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## ABSTRACT

In November 1994, the Current Population Survey included questions on ownership and usage of computers and modems in addition to its customary questions on telephone "penetration." Data from this survey were cross-tabulated according to income, race, age, educational attainment, region, and geographic category (rural, urban, and central city) to create a profile of those not connected to the National Information Infrastructure. Overall, the poorest central-city households (incomes less than \$10,000) had the lowest telephone penetration (79.8 percent), but the rural poor had the lowest computer penetration (4.5 percent) and, among households with computers, were least likely to have a modem. However, the most likely users of online classes were low-income users in all areas. With regard to racial categories, rural Native Americans had the lowest telephone penetration (75.5 percent), while rural Blacks had the lowest computer rates (6.4 percent). Regarding usage of online services, minority groups surpassed Whites in percentage of classified ad searches, taking courses, and accessing government reports. By age group, telephone penetration was lowest among the youngest rural households, while computer penetration was lowest among rural and central-city seniors and the youngest rural households. With some exceptions, educational attainment (tables 10-12) was related to telephone, computer, and modem penetration. For a given level of education, central-city households had the lowest telephone and computer penetration and rural households with computers had the lowest modem penetration. Participation in online courses was highest among those with the lowest educational attainment. Includes definitions and 30 data tables illustrated with bar charts. (SV)

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# FALLING THROUGH THE NET: A SURVEY OF THE "HAVE NOTS" IN RURAL AND URBAN AMERICA



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# FALLING THROUGH THE NET: A SURVEY OF THE "HAVE NOTS" IN RURAL AND URBAN AMERICA

## I. Background

At the core of U.S. telecommunications policy is the goal of "universal service" -- the idea that all Americans should have access to affordable telephone service. The most commonly used measure of the nation's success in achieving universal service is "telephone penetration" -- the percentage of all U.S. households that have a telephone on-premises.<sup>1</sup> There currently exist two principal sources for nationwide data on telephone penetration: First, the Current Population Survey ("CPS"), conducted by the U.S. Bureau of the Census, U.S. Department of Commerce, three times each year, includes questions on telephone subscription. Second, the Federal Communications Commission's ("FCC") Industry Analysis Division, within the Common Carrier Bureau, uses the CPS data to produce regular reports that provide a detailed demographic profile of telephone subscribership in the United States.

Although these statistics have provided an invaluable empirical foundation for the universal service debate, they are incomplete in at least two respects. The publicly-available CPS data does not include a geographic identifier for the households surveyed, primarily to preserve the confidentiality of household-specific information. As a result, the FCC's periodic reports cannot indicate how telephone subscribership varies geographically -- how, for example, telephone penetration in rural areas compares to penetration in suburbia or central cities.

*"While a standard telephone line can be an individual's pathway to the riches of the Information Age, a personal computer and modem are rapidly becoming the keys to the vault."*

Additionally, the subscribership data typically collected are limited to telephone service. There are legitimate questions about linking universal service solely to telephone service in a society where individuals' economic and social well-being increasingly depends on their ability to access, accumulate, and assimilate information. While a standard telephone line can be an individual's pathway to the riches of the Information Age, a personal computer and modem are rapidly becoming the keys to the vault. The robust growth recently experienced in Internet usage illustrates this promise as new and individual subscribers gravitate to on-line services.<sup>2</sup> This suggests a need to go beyond the traditional focus on telephone penetration as the barometer of this nation's progress toward universal service.

As the President's principal adviser on telecommunications policy, the Commerce Department's National Telecommunications and Information Administration ("NTIA") has taken two steps to fill these lacunae in the nation's universal service database. In July 1994, NTIA contracted with the Census Bureau to include questions on computer/modem ownership and usage in the CPS conducted in November 1994<sup>3</sup>. Further, after the CPS was concluded, NTIA asked Census to cross-tabulate the information gathered according to several specific variables (*i.e.*,

income, race, age, educational attainment, and region) and three geographic categories -- rural, urban, and central city.<sup>4</sup>

*"In essence, information "have nots" are disproportionately found in this country's rural areas and its central cities."*

By supplementing the existing database in these two critical respects, NTIA has developed a more expansive profile of universal service in America -- a portrait that includes computers and modems as well as telephones. The data in the attached tables provide fresh insights into the make-up of those who are not connected to the National Information Infrastructure ("NII"). More particularly, this research has explored the characteristics of the "have nots" in rural versus urban settings. In addition, the agency has gained new insights about the "information disadvantaged" in America's central cities, enabling policymakers for the first time to array these characteristics against rural and urban profiles. NTIA's examination reveals the usage habits of PC/modem users in accessing on-line services, an important input for policy development in the nascent Information Age.

**A Closer Look.** In essence, information "have nots" are disproportionately found in this country's rural areas and its central cities. While most recognize that poor people as a group have difficulties in connecting to the NII, less well-known is the fact that the lowest telephone penetration exists in central cities (Table-Chart 1). Concerning personal-computer penetration and the incidence of modems when computers are present in a household, however, no situation compares with the plight of the rural poor (Table-Charts 2 and 3).

An examination by race reveals that Native Americans (including American Indians, Aleuts, and Eskimos) in rural areas proportionately possess the fewest telephones, followed by rural Hispanics and rural Blacks (Table-Chart 4). Black households in central cities and particularly rural areas have the lowest percentages of PCs, with central city Hispanics also ranked low (Table-Chart 5). For those households with computers, Native Americans and Asians/Pacific Islanders registered the lowest position among those possessing modems (Table-Chart 6).

*"On the basis of age, the single most seriously disadvantaged group consists of the youngest householders (under 25 years), particularly in rural areas."*

On the basis of age, the single most seriously disadvantaged group consists of the youngest house-holders (under 25 years), particularly in rural areas. Overall, they rank lowest in telephone penetration and near the bottom relating to computers on-premises (Table-Chart 7). While senior citizens (55 years and older) -- regardless of the type of area -- surpass all other groups with respect to telephones, rural seniors rate lowest in computer penetration (see Table-Chart 8). Among households with

PCs, the youngest in rural areas also fare worst in modem penetration, followed by rural middle-aged and senior citizens (Table-Chart 9).

***"NTIA's research reveals that many of the groups that are most disadvantaged in terms of absolute computer and modem penetration are the most enthusiastic users of on-line services that facilitate economic uplift and empowerment."***

Generally, the less that one is educated, the lower the level of telephone, computer, and computer-household modem penetration. For a given level of education, however, central city households generally have the lowest penetration for both telephones and computers (Table-Charts 10 and 11), while rural households with computers consistently trail urban areas and central cities in terms of modem penetration (Table-Chart 12). Northeast central cities rank as the region with proportionately the most telephone and computer "have nots," followed by Southern central cities and rural areas (Table-Charts 13-14). Modem penetration among computer households is lowest in rural areas, specifically in the West, then the Midwest and the South (Table-Chart 15).

***Empowering the Information Disadvantaged.*** NTIA's research reveals that many of the groups that are most disadvantaged in terms of absolute computer and modem penetration are the most enthusiastic users of on-line services that facilitate economic uplift and empowerment. Low-income, minority, young, and less educated computer households in rural areas and central cities appear to be likely to engage actively in searching classified ads for employment, taking educational classes, and accessing government reports, on-line via modem (Table-Charts 16-30).

***The Facts.*** More specifically, our findings point to the following information "have nots":

- **Poor in Central Cities and Rural Areas** -- Overall, the poorest households (incomes less than \$10,000) in central cities have the lowest telephone penetration (79.8%), followed by rural (81.6%) and urban (81.7%) areas. However, the rural poor are lowest in terms of computer penetration (4.5%) and -- among those households with computers -- modem (23.6%) penetration compared to central cities (7.6% and 43.9%) and urban areas (8.1% and 44.1%). Interestingly, among the most likely users of on-line classes are low-income users (\$10,000-\$14,999) in all areas (rural, central city, and urban).
- **Rural and Central City Minorities** -- Native American households (American Indians, Aleuts, and Eskimos) in rural areas have the lowest telephone penetration (75.5%). Rural Blacks have the lowest computer rates (6.4%), followed by central city Blacks (10.4%), central city Hispanics (10.5%), and urban Blacks (11.8%). Computer households composed of Asian/Pacific Islanders (26.7%) and Native Americans in rural areas have the least modem

penetration. Albeit Whites in urban areas have the highest telephone penetration (96.2%), an urban minority group (Asians or Pacific Islanders) leads all others in terms of computer penetration (39.5%). Regarding usage of on-line services, minority groups surpassed Whites in percentage of: classified ad searches -- urban and central city Native Americans (48.6%, 27.0%) and rural Hispanics (22.1%); taking courses -- rural Native Americans (51.7%) and rural Blacks (33.4%); and accessing government reports -- rural, urban, and central city Native Americans (45.4%, 46.4%, 41.8%) and rural Hispanics (52.8%).

- **Young and Old** -- Regarding telephone penetration, the youngest households (under 25 years) in rural areas trail all others. In terms of computers, rural senior citizens (55 years and older) possess the lowest penetration (11.9%), followed by seniors in central cities (12.0%) and the youngest in rural areas (12.3%). These two groups are also very low-ranking in terms of modem penetration as a percentage of computer households, all in rural areas: the youngest (27.4%), 45-54 years old (38.0%), and seniors (38.4%). Yet the youngest households with computers in rural areas rank number one in taking courses (21.7%) and second in classified ad searches (10.7%). The youngest householders in central city areas are also among the most likely to search classified ads (9.2%) and access government reports (21.0%) among on-line services.
- **Less-educated in Central Cities** -- With some exceptions (most notably, telephone penetration for the two lowest education categories), the fewer the number of years of education, the lower the telephone, computer, and computer-household modem penetration. For a given level of education, however, central city households generally have the lowest telephone and computer penetration rates, while rural households with computers consistently trail other areas with respect to modems. For those taking on-line courses, the highest degree of participation is among those with the lowest level of education (zero to eight years) located in urban (31.8%) and rural (24.3%) areas, and the lowest in the central cities (13.7%).
- **Northeast Central Cities and South** -- The lowest telephone and computer penetration is in Northeast central cities (89.5%, 16.4%), plus central city (91.2%, 22.0%) and rural (91.3%, 18.6%) areas in the South. Modem penetration among households with computers is lowest in rural areas in the West (35.3%), Midwest (37.2%), and South (40.7%). Yet households in the rural South (7.3%) and Northeast central cities (9.4%) are among the most active in searching classified ads, and the latter region in accessing government documents (20.9%). In taking classes, the rural South (22.3%) and central cities (20.3%) topped all other areas, followed by Northeast central cities (18.8%).



**Where We Go From Here -- and Why . . .** More work needs to be done to better assess the characteristics of these "have nots." For example, it is not clear whether the same low-income disadvantaged are also those who are minorities or the less educated or the young or old. Additional evidence is required for determining whether, *e.g.*, mobility of households is an important determining factor of information exclusion within central cities or rural areas. Once superior profiles of telephone, computer, and on-line users are developed, then carefully targeted support programs can be implemented that will assure with high probability that those who need assistance in connecting to the NII will be able to do so. NTIA anticipates working in a collaborative effort with federal, state, and local policymakers, as appropriate, to meaningfully achieve these goals.

The broad policy implications for these findings should not be overlooked. By identifying those who are truly in need, policymakers can prudently and efficiently target support to these information disadvantaged. Only when this point is reached can all those who desire to access the NII be possibly accommodated. However, connectivity to all such households will not occur instantaneously; rather, there is a pivotal role to be assumed in the new electronic age by the traditional providers of information access for the general public -- the public schools and libraries. These and other "community access centers" can provide, at least during an interim period, a means for electronic access to all those who might not otherwise have such access. Policy prescriptions that include public "safety nets" would complement the long-term strategy of hooking up all those households who want to be connected to the NII.

*" . . . there is a pivotal role to be assumed in the new electronic age by the traditional providers of information access for the general public -- the public schools and libraries. . . and other "community access centers". . . "*

## II. Methodology and Definitions

The tables and charts that follow draw upon the results of both the Computer Ownership/Usage Supplement and the November 1994 CPS.

**Race and Origin.** According to the U.S. Census Bureau, race is defined as a concept used by individuals as a self-identification of "biological stock." Such identifiers include White; Black; American Indian, Eskimo, or Aleut; and Asian or Pacific Islander.<sup>5</sup> In addition to the race identifier, all respondents are asked if they classify themselves as Hispanic in origin, including "ancestry, nationality, group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States." As a result, individuals of Hispanic origin can be of any race.

Most analyses of telephone penetration use race defined in terms of White, Black, and Other (including American Indian, Eskimo, Aleut, Asian, Pacific Islander,



and other) and Hispanic origin. The consequence of Census' racial description, and analyses based on this description, is a "double counting" for the various races and respondents who claim Hispanic origin. This may result in under representing the penetration figures for those races.<sup>6</sup> To correct this problem, NTIA requested that Census "recode" the race definitions to exclude Hispanic data, thus creating new classifications. These include a separate category for Hispanic origin, and newly defined categories for White - non-Hispanic; Black - non-Hispanic; American Indian -, Eskimo -, and Aleut - non-Hispanic; Asian -, or, Pacific Islander - non- Hispanic; and other - non-Hispanic. NTIA strongly believes that by recoding the race tabulations, our analysis will present a clearer picture of the "haves" and "have nots."

***Rural versus Urban and Central City Areas.*** The Census Bureau defines "urban" as designated areas comprised of all territory, population, and housing units of 2500 or more persons.<sup>7</sup> "Rural" areas constitute territory, population and housing units not classified as urban; "places of less than 2500" persons and, what the Census Bureau refers to as, "not in places" (areas not part of or outside of designated Census areas).<sup>8</sup>

Our analysis also includes areas designated as "central city" areas or part(s) of a Metropolitan Statistical Area ("MSA") or Primary Metropolitan Statistical Area ("PMSA") that meet the standard of the "largest place," or places (based on population and other criteria) within that MSA or PMSA.<sup>9</sup> There is no relation between data for central city and data for urban versus rural.

## Endnotes

1. As of November 1994, telephone penetration in the U.S. was 93.8 percent. See Alexander Belinfante, Federal Communications Commission, Telephone Subscribership in the United States, Table 2 at 14 (April 1995).
2. Recent evidence accumulated by the University of Michigan Business School suggests that more than half of "Net" users subscribe through a private Internet access provider -- using their PCs and modems. Steve Lohr, Technology: On the Net; Out, Damned Geek! The Typical Web User is no Longer Packing a Pocket Protector, N.Y. Times, July 3, 1995, § 1, at 39. Moreover, a 1994-95 survey of 12,000 users conducted by the Interactive Services Association found that for the first time, consumers that have been on-line for a year or less will make up a majority of all on-line users by the end of 1995. Communications Daily, May 22, 1995.
3. The November, 1994, Current Population Survey reports data collected from a sample of 54,000 U.S. households.
4. See discussion infra part II, "Methodology and Definitions."
5. Also included is the "Other" category, which most often includes individuals of "multiracial, multiethnic, mixed, interracial, Wesort, or a Spanish/Hispanic origin group (such as Mexican, Cuban, or Puerto Rican)." Bureau of the Census, U.S. Dep't of Commerce, Current Population Survey Interview Manual Technical Documentation of the 1990 Census of Population and Housing, Summary Tape File 3, 5-6 (January 1994).
6. Although Black and other categories could be similarly affected, Census has found that most of the overlap occurs between the White and Hispanic categories.
7. However, the following places with 2500 or more persons are not considered "urban": "incorporated cities, villages, boroughs (except in Alaska and New York), and towns (except in the six New England States, New York, and Wisconsin), but excluding the rural portions of "extended cities" (e.g., Nashville, Tennessee, and Jacksonville, Florida, where the county and cities have merged). Bureau of the Census, U.S. Dep't of Commerce, Technical Documentation of the 1990 Census of Population and Housing: Summary Tape File 3 on CD-ROM, A-11 (May 1992).
8. Id. at A-8 - A-9.
9. Generally, MSAs are a collection of communities surrounding a large, or several large, population nucleus that share very strong economic and social links with that nucleus. Technical Documentation at A-8 - A-9.

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Table 1: Percent of U.S. Households with a Telephone  
By Income  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Less than \$10,000	81.6	81.7	79.8
\$10,000- \$14,999	89.5	91.3	91.2
\$15,000-\$19,999	93.2	93.4	91.0
\$20,000-\$24,999	93.0	95.3	93.7
\$25,000-\$34,999	97.8	97.0	96.8
\$35,000-\$49,999	98.6	98.3	98.2
\$50,000-\$74,999	99.1	99.1	98.6
\$75,000 or more	99.2	98.9	98.8

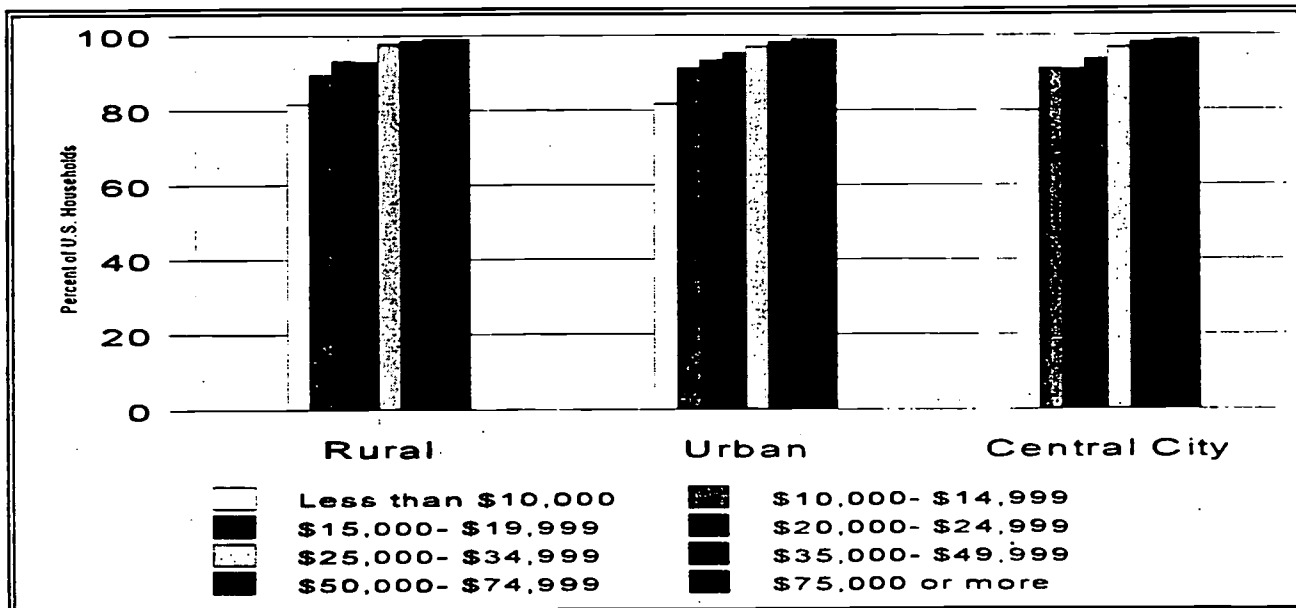


Chart 1

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 2: Percent of U.S. Households with a Computer  
By Income  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Less than \$10,000	4.5	8.1	7.6
\$10,000-\$14,999	7.0	9.1	9.3
\$15,000-\$19,999	11.0	12.6	13.0
\$20,000-\$24,999	15.7	15.9	16.3
\$25,000-\$34,999	18.1	22.0	21.1
\$35,000-\$49,999	32.7	34.9	34.7
\$50,000-\$74,999	46.0	48.4	47.4
\$75,000 or more	59.6	64.4	63.1

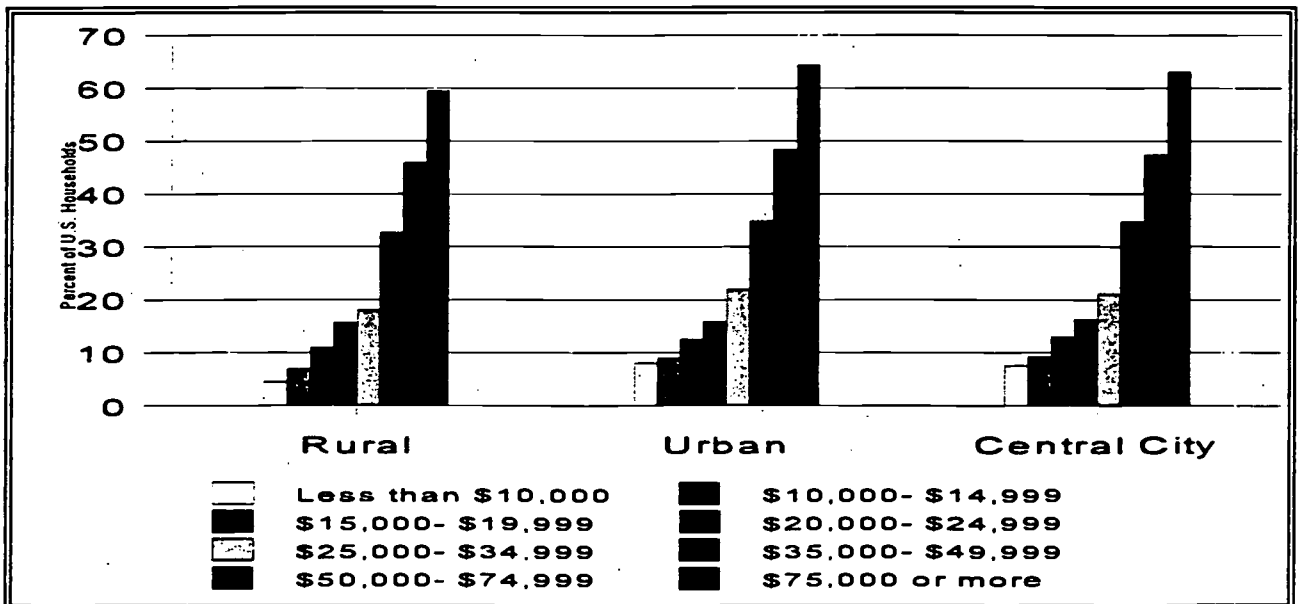


Chart 2

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.



Table 3: Percent of U.S. Computer Households with a Modem  
By Income  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Less than \$10,000	23.6	44.1	43.9
\$10,000-\$14,999	28.9	40.6	44.8
\$15,000-\$19,999	32.4	30.7	28.3
\$20,000-\$24,999	28.5	38.2	36.8
\$25,000-\$34,999	32.6	41.1	43.3
\$35,000-\$49,999	34.4	45.6	48.0
\$50,000-\$74,999	46.7	49.8	49.2
\$75,000 or more	52.2	58.1	56.4

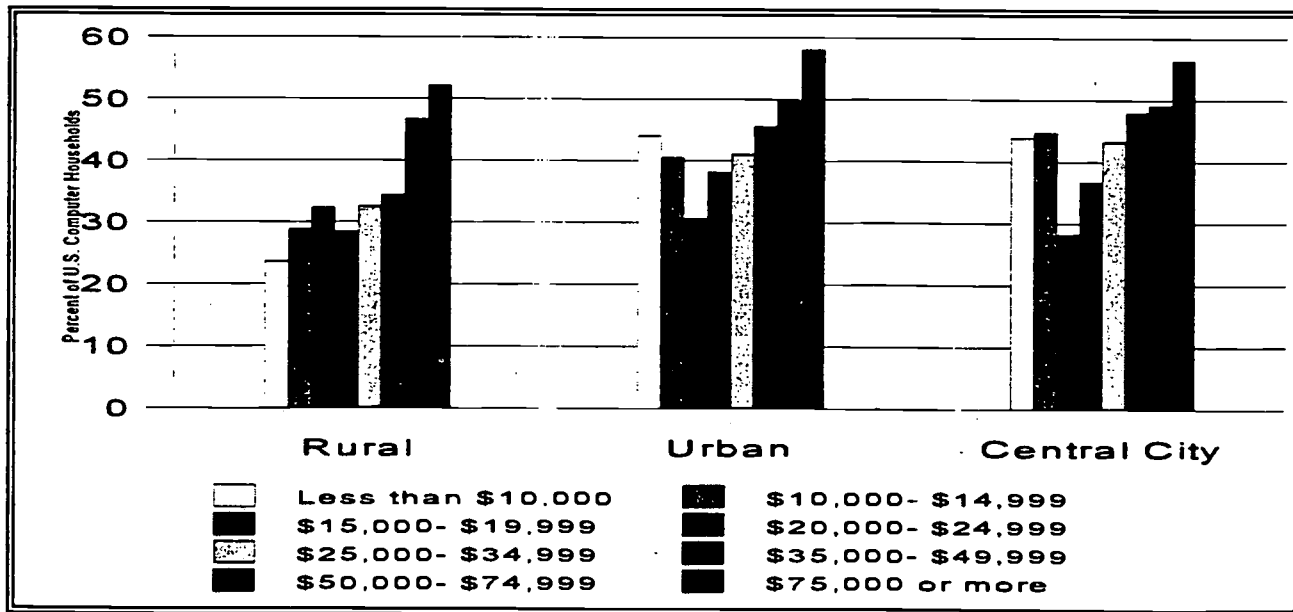


Chart 3

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 4: Percent of U.S. Households with a Telephone  
By Race/Origin  
By Rural, Urban, and Central City

	Rural	Urban	Central City
White-non-Hispanic	95.4	96.2	95.2
Black-non-Hispanic	80.9	86.3	86.2
Hispanic	79.0	86.4	84.9
American Indian, Aleut, Eskimo-non-Hispanic	75.5	90.0	90.3
Asian or Pacific Islander-non-Hispanic	97.1	95.8	95.3
Other-non-Hispanic	81.8	91.0	88.3

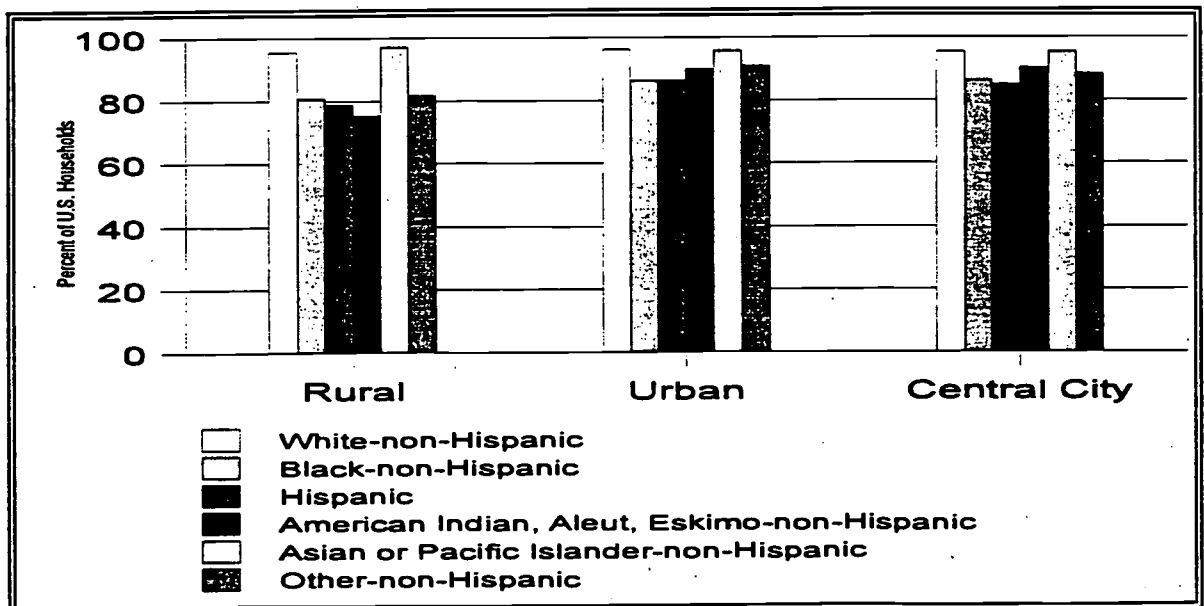
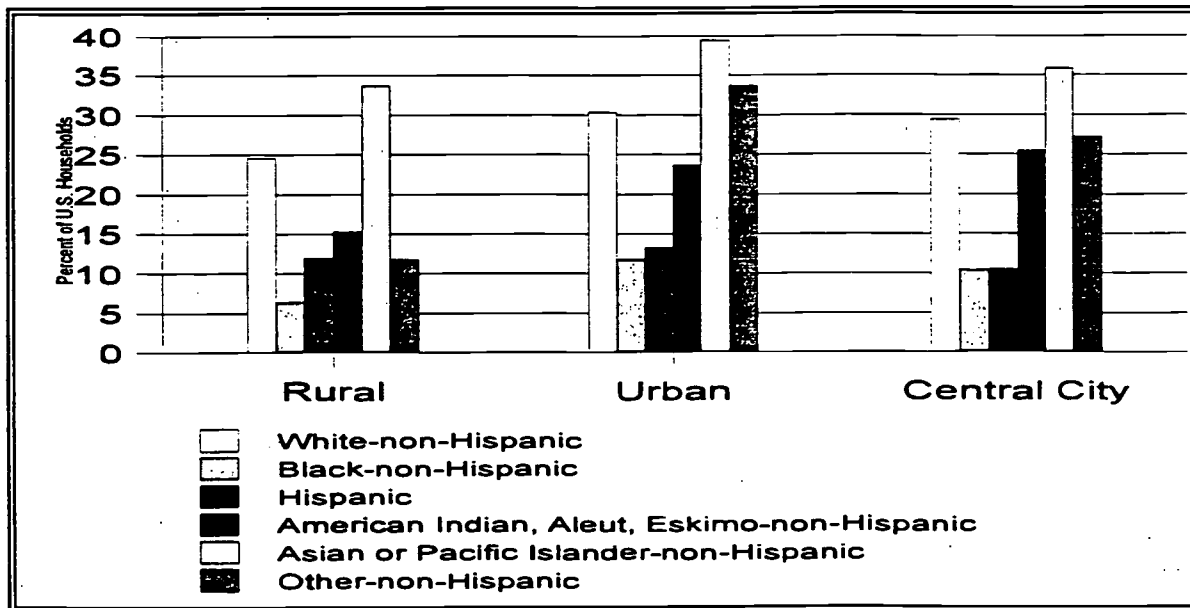


CHART 4

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 5: Percent of U.S. Households with a Computer  
by Race/Origin  
By Rural, Urban, and Central City Areas.

	Rural	Urban	Central City
White-non-Hispanic	24.6	30.3	29.4
Black-non-Hispanic	6.4	11.8	10.4
Hispanic	12.0	13.2	10.5
American Indian, Aleut, Eskimo-non-Hispanic	15.3	23.7	25.5
Asian or Pacific Islander-non-Hispanic	33.7	39.5	35.9
Other-non-Hispanic	11.8	33.7	27.2

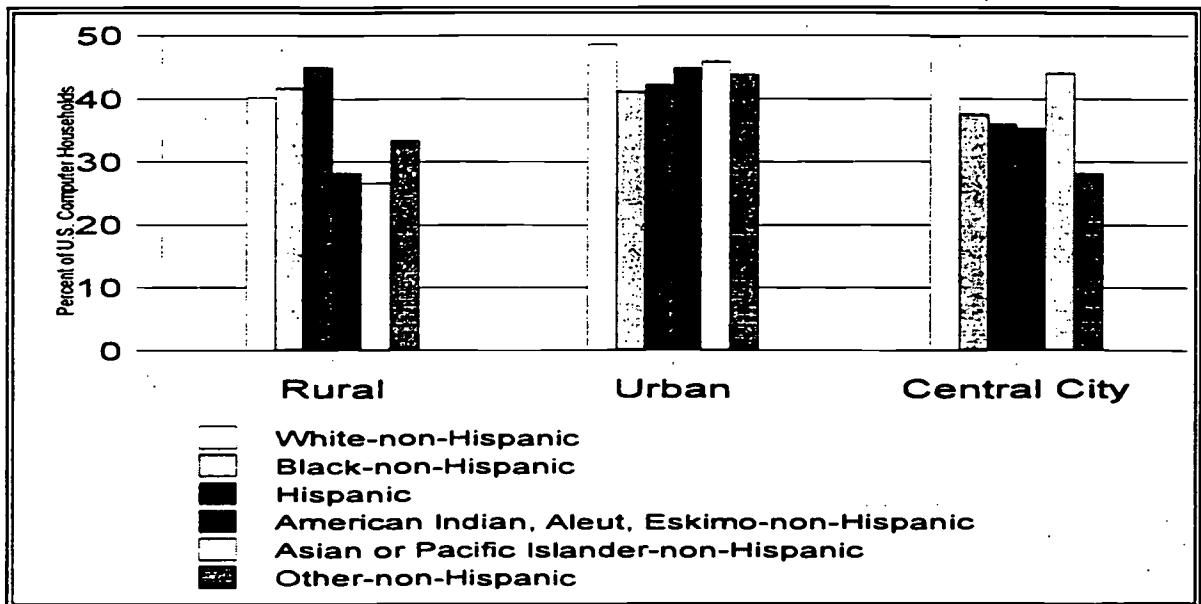


**CHART 5**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 6: Percent of U.S. Computer Households with a Modem  
By Race/Origin  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
White-non-Hispanic	40.2	48.6	49.7
Black-non-Hispanic	41.7	41.2	37.6
Hispanic	45.0	42.3	36.0
American Indian, Aleut, Eskimo-non-Hispanic	28.3	44.9	35.4
Asian or Pacific Islander-non-Hispanic	26.7	45.9	44.1
Other-non-Hispanic	33.4	43.8	28.2



**CHART 6**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 7: Percent of U.S. Households with a Telephone  
By Age  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Under 25 years	77.2	85.6	85.1
25-34 years	89.6	91.3	89.3
35-44 years	94.3	93.9	91.4
45-54 years	96.1	95.2	93.1
55 years and older	96.4	96.2	95.2

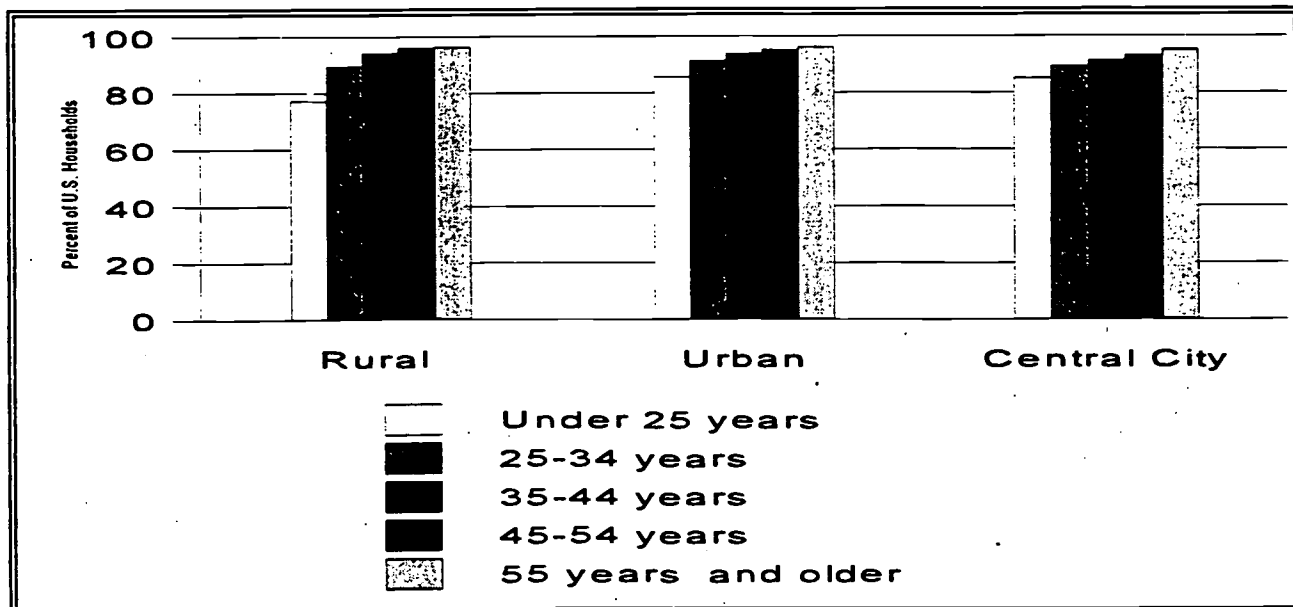
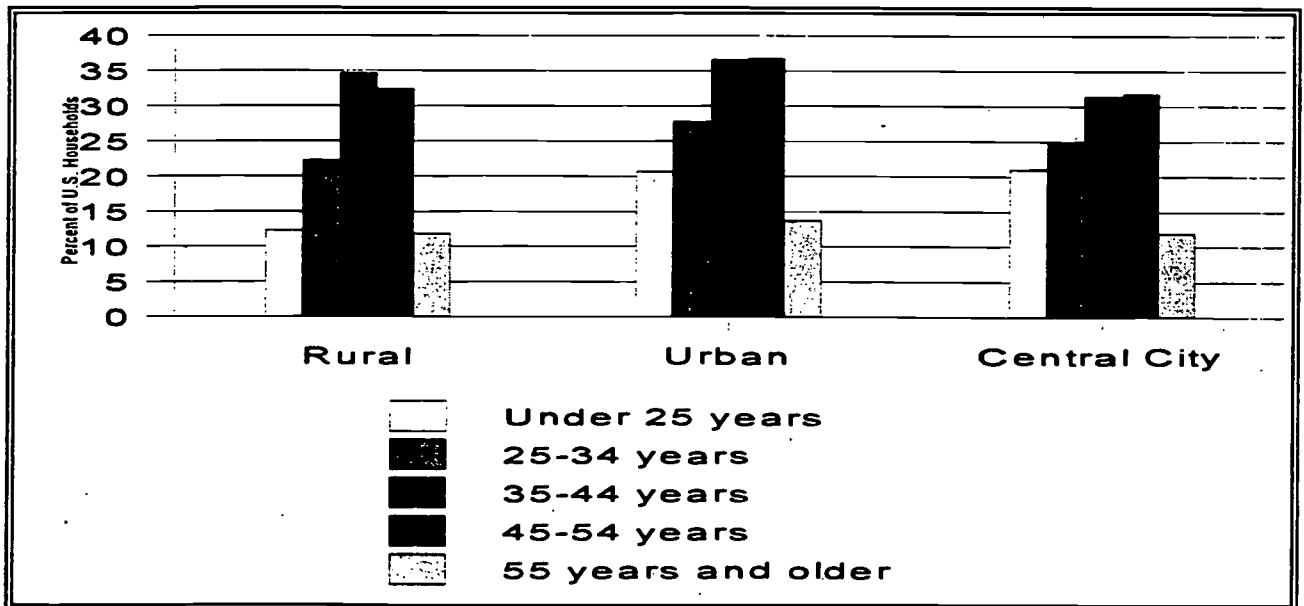


Chart 7

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 8: Percent of U.S. Households with a Computer  
By Age  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Under 25 years	12.3	20.7	21.0
25-34 years	22.3	27.8	25.0
35-44 years	34.7	36.6	31.4
45-54 years	32.5	36.8	31.8
55 years and older	11.9	13.8	12.0



**Chart 8**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.



Table 9: Percent of U.S. Computer Households with a Modem  
By Age  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Under 25 years	27.4	44.4	46.6
25-34 years	44.0	52.3	51.0
35-44 years	41.5	47.6	48.2
45-54 years	38.0	48.4	47.9
55 years and older	38.4	41.7	39.2

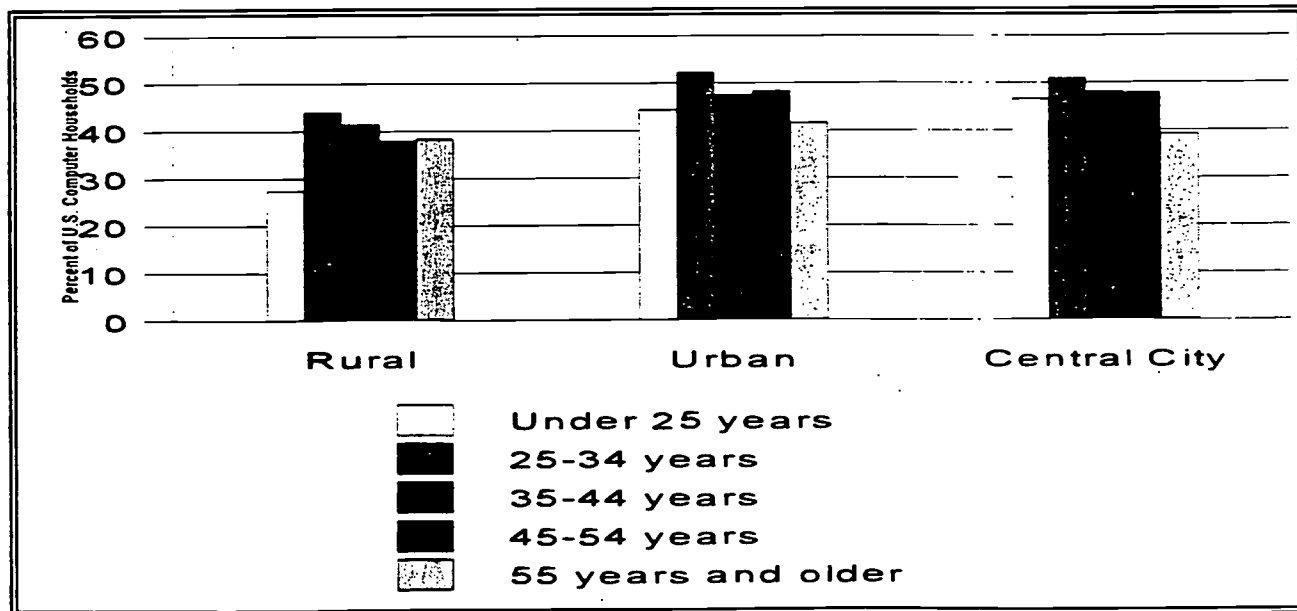


Chart 9

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 10: Percent of U.S. Households with a Telephone  
By Educational Attainment  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Elementary: 0-8 years	88.9	87.6	86.9
High School: 1-3 years	88.2	85.9	83.7
High School: 4 years	93.7	92.7	89.6
College: 1-3 years	96.3	95.8	94.5
College: 4 years or more	98.7	98.0	97.6

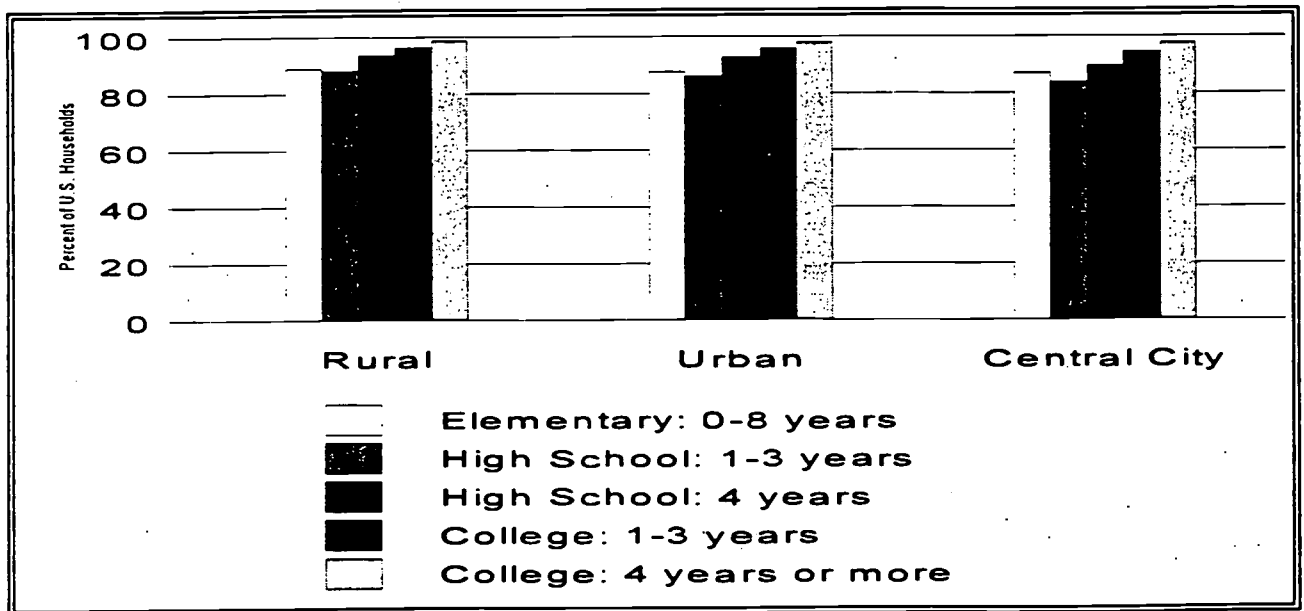
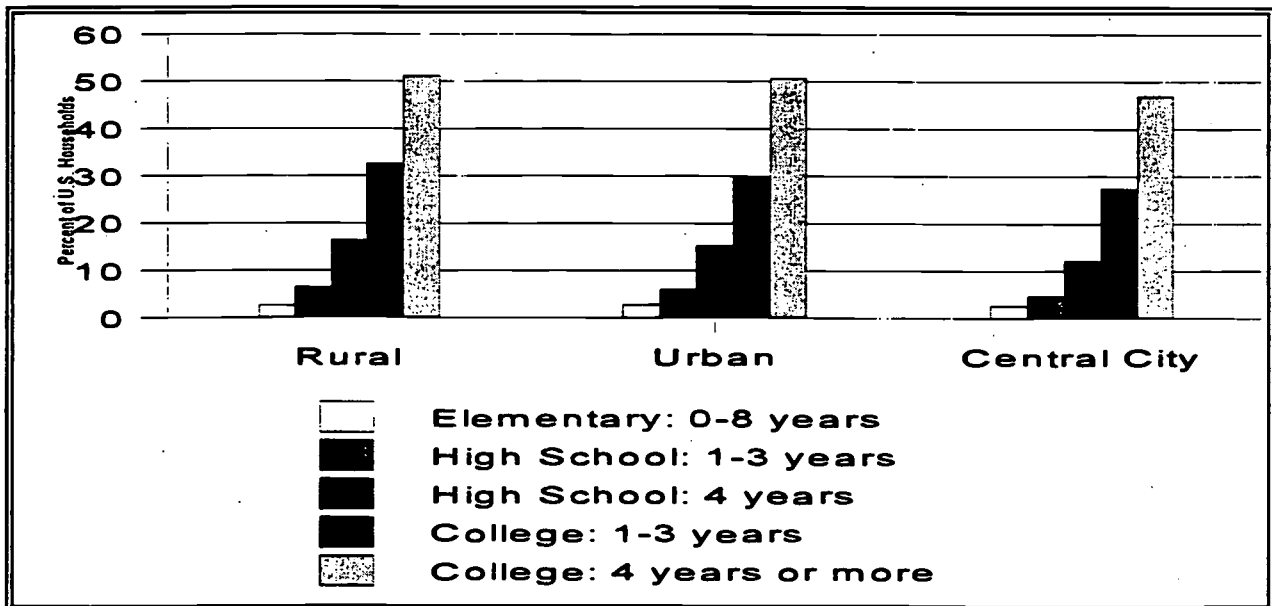


Chart 10

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 11: Percent of U.S. Households with a Computer  
By Educational Attainment  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Elementary: 0-8 years	2.6	2.8	2.6
High School: 1-3 years	6.5	6.1	4.7
High School: 4 years	16.5	15.3	12.2
College: 1-3 years	32.7	29.9	27.5
College: 4 years or more	51.2	50.7	47.0



**Chart 11**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 12: Percent of U.S. Computer Households with a Modem  
By Educational Attainment  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Elementary: 0-8 years	23.7	32.9	35.4
High School: 1-3 years	22.4	36.7	44.7
High School: 4 years	31.2	37.8	36.0
College: 1-3 years	40.4	45.0	42.3
College: 4 years or more	48.9	53.5	53.9

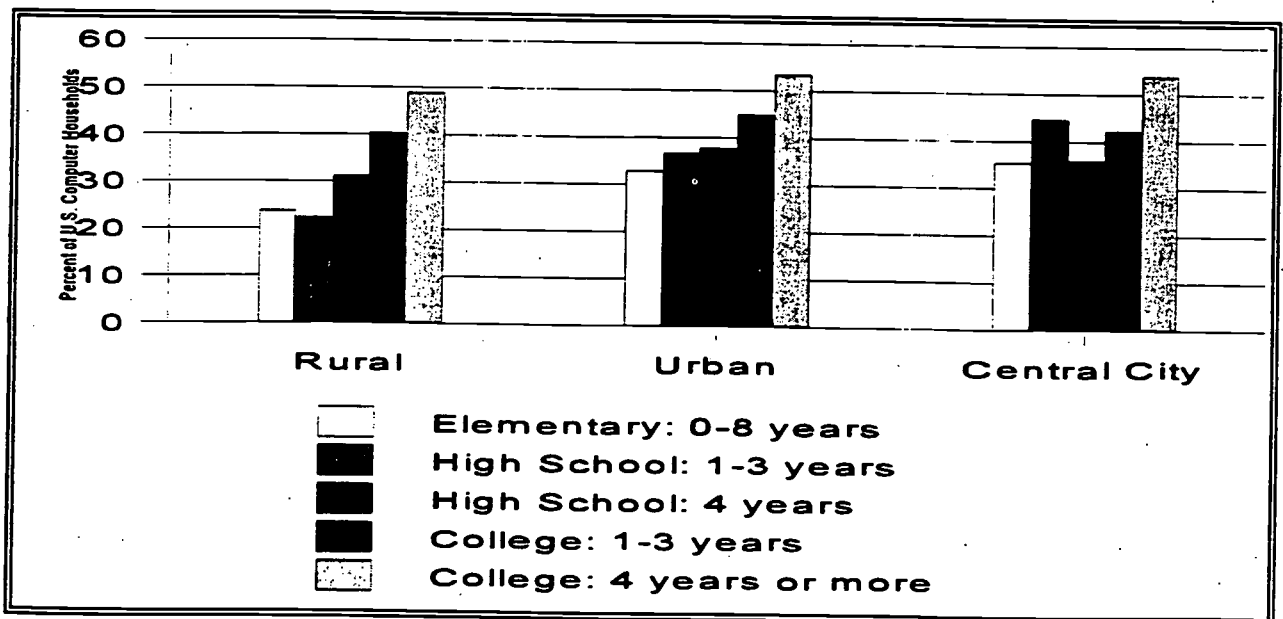
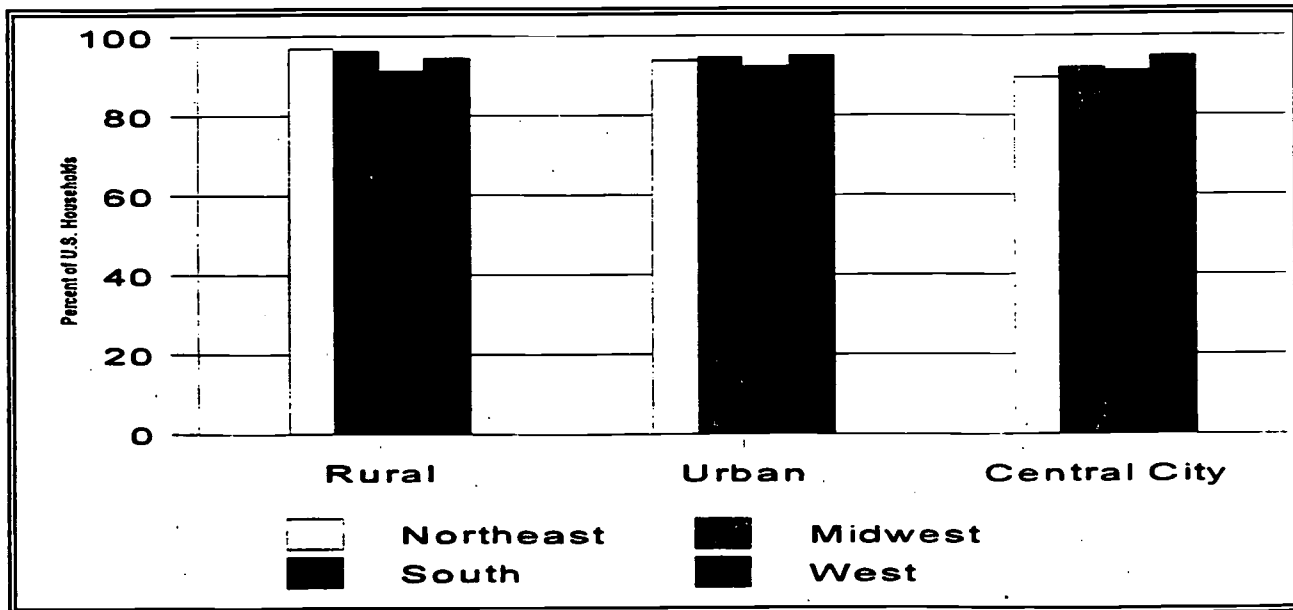


Chart 12

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 13: Percent of U.S. Households with a Telephone  
By Region  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Northeast	96.9	93.8	89.5
Midwest	96.2	94.6	92.0
South	91.3	92.4	91.2
West	94.5	95.0	94.9



**Chart 13**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 14: Percent of U.S. Households with a Computer  
By Region  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Northeast	27.4	23.4	16.4
Midwest	24.6	25.7	21.7
South	18.6	23.7	22.0
West	29.5	32.8	31.7

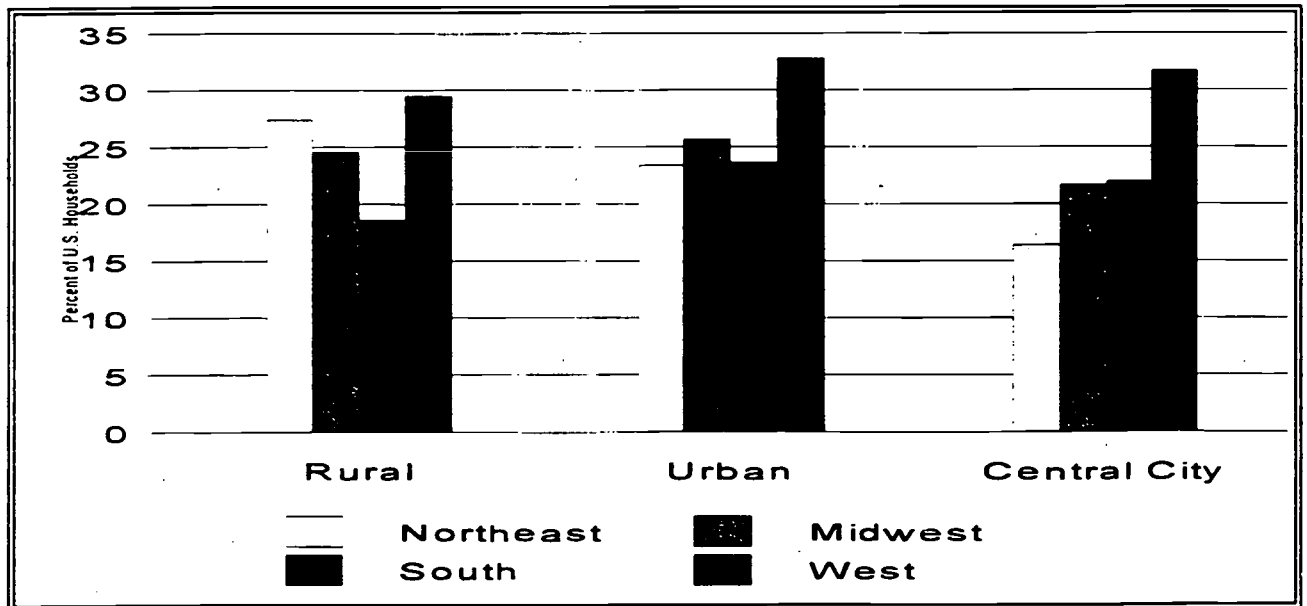


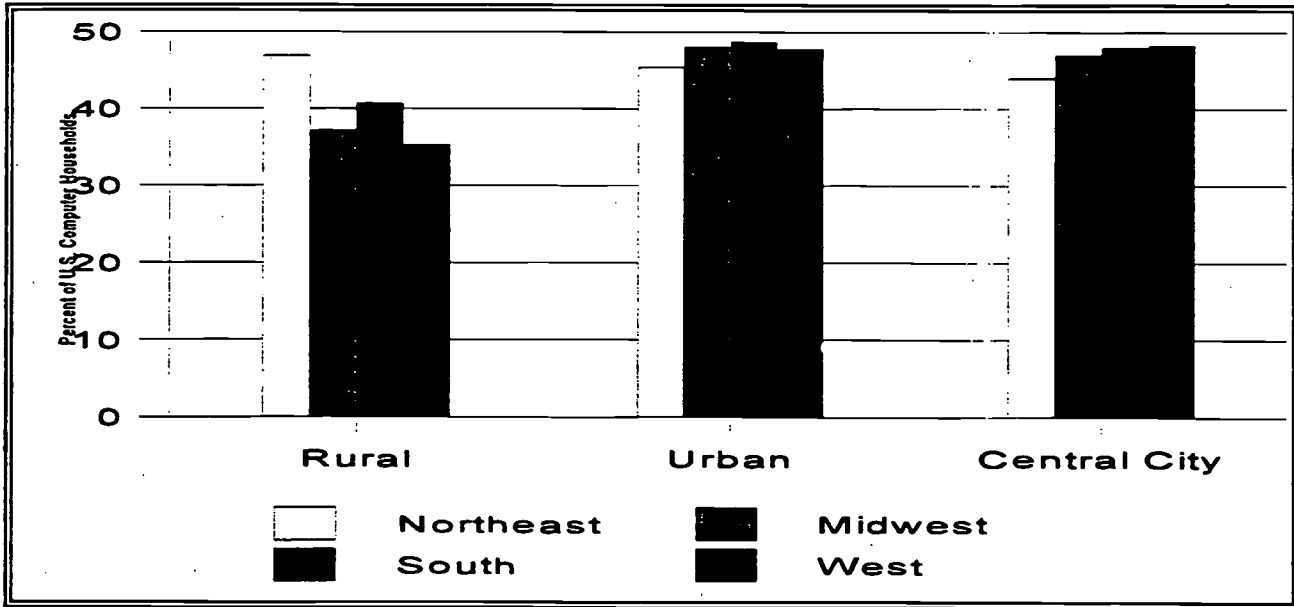
Chart 14

Source: National Telecommunications and Information Administration and U.S. Census Bureau. U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.



**Table 15: Percent of U.S. Computer Households with a Modem  
By Region  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Northeast	46.9	45.4	44.0
Midwest	37.2	48.0	47.0
South	40.7	48.7	48.0
West	35.3	47.8	48.3



**Chart 15**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 16: Percent of U.S. Households with a Computer and Modem Using On-Line Services to Search Classified Ads  
By Income  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Less than \$10,000	10.9	7.2	8.3
\$10,000-\$14,999	4.0	7.8	8.3
\$15,000-\$19,999	8.6	6.5	14.0
\$20,000-\$24,999	9.7	6.6	8.5
\$25,000-\$34,999	8.1	7.7	9.9
\$35,000-\$49,999	7.2	8.4	10.4
\$50,000-\$74,999	5.2	7.0	7.2
\$75,000 or more	5.2	5.8	5.9

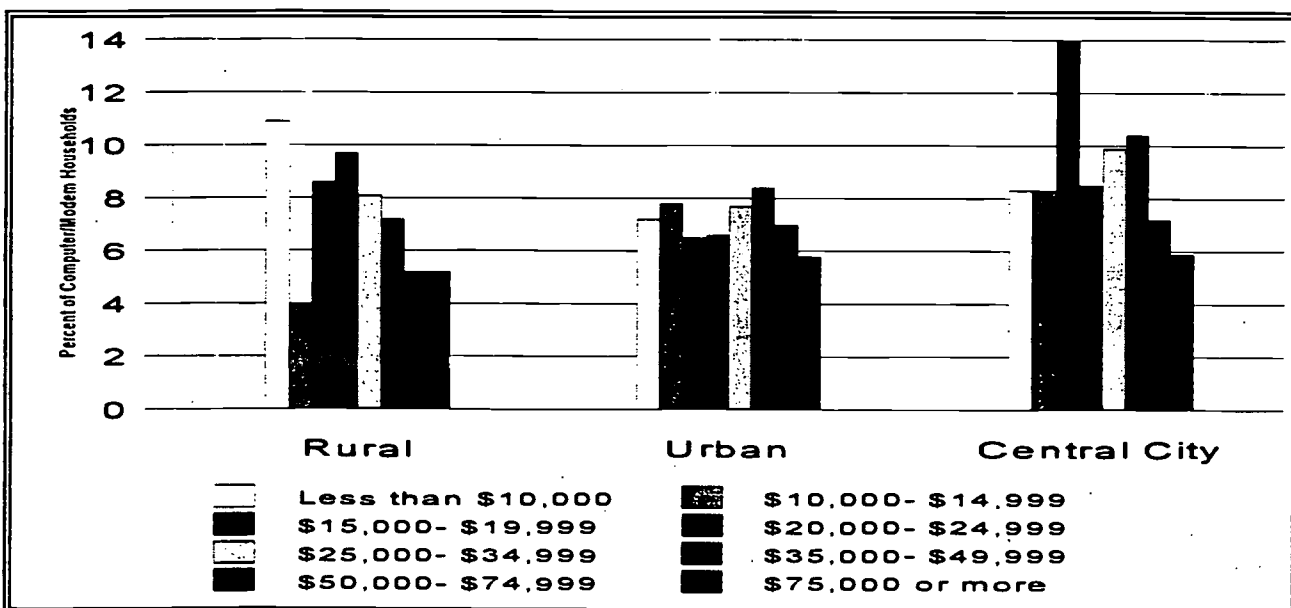


Chart 16

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 17: Percent of U.S. Households with a Computer and Modem Using On-Line Services to Take Courses  
By Income  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Less than \$10,000	10.9	14.1	11.7
\$10,000-\$14,999	23.8	21.3	20.8
\$15,000-\$19,999	18.3	14.6	7.8
\$20,000-\$24,999	18.8	16.7	18.0
\$25,000-\$34,999	14.3	20.0	19.9
\$35,000-\$49,999	19.8	19.0	18.1
\$50,000-\$74,999	16.1	18.4	17.3
\$75,000 or more	18.2	14.4	15.6

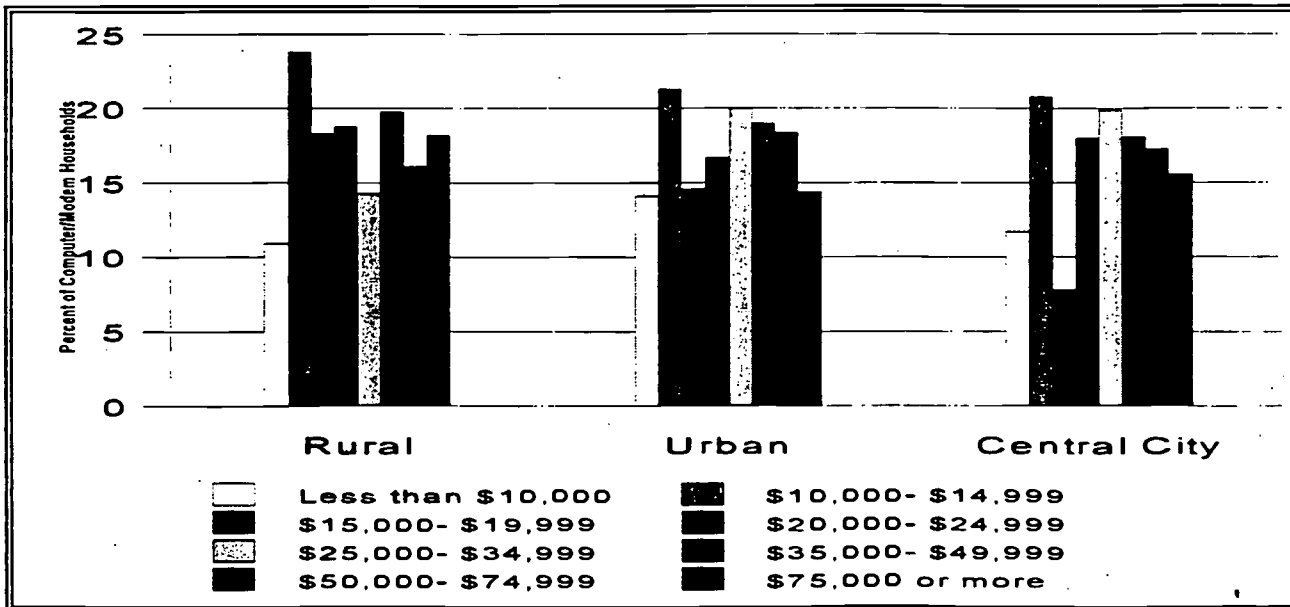
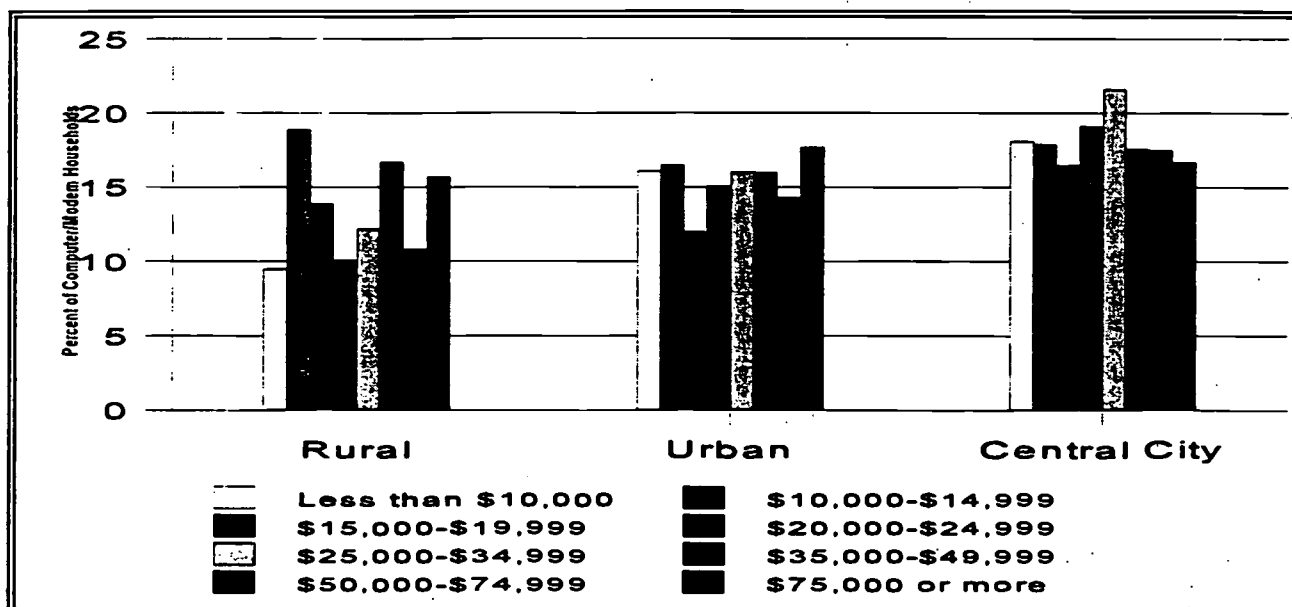


Chart 17

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 18: Percent of U.S. Households with a Computer and Modem Using  
On-Line Services to Access Government Reports  
By Income  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Less than \$10,000	9.5	16.1	18.1
\$10,000-\$14,999	18.9	16.5	17.9
\$15,000-\$19,999	13.9	12.0	16.5
\$20,000-\$24,999	10.1	15.1	19.1
\$25,000-\$34,999	12.2	16.0	21.6
\$35,000-\$49,999	16.7	16.0	17.6
\$50,000-\$74,999	10.8	14.3	17.5
\$75,000 or more	15.7	17.7	16.7

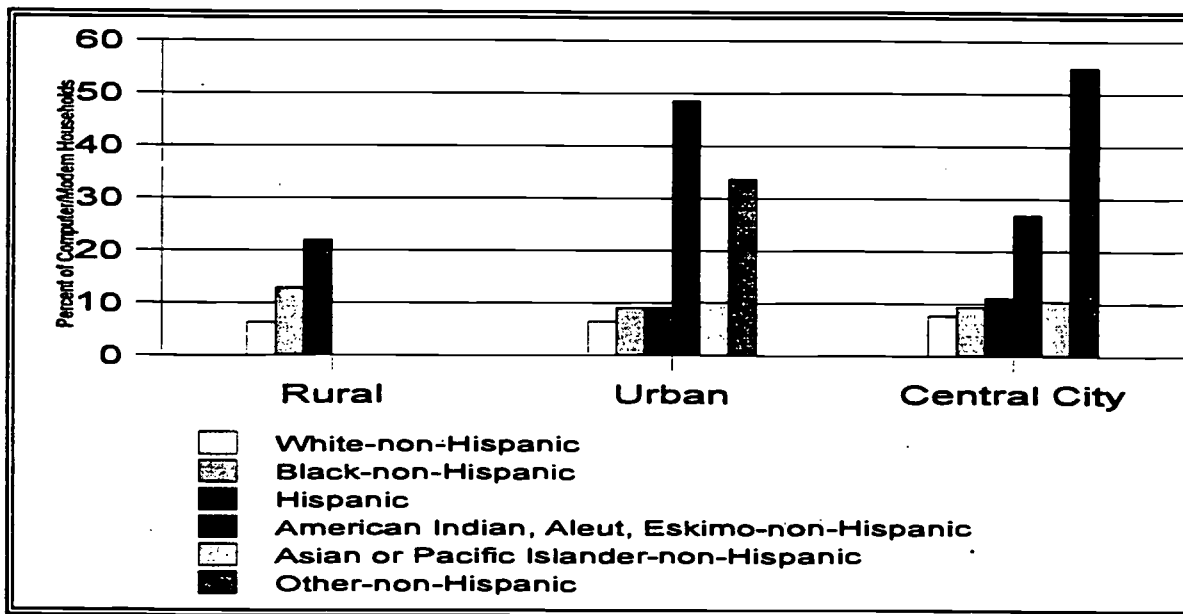


**Chart 18**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 19: Percent of Households with a Computer and Modem  
Using On-Line Services to Search Classified Ads  
By Race/Origin  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
White-non-Hispanic	6.3	6.5	7.7
Black-non-Hispanic	12.9	9.1	9.5
Hispanic	22.1	9.1	11.1
American Indian, Aleut, Eskimo-non-Hispanic	0.0	48.6	27.0
Asian or Pacific Islander-non-Hispanic	0.0	10.2	10.4
Other-non-Hispanic	0.0	33.7	54.9

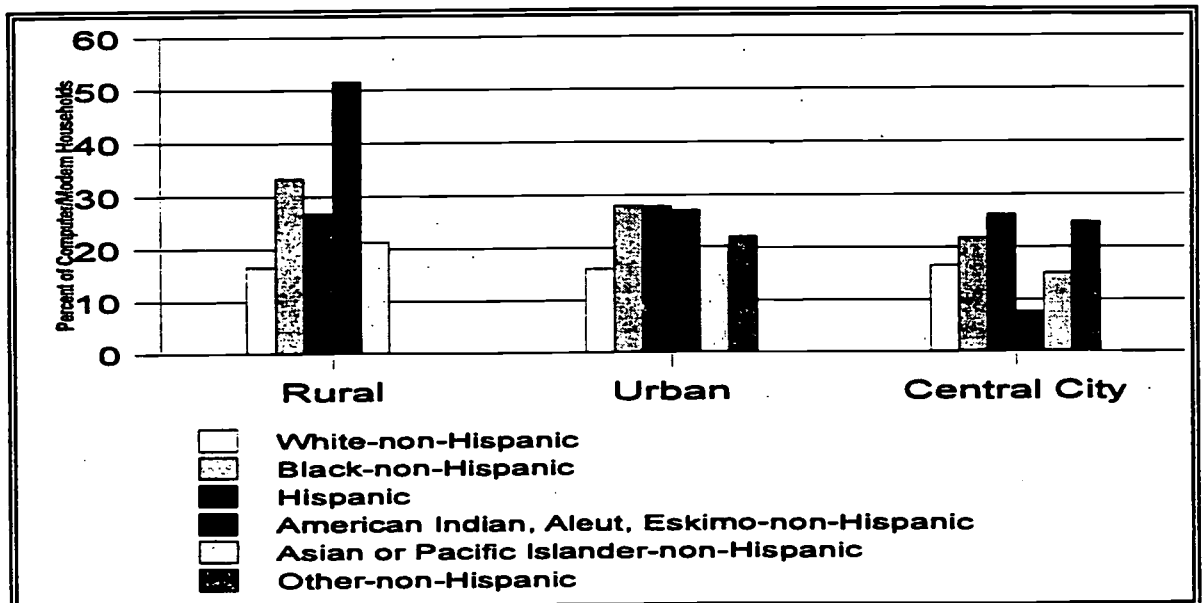


**CHART 19**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 20: Percent of Households with a Computer and Modem  
Using On-Line Services to Take Courses  
By Race/Origin  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
White-non-Hispanic	16.6	16.0	16.5
Black-non-Hispanic	33.4	28.1	21.8
Hispanic	26.9	28.0	26.3
American Indian, Aleut, Eskimo- non-Hispanic	51.7	27.3	7.8
Asian or Pacific Islander-non- Hispanic	21.4	20.3	15.1
Other-non-Hispanic	0.0	22.2	24.8



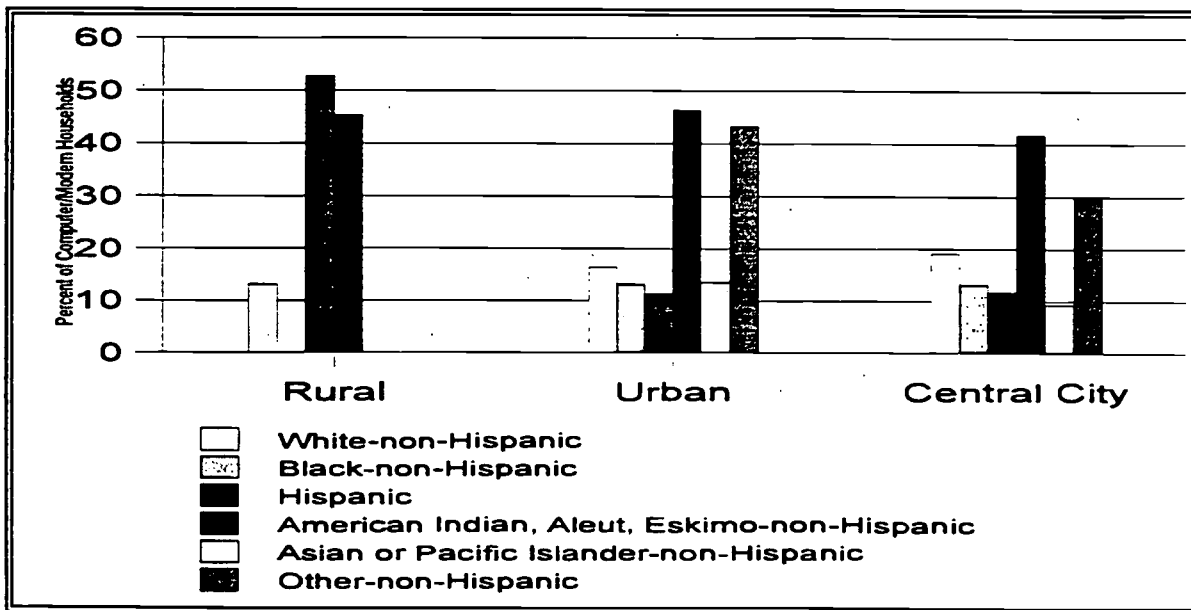
**CHART 20**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.



**Table 21: Percent of Households with a Computer and Modem  
Using On-Line Services to Access Government Reports  
By Race/Origin  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
White-non-Hispanic	13.1	16.4	19.1
Black-non-Hispanic	0.0	13.2	13.1
Hispanic	52.8	11.4	11.7
American Indian, Aleut, Eskimo- non-Hispanic	45.4	46.4	41.8
Asian or Pacific Islander-non- Hispanic	0.0	13.6	9.4
Other-non-Hispanic	0.0	43.3	30.1



**CHART 21**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 22: Percent of U.S. Households with a Computer and Modem Using On-Line Services to Search Classified Ads  
By Age  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Under 25 years	10.7	7.7	9.2
25-34 years	5.7	8.8	9.9
35-44 years	6.3	7.2	6.7
45-54 years	8.9	7.3	11.2
55 years and older	4.5	3.7	3.2

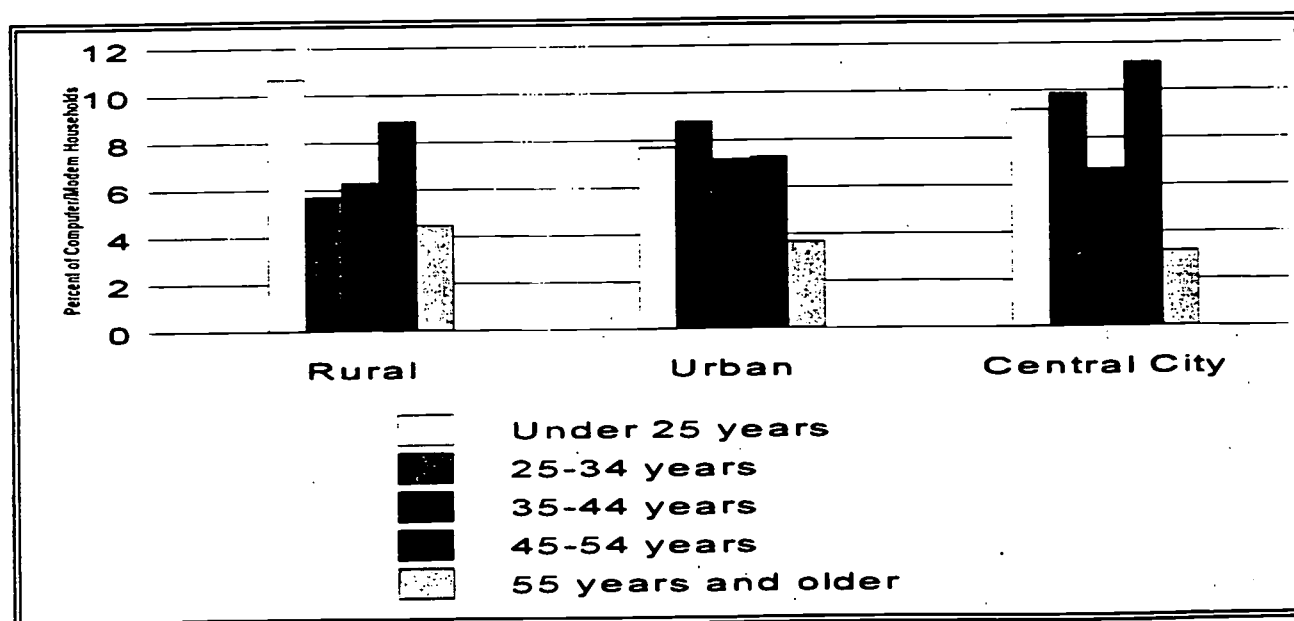


Chart 22

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 23: Percent of U.S. Households with a Computer and Modem Using On-Line Services to Take Courses  
By Age  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Under 25 years	21.7	14.9	9.2
25-34 years	13.3	18.9	19.9
35-44 years	20.2	18.4	16.9
45-54 years	19.1	16.8	19.2
55 years and older	11.7	14.4	14.0

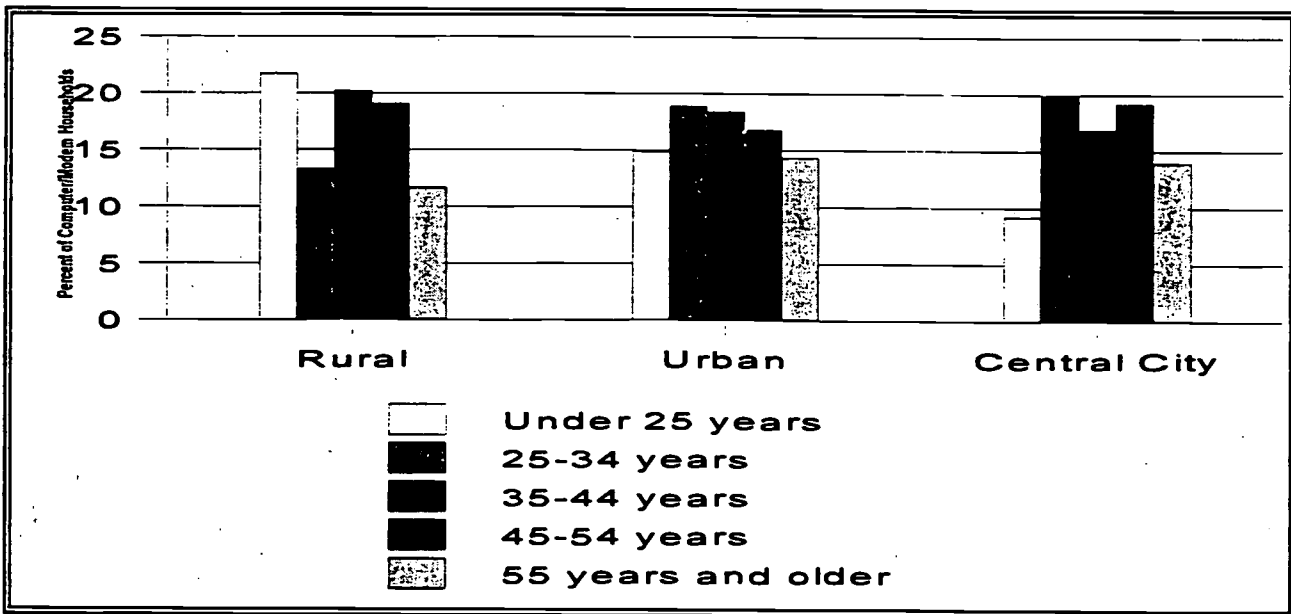
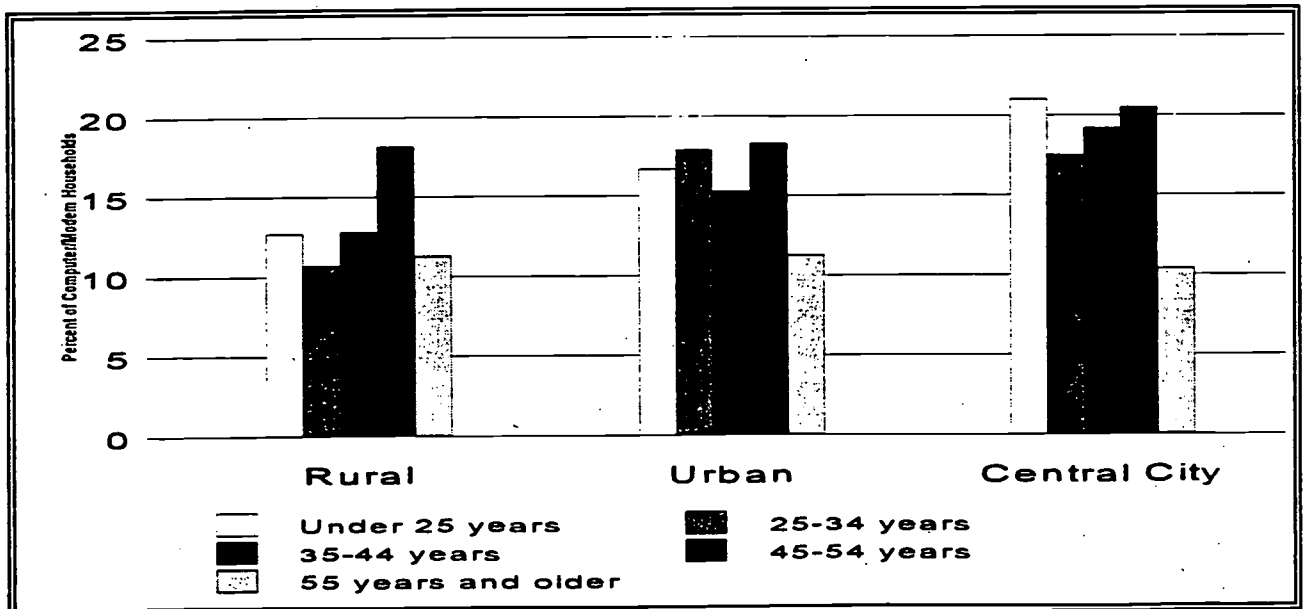


Chart 23

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 24: Percent of U.S. Households with a Computer and Modem Using  
On-Line Services to Access Government Reports  
By Age  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Under 25 years	12.7	16.7	21.0
25-34 years	10.7	17.9	17.5
35-44 years	12.8	15.3	19.2
45-54 years	18.2	18.3	20.5
55 years and older	11.3	11.3	10.4

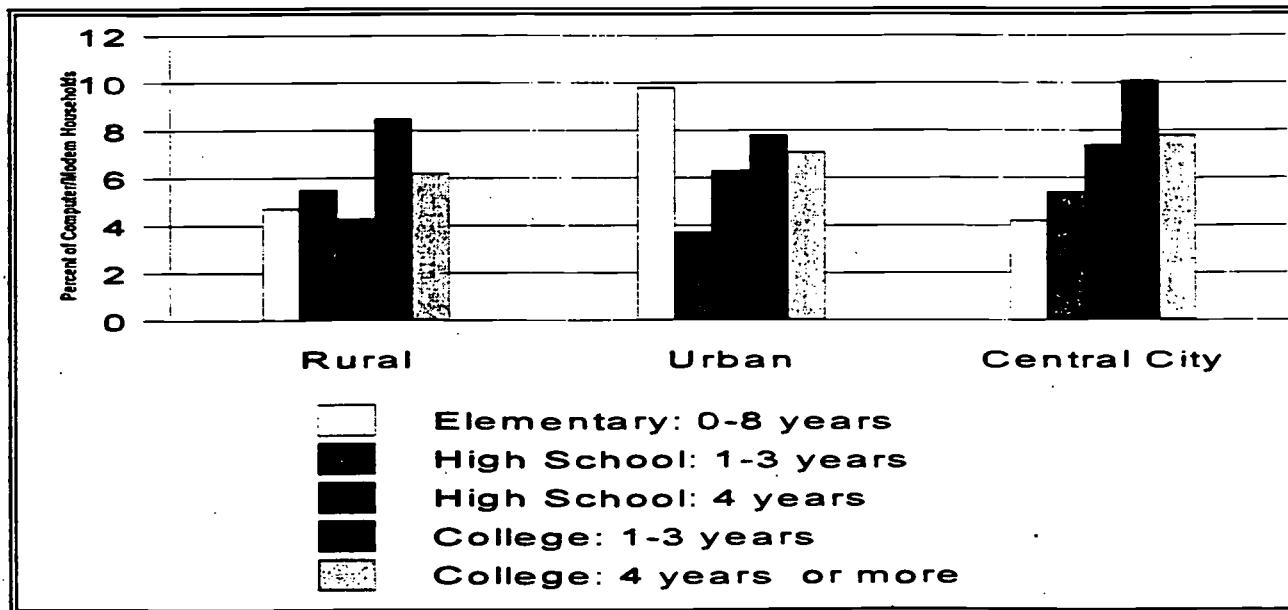


**Chart 24**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 25: Percent of U.S. Households with a Computer and Modem Using  
On-Line Services to Search Classified Ads  
By Educational Attainment  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Elementary: 0-8 years	4.7	9.8	4.2
High School: 1-3 years	5.5	3.7	5.4
High School: 4 years	4.3	6.3	7.4
College: 1-3 years	8.5	7.8	10.1
College: 4 years or more	6.2	7.1	7.8

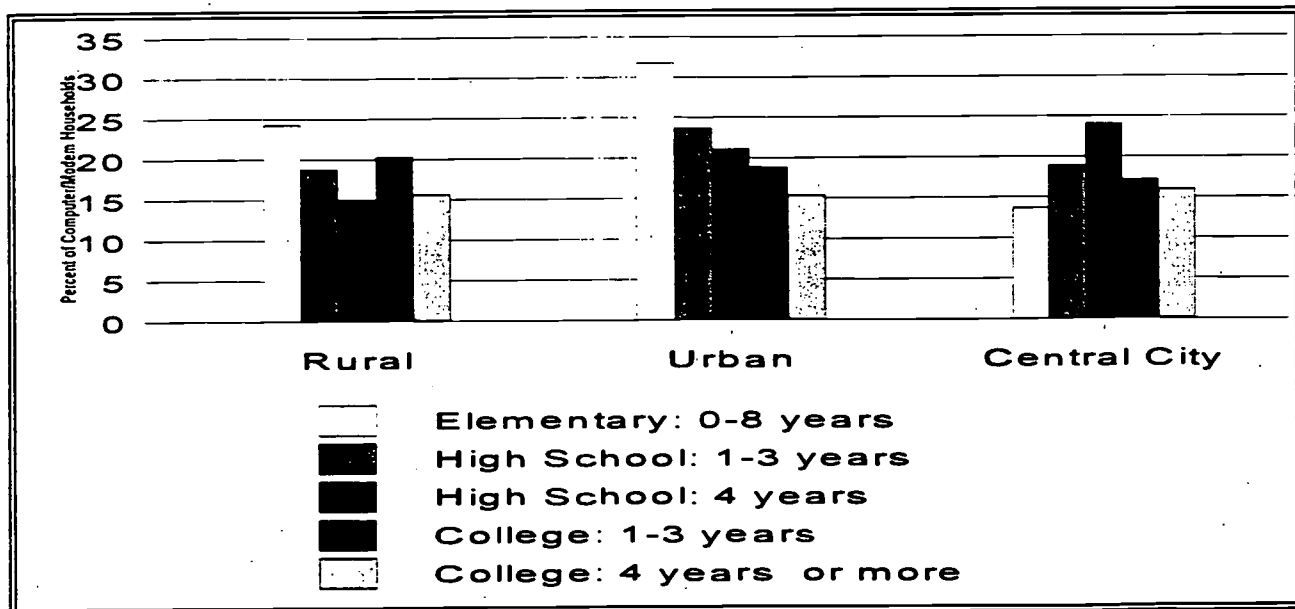


**Chart 25**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 26: Percent of U.S. Households with a Computer and Modem Using  
On-Line Services to Take Courses  
By Educational Attainment  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Elementary: 0-8 years	24.3	31.8	13.7
High School: 1-3 years	18.8	23.7	18.9
High School: 4 years	15.1	21.1	24.1
College: 1-3 years	20.3	18.9	17.2
College: 4 years or more	15.7	15.4	16.0

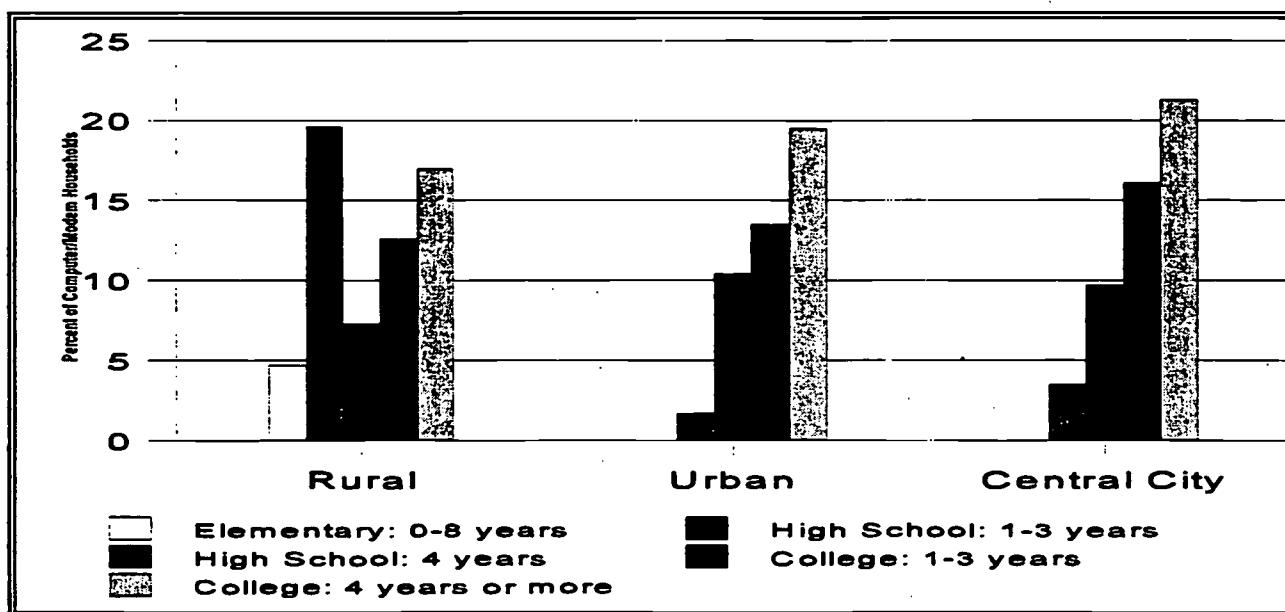


**Chart 26**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

**Table 27: Percent of U.S. Households with a Computer and Modem Using  
On-Line Services to Access Government Reports  
By Educational Attainment  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Elementary: 0-8 years	4.7	0.0	0.0
High School: 1-3 years	19.6	1.7	3.5
High School: 4 years	7.3	10.4	9.7
College: 1-3 years	12.6	13.5	16.1
College: 4 years or more	17.0	19.5	21.3

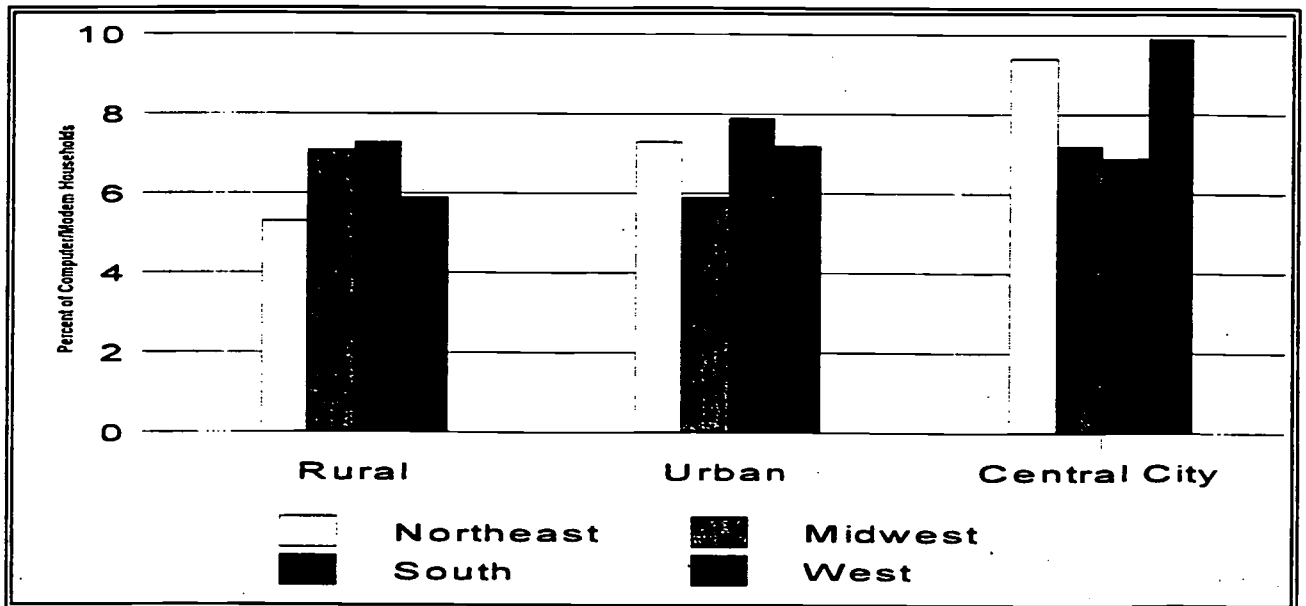


**Chart 27**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 28: Percent of U.S. Households with a Computer and Modem Using On-Line Services to Search Classified Ads  
By Region  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Northeast	5.3	7.3	9.4
Midwest	7.1	5.9	7.2
South	7.3	7.9	6.9
West	5.9	7.2	9.9



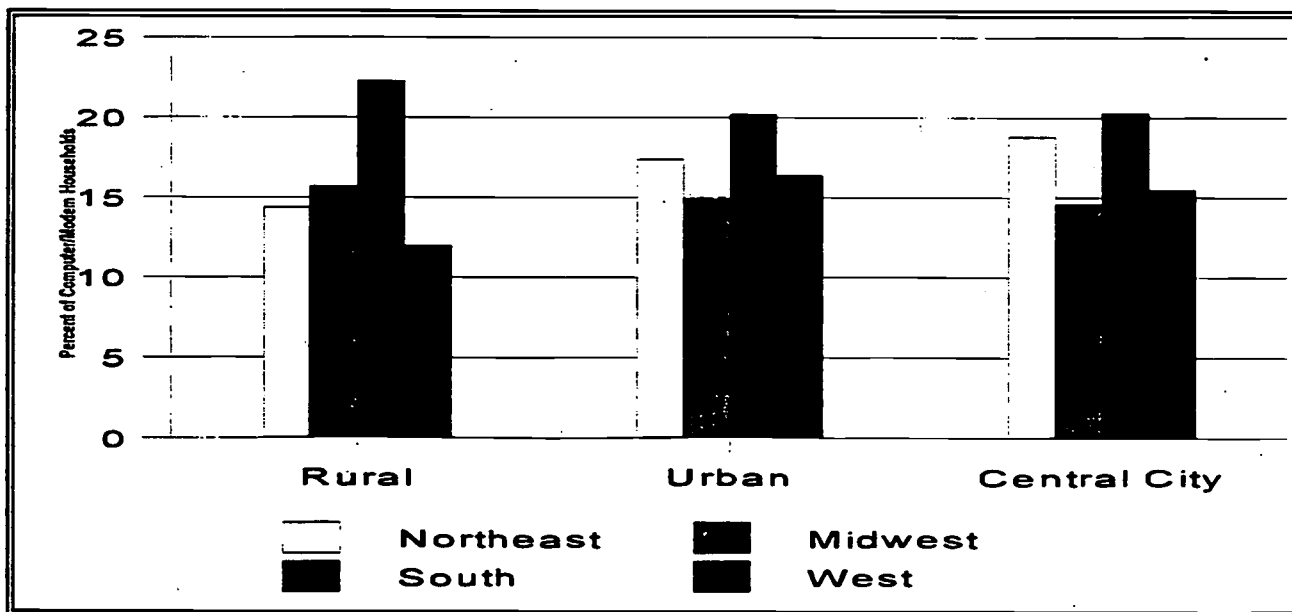
**Chart 28**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.



**Table 29: Percent of U.S. Households with a Computer and Modem Using  
On-Line Services to Take Courses  
By Region  
By Rural, Urban, and Central City Areas**

	Rural	Urban	Central City
Northeast	14.4	17.4	18.8
Midwest	15.7	14.9	14.6
South	22.3	20.2	20.3
West	12.0	16.4	15.5



**Chart 29**

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.

Table 30: Percent of U.S. Households with a Computer and Modem Using On-Line Services to Access Government Reports  
By Region  
By Rural, Urban, and Central City Areas

	Rural	Urban	Central City
Northeast	14.4	15.9	20.9
Midwest	10.2	15.5	19.7
South	13.8	16.6	17.5
West	17.0	16.3	16.2

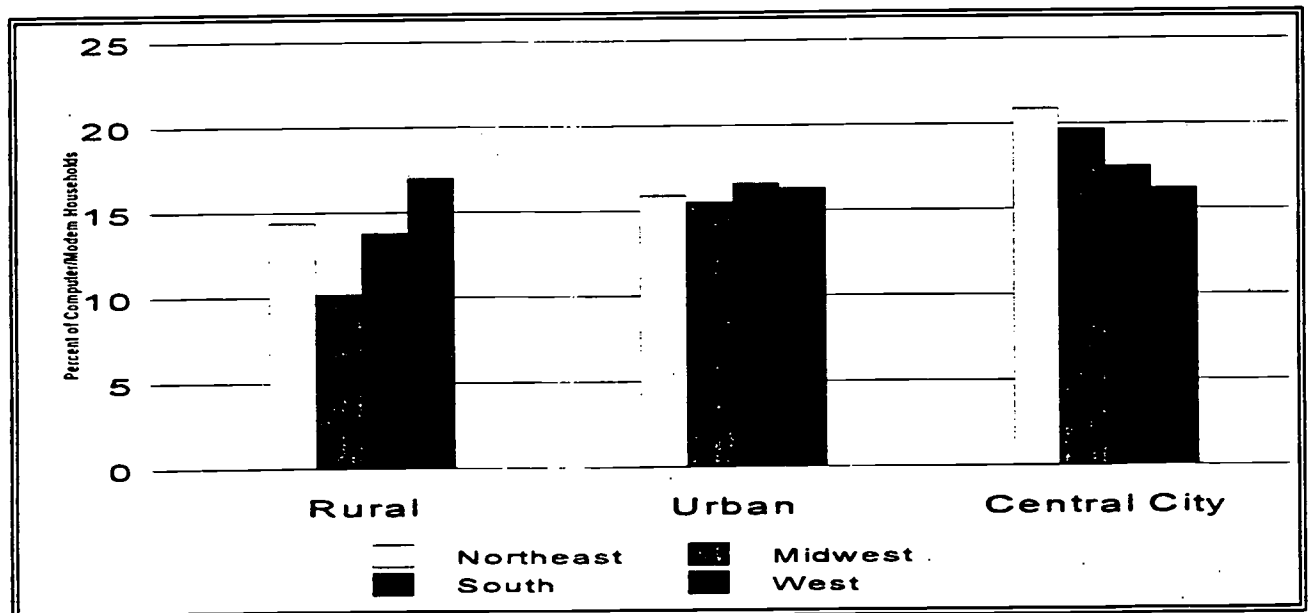


Chart 30

Source: National Telecommunications and Information Administration and U.S. Census Bureau, U.S. Department of Commerce, using November 1994 Current Population Survey and Computer Ownership/Usage Supplement.



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*Office of Educational Research and Improvement (OERI)*  
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