

# e-Census Unplugged: Why Americans Should Be Able to Complete the Census Online

BY DANIEL CASTRO | FEBRUARY 2008

*Given the rising costs of conducting the decennial census, the U.S. Census Bureau should welcome the opportunity to reduce costs and improve quality through more efficient data collection over the Internet.*

In 2000, the U.S. Census Bureau established itself as a digital pioneer by making the United States one of the first countries to use an Internet-based data collection method for its population census. Through this project, the United States demonstrated that it was a global leader in using information technology (IT) for e-government. Unfortunately, though, citing various challenges, the U.S. Census Bureau has cancelled all plans to use the Internet for data collection in the 2010 population census. The Census Bureau has also opted not to implement an Internet response option for the American Community Survey (ACS), which has replaced the long form used in the decennial census.

The Census Bureau's decision not to provide an Internet response option for the census was made in part because the Census Bureau asserts that Internet data collection will not increase response rates or lower data collection costs. In addition, the Census Bureau argues that introducing an Internet response option could pose new security risks.<sup>1</sup> Yet a closer look at the Census Bureau's arguments shows little basis for most of its claims. Internet-based transactions are generally less costly, more accurate and can be more secure than their paper-based counterparts. The Census Bureau itself experienced generally positive results in

its earlier tests of an Internet response option, yet it failed to fully explore how most effectively to implement a similar approach in the 2010 Census. Our review of the census data collection methodologies used by government statistics agencies in countries other than the United States shows that other countries, including Canada, Norway, and Australia, have far surpassed the United States in the use of the Internet to conduct the census.

Government agencies in the United States should be embracing the use of IT where it can provide more efficient and

effective services. We recommend that Congress mandate that the Census Bureau recommit to a strategy of technical leadership and develop e-government solutions that are appropriate for our digital society. To take advantage of the benefits of Internet-based data collection, we specifically recommend that the U.S. Census Bureau do the following:

- Provide an online data collection option for the next decennial population census after 2010 and the American Community Survey.
- As a matter of policy, provide an Internet response option for all major household surveys that allow a paper response.
- Promote the Internet survey response option as a secure, low-cost, and time-saving option.

## BACKGROUND

In 1790, the U.S. federal government conducted its first population census, as established by the U.S. Constitution, to determine how many seats each state would receive in the U.S. House of Representatives and how much each state would have to contribute to pay for the Revolutionary War. Over time, the tools used to conduct the U.S. census have evolved from paper and pencils to electromechanical counting machines in the 1890s and to electronic computers in the 1950s.<sup>2</sup> In addition, the census has grown from a simple enumeration of the population to include a variety of demographic and socioeconomic statistics. Data from the decennial population census are used to support numerous federal, state, and local programs, to conduct market analyses, to assess environmental impacts, and to carry out research in various fields.<sup>3</sup>

The U.S. Census Bureau conducts a wide array of other surveys in addition to the decennial population census. Among these are the Current Population Survey, the American Community Survey, the American Housing Survey, the Census of Governments, the Annual Survey of Manufactures, and the Economic Census.<sup>4</sup> Since 2002, businesses participating in the Economic Census have been permitted to submit their responses over the Internet using a software program available for download from the Census Bureau's web site. Such

businesses may also use a secure section of the Census Bureau's web site to check their filing status, request extensions, or securely communicate with Census Bureau staff.<sup>5</sup> By claiming that security risks prevent it from collecting data online for the decennial census but at the same time allowing businesses to transmit data over the Internet for the Economic Census, the Census Bureau appears to contradict itself. Its decision not to allow an Internet option for the decennial census is especially puzzling in light of the fact that data collected for the decennial census and the Economic Census are subject to the same Title 13 privacy and confidentiality requirements.<sup>6</sup>

## CENSUS 2000

When designing the census, the Census Bureau must balance the needs of various stakeholders including Congress, federal agencies, advocacy groups, the statistical community, and the American public.<sup>7</sup> To help meet these needs, the Census Bureau introduced Internet data collection in Census 2000. Internet data collection was intended to supplement other forms of data collection, including traditional paper forms and by telephone. Although only a small percentage (0.07 %) of Census 2000 respondents submitted their data over the Internet, the project was an overwhelming success. The Census Bureau surveyed Internet respondents' satisfaction with the online census. Respondents overwhelmingly reported high levels of satisfaction with the Internet form. In addition, 94 percent of respondents indicated that they were satisfied or very satisfied with the ease of submitting the online form.<sup>8</sup>

A major reason that the rate of response to the online census was low is that the Internet response option was not well publicized because of concerns by Census Bureau officials that the census could be perceived as insecure.<sup>9</sup> No printed materials from the Census Bureau indicated to respondents that an Internet option was even available. In fact, the Census Bureau never even sent out a press release to announce that the Internet option existed. The only way Census 2000 respondents learned about the Internet response option at all was by discovering the link on the Census Bureau's web site or hearing about it from another source.<sup>10</sup> The

low rate of response to the online census was also due to the fact that less than 5 percent of Americans had broadband connections to the home in 2000. As of early 2007, 47 percent of Americans had a broadband connection in the home.<sup>11</sup>

Even though only a small percentage of census respondents in 2000 used the Internet, the Internet response option appeared to be a success that could serve as a foundation for developing future censuses. Especially in the area of information security, the Census Bureau found the Internet application to be both reliable and secure.<sup>12</sup> In one post-Census 2000 report, a Census Bureau official concluded the following:

Obviously, the Internet is here to stay. The software and hardware developed for this program could have handled tens of millions of records instead of the tens of thousands it did handle. It is our recommendation that future research focus not necessarily on how to implement the form itself, but how to promulgate the Internet form as an option and convince the public that there is sufficient data security. Future research should also focus on how to use it as a tool to increase data quality by implementing real-time data feedback and analysis. The Internet option in Census 2000 was an operational success.<sup>13</sup>

## 2010 CENSUS

The 2010 Census will be different from past U.S. censuses. One major change will be the elimination of the long form in the decennial census. All U.S. households will receive a short census form only. The demographic, housing, social, and economic data previously collected via the long form will now be collected in the annual American Community Survey.

A second major change planned by the Census Bureau for the 2010 Census is to equip census workers with GPS-enabled handheld computers to conduct personal interviews in field operations. These handhelds will primarily be used for follow-up interviews to nonrespondents. This change is intended to automate many of the tasks of the census workers and to reduce costs

by reducing the reliance on paper forms and paper maps. Data collected during personal interviews will be keyed into the handheld computers and then uploaded to the Census Bureau either by a wireless cellular connection or a dialup modem.<sup>14</sup>

A third major change in the 2010 Census will be the elimination of the Internet response option that was introduced in the 2000 Census. Until mid-2006 the Census Bureau had indicated that Internet data collection would be a part of the 2010 Census. Its decision to eliminate the Internet response option in the 2010 Census was made late in the development lifecycle of the Decennial Response Integration System, the system used to collect and integrate all census responses.

The Census Bureau must also address new challenges in the 2010 Census such as a growing population that has become more diverse and difficult to enumerate.<sup>15</sup> In addition, as shown in Table 1, the cost of conducting the census has risen dramatically in recent decades and outpaced the growth rate of housing units. Both the average cost per housing unit and the average cost per person will reach unprecedented levels in 2010.

**Table 1: Cost of the Decennial Census and Average Cost per Housing Unit, 1960-2010 (in 2000 dollars)<sup>16</sup>**

Year	Total Census	
	Cost (in billions)	Average Cost Per Housing Unit
1960	\$0.7	\$12.75
1970	\$1.1	\$15.98
1980	\$2.3	\$25.50
1990	\$3.3	\$32.12
2000	\$4.5	\$38.97
2010	\$9.3	\$73.21

The average cost per housing unit of the U.S. decennial census in 2010 is expected to be almost double the average cost in 2000. The Census Bureau estimates that the cost of the 2010 Census will be \$11.3 billion in current dollars and the average cost per housing unit will be approximately \$89.<sup>17</sup> Given the rising costs associ-

ated with the census, it is surprising that the Census Bureau did not design the 2010 Census to use Internet data collection as part of a long-term strategic shift away from costly paper-form processing to cheaper electronic data processing.

The Census Bureau should look to other U.S. government agencies that have successfully implemented Internet-based services. The Internal Revenue Service (IRS), for example, launched its “e-file” program in 1999, allowing federal income taxpayers to file their tax returns electronically. In 2006, more than 50 percent of individual income tax returns in the United States were filed electronically. Moreover, as Americans have switched from paper to electronic filings, the IRS has saved over 1,600 staff years and closed three paper processing facilities.<sup>18</sup> Overall, the IRS has found that the cost to process an electronic tax return is about 90 percent less than the cost to process a paper return. Similarly, the United Kingdom has found that processing electronic tax returns was over 40 percent cheaper than processing a paper return.<sup>19</sup>

#### **THE AMERICAN COMMUNITY SURVEY (ACS)**

The ACS collects demographic, housing, social, and economic data that were previously collected via the long form of the decennial census. The problem with collecting the data on the long form every 10 years was that the data quickly became outdated. The Census Bureau addressed that problem with the ACS, which is an ongoing statistical survey conducted every year.<sup>20</sup>

Currently, the Census Bureau collects data for the ACS through three mechanisms: mail, telephone, and face-to-face interviews. Offering ACS respondents an Internet response option could yield cost savings by reducing expenditures for postage, handling, data capture, and nonresponse follow-up.<sup>21</sup> In addition, collecting ACS questionnaire responses electronically by Internet could improve data quality. In the 2000 ACS, approximately one-third of paper form responses did not pass automated consistency and coverage checks.<sup>22</sup> Incomplete or inaccurate forms reduce the quality of data collected and, because census workers must follow up with respondents, introduce additional costs.

Web-based forms can prevent many of these errors by validating the data and reminding respondents if they forget to answer a question. In fact, when the Census Bureau conducted a feasibility test for using the Internet to collect data for the ACS in 2000 and 2001, it found a significant improvement in data quality for forms submitted online.<sup>23</sup> Since that time, the Census Bureau has not conducted any further research on using an Internet response option for the ACS.<sup>24</sup>

#### **GROWING USE OF INTERNET-BASED DATA COLLECTION IN CENSUSES ABROAD**

Although the United States was at the forefront of using the Internet to collect census data in 2000, it has since ceded its leadership to Canada, Singapore, and other countries (see Table 2). Comparing data from different countries can be difficult, because each country conducts its population census in a unique way. Many countries, including Sweden, Finland, Denmark, and Iceland, for example, no longer conduct a questionnaire-style census but instead gather census data from administrative records. These countries have found that a register-based census—that is, a census using existing data from administrative records—is cheaper and faster and places less of a burden on the county’s population than a questionnaire-style census.<sup>25</sup> In addition, some countries have begun substituting or supplementing a traditional population-wide census conducted every five or 10 years with smaller surveys conducted more regularly.

The notion of American exceptionalism is false, however, and meaningful lessons can be drawn from Internet censuses conducted in other countries. Our review of population census projects in different countries indicates that a number of countries are embracing the use of Internet-based census data collection methods. In addition, of the countries that we found that use the Internet to collect census data, all but one (Spain) have had a great percentage of their census respondents submit their responses over the Internet than the United States. Moreover, these other countries have overwhelmingly found that Internet-based data collection methods have improved census-taking.<sup>26</sup>

**Table 2: Use of Internet Data Collection for Population Censuses in Select Countries<sup>27</sup>**

Country	Percentage of Respondents Using the Internet	Year of Census
Canada	18.50%	2006
Singapore	15.00%	2000
Norway	9.90%	2001
Australia	9.00%	2006
New Zealand	7.00%	2006
Switzerland	4.20%	2000
Korea	0.90%	2005
United States	0.07%	2000
Spain	0.01%	2001

Canada has had one of the most successful experiences with using the Internet to collect census data. In Canada's 2006 census, 18.5 percent of census respondents used the Internet—the highest percentage of any nation to date. The provinces of Alberta, British Columbia, and Ontario and Yukon Territory all had Internet census response rates of over 20 percent.<sup>28</sup> Respondents could respond by Internet regardless of whether they used the short form or the long form. Internet respondents could save a partially completed form and complete the census questionnaire over multiple sessions.

Canada found that if it achieved a 16 percent Internet response rate, the cost savings would exceed the cost of implementing the Internet response option. Given that it exceeded its response rate goal, Canada not only saved money on its 2006 census but now has the infrastructure in place to conduct future censuses online.<sup>29</sup> Developing an online census, or any similar IT application, has high fixed costs and low marginal costs. This means that while the development costs for most countries are similar, large countries can spread the costs over a larger population, resulting in a lower cost per person. Given that the population of the United States is almost 10 times larger than the population of Canada, the United States should expect to be able to

develop a cost-neutral Internet response option with a significantly smaller percentage of its population.

Singapore also generated an impressive Internet response rate of 15 percent in its 2000 census, even though only 32 percent of Singapore's population were Internet users at the time.<sup>30</sup> This high response rate has been credited to the design of Singapore's census, which encouraged respondents to use the Internet. The Singapore census offered three data response methods—mail, telephone, and Internet—but each response method was offered at a different stage. First, all individuals were invited to respond by Internet. Then for the individuals who had not responded by Internet, phone interviews were offered. Finally, census workers used paper forms to enumerate the remaining individuals.<sup>31</sup>

#### **BENEFITS OF INTERNET-BASED DATA COLLECTION**

Providing the U.S. population with an Internet-based census response option would yield many benefits for both the Census Bureau and respondents, including convenience, better usability, improved accuracy, reduced costs, increased security over traditional paper-based methods, and other less tangible benefits.

Web-based forms can provide a more user-friendly experience than paper forms by offering well-designed interfaces that increase legibility and accessibility. In addition, web-based forms can increase usability by providing additional guidance and contextual help. To illustrate, web surveys can use popup windows, troubleshooting wizards, and searchable guides to ensure individuals can get help and successfully complete the questionnaire. Furthermore, the web-based form can be customized for each user. Thus, for instance, questions can be personalized on the basis of previously provided information, and irrelevant questions can be suppressed. Users can also select their preferred language. Finally, users can easily print a copy of the census questionnaire for their own records after completing the form.<sup>32</sup>

Collecting data online has the potential to improve data accuracy over paper-based methods for several reasons. First, online forms can handle atypical data

such as unusually long responses. One limitation of the paper-based census, for example, is that some large households cannot report all information on each household member because there is not space on the questionnaire. With a web-based census form, this space problem would not exist. Second, web forms can have automatic error-checking to prevent users from submitting invalid or incomplete data. Thus, for example, client-side scripts—computer code executed in the user's browser—can generate a warning to alert users that they have not completed all fields before they submit their web form. Third, Internet-based census forms can use discrete options, such as selection menus or checkboxes, to reduce the number of possible ambiguous answers and ensure all data is coded correctly.<sup>33</sup> Fourth, online data collection eliminates the possibility for error during the scanning, decoding, and transcribing processes that must occur for paper forms. In addition, because data collected online require less processing than data collected using paper forms, census results can be made available more quickly if the data are collected online.

Using the Internet to collect census data can help reduce the costs of data collection by reducing mail-back costs, processing costs, and follow-up costs.<sup>34</sup> First, the Census Bureau saves the cost of postage that it must pay for every census questionnaire returned by mail. Second, Internet-based web forms eliminate the expensive intermediary steps of paper-based data collection, such as scanning and transcribing. Third, providing an Internet response can help the Census Bureau reduce the number of individuals with whom it must follow up. Some of the savings could come from individuals who respond to the census by Internet who otherwise would not have responded, although previous surveys have found that offering an Internet response option did not increase the overall response rate. Additional savings could come from reduced follow-up costs, because forms submitted online are less likely to be inconsistent or incomplete.<sup>35</sup> Further savings could come from reducing nonresponse follow-up costs for replacement questionnaires, which are sent to individuals who have not responded after some predetermined threshold date. The Census Bureau found during tests in 2003 and 2005 that when an Internet census response option is provided, the response rate

prior to the threshold date is higher. The Census Bureau has estimated these savings from reduced non-response follow-up to be in the range of \$300,000 to \$500,000 per census.<sup>36</sup>

In terms of data security, it should be noted that all census records are eventually stored electronically, regardless of how they are collected. The security of the census data while in storage is not affected by the manner in which the census data are collected. Internet-based data collection affects the security of the data only while the data are in transit. If strong encryption and authentication methods are used, sending data over the Internet can be more secure than sending a census questionnaire through the mail. This statement is not an indictment of the U.S. Postal Service but rather a recognition of the fact that encrypted digital information is more secure than the same unencrypted information when it is on paper. Encrypted electronic data, for example, can only be accessed by an individual with the appropriate passcode, whereas unencrypted data in an envelope can be accessed by anyone with a letter-opener. As we discuss below, both paper and electronic data collection carry certain security risks; however, these risks are neither insurmountable nor unique to a particular method of data collection.

Finally, providing an Internet response option for the census has a number of additional, less quantifiable benefits. Providing respondents with access to the census questions online can help the Census Bureau create a more modern image for itself and might help reduce some of the resistance to the census.<sup>37</sup> Citizens increasingly expect government services to be online, and providing an Internet option would help the Census Bureau meet the demands and expectations of its customers.<sup>38</sup> Large-scale projects such as providing an Internet response option for the census could also help to develop the skills and knowledge base of federal employees, which could then subsequently be leveraged in other e-government projects.

#### **RESPONSE TO U.S. CENSUS BUREAU'S OBJECTIONS TO INTERNET-BASED DATA COLLECTION**

The U.S. Census Bureau has indicated that its decision to eliminate the Internet-based data collection from the 2010 Census was based on its belief that (1) an Inter-

net response option would not necessarily increase the census response rate;<sup>39</sup> (2) an Internet response option could threaten the success of the census by introducing “potential risks from computer security attacks;”<sup>40</sup> and (3) an Internet response option would not reduce costs. As discussed below, the first assertion is true but is not a justification for eliminating the Internet response option. The second argument, that computer security risks could jeopardize the census, is questionable—and, at most, an obstacle that other organizations have successfully overcome. The third argument is simply unsupported by a close examination of the facts.

### Census Response Rates

The Census Bureau correctly states that other countries have not reported higher response rates as a result of adding an Internet response option to their censuses. Higher response rates are desirable because more responses yield more data and reduce the amount of fieldwork required. The fact that an Internet response option does not increase census response rates, however, is not a justification for eliminating the Internet response option given the many other strategic reasons to collect data over the Internet, which were discussed earlier.

In addition, although the *overall* census response rate may not increase with an Internet response option, the response rate for *individual* questions might very well improve using online data collection methods. Norway found that Internet data collection reduced nonresponses to specific items, because the web form could remind respondents when they did not answer a question. Moreover, in a post-census data analysis, Norwegian census officials reported, “...the quality of the Internet responses was better than the quality on the paper version of the questionnaire. And, most encouraging, the quality improvement was stronger among those who generally make the most mistakes.”<sup>41</sup>

### Information Security

Malicious individuals can certainly use the Internet to their advantage. Using the Internet, attackers can more easily conduct large-scale, automated attacks. In addition, sophisticated attackers can often mask their identity to make it difficult for law enforcement to find

the criminals and prosecute them. Yet these computer security risks can be mitigated by using good computer security practices. Moreover, the risks faced by the Census Bureau are no different from those faced by other government agencies or companies that successfully use the Internet for secure transactions every day.

The Census Bureau identified three main computer security risks: denial of service (DOS) attacks, phishing attacks, and spyware attacks. A DOS attack is an attempt to make a computer resource unavailable to its intended users. For example, DOS attacks could be used to degrade the service of the web site the Census Bureau uses to collect survey responses. Although it is almost impossible to prevent all DOS attacks, most organizations have taken a number of steps to mitigate the risk from either DOS attacks or unexpectedly high numbers of visitors. The Census Bureau should expect to have a sufficiently large server and bandwidth capacity to handle a large flood of requests. The Census Bureau might also adopt techniques such as the “graceful deferral” technique used in Canada, which limits the number of users to ensure a minimum level of quality of service.<sup>42</sup> The worst case scenario from a DOS attack is that individuals are unable to access the Census Bureau’s web site on a certain day and must instead complete the census questionnaire later.

The second potential security risk cited by Census Bureau officials, phishing attacks, occur when malicious web sites or e-mails are used to impersonate a trusted entity. For example, an attacker could attempt to lure individuals to a counterfeit web site that is not operated by the U.S. Government. Although phishing attacks are well known, attackers continue to use these attacks with some degree of success. The Census Bureau could take many steps to help mitigate such attacks. The Census Bureau should have clear instructions and guidelines to educate respondents on how to verify that they are using a legitimate web site. For example, it could use digital certificates on its web site so all users can verify the web site’s identity. The Census Bureau could also implement a challenge-response protocol, where it must prove to an online respondent that it knows a unique identifier printed on the respondent’s census form.<sup>43</sup>

The third potential security risk cited by the Census Bureau, spyware, is malicious software that runs on a computer to steal data. Some spyware, for example, can capture all keyboard strokes and send this information to an attacker. The Census Bureau can help limit this type of attack by encouraging all users to scan their computer for spyware before entering census data. Even if a spyware attack is successful, though, the consequences of such an attack would usually be relatively minor. Disclosing census data poses no real privacy risks for most respondents. Much of the data in the census can be gathered from other public records such as birth certificates, marriage certificates, and registered voter lists. In addition, the type of information submitted is relatively benign in comparison to other information Internet users regularly submit online, including banking and credit card information. As a result, census data are not likely to be as attractive a target for attackers as other information is.

Census Bureau officials expressed concern that, justifiably or not, the public would perceive the online census as insecure. According to officials, this doubt would reduce response rates and, therefore, increase costs.<sup>44</sup> However, this risk is likely overstated. In the event that respondents do not want to use the Internet they can still respond by mail. The risk of negative publicity is real, but it is by no means limited to Internet-based data collection. In the physical world, for example, impersonation attacks can hurt public confidence in the census. In 2000, two police officers posed as census workers in an undercover illegal drug investigation.<sup>45</sup> In another case, criminals posed as census takers to rob individuals in their homes.<sup>46</sup> These incidents have the potential to hurt public confidence in the census, but the Census Bureau has responded to these risks by equipping all census workers with ID badges and educating the public on how to properly identify a census worker.

When government agencies simply abandon e-government projects because of security challenges, they not only give up short-term benefits but they also jeopardize future cost savings. Although legitimate computer security risks should always be considered, government agencies that eschew projects because of unfounded security risks run the risk of creating a self-fulfilling

prophecy. By not using Internet data collection, the Census Bureau only helps foster the incorrect belief that an online census is not secure. A better response would be to educate the public on the security of the system and demonstrate to residents that this project *is* secure. This approach would lay the groundwork for future e-government initiatives that not only depend on technically savvy government leaders, but also on a computer-literate population.

### Costs

Census Bureau officials stated that the third reason they decided to eliminate their plans to allow individuals to respond online to the 2010 Census was that they do not believe an Internet response option will reduce their costs. These officials maintain that because they cannot predict the online response rate, they cannot reduce their paper operations. In addition, they claim that the cost of developing an Internet response capability exceeds the expected savings.

The Census Bureau's analysis of costs was based on a contractor's cost-benefit analysis report. The contractor uses three questionable figures in particular that distort the analysis in its report: (1) the average cost savings from processing an Internet form; (2) the expected Internet response rate; and (3) the total cost to implement an Internet response option. As discussed below, a close look at the data used by that contractor raises doubts about the conclusions of the analysis.<sup>47</sup> In fact, our analysis suggests that the cost to the Census Bureau of *not* providing an Internet response option in 2010 is between \$5 million to \$12 million. Moreover, the contractor evaluated the costs and benefits of the existing proposal for providing an Internet response option, but it did not conduct a systematic review to determine whether the Census Bureau could design a cost-effective system for Internet-based data collection.

First, the contractor's report states that the average cost to process a paper form is fixed at \$2.50 for the first 90 million forms (per the government contract). The incremental paper-form processing cost, representing variable labor, is \$0.20 per form (based on cost estimates).<sup>48</sup> The report then assumes that the average cost savings from processing an Internet form instead

of a paper form is limited to only \$0.20, rather than the higher rate of \$2.50. The report made this assumption because Census Bureau officials stated that they could not predict with a high degree of confidence the response rate of the Internet option and therefore could not reduce the infrastructure costs for paper-form processing.<sup>49</sup>

Although the Census Bureau may not be able to predict the exact response rate for the Internet option, it seems unlikely that the Census Bureau would not be able to predict a minimum level of usage. Given that the Internet response rate in the 2006 Canadian census was 18.5 percent, the Census Bureau could conservatively estimate that at a minimum 10 percent of respondents would choose the Internet option. Using this figure, the Census Bureau could expect to save approximately \$21 million by reducing its investment in paper processing infrastructure.

Second, the contractor's report estimates that only between 3 percent to 11 percent of respondents would use the Internet option. This prediction may be accurate if the Census Bureau once again fails to promote the Internet option; however, in comparison to international response rates, these estimated figures are unjustifiably low. Moreover, they differ substantially from the Census Bureau's previous published es-

timate that one-quarter of all respondents would use the Internet option.<sup>50</sup> The contractor's report gives no justification for this discrepancy.

Finally, the contractor's report did not validate the \$22.5 million estimated implementation cost of the Internet response system.<sup>51</sup> Given that the Census Bureau had already developed an Internet response option for Census 2000 and a 2005 National Census Test application, products from these previous efforts could probably have been reused.<sup>52</sup> In addition, any additional development for the 2010 Census could have been expected to help offset future costs for subsequent censuses and other online surveys. These costs and benefits were not evaluated in the contractor's report.

Our analysis suggests that providing an Internet response option for the census should generate cost savings even with a relatively low response rate (see Table 3). With only a 10 percent Internet response rate, for example, the Census Bureau should generate savings of almost \$28 million—more than enough to cover the estimated \$22.5 million price tag of providing an Internet response. Moreover, if the Census Bureau promoted the Internet response option and achieved response rates similar to Canada, it could expect to generate savings of \$30 to \$35 million.

**Table 3: Estimated Savings from the Internet Response Option<sup>53</sup>**

Source	Savings by Internet Response Rate		
	10%	15%	20%
10% reduction in paper processing infrastructure investment	\$20,700,000	\$20,700,000	\$20,700,000
Reduction in paper processing labor costs	\$2,562,327	\$3,843,490	\$5,124,653
Reduction in mailback costs	\$4,612,188	\$6,918,282	\$9,224,376
<b>Savings</b>	<b>\$27,874,515</b>	<b>\$31,461,772</b>	<b>\$35,049,029</b>

## RECOMMENDATIONS

Given the expected benefits of using Internet data collection, we recommend that Congress mandate that the U.S. Census Bureau recommit to a strategy of technical leadership and develop e-government solutions that are appropriate for our digital society. Specifically, we recommend that the Census Bureau do the following:

- **The U.S. Census Bureau should provide an online data collection option for the decennial population census after 2010 and the American Community Survey.** At this point in the development cycle, it is unlikely that the Census Bureau has the resources available to implement an Internet response option in time for the 2010 Census. The Census Bureau needs sufficient time to design, integrate, test and evaluate an Internet response option. Nevertheless, the short-term and long-term benefits of using Internet data collection are overwhelming. Other countries have succeeded in designing an Internet-based solution that is both secure and cost-effective, and the U.S. Census Bureau should also meet this challenge.
- **As a matter of policy, the U.S. Census Bureau should provide an Internet response option for all major household surveys that allow a self-enumerated paper response.** An Internet response option will allow the Census Bureau to

cut costs, improve data quality and more quickly report census results. In addition, the Census Bureau will be able to demonstrate to Americans the security of e-government applications so that Americans can continue to benefit from these efficiencies. Furthermore, the Census Bureau will be able to develop a workforce skilled in good online survey techniques so that America is not left behind in this discipline.

- **The U.S. Census Bureau should promote the Internet survey response option as a secure, low-cost, and time-saving option.** Given the qualitative and quantitative benefits of submitting survey data over the Internet, the Census Bureau should actively seek to promote and publicize this response method when it is offered, much as IRS has promoted the “e-file” option for tax returns.

## CONCLUSION

Given the rising costs of conducting the decennial census, the U.S. Census Bureau should welcome the opportunity to reduce costs and improve quality through more efficient data collection over the Internet. Moreover, the Census Bureau should respond to 21<sup>st</sup> century challenges with innovation and inventiveness, rather than resign itself to the familiar yet impractical methods of the past.

## ENDNOTES

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