# Digital Inequality

## *From Unequal Access to Differential Use*

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Social scientists and policymakers began worrying about inequality in Internet access as early as 1995 (Anderson et al. 1995), when just 3 percent of Americans had ever used the World Wide Web (Pew Center for the People and the Press 1995). At first most believed that the Internet would enhance equality of access to information by reducing its cost. As technoeuphoria wore off, however, observers noted that some kinds of people used the Internet more than others and that those with higher Internet access also had greater access to education, income, and other resources that help people get ahead (Hoffman and Novak 1998, 1999; Benton Foundation 1998; Strover 1999; Bucy 2000). Concern that the new technology might exacerbate inequality rather than ameliorate it focused on what analysts have called the "digital divide" between the online and the offline.

Since the mid-1990s researchers have found persistent differences in Internet use by social category (NTIA 1995, 1998, 1999, 2000, 2002; Lenhart et al. 2003). Although operational definitions of access vary from study to study, most make a binary distinction between people who use the Web and other Internet services (especially e-mail) and people who do not. At first "access" was used literally to refer to whether a person had the means to connect to the Internet *if she or he so chose* (NTIA 1995). Later "access" became a synonym for use, conflating opportunity and choice. This is unfortunate, because studies that have measured both access *and* the extent of Internet use have found, first, that more people have access than use it (NTIA 1998 and Lenhart et al. 2003 report that 20 percent of residents of Internet households never go online), and second, that whereas resources drive access, demand drives intensity of use among people who have access. Thus, young adults are less likely to have home access than adults between the ages of twenty-five and fifty-four (NTIA 2000), but in Internet households teenagers spend more time online than adults (Kraut et al. 1998). . . .

Thanks to the NTIA's research program, we have a series of valuable snapshots

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(based on the Current Population Survey in 1994, 1997, 1998, 2000, and 2001) of intergroup differences in Internet use by:

1. *Region and place of residence:* Rates of Internet use are highest in the Northeast and far West and lowest in the Southeast. Of Americans age three or older (the NTIA reporting base for most purposes), state-level estimates range from 42 percent online in Mississippi to 69 percent in Alaska (NTIA 2002, 7–8). Suburbanites are most likely to use the Internet (57 percent), followed by rural dwellers (53 percent) and central-city residents (49 percent) (NTIA 2002, 19).
2. *Employment status:* In 2001, 65 percent of employed people age sixteen or older were Internet users, compared to just 37 percent of those who were not working (NTIA 2002, 12).
3. *Income:* Internet use rates rise linearly with family income, from 25 percent for persons with incomes of less than $15,000 to almost 80 percent for those with incomes above $75,000.
4. *Educational attainment:* Among persons age twenty-five or older, educational attainment is strongly associated with rates of Internet use. Proportions online range from fewer than 15 percent of those without a high school diploma to 40 percent of persons with a high school diploma, and more than 80 percent of college graduates (NTIA 2002, 17).
5. *Race-ethnicity:* Rates of Internet use are greater for Asian Americans and non-Hispanic whites (about 60 percent for each) than for non-Hispanic blacks (40 percent) and persons of Hispanic origin (just under 32 percent) (NTIA 2002, 21). Variation among these groups in income and education explains much of the difference, but even among those similar in educational attainment or income level, fewer African Americans than whites use the Internet (Hoffman, Novak, and Schlosser 2001; Lenhart et al. 2003).
6. *Age:* Rates of Internet use rise rapidly from age three to a peak around age fifteen, when nearly 80 percent of Americans are online; decline to around 65 percent at age twenty-five; then descend gently to just below 60 percent by age fifty-five. At that point rates decline rapidly with age (NTIA 2002, 13).
7. *Gender:* In early surveys men used the Internet at higher rates than women, but by 2001 women and men were equally likely to be online (Losh 2003). From the late teens to the late forties, women are *more* likely than men to use the Internet; men acquire an increasing edge after age fifty-five (NTIA 2002, 14).
8. *Family structure:* Families with children in the home are more likely to have computers and the Internet than are families without children (NTIA 2002, 14).

These patterns of inequality are similar to those observed in other countries. In Switzerland, for example, in 2000, 69 percent of university graduates but only 19 percent of high school graduates were online, and similar advantages were found for persons with high incomes, the young, and men (with the gender gap notably greater than in the United States) (Bonfadelli 2002, 75; see also De Haan 2003 on the Netherlands; Heil 2002 on the United Kingdom and Germany; and McLaren and Zappalà 2002 on Australia).

## Persistent Disagreement

The availability of high-quality data has failed to dampen a hot debate over whether socioeconomic and racial divisions in Internet access warrant government action. During the Clinton administration the Commerce Department advanced an ambitious set of programs aimed at wiring schools, libraries, government offices, and community centers throughout the country. The second Bush administration has alternately treated the digital divide as something that was never a problem (Bush's FCC chair likened it to the "Mercedes divide") and a problem that has been solved. (The NTIA's 2002 report on Internet access is triumphantly titled *A Nation Online.*) Almost everyone agrees that the CPS data are reliable. But disagreement on how to interpret the trends persists. It centers on four questions:

1. *What do we mean by "access"?* If we mean an individual's ability to get online in some fashion at some location, then inequality is much diminished. If "access" means an individual's ability to use graphically complex websites from his or her home, differences among groups remain substantial.
2. *Which "digital divide"?* Some intergroup differences that were large at the onset of the digital revolution have diminished or disappeared. Others have persisted.
3. *How should we measure the difference?* It is simple to find measures that convey whatever impression an advocate prefers. But some measures are better than others.
4. *How should we interpret trends?* Can we count on the market to provide extensive service soon enough in the future (and how extensive and how soon are "extensive" and "soon enough"?), or are current inequalities likely to persist indefinitely?

### *What Do We Mean by Access?*

The original literal sense of "access" has gradually been replaced by a set of more concrete operational definitions. Different definitions yield somewhat different conclusions about inequality. We compare digital divides based on three increasingly demanding definitions of access: using the Internet anywhere; using the Internet at one's place of residence; and using the Internet at home through a high-speed connection. (The second criterion is meaningful because most people can surf more freely and spontaneously at home than at the office or in a public library. High-speed connections enable people to access streaming media or graphically complex websites.) For each criterion, Table 59.1 provides access rates for two contrasting groups and a measure of inequality—the ratio of the odds of access for the more- and less-privileged groups.[1]

Three features of this table deserve note. First, different criteria yield different estimates of inequality. For example, the disadvantage of people over age fifty-five relative to that of the young (age eighteen to twenty-five) is greater with respect to using the Internet anywhere than it is with respect to using the Internet at home and, especially, to having a high-speed home connection. (The difference reflects the fact that older people have higher incomes, more stable residences, and fewer other places to go online than the young.) Similarly, in 2001 women surpassed men in rates of Internet use, but men were still

Table 59.1 Internet Access of Americans Age Eighteen and Older, 2001

| | *Use Internet* | *Use Internet at Home* | *Use Internet at Home High-Speed* |
|---|---|---|---|
| Black | 39.09% | 26.21% | 5.57% |
| Non-black | 57.89 | 46.54 | 10.87 |
| Non-black/black Odds ratio | 2.111 | 2.451 | 2.068 |
| Women | 56.33 | 44.23 | 9.71 |
| Men | 55.84 | 45.03 | 11.09 |
| Male/female odds ratio | 0.970 | 1.033 | 1.160 |
| High school degree | 54.61 | 42.71 | 9.53 |
| College graduate | 83.39 | 68.90 | 16.69 |
| B.A./high school degree odds ratio | 4.173 | 2.972 | 1.903 |
| Income $20,000 to $29,999 | 40.02 | 28.04 | 4.79 |
| Income greater than $67,500 | 68.24 | 57.01 | 14.91 |
| Greater/lesser income odds ratio | 3.220 | 2.991 | 3.484 |
| Age eighteen to twenty-five | 67.62 | 50.00 | 11.57 |
| Age fifty-five and older | 30.96 | 25.30 | 5.98 |
| Younger/older odds ratio | 4.657 | 2.952 | 1.837 |

*Source:* 2001 CPS.

ahead in access to the Internet at home, especially through high-speed connections.

Second, different criteria yield different impressions for different intergroup comparisons. Inequality with respect to age and educational attainment (comparing college graduates to high school graduates) is greatest for Internet use anywhere. Racial inequality, however, is greatest for at-home access, and income inequality (people with family incomes of $67,500 or more compared to those with incomes between $20,000 and $30,000) is greatest for high-speed connections at home.

Third, it follows that the size of intergroup "divides" depends on how we define "access." Inequality in Internet access anywhere between college and high school graduates dwarfs inequality between blacks and nonblacks, but racial inequality is slightly greater for access to high-speed connections at home. By the same token, the age and education "divides" exceed inequality between income groups in use of the Internet at all, but income inequality slightly exceeds that associated with age and educational attainment for use of the Internet in one's home.

### *Which Divide?*

In the few years that the Internet has been widely available, it has diffused widely. Some inequalities in access have already closed. Other gaps persist, however (see Figures 59.1 through 59.4).[2] Differences in rates of Internet use between men and women essentially disappeared between 1994 and 2001. (This descriptive conclusion is confirmed by Hiroshi Ono and Madeline Zavodny's [2003] logistic regression analyses with controls for income, age, educational attainment, and marital status.) Age remains strongly associated with Internet use, but the disadvantage of persons in their fifties and sixties has diminished. Regional differences and urban/rural differences also have declined (on the latter, see Bikson and Panis 1999).

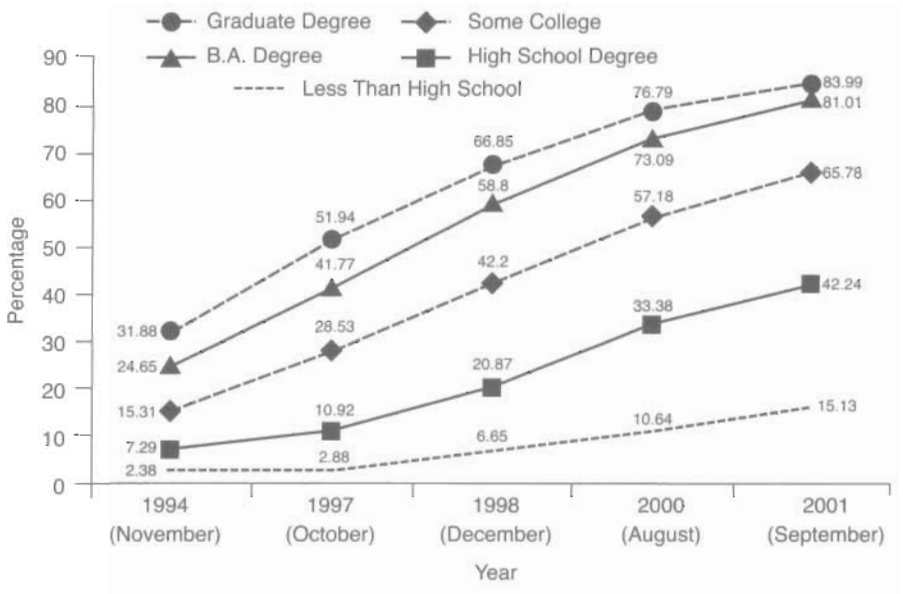


Figure 59.1 Internet Users in the United States, by Education (Age Eighteen and Older)
*Source:* CPS

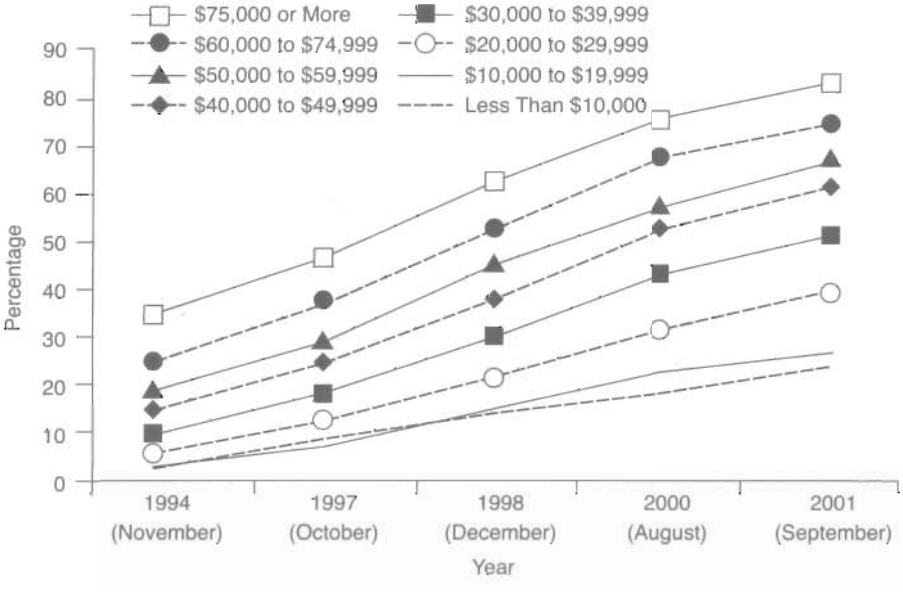


Figure 59.2 Internet Users in the United States, by Family Income (Age Eighteen and Older)
*Source:* CPS

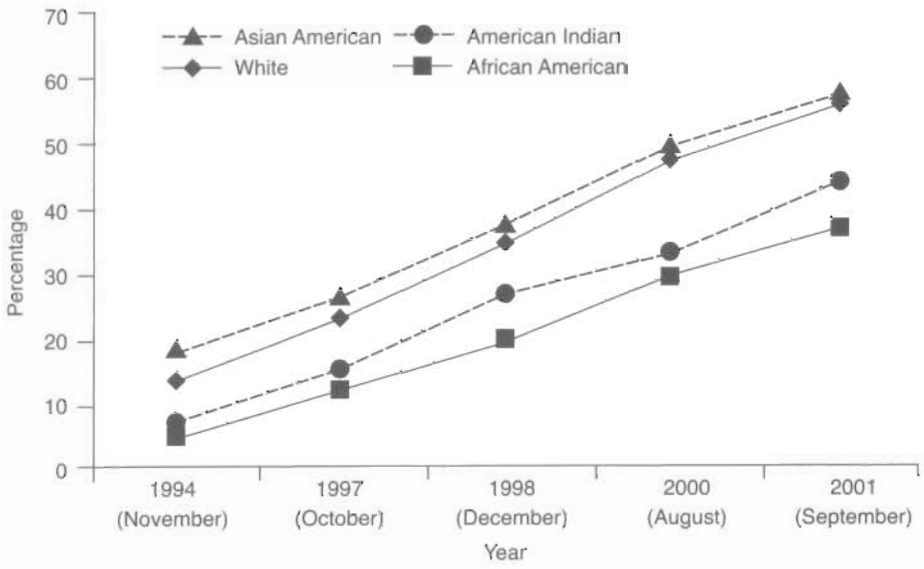


Figure 59.3 Internet Users in the United States, by Race (Age Eighteen and Older)
*Source:* CPS

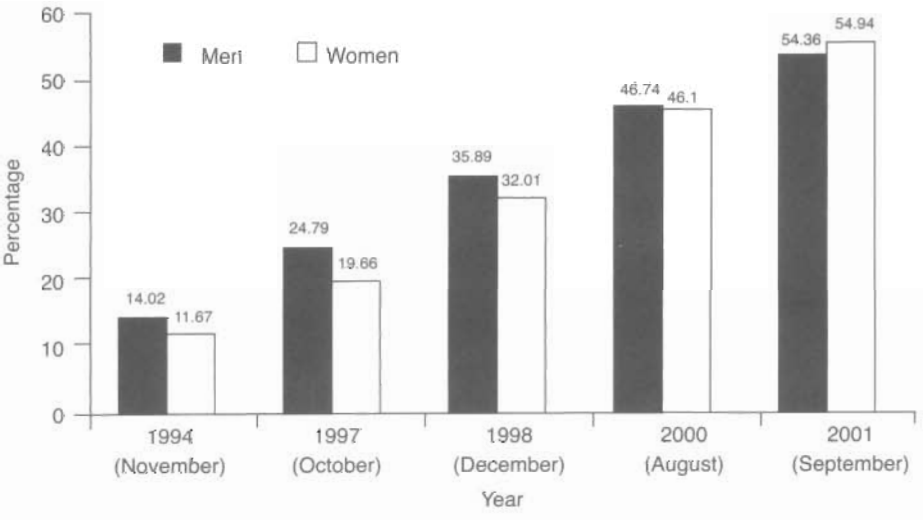


Figure 59.4 Internet Users in the United States, by Gender (Age Eighteen and Older)
*Source:* CPS

By contrast the absolute gap between Asian Americans and Euro-Americans, on one side, and African Americans and Native Americans, on the other, increased (though the ratio of the more-privileged to the less-privileged groups' rates declined; see also Hoffman, Novak, and Schlosser 2001). Most absolute differences based on educational attainment and income fanned out in the early years of rapid penetration, then remained stable (or in the case of differences among the topmost categories, declined) thereafter. Policy analysts particularly interested in disparities based on gender, age, or place of residence are likely to find reasons for cheer in the Internet's trajectory, whereas analysts especially concerned about racial or socioeconomic inequality will be far less satisfied.

### *Which Measures?*

Interpretation of trend data is complicated by the fact that different measures of inequality yield diametrically different results. Observers measure over-time change in intergroup inequality in Internet use in many ways: absolute percentage differences; the ratio of the proportion online in the advantaged group to the proportion online in the less-advantaged group; the ratio of the proportion offline in the less-advantaged group to the proportion offline in the more-advantaged group; the odds ratios of adoption (or non-adoption) between two groups; and for forms of inequality that can be expressed ordinally, pseudo-gini coefficients expressing deviation from equality in the distribution of Internet users across income (or educational) strata. Some measure relative rates of change: ratios in the rate of increase of the less-advantaged to the more-advantaged group, or ratios of the rate of decrease of non-use of the more-advantaged to the less-advantaged use (both expressed as change in either absolute rates or in odds ratios).

Figures 59.5 and 59.6 use CPS data to illustrate why this proliferation of measures is problematic, using a single type of inequality—that between blacks and whites age eighteen or older. Figure 59.5 compares the shares of each group online between 1994 and 2001. Those pointing with pride can emphasize a steady decline in the ratio of the percentage of white Americans online to the percentage of black Americans online. Those viewing with alarm may note that the absolute percentage difference between whites and blacks has increased slightly and that the ratio of the percentage of African Americans who are offline to the percentage of whites who are offline has risen steadily. In fact, the online and offline ratios are mirror images, for as the proportion of Internet users has increased from a very low base, the percentage of non-users has declined from a very high base. Other things being equal, groups that start at a disadvantage will increase their percentage of those online while constituting an ever-larger share (proportionately) of the disenfranchised.

We see the same thing if we compare rates of change (Figure 59.6). Whether inequality seems to be worsening or improving varies from measure to measure. Optimists may note that the rates of percentage increase in the proportion online have been greater for blacks than for whites. Pessimists can point out that the rates of absolute percentage increase for whites have outpaced those for blacks and that whites reduced their offline numbers at a higher rate than blacks throughout this period.

Steven Martin (2003) argues that there is something wrong with measures that yield opposite conclusions depending on whether

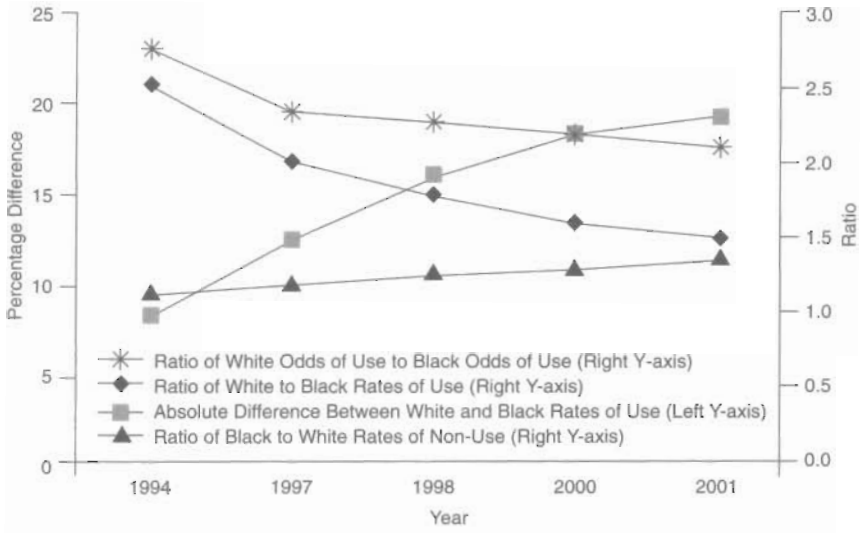


Figure 59.5 Measure of Inequality in Black and White Americans' Internet Use (Age Eighteen and Older)

*Source:* CPS

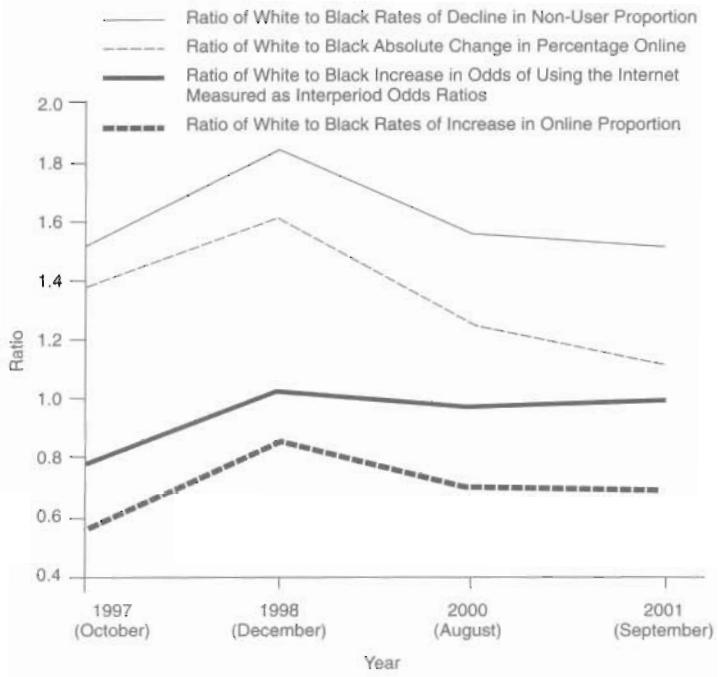


Figure 59.6 Measures of Inequality in Rate of Change in Black and White Americans' Internet Use (Age Eighteen and Older)

*Source:* CPS

one measures the proportion of two groups online or the complement of that proportion (intergroup ratios of use/non-use rates or rates of change in use/non-use, as well as quasi-gini coefficients for forms of inequality that can be represented ordinally), and he offers an attractive solution. Odds ratios do not have this problem, he notes: they are the same whether one focuses on the proportions of two groups who are users or the proportions who have been left behind. We include odds ratios in both Figure 59.5 (the ratio of the odds that a white American is online to the odds that a black American is online) and Figure 59.6 (the ratio of interperiod changes in odds for whites to changes in odds for blacks). Both demonstrate that the white advantage declined notably between 1994 and 1997 and remained stable or grew slightly from 1997 to 2001.

To understand the mechanisms that produce inequality it is helpful to identify the advantages and disadvantages that accrue to people as a consequence of their race (or gender or income) independent of other salient characteristics that travel in tandem with race (or gender or income). A good measure of a characteristic's net contribution to inequality in Internet use is its coefficient in a logistic regression equation with statistical controls for other factors associated with going online. One study that employed this technique, using CPS household data from 1994 to 2000, found that the net effects of education, race, and, to a lesser extent, income increased over this period (Leigh and Atkinson 2001). Another, using CPS data from 1993 and 1997, found constant income effects but increasing education effects on use of Internet services, as well as growing net differences between African Americans and non-Hispanic whites (Bikson and Panis 1999). A study of Internet use in fourteen European countries (Norris 2001) found growing effects of education, income, and occupation from 1996 to 1999. Such studies indicate that inequality grew modestly during the first years of diffusion.[3]

### *Interpreting the Trends*

Andrew Leigh and Robert Atkinson (2001) argue that changing differences between groups in rates of Internet use simply reflect the position of those groups on an S-shaped diffusion curve that will culminate in full access for everyone. Groups that have reached the point of rapid ascent at the curve's midsection will always appear to be outpacing groups that are still in the takeoff stage. When the latter achieve takeoff and the former reach the "top" of the S, where rapid growth yields to slower increases, the less-advantaged groups will appear to be catching up (Norris 2001, 30–31).

This is a crucial analytic insight. But *can* we assume that different groups are merely at different points on the same curve? Perhaps the most important question facing policymakers is whether disadvantaged groups are simply a few paces behind or, by contrast, whether they are becoming marooned as the rest of the world moves ahead. If the former is true, we can count on time to bridge the divide; if the *trajectories* are different, public policy must play a larger role to reduce inequality (Leigh and Atkinson 2001).

We can make a good theoretical case for either scenario. Liberals, who set policy in the Clinton administration, tend to take the latter stance, whereas conservatives, like those in the Bush administration, embrace the former. The case for the optimistic scenario goes like this. In its rapid diffusion the Internet is traversing the path of such communication technologies as radio and

television. At first access is restricted to an elite defined by wealth, institutional location, or both, but increasing penetration reduces gaps between rich and poor, urban and rural, old and young, the well educated and the unschooled (Compaine 2001).

Peter Blau's (1977) insights explain why purely structural factors may ensure that inequality in access declines with diffusion. The first people to gain access to a new technology usually occupy privileged positions on several dimensions—for example, income, white-collar work, educational level, race, rural residence, and gender. But many fewer people are privileged on all dimensions than on each. For example, there are a lot more white-collar workers than there are high-income, white, male, urban-dwelling, college-educated, white-collar workers. As penetration grows, access cascades beyond multiply privileged groups to people who are privileged in some ways but disadvantaged in others; the latter, in turn, become conduits to others with whom they share less-privileged characteristics. For example, when a rural, Latina, white-collar worker gains Internet access at her workplace, she may use the skills she acquires to help blue-collar family members go online, thus playing a role in reducing inequality between Hispanic and non-Hispanic Americans, and between urban and rural dwellers.[4]

An equally strong case can be made for the opposite scenario. When we examine technology diffusion, a distinction emerges between products and services. Even expensive products often reach high penetration levels when economies of scale reduce their prices (television sets, VCRs, computers) or less expensive secondary markets emerge (automobiles, refrigerators), or both. By contrast, the diffusion of services that entail continuing expense has been slower, bumpier, and less complete (Schement 2003). As critical as telephone service would seem to be (especially to residents of rural areas), telephone penetration grew slowly and actually declined (markedly among farm families) during the Great Depression (Fischer 1992). Despite federal efforts, telephone service did not penetrate 90 percent of households until the 1970s, and the rate remains much lower than 90 percent in inner-city neighborhoods (Schement and Forbes 1999; Mueller and Schement 2001).

Evidence as well as theory can be mustered on behalf of both the optimistic and pessimistic points of view. Four arguments favor the former. First, as we have seen, some "divides" (gender, region, age, rural/urban) have already diminished. The trajectory of other gaps depends on the measures we use, but Internet use has undeniably expanded among all groups, so straight-line extrapolation (until recently at least) has suggested eventual convergence.

Second, surveys indicate that despite slowing growth after 2000, the market for Internet services is far from saturated. A spring 2000 survey by the Pew Center reported that 41 percent of Americans who did *not* use the Internet intended to do so (Lenhart 2000, 2); two years later, 44 percent of non-users predicted they would do so. If they did (and if those who said they probably or definitely would not go online did not), the proportion of Americans who are Internet users would rise above 70 percent.

Third, non-users' expectations are strongly correlated with age. In the Pew survey, 65 percent of non-users age fifty or younger expected to go online, compared to just 36 percent of non-users over age fifty, suggesting that generational succession will send Internet usage rates even higher. Based on these cohort differences, Lenhart (2000, 3)

predicts that "in a generation, Internet penetration will reach the levels enjoyed by the telephone . . . and the television." Finally, late adopters come from less-privileged backgrounds than Internet pioneers. In both 1998 and 2000, surveys found that new users had lower incomes and less education than Americans who had been online longer (Horrigan 2000; Cummings and Kraut 2000; Howard, Rainie, and Jones 2001; Katz, Rice, and Aspden 2001).

Evidence in favor of the pessimistic scenario is equally strong. Inequality by race, income, and educational attainment has diminished little, if at all: Americans with few years of education and low incomes were still less likely to be online in 2001 as Americans with the most education and the highest incomes had been in 1994. Moreover, we can discount those divides that *have* been bridged as special cases: place of residence became less important because networks were built out and the technology became more flexible, and women and the elderly are usually slower technology adopters than men and the young, but both groups ordinarily catch up.

Second, the high diffusion rate of the 1990s did not represent a "natural" trajectory but rather the success of federal and state initiatives to encourage the Internet's rapid evolution and broad availability and the special benefits to the Internet of an extraordinary economic bubble (the eponymous "boom" of the late 1990s). The reversal of both public policy and macroeconomic fortune after 2000 has already belied projections made as recently as 1999 that income inequality in the use of Internet services would vanish by 2001 (Bikson and Panis 1999) and in 2001 that household Internet access would reach 90 percent by 2003 (Leigh and Atkinson 2001, 6). Instead, diffusion slowed as the bubble popped (Lenhart et al. 2003). If curves plateau at or near 2001 rates, existing levels of inequality could be locked in for decades.

Third, although newer adopters are of lower socioeconomic status than longtime users, they may not *stay* online. In particular, loss of income during hard times may make consumers less able to pay monthly connection fees. Many people adopt the technology only to give it up later, and these Internet dropouts come disproportionately from groups with lower probabilities of going online in the first place. In surveys undertaken between 1995 and 2000, James Katz and his colleagues (Katz and Aspden 1997; Katz and Rice 2002) found that approximately 20 percent of those who had ever used the Internet no longer did so. In the fall of 2001, 3.3 percent of CPS households reported that they had discontinued Internet service (NTIA 2002, 77). Analyses prepared for this chapter reveal that about 10 percent of General Social Survey (GSS) respondents who used the Internet in the spring of 2000 no longer did so when they were reinterviewed eighteen months later. A 2002 study (Lenhart et al. 2003, 21) reports that 7 percent of U.S. adults are *former* Internet users and that between 27 and 44 percent of *current users* have gone offline for extended periods after becoming users. This study concludes that "the road to Internet use is so paved with bumps and turnarounds" (3) that the binary division of the population into "online" and "offline" is misleading. . . .

## Online Inequality Compared to Inequality in the Use of Other Media

To understand the Internet's implications for equality of access to information, we must

examine comparative evidence on access to and use of other communication media. Even if people with lots of money or education have privileged access to information online, whether or not an increasing role for the Internet exacerbates or ameliorates information inequality depends on whether access to and use of other media is more or less equally distributed. Socioeconomic status is ordinarily associated with access to communication media and, among those with access, with getting information (for evidence from the political domain, see Verba, Schlozman, and Brady 1995); it would be headline news if the Internet were an exception. As Pippa Norris (2001, 12) argues: "The interesting question is not whether there will be *absolute* social inequalities in Internet access [but] . . . whether *relative* inequalities in Internet use will be similar to disparities in the penetration rates of older communication technologies."

How might the Internet compare to mundane communication technologies like newspapers, magazines, the daily press, or even face-to-face conversation? Most online information is a free good. Economic theory tells us that if price elasticity is greater than zero, free information will be consumed at a faster rate than costly information, especially by people with little discretionary income. Thus, for those who have access to it, the Internet should make the distribution of information more equal. Yet this argument requires qualification in a number of ways. First, many competing information sources (network television news, interpersonal communication by telephone, daily newspapers) are either free or inexpensive. Second, online information is a "free good" only insofar as the user's time is without value. If lower-status Internet users take longer to find information (because their search skills are poorer, their connections slower, or their domain knowledge less), then the Internet could be a more "expensive" form of information than the newspaper, television, or a phone call to a friend. If going online requires a drive to the library or the risk of getting caught surfing while at work, it may be more expensive still. Third, because of the vast amount of information online, the Internet may be most attractive to those whose demand for information is highest (in many domains, high-SES users). Others may be satisfied by more limited media. Heinz Bonfadelli (2002) argues that the heterogeneity and depth of Internet-based information (in comparison to the relative homogeneity of material in newspapers or news broadcasts) is likely to exacerbate information inequality. In other words, we could plausibly hypothesize that the Internet will lead to a more egalitarian distribution of information, *or* that it will reinforce or even exacerbate the usual inequalities.

We must distinguish analytically between *access* and *use* in this regard. With respect to access, we may ask what would happen (holding constant the way people distribute attention across media) if information *producers* took information currently transmitted by newspaper, television, or word of mouth and began distributing it through the Internet instead. For example, to what extent would low-income parents be hurt or helped if public schools used local newspapers less and websites more to distribute information about class assignments, policy changes, and extracurricular activities? With respect to use, the question is (given the current allocation of information across media) how would inequality be affected if information *consumers* shifted their attention from one medium to another? For example,

would low-income parents learn more or less about their kids' schools if they spent more time online and less time reading the newspaper or talking with neighbors?

We know of only four studies that address such questions directly. Norris (2001, 90), using 1999 Eurobarometer data, found remarkably similar predictors of scores on a "new media index" (computer, CD-ROM, modem, and Internet) and an "old media index" (VCR, fax, satellite TV, cable TV, Teletext, and Videotext) in several European countries. Mariko Lin Chang (2003) used data from the 1998 Survey of Consumer Finances to investigate the impact of education, race, and other factors on where people get financial information. Education was more strongly associated with use of the Internet than with use of any other source of information; wealth (but not income) was significantly predictive of Internet use as well (but less so than of contact with financial professionals). African Americans favored financial professionals and advertisements over the Internet. Young people preferred the Internet and eschewed financial professionals; the elderly did the opposite. In a study of health information-seeking, Sanjay Pandey, John Hart, and Sheela Tiwary (2002) found that income and education significantly predicted Internet use. Compared to information sought from a doctor or in the newspaper, the Web was the only medium stratified by socioeconomic status. In a study of the use of media for political news, Bruce Bimber (2003) reported that African Americans were less underrepresented among Internet users than among newspaper readers and that young people were disproportionately likely to seek information online.

For this chapter, we analyzed data from the 2000 and 2002 General Social Surveys, which contained domain-specific questions about information-seeking in the areas of health (2000 and 2002), politics (2000), and jobs (2002). Respondents were first asked if they had "looked for information" at all during the past year; those who replied affirmatively were then asked which of several sources of information they employed.[5] Therefore, we can explore variation in search behaviors among people for whom we know that the knowledge domain is salient.

Here we focus on the association between median family income and the use of each source of information. Comparison of median incomes (reported in dollar ranges, to which we assigned values at the midpoint) indicates that respondents who sought information at all about health care or political candidates were financially better off than those who did not (see Table 59.2). No difference was evident for job information. Table 59.3 describes the search behavior of respondents who sought information in each domain. The results are striking: in each case, people who sought information on the Internet had notably higher incomes than people who searched through other means. The difference was least for employment information ($37,500 compared to $32,500), but the Internet was the *only* source for which users had higher incomes than nonusers. The income advantage of those who sought political information online was greater than for any other source but general-interest magazines (both $55,000 for users and $37,500 for non-users). The differences were most marked in health care, where the Web users' income advantage was far greater than it was for any other information source.

To summarize, the little evidence we have is equivocal with respect to socioeconomic

Table 59.2 Median Income of Respondents Who Did or Did Not Search for Information

| | *Health Information (2000)* | *Health Information (2002)* | *Political Information (2000)* | *Employment Information (2002)* |
|---|---|---|---|---|
| Sought information | $37,500 | $45,000 | $45,000 | $37,500 |
| Did not seek information | 32,500 | 32,500 | 32,500 | 37,500 |

*Data Source:* 2000 and 2002 GSS.

Table 59.3 Median Family Income of Respondents Who Did or Did Not Use Specific Media for Information (Respondents Who Sought Such Information from Any Source Only)

**Panel A: Health Information Search (2000)**

| | *Doctor or Nurse* | *Friend or Relative* | *World Wide Web* | *Magazine (Health)* | *Magazine (General)* | *TV/Radio* | *Newspaper* |
|---|---|---|---|---|---|---|---|
| Yes | $37,500 | $45,000 | $55,000 | $37,500 | $37,500 | $32,500 | $37,500 |
| No | 35,000 | 37,500 | 27,500 | 37,500 | 37,500 | 45,000 | 41,250 |

**Panel B: Health Information Search (2002)**

| | *Doctor or Nurse* | *Friend or Relative* | *World Wide Web* | *Magazine (Health)* | *Magazine (General)* | *TV/Radio* | *Newspaper* |
|---|---|---|---|---|---|---|---|
| Yes | 45,000 | 45,000 | 55,000 | 37,500 | 37,500 | 37,500 | 37,500 |
| No | 45,000 | 37,500 | 32,500 | 45,000 | 45,000 | 45,000 | 45,000 |

**Panel C: Political Information Search (2000)**

| | *Newspaper* | *TV/Radio* | *Magazine (General)* | *Friend or Relative* | *Political Campaign* | *World Wide Web* | *Magazine (Political)* |
|---|---|---|---|---|---|---|---|
| Yes | 45,000 | 45,000 | 55,000 | 45,000 | 45,000 | 55,000 | 45,000 |
| No | 37,500 | 55,000 | 37,500 | 37,500 | 45,000 | 37,500 | 45,000 |

**Panel D: Employment Information Search (2002)**

| | *Newspapter* | *Friend or Relative (Non-coworker)* | *Outside Contact* | *World Wide Web* | *Coworker* | *Publication* | *Counseling Service* | *TV/Radio* |
|---|---|---|---|---|---|---|---|---|
| Yes | 37,500 | 37,500 | 37,500 | 37,500 | 37,500 | 37,500 | 32,500 | 25,625 |
| No | 45,000 | 45,000 | 37,500 | 32,500 | 37,500 | 37,500 | 37,500 | 37,500 |

*Data Source:* 2000 and 2002 GSS.

inequality in the use of different media, but it suggests that for some purposes at least information would be more unequally distributed in a world in which the Internet played a greater role and other media a correspondingly smaller one. Insofar as we can judge from available studies, the level of socioeconomic inequality in access to information online is no less, and is probably greater, than the degree of inequality in access to information through other media. . . .

## Conclusion

The digital divide paradigm served researchers and policymakers well during the opening years of Internet diffusion. Even though we know relatively little about the net effects of Internet access on educational attainment, labor market success, and life-course outcomes, the fact that public services and government information are increasingly migrating to the Internet makes access an important topic from the standpoint of public policy. Now that more than half of Americans go online, we should pursue a more differentiated approach to understanding the Internet's implications for social and economic inequality—one that focuses on the extent and causes of different returns to Internet use for different kinds of users. In particular, it is crucial to move beyond description and projection to understand the mechanisms, consequences, and institutional context of inequality in access to the Internet and use of the services it offers.

### NOTES

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1. The odds ratio, $r_{jk}$, equals $(p_j/[1 - p_j])/(p_k/[1 - p_k])$, where $p_j$ is the probability that the more-advantaged group has access and $p_k$ is the probability that the less-advantaged group has access.

2. Figures 59.1 to 59.4 were produced by Hargittai using CPS data. Comparable graphs for region, metropolitan residence, gender, and Hispanic ethnicity are available at http://www.eszter.com/netuse.html. Data for 1994 are on the presence of modems in the household. Data for subsequent years are on use of the Internet for any purpose.

3. Unfortunately, it is difficult to interpret these results with much confidence. The authors of the U.S. study chose a method (linear as opposed to logistic regression) that would tend to lead coefficients to become larger (other things being equal) as the Internet's penetration increased. The author of the European study describes her method as linear (OLS) regression in the text but as logistic regression in the notes to the table reporting results, complicating interpretation (Norris 2001, 86, 88).

4. This line of reasoning must make two assumptions, for both of which there is much empirical support. First, the parameters with respect to which advantage is accorded must be only moderately correlated with one another (Blau 1977); second, personal relationships must be characterized by bias toward homophily—that is, people must tend to have friends who are similar to themselves (Marsden 1987).

5. The text of the health item was: "In the past year . . . have you looked for information about a health concern or medical problem? If yes, please tell me if you tried to find such health information from [articles in a daily newspaper; articles in a general-interest magazine; special health or medical magazine or newsletter; a doctor, nurse, or other medical professional; friends or relatives; radio or television programs; the Internet or World Wide Web]." The text for the political item was: "In the past two years . . . have you looked for information about the views or background of a candidate for political office? If yes, please tell me if you tried to find such political information from [articles in a daily newspaper; articles in general newsmagazines like *Time, Newsweek,* or *U.S. News & World Report;* special magazine or newsletter with particular policy interest or perspective; radio or television programs; friends or relatives; campaign materials from campaign worker or candidate; the Internet or World Wide Web]." The text for the jobs item was: "In the past

year . . . have you searched for information about a new job or explored career opportunities? Please tell me how many times you tried to find such information from [classified ads in a daily newspaper; classified ads in an industry or professional publication; a fellow worker or human resources staff member at your workplace—that is, where you were working when you were searching; business or work contacts outside your workplace—that is, outside where you were then working; friends outside of work or relatives; any job placement or career counseling service; radio or television program; information posted on the Internet]." (The job responses were binarized as yes or no.) Note that respondents were asked these questions *before* being asked the series of items about their use of the Internet, so that they were *not* primed to think about the latter.

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