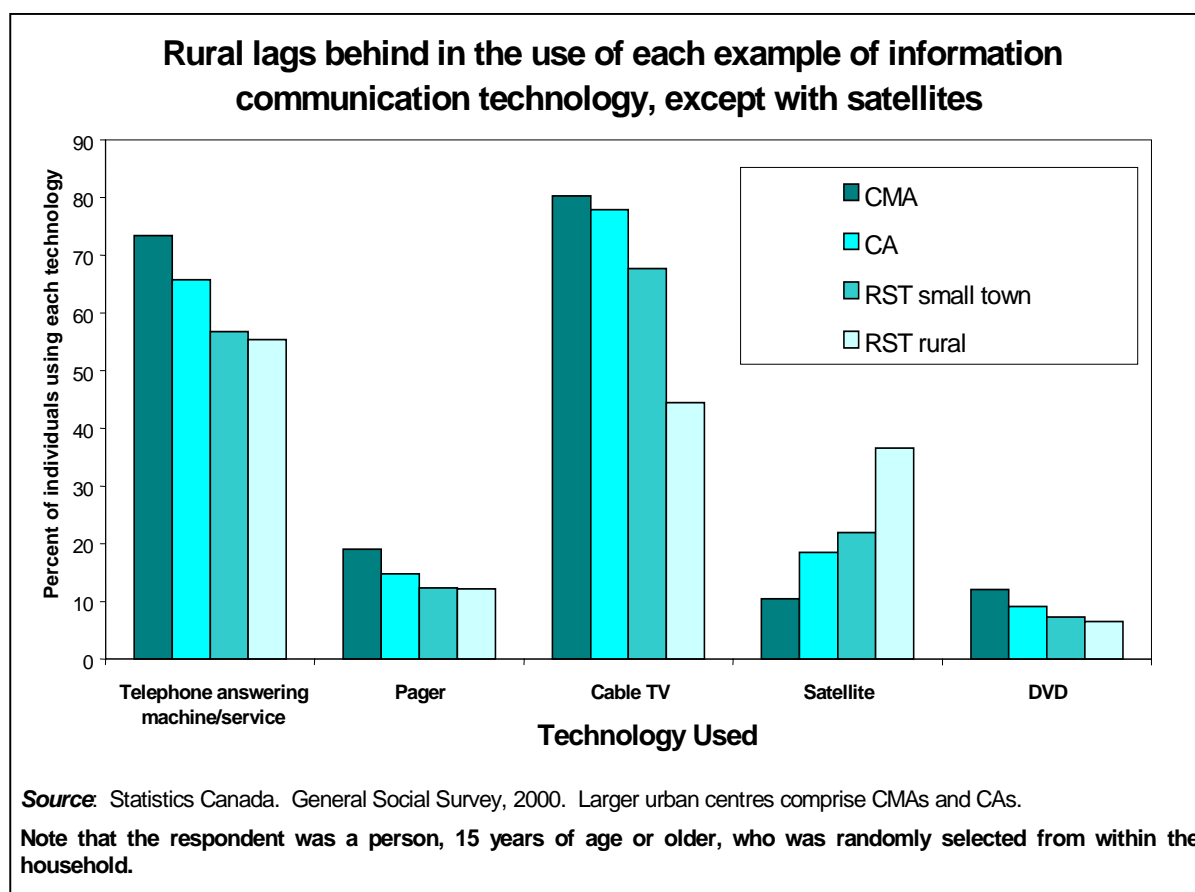
Figure 14



In examining various types of information technology, rural individuals lag in the use of telephone and answering machines, pagers, cable television and digital video discs (DVDs) but rural individuals are ahead in the use of satellites. The higher use of satellites in rural areas could be due to a lack of access to cable television and a lack of access to high speed Internet access (either through cable or phone lines).

Note the markedly lower share of RST rural individuals with cable and the markedly higher share of RST rural individuals with a satellite connection. As noted in Box 1, RST rural individuals live in the countryside outside centres of 1,000 or more – thus cable service is much less common. This is important because cable can support the bandwidth needed for high speed Internet access – if cable is not available, one way to get a high speed Internet connection is via satellite. Of course, rural individuals can also use a satellite connection to access television channels that urban dwellers would access via their cable service.

Figure 15



At the Canada level, within RST rural areas, “access” was listed as the major barrier by 29 percent of the respondents “who are interested in accessing the Internet” (Table 1). The data for Table 1 was tabulated only for RST rural individuals without an Internet connection but “who are interested in accessing the Internet.” The purpose of the question was to determine the greatest barrier to access for individuals interested in Internet access. The second major reason was “cost”, listed by 27 percent of the respondents. (Respondents were asked to list only one ‘major’ factor that constrained their access to the Internet.) Note that “access” ranked as more important than “cost” among RST rural individuals in all provinces except Ontario, Manitoba, Saskatchewan and British Columbia – where “cost” was a greater barrier than “access”. In fact, for RST rural individuals, “not enough time” ranked as an important reason for not establishing an Internet connection in Saskatchewan and British Columbia.

Table 1. For individuals in RST rural areas who do not have Internet access and who are interested in accessing the Internet, what was their major barrier to accessing the Internet?

RST rural areas in:	Major barrier to accessing the Internet?	
	Most important reason(s) (1)	Second most important
Newfoundland	"Access to computer or Internet"	"Cost"
Prince Edward Island	"Access to computer or Internet" "Cost"	(2)
Nova Scotia	"Access to computer or Internet" "Cost"	(2)
New Brunswick	"Access to computer or Internet" "Cost"	(2)
Quebec	"Access to computer or Internet" "Cost"	"Not enough time"
Ontario	"Cost" "Access to computer or Internet"	"Lack of skills or training"
Manitoba	"Cost" "Access to computer or Internet"	"Lack of skills or training"
Saskatchewan	"Cost" "Not enough time"	"Access to computer or Internet"
Alberta	"Access to computer or Internet" "Cost"	(2)
British Columbia	"Cost" "Not enough time" "Access to computer or Internet"	(2)
Canada	"Access to computer or Internet"	"Cost"

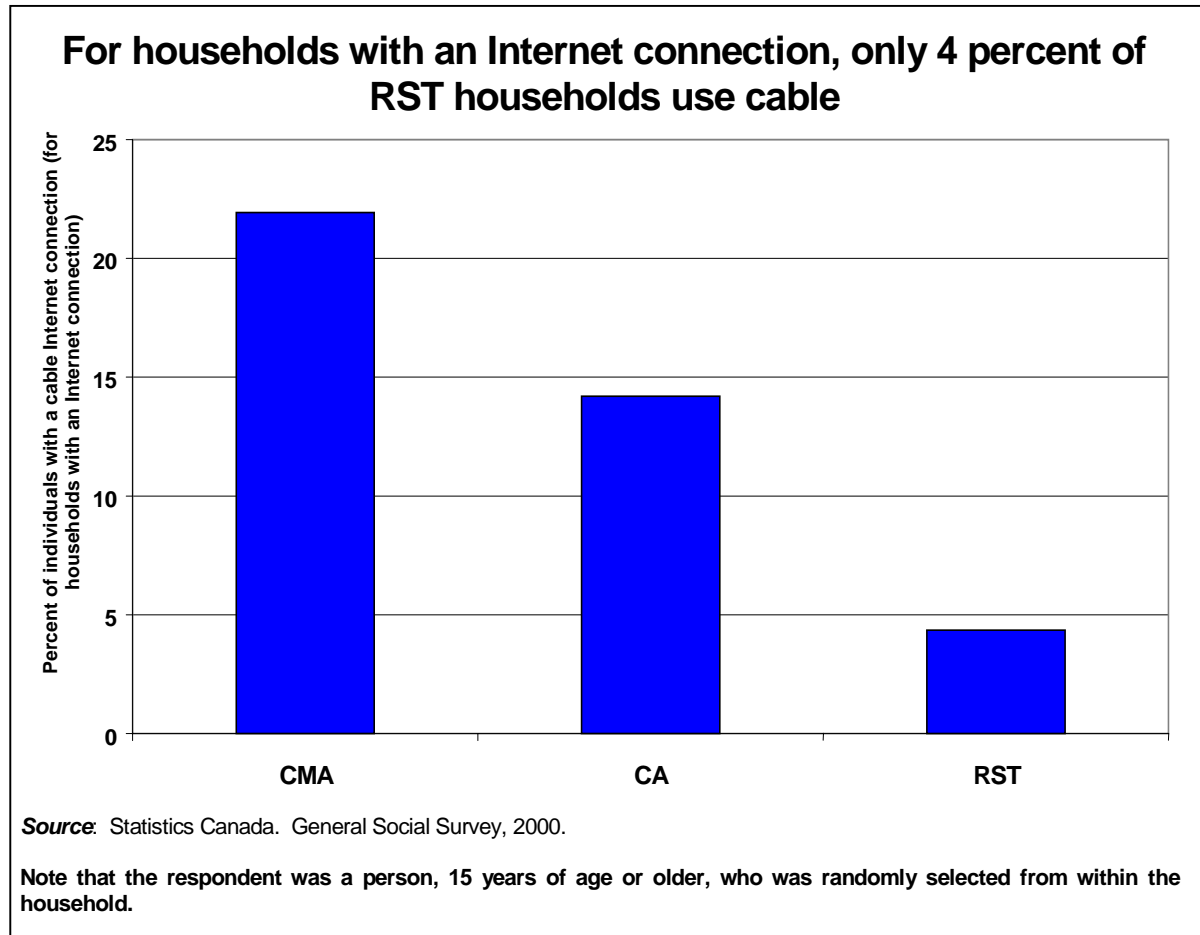
Source: Statistics Canada. General Social Survey, 2000.

Notes:

- (1) In some provinces, two or three reasons were essentially "tied" as the most important barrier.
- (2) Sample too small for reliable estimate.

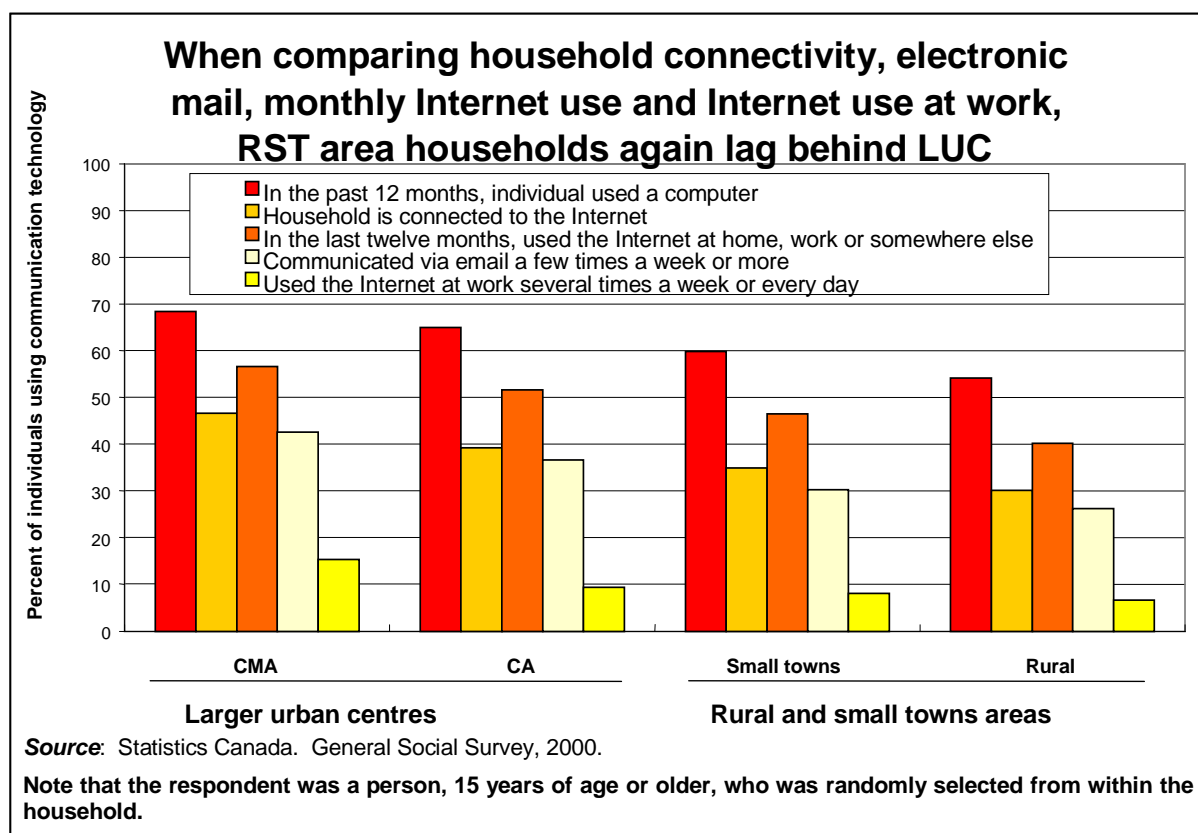
For households with an Internet connection, only 4 percent of RST households use cable (Figure 16). Thus, the vast majority of rural households use telephone lines to connect to the Internet. The more rural you are, the less likely you are to access the Internet via cable lines. Cable can support higher bandwidth, which provides high speed Internet access. This is viewed as a way to deliver "advanced and faster services" (Dickinson and Ellison, 2000, p. 3).

Figure 16



As noted above, Internet and computer use are less common in more rural areas. There are more people who are using the Internet than who are in households that are connected to the Internet (Figure 17). Interestingly, the percent of individuals who are in a household connected to the Internet is very close to the percent of individuals that are communicating via email a few times a week or more. Also, for households with an Internet connection, a small share (less than 15 percent) used regular mail to communicate with family or friends in the previous month – and this share is constant across all geographic groups (data not shown).

Figure 17



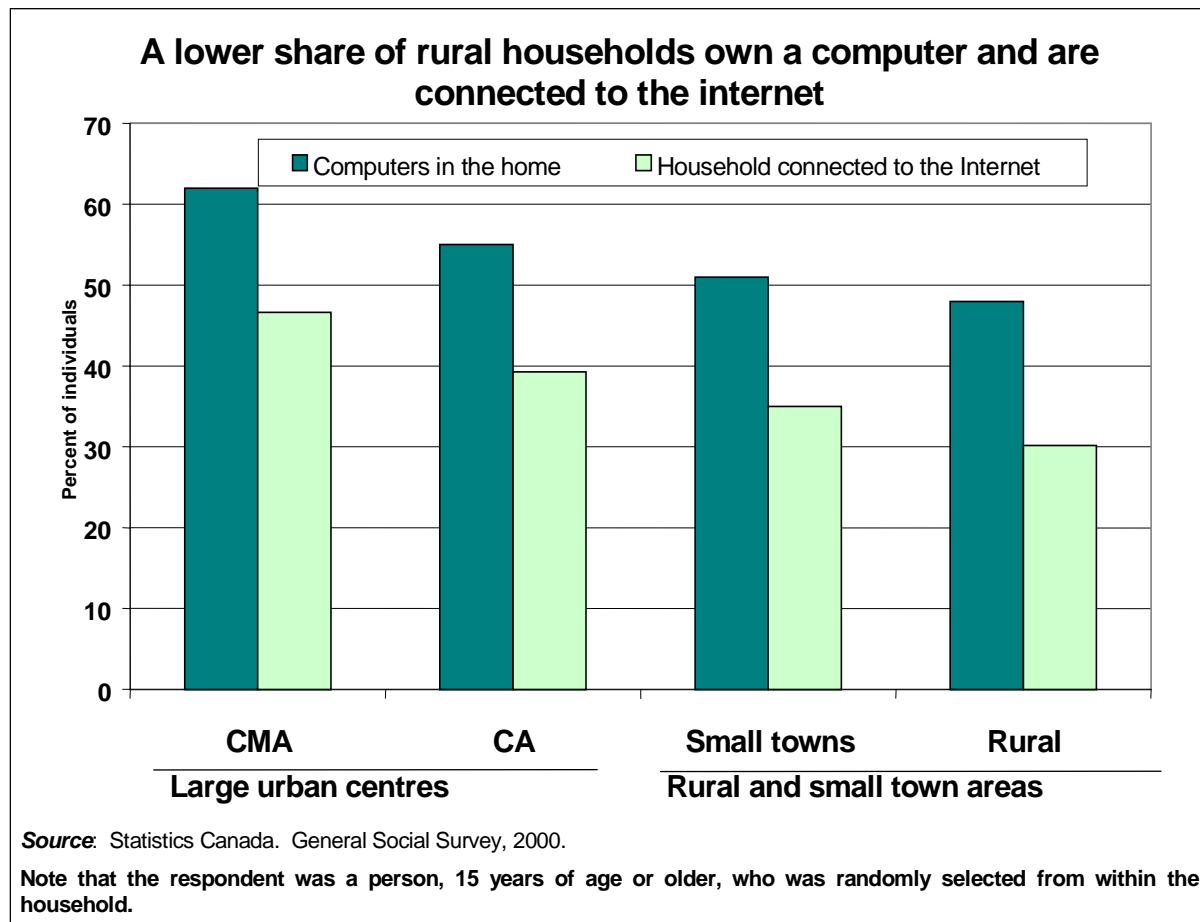
Summary

In summary, computer ownership and Internet connectivity are lower in rural areas (Figure 18). This pattern holds within each level of educational attainment, within each age group, within each province and within each language group. Thus, rurality matters when considering computer ownership and Internet connectivity.

The more educated and younger an individual is, the more likely she/he will own a computer and be connected to the Internet.

The provinces with the highest average incomes (Alberta, Ontario and British Columbia) have a higher incidence of households connected to the Internet and have a higher incidence of rural households connected to the Internet.

Figure 18



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Appendix A

Below is a list of the questions examined.

A1: Is your household connected to the Internet?

- (1) Yes
- (2) No

A2: Is your Internet connection provided through your telephone line, your cable line or another source?

- (1) Telephone line
- (2) Cable line
- (3) Other source

A3: How many personal computers are there in your home?

A5: In the past 12 months, did you use the Internet?

- (1) Yes
- (2) No

A7: In the past 12 months, did you use a computer?

- (1) Yes
- (2) No

A10: In the past 12 months, did you use...

- a. telephone answering machine or service?
- b. A pager?
- c. Cable television?
- d. A satellite dish?
- e. A Digital Video disc (DVD)?

F3: In the last month, how often did you use the Internet at home? Was it...

- (1) Every day?
- (2) Several times a week?
- (3) A few times a month?
- (4) Not in the last month?

J8: What is the greatest barrier that keeps you from using the Internet?

- (1) Cost
- (2) Access to Computer or Internet
- (3) Lack of skills or training
- (4) Fear of technology
- (5) No need
- (6) Not enough time
- (7) Disability

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