



National Center for
Education Statistics

U.S. Department of Education
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NCES 2004-014

Computer and Internet Use by Children and Adolescents in 2001

Statistical Analysis Report





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October 2003

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Suggested Citation

U.S. Department of Education, National Center for Education Statistics. *Computer and Internet Use by Children and Adolescents in 2001*, NCES 2004-014, by Matthew DeBell and Chris Chapman. Washington, DC: 2003.

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Acknowledgements

The authors wish to thank John Bailey of the U.S. Department of Education's Office of Educational Technology for helping to make this report possible. The authors would also like to thank Alex Janus of the U.S. Census Bureau, Nolan Bowie of the John F. Kennedy School of Government at Harvard University, and Valena Plisko, Marilyn Seastrom, Jerry West, Bill Hussar, Edith McArthur, and Lee Hoffman of the U.S. Department of Education's National Center for Education Statistics, for their detailed reviews and thoughtful comments. The authors would also like to thank staff from the Education Statistics Services Institute (ESSI), including Sandy Eyster, who were instrumental in assuring the technical quality of the report.

Highlights

This report uses data from the September Computer and Internet Use supplement to the 2001 Current Population Survey to examine the use of computers and the Internet by American children and adolescents between the ages of 5 and 17.¹ The report examines the overall rate of use, the ways in which children and teens use the technologies, where the use occurs (home, school, and other locations), and the relationships of these aspects of computer and Internet use to demographic and socioeconomic characteristics such as children's age and race/ethnicity and their parents' education and family income. All statistical comparisons in this report were tested for significance at the 95 percent confidence level ($p < .05$), and all reported differences are statistically significant, unless otherwise noted.

Key findings are as follows:

- **Most children and adolescents use these technologies** (table 1). About 90 percent of children and adolescents ages 5–17 (47 million persons) use computers, and about 59 percent (31 million persons) use the Internet.
- **Use begins at an early age** (figure 1). About three-quarters of 5-year-olds use computers, and over 90 percent of teens (ages 13–17) do so. About 25 percent of 5-year-olds use the Internet, and this number rises to over 50 percent by age 9 and to at least 75 percent by ages 15–17.
- **There is a “digital divide”** (table 1). Computer and Internet use are divided along demographic and socioeconomic lines. Use of both technologies is higher among Whites than among Blacks and Hispanics and higher among Asians and American Indians than among Hispanics.² Five- through 17-year-olds living with more highly educated parents are more likely to use these technologies than those living with less

¹ Current Population Survey interviews were conducted in about 56,000 households in September 2001 and collected information regarding 28,002 5- to 17-year-olds, including those enrolled in school and those not enrolled in school. One respondent per household was interviewed and that respondent provided information about the household and about individual household members, including information about computer and Internet use. Because a household's respondent may not have full information regarding computer and Internet use by other members of the household, this method is a potential source of error in the data.

² “White,” “Black,” “Asian,” and “American Indian” refer to White non-Hispanic; Black non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic, respectively, and will be used throughout this report for ease of presentation. Hispanics may be of any race.

well educated parents, and those living in households with higher family incomes are more likely to use computers and the Internet than those living in lower income households.

- **Disability, urbanicity, and household type are factors in the digital divide.** Consistent with the findings of previous research (U.S. Department of Commerce 2002), 5- through 17-year-olds without a disability are more likely to use computers and the Internet than their disabled peers, and children and adolescents living outside of central cities are more likely to use computers than those living in central cities. When not controlling for other factors, children and adolescents from two-parent households are more likely to use the computer and the Internet than those from single-parent households,³ and children and adolescents living outside of central cities are more likely to use the Internet than those living in central cities. However, when controlling for other factors such as family income and parent education, the association of household type and of Internet use outside of central cities was not statistically significant (table 2).
- **There are no differences between the sexes in overall computer or Internet use rates.** In contrast to the 1990s, when boys were more likely to use computers and the Internet than girls were, overall computer and Internet use rates for boys and girls are now about the same.
- **More children and adolescents use computers at school (81 percent) than at home (65 percent)** (table 3). The difference in school versus home computer use is larger for groups of 5- through 17-year-olds who are generally less likely to use computers. Computer use at school exceeds use at home by 30 percentage points or more for Blacks and for Hispanics. Use at school also exceeds use at home by 30 percentage points or more for those whose parents did not complete high school, who live with a single mother, who live in households where Spanish is the only language spoken by household members age 15 or over, or who live in households where the

³ The categories for family structure include “male-headed single-householder” and “female-headed single-householder.” “Single father” and “single mother” (or “single parent,” when referring to both) are used for ease of presentation. Some single-householders include nonrelatives or relatives other than the father or mother such as a grandfather or grandmother.

family income is under \$20,000. However, home use is slightly more prevalent than school use for two groups: (1) children and adolescents whose parents have at least some graduate school education, and (2) children and adolescents who live in families with incomes of \$75,000 or more per year.⁴

- **Use of home computers for playing games and for work on school assignments are common activities.** A majority (59 percent) of 5- through 17-year-olds use home computers to play games, and over 40 percent use computers to connect to the Internet (46 percent) and to complete school assignments (44 percent) (table 4). Middle-school-age and high-school-age youth (ages 11–17) use home computers to complete school assignments (57–64 percent), to connect to the Internet (54–63 percent), and to play games (60–63 percent).
- **Home is the most common location for Internet access, followed by school.** Although nearly all schools have Internet access, children and adolescents are more likely to access the Internet from their homes (table 6). Of those children and adolescents who use the Internet, 78 percent access it at home, compared to 68 percent who access it at school. Many of those who rely more on access at school come from lower income families (less than \$35,000 per year) or have parents who have not earned at least a high school credential.
- **Many disadvantaged children and adolescents use the Internet only at school.** Among the group of children and adolescents who access the Internet at only one location, 52 percent of those from families in poverty and 59 percent of those whose parents have not earned at least a high school credential do so at school. In comparison, 26 percent of those from families not in poverty and 39 percent of those with more highly educated parents do so only at school. This illustrates the role of schools in bridging the digital divide (table 7).
- **Considering all locations, use of the Internet for work on school assignments, e-mail, and games are common activities.** About 72 percent of Internet users ages 5–17 (or 42 percent of all youth in this age range) use the Internet to complete school

⁴ The prevalence of the use of a technology is measured in this report by the percentage of 5–17 year-olds using the technology. This report does not examine other aspects of the frequency of use, such as the number of incidents of use or the amount of time spent using technologies, because the CPS does not include these data.

assignments, while 65 percent of users (38 percent of all persons 5–17) use the Internet for e-mail or instant messaging and 62 percent of users (36 percent of all persons 5–17) use it to play games (tables 8 and 9).

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Introduction

Computers and the Internet recently passed a milestone: both are now used by a majority of Americans. Two-thirds of Americans used computers in 2001, up from about one-half in 1997, and 54 percent used the Internet, up from about a third in 1997. Comparable trend data have not been published for 5- to 17-year-olds, but among those ages 9 to 17, Internet use has increased from about one third in 1997 to about two thirds in 2001 (U.S. Department of Commerce 2002). Currently, the use of these technologies is more widespread among children and adolescents ages 5 through 17 than among adults: about 90 percent of 5- to 17-year-olds use computers and 59 percent use the Internet (table 1).

This report describes computer and Internet use by children and teens ages 5–17. This age range represents the modal ages for students in grades K-12, and has not been the focus of previous reports using the 2001 Current Population Survey (CPS) data. The purpose of this report is to provide interested researchers, policymakers, and the general public with a detailed view of computer and Internet use, examining the rates of use, how these technologies are used, where they are used, and the characteristics of users. This information provides a portrait of those who are embracing these technologies in large numbers and those who have yet to do so.

This report is based on data collected in the September Computer and Internet Use supplement to the 2001 Current Population Survey. Interviews were conducted in approximately 56,000 households. One respondent per household was interviewed and that respondent provided information both about the household and about individual household members, including information pertaining to their computer and Internet use.¹ Respondents provided information about the computer and Internet use experiences of 28,002 5- to 17-year-olds. The following questions are addressed using these data:

1. What percentage of children and adolescents use computers and the Internet?

¹ Because a household's informant may not have full information regarding computer and Internet use by other members of the household (especially when that use occurs at school), this method is a potential source of error in the data.

2. Is use by children and adolescents related to age, socioeconomic and demographic characteristics such as race/ethnicity, family income, parents' educational attainment, and other factors?
3. How do children and adolescents use home computers and the Internet?
4. Where do children and adolescents use computers? Where do they use the Internet? How many users use the Internet in only one place, and what locations do these users favor?
5. Do the ways children and adolescents use computers and the Internet, and where they use them, vary by children's and adolescents' demographic or socioeconomic characteristics?

All statistical comparisons in this report were tested for significance at the 95 percent confidence level ($p < .05$), and all reported differences are statistically significant, unless otherwise noted.

Current Use and User Characteristics

Growth Over Time

Rates of computer and Internet use by children and adolescents have increased rapidly. In 1984, data from the Current Population Survey indicated that 27 percent of students (from pre-kindergarten through college) used computers at school. By 1989 this number had increased to 43 percent; by 1997 it was 69 percent. Student use of computers at home has also shown increases, rising from 12 percent in 1984 to 19 percent in 1989, 27 percent in 1993, and 45 percent in 1997 (U.S. Department of Education 1999). Internet use by children and adolescents of elementary and high school age has also increased rapidly, growing from about one third of 9-through 17-year-olds in 1997 to about two thirds in 2001 (U.S. Department of Commerce 2002).

Current Use

Table 1 shows that about 90 percent of children and adolescents age 5 through 17 (47 million persons) use computers and about 59 percent (31 million persons) use the Internet. Figure 1 graphs the relationship between age and the use of these technologies (data shown in appendix table A1). About three quarters of children already use computers by the age of five, and a majority use the Internet by the age of nine. Among high-school-age youth (ages 15–17), more than 90 percent use computers and at least three quarters use the Internet.

Table 1. Percentage of children and adolescents age 5–17 who use computers and the Internet, by child and family/household characteristics: 2001

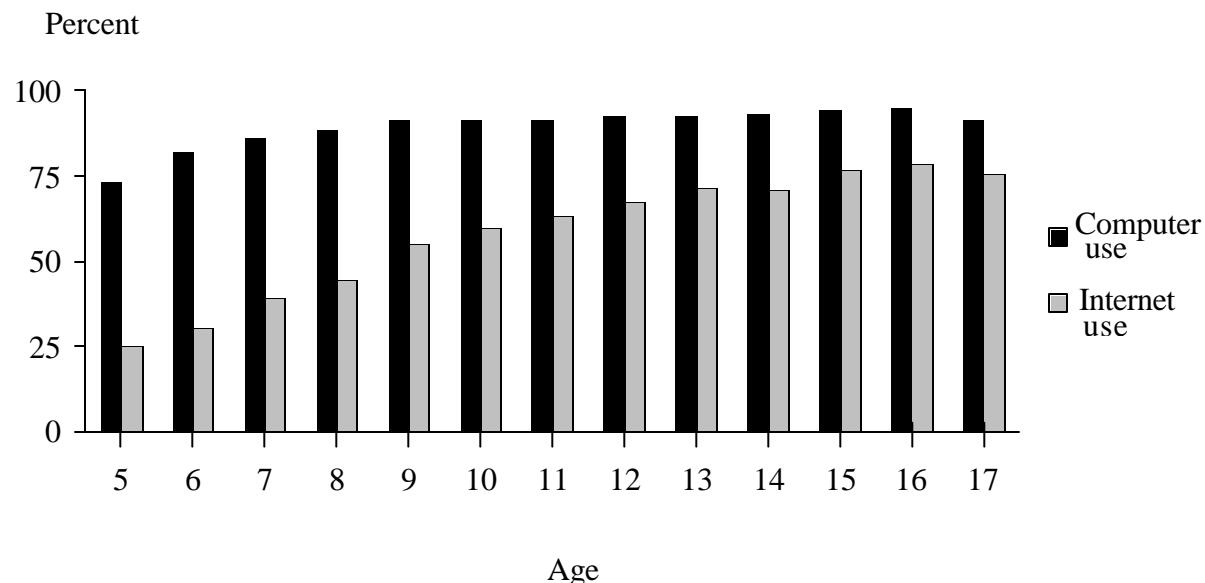
Characteristics	Number of children (in thousands)	Percent using computers		Percent using the Internet	
		Percent	s.e.	Percent	s.e.
Total (persons age 5–17)	53,013	89.5	0.30	58.5	0.49
Child characteristics					
Age					
5–7	11,990	80.5	0.83	31.4	0.97
8–10	12,455	90.5	0.60	53.5	1.02
11–14	16,493	92.6	0.47	68.3	0.83
15–17	12,075	93.4	0.52	77.1	0.87
Sex					
Female	25,835	90.0	0.43	58.6	0.70
Male	27,178	89.1	0.43	58.3	0.68
Race/ethnicity ¹					
White	33,433	93.4	0.31	66.7	0.59
Black	8,275	85.0	1.07	45.3	1.50
Hispanic	8,400	78.7	1.59	37.2	1.87
Asian	2,268	89.7	1.46	64.6	2.29
American Indian	637	89.8	2.74	53.5	4.51
Disability status					
Disabled	626	80.0	3.65	48.9	4.56
Not disabled	45,416	89.8	0.32	59.4	0.53
Family & household characteristics					
Parent educational attainment					
Less than high school credential	5,450	75.6	1.33	31.6	1.44
High school credential	13,611	87.2	0.65	50.2	0.98
Some college	15,665	92.0	0.49	63.2	0.88
Bachelor's degree	6,712	94.2	0.65	69.3	1.29
Graduate education	9,114	96.4	0.45	74.4	1.04
Family/household type					
Two parent household	37,230	91.3	0.33	62.2	0.57
Male householder	2,715	86.9	1.48	54.3	2.18
Female householder	12,440	85.5	0.72	48.8	1.02
Other arrangement	628	75.2	3.94	48.8	4.56
Household language					
Spanish-only	2,549	70.4	2.06	28.7	2.05
Not Spanish-only	50,464	90.5	0.30	60.0	0.50
Poverty status					
In poverty	9,277	80.5	1.33	36.7	1.61
Not in poverty	36,904	92.6	0.44	65.3	0.80
Family income					
Under \$20,000	8,344	80.1	1.00	36.5	1.20
\$20,000–\$34,999	8,852	86.3	0.83	48.8	1.21
\$35,000–\$49,999	7,438	92.0	0.72	62.8	1.28
\$50,000–\$74,999	9,530	93.6	0.57	67.1	1.10
\$75,000 or more	12,018	96.2	0.40	75.4	0.90
Urbanicity					
Metropolitan, city center	12,249	84.6	0.74	49.5	1.03
Metropolitan, not city center	23,566	91.1	0.42	61.9	0.72
Non-metropolitan	9,609	91.4	0.80	59.7	1.40

¹ White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding or missing data.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Figure 1. Percentage of 5–17 year-olds using computers or the Internet, by age: 2001



SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

“Digital Divide”

Although the adoption of these technologies has been rapid, it has occurred at disparate rates in different parts of American society. How computers and the Internet are used, and whether they are used at all, often vary by socioeconomic status (assessed in this report with measures of parent educational attainment, poverty status and/or family income) and other characteristics such as race/ethnicity, household composition, and urbanicity, such that the inequality of use has been termed a “digital divide” (U.S. Department of Commerce 1998; Norris 2001). This is particularly true of adults. While 82 percent of adults with an annual family income over \$75,000 used the Internet in 2001, only 24 percent of adults with an annual family income below \$20,000 did so (table A2). Large racial/ethnic and educational differences exist as well. Sixty percent of White and Asian adults used the Internet, compared to 47 percent of American Indians, 39 percent of Blacks, and 31 percent of Hispanics.² About 80 percent of adult college graduates used the Internet, but 42 percent with only a high school education were Internet users, and the rate of Internet use was only 17 percent among adults who had not

² “White,” “Black,” “Asian,” and “American Indian” refer to White non-Hispanic; Black non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic, respectively, and will be used throughout this report for ease of presentation. Hispanics may be of any race.

graduated from high school. This digital divide exists for children and adolescents as well, though many differences are smaller than those found between various groups of adults.

Table 1 shows computer and Internet use rates by individual, family, and household characteristics for 5–17-year-olds.³ Looking at individual characteristics, older adolescents are as much as 20 percentage points more likely to use computers than younger children and as much as 50 percentage points more likely to use the Internet (table A1). White 5–17-year-olds are more likely to use these technologies than their Black or Hispanic counterparts. In addition, those who are not disabled are more likely to use computers and the Internet than those with disabilities.

The family and household settings children and adolescents experience are also related to computer and Internet use. Five- through seventeen-year-olds from two-parent households are more likely to use these technologies than those from single-parent households,⁴ and those living with more highly educated parents are more likely to use these technologies than those living with less well educated parents. In addition, those living in households where Spanish is not the only language spoken are more likely to use computers and the Internet than those living in Spanish monolingual homes. Children and adolescents in families with higher incomes are more likely to use computers and the Internet than those in families with lower incomes. Children and adolescents who live outside of central cities are more likely to use computers and the Internet than those living in central cities.

A closer look at these differences provides a better picture of the magnitude of the differences in technology use between certain groups of children and adolescents. For instance, the rate of computer use for Black 5–17-year-olds is 8 percentage points lower than that of their White counterparts, and the difference in Internet use is even more pronounced at 21 percentage points. Differences between Whites and Hispanics are even larger (15 percentage points and 30

³ Appendix table A3 shows the characteristics of users and non-users, indicating the number and percentage of all users and non-users who belong to selected groups.

⁴ The categories for family structure in the CPS data are “two parent, male-headed single-householder, female-headed single-householder, and other arrangement.” When referring to the single householder categories, we use “single parent” or “single father” and “single mother” for ease of presentation. Some single-householders include non-relatives or relatives other than the father or mother such as a grandfather or grandmother.

percentage points, respectively). Among all racial/ethnic groups, Hispanics have the lowest rates of computer and Internet use, while Whites and Asians have the highest rates. Approximately 76 percent of children and adolescents from households where no parent has graduated from high school use computers and 32 percent of them use the Internet. Approximately 96 percent of children and adolescents from households where at least one parent attended graduate school use computers and 74 percent of them use the Internet. Eighty percent of poor 5- through 17-year-olds use computers compared to 93 percent of non-poor children, and the difference in Internet use is even larger.

There is also a clear difference in children's and adolescents' use in households where Spanish is the only language spoken compared to other households. For children and adolescents living in households that are Spanish-monolingual, the rate of computer use is 20 percentage points lower than those in households where other languages (usually English) are spoken. Internet use by 5-through 17-year olds in Spanish-monolingual households is about half that of 5-through 17-year olds in households where Spanish is not the only language spoken.

Disabilities are another source of differences. Adults with a disability are roughly half as likely to use the Internet as non-disabled adults and even less likely to have ever used a computer (U.S. Department of Commerce 2000). Adults with visual impairments use computers and the Internet at significantly lower rates than the rest of the adult population (Gerber and Kirchner 2001). The differences between disabled and non-disabled 5- through 17-year-olds are smaller than those found for adults, but they still exist. Comparing 5- through 17-year-olds with and without disabilities, the rates of computer and Internet use are both about 10 percentage points lower for those with disabilities.

One important difference in use has all but disappeared, however. In the past, males have used computers and the Internet at significantly higher rates than females (Clemente 1998; Riccobono 1986) and have reported more experience and skill with these technologies (Schumacher and Morahan-Martin 2001). More recently, as the use of these technologies has become more widespread, this gender gap has closed for both adults and children, and among both adults and youths today there are now no differences between the sexes in overall computer

or Internet use rates (U.S. Department of Commerce 2002; Miller, Schweingruber, and Brandenburg 2001, reporting on computers only). Figures in table 1 and appendix table A2 are consistent with this pattern.

In order to study how various factors related to computer and Internet use behave when they are looked at simultaneously, multiple logistic regression analyses were performed. Regressions can help answer questions such as, “If one controls for parent education, is family income still positively related to Internet use?”

Table 2 shows the results of regression analyses of the characteristics associated with computer and Internet use discussed to this point.⁵ Table 2 verifies several of the key findings about the digital divide that were shown in table 1. Increases in age,⁶ parental education, and family income are all associated with an increase in a child’s odds of using computers and the Internet. Black and Hispanic children are less likely to use computers and the Internet than White children, and Asian children are less likely to use computers than White children. Children living in central cities are less likely to use computers (but not less likely to use the Internet) than those living outside central cities. Those with disabilities are less likely to use the technologies than their non-disabled peers, and those from Spanish monolingual households are less likely to use the technologies than those from households where other languages are spoken. Also, no differences between boys and girls are observed. In these respects, the overall picture of technology use that is revealed by the regression analysis is essentially the same as the picture suggested by the bivariate analyses in table 1.

⁵ Multiple regression is a statistical procedure that identifies the association between each independent variable and the dependent variable while the other independent variables are held constant, or statistically controlled. This statistical control reveals each independent variable’s association with the variable being predicted. For details, see the Methodological and Technical Notes section.

⁶ Note that in the regression analyses, age is measured as a continuous variable. Age groupings were used in the bivariate tables.

Table 2. Logistic regression analyses of child and family/household characteristics and computer and Internet use: 2001

Independent variables	Computer Use			Internet Use		
	Parameter estimate	Standard error	Odds ratio	Parameter estimate	Standard error	Odds ratio
Child characteristics						
Age	0.14 *	0.01	1.16	0.24 *	0.01	1.27
Sex						
Female		reference category			reference category	
Male	-0.13	0.15	0.89	-0.03	0.05	0.98
Race/ethnicity ¹						
White		reference category			reference category	
Black	-0.45 *	0.10	0.64	-0.60 *	0.07	0.55
Hispanic	-0.59 *	0.12	0.55	-0.69 *	0.09	0.50
Asian	-0.35 *	0.16	0.71	0.00	0.11	1.00
American Indian	-0.01	0.31	0.99	-0.12	0.20	0.89
Disability status						
Not disabled		reference category			reference category	
Disabled	-0.74 *	0.26	0.48	-0.49 *	0.21	0.62
Missing disability status	-0.17	0.10	0.84	-0.39 *	0.07	0.68
Family & household characteristics						
Parent educational attainment						
Less than high school credential		reference category			reference category	
High school credential	0.43 *	0.12	1.54	0.46 *	0.10	1.58
Some college	0.79 *	0.12	2.20	0.89 *	0.10	2.42
Bachelor's degree	0.99 *	0.16	2.70	1.02 *	0.11	2.77
Graduate education	1.33 *	0.17	3.77	1.17 *	0.11	3.22
Missing parent education	0.06	0.16	1.06	0.27	0.14	1.31
Family/household type						
Two parent household		reference category			reference category	
Male householder	-0.13	0.15	0.88	-0.11	0.11	0.89
Female householder	0.00	0.09	1.00	0.00	0.06	1.00
Other arrangement	-0.84 *	0.24	0.43	-0.24	0.21	0.79
Household language						
Not Spanish-only		reference category			reference category	
Spanish-only	-0.21 *	0.08	0.81	-0.16 *	0.08	0.85
Poverty status						
Not in poverty		reference category			reference category	
In poverty	0.02	0.16	1.02	-0.10	0.12	0.90
Family income						
Under \$20,000		reference category			reference category	
\$20,000-\$34,999	0.29	0.16	1.34	0.27 *	0.12	1.31
\$35,000-\$49,999	0.61 *	0.19	1.85	0.68 *	0.14	1.97
\$50,000-\$74,999	0.64 *	0.19	1.90	0.65 *	0.14	1.92
\$75,000 or more	0.90 *	0.20	2.45	0.90 *	0.14	2.47
Missing family income	-0.04	0.18	0.96	0.18	0.14	1.20
Urbanicity						
Metropolitan, city center		reference category			reference category	
Metropolitan, not city center	0.21 *	0.09	1.23	0.09	0.06	1.10
Non-metropolitan	0.32 *	0.12	1.38	0.10	0.08	1.11
Missing urbanicity	0.21	0.12	1.23	0.16 *	0.08	1.17
Constant	-0.29	0.24	0.75	-3.30 *	0.19	0.04

* p < .05

¹ White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: The number of cases analyzed is 28,002. Missing data are modeled to retain 10,370 cases for which data are missing for one or more independent variables.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Other findings from table 1 do not appear significant in the regression analysis. Although table 1 shows differences between children in single-parent households and children in other family situations and between those living in poverty and those not in poverty, these results are not observed in the regression analysis. When studied in isolation in table 1, these factors are related to computer and Internet use, but when other factors are considered these relationships are no longer significant. This suggests that other characteristics that were controlled for in the regression model, such as income and parent education level, may account for the differences in children's odds of using computers and the Internet. Notwithstanding the non-significance of certain variables in the regression analysis, it is still important to examine the bivariate statistics for these variables because the bivariate statistics accurately describe the population.⁷

Having looked at the overall rate of computer use among 5–17 year olds and the characteristics of users, the next few sections describe where and how the children and adolescents use computers and the Internet.⁸

⁷ For example, after controlling for other factors such as household income, family structure is not significantly related to computer and Internet use. However, it is the case that fewer children from single-parent families use computers and the Internet.

⁸ This report does not examine the frequency of use or the amount of time spent using computers or the Internet because the CPS does not collect such data.

Home and School Computer Use

Home and school are the primary locations where children and adolescents use computers. Table 3 compares the rates of computer use at these two locations.⁹ Eighty-one percent of 5–17 year-olds use computers at school and 65 percent use computers at home.¹⁰ In general, more use computers at school than at home, but among those from households where the highest parental education was a graduate education, and those from families with incomes above \$75,000, the rate of use at home (90 and 89 percent, respectively) was slightly higher than the rate of use at school (85 percent).¹¹

Table 3 reveals demographic and socioeconomic differences in the use of home computers that parallel those found in the overall use of computers. There are racial/ethnic gaps in home use: 41 percent of Blacks and Hispanics use computers at home and 54 percent of American Indians do so, compared to 76–77 percent of Whites and Asians. There is also a difference in home use between children and adolescents from the lowest and highest family incomes. Only 31 percent of those from families with incomes less than \$20,000 use computers at home, compared to 89 percent of those living in families with annual incomes over \$75,000. Larger still is the gap between children and adolescents whose parents have the least and the most education: while 26 percent of those whose parents did not complete high school use computers at home, 90 percent of those living with at least one parent who has attended graduate school use a computer at home.

Table 3 also shows that differences between groups in home computer use are generally not as pronounced when focusing on school computer use. While the gap in home computer use by parental education level noted above is 64 percentage points, at school it is 14 percentage points. While the differences in home computer use between 5–17-year-olds living in two-parent households compared to those living in single father or single mother households was 20 and 29

⁹ For estimates of characteristics of persons using computers at home and at school, see appendix table A3.

¹⁰ Analyses in this report include children and adolescents who are enrolled in school and those who are not. About 93 percent of individuals age 5–17 in the 2001 September CPS are enrolled in school. Among those enrolled, 87 percent use computers at school and 67 percent use computers at home.

¹¹ There is substantial overlap in these two populations; 63 percent of 5–17 year-olds who have a parent with a graduate education also have a family income over \$75,000 per year.

Table 3. Percentage of children and adolescents age 5–17 using computers at home and at school, by child and family/household characteristics: 2001

Characteristics	Number of children (in thousands)	Percent using computers at home		Percent using computers at school	
		Percent	s.e.	Percent	s.e.
All persons age 5–17	53,013	65.2	0.47	80.7	0.39
Child Characteristics					
Age					
5–7	11,990	56.4	1.03	68.2	0.97
8–10	12,455	62.7	0.99	83.1	0.77
11–14	16,493	68.6	0.82	85.2	0.63
15–17	12,075	72.0	0.93	84.5	0.75
Sex					
Female	25,835	65.7	0.67	81.6	0.55
Male	27,178	64.8	0.66	79.9	0.55
Race/ethnicity ¹					
White	33,433	76.9	0.53	83.5	0.46
Black	8,275	41.0	1.48	79.8	1.21
Hispanic	8,400	40.6	1.90	71.8	1.74
Asian	2,268	75.7	2.06	76.1	2.04
American Indian	637	54.1	4.51	83.0	3.40
Disability status					
Disabled	626	58.4	4.50	71.5	4.12
Not disabled	45,416	65.7	0.51	81.4	0.42
Family & household characteristics					
Parent educational attainment					
Less than high school credential	5,450	26.2	1.36	70.6	1.41
High school credential	13,611	53.7	0.98	80.2	0.78
Some college	15,665	70.7	0.83	82.0	0.70
Bachelor's degree	6,712	80.8	1.10	84.8	1.00
Graduate education	9,114	90.2	0.71	85.0	0.85
Family/household type					
Two parent household	37,230	73.3	0.52	81.5	0.46
Male householder	2,715	53.8	2.18	78.6	1.80
Female householder	12,440	44.1	1.02	79.6	0.82
Other arrangement	628	51.1	4.56	63.6	4.38
Household language					
Spanish-only	2,549	29.2	2.06	64.2	2.17
Not Spanish-only	50,464	67.0	0.48	81.6	0.39
Poverty status					
In poverty	9,277	31.9	1.56	75.2	1.44
Not in poverty	36,904	75.2	0.72	83.1	0.63
Family income					
Under \$20,000	8,344	31.2	1.16	75.3	1.08
\$20,000–\$34,999	8,852	50.9	1.21	78.3	1.00
\$35,000–\$49,999	7,438	70.7	1.20	83.1	0.99
\$50,000–\$74,999	9,530	80.1	0.93	83.9	0.86
\$75,000 or more	12,018	89.3	0.64	85.4	0.74
Urbanicity					
Metropolitan, city center	12,249	52.7	1.03	76.0	0.88
Metropolitan, not city center	23,566	71.9	0.67	81.4	0.58
Non-metropolitan	9,609	63.1	1.38	84.3	1.04

¹ White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

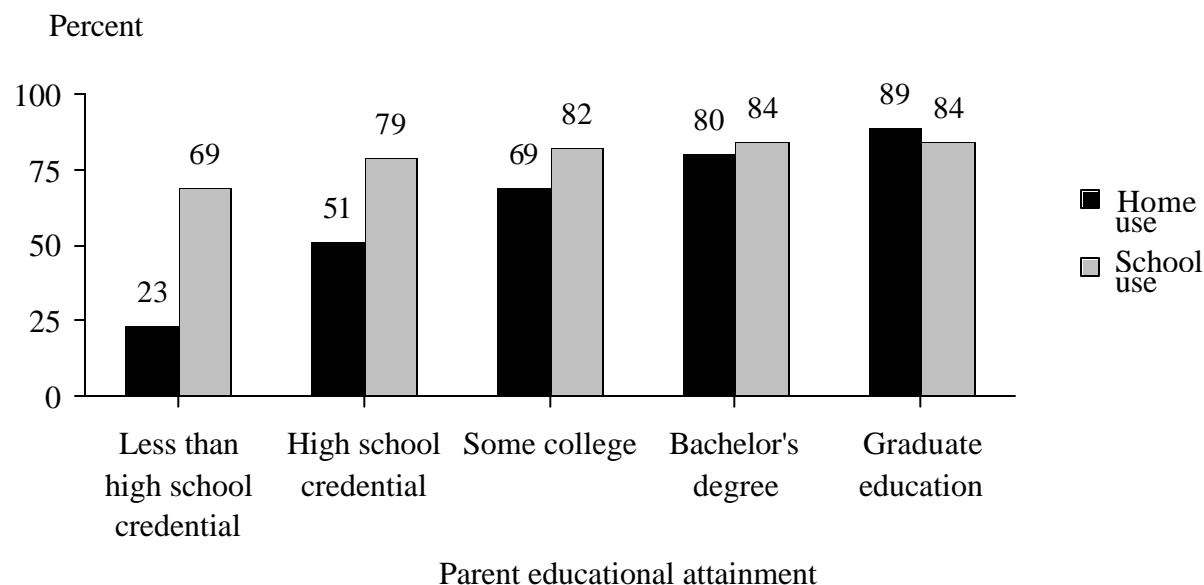
NOTE: s.e. is standard error. Detail may not sum to total due to rounding or missing data.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

percentage points, respectively, no differences are detectable between these groups in terms of computer use at school. Although there are gaps in school computer use by race/ethnicity, home language, and socioeconomic status (parental education, family income, and poverty), most of these gaps are narrower than they are for home computer use.

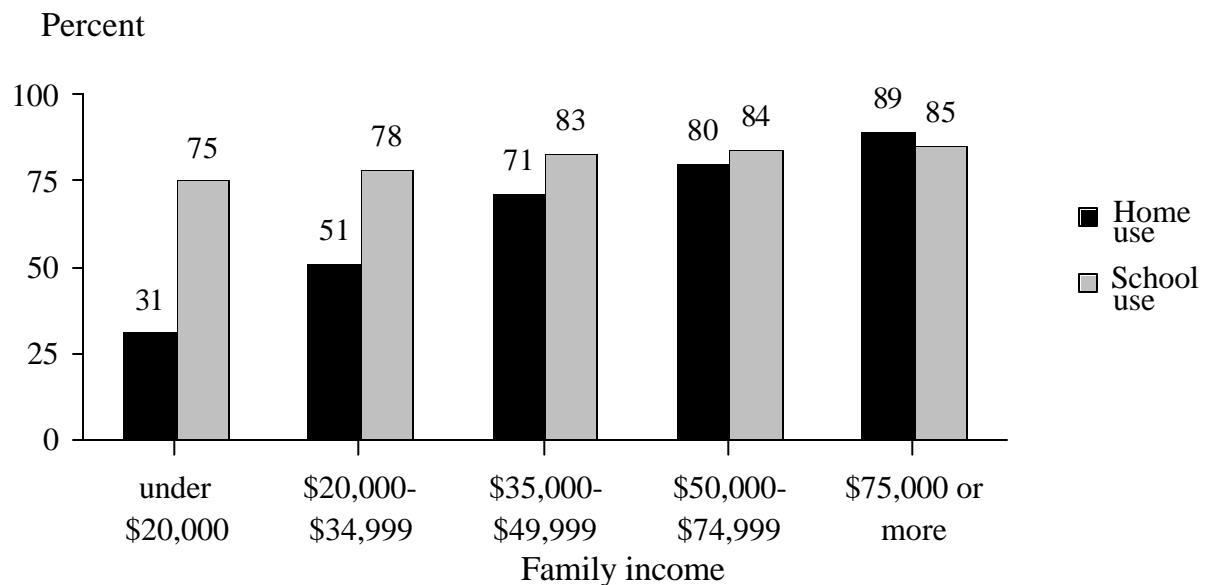
The narrowing of differences in use rates at school compared to home use is illustrated in figures 2, 3, and 4. Figure 2 shows that the percentage of children and adolescents using computers at home increases as their parents' educational attainment increases, but that the percentage using computers at school is more nearly equal across the levels of parental education. Figure 3 shows the same pattern for family income: home computer use rates increase as family income increases, but use of computers at school remains relatively high across all levels of income. Similarly, figure 4 shows that differences in computer use between some racial/ethnic groups are smaller at school than at home.

Figure 2. Percentage of children and adolescents using computers at home and at school, by parent educational attainment: 2001



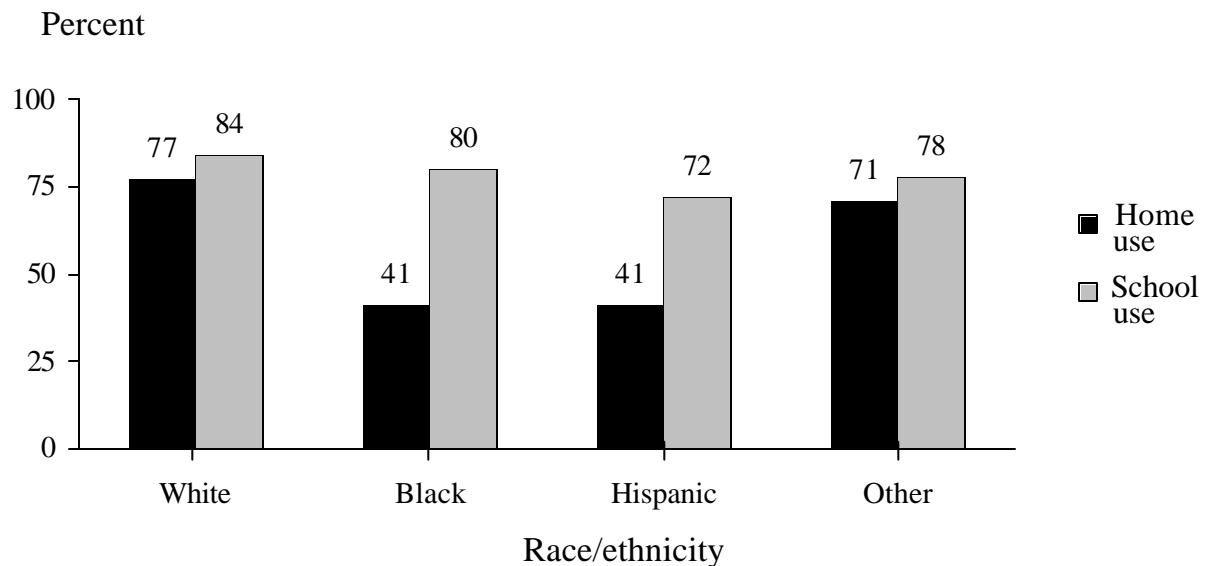
SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Figure 3. Percentage of children and adolescents using computers at home and at school, by family income: 2001



SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Figure 4. Percentage of children and adolescents using computers at home and at school, by race/ethnicity: 2001



SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Home Computer Activities

It is useful to examine computer use in two ways.¹² First, this section estimates the percentage of children and adolescents ages 5–17 who use computers in various ways. Second, it controls for computer use by looking at just those children and adolescents who use computers at home. When home computer use is controlled, some apparent group differences in the ways 5- through 17-year-olds use computers appear to be a function of home use.

Table 4 shows how 5- through 17-year-olds use home computers. Children use computers for a wide variety of activities encompassing work, education, and play, making computers a significant part of young people's everyday lives. Most play computer games, and a majority of middle-school-age and high-school-age youth (ages 11–17) use home computers to complete school assignments and connect to the Internet. A majority of teens ages 15–17 also use home computers for e-mail, and about half use them for word processing.¹³

The percentage of children and adolescents who use computers in various ways varies by individual, family, and household characteristics. As shown in table 4, most of the characteristics that are associated with the digital divide (e.g., race/ethnicity, family income, and parent educational attainment) are also associated with differences in the ways children and adolescents use computers at home. In many cases, differences in how computers are used are even more pronounced than the differences in the rates of use. For example, there is a 21 percentage point gap in computer use between children and adolescents from households where no parent has received a high school credential and those from households where at least one parent has some graduate school education (table 1). The difference between these two groups' use of computers for word processing is about 41 percentage points, and is about 44 percentage points for using computers to complete school assignments. The disparity is even larger for the use of home computers to connect to the Internet. Approximately 15 percent of those ages 5–17 with the

¹² The data do not support analysis of the quality of software or hardware available or the convenience of access.

¹³ CPS data concerning computer activities were only collected for activities with home computers, not computers at school or any other location. Questions concerning some computer applications were only asked for users age 15 and older. These applications were spreadsheets or databases, graphics and design, and managing household records or finances. Activities analyzed here are based on the wording of survey questions; further details on activities are not available.

Table 4. Percentage of persons age 5–17 using home computers for specific activities, by child and family/household characteristics: 2001

User Characteristics	Total number (in thousands)	Home computer activity															
		Word processing		Connect to the Internet		E-mail		Spreadsheets or databases ¹		Graphics and design ¹		Complete school assignments		Manage household records or finances ¹		Play games	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
All persons age 5–17	53,013	32.4	0.5	45.6	0.5	34.4	0.5	—	†	—	†	44.2	0.5	—	†	59.2	0.5
Child characteristics																2.8	0.2
Age																	
5–7	11,990	9.4	0.6	22.6	0.9	9.5	0.6	—	†	—	†	13.8	0.7	—	†	54.0	1.0
8–10	12,455	23.8	0.9	39.5	1.0	23.9	0.9	—	†	—	†	37.7	1.0	—	†	58.8	1.0
11–14	16,493	42.1	0.9	54.1	0.9	43.3	0.9	—	†	—	†	56.6	0.9	—	†	62.9	0.9
15–17	12,075	50.9	1.0	62.9	1.0	57.7	1.0	17.1	0.8	23.6	0.9	64.2	1.0	2.9	0.3	59.6	1.0
Sex																	
Female	25,835	34.7	0.7	45.7	0.7	36.1	0.7	3.9	0.3	5.6	0.3	45.4	0.7	0.7	0.1	58.3	0.7
Male	27,178	30.3	0.6	45.5	0.7	32.7	0.6	3.9	0.3	5.2	0.3	43.1	0.7	0.6	0.1	60.0	0.7
Race/ethnicity ²																	
White	33,433	39.3	0.6	55.2	0.6	42.7	0.6	4.7	0.3	6.4	0.3	52.1	0.6	0.8	0.1	70.2	0.6
Black	8,275	18.9	1.2	27.3	1.3	18.8	1.2	2.0	0.4	3.0	0.5	28.3	1.4	0.5	0.2	37.7	1.5
Hispanic	8,400	17.0	1.5	23.1	1.6	15.1	1.4	2.3	0.6	3.1	0.7	26.7	1.7	#	†	35.6	1.9
Asian	2,268	40.4	2.3	57.3	2.4	43.7	2.4	5.0	1.0	7.1	1.2	54.3	2.4	0.6	0.4	64.3	2.3
American Indian	637	20.7	3.7	31.7	4.2	20.8	3.7	2.1	1.3	2.3	1.4	32.0	4.2	0.5	0.6	51.7	4.5
Disability status																	
Disabled	626	23.5	3.9	29.8	4.2	21.1	3.7	3.0	1.6	5.1	2.0	34.4	4.3	#	†	54.4	4.5
Not disabled	45,416	33.0	0.5	45.9	0.5	35.0	0.5	3.8	0.2	5.5	0.2	45.0	0.5	0.5	0.1	59.8	0.5

See footnotes at end of table.

Table 4. Percentage of persons age 5–17 using home computers for specific activities, by child and family/household characteristics: 2001—Continued

User Characteristics	Total number of children (in thousands)	Home computer activity																	
		Word processing		Connect to the Internet		E-mail		Spreadsheets or databases ¹		Graphics and design ¹		Complete school assignments		Manage household records or finances ¹					
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.				
Family & household characteristics																			
Parent educational attainment																			
Less than high sch. credential	5,450	11.1	1.0	14.5	1.1	10.4	0.9	1.5	0.4	1.9	0.4	18.3	1.2	#	†	22.8	1.3	1.0	0.3
High school credential	13,611	22.8	0.8	35.1	0.9	27.3	0.9	2.8	0.3	3.8	0.4	35.5	0.9	#	†	49.3	1.0	2.0	0.3
Some college	15,665	34.3	0.9	48.7	0.9	36.0	0.9	4.0	0.4	5.8	0.4	47.5	0.9	0.7	0.2	64.6	0.9	2.9	0.3
Bachelor's degree	6,712	42.8	1.4	60.8	1.4	45.2	1.4	5.3	0.6	7.2	0.7	55.5	1.4	0.9	0.3	72.9	1.2	3.1	0.5
Graduate education	9,114	52.2	1.2	67.6	1.1	52.1	1.2	6.2	0.6	8.3	0.7	62.5	1.2	0.9	0.2	81.7	0.9	4.7	0.5
Family/household type																			
Two parent household	37,230	36.6	0.6	51.6	0.6	38.8	0.6	4.4	0.2	5.8	0.3	49.6	0.6	0.7	0.1	66.6	0.6	2.9	0.2
Male householder	2,715	26.7	1.9	37.8	2.1	29.8	2.0	4.0	0.9	6.7	1.1	37.9	2.1	1.0	0.4	48.5	2.2	3.5	0.8
Female householder	12,440	21.9	0.8	29.7	0.9	22.4	0.9	2.6	0.3	3.7	0.4	30.3	0.9	#	†	40.1	1.0	2.1	0.3
Other arrangement	628	19.1	3.6	36.3	4.4	26.9	4.0	1.8	1.2	4.5	1.9	30.4	4.2	0.7	0.8	43.8	4.5	3.2	1.6
Household language																			
Spanish-only	2,549	12.0	1.5	14.5	1.6	10.7	1.4	1.3	0.5	2.2	0.7	19.1	1.8	#	†	23.5	1.9	1.0	0.4
Not Spanish-only	50,464	33.5	0.5	47.1	0.5	35.6	0.5	4.0	0.2	5.5	0.2	45.5	0.5	0.7	0.1	61.0	0.5	2.8	0.2
Poverty status																			
In poverty	9,277	12.5	1.1	17.2	1.3	12.1	1.1	1.6	0.4	1.9	0.5	20.1	1.3	#	†	28.7	1.5	1.5	0.4
Not in poverty	36,904	38.7	0.8	53.7	0.8	40.7	0.8	4.5	0.3	6.4	0.4	51.4	0.8	0.7	0.1	68.5	0.8	3.1	0.3
Family income																			
Under \$20,000	8,344	13.1	0.8	16.8	0.9	11.8	0.8	1.7	0.3	2.1	0.4	20.0	1.0	#	†	28.3	1.1	1.7	0.3
\$20,000–\$34,999	8,852	21.0	1.0	30.8	1.1	22.7	1.0	2.1	0.3	3.2	0.4	31.4	1.1	#	†	46.3	1.2	1.9	0.3
\$35,000–\$49,999	7,438	32.1	1.2	47.7	1.3	34.9	1.3	3.6	0.5	5.0	0.6	46.7	1.3	0.6	0.2	65.6	1.3	2.2	0.4
\$50,000–\$74,999	9,530	40.0	1.1	56.9	1.2	42.6	1.2	4.6	0.5	6.8	0.6	55.2	1.2	0.7	0.2	73.8	1.0	3.2	0.4
\$75,000 or more	12,018	52.2	1.0	69.3	1.0	54.0	1.0	6.5	0.5	8.8	0.6	63.7	1.0	1.1	0.2	79.8	0.8	4.3	0.4
Urbanicity																			
Metropolitan, city center	12,249	25.0	0.9	36.1	1.0	26.0	0.9	3.0	0.4	4.2	0.4	35.1	1.0	0.6	0.2	48.3	1.0	2.3	0.3
Metropolitan, outlying areas	23,566	36.5	0.7	50.8	0.7	38.5	0.7	4.4	0.3	5.7	0.3	49.2	0.7	0.7	0.1	64.4	0.7	2.9	0.2
Non-metropolitan	9,609	30.8	1.3	42.6	1.4	33.3	1.3	3.6	0.5	5.4	0.6	42.3	1.4	0.7	0.2	58.5	1.4	2.5	0.4

[†] Not applicable.

— Not available. Data were not collected.

Percentage less than 0.5.

¹ Questions about some computer activities were asked only about persons age 15 and older.² White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding, missing data, and multiple response.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

least educated parents use computers for this purpose compared to 68 percent of those living with the most educated parents (a 53 percentage point difference).

There are other differences in home computer use activities by race/ethnicity and family income. Whites and Asians are more likely than Blacks, Hispanics, and American Indians to use computers for word processing (39 percent and 40 percent versus 19 percent, 17 percent, and 21 percent, respectively), connecting to the Internet (55 percent and 57 percent versus 27 percent, 23 percent, and 32 percent, respectively), e-mail (43 percent and 44 percent versus 19 percent, 15 percent, and 21 percent, respectively), and completing school assignments (52 percent and 54 percent versus 28 percent, 27 percent, and 32 percent, respectively). Children and adolescents living in families with incomes of \$75,000 or more per year are more than four times as likely to use e-mail at home than children and adolescents from families with incomes under \$20,000 annually. They are also about four times as likely to do word processing, and about three times as likely to use home computers to complete school assignments.

Although there is no difference between boys and girls in overall use of computers, boys and girls differ in some of the ways they use computers. When looking at 5- through 17-year-olds, girls are slightly more likely than boys to use home computers for e-mail, word processing, and completing school assignments.

Table 4 presents data on what child and adolescent characteristics are associated with particular kinds of home computer activities for the entire 5–17 -year-old population. Table 5 controls for home computer use by looking at just those children and adolescents who use computers at home. Many general patterns found in the broader 5- through 17-year-old age group hold when focusing just on those who use computers at home. For instance, the most popular home computer activity among children ages 5-7, 8- 10, and 11-14 is playing games. Indeed, nearly all young children who use computers at home use them to play games. For older teens (ages 15–17) who use computers at home, activities such as word processing, connecting to the Internet, e-mailing, completing school assignments, and playing games are all common; 71 to 89 percent of home users ages 15–17 use the home computer for these activities.

Table 5. Percentage of home computer users age 5–17 who use home computers for specific activities, by child and family/household characteristics: 2001

User Characteristics	Number of children using computers at home (in thousands)	Home computer activity															
		Word processing		Connect to the Internet		E-mail		Spreadsheets or databases ¹		Graphics and design ¹		Complete school assignments		Manage household records or finances ¹		Play games	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
All persons age 5–17	34,573	49.7	0.6	69.9	0.6	52.7	0.6	—	†	—	†	67.8	0.6	—	†	90.8	0.4
Child Characteristics																	
Age																	
5–7	6,760	16.7	1.0	40.1	1.4	16.9	1.0	—	†	—	†	24.4	1.2	—	†	95.8	0.6
8–10	7,810	38.0	1.3	63.0	1.2	38.1	1.3	—	†	—	†	60.1	1.3	—	†	93.8	0.6
11–14	11,312	61.4	1.0	78.9	0.9	63.1	1.0	—	†	—	†	82.6	0.8	—	†	91.8	0.6
15–17	8,691	70.7	1.1	87.4	0.8	80.2	1.0	23.8	1.0	32.8	1.1	89.2	0.8	4.0	0.5	82.8	0.9
Sex																	
Female	16,963	52.8	0.9	69.6	0.8	55.0	0.9	5.9	0.4	8.5	0.5	69.2	0.8	1.1	0.2	88.8	0.6
Male	17,609	46.8	0.9	70.2	0.8	50.5	0.9	6.0	0.4	8.0	0.5	66.5	0.8	0.9	0.2	92.7	0.4
Race/ethnicity ²																	
White	25,715	51.1	0.7	71.8	0.6	55.5	0.7	6.2	0.3	8.4	0.4	67.7	0.7	1.0	0.1	91.3	0.4
Black	3,389	46.2	2.3	66.5	2.2	46.0	2.3	4.9	1.0	7.4	1.2	69.2	2.2	1.3	0.5	92.2	1.3
Hispanic	3,408	41.9	3.0	56.9	3.0	37.3	2.9	5.6	1.4	7.7	1.6	65.8	2.9	0.9	0.6	87.6	2.0
Asian	1,716	53.4	2.7	75.7	2.4	57.7	2.7	6.6	1.4	9.4	1.6	71.8	2.5	0.8	0.5	85.0	2.0
American Indian	345	38.3	6.0	58.6	6.1	38.5	6.0	3.8	2.4	4.2	2.5	59.1	6.0	0.9	1.2	95.6	2.5
Disability status																	
Disabled	365	40.2	5.9	51.1	6.0	36.2	5.7	5.2	2.7	8.7	3.4	59.0	5.9	‡	†	93.2	3.0
Not disabled	29,832	50.2	0.7	69.9	0.6	53.3	0.7	5.9	0.3	8.4	0.4	68.4	0.6	0.8	0.1	91.0	0.4

See footnotes at end of table.

Table 5. Percentage of home computer users age 5–17 who use home computers for specific activities, by child and family/household characteristics: 2001—Continued

User Characteristics	Number of children using computers at home (in thousands)	Home computer activity																	
		Word processing		Connect to the Internet		E-mail		Spreadsheets or databases ¹		Graphics and design ¹		Complete school assignments		Manage household records or finances ¹		Play games			
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.		
Family & household characteristics																			
Parent educational attainment																			
Less than high sch. credential	1,431	42.5	3.0	55.2	3.0	39.5	3.0	5.7	1.4	7.1	1.6	69.6	2.8	1.5	0.7	86.8	2.0	3.8	1.2
High school credential	7,306	42.5	1.3	65.4	1.3	50.9	1.3	5.3	0.6	7.0	0.7	66.1	1.3	0.7	0.2	91.8	0.7	3.7	0.5
Some college	11,076	48.5	1.1	68.9	1.0	51.0	1.1	5.7	0.5	8.1	0.6	67.2	1.0	1.0	0.2	91.4	0.6	4.0	0.4
Bachelor's degree	5,425	53.0	1.5	75.2	1.3	55.9	1.5	6.6	0.8	8.9	0.9	68.7	1.4	1.1	0.3	90.1	0.9	3.9	0.6
Graduate education	8,216	57.9	1.2	75.0	1.1	57.8	1.2	6.9	0.6	9.2	0.7	69.3	1.2	1.0	0.3	90.6	0.7	5.2	0.6
Family/household type																			
Two parent household	27,304	49.9	0.7	70.3	0.6	53.0	0.7	5.9	0.3	8.0	0.4	67.6	0.6	1.0	0.1	90.8	0.4	4.0	0.3
Male householder	1,460	49.7	3.0	70.2	2.7	55.5	3.0	7.4	1.6	12.6	2.0	70.5	2.7	1.9	0.8	90.2	1.8	6.4	1.5
Female householder	5,488	49.7	1.5	67.3	1.4	50.7	1.5	5.9	0.7	8.4	0.9	68.8	1.4	1.0	0.3	90.8	0.9	4.9	0.7
Other arrangement	321	37.3	6.2	70.9	5.8	52.5	6.4	3.5	2.3	8.8	3.6	59.5	6.3	†	†	85.7	4.5	6.3	3.1
Household language																			
Spanish-only	744	41.0	4.1	49.6	4.2	36.8	4.0	4.4	1.7	7.5	2.2	65.6	4.0	1.2	0.9	80.4	3.3	3.5	1.5
Not Spanish-only	33,828	49.9	0.6	70.3	0.6	53.1	0.6	6.0	0.3	8.2	0.3	67.8	0.6	1.0	0.1	91.0	0.4	4.2	0.2
Poverty status																			
In poverty	2,955	39.2	2.9	54.1	3.0	38.1	2.9	5.1	1.3	5.9	1.4	63.2	2.9	1.2	0.6	90.0	1.8	4.6	1.2
Not in poverty	27,763	51.4	1.0	71.4	0.9	54.1	1.0	6.0	0.5	8.5	0.5	68.3	0.9	0.9	0.2	91.1	0.6	4.2	0.4
Family income																			
Under \$20,000	2,600	42.1	2.2	53.9	2.2	37.9	2.2	5.5	1.0	6.6	1.1	64.3	2.1	1.4	0.5	90.8	1.3	5.4	1.0
\$20,000–\$34,999	4,503	41.3	1.7	60.5	1.7	44.6	1.7	4.2	0.7	6.3	0.8	61.7	1.7	#	†	90.9	1.0	3.7	0.6
\$35,000–\$49,999	5,257	45.3	1.6	67.5	1.5	49.3	1.6	5.0	0.7	7.1	0.8	66.1	1.5	0.9	0.3	92.9	0.8	3.1	0.5
\$50,000–\$74,999	7,632	50.0	1.3	71.0	1.2	53.2	1.3	5.8	0.6	8.6	0.7	68.9	1.2	0.8	0.2	92.1	0.7	3.9	0.5
\$75,000 or more	10,726	58.5	1.1	77.7	0.9	60.5	1.1	7.3	0.6	9.9	0.7	71.4	1.0	1.2	0.2	89.4	0.7	4.8	0.5
Urbanicity																			
Metropolitan, city center	6,460	47.4	1.4	68.4	1.3	49.2	1.4	5.7	0.7	8.0	0.8	66.6	1.3	1.1	0.3	91.5	0.8	4.4	0.6
Metropolitan, outlying areas	16,937	50.8	0.9	70.7	0.8	53.5	0.9	6.1	0.4	7.9	0.5	68.5	0.8	1.0	0.2	89.6	0.5	4.0	0.3
Non-metropolitan	6,063	48.8	1.8	67.6	1.7	52.8	1.8	5.7	0.8	8.6	1.0	67.0	1.7	1.1	0.4	92.7	0.9	3.9	0.7

¹ Not available. Data were not collected.

† Not applicable.

Percentage less than 0.5.

‡ Too few cases to report.

¹ Questions about some computer activities were asked only of persons age 15 and older.² White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding, missing data, or multiple response.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Controlling for the use of computers at home reduces the magnitude of many group differences in computer use and eliminates some of them, but differences remain nonetheless. For instance, comparing children and adolescents from households where parents have not completed high school to those from households where parents have attended graduate school, differences in the use of computers for word processing, connecting to the Internet, and e-mailing range between 15 and 20 percentage points. The differences are smaller than observed in the larger 5–17 population where differences between these two groups for these activities ranged between 41 and 53 percentage points. Differences in the use of computers for school assignments by parent education essentially disappear once home use of computers is controlled.

Racial/ethnic differences in the use of computers seem to largely be a function of home access. Looking just at those children and adolescents with access to computers at home, few of the differences between racial/ethnic groups seen in the 5- through 17-year-old population at large remain or, if they do, are largely reduced. No differences were detected between racial/ethnic groups who had access to computers at home in terms of their use of computers to complete school assignments. Some differences between White and Black or Hispanic children do persist (e.g. connecting to the Internet, word processing, and e-mailing), but even these differences are significantly reduced once home computer access is taken into account.

Differences between 5- through 17-year-olds living in families with incomes under \$20,000 per year and those with incomes of \$75,000 or more per year persist for certain activities: word processing, connecting to the Internet, e-mailing, and completing school assignments. However, the magnitude of the differences is significantly reduced when home computer use is kept constant.

Controlling for home use does not change the differences in computer use between girls and boys for most types of activities. Girls are still slightly more likely than boys to use home computers for e-mail, word processing, and school assignments. Boys, on the other hand, are still more likely to use home computers to play games than are girls; this finding was not present when looking at all boys and girls.

Internet Access Locations

The high rate at which young people use the Internet is partly attributable to the availability of this technology in schools, where a major effort to move schools online contributed to nearly all public schools (98%) having some level of Internet access by 2000 (Cattagni and Farris 2001; U.S. Department of Education 2000). Although a comparable estimate is not available for private schools, they have made major gains as well (Levin, Hurst, and Burns 2000). However, differences among schools persist in student access to computer resources, including student/computer and computer/classroom ratios, both of which affect the availability and convenience of Internet access at school (Parsad, Skinner, and Farris 2001; Rathbun and West, 2003).

Although nearly all schools have Internet access, the home is more widely used as an Internet access location. In the CPS, respondents are asked to identify locations where household members use the Internet. Of those children and adolescents who use the Internet, 78 percent access the Internet from home, compared to 68 percent who access it from school. About 15 percent of children and adolescents access the Internet from someone else's home or from a public library. About 1 percent each access the Internet from a community center or some other place (table 6).

Inequalities in computer and Internet use manifest themselves in the locations where children and adolescents log in to the Internet. Given the role of computers in accessing the Internet, it is not surprising that Internet home-use rates are highest among those groups who are most likely to have computers at home. These groups include Asians, Whites, children and adolescents living with more highly educated parents, those living with two parents, and those from families with higher incomes.

Although the largest overall percentage of users logs in from home, several groups of users rely more heavily on access through schools or other locations. Children and adolescents more likely to connect to the Internet from school than from home are from households where no parent has earned a high school diploma or equivalent, households headed by single mothers,

Table 6. Percentage of Internet users age 5–17 who use the Internet at specific locations, by child and family/household characteristics: 2001

Characteristics of users	Number of children (in thousands)	Internet use locations											
		Own Home		School		Public Library		Community Center		Someone Else's Home		Some Other Place	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
All persons age 5–17	30,989	77.9	0.54	67.7	0.61	15.4	0.47	1.1	0.14	15.1	0.46	1.2	0.14
Child characteristics													
Age													
5–7	3,766	72.0	1.67	53.3	1.86	10.1	1.12	0.8	0.33	8.7	1.05	1.7	0.48
8–10	6,658	74.0	1.23	63.4	1.35	12.2	0.92	0.8	0.25	11.4	0.89	0.9	0.26
11–14	11,260	79.2	0.87	70.8	0.98	17.3	0.81	1.3	0.24	16.6	0.80	1.2	0.23
15–17	9,306	81.6	0.92	72.9	1.05	17.6	0.90	1.3	0.27	18.4	0.92	1.1	0.25
Sex													
Female	15,149	77.9	0.77	67.8	0.87	16.2	0.68	1.0	0.18	15.8	0.68	1.0	0.18
Male	15,840	78.0	0.75	67.7	0.85	14.7	0.64	1.2	0.20	14.4	0.64	1.3	0.21
Race/ethnicity ¹													
White	22,316	82.7	0.58	68.5	0.71	12.4	0.50	0.8	0.14	16.0	0.56	1.1	0.16
Black	3,747	60.2	2.19	66.5	2.11	29.2	2.03	2.9	0.75	14.5	1.57	1.2	0.49
Hispanic	3,120	62.1	3.08	67.0	2.99	20.0	2.54	1.6	0.80	12.5	2.10	1.2	0.69
Asian	1,465	88.6	1.90	58.7	2.94	16.9	2.23	0.9	0.56	8.8	1.69	1.8	0.79
American Indian	341	59.3	6.07	75.3	5.33	11.2	3.90	#	†	10.7	3.82	#	†
Disability status													
Disabled	306	61.0	6.36	71.7	5.88	28.3	5.88	10.5	4.00	22.3	5.43	10.9	4.07
Not disabled	26,976	77.3	0.58	67.8	0.65	17.2	0.52	1.1	0.14	16.9	0.52	1.1	0.14

See footnotes at end of table.

Table 6. Percentage of Internet users age 5–17 who use the Internet at specific locations, by child and family/household characteristics: 2001—Continued

Characteristics of users	Number of children (in thousands)	Internet use locations											
		Own home		School		Public library		Community center		Someone else's home		Some other place	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Family & household characteristics													
Parent educational attainment													
Less than high sch. credential	1,724	45.8	2.74	74.8	2.39	21.8	2.27	1.4	0.65	17.1	2.07	2.5	0.86
High school credential	6,839	69.9	1.27	69.5	1.27	15.5	1.00	1.3	0.31	16.4	1.02	1.3	0.31
Some college	9,898	77.1	0.96	67.2	1.08	15.8	0.84	0.9	0.22	16.0	0.84	1.1	0.24
Bachelor's degree	4,650	87.8	1.10	64.4	1.60	12.9	1.12	0.6	0.26	13.7	1.15	1.1	0.35
Graduate education	6,778	90.9	0.80	66.9	1.30	13.9	0.96	1.5	0.34	13.3	0.94	1.0	0.28
Family/household type													
Two parent household	23,140	83.0	0.56	67.0	0.71	13.0	0.50	0.8	0.13	13.1	0.51	1.0	0.15
Male householder	1,475	69.5	2.74	67.2	2.79	18.8	2.32	1.8	0.79	23.1	2.51	1.7	0.77
Female householder	6,068	60.9	1.43	70.8	1.33	23.7	1.25	2.1	0.42	20.7	1.19	1.5	0.36
Other arrangement	306	74.3	5.70	63.9	6.27	15.0	4.66	‡	†	15.9	4.77	2.7	2.11
Household language													
Spanish-only	730	50.5	4.22	73.6	3.72	19.9	3.37	‡	†	12.8	2.82	0.6	0.65
Not Spanish-only	30,259	78.6	0.54	67.6	0.61	15.3	0.47	1.1	0.14	15.1	0.47	1.2	0.14
Poverty status													
In poverty	3,408	46.9	2.75	71.9	2.48	25.2	2.40	2.1	0.79	17.7	2.11	2.0	0.77
Not in poverty	24,089	82.3	0.79	67.2	0.97	14.7	0.74	1.1	0.22	15.4	0.75	1.1	0.22
Family income													
Under \$20,000	3,045	46.0	2.06	73.8	1.82	27.1	1.84	2.4	0.63	19.6	1.64	1.7	0.53
\$20,000–\$34,999	4,320	63.0	1.68	69.4	1.60	18.9	1.36	1.5	0.42	17.4	1.32	1.6	0.44
\$35,000–\$49,999	4,670	76.0	1.43	67.2	1.57	15.4	1.21	1.1	0.35	17.1	1.26	1.2	0.36
\$50,000–\$74,999	6,396	84.8	1.02	65.7	1.35	16.1	1.05	0.8	0.25	15.1	1.02	1.0	0.28
\$75,000 or more	9,066	91.9	0.65	66.8	1.13	11.0	0.75	1.0	0.24	13.2	0.81	1.1	0.25
Urbanicity													
Metropolitan, city center	6,059	72.9	1.30	64.1	1.41	21.3	1.20	2.2	0.43	13.4	1.00	1.1	0.31
Metropolitan, not city center	14,576	82.2	0.72	67.1	0.89	14.8	0.67	0.9	0.18	15.0	0.68	1.0	0.19
Non-metropolitan	5,732	71.5	1.67	74.0	1.62	13.2	1.25	0.6	0.29	15.8	1.35	1.7	0.48

† Not applicable.

Percentage less than 0.5.

‡ Too few cases to report.

¹ White, Black, Asian, and Am. Indian indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pac. Islander, non-Hispanic; and Am. Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding, missing data, or multiple response.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Spanish-monolingual households, and families with incomes below \$35,000 per year (table 6). Many of these users do not have computers at home (Newburger 2001), while nearly all schools have Internet access, which may explain the tendency of these populations to connect to the Internet from school.¹⁴

There are no detectable race/ethnicity differences in rates of Internet use at school among Whites, Blacks, Hispanics, and American Indians; the use rate at school is approximately 68 percent for all four groups.¹⁵ Among Asians the use rate at school is lower than the rate for whites, but is not detectably different from the rates for other groups. There are also no detectable differences between the use rates at home and at school for Blacks and Hispanics, though more Whites use the Internet at home than at school, and a greater percentage of Whites use the Internet at home than do Blacks or Hispanics.

Some groups are more reliant on Internet access through public libraries than others. Some of the same groups who rely relatively heavily on school facilities for Internet access are the most likely to use public libraries for Internet access. These groups include children and adolescents from families with incomes under \$20,000 per year and those from single-mother households. In addition, about 30 percent of Black children and adolescents and about 25 percent of 5- through 17-year-olds living in poverty use public libraries to get on the Internet. These statistics suggest that public libraries serve as a significant point of access.

Table 7 looks at children and adolescents who access the Internet through one location only. Such youth make up approximately 39 percent of all 5- through 17-year-olds who use the Internet and number approximately 12.2 million. Looking at the data in this way helps to more clearly illustrate the role schools play in providing Internet access for children and adolescents by showing how heavily students from some backgrounds rely on schools for access. The table shows that the home is the most likely point of access among those who access the Internet from only one location. Nearly two-thirds of these Internet users rely solely on home access.

¹⁴ No statistical difference between home and school Internet use was detected for 5- through 17-year-olds with disabilities. Large standard errors associated with these estimates require that the results be interpreted with caution.

¹⁵ The estimate for American Indian is 75 percent, but this is not statistically distinguishable from the estimates of 67–69 percent for White, Black, and Hispanic, due to the large standard error of the American Indian estimate.

Table 7. Percentage of children and adolescents who use the Internet at only one location, by child and family/household characteristics and by location of use: 2001

Characteristics of persons	Number of children (in thousands)	Internet use locations											
		Own Home		School		Public Library		Community Center		Someone Else's Home		Some Other Place	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
All persons age 5–17	12,163	64.0	0.99	30.8	0.96	2.1	0.30	#	†	2.6	0.33	#	†
Child characteristics													
Age													
5–7	2,281	63.0	2.31	31.6	2.22	1.9	0.65	‡	†	2.8	0.79	0.6	0.37
8–10	3,205	62.2	1.96	33.8	1.91	1.6	0.51	#	†	1.9	0.55	#	†
11–14	3,865	64.4	1.76	29.8	1.68	2.3	0.55	#	†	3.0	0.63	#	†
15–17	2,812	66.3	2.03	28.2	1.94	2.6	0.69	‡	†	2.7	0.70	#	†
Sex													
Female	5,847	64.9	1.42	29.6	1.36	2.2	0.44	#	†	2.6	0.48	#	†
Male	6,316	63.2	1.39	31.9	1.34	2.0	0.40	#	†	2.6	0.46	#	†
Race/ethnicity ¹													
White	8,142	69.2	1.17	26.6	1.12	1.2	0.28	#	†	2.5	0.39	#	†
Black	1,665	48.7	3.35	42.1	3.31	6.1	1.60	‡	†	2.8	1.11	‡	†
Hispanic	1,562	47.9	4.49	44.5	4.47	3.2	1.58	‡	†	3.8	1.72	0.5	0.63
Asian	618	84.0	3.37	14.0	3.19	0.8	0.82	‡	†	0.5	0.65	‡	†
American Indian	175	40.9	8.47	56.2	8.55	1.8	2.29	‡	†	‡	†	‡	†
Disability status													
Disabled	95	38.2	11.38	49.8	11.71	‡	†	‡	†	‡	†	‡	†
Not disabled	10,308	63.7	1.08	30.3	1.03	2.4	0.34	#	†	3.1	0.39	#	†

See footnotes at end of table.

Table 7. Percentage of children and adolescents who use the Internet at only one location, by child and family/household characteristics and by location of use:
2001—Continued

Characteristics of persons	Number of children (in thousands)	Internet use locations									
		Own home		School		Public library		Community center		Someone else's home	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Parent & household characteristics											
Parent educational attainment											
Less than high sch. credential	868	32.7	3.63	58.8	3.81	3.4	1.40	‡	†	3.9	1.50
High school credential	2,857	55.3	2.12	38.6	2.08	2.7	0.69	#	†	2.8	0.70
Some college	3,927	63.8	1.75	30.0	1.67	2.2	0.53	#	†	3.7	0.69
Bachelor's degree	1,775	75.5	2.33	21.5	2.23	1.6	0.68	‡	†	1.4	0.64
Graduate education	2,272	81.5	1.86	15.9	1.75	1.1	0.50	‡	†	1.0	0.48
Family/household type											
Two parent household	9,054	69.9	1.89	26.8	1.83	1.4	0.49	#	†	1.5	0.50
Male householder	589	49.7	4.70	41.9	4.64	3.0	1.60	‡	†	5.5	2.14
Female householder	2,404	45.6	2.32	43.1	2.31	4.6	0.98	0.6	0.36	5.8	1.09
Other arrangement	116	61.5	10.32	30.9	9.80	#	†	‡	†	5.0	4.62
Household language											
Spanish-only	397	35.5	5.48	58.3	5.65	#	‡	‡	†	4.9	2.47
Not Spanish-only	11,766	65.0	1.00	29.9	0.96	2.2	0.31	#	†	2.5	0.33
Poverty status											
In poverty	1,691	34.5	3.72	52.1	3.91	7.1	2.01	‡	†	4.6	1.64
Not in poverty	8,946	69.8	1.56	26.1	1.50	1.4	0.40	‡	†	2.4	0.52
Family income											
Under \$20,000	1,422	33.5	2.86	53.2	3.02	6.9	1.53	0.9	†	4.8	1.29
\$20,000–\$34,999	1,899	50.4	2.62	40.5	2.57	3.6	0.98	#	†	4.9	1.13
\$35,000–\$49,999	1,873	60.9	2.57	34.1	2.50	2.0	0.74	‡	†	3.1	0.91
\$50,000–\$74,999	2,300	73.5	2.10	22.5	1.99	1.5	0.58	‡	†	2.2	0.70
\$75,000 or more	3,145	81.7	1.57	17.1	1.53	#	†	‡	†	0.7	0.34
Urbanicity											
Metropolitan, city center	2,589	62.0	2.18	30.4	2.06	4.1	0.89	#	†	2.7	0.73
Metropolitan, not city center	5,528	69.4	1.41	27.2	1.37	1.1	0.32	‡	†	2.1	0.44
Non-metropolitan	2,201	52.4	2.98	41.5	2.94	3.1	1.03	‡	†	2.7	0.97

† Not applicable.

Percentage less than 0.5.

‡ Too few cases to report.

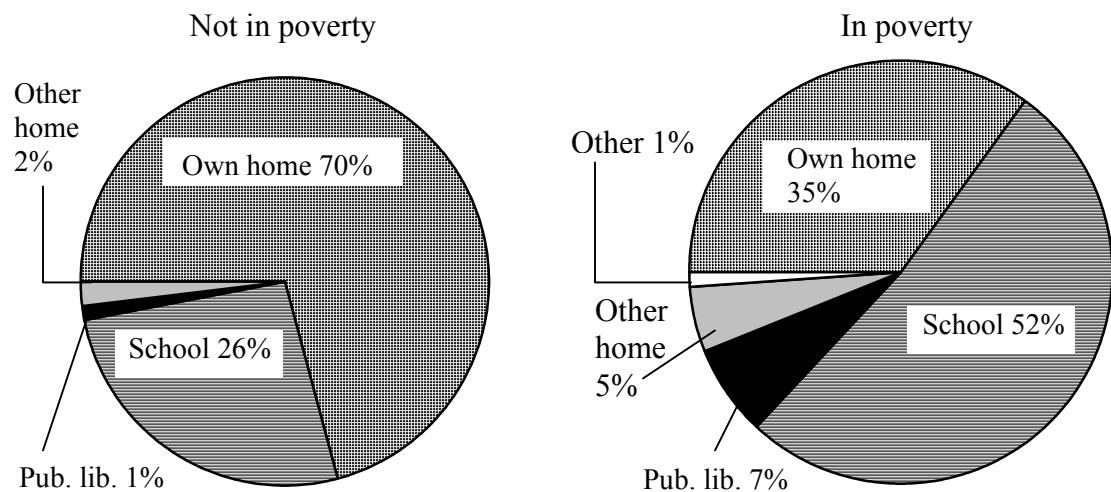
¹ White, Black, Asian, and Am. Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and Am. Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding or missing data. Totals may exceed 100 percent because individuals may use the Internet in more than one place.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

However, several groups—those from households where no parents have a high school credential, those from monolingual Spanish households, and those in poverty—rely more heavily on access to the Internet from school than from any other single location. Fifty-nine percent of children and adolescents who have parents who have not earned a high school credential and who have only one point of access for the Internet rely on school facilities for this access. Conversely, 16 percent of children and adolescents living with parents who attended graduate school and who use the Internet in only one place do so through school facilities. Fifty-eight percent of users with one point of access who belong to Spanish-monolingual households rely solely on school for access, compared to 30 percent of users with one access point who belong to other households, and about half of poor users with one access point do so, compared to about a quarter of non-poor users with only one access point (figure 5). Without access at school, these users would be forced to find alternative points of access or would cease using the Internet.

Figure 5. Percentage of children and adolescents age 5–17 who use the Internet at only one location, by location and poverty status: 2001



NOTE: Estimates may not sum to 100 percent because of rounding.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Internet Activities¹⁶

The Internet supports a broad range of activities it supports. Children and adolescents use the Internet as a medium to communicate, to find information, to have fun, and to do homework. While electronic mail is the Internet application most widely used by adults (U.S. Department of Commerce 2000), among youth age 5 through 17, e-mail (or instant messaging) and playing games are the second most popular Internet activities, after completing school assignments. About 42 percent of all youth in this age range use the Internet for school work, while 38 percent use e-mail or instant messaging and about the same percentage play games.

As shown in table 8, from 6 to 22 percent of children and adolescents use the Internet to find information about news, weather, sports, and products, to participate in chat rooms or listservs (discussion groups or mailing lists), to watch or listen to television, movies, or radio, and to make purchases.¹⁷ Smaller percentages use the Internet for other purposes.

Table 9 controls for Internet use by looking at just those 5- through 17-year-olds who use the Internet. General patterns found for the broader 5–17 year-old age group hold when focusing just on those who use the Internet. Completing school assignments is the most popular activity, followed by e-mail and playing games, all of which are done by a majority of users.

Older children tend to use the Internet for more applications than do younger children. Table 9 shows that, with the exception of playing games, other activities such as completing school assignments, e-mail, and finding information about news, weather, or sports increase steadily with age.

Although the gender gap in Internet use rates has closed, there are gender differences in Internet activities. As shown in table 9, girls who use the Internet are more likely to use it for

¹⁶ In contrast to the discussion of computer activities, which was limited by the CPS design to activities at home, this discussion of Internet activities applies to activities at any location where the Internet is used. CPS data do not allow separate examination of Internet activities at home or at school.

¹⁷ The large number of Internet use options makes presenting extensive demographic details by type of activity unwieldy. In order to keep the tables to a practical size, characteristics associated with differences in computer use in earlier sections of the report are presented in tables 7 and 8.

Table 8. Percentage of persons age 5–17 using the Internet for specific activities, by selected characteristics: 2001

	All persons age		Sex				Age group									
	5–17		Female	s.e.	Male	s.e.	5–7	s.e.	Percent	s.e.	8–10	s.e.	11–14	s.e.	15–17	s.e.
Internet activity	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Completing school assignments	42.1	0.5	42.9	0.7	41.3	0.7	11.7	0.7	31.9	1.0	54.3	0.9	66.2	1.0		
E-mail or instant messaging	38.0	0.5	39.7	0.7	36.4	0.7	11.1	0.7	26.8	0.9	47.0	0.9	63.8	1.0		
Playing games	36.4	0.5	34.6	0.7	38.1	0.7	20.5	0.8	33.7	1.0	43.0	0.9	46.1	1.0		
News/weather/sports	21.8	0.4	19.9	0.6	23.6	0.6	4.6	0.4	13.0	0.7	27.4	0.8	40.2	1.0		
Find information on products	19.9	0.4	18.9	0.6	20.9	0.6	3.9	0.4	9.9	0.6	23.6	0.8	40.9	1.0		
Chat rooms or listservs	11.9	0.3	12.4	0.5	11.4	0.4	1.3	0.2	3.5	0.4	14.3	0.6	27.8	0.9		
Watch/listen to TV, movies, or radio	11.1	0.3	10.3	0.4	11.8	0.4	3.0	0.4	6.5	0.5	13.0	0.6	21.1	0.8		
Make purchases	6.2	0.2	5.2	0.3	7.1	0.4	0.7	0.2	2.3	0.3	6.4	0.4	15.6	0.8		
Phone calls	1.9	0.1	2.1	0.2	1.7	0.2	0.5	0.1	1.1	0.2	1.8	0.2	4.1	0.4		
Taking a course on-line	0.5	0.1	0.5	0.1	0.6	0.1	#	†	#	†	#	†	1.2	0.2		
Other	0.9	0.1	0.9	0.1	1.0	0.1	#	†	0.6	0.2	1.0	0.2	1.9	0.3		
Find government information ¹	—	†	—	†	—	†	—	†	—	†	—	†	7.6	0.6		
Find health information ¹	—	†	—	†	—	†	—	†	—	†	—	†	7.4	0.5		
Find a job ¹	—	†	—	†	—	†	—	†	—	†	—	†	3.6	0.4		
Online banking ¹	—	†	—	†	—	†	—	†	—	†	—	†	1.7	0.3		
Trading stocks ¹	—	†	—	†	—	†	—	†	—	†	—	†	0.7	0.2		

See footnotes at end of table.

Table 8. Percentage of persons age 5–17 using the Internet for specific activities, by selected characteristics: 2001—Continued

Internet activity	Parent educational attainment										Race/ethnicity ²									
	Less than high school credential		High school credential		Some college		Bachelor's degree		Graduate education		White		Black		Hispanic		Asian		American Indian	
	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Completing school assignments	21.4	1.3	34.6	0.9	44.2	0.9	51.4	1.4	58.2	1.2	48.9	0.6	29.7	1.4	26.1	1.7	48.9	2.4	33.5	4.3
E-mail or instant messaging	13.8	1.1	30.7	0.9	39.7	0.9	48.9	1.4	55.6	1.2	46.7	0.6	22.2	1.2	17.5	1.5	44.8	2.4	30.2	4.2
Playing games	18.8	1.2	30.7	0.9	39.2	0.9	45.5	1.4	47.3	1.2	41.5	0.6	29.8	1.4	21.9	1.6	38.9	2.3	38.5	4.4
News/weather/sports	9.2	0.9	17.4	0.7	23.4	0.8	25.9	1.2	31.8	1.1	25.7	0.5	15.1	1.1	11.9	1.3	25.9	2.1	20.4	3.6
Find information on products	7.1	0.8	15.1	0.7	20.9	0.7	24.8	1.2	30.8	1.1	24.4	0.5	11.9	1.0	10.1	1.2	21.3	2.0	12.3	3.0
Chat rooms or listservs	6.9	0.8	10.3	0.6	12.7	0.6	13.7	1.0	15.6	0.9	14.0	0.4	6.4	0.7	7.9	1.0	14.4	1.7	13.8	3.1
Watch/listen to TV, movies, or radio	5.2	0.7	9.4	0.6	12.0	0.6	12.3	0.9	15.2	0.9	12.3	0.4	10.1	0.9	6.9	1.0	11.8	1.5	11.5	2.9
Make purchases	1.4	0.4	3.7	0.4	5.6	0.4	8.7	0.8	12.8	0.8	8.1	0.3	2.7	0.5	2.4	0.6	5.9	1.1	3.9	1.8
Phone calls	0.8	0.3	1.4	0.2	2.2	0.3	2.4	0.4	2.3	0.4	2.1	0.2	1.7	0.4	1.0	0.4	2.0	0.7	2.4	1.4
Taking a course on-line	0.6	0.2	#	†	0.5	0.1	#	†	0.8	0.2	0.5	0.1	#	†	0.5	0.3	0.9	0.5	1.3	1.0
Other	#	†	0.8	0.2	1.1	0.2	0.5	0.2	1.7	0.3	1.1	0.1	0.6	0.2	0.8	0.3	0.8	0.4	1.4	1.1
Find government information ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Find health information ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Find a job ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Online banking ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Trading stocks ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†

See footnotes at end of table.

Table 8. Percentage of persons age 5–17 using the Internet for specific activities, by selected characteristics: 2001—Continued

Internet activity	Family income									
	Less than \$20,000		\$20,000– \$34,999		\$35,000– \$49,999		\$50,000– \$74,999		\$75,000 or more	
	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Completing school assignments	23.2	1.1	32.1	1.1	43.2	1.3	49.1	1.2	59.0	1.0
E-mail or instant messaging	16.6	0.9	26.5	1.1	38.7	1.3	45.8	1.2	57.2	1.0
Playing games	21.2	1.0	30.0	1.1	41.0	1.3	42.8	1.2	47.2	1.0
News/weather/sports	11.7	0.8	16.5	0.9	20.7	1.1	26.1	1.0	31.9	1.0
Find information on products	8.7	0.7	14.0	0.8	18.9	1.0	23.3	1.0	31.4	1.0
Chat rooms or listservs	7.3	0.7	8.5	0.7	12.2	0.9	13.8	0.8	17.0	0.8
Watch/listen to TV, movies, or radio	7.0	0.6	8.8	0.7	12.2	0.9	12.4	0.8	15.4	0.8
Make purchases	2.2	0.4	3.0	0.4	4.2	0.5	7.0	0.6	12.7	0.7
Phone calls	1.7	0.3	1.6	0.3	2.1	0.4	1.8	0.3	2.3	0.3
Taking a course on-line	0.5	0.2	#	†	0.7	0.2	#	†	0.7	0.2
Other	0.6	0.2	0.9	0.2	0.8	0.2	1.3	0.3	1.3	0.2
Find government information ¹	—	†	—	†	—	†	—	†	—	†
Find health information ¹	—	†	—	†	—	†	—	†	—	†
Find a job ¹	—	†	—	†	—	†	—	†	—	†
Online banking ¹	—	†	—	†	—	†	—	†	—	†
Trading stocks ¹	—	†	—	†	—	†	—	†	—	†

— Not available. Data were not collected.

† Not applicable.

Too small to report.

¹ The survey did not ask about these activities for persons less than 15 years old.

² White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding and multiple response.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Table 9. Percentage of Internet users age 5–17 using the Internet for specific activities, by selected characteristics: 2001

Internet activity	All users age		Sex				Age group							
	5–17		Female		Male		5–7		8–10		11–14		15–17	
	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Completing school assignments	72.0	0.6	73.2	0.8	70.9	0.8	37.2	1.8	59.7	1.4	79.5	0.9	85.8	0.8
E-mail or instant messaging	65.0	0.6	67.6	0.9	62.4	0.9	35.5	1.8	50.1	1.4	68.8	1.0	82.8	0.9
Playing games	62.3	0.6	59.1	0.9	65.4	0.9	65.3	1.8	63.0	1.4	63.0	1.0	59.8	1.2
News/weather/sports	37.3	0.6	33.9	0.9	40.5	0.9	14.7	1.3	24.4	1.2	40.1	1.1	52.2	1.2
Find information on products	34.0	0.6	32.2	0.9	35.8	0.9	12.5	1.2	18.6	1.1	34.6	1.0	53.1	1.2
Chat rooms or listservs	20.3	0.5	21.2	0.8	19.5	0.7	4.1	0.7	6.6	0.7	20.9	0.9	36.1	1.1
Watch/listen to TV, movies, or radio	18.9	0.5	17.5	0.7	20.3	0.7	9.4	1.1	12.2	0.9	19.0	0.8	27.4	1.1
Make purchases	10.6	0.4	8.9	0.5	12.3	0.6	2.1	0.5	4.2	0.6	9.3	0.6	20.2	1.0
Phone calls	3.2	0.2	3.5	0.3	2.9	0.3	1.7	0.5	2.0	0.4	2.7	0.3	5.3	0.5
Taking a course on-line	0.9	0.1	0.8	0.2	1.0	0.2	0.6	0.3	0.8	0.2	0.6	0.2	1.5	0.3
Other	1.6	0.2	1.6	0.2	1.6	0.2	0.7	0.3	1.1	0.3	1.5	0.3	2.5	0.4
Find government information ¹	—	†	—	†	—	†	—	†	—	†	—	†	9.8	0.7
Find health information ¹	—	†	—	†	—	†	—	†	—	†	—	†	9.7	0.7
Find a job ¹	—	†	—	†	—	†	—	†	—	†	—	†	4.7	0.5
Online banking ¹	—	†	—	†	—	†	—	†	—	†	—	†	2.3	0.4
Trading stocks ¹	—	†	—	†	—	†	—	†	—	†	—	†	0.9	0.2

See footnotes at end of table.

Table 9. Percentage of persons age 5–17 using the Internet for specific activities, by selected characteristics: 2001—Continued

Internet activity	Parent educational attainment										Race/ethnicity ²									
	Less than high school credential		High school credential		Some college		Bachelor's degree		Graduate education		White		Black		Hispanic		Asian		American Indian	
	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Completing school assignments	67.6	2.6	68.9	1.3	70.0	1.1	74.1	1.5	78.2	1.1	73.3	0.7	65.5	2.1	70.3	2.9	75.8	2.6	62.6	6.0
E-mail or instant messaging	43.6	2.7	61.2	1.3	62.9	1.1	70.5	1.5	74.8	1.2	70.0	0.7	48.9	2.2	47.0	3.2	69.4	2.7	56.5	6.1
Playing games	59.3	2.7	61.2	1.3	62.0	1.1	65.7	1.6	63.6	1.3	62.1	0.7	65.8	2.1	59.1	3.1	60.2	2.9	71.9	5.6
News/weather/sports	29.2	2.5	34.5	1.3	37.0	1.1	37.3	1.6	42.8	1.4	38.5	0.7	33.4	2.1	32.0	3.0	40.1	2.9	38.1	6.0
Find information on products	22.3	2.3	30.1	1.3	33.1	1.1	35.9	1.6	41.4	1.4	36.5	0.7	26.3	2.0	27.2	2.8	33.0	2.8	23.0	5.2
Chat rooms or listservs	21.8	2.3	20.6	1.1	20.2	0.9	19.7	1.3	20.9	1.1	21.0	0.6	14.2	1.6	21.2	2.6	22.3	2.5	25.9	5.4
Watch/listen to TV, movies, or radio	16.3	2.0	18.7	1.1	19.0	0.9	17.8	1.3	20.5	1.1	18.4	0.6	22.4	1.9	18.6	2.5	18.3	2.3	21.4	5.1
Make purchases	4.4	1.1	7.3	0.7	8.9	0.7	12.6	1.1	17.2	1.0	12.1	0.5	5.9	1.1	6.6	1.6	9.2	1.7	7.3	3.2
Phone calls	2.5	0.9	2.9	0.5	3.5	0.4	3.4	0.6	3.1	0.5	3.1	0.3	3.8	0.9	2.7	1.0	3.1	1.0	4.4	2.5
Taking a course on-line	1.7	0.7	0.8	0.2	0.8	0.2	0.5	0.2	1.1	0.3	0.8	0.1	0.9	0.4	1.4	0.7	1.4	0.7	2.4	1.9
Other	1.1	0.6	1.6	0.3	1.7	0.3	0.8	0.3	2.3	0.4	1.6	0.2	1.4	0.5	2.0	0.9	1.3	0.7	2.7	2.0
Find government information ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Find health information ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Find a job ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Online banking ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†
Trading stocks ¹	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†	—	†

See footnotes at end of table.

Table 9. Percentage of persons age 5–17 using the Internet for specific activities, by selected characteristics: 2001—Continued

Internet activity	Family income									
	Less than \$20,000		\$20,000– \$34,999		\$35,000– \$49,999		\$50,000– \$74,999		\$75,000 or more	
	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.
Completing school assignments	63.5	2.0	65.8	1.6	68.7	1.5	73.2	1.3	78.2	1.0
E-mail or instant messaging	45.6	2.1	54.3	1.7	61.6	1.6	68.3	1.3	75.8	1.0
Playing games	58.1	2.0	61.4	1.7	65.3	1.6	63.7	1.4	62.6	1.2
News/weather/sports	32.2	1.9	33.8	1.6	33.0	1.6	38.9	1.4	42.3	1.2
Find information on products	24.0	1.8	28.7	1.6	30.2	1.5	34.7	1.4	41.6	1.2
Chat rooms or listservs	20.1	1.7	17.4	1.3	19.5	1.3	20.6	1.2	22.5	1.0
Watch/listen to TV, movies, or radio	19.3	1.6	18.1	1.3	19.4	1.3	18.5	1.1	20.4	1.0
Make purchases	5.9	1.0	6.1	0.8	6.7	0.8	10.5	0.9	16.8	0.9
Phone calls	4.5	0.9	3.3	0.6	3.3	0.6	2.6	0.5	3.0	0.4
Taking a course on-line	1.5	0.5	0.7	0.3	1.2	0.4	0.7	0.2	0.9	0.2
Other	1.7	0.5	1.7	0.4	1.3	0.4	2.0	0.4	1.7	0.3
Find government information ¹	—	†	—	†	—	†	—	†	—	†
Find health information ¹	—	†	—	†	—	†	—	†	—	†
Find a job ¹	—	†	—	†	—	†	—	†	—	†
Online banking ¹	—	†	—	†	—	†	—	†	—	†
Trading stocks ¹	—	†	—	†	—	†	—	†	—	†

— Not available. Data were not collected.

† Not applicable.

Percentage less than 0.5.

¹ The survey did not ask about these activities for persons less than 15 years old.

² White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding and multiple response.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

e-mail, and boys who use the Internet are more likely to use it for games, shopping, and finding information about news, weather, or sports. This is consistent with research on adults' uses of the Internet, which has shown that although gender differences in overall use rates have vanished, gender differences persist in preferences for Internet activities, with men favoring entertainment and women favoring communication and educational assistance (Weiser 2000; also see Odell et al. 2000; Singh 2002). Some recent research on college students has revealed similar differences in Internet activities—women used more e-mail and men used the web more (Jackson et al. 2001).

Conclusions

This report uses data from the September 2001 Current Population Survey to examine the use of computers and the Internet by children and adolescents. The report examines children's and adolescents' overall use, how children and teens use these technologies, where they use them, and the relationships of patterns of use to socioeconomic and demographic characteristics such as age, race/ethnicity, parental education, and family income.

Computer and Internet use by children and adolescents is widespread and begins at an early age. About nine in ten Americans age 5 through 17 use computers, and more than half use the Internet. Computer use is common at an earlier age than Internet use, but by high-school-age (15–17) about three quarters of youth are on-line.

Children and adolescents commonly use computers for playing games, completing school assignments, word processing, email, and connecting to the Internet. On-line, the most frequent activities are school work, email, games, and finding information.

There are significant demographic and socioeconomic differences in the use of these information technologies. Family income and parents' education are both positively associated with computer and Internet use, and proportionally fewer children and adolescents who live in households where Spanish is the only language spoken use computers and the Internet. Use of both technologies is higher among Whites than among Blacks and Hispanics and is higher among the non-disabled than among the disabled. The findings for each variable remain statistically significant when controlling for other variables. In contrast to findings from previous studies (e.g. Clemente 1998; Riccobono 1986), however, gender differences in rates of computer and Internet use no longer exist.

Looking at where children and adolescents use computers, more use computers at school than at home. For some groups of 5–17-year-olds, use at school exceeds use at home by 30 percentage points or more. These groups include Blacks and Hispanics, those whose parents did not complete high school, those living with a single mother, those living in households where

Spanish is the only language spoken, and those living in families with incomes below \$20,000 per year. Home use is more prevalent among children and adolescents who are members of families with incomes of \$75,000 or more per year, and whose parents attended graduate school.

Schools do appear to help narrow the digital divide in terms of computer use. Differences in the rates of computer use are smaller at schools than they are at home when considering such characteristics as race/ethnicity, family income, and parental education.

Although nearly all schools have Internet access and more children and adolescents use computers at school than at home, the home is the most widely used Internet access location. Of those children and adolescents who use the Internet, 78 percent use it at home, compared to 68 percent at school. Highlighting the digital divide, those who rely more heavily on access at school come from households with annual family incomes below \$35,000 and whose parents did not complete high school.

While CPS data do support analyses of the use of technology, they do not support analysis of the quality of hardware and software available or the convenience of access. Future research could address these issues of quality and convenience, and also continue to study the digital divide to track trends in usage.

Methodological and Technical Notes¹⁸

Current Population Survey (CPS) Design

The CPS is a representative sample survey of all households in the United States. The survey is conducted in approximately 56,000 dwelling units in 754 primary sampling units. Dwelling units are in-sample for 4 successive monthly interviews, out-of-sample for the next 8 months, and then returned to the sample for the following 4 months. The sample frame is a complete list of dwelling-unit addresses at the time of the Census updated by demolitions and new construction and field listings. The population surveyed excludes members of the armed forces, inmates of correctional institutions, and patients in long-term medical or custodial facilities; it is referred to as the civilian, noninstitutionalized population. Typically about 4 percent of dwelling units are not interviewed because occupants are not at home after repeated callbacks or for some other reason.

A member of each household who is at least 15 years old serves as the informant for that household, supplying data for each member of the household. As a result of this data collection method, data regarding computer and Internet use by children and adolescents were not collected directly from the users in most cases, but from another member of the user's household. Because a household's informant may not have full information regarding computer and Internet use by other members of the household (especially when that use occurs at school), this method is a potential source of error in the data.

In September 2001, supplementary questions regarding computer and Internet use were asked about eligible household members 3 years old and over. (This report examines persons ages 5–17 because this range corresponds to the modal ages of students in kindergarten through twelfth grade.) Most interviews were conducted by phone using computer-assisted telephone interviewing.

¹⁸ Part of this section on the CPS and statistical procedures is reprinted from Appendix C of U.S. Department of Education, National Center for Education Statistics, *Dropout Rates in the United States: 1999*, NCES 2001-022, by Phillip Kaufman, Jin Y. Kwon, Steve Klein, and Christopher D. Chapman. Washington, DC, 2000. Also see U.S. Census Bureau, *Technical Paper 63 Revised: Current Population Survey – Design and Methodology*, TP63RV. Washington, DC, 2002.

Standard Errors and the Accuracy and Precision of Estimates

The estimates in this report are derived from samples and are subject to two broad classes of error—sampling and nonsampling error. Sampling errors can occur when the data are collected from a sample of a population rather than from the entire population. To the extent that the sample differs from the population it is supposed to represent, estimates based on a sample can differ from the values that would have been obtained from a universe survey using the same instruments, instructions, and procedures. Nonsampling errors come from a variety of sources and affect all types of surveys, universe as well as sample surveys. Examples of sources of nonsampling error include item wording, reporting error by respondents, and data processing errors. The effects of nonsampling errors are more difficult to evaluate than those that result from sampling variability. As much as possible, procedures are built into surveys in order to minimize nonsampling errors.

The standard error is a measure of the variability due to sampling when estimating a parameter. It indicates how much variance there is in the population of possible estimates of a parameter for a given sample size. Standard errors can be used as a measure of the precision expected from a particular sample. The chances that a sample estimate would differ from a population parameter by less than the standard error are about 68 out of 100; the chances that the difference would be less than 1.96 times the standard error are about 95 out of 100.

Since the CPS sample is not a simple random sample, the methods that are most frequently used to compute standard errors must be adjusted to account for the effects of the sample design. Standard errors for percentages based on CPS data were calculated using the following formula:

$$se = \sqrt{(b / N)(p)(100 - p)}$$

where b = the parameter associated with the characteristic,¹⁹
 N = the population on which the percentage is based, and
 p = the percentage ($0 < p < 100$).

For example, where table 1 shows an estimate that 89.5 percent of persons ages 5–17 use computers, the standard error is calculated as follows. The variable b is 5211 (this can be found in the Census Bureau technical report previously cited); the N is 53,013,000, and the percentage is 89.5. Using the formula given above, the standard error is .30.

$$.30 = \sqrt{(5211/53,013,000)(89.5)(100 - 89.5)}$$

Response Rates

The unweighted response rate for the September 2001 core CPS was 93.5 percent, and the response rate for the computer and Internet use supplement was 92.1 percent, for an overall response rate on the supplement of 86.1 percent.

Method and Statistical Procedures for the Comparison of Estimates

The comparisons in the text have all been tested for statistical significance to ensure that the differences are larger than those that might be expected due to sampling error. Four types of comparisons have been made in the text. All statistical comparisons in this report were tested for significance at the 95 percent confidence level ($p < .05$), and all reported differences are statistically significant, unless otherwise noted. One type of comparison tests the significance of a statistic's relationship to a specified value, such as 50 percent. A 95 percent confidence interval is computed and the statistic is treated as though the true value falls within this range, supporting a statement that the statistic is more than, less than, or not distinguishable from a specified value. The confidence interval for an estimate is determined by the following formula:

$$CI = x \pm t(se)$$

¹⁹ These parameters and their use are explained in U.S. Census Bureau, *Source and Accuracy Statement for the September 2001 CPS Microdata File for Internet and Computer Use in the U.S.*, Washington, DC, 2002. Available at <http://www.bls.census.gov/cps/computer/2001/ssrcacc.htm>

where x = the estimate for which the confidence interval is desired
 t = the critical value, which is 1.96 for a 95 percent interval
 se = the standard error of the estimate

For example, the statement on page 3 of this report that “among high-school-age youth (ages 15–17), more than 90 percent use computers,” was tested as follows:

$$\begin{aligned} CI &= x \pm t (se) \\ CI &= 93.4 \pm 1.96 (0.52) \\ 92.4 \text{ to } 94.4 &= 93.4 \pm 1.0 \end{aligned}$$

In repeated sampling, the population parameter (i.e., the “true” value) can be expected to fall within the range of the 95 percent confidence interval 95 percent of the time. In the previous example, the true value is expected to be between 92.4 and 94.4, so the statement in the text that “among high-school-age youth (ages 15–17), more than 90 percent use computers” is supported. Had the confidence interval included the range 89.0 to 97.8, for example, the statement would not have been supported because the range extends below 90 percent.

The second type of comparison tests the hypothesis that there is a linear relationship between two variables with multiple categories. A bivariate linear regression model is specified, and a statistically significant regression coefficient supports the hypothesis that there is a linear association between the dependent and independent variables. To account for the complex sampling methods of the CPS, a weighted least squares (WLS) regression is used in which the model (e.g. the percentage of children who use computers) is weighted by the variance of the dependent variable.

The third type of comparison tests the statistical significance of the difference of two statistics. The student’s t statistic can be used to test the likelihood that the differences between two percentages are larger than would be expected by sampling error alone.

$$t = \frac{P_1 - P_2}{\sqrt{se_1^2 + se_2^2}}$$

where P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their respective standard errors.

For example, the statement on page 6 of this report that “those who are not disabled are more likely to use computers... than those with disabilities” was tested as follows. The estimate for the percentage of non-disabled children and adolescents ages 5–17 who use computers is 89.8 percent, and the standard error of this estimate is .32 percent; the estimate and standard error for disabled children and adolescents in the same age group are 80.0 percent and 3.65 percent, respectively (table 1). The t value is 2.67, as shown below.

$$t = \frac{89.8 - 80.0}{\sqrt{.32^2 + 3.65^2}} = 2.67$$

Since the t value exceeds the critical value of 1.96, readers can conclude that children and adolescents who are not disabled are more likely to use computers than those with disabilities.

As the number of comparisons on the same set of data increases, the likelihood that the t value for at least one of the comparisons will exceed 1.96 simply due to sampling error increases. For a single comparison, there is a 5 percent chance that the t value will exceed 1.96 due to sampling error. For five tests, the risk of getting at least one t value that high increases to 23 percent, and for 20 comparisons, to 64 percent.

One way to compensate for this danger when making multiple comparisons is to adjust the alpha level to take into account the number of comparisons being made. The alpha rate is the probability of falsely rejecting the hypothesis that there are no differences between groups in the population. For example, rather than establishing an alpha level of 0.05 for a single comparison, the alpha level is set to ensure that the likelihood is less than 0.05 that the t value for any of the comparisons exceeds the critical value by chance alone when there are truly no differences for any of the comparisons. For this report, the alpha level is reduced using the Bonferroni adjustment. The adjustment is calculated by dividing the desired alpha level by the number of

possible comparisons, based on the variable(s) being compared (Dunn, 1961). The *t* value corresponding to the revised, lower alpha level must be exceeded in order for any of the comparisons to be considered significant. For example, to test for differences in computer use rates among non-Hispanic Whites, non-Hispanic Blacks, and Hispanics, the following steps would be taken:

- Establish the number of comparisons. The number of two-way comparisons that can be made equals $[(n)(n-1)]/2$, where n is the number of variable categories. Thus, with three categories (Whites, Blacks, and Hispanics) the number of possible comparisons is $[(3)(2)]/2 = 3$ (Whites and Blacks, Whites and Hispanics, Blacks and Hispanics).
- Divide the desired alpha level, 0.05, by the number of comparisons (e.g. 3) to obtain the new alpha level ($0.05/3 = 0.0167$).
- Consult a table of *t* statistics (or the standard normal table for *z* values if the *N* is large) to find the *t* value that corresponds to that alpha (*t* = 2.39 for alpha = 0.0167).

All *t* test comparisons in this report were tested using the Bonferroni adjustment. Where categories of two variables were involved, the number of comparisons to make the number of comparisons used to make the Bonferroni adjustment was based on the relationship(s) being tested. This technique reduces the frequency of Type I errors (rejecting the null hypothesis when it is true) while increasing Type II errors (failing to reject the null hypothesis when it is false).

The fourth type of comparison is an equivalence test (Rogers, Howard, and Vessey 1993), which determines whether there is any substantive difference between two statistics.

This test requires an *a priori* determination of the minimum difference considered substantively important (delta). Equivalence tests in this report were conducted with a delta value of two percentage points, meaning that differences smaller than this are not considered meaningful. A delta of two percentage points is commensurate with the statistical properties of the data presented in this report; considering the sources of non-sampling error that affect survey data, including proxy reporting errors and data processing errors, it may not be reasonable to attribute substantive importance to differences smaller than about two percentage points.

The equivalence test uses one-tailed t-tests to construct a confidence interval for the difference between two statistics. This confidence interval is compared to the minimum substantively significant difference described by delta and negative delta. If the confidence interval is within the range of negative delta and delta—that is, if the upper bound of the confidence interval is less than delta and the lower bound of the interval is more than negative delta—this indicates that the difference between the two statistics is less than the smallest difference that can be considered important, so the two statistics are equivalent.

The formula for the confidence interval of the difference is as follows:

$$CI = p_1 - p_2 \pm t(s.e.)$$

where p_1 = the first statistic being compared

p_2 = the second statistic being compared

t = the critical value²⁰

s.e. = the standard error of the difference of p_1 and p_2

In this report the estimate of the percentage of females age 5–17 who use computers is 90.0 percent (s.e. = 0.43) and the estimate for males is 89.1 percent (s.e. = 0.43). The difference is 0.9 percent (s.e. = 0.61). To test the equivalence of these two statistics at the 95 percent confidence level when the minimum substantively important difference, delta, is two percentage points, compare confidence interval for the difference to delta. In this case the confidence interval for the difference is –0.10 to 1.90. Since this interval is within the delta interval of –2 to 2, the percentages of males and females age 5–17 who use computers are about the same.

Logistic Regression Analysis

Regression is a procedure that uses one or more independent variables to predict the values of a dependent variable and to reveal each independent variable's association with the variable being predicted. In the two analyses presented in table 2, computer use and Internet use

²⁰ For 95 percent confidence in equivalency, using a one-tailed test, the critical value is 1.645.

(the dependent variables) were analyzed using several independent variables that have previously been found to be associated with the use of information technologies.

Logistic regression is a form of regression used when the dependent variable is dichotomous (that is, when it can take only two different values, such as “computer user” or “computer non-user”). In logistic regression, the equation predicts the natural log of the odds (the “log odds”) of an event occurring, such as the sampled individual being a computer user.²¹

The form of the equation is as follows:

$$\text{Log}[P/(1-P)] = B_0 + B_1X_1 + \dots + B_pX_p$$

In this equation, the value B_0 is a constant. The X values are the observed values of independent variables such as age or income, and the corresponding B values are parameters indicating the effect of a one-unit change in X on the log odds of the event. The B parameters indicate the association between the independent variable and the dependent variable when all the other independent variables are statistically controlled, or held constant.

Dichotomous independent variables and the “reference category.” Most of the independent variables in the logistic regression equations are treated as dichotomous. For example, the five categories of race/ethnicity are included in the regressions as four variables: Black, non-Hispanic; Hispanic; Asian or Pacific Islander, non-Hispanic, and American Indian, Aleut, or Eskimo, non-Hispanic. White, non-Hispanic is the “reference category.” The indicated parameter estimate and odds ratio (explained below) are interpreted in comparison with the reference category. For example, since the male parameter estimate in the computer use analysis is negative (or, since the odds ratio is less than one), this indicates that males are less likely than females (the reference category) to use computers. (However, the association is not statistically

²¹ Odds are the probability of an event occurring divided by the probability of it not occurring. For example, consider the data reported in table 1 indicating that 58.5 percent of children 5–17 years old use the Internet. The odds of someone from this population using the Internet are $(.585)/(1-.585) = 1.41$ to one. This means that someone 5–17 is 1.41 times more likely to use the Internet than to not use the Internet.

significant.) Similarly, the negative parameter estimate for “Black, non-Hispanic” (or the odds ratio less than one) indicates that a Black child is less likely to use computers than a White child.

Odds ratio. The results of the regression analysis include an “odds ratio” for each independent variable. The odds ratio shows each independent variable’s statistical relationship to the dependent variable when all of the other independent variables are held constant. More specifically, it shows how the odds of the dependent variable event occurring (i.e. the odds of a child being a computer user or being an Internet user) change when the independent variable changes. For example, table 2 shows that a child from a family in the highest income group is about two and a half times as likely to use the Internet as a child from a family in the lowest income group, all else being equal. This is indicated by the odds ratio of 2.46 for the highest income category.

Continuous independent variables. Continuous variables do not have a reference category. Age is the only continuous variable in this analysis. The odds ratio and parameter estimate for this variable describe the statistical effect of a one-unit change in age on the dependent variable. For example, the odds ratio shows that a child who is one year older than another child is estimated to be 1.15 times more likely to use computers than the younger child (table 2), all else being equal.

Significance tests and CPS sample design. Significance tests were conducted after adjusting for the effects of the CPS sample design. Since the CPS sample is not a simple random sample, the methods that are normally used to compute the significance of parameter estimates in regression must be adjusted to account for the sample design. Adjustments were made to the weight variable to reflect design effects before the regression analysis was conducted. The new weight variable used in the regression analyses was calculated as follows:

$$w_n = \frac{w}{\bar{w} \times DEFF}$$

where w_n = the new final weight for a case used in regression

- w = the original final weight for the case
 \bar{w} = the mean of the original final weight, or 1748.3414
 DEFF = the design effect for the case

The DEFF is the square of the factor by which standard errors are inflated due to the characteristics of the complex sample design used in the Current Population Survey. The DEFF equals the product of two parameters that account for race and urbanicity (which are factors in the CPS sample design) divided by the survey sampling interval, which is 2,255. The parameters for White, non-Hispanic; Black, non-Hispanic; Hispanic; and other non-Hispanic are, respectively, 5,211, 7,486, 12,616, and 5,211. These parameters are increased by a factor of 1.5 for persons living in non-metropolitan areas and are unchanged for persons living in metropolitan areas. The DEFF ranges from 2.31 for a White or other non-Hispanic child living in a metropolitan area ($5,211/2,255 = 2.31$) to 8.39 for a Hispanic child living in a non-metropolitan area ($12,616 \times 1.5 / 2,255 = 8.39$).

Variables Used in the Analysis

Race/Ethnicity: The race/ethnicity variable is derived from two CPS questions that ask the subject's race (classified as White, Black, American Indian/Aleut/Eskimo, Asian or Pacific Islander, or other) and whether or not he or she is Hispanic. These data were used to derive a race/ethnicity variable with five mutually exclusive categories: White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; American Indian, Aleut, or Eskimo, non-Hispanic, and Hispanic.

Parent Educational Attainment: The CPS collects data about the highest level of school completed or the highest degree received for each person over the age of 15. Household respondents are also asked if subjects have taken any graduate or professional coursework since completing a bachelor's degree. Responses for these two variables were collapsed into an education variable with categories corresponding to five levels of educational attainment: less than a high school diploma, a high school diploma or equivalent (GED), some college education but no bachelor's degree (including people with an associate's degree), college degree (i.e. people with a bachelor's degree), and graduate education beyond a bachelor's degree, including

people who have taken graduate coursework but have not earned a degree. These data were then grouped by parent-child relationship and the highest level of education achieved by either parent residing with the child was assigned as the level of parent educational attainment. Those children and adolescents who do not reside with a parent are dropped from the analysis of parental education, and parents who do not live with their children are not included in the computation of parent educational attainment.

Family/Household Type: Each household in the sample is classified as one of four types. In a “two-parent household” the child or adolescent lives with a married couple. In “male householder” or “female householder” households the child or adolescent lives with an unmarried male or female adult. Children and adolescents whose housing arrangements fit none of these categories are classified as an “other arrangement.”

Household Language: Households are classified according to whether or not Spanish is the only language spoken by all members of the household who are 15 years of age or older.

Disability Status: Each child and adolescent is classified as disabled or not disabled. Subjects who were reported to have any one or more of the following “long-lasting physical conditions” were classified as disabled: “blindness or a severe vision impairment even with glasses or contact lenses;” “deafness or a severe hearing impairment even with a hearing aid;” “a physical condition that substantially limits [the person’s] ability to walk or climb stairs;” or “a condition that makes it difficult to type on an ordinary typewriter or traditional computer keyboard.” Note that it is not possible to infer that children and adolescents identified as disabled in this report receive any services or accommodation as a result of disability.

Family Income: Family income is derived from a single question asked of the household respondent. Income includes money from all sources including jobs, business, interest, rent, social security payments, and so forth that was received in the preceding 12 months. The income of all family members 15 years old and over is included. Income is reported in fourteen categories ranging from “less than \$5,000” to “\$75,000 or more.” For convenience in tabular

presentation, these fourteen categories were collapsed to five: under \$20,000, \$20,000-\$34,999, \$35,000-49,999, \$50,000-\$74,999, and \$75,000 or more.

Poverty Status: Poverty status is deduced from household size and reported household income categories. Households with reported income in categories below the poverty threshold for their household size (as currently defined by the U.S. Census Bureau for 2001) were classified as poor, and those households with income categories above the poverty threshold were classified as not poor. Some households reported income in a range that straddles the poverty threshold. It is likely that some of these households meet the Census Bureau definition of poverty and that some do not, but the CPS data do not allow discrimination between poor and non-poor status for these households. For the purposes of this analysis, all households in an income category that straddles a poverty threshold were classified as poor.²²

Urbanicity: The location of each subject's residence is considered metropolitan and part of a central city, metropolitan and not part of a central city, or non-metropolitan. Metropolitan status is defined by the Office of Management and Budget and indicates that an area has a total population of at least 75,000 in New England or 100,000 elsewhere and also contains a place with a population of at least 50,000 or an area that meets the Census Bureau's definition of an "urbanized" area. Metropolitan areas often include several counties and may include territory in more than one state. Central cities usually are one or more of the most populous areas in each metropolitan area.

²² For example, the poverty threshold for a family of three persons including one related child is currently \$14,255. A family of three that reported an income in the category "\$12,500 to \$14,999" is classified as poor in this analysis.

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Appendix

Table A1. Percentage of children and adolescents age 5–17 who use computers and the Internet, by age: 2001

Characteristics	Number of children (in thousands)	Percent using computers		Percent using the Internet	
		Percent	s.e.	Percent	s.e.
Total (persons age 5–17)	53,013	89.5	0.30	58.5	0.49
Age					
5	3,992	73.4	1.60	25.0	1.56
6	3,989	81.9	1.39	30.1	1.66
7	4,009	86.1	1.25	39.0	1.76
8	3,905	88.6	1.16	44.6	1.82
9	4,201	91.4	0.99	55.1	1.75
10	4,350	91.3	0.98	59.8	1.70
11	4,263	91.7	0.96	63.4	1.68
12	4,179	92.5	0.93	67.2	1.66
13	4,103	92.8	0.92	71.7	1.61
14	3,948	93.4	0.90	71.1	1.65
15	4,016	94.2	0.84	76.8	1.52
16	4,003	94.7	0.81	78.7	1.48
17	4,055	91.2	1.02	75.8	1.54

NOTE: s.e. is standard error. Detail may not sum to total due to rounding.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Table A2. Percentage of adults who use computers and the Internet, by selected characteristics: 2001

Characteristics	Number of adults (in thousands)	Percent using computers		Percent using the Internet	
		Percent	s.e.	Percent	s.e.
Total (persons age 18 and over)	204,299	60.1	0.25	54.2	0.25
Adult characteristics					
Age					
18-29	44,717	70.6	0.49	65.0	0.51
30-39	40,927	71.4	0.51	65.3	0.54
40-49	43,384	69.3	0.51	62.3	0.53
50-64	42,430	58.2	0.55	51.2	0.55
65 and over	32,842	22.1	0.52	18.7	0.49
Sex					
Male	97,970	59.7	0.36	54.3	0.36
Female	106,329	60.5	0.34	54.1	0.35
Race/ethnicity ¹					
White	148,620	65.2	0.28	59.7	0.29
Black	23,826	46.5	0.88	39.2	0.87
Hispanic	22,221	38.7	1.16	31.1	1.10
Asian	8,083	67.0	1.19	61.2	1.24
American Indian	1,548	50.5	2.90	45.8	2.89
Disability status					
Disabled	17,302	27.7	0.78	24.4	0.75
Not disabled	160,947	62.6	0.28	56.8	0.28
Educational attainment					
Less than high school credential	32,451	21.3	0.52	16.6	0.47
High school credential	67,305	49.4	0.44	42.2	0.43
Some college	55,421	73.0	0.43	65.8	0.46
Bachelor's degree	23,539	84.3	0.54	80.2	0.59
Graduate education	25,582	87.4	0.47	84.3	0.52
Family & household characteristics					
Household language					
Spanish-only	7,478	26.7	1.17	21.4	1.08
Not Spanish-only	196,821	61.4	0.25	55.4	0.26
Poverty status					
In poverty	23,414	29.6	0.96	24.8	0.91
Not in poverty	147,060	67.3	0.39	61.3	0.41
Family income					
Under \$20,000	32,652	28.4	0.57	24.1	0.54
\$20,000-\$34,999	33,721	47.8	0.62	40.9	0.61
\$35,000-\$49,999	27,411	64.9	0.66	57.5	0.68
\$50,000-\$74,999	33,851	76.1	0.53	69.2	0.57
\$75,000 or more	42,839	86.5	0.38	82.1	0.42
Urbanicity					
Metropolitan, city center	49,076	55.9	0.51	49.8	0.52
Metropolitan, not city center	88,223	65.5	0.37	59.9	0.38
Non-metropolitan	38,087	52.6	0.72	46.3	0.71

¹ White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding or missing data. Estimates are based on public-use data and may differ from estimates based on restricted-use data.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Table A3. Characteristics of persons age 5–17: 2001

Characteristics	Number of children (in thousands)	All persons age 5–17			Computer non-users			Internet users			Internet non-users	
		Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	Percent	s.e.	
Child characteristics												
Age												
5–7	11,990	22.6	0.41	20.3	0.42	42.2	1.51	12.2	0.42	37.3	0.74	
8–10	12,455	23.5	0.42	23.8	0.45	21.3	1.26	21.5	0.53	26.3	0.68	
11–14	16,493	31.1	0.46	32.2	0.49	22.0	1.27	36.3	0.62	23.8	0.66	
15–17	12,075	22.8	0.42	23.7	0.45	14.5	1.08	30.0	0.59	12.6	0.51	
Sex												
Female	25,835	48.7	0.50	49.0	0.52	46.4	1.53	48.9	0.65	48.5	0.77	
Male	27,178	51.3	0.50	51.0	0.52	53.6	1.53	51.1	0.65	51.5	0.77	
Race/ethnicity ¹												
White	33,433	63.1	0.48	65.8	0.50	40.1	1.50	72.0	0.58	50.5	0.77	
Black	8,275	15.6	0.43	14.8	0.45	22.3	1.53	12.1	0.51	20.6	0.75	
Hispanic	8,400	15.8	0.56	13.9	0.56	32.2	2.23	10.1	0.61	24.0	1.02	
Asian	2,268	4.3	0.20	4.3	0.21	4.2	0.61	4.7	0.27	3.6	0.29	
American Indian	637	1.2	0.11	1.2	0.11	1.2	0.33	1.1	0.14	1.3	0.17	
Disability status												
Disabled	626	1.4	0.12	1.2	0.12	2.6	0.53	1.1	0.14	1.7	0.22	
Not disabled	45,416	98.6	0.12	98.8	0.12	97.4	0.53	98.9	0.14	98.3	0.22	
Family & household characteristics												
Parent educational attainment												
Less than h. s. credential	5,450	10.8	0.32	9.1	0.31	26.3	1.41	5.8	0.31	18.0	0.61	
High school credential	13,611	26.9	0.45	26.1	0.47	34.6	1.53	22.9	0.55	32.8	0.75	
Some college	15,665	31.0	0.47	31.7	0.50	24.9	1.39	33.1	0.62	27.9	0.71	
Bachelor's degree	6,712	13.3	0.34	13.9	0.37	7.7	0.86	15.6	0.48	10.0	0.48	
Graduate education	9,114	18.0	0.39	19.3	0.42	6.5	0.79	22.7	0.55	11.3	0.50	
Family/household type												
Two parent household	37,230	70.2	0.45	71.6	0.47	58.3	1.51	74.7	0.56	64.0	0.74	
Male householder	2,715	5.1	0.22	5.0	0.23	6.4	0.75	4.8	0.28	5.6	0.35	
Female householder	12,440	23.5	0.42	22.4	0.44	32.5	1.44	19.6	0.51	28.9	0.70	
Other arrangement	628	1.2	0.11	1.0	0.10	2.8	0.51	1.0	0.13	1.5	0.19	
Household language												
Spanish-only	2,549	4.8	0.21	3.8	0.20	13.6	1.05	2.4	0.20	8.3	0.42	
Not Spanish-only	50,464	95.2	0.21	96.2	0.20	86.4	1.05	97.6	0.20	91.7	0.42	
Poverty status												
In poverty	9,277	20.1	0.60	17.9	0.61	39.9	2.34	12.4	0.64	31.4	1.09	
Not in poverty	36,904	79.9	0.60	82.1	0.61	60.1	2.34	87.6	0.64	68.6	1.09	
Family income												
Under \$20,000	8,344	18.1	0.41	16.1	0.41	36.5	1.63	11.1	0.43	28.4	0.75	
\$20,000–\$34,999	8,852	19.2	0.42	18.3	0.43	26.8	1.50	15.7	0.50	24.3	0.72	
\$35,000–\$49,999	7,438	16.1	0.39	16.4	0.41	13.1	1.14	17.0	0.52	14.8	0.59	
\$50,000–\$74,999	9,530	20.6	0.43	21.4	0.46	13.5	1.16	23.3	0.58	16.8	0.62	
\$75,000 or more	12,018	26.0	0.47	27.8	0.50	10.1	1.02	33.0	0.65	15.8	0.61	
Urbanicity												
Metropolitan, city center	12,249	27.0	0.48	25.5	0.49	39.2	1.61	23.0	0.59	32.5	0.77	
Metropolitan, not city center	23,566	51.9	0.54	52.9	0.57	43.5	1.63	55.3	0.70	47.2	0.83	
Non-metropolitan	9,609	21.2	0.54	21.6	0.57	17.3	1.52	21.7	0.71	20.3	0.81	

¹ White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding or missing data.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.

Table A4. Characteristics of persons age 5–17 using computers at home and at school: 2001

Characteristics	Computer users				
	Number of children ¹ (in thousands)	Using computers at home		Using computers at school	
		Percent	s.e.	Percent	s.e.
Child characteristics					
Age					
5–7	9,650	19.6	0.49	19.1	0.43
8–10	11,275	22.6	0.51	24.2	0.47
11–14	15,270	32.7	0.58	32.9	0.52
15–17	11,254	25.1	0.53	23.8	0.47
Sex					
Female	23,257	49.1	0.61	49.3	0.55
Male	24,192	50.9	0.61	50.7	0.55
Race/ethnicity ²					
White	31,201	74.4	0.54	65.2	0.53
Black	7,033	9.8	0.44	15.4	0.48
Hispanic	6,609	9.9	0.57	14.1	0.60
Asian	2,033	5.0	0.27	4.0	0.22
American Indian	573	1.0	0.12	1.2	0.12
Disability status					
Disabled	500	1.2	0.14	1.2	0.13
Not disabled	40,759	98.8	0.14	98.8	0.13
Family & household characteristics					
Parent educational attainment					
Less than high school credential	4,121	4.3	0.25	9.4	0.33
High school credential	11,863	21.8	0.52	26.6	0.50
Some college	14,403	33.1	0.59	31.3	0.52
Bachelor's degree	6,317	16.2	0.46	13.9	0.39
Graduate education	8,786	24.6	0.54	18.9	0.44
Family/household type					
Two parent household	33,988	79.0	0.50	70.9	0.50
Male householder	2,357	4.2	0.25	5.0	0.24
Female householder	10,635	15.9	0.45	23.1	0.47
Other arrangement	469	0.9	0.12	0.9	0.10
Household language					
Spanish-only	1,794	2.2	0.18	3.8	0.21
Not Spanish-only	45,655	97.8	0.18	96.2	0.21
Poverty status					
In poverty	7,462	9.6	0.54	18.5	0.64
Not in poverty	34,172	90.4	0.54	81.5	0.64
Family income					
Under \$20,000	6,682	8.5	0.36	16.7	0.44
\$20,000–\$34,999	7,638	14.7	0.46	18.4	0.46
\$35,000–\$49,999	6,838	17.1	0.49	16.4	0.44
\$50,000–\$74,999	8,919	24.8	0.56	21.2	0.48
\$75,000 or more	11,557	34.9	0.62	27.3	0.52
Urbanicity					
Metropolitan, city center	10,357	21.9	0.55	25.4	0.52
Metropolitan, not city center	21,463	57.5	0.66	52.4	0.60
Non-metropolitan	8,774	20.6	0.66	22.1	0.61

¹ This figure is the number of people age 5 to 17 in the designated category who use computers at home and/or at school. The number using computers at either location may be lower.

² White, Black, Asian, and American Indian respectively indicate White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and American Indian, Aleut, or Eskimo, non-Hispanic.

NOTE: s.e. is standard error. Detail may not sum to total due to rounding.

SOURCE: U.S. Census Bureau, Current Population Survey, September 2001.