

Researching Internet Use in Vermont

Using the 2003 *Vermont* Poll

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Executive Summary

The 2003 Vermonter Poll asked ten questions relating to information technology. We tested the relationships between age, gender, income, political affiliation and region of residency and personal computer (PC - no distinction among types of computer) ownership, connectivity, and various Internet uses.

The proportion of Vermont households with home PCs has increased over the past decade from 43% in 1993 to 79% in 2003, according to the statewide Vermonter Poll conducted by the Center for Rural Studies at the University of Vermont.

Despite the overall increase in PC ownership, there is still evidence of a digital divide. Households making more than \$20,000 annually are more likely to have a home PC than those making less. Thirty-nine percent of households making less than \$20,000 annually have computers, compared to a 67% rate of home computer ownership in the \$20,000 - \$35,000 income bracket. The ownership rates in all income brackets above that are even higher, topping at 97% in those households making \$65,000 or more. Nevertheless, among all households with computers, there is no significant statistical relationship between income and Internet connectivity.

Ninety-two percent of Vermont households with a home PC are connected to the Internet, up from 79% in 2002. Seventy-eight percent of connected households use a dial-up modem, versus 22% with some type of broadband connection. The ratio of dial-up connection to broadband has decreased slightly since 2001. This could be illustrative of a tendency for Vermont households to move to faster connection speeds.

Of those households with a PC, 56% perform some sort of business function on their computer, down slightly from 59% in 2002. In terms of Internet use from home or any other location: 74% of Vermonters go online to access their email service, 50% to access websites related to state government, 49% to access news sites, 48% to shop online, 47% to access data and statistics online, 40% to access information on schools and colleges, and 25% to access information and services from municipal government.

Region of residency within the state does not seem to have a significant influence on household PC ownership. The three Vermont regions studied are Chittenden County, the Northeast Kingdom, and the remainder of the state. These regions act as proxies for urban Vermont, rural Vermont, and the urban-rural-suburban mix that one can find throughout the state. Sample sizes by county alone are too small for a county-by-county analysis.

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Internet Use in Vermont

I. Introduction

Increased attention and utilization of the World Wide Web is professed to have started around 1994 at the dawn of the dot-com era (Mitchell, 1994). Since then, the Internet has provided almost infinite possibilities for users. Any person that has access to a computer with an Internet connection can read an email, read and/or hear local, national, or world news, buy products online from retailers in the U.S. or abroad, take online courses, teach oneself, or research a topic. The Internet's uses seem endless and can bring the world to a home or person.

The Center for Rural Studies at the University of Vermont has been conducting survey research on Vermonters' PC ownership through the annual Vermonter Poll for the past ten years. To determine if Vermonters are "e-ready" (International Economic Development Council website), the CRS poll continues to poll Vermonters' about their connections (such as DSL or dial-up) and opportunities (at home, office, or both) to the Internet. This report examines whether there is a relationship between several demographic variables, including age, gender, income, political affiliation or region of residency, and ownership of a home personal computer (PC - no distinction among types of computer), connectivity, and various types of Internet use. More specifically, the null hypothesis examined for this report stated: There is no significant relationship between age, gender, income, political affiliation, or region of residency and home PC ownership, connectivity, or type of Internet use. Through bivariate analysis of the survey data, the study found:

- Purchase of home PCs by Vermonters has steadily increased over the last ten years
- The majority of the sample population owns a PC
- Of those households that own a PC the majority of the sample population is likely to have an Internet connection at home
- Regardless of where one accesses the Internet (any location or home), the majority of the sample population noted using the Internet for one or more reasons
- Internet uses increase considerably when a computer is present in the household
- Households with an annual income greater than \$20,000 are more likely to own a PC
- Regardless of income, households with a PC are more likely to have an Internet connection than not
- Region of residency does not play a significant role in owning a PC, having Internet connectivity or using the Internet

II. Methodology

The data used in this report was collected by the Center for Rural Studies (CRS) at the University of Vermont as part of the annual "Vermonter Poll" telephone survey. The survey was conducted at CRS over the first two weeks of March 2003 and administered using a Computer Aided Telephone Interviewing (CATI) system by trained interviewers. Households were randomly selected using a list of telephone numbers generated from Vermont telephone directories. Unlisted numbers were included in the random number generation. The survey excluded those households without a telephone. The subjects in this study consisted of Vermont residents eighteen years or older. The questions on the survey are paid for by various organizations interested in how Vermonters feel on certain issues in the state of Vermont. The ten information technology questions were asked and paid for by the Center for Rural Studies to

further understand Vermonters’ access and uses of information technology (see Appendix for the questions’ frequencies from the poll).

III. Description

Univariate analyses were run to provide an understanding of the population’s demographics and the population’s PC ownership and Internet access and uses. Bivariate analyses were used to test the null hypothesis: There is no significant difference between age, gender, income, political affiliation, or region of residency and home PC ownership, connectivity, or type of Internet uses. More specifically, chi-square tests were used to test the significance of rejecting the null hypothesis between ordinal and nominal data. T-tests were used to test the relationships between interval and ordinal or nominal data. Confidence levels of 99%, 95%, and 90% were evaluated.

A. Demographics:

In this analysis independent variables (Table I) tested were age, gender, income, political affiliation, and region of residency. A sample size of 400 is needed to be representative of Vermont; 674 people answered the survey. Variations in “n” exist due to some respondents answering, “Don’t know,” “Refused,” or a question was skipped.

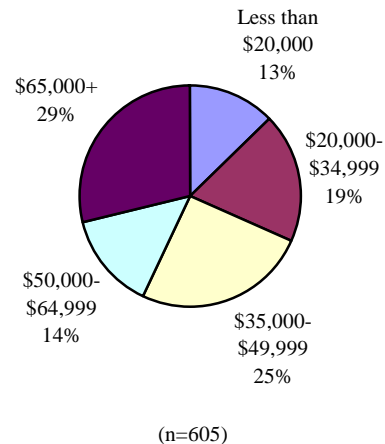
TABLE I: STATISTICS OF THE SAMPLE POPULATION

Demographic*	Measures of Central Tendency		
	Mean	Median	Mode
Age	50	49	52
Gender	n/a	n/a	Female
Income	n/a	\$35,000-\$49,999	\$65,000+
Political Affiliation	n/a	n/a	Independent
Region	n/a	n/a	Rest of State**

*n varied between 605-674; **Rest of State includes all counties except Chittenden and counties in the Northeast Kingdom (Caledonia, Essex, and Orleans)

The distribution of female and males was 53% and 47% respectively. The mean age of the sample population was 50 years with a standard deviation of 15.5 years. Median income for the sample was \$35,000-\$49,999 and the mode was \$65,000+ (Figure I). Vermont is divided into three regions to represent its urban and rural environments - urban (Chittenden County), rural (the Northeast Kingdom - Caledonia, Essex, and Orleans), and a balance of urban/rural (rest of the state). The mode of the sample was “rest of state.” The political affiliation most noted was the Independent party.

FIGURE I: DISTRIBUTION OF THE SAMPLE POPULATION BY INCOME GROUP



B. Behaviors:

The dependent variables used in this analysis were home PC ownership, Internet connectivity, and various Internet usages (i.e. email, news, shopping, or information search) at any location or home.

To determine PC ownership, respondents were asked a “yes/no” question about home PC ownership. To determine Internet connectivity in the home, respondents were asked to respond about their type Internet connection. To determine Internet uses at any location (home, work, school, etc.), respondents were asked “yes/no” questions to whether or not they used the Internet for any of the following: email, news, shopping services, data and statistics, information about state government, information about municipal governments, or information on schools and colleges.

Excluding the 1996 and 1998 Vermonter Polls, historical data for household PC ownership shows that PC ownership has continued to increase over the last ten years. Looking more closely at the last five years, households with a PC showed an increase from 1999 to 2002 and remained unchanged in 2003 (Table II).

TABLE II: HOUSEHOLDS WITH A PERSONAL COMPUTER

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Personal Computer	43%	48%	50%	NA	53%	NA	64%	68%	75%	79%	79%

Source: Center for Rural Studies, 1993-2003 Vermonter Poll (Question not asked in 1996 and 1998)

Figure II shows the total percent of the households in 2003 with an Internet connection at home - 92% of households with a PC have an Internet connection at home (Figure II). Questions regarding *type* of Internet connectivity have been asked since 2001. Figure III shows overall Internet connectivity from 2001 to 2003. Figure IV shows that overall, the majority of the sample population uses the Internet for email most and for information about municipal governments least.

FIGURE II: PERCENT OF HOUSEHOLDS WITH AN INTERNET CONNECTION AT HOME

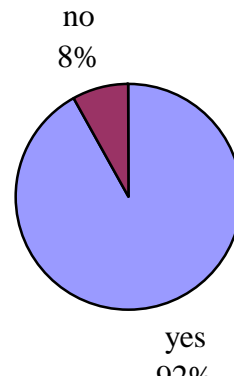


FIGURE III: TYPE OF INTERNET CONNECTIVITY 2001-2003

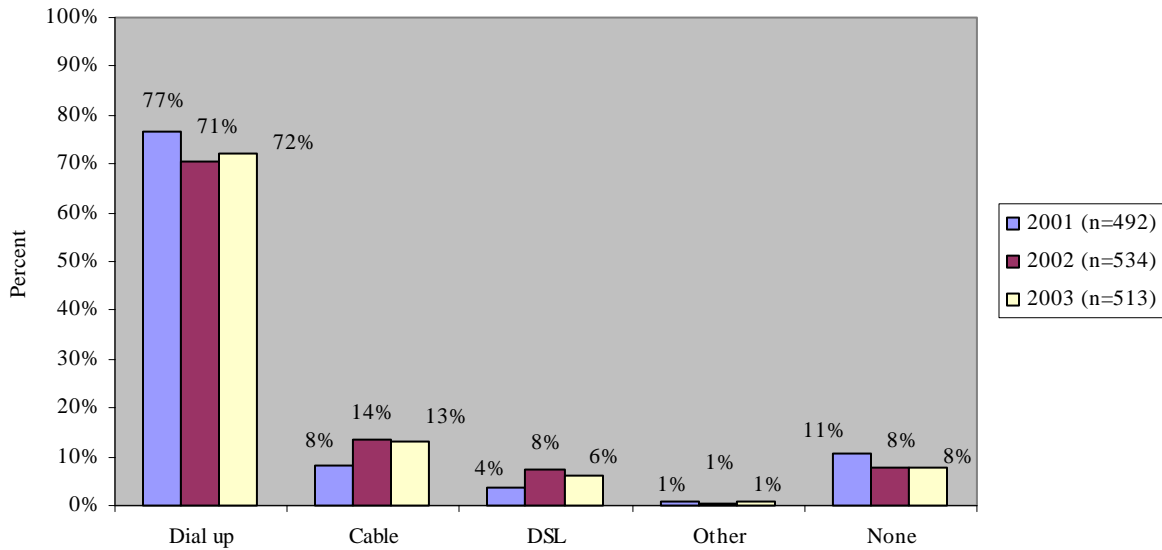
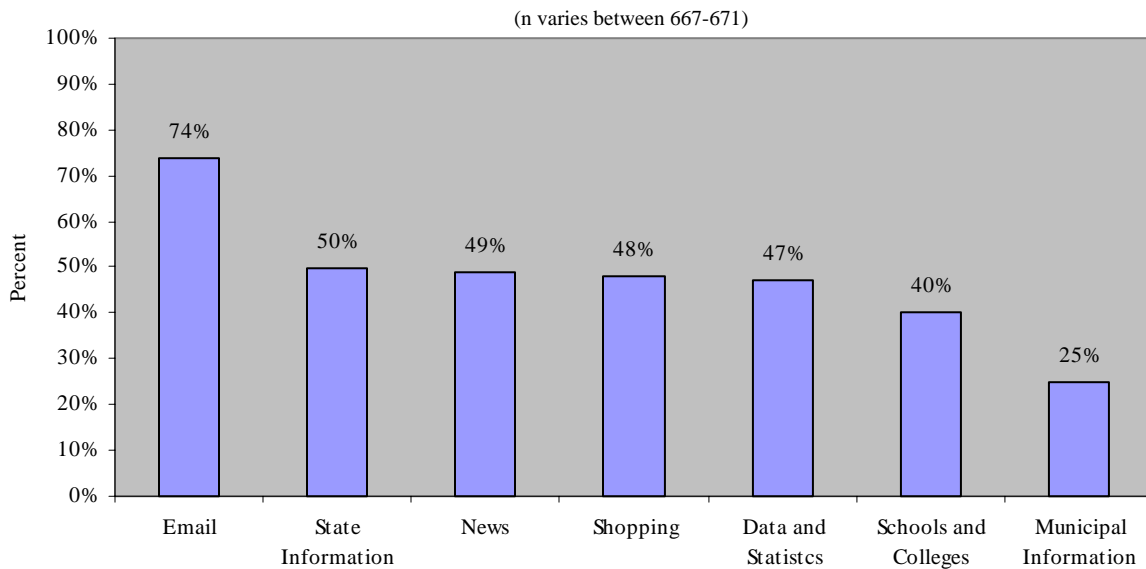


FIGURE IV: INTERNET USES BY THE SAMPLE POPULATION 2001-2003

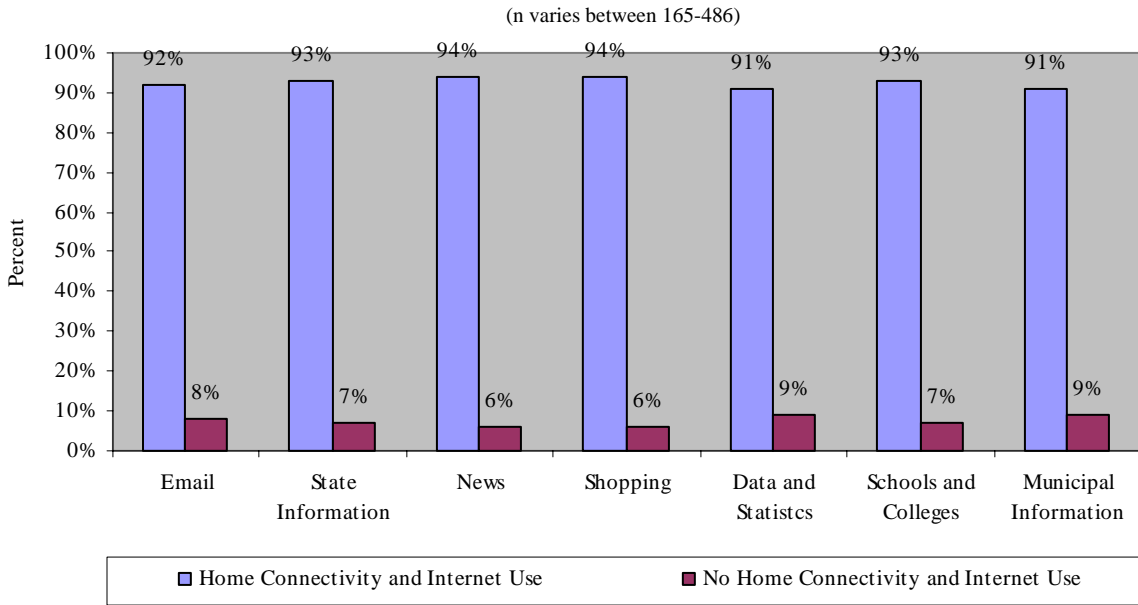


IV. Bivariate Analysis

A. Analyses of Personal Computer Ownership, Internet Connection, and Internet Uses:

After analyzing behaviors of the sample population, further analysis was conducted to look at relationships between PC ownership, connectivity and use. Further analysis into Internet uses and home connectivity were conducted to reveal that those households with a PC and home connectivity are overall more likely to use the Internet more across all categories than those households that do not have home connectivity (Figure V).

FIGURE V: DIFFERENCES IN FREQUENCY OF INTERNET USES BY THOSE WITH HOME CONNECTIVITY AND THOSE WITHOUT HOME CONNECTIVITY



When analyzing the data by region, there are no significant discrepancies between region of residency and household PC ownership and connectivity (Figures VI and VII). Figure VIII also shows that there is little difference in type of Internet connectivity among the regions.

FIGURE VI: HOUSEHOLDS WHO OWN A HOME PERSONAL COMPUTER BY REGION

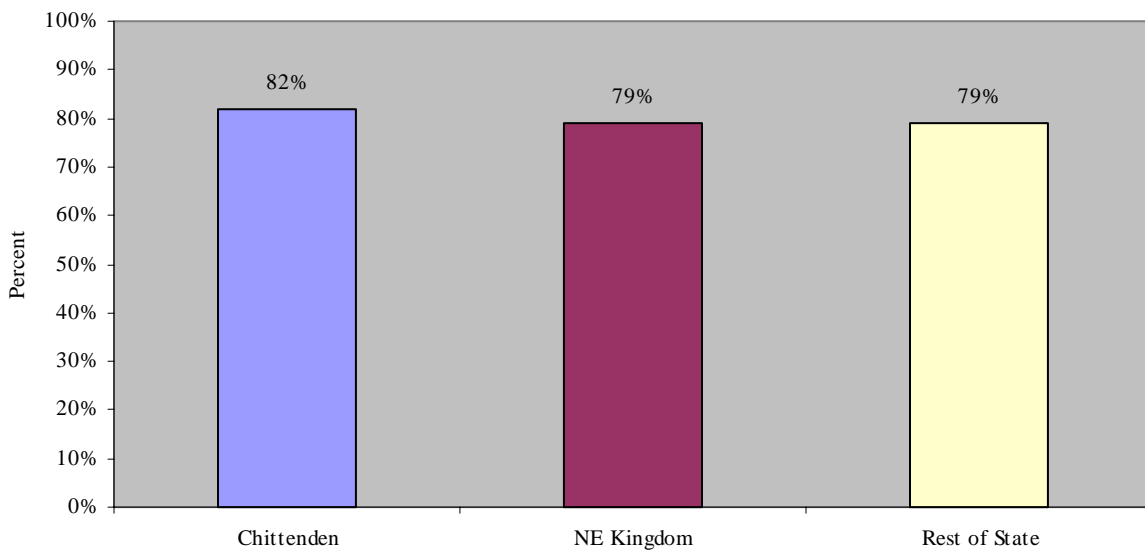


FIGURE VII: HOME INTERNET CONNECTIVITY BY REGION OF HOUSEHOLDS THAT OWN A PC

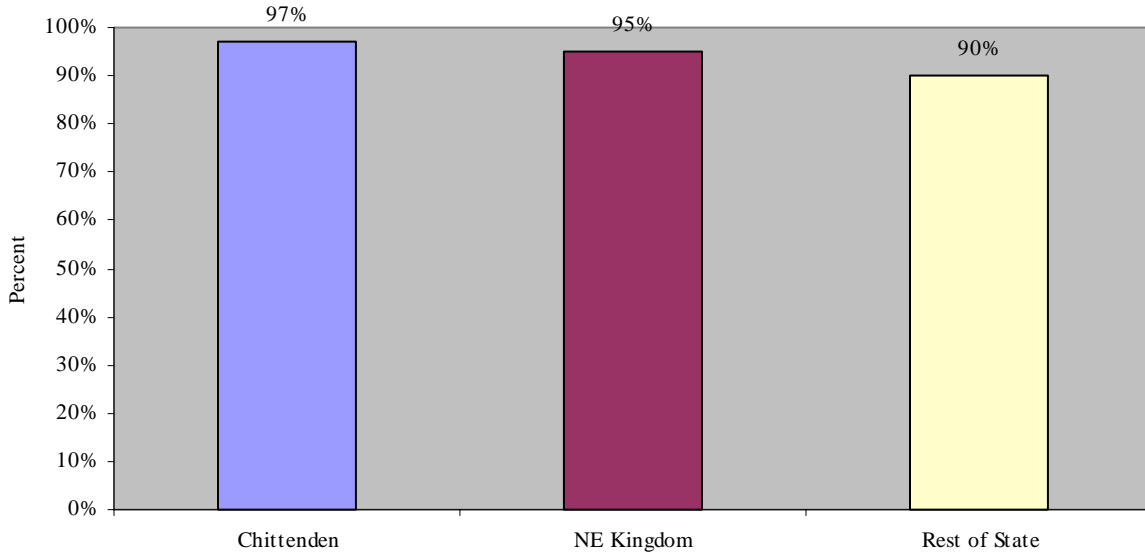
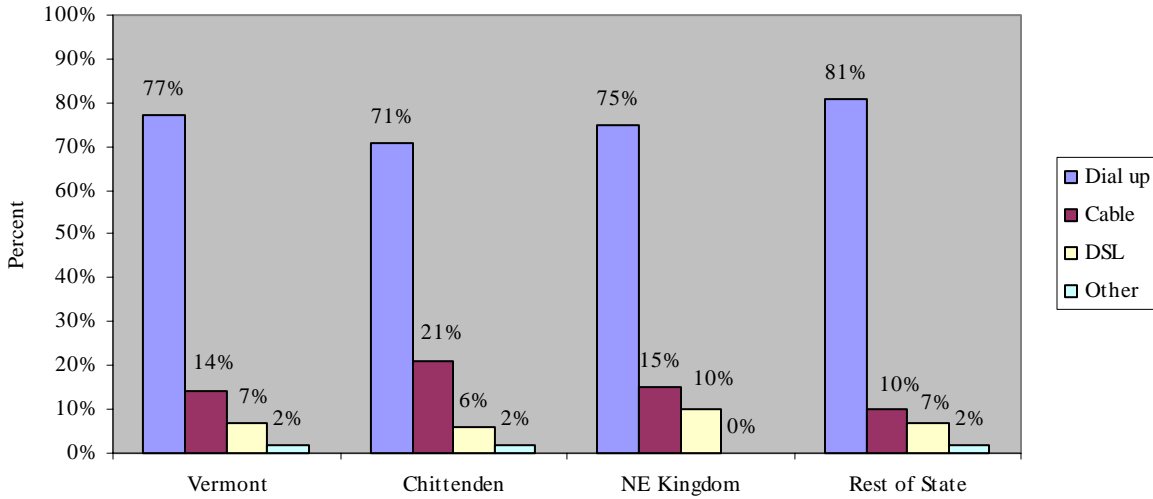


FIGURE VIII: TYPE OF INTERNET CONNECTIVITY AT HOME BY STATE AND REGION



B. Testing Significant Relationships:

Table III shows the significance of the relationship between the independent variables and the dependent variables, PC ownership and Internet connectivity. Although we can reject the null hypothesis at a 99% confidence level for age and PC ownership, the difference is not significant or meaningful. The mean age of those with a home PC is 50 and those without is 57. The same holds true for age and Internet connectivity. The null is rejected at a 95% confidence level; mean age of those with Internet connectivity is 47 and without, 52. Although we can reject the null hypothesis at a 95% confidence level for region and home connectivity, the

difference is not significant or meaningful. Of more importance is the relationship between income and PC ownership and income and home connectivity.

TABLE III: SIGNIFICANCE OF RELATIONSHIP BETWEEN DEMOGRAPHICS AND PERSONAL COMPUTER OWNERSHIP AND CONNECTIVITY

Age	Income	Gender	Political Affiliation	Region
Home Computer ***	Home Computer ***	Home Computer	Home Computer	Home Computer
Connected**	Connected	Connected	Connected	Connected**

Significance at ***99%, ** 95%, *90%

Chi-square tests showed that there appears to be a significant difference between income and PC ownership. We reject the null hypothesis at a 99% confidence level for income and PC ownership. As income increases, the likelihood of owning a PC increases. 39% of households with less than \$20,000 annual income own a PC as opposed to 67%, 80%, 95% and 97% in the other four income brackets respectively (Figure IX).

However, Figure X shows that, once a computer is in the home, Internet connectivity across all income levels is high and that no significant difference occurs between income and Internet connectivity.

FIGURE IX: PERCENT BY INCOME GROUP OF THE SAMPLE POPULATION THAT OWN A PERSONAL COMPUTER

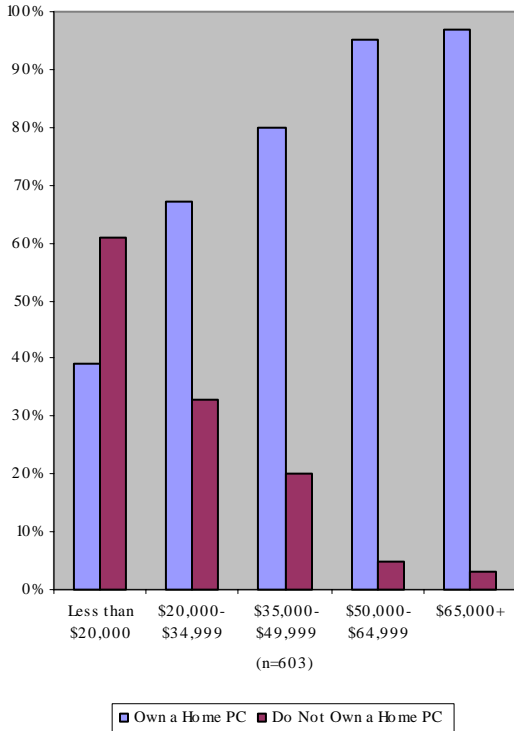
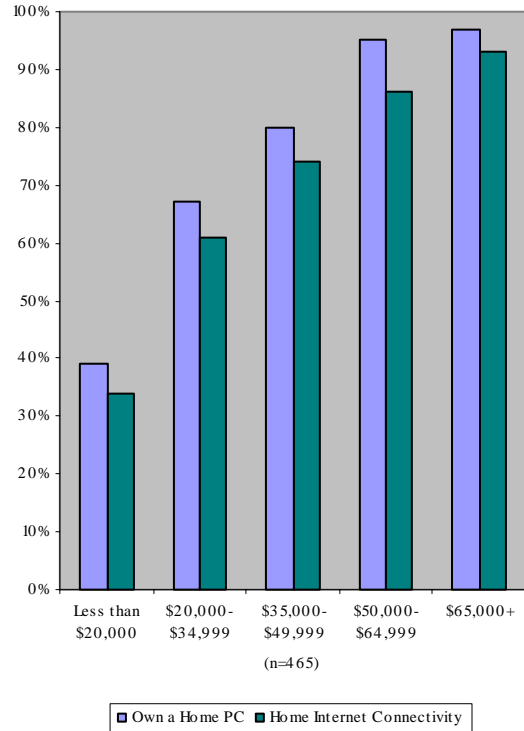


FIGURE X: PERCENT BY INCOME GROUP OF THE SAMPLE POPULATION WITH AN INTERNET CONNECTION AT HOME



V. Conclusions and Recommendations

Own a Personal Computer (PC)

- Owning a PC appears to be significantly tied to income.
- Owning a PC is associated with increases in Internet uses across all demographics analyzed.

Internet Connectivity and Internet Use

- Regardless of income, more Vermonters who own a PC are connected to the Internet compared to those who do not own a PC.
- There is no significant difference between Internet use and income when a computer is present in the household.

Looking at Internet uses of the sample population as a whole and at the sample population that owns a PC and has an Internet connection, it is evident that all types of Internet use increase when a computer is present in the home (Figure V).

Since income and owning a PC appear to be significantly related, it is not surprising that only 39% of households with annual incomes less than \$20,000 own a computer and that at least 67% of households with incomes greater than \$35,000 own computers.

To bridge the gap between lower income groups and the digital world, further research may expand on understanding the social and economic benefits of being connected to the Internet. Further research could provide incentive for local, state, federal, or private funding to enable lower income households to purchase a PC and assist them in expanding their capabilities outside of the community.

Appendix

	Frequency	Valid Percent
Has a PC in the home.		
1.Yes	533	79.4%
2.No	138	20.6%
Uses of PC.		
1.Personal use only	223	41.9%
2.Business use only	13	2.4%
3.Both	286	53.8%
4.Do not use computer at all	10	1.9%
Type of Internet connection.		
1.Dial up modem (using phone lines, 56K, 28.8K)	371	71.8%
2.Cable	67	13.0%
3.DSL (Digital Subscriber Line)	32	6.2%
4.Satellite	4	0.8%
5.None	39	7.5%
6.Other	4	0.8%
Use for email.		
1.Yes	495	73.8%
2.No	176	26.2%
Use for news.		
1.Yes	331	49.4%
2.No	339	50.6%
Use for shopping.		
1.Yes	320	47.8%
2.No	350	52.2%
Use for data and statistics.		
1.Yes	310	46.5%
2.No	357	53.5%
Use for state government or state agencies information.		
1.Yes	332	49.7%
2.No	336	50.3%

Use for municipal government information.

1.Yes	170	25.4%
2.No	498	74.6%

Use for schools and colleges information.

1.Yes	263	39.3%
2.No	406	60.7%