

**GAO**

Report to the Subcommittee on  
Terrorism, Technology and Homeland  
Security, Committee on the Judiciary,  
U.S. Senate

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September 2006

# ESTIMATING THE UNDOCUMENTED POPULATION

## A “Grouped Answers” Approach to Surveying Foreign- Born Respondents



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Accountability · Integrity · Reliability

# Highlights

Highlights of [GAO-06-775](#), a report to the Subcommittee on Terrorism, Technology and Homeland Security, Committee on the Judiciary, U.S. Senate

## Why GAO Did This Study

As greater numbers of foreign-born persons enter, live, and work in the United States, policymakers need more information—particularly on the undocumented population, its size, characteristics, costs, and contributions. This report reviews the ongoing development of a potential method for obtaining such information: the “grouped answers” approach. In 1998, GAO devised the approach and recommended further study. In response, the Census Bureau tested respondent acceptance and recently reported results.

GAO answers four questions.

- (1) Is the grouped answers approach acceptable for use in a national survey of the foreign-born?
- (2) What further research may be needed?
- (3) How large a survey is needed?
- (4) Are any ongoing surveys appropriate for inserting a grouped answers question series (to avoid the cost of a new survey)?

For this study, GAO consulted an independent statistician and other experts, performed test calculations, obtained documents, and interviewed officials and staff at federal agencies.

The Census Bureau and DHS agreed with the main findings of this report. DHHS agreed that the National Survey of Drug Use and Health is not an appropriate survey for inserting a grouped answers question series.

## What GAO Recommends

GAO makes no new recommendations in this report.

[www.gao.gov/cgi-bin/getrpt?GAO-06-775](http://www.gao.gov/cgi-bin/getrpt?GAO-06-775).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Nancy R. Kingsbury at (202) 512-2700 or [kingsbury@gao.gov](mailto:kingsbury@gao.gov).

# ESTIMATING THE UNDOCUMENTED POPULATION

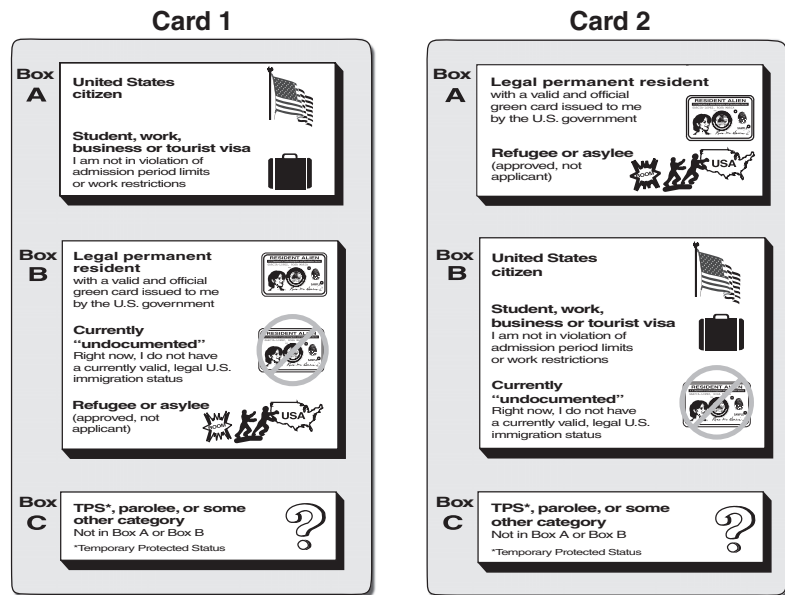
## A “Grouped Answers” Approach to Surveying Foreign-Born Respondents

### What GAO Found

The grouped answers approach is designed to ask foreign-born respondents about their immigration status in a personal-interview survey. Immigration statuses are grouped in Boxes A, B, and C on two different flash cards—with the undocumented status in Box B. Respondents are asked to pick the box that includes their current status and are told, “If it’s in Box B, we *don’t* want to know which specific category applies to you.”

A random half of respondents are shown the card on the left of the figure (Card 1), resulting in estimates of the percentage of the foreign-born population who are in each box of that card. The other half of the respondents are shown the card on the right, resulting in corresponding estimates for slightly different boxes. (No one sees both cards.) The percentage undocumented is estimated by subtraction: The percentage of the foreign-born who are in Box B of one card minus the percentage who are in Box A of the other card.

Immigration Status Cards 1 and 2



Sources: GAO; Corel Draw (flag and suitcase); DHS (resident alien cards). (The actual size of each card is 8-1/2" by 11.")

The grouped answers approach is acceptable to many experts and immigrant advocates—with certain conditions, such as (for some advocates) private sector data collection.

Most respondents tested did not object to picking a box. Research is needed to assess issues such as whether respondents pick the correct box. A sizable survey—roughly 6,000 or more respondents—would be needed for 95 percent confidence and a margin of error of (plus or minus) 3 percentage points. The ongoing surveys that GAO identified are not appropriate for collecting data on immigration status. (For example, one survey takes names and Social Security numbers, which might affect acceptance of immigration status questions.) Whether further research or implementation in a new survey would be justified depends on how policymakers weigh the need for such information against potential costs and the uncertainties of future research.

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## Abbreviations

|        |   |
|--------|---|
| ACS    | American Community Survey                                 |
| BLS    | Bureau of Labor Statistics                                |
| CASI   | Computer Assisted Self Interview                          |
| CPS    | Current Population Survey                                 |
| DHS    | Department of Homeland Security                           |
| GSS    | General Social Survey                                     |
| HHS    | Department of Health and Human Services                   |
| INS    | Immigration and Naturalization Service                    |
| NAWS   | National Agricultural Workers Survey                      |
| NCHS   | National Center for Health Statistics                     |
| NHIS   | National Health Interview Survey                          |
| NORC   | National Opinion Research Center                          |
| NRC    | National Research Council                                 |
| NSDUH  | National Survey on Drug Use and Health                    |
| NSF    | National Science Foundation                               |
| OMB    | Office of Management and Budget                           |
| SAMHSA | Substance Abuse and Mental Health Services Administration |
| SIPP   | Survey of Income and Program Participation                |

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United States Government Accountability Office  
Washington, DC 20548

September 29, 2006

The Honorable Jon Kyl  
Chairman  
The Honorable Dianne Feinstein  
Ranking Minority Member  
Subcommittee on Terrorism, Technology  
and Homeland Security  
Committee on the Judiciary  
United States Senate

As greater numbers of foreign-born persons enter, live, and work in the United States, policymakers and the general public increasingly place high priority on issues involving immigrants. Because separate policies, laws, and programs apply to different immigration statuses, valid and reliable information is needed for populations defined by immigration status. However, government statistics generally do not include such information.

The information most difficult to obtain concerns the size, characteristics, costs, and contributions of the population referred to in this report as *undocumented* or *currently undocumented*.<sup>1</sup> Such information is needed because, for example, large numbers of undocumented persons arrive each year, and the Census Bureau has realized that information on the size of the undocumented population would help estimate the size of the total U.S. population, especially for years between decennial censuses.<sup>2</sup> More

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<sup>1</sup>Our previous reports and those of other government agencies have sometimes used the terms *undocumented*, *illegal aliens*, *illegal immigrants*, *unauthorized immigrants*, and *not legally present*. We use *undocumented* here, because this report concerns a technique for surveying the foreign-born and an ongoing federally funded survey uses this term as a response category when asking about legal status. We define undocumented as foreign-born persons who are illegally present in the United States. Foreign-born persons (that is, persons not born as U.S. citizens) were born outside the United States to parents who were both not U.S. citizens at the time of the birth.

<sup>2</sup>Most recently, the Census Bureau has stated that among its “enhancement priorities” to “improve estimates of net international migration” are efforts to research ways of estimating “international migrants by migrant status (legal migrants, temporary migrants, quasi-legal migrants, unauthorized migrants, and emigrants)” with the overall purpose of producing annual estimates of the U.S. population. (“The U.S. Census Bureau’s Intercensal Population Estimates and Projections Program: Basic Underlying Principles,” paper distributed by the Census Bureau at its conference on Population Estimates: Meeting User Needs, Alexandria, Virginia, July 19, 2006.)

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generally, information about the undocumented population—and about changes in that population—can contribute to policy-related planning and evaluation efforts.

As you know, in 1998, we devised an approach to surveying foreign-born respondents about their immigration status.<sup>3</sup> This self-report, personal-interview approach groups answers so that no respondent is ever asked whether he, she, or anyone else is undocumented. In fact, no individual respondent is ever categorized as undocumented. Logically, however, grouped answers data can provide indirect estimates of the undocumented population. Generally, grouped answers questions on immigration status would be asked as part of a larger survey that includes direct questions on demographic characteristics and employment and might include questions on school attendance, use of medical facilities, and so forth; some surveys also ask specific questions that can help estimate taxes paid. Potentially, combining the answers to such questions with grouped answers data can provide further information on the characteristics, costs, and contributions of the undocumented population.

We reported the first results of preliminary tests of the grouped answers approach, primarily with Hispanic farmworkers, in 1998 and 1999; the majority of the preliminary test interviews were fielded by Aguirre International of Burlingame, California.<sup>4</sup> We also recommended that the Immigration and Naturalization Service (INS) and the Census Bureau further develop and test the method. In response, the Census Bureau contracted for a test as part of the 2004 General Social Survey (GSS), which is fielded by the National Opinion Research Center (NORC) at the University of Chicago, with “core funding” provided by a grant from the

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<sup>3</sup>GAO, *Immigration Statistics: Information Gaps, Quality Issues Limit Utility of Federal Data to Policymakers*, [GAO/GGD-98-164](#) (Washington, D.C.: July 31, 1998), and *Survey Methodology: An Innovative Technique for Estimating Sensitive Survey Items*, [GAO/GGD-00-30](#) (Washington, D.C.: November 1999).

<sup>4</sup>See [GAO/GGD-98-164](#) and [GAO/GGD-00-30](#).

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National Science Foundation (NSF).<sup>5</sup> The Census Bureau’s analysis of the 2004 GSS data became available in 2006.

In this report, we respond to your request that we review the ongoing development of the grouped answers approach and related issues. We address four questions: (1) Is the grouped answers approach “acceptable” for use in a national survey of the foreign-born population?<sup>6</sup> (2) What kinds of further research are or may be needed, based on the results of tests conducted thus far and expert opinion? (3) How large a survey is needed to provide “reasonably precise” estimates of the undocumented population, using grouped answers data? (4) Are there appropriate ongoing surveys in which the grouped answers question series might eventually be inserted (thus avoiding the costs of fielding a new survey)?

To answer these questions, we

- consulted private sector experts in immigration issues and studies, including immigrant advocates, immigration researchers, and others;<sup>7</sup>

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<sup>5</sup>The GSS is a long-standing series of nationally representative personal-interview self-report surveys, each consisting of a “core” question series and additional “modules.” The funding for fielding the core question series is provided by a grant from NSF. The modules are question series added through grants from and contracts with a variety of sources. The Census Bureau contracted for a grouped answers module in the 2004 GSS. The bulk of the funding for that Census–GSS contract had been provided to the Census Bureau by the Department of Homeland Security (DHS). This test of the grouped answers approach was in response to our earlier recommendation in [GAO/GGD-98-164](#).

<sup>6</sup>The acceptability of the grouped answers approach for use in a national survey is defined here primarily in terms of (1) the responses of immigrant advocates when the grouped answers approach is explained to them (that is, objecting versus not objecting to or accepting the method) and (2) respondents’ tendency to pick a box when the grouped answers immigration status question is posed to them (rather than their refusing or saying that they “don’t know”). The opinions of other experts—for example, those who have conducted studies of immigrants—are also relevant, as are interviewer judgments about respondent reactions.

<sup>7</sup>In all, we consulted over 20 private sector immigration experts (listed in appendix I, table 5). Because of the importance of immigrant advocates’ views on the issues in surveying immigrants, table 5 identifies the experts representing immigrant advocate organizations. For purposes of this report, we define immigrant advocate organizations as those whose purpose includes representing the immigrants’ point of view. More generally, in reporting the views of the experts we consulted, we recognize that in some cases other knowledgeable persons might have differing views.



- 
- consulted an independent statistical expert, Dr. Alan Zaslavsky, and other experts in statistics and surveys;<sup>8</sup>
  - reanalyzed the data from the 2004 GSS test and subjected both our analysis and the Census Bureau's analysis to review by the independent statistical expert;
  - performed test calculations, using specific assumptions; and
  - identified ongoing surveys that might be candidates for piggybacking the grouped answers question series, gathered documents on those surveys, and met with officials and staff at the federal agencies that conduct or sponsor them.<sup>9</sup>

We also met with other relevant federal agencies.<sup>10</sup> Appendix I describes our methodology and the scope of our work in more detail. We conducted our work in accordance with generally accepted government auditing standards between July 2005 and September 2006.

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<sup>8</sup>Alan Zaslavsky is Professor of Statistics, Department of Health Care Policy, Harvard Medical School, Boston, Massachusetts. We selected Dr. Zaslavsky because he (1) is independent with respect to the method we discuss; (2) is a noted statistician who has received many awards, has advised multiple executive agencies on the design and analysis of large-scale surveys, and serves on the National Research Council's (NRC) Committee for National Statistics at the National Academy of Sciences; and (3) has developed innovative statistical approaches. We also sought the advice of two other noted statisticians who had advised us in earlier work on this method (Dr. Fritz Scheuren and Dr. Mary Grace Kovar of NORC at the University of Chicago) and GAO colleagues with expertise in statistics.

<sup>9</sup>We talked with four agencies sponsoring or conducting these surveys: the Census Bureau in the Department of Commerce, the Bureau of Labor Statistics (BLS) in the Department of Labor, and the National Center for Health Statistics (NCHS) and the Substance Abuse and Mental Health Services Administration (SAMHSA) in the Department of Health and Human Services (HHS). Survey-related staff at these agencies provided information on the specific surveys. Additionally, we deemed some staff at these agencies to be experts in statistics and survey research.

<sup>10</sup>These included the Statistical and Science Policy Branch of the Office of Information and Regulatory Affairs in the Office of Management and Budget (OMB), the Employment and Training Administration in the Department of Labor (DOL), and the Office of Immigration Statistics within the Policy Directorate and the Research and Evaluation Division, Office of Policy and Strategy, U.S. Citizenship and Immigration Services in the Department of Homeland Security (DHS).

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## Results in Brief

Acceptance of the grouped answers approach appears to be high among immigrant advocates and respondents. The advocates we interviewed generally accepted the approach—with provisos such as fielding by a university or other private sector organization, appropriate data protection (including protections against government misuse), and high-quality survey procedures. The independent statistician, reviewing the Census Bureau’s analysis and our reanalysis of the 2004 GSS test of respondent acceptance, concluded that the grouped answers approach is “generally usable” for surveys interviewing foreign-born respondents in their homes.<sup>11</sup>

Based on the results of the GSS test and on consultations and interviews with varied experts, further work is or may be needed to

- **Expand knowledge about respondent acceptance.** For example, the 2004 GSS test did not cover persons who are “linguistically isolated” in the sense that no member of their household age 14 or older speaks English “very well”.<sup>12</sup>
- **Test the accuracy of responses or respondents’ *intent to answer accurately*.**<sup>13</sup> To date, no tests of response accuracy, or the intent to answer accurately, have been conducted, although a number of relevant designs can be identified.

Thousands of foreign-born respondents would be needed to obtain “reasonably precise” grouped answers estimates of the undocumented

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<sup>11</sup>Our reanalysis differed from the Census Bureau’s in that we eliminated 19 GSS cases that we deemed ineligible because, for example, interviewing took place over the telephone rather than in person, as required by the grouped answers approach; we found that 6 respondents of more than 200 failed to provide usable, specific answers.

<sup>12</sup>The GSS allowed bilingual household members to help respondents with limited English skills. Our earlier testing with farmworkers was conducted in Spanish, but no testing has covered linguistically isolated non-Hispanic respondents. About 4 percent of the foreign-born population both (1) does not speak Spanish and (2) is linguistically isolated (that is, is part of a household in which no member age 14 or older speaks English “very well”). Although this may seem a small percentage, it is possible that non-Hispanic undocumented persons are concentrated in this group.

<sup>13</sup>The distinction between accurate responses and the intent to answer accurately is necessary because some respondents may mistakenly think that they are, for example, in a legal status.

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population.<sup>14</sup> Our calculations and work with statisticians showed that while many factors are involved and it is not possible to guarantee a specific level of precision, roughly 6,000 interviews would be likely to be sufficient to support estimates of the size of the undocumented population and major subgroups within it (especially high-risk subgroups, defined by characteristics such as age 18 to 40, recently arrived, employed<sup>15</sup>). Quantitative estimates are also possible; for example, major program costs associated with the undocumented population may also be estimated, given appropriate program data.

None of the ongoing, large-scale national surveys we identified appear to be appropriate for piggybacking the grouped answers question series. One self-report personal interview survey is fielded by a private sector organization (under a contract with a Department of Health and Human Services (HHS) agency); however, that survey focuses on the use of illegal drugs, and we believe that direct questions on drug use might heighten the sensitivity of the questions on immigration status. We believe other ongoing surveys to be inappropriate; for example, one asks other sensitive questions (on HIV status) and takes respondents' names and Social Security numbers. Additionally, the Census Bureau fields these surveys.

Whether further research or a new survey would be justified depends on issues such as how policymakers weigh the need for such information against potential costs.

We received comments on a draft of this report from the Department of Commerce (Census Bureau), the Department of Homeland Security (DHS), and the Department of Health and Human Services (DHHS). The Census Bureau and DHS generally agreed with the main findings of the report, and DHHS agreed that the National Survey of Drug Use and Health would not be appropriate for "piggy-backing" the grouped answers question series. These agencies also provided other technical comments (see appendices VII, VIII, and IX).

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<sup>14</sup>We define "reasonably precise" as a 90 percent or 95 percent confidence interval spanning plus or minus 2 to 4 percentage points. A 90 percent or 95 percent confidence interval is the interval within which the parameter in question would be expected to fall 90 percent or 95 percent of the time, if the sampling and interval estimation procedures were repeated in an infinite number of trials.

<sup>15</sup>In many cases, the method would not be suitable for low-risk subgroups. (*High-risk* and *low-risk* refer to subgroups with above-average and below-average percentages of undocumented persons, respectively.)

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## Background

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### Grouped Answers Reduce “Question Threat” and Allow Indirect Estimates of the Undocumented

Survey questions about sensitive topics carry a “threat” for some respondents, because they fear that a truthful answer could result in some degree of negative consequence (at a minimum, social disapproval). The grouped answers approach is designed to reduce this threat when asking about immigration status.

Three key points about the grouped answers approach are that

1. no respondent is ever asked whether he or she, or anyone else, is undocumented;
2. two pieces of information are separately provided by two subsamples of respondents (completely different people—no one is shown both immigration status cards); and
3. taking the two pieces of information together—like two different pieces of a puzzle—allows *indirect* estimation of the undocumented population, but no individual respondent (and no piece of data on an individual respondent) is ever categorized as undocumented.

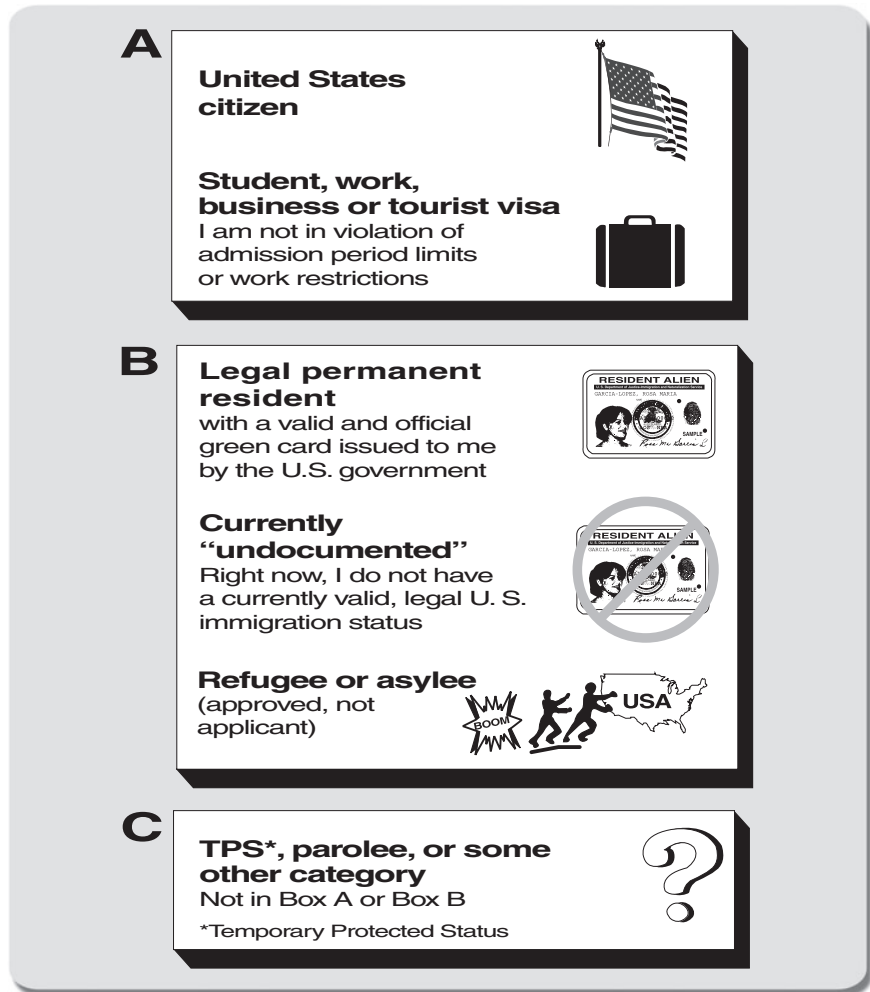
We discuss each point in some detail.<sup>16</sup>

1. **No respondent is ever asked whether he or she is in the *undocumented* category.** Unlike questions that ask respondents to choose among specific answer categories, the grouped answers approach combines answer categories in sets or “boxes,” as shown in figure 1.

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<sup>16</sup>The grouped answers approach derives from (1) the residual method described by Henry S. Schryock and Jacob S. Siegel and Associates, *The Methods and Materials of Demography* (Washington, D.C.: U.S. Government Printing Office, 1980), and Robert Warren and Jeffrey S. Passel, “A Count of the Uncountable: Estimates of Undocumented Aliens Counted in the 1980 Census,” *Demography*, 24:3 (1987): 375–93, and (2) earlier indirect survey-based techniques, such as “randomized response” (see Stanley Warner, “A Survey Technique for Eliminating Evasive Answer Bias,” *Journal of the American Statistical Association*, 60 (1965): 63–69, and Bernard Greenberg and others, “The Unrelated Questions Randomized Response Model: Theoretical Framework,” *Journal of the American Statistical Association*, 64 (1969): 520–39.

**Figure 1: Immigration Status Card 1, Grouped Answers**



Sources: GAO; Corel Draw (flag and suitcase); DHS (resident alien cards). (The actual size of the card is 8-1/2" by 11.")

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Box B includes the sensitive answer category—*currently “undocumented”*—along with other categories that are nonsensitive.<sup>17</sup>

Each respondent is asked to “pick the Box”—Box A, Box B, or Box C—that contains the specific answer category that applies to him or her. Respondents are told, in effect: If the specific category that applies to you is in Box B, we *don’t* want to know which one it is, because right now we are focusing on Box A categories.<sup>18</sup>

By using the boxes, the interview avoids “zeroing in” on the sensitive answer. The specific categories shown in the boxes in figure 1 are grouped so that

- one would expect many respondents who are here legally, as well as those who are undocumented, to choose Box B,<sup>19</sup> and
- there is virtually no possibility of anyone deducing which specific category within Box B applies to any individual respondent.

**2. Two pieces of information are provided separately by two subsamples of respondents (no one is shown both immigration status cards).** Respondents are divided into two subsamples, based on randomization procedures or rotation (alternation) procedures conducted outside the interview process. (For example, a rotation procedure might specify that within an interviewing area, every other household will be designated as subsample 1 or subsample 2.)

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<sup>17</sup>Note that Box B in figure 1 uses the term *currently “undocumented”*—with quotation marks around undocumented. We believe this wording may help communicate with undocumented respondents who either (1) had a legal status in the past (for example, entered with a temporary visa but have now overstayed and thus lost their legal status) or (2) are likely to acquire a legal status in the near future (for example, entered illegally and applied for legal status but have not yet received it). Potentially, the quotation marks might help communicate with respondents who have some kind of document (for example, a “matricula card” issued by the Mexican government) but who do not have a valid legal immigration status that allows U.S. residence.

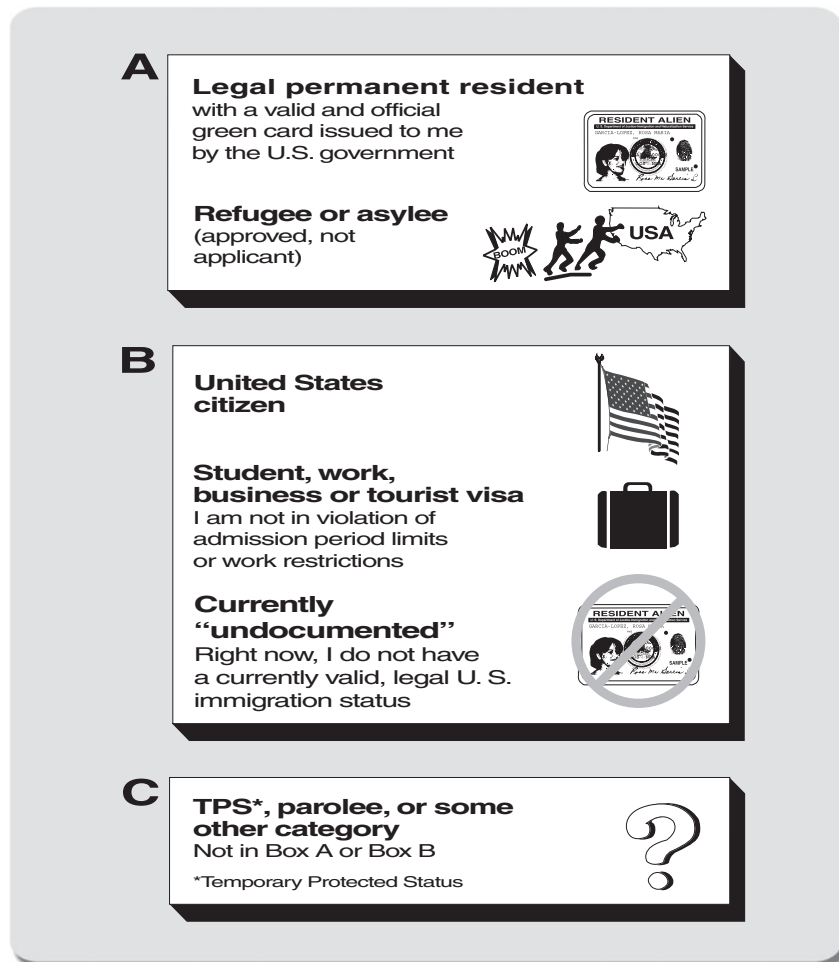
<sup>18</sup>In the test with Hispanic farmworkers, interviewers explained: “Because we’re using the boxes—we WON’T ‘zero in’ on anything somebody might not want to tell us.”

<sup>19</sup>In future, changes in percentages of foreign-born in various statuses might warrant changes in groupings across the boxes. Additionally, the specific legal statuses defined by law might change, requiring a change in the legal statuses shown on the cards.

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This “split sample” procedure has been used routinely for many surveys over the years. As applied to the grouped answers approach, the two subsamples are shown alternative flash cards. Immigration Status Card 1, described above, represents one way to group immigration statuses in three boxes. A second immigration status flash card (Immigration Status Card 2, shown in figure 2) groups the same statuses differently.

Figure 2: Immigration Status Card 2



Sources: GAO; Corel Draw (flag and suitcase); DHS (resident alien cards). (The actual size of the card is 8-1/2" by 11.")

The alternative immigration-status cards can be thought of as “mirror images” in that

- the two nonsensitive legal statuses in Box A of Card 1 appear in Box B of Card 2 and
- the two nonsensitive legal statuses in Box B of Card 1 appear in Box A of Card 2.

However, the undocumented status always appears in Box B.



---

Interviewers ask survey respondents in subsample 1 about immigration status with respect to Card 1. They ask survey respondents in subsample 2 (completely different persons) about immigration status with respect to Card 2. Each respondent is shown *one and only one* immigration-status flash card. There are no highly unusual or complicated interviewing procedures.<sup>20</sup>

Because the two subsamples of respondents are drawn randomly or by rotation, each subsample represents the foreign-born population and, if sufficiently large, can provide “reasonably precise” estimates of the percentages of the foreign-born population in the boxes on one of the alternative cards.

Incidentally, a respondent picking a box that does not include the sensitive answer—for example, a respondent picking Box A or Box C in figure 1—can be asked follow-up questions that pinpoint the specific answer category that applies to him or her. Thus, direct information is obtained on all legal immigration statuses. The data on some of the legal categories can be compared to administrative data to check the reasonableness of responses. Additionally, these data provide estimates of legal statuses, which are useful when, for example, policymakers review legislation on the numbers of foreign-born persons who may be admitted to this country under specific legal status programs.

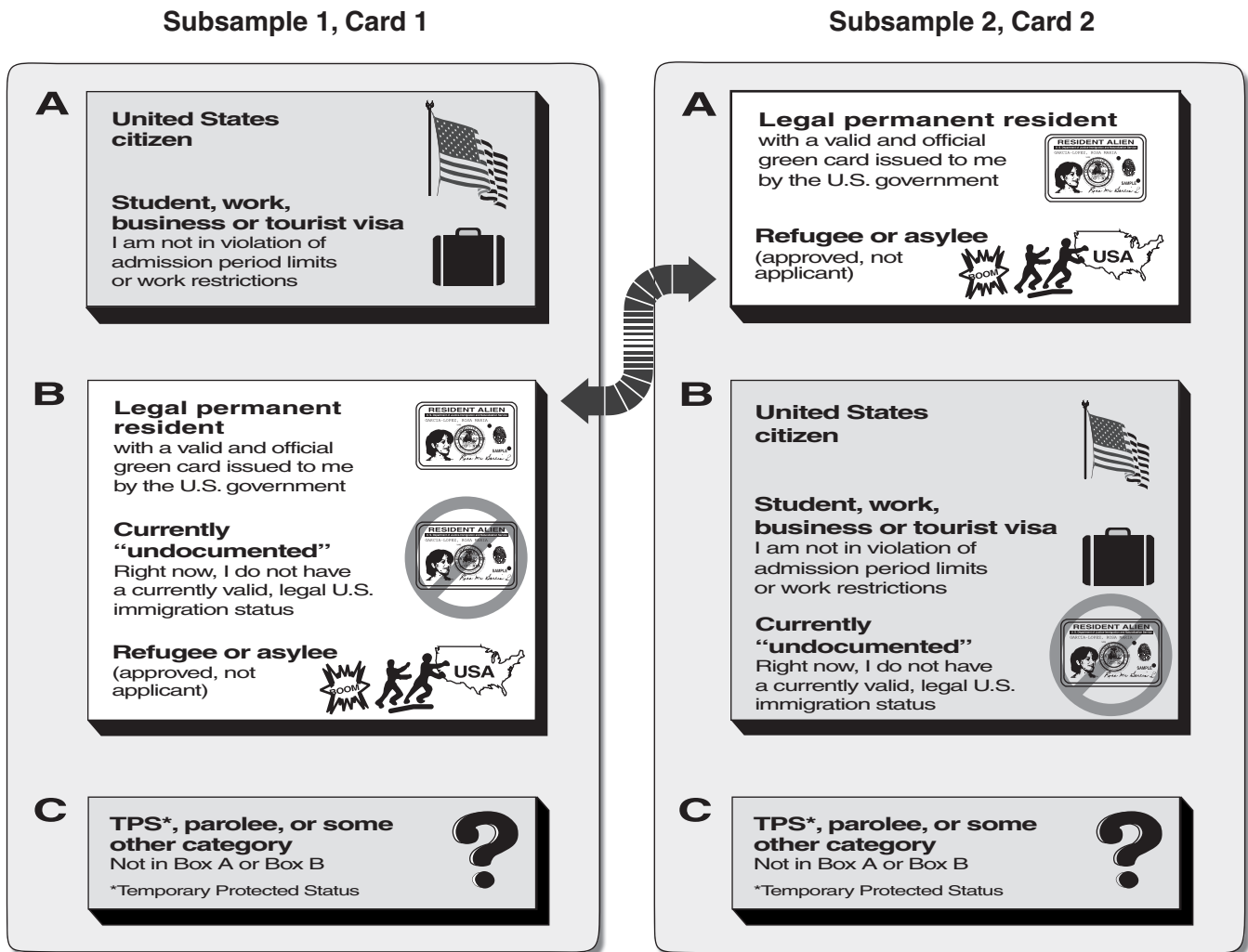
**3. No individual respondent is ever categorized as undocumented, but indirect estimates of the undocumented population can be made.** Using two slightly different pieces of information provided by the two different subsamples allows *indirect* estimation of the size of the currently undocumented population—by simple subtraction.

The only difference between Box B of Card 1 and Box A of Card 2 is the inclusion of the *currently “undocumented”* category in Box B of Card 1. Figure 3 shows both cards together for easy comparison.

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<sup>20</sup>Unlike some other indirect estimation techniques, the grouped answers approach does *not* require unusual stratagems as part of the survey interview, such as asking respondents to make a secret random selection of a question.

Figure 3: Cards 1 and 2 Compared



Sources: GAO; Corel Draw (flag and suitcase); DHS (resident alien cards). (The actual size of each card is 8-1/2" by 11.")

Thus, the percentage of the foreign-born population who are currently undocumented can be estimated as follows:

- Start with the percentage of subsample 1 respondents who report that they are in Box B of Card 1 (hypothetical figure: 62 percent of subsample 1).

- 
- Subtract from this the percentage of subsample 2 who say they are in Box A on Card 2 (hypothetical figure: 33 percent of subsample 2).
  - Observe the difference (29 percent, based on the hypothetical figures); this represents an estimate of the percentage of the foreign-born population who are undocumented.

Alternatively, a “mirror-image” estimate could be calculated, using Box B of Card 2 and Box A of Card 1.<sup>21</sup>

To estimate the numerical size of the undocumented population, a grouped answers estimate of the percentage of the foreign-born who are undocumented would be combined with a census figure. For example, the 2000 census counted 31 million foreign-born, and the Census Bureau issued an updated estimate of 35.7 million for 2005. The procedure would be to simply multiply the percent undocumented (based on the grouped answers data and the subtraction procedure) by a census count or an updated estimate for the year in question.

These procedures ensure that no respondents—and no data on any specific respondent—are ever separated out or categorized as undocumented, not even during the analytic process of making indirect, group-level estimates.

To further ensure reduction of “question threat,” the grouped answers question series begins with flash cards that ask about nonsensitive topics and familiarize respondents with the 3-box approach. For each nonsensitive-topic card, interviewers ask the respondent which box applies to him or her, saying: If it’s Box B, we do *not* want to know which specific category applies to you.

In this way, most respondents should understand the grouped answers approach before seeing the immigration-status card.

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<sup>21</sup>The result of the subtraction would be the same, either way—assuming that the same percentage of subsample 1 and subsample 2 chose Box C.

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To help ensure accurate responses, respondents who choose Box A can be asked a series of clarifying questions.<sup>22</sup> (No follow-up questions are addressed to anyone choosing Box B.) The questions for Box A respondents are designed to prompt them to, essentially, reclassify themselves in Box B, if that is appropriate.<sup>23</sup>

The grouped answers question series can potentially be applied in a large-scale general population survey, where the questions on immigration status would be added for the foreign-born respondents—provided that an appropriate survey can be identified. If a new survey of the general foreign-born population were planned, it would involve selecting a general sample of households and then screening out the households that do not include one or more foreign-born persons.

Finally, we note that while the initial version of the grouped answers approach involved three alternative flash cards (and was termed the “three-card method”), we recently devised the version described here, which uses two cards rather than three. The two-card method is simpler, is easier to understand, and provides more precise estimates. All cards are alike in that they feature *three boxes* in which specific answer categories are grouped.

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## Characteristics, Costs, and Contributions Can Potentially Be Estimated

Generally, grouped answers questions on immigration status would be asked as part of a larger survey that includes direct questions on demographic characteristics and employment and might include questions on school attendance, use of medical facilities, and so forth; some surveys also ask specific questions that can help estimate taxes paid. Potentially, combining the answers to such questions with grouped answers data can be used to provide further information on the characteristics, costs, and contributions of the undocumented population.

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<sup>22</sup>For example, in the test with Hispanic farmworkers, respondents who picked Box A and said they were legal permanent residents (they had a green card) were asked (1) under which program they had applied for a green card (Family Unity, employer, and so forth), (2) whether they had received the card (or had applied but not yet received it), (3) how they received it (in person or by mail), and (4) whether they had then applied for U.S. citizenship—and if so, whether they had received citizenship.

<sup>23</sup>If a respondent decides to reclassify himself or herself in Box B, on the basis of follow-up questions, survey procedures can record *only* the Box B classification—and delete the original Box A classification, as well as any answers to Box A follow-up questions. This prevents retention of any detailed immigration-status material on respondents in Box B.

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For example, the numbers of undocumented persons in major subgroups—such as demographic or employment status subgroups—can be estimated, provided that the sample of foreign-born persons interviewed is sufficiently large.

Grouped answers data collected from adult respondents can also be used to estimate the number of children in various immigration statuses, including undocumented—provided that an additional question is asked.<sup>24</sup> Additionally, when combined with separate quantitative data (for example, data on program costs per individual), grouped answers data can be used to estimate quantitative information (such as program costs) for the undocumented population as a whole—or, again, depending on sample size, for specific subgroups.

The procedures for deriving these more complex indirect estimates are described in appendix II. No grouped answers respondent is ever categorized as undocumented.

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## Statistical Information Is Needed on the Undocumented Population

The foreign-born population of the United States is large and growing—as is the undocumented population within it. Congressional policymakers, the U.S. Commission on Immigration Reform, and the National Research Council's (NRC) Committee on National Statistics have indicated a need for statistical information on the undocumented population, including its size, characteristics, costs, and contributions.

The Census Bureau estimates that as of 2005, foreign-born residents (both legally present and undocumented) numbered 35.7 million and accounted for at least one-tenth of all persons residing in each of 15 states and the District of Columbia.<sup>25</sup> These figures represent substantial increases over the prior 15 years. For example, in 1990 the foreign-born population totaled fewer than 20 million; only 3 states had a population more than

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<sup>24</sup>The additional question would ask for the number of foreign-born children in the household who are in each box of the same immigration status card that the adult respondent used to report which box he or she is in. However, this questioning approach has not been tested.

<sup>25</sup>The 15 states and their percentages of foreign-born residents in 2005 were Arizona, 14.5; California, 27.2; Colorado, 10.1; Connecticut, 12.5; Florida, 18.5; Hawaii, 17.2; Illinois, 13.6; Maryland, 11.7; Massachusetts, 14.4; Nevada, 17.4; New Jersey, 19.5; New York, 21.4; Rhode Island, 12.6; Texas, 15.9; Washington, 12.2. The percentage in the District of Columbia was 13.1.

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one-tenth foreign-born. One result is that as the Department of Labor has testified, foreign-born workers now constitute almost 15 percent of the U.S. labor force, and the numbers of such workers are growing.<sup>26</sup>

A new paper from the Department of Homeland Security (DHS) puts the “unauthorized” immigrant population at 10.5 million as of January 2005 and indicates that if recent trends continued, the figure for January 2006 would be 11 million.<sup>27</sup> The Pew Hispanic Center’s indirect estimate of the undocumented population as of 2006 is 11.5 million to 12 million. These estimates represent roughly one-third of the entire foreign-born population.<sup>28</sup> DHS has variously estimated the size of the undocumented population as of January 2000 as 7 million and 8.5 million.<sup>29</sup> Government and other estimates for 1990 numbered only 3.5 million.<sup>30</sup>

These various indirect estimates of the undocumented population are based on the “residual method.” Residual estimation (1) starts with a census count or survey estimate of the number of foreign-born residents who have not become U.S. citizens and (2) subtracts out estimated numbers of legally present individuals in various categories, based on administrative data and assumptions (because censuses and surveys do not ask about legal status). The remainder, or residual, represents an indirect estimate of the size of the undocumented population.

To illustrate the role of administrative data and assumptions, residual estimates draw on counts of the number of new green cards issued each

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<sup>26</sup>Statement of Ronald Bird, Chief Economist, Office of the Assistant Secretary for Policy, U.S. Department of Labor, before the Committee on the Judiciary, U.S. Senate, July 5, 2006.

<sup>27</sup>Michael Hofer, Nancy Rytina, and Christopher Campbell, *Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2005* (Washington, D.C.: Department of Homeland Security, Office of Immigration Statistics, August 2006).

<sup>28</sup>Jeffrey S. Passel, “The Size and Characteristics of the Unauthorized Migrant Population in the U.S.: Estimates Based on the March 2005 Current Population Survey,” *Research Report* (Washington, D.C.: Pew Hispanic Center, Mar. 7, 2006).

<sup>29</sup>The first figure is from U.S. Immigration and Naturalization Service, Office of Policy and Planning, *Estimates of the Unauthorized Immigrant Population Residing in the United States: 1990 to 2000* (Washington, D.C.: January 2003); the second is from Hofer, Rytina, and Campbell.

<sup>30</sup>While different estimates are based on different definitions of undocumented, and there are questions about data reliability, it seems clear that the population of undocumented foreign-born persons is large and has increased rapidly.

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year. But they also require assumptions to account for emigration and deaths among those who received green cards in earlier years.

A recent DHS paper providing residual estimates of the undocumented population includes ranges of estimates based on alternative assumptions made for two key components.<sup>31</sup> For example, “by lowering or raising the emigration rates 20 percent . . . the estimated unauthorized immigrant population would range from 10.0 million to 11.0 million.”<sup>32</sup> The DHS paper also lists assumptions that were not subjected to alternative specifications. We believe the DHS paper represents an advance because, up to now, analysts producing residual estimates have generally not made public statements regarding the precision of the estimates. (Some critics have, however, indicated that residual estimates are likely to lack precision.<sup>33</sup>)

While the residual approach has been used to profile the undocumented population on two characteristics—age and country of birth—it is limited with respect to estimating (1) *current* geographic location and (2) current employment and benefit use. The reason is that current characteristics of legally present persons are not maintained in administrative records; analysts must therefore rely largely on assumptions.<sup>34</sup> In contrast, the grouped answers method does allow for the possibility of estimating current characteristics based on current self-reports.

During the mid-1990s, the U.S. Commission on Immigration Reform determined that better statistical “information on legal status and type of immigrant [is] crucial” to assessing immigration policy. Indeed, the

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<sup>31</sup>The alternative assumptions were made for levels of (1) American Community Survey (ACS) undercounting of “unauthorized” immigrants and (2) emigration from the United States on the part of legal immigrants counted as having been “admitted” between 1980 and 2004.

<sup>32</sup>Hoefler, Rytina, and Campbell, p. 6.

<sup>33</sup>See Kenneth Hill, “Estimates of Legal and Unauthorized Foreign-Born Population for the United States and Selected States Based on Census 2000,” presentation at the U.S. Census Bureau Conference, Immigration Statistics: Methodology and Data Quality, Alexandria, Virginia, February 13–14, 2006. A similar point was made by Jacob S. Siegel and David A. Swanson, *The Methods and Materials of Demography*, 2nd ed. (San Diego, Calif.: Elsevier Academic Press, 2004), p. 479.

<sup>34</sup>Administrative records on where legal immigrants live are based on their residence (or intended residence) *at the time when legal permanent resident status was attained*; these records have not been subsequently updated. There are no administrative records on current activities of legal permanent residents, such as employment.

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Commission called for a variety of improvements in estimates of the costs and benefits associated with undocumented immigration.<sup>35</sup> NRC's Committee on National Statistics further emphasized the need for better information on costs, especially state and local costs.<sup>36</sup> (If successfully fielded, the grouped answers method might help provide general information on such costs—and, potentially, specific information for large states such as California. Sample size limitations would be likely to prohibit separate analyses for specific local areas, small states, and states with low percentages of foreign-born or undocumented.)

Over the years, we have received numerous congressional requests related to estimating costs associated with the undocumented population.<sup>37</sup> Recent Census Bureau research and conferences reflect the realization that undocumented immigration is a key component of current population growth and that there is a resultant need for information on this group.<sup>38</sup> Additionally, some of the immigrant advocates we interviewed expressed an interest in being able to better describe the contributions of the undocumented population.

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## Surveys Are a Key Information Source

Various national surveys ask foreign-born respondents to provide information about themselves and, in some cases, other persons in their households. While such surveys provide a wealth of information on a wide variety of areas, including some sensitive topics, national surveys generally do not ask about current immigration status—with the exception of a question on U.S. citizenship, which is included in several surveys.

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<sup>35</sup> See U.S. Commission on Immigration Reform, *U.S. Immigration Policy: Restoring Credibility: 1994 Report to Congress* (Washington, D.C.: U.S. Government Printing Office, 1994), pp. 179–86.

<sup>36</sup> NRC, Committee on National Statistics, *Local Fiscal Effects of Illegal Immigration: Report of a Workshop* (Washington, D.C.: National Academy Press, 1996), p. 1-2.

<sup>37</sup> See, for example, GAO, *Illegal Alien Schoolchildren: Issues in Estimating State-by-State Costs*, [GAO-04-733](#) (Washington, D.C.: June 23, 2004), and *Undocumented Aliens: Questions Persist about Their Impact on Hospitals' Uncompensated Care Costs*, [GAO-04-472](#) (Washington, D.C.: May 21, 2004). For a more general discussion, see [GAO/GGD-98-164](#), ch. 2, "Policy-Related Information Needs."

<sup>38</sup> Census Bureau staff told us that this research includes J. Gregory Robinson, "Memorandum for Donna Kostanich," DSSD A.C.E. Revision II Memorandum Series No. PP-36, U.S. Bureau of the Census, Washington, D.C., December 31, 2002.



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As we reported earlier, it is believed that direct questions on immigration status “are very sensitive, and negative reactions to them could affect the accuracy of responses to other questions on [a] survey.”<sup>39</sup> Two surveys that *have* asked respondents directly about immigration status for several years are

- the National Agricultural Workers Survey (NAWS), an ongoing annual cross-sectional self-report survey of farmworkers, fielded by Aguirre International, a private sector firm under contract to the Department of Labor, since 1988,<sup>40</sup> and
- the Survey of Income and Program Participation (SIPP), a longitudinal panel survey of the general population, conducted by the Census Bureau, which has asked immigration status questions since 1996.

Of the two, SIPP is the more relevant, because its immigration status questions have been administered to a sample of the general foreign-born population.

SIPP has asked an adult respondent-informant from each household to provide information about himself or herself and about others in his or her household, including which immigration-status category applied to each person when he or she came to this country. Answers are facilitated by a flash card that lists major legal immigration statuses (see fig. 4).<sup>41</sup> A further question asks whether each person obtained a green card after arriving in this country. The SIPP questions come close to asking about—but do not actually allow an estimate of—the number of foreign-born U.S. residents

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<sup>39</sup>GAO/GGD-98-164, p. 3.

<sup>40</sup>While NAWS data collections are fielded annually, results are generally reported every other year. See U.S. Department of Labor, *Findings from the National Agricultural Workers Survey (NAWS) 2000–2002: A Demographic and Employment Profile of United States Farm Workers*. Research Report 9 (Washington, D.C.: March 2005).

<sup>41</sup>The SIPP flash card has neither an undocumented category nor an “other status not listed” category. However, persons reported to have an immigration status not on the SIPP card—which would logically include undocumented persons as well as a small number of persons in various minor legal immigration categories—are tallied separately.

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who are currently undocumented.<sup>42</sup> According to the Census Bureau, SIPP is now scheduled to be “reengineered,” but the full outlines of the revised effort have not been set.

**Figure 4: SIPP Flash Card**

**CARD U**

**IMMIGRATION STATUS AT TIME OF ENTRY**

- 1** – Immediate relative or family-sponsored permanent resident
- 2** – Employment-based permanent resident
- 3** – Other permanent resident
- 4** – Granted refugee status or granted asylum
- 5** – Non-immigrant (e.g., diplomatic, student, business, or tourist visa)

**U**

SIPP-24204 (1-16-2004)

Source: U.S. Bureau of the Census. (The actual size of the card is 8-1/2" by 11.")

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<sup>42</sup>Although NAWS and SIPP have received OMB clearance (under the Paperwork Reduction Act), and although no special field problems have emerged, it is difficult to say whether field problems might arise in future. Reasons include question-threat and related problems depending, in part, on contextual factors, such as current levels of immigration enforcement in the nonborder areas of the United States, and the perceived relevance of the question to the survey.

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## The Grouped Answers Approach Has Been Tested in Surveys Fielded by Private Sector Organizations

In the middle to late 1990s, the grouped answers question series was subjected to preliminary development and testing with Hispanic respondents, including interviews with farmworkers conducted by Aguirre International, under contract to GAO.<sup>43</sup> In these tests, every respondent picked a box.<sup>44</sup> However, these interviews were not conducted under conditions of a typical large-scale survey in which interviewers initiate contact with respondents in their homes.<sup>45</sup>

To further test respondents' acceptance of the grouped answers approach, the Census Bureau created a question module with 3-box flash cards and contracted for it to be added to the 2004 GSS. When presenting the survey to respondents, interviewers explained that NORC of the University of Chicago fielded the GSS survey, with "core funding" from an NSF grant.<sup>46</sup> The Census Bureau's question module included cards from the three-card version of the grouped answers approach—which features only one immigration status category in Box A. The cards used were

- the two training cards shown in figures 5 and 6<sup>47</sup> and
- the immigration status card shown in figure 7.<sup>48</sup>

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<sup>43</sup>The contract specified that Aguirre would provide GAO data on actual responses that had been "stripped of person-identifiers and related information."

<sup>44</sup>Additionally, GAO conducted cognitive interviews focused on testing the appropriateness of the icons used on the cards (see [GAO/GGD-00-30](#), pp. 44-45). Cognitive interviewing focuses on the mental processes of the respondent while he or she is answering a survey question. The goals are to find out what each respondent thinks the question is asking, what the specific words or phrases (or icons on a card) mean to him or her, and how he or she formulates an answer. Typically, cognitive interviewing is an iterative process in which the findings or problems identified in each set of interviews are used to modify the questions to be tested in the next set of interviews.

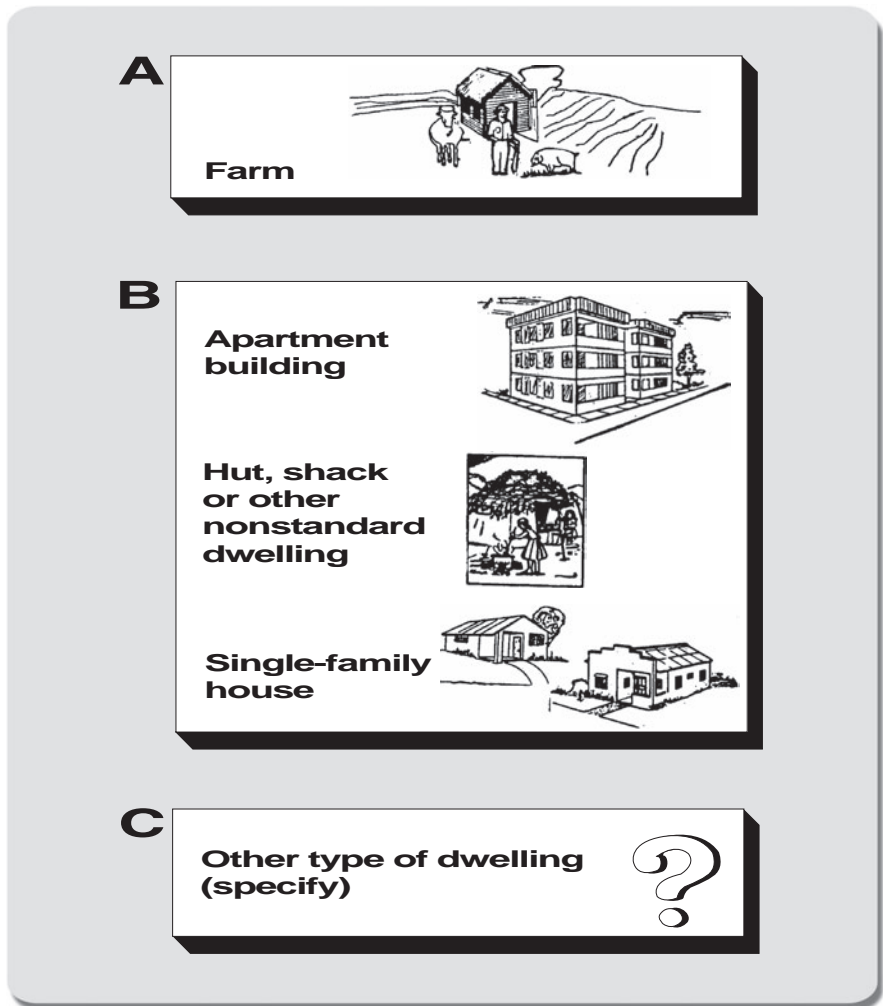
<sup>45</sup>[GAO/GGD-98-164](#) and [GAO/GGD-00-30](#).

<sup>46</sup>The GSS consists of a "core" question series and additional "modules." The funding for fielding the core question series is provided by a grant from NSF. The modules are question series added through a variety of grants and contracts.

<sup>47</sup>An expert reviewer of a draft of this report noted that the housing types on the training card shown in figure 5 are not all mutually exclusive; that is, a single family house can be located on a farm.

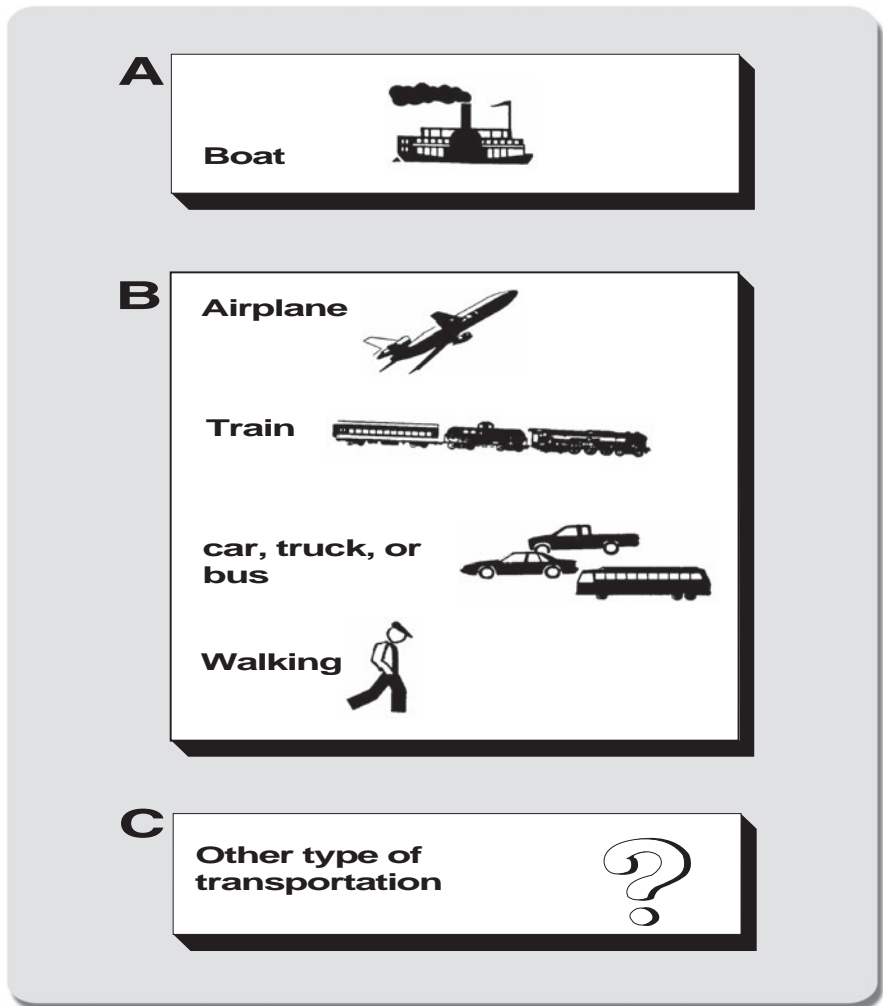
<sup>48</sup>These cards were initially subjected to 1997–98 developmental tests conducted with more than 100 Hispanic immigrants who were farmworkers or in other situations such as applying for aid at a legal clinic specializing in immigration cases—such that a fair number of those interviewed seemed relatively likely to be undocumented. See [GAO/GGD-00-30](#) and [GAO/GGD-98-164](#).

Figure 5: Training Card 1



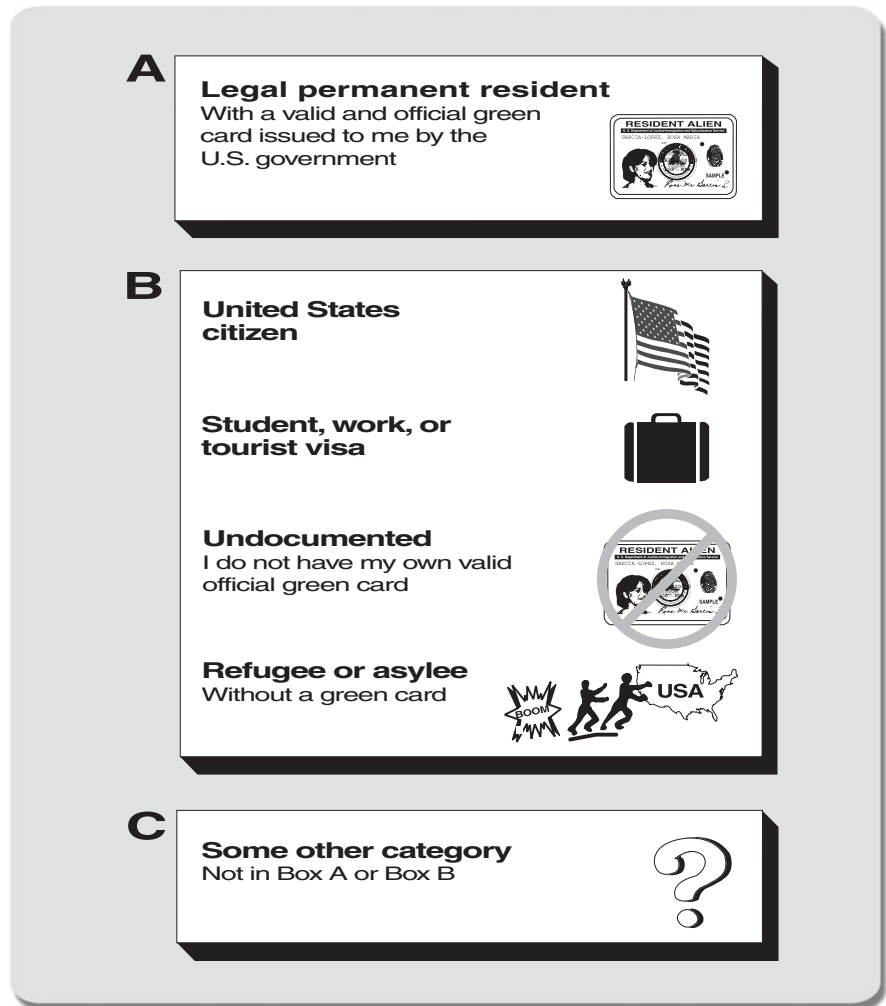
Sources: GAO, Dominican Republic (illustrations). (The actual size of the card is 8-1/2" by 11.")

Figure 6: Training Card 2



Source: GAO. (The actual size of the card is 8-1/2" by 11.")

**Figure 7: Immigration Status Card Tested in GSS**



Sources: GAO; Corel Draw (flag and suitcase); DHS (resident alien cards). (The actual size of the card is 8-1/2" by 11.")

Training card 1 shows different types of houses arranged in three boxes. Respondents are asked to indicate the type of house they lived in when in their home country—by picking a box. They are told that if the answer is in Box B, we don't need to know which specific type applies to them, because right now we are focusing on Box A.

Training card 2 shows different modes of transportation, again arranged in three boxes. Respondents are asked to indicate the mode of transportation they used the most recent time they traveled from their home country to

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the United States—again by picking a box. They are again told that if it’s in Box B, we don’t need to know which specific mode applies.

Additionally, the GSS–Census Bureau module asked interviewers to (1) judge respondents’ understanding of the 3-box format, (2) observe whether respondents objected or “kept silent for a while” when presented with the immigration status card, and (3) record any comments that respondents made about the cards. As the Census Bureau has noted, the module was a partial test because only one immigration status card was tested.

Data and documentation from this field test became available in late 2005. A Census Bureau analysis of these data (completed in 2006 and reproduced in full in appendix IV), indicates that of 237 foreign-born respondents, 216 (roughly 90 percent) chose a box, 4 gave other answers, and 17 refused or said “don’t know.” The Census Bureau took this “as an indication that most foreign-born who are asked about their migrant status in this format would understand the question, know the answer, and answer willingly.”

Further, the Census Bureau paper stated that

- the “overwhelming majority of foreign-born respondents” picked a box on the immigration status card without—according to interviewers—any objection, hesitation, or periods of silence;
- while some interviewers did not give a judgment or were confused about rating respondents’ understanding, about 80 percent of respondents were coded as understanding and about 10 percent as not;<sup>49</sup> and
- some respondents’ comments, written in by interviewers, indicated that although the GSS is a “personal interview” survey, telephone interviews had been substituted, in some cases, and this meant that respondents could not see the cards—making the use of the 3-box format difficult.

The Census Bureau’s paper highlighted various limitations of the 2004 GSS test, including (1) testing only one immigration status card,

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<sup>49</sup>The Census Bureau’s paper said that field representatives reported that the remaining respondents were in doubt and may not have understood.

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(2) underrepresenting Hispanics, and (3) in some instances interviewing over the telephone (instead of in person), so that respondents did not see the flash cards.<sup>50</sup>

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## Experts Seem to Accept “Grouped Answers” Questions If Fielded by a Private Sector Organization

The acceptability of the grouped answers approach appears to be high, when implemented in surveys fielded by a university or private sector organization. Many immigration experts, including advocates, accepted the grouped answers approach, although some conditioned their acceptance on a quality implementation in a survey fielded by a university or other private sector organization. An independent statistical expert believed that the grouped answers approach would be generally usable with survey respondents.

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## Keys to Acceptance Are Fielding by a Private Sector Organization, Data Protections, and Quality Implementation

Some of the researchers and advocates we contacted were extremely enthusiastic about the potential for new data. No one objected to statistical, policy-relevant information being developed on the size, characteristics, costs, and contributions of the undocumented population. Overall, the immigration experts we contacted (listed in appendix I, table 5) accepted the grouped-answers question approach—although advocates sometimes conditioned their acceptance on, for example, the questions being asked in a survey fielded by a university or private sector organization—with data protections built in. Many also offered suggestions for maximizing cooperation by foreign-born respondents or ideas about how advocacy organizations might help.

Some advocates indicated that a key condition of their support would be that (1) the grouped answers question on immigration status be asked by a university or private sector organization and (2) identifiable data (that is, respondents’ answers linked to personal identifiers) be maintained by that organization. Two advocate organizations specifically stated that they “could not endorse,” or implied they would not support, the grouped answers approach, assuming the data were collected and maintained by, in one case, the Census Bureau and, in the other case, the government. Many other immigration experts and advocates preferred that grouped answers

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<sup>50</sup>The Census Bureau’s paper also noted that the nonresponse rate for the GSS overall (that is, averaged across a combination of U.S.-born and foreign-born persons selected for the sample) was 29.6 percent. (Persons who are selected for interview but not interviewed may be either native-born or foreign-born; because they were never asked and never reported where they were born, a specific response rate for the foreign-born cannot be calculated.)



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data on immigration status be collected by a university or other reputable private sector organization pledged to protect the data.

The immigration advocates said that private sector fielding of a grouped answers survey and protection of such data from nonstatistical uses that might harm immigrants were key issues because

- Some foreign-born persons are from countries with repressive regimes and thus have more fear of (less trust in) government than the typical U.S.-born person.
- Despite current law protecting individual data from disclosure, some persons believe that information collected by a government agency such as the Census Bureau is routinely shared (or that in some circumstances it might be shared) across government agencies. Further, one advocate pointed out that the Congress could change the current law, eliminating that protection. (Although the grouped answers approach does not identify anyone as undocumented, it does provide some information regarding each respondent's immigration status.)
- Extremely large-scale data collections—notably, the American Community Survey (ACS)—can yield estimates for areas small enough that if the data were publicly available, they could be used for nonstatistical, nonpolicy purposes. Some advocates referred to the World War II use of census data to identify the areas where specific numbers of persons of Japanese origin or descent resided. They also pointed out that Census Bureau data on ethnicity—including counts of Arab Americans—are publicly available by zip code. (The Census Bureau, unlike other government agencies and private sector survey organizations, is associated with extremely large-scale data collections, and some persons may not fully differentiate Census Bureau data collection efforts of different sizes.)
- Hostility to or lack of trust in the Census Bureau might result in potentially lower response rates for foreign-born persons, based on the World War II experience of the Japanese or a more recent incident in which Census Bureau staff helped a DHS enforcement

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unit access publicly available data on ethnicity by zip code.<sup>51</sup> DHS stated that it did not use these data and had not requested the information by zip code.<sup>52</sup> The Census Bureau clarified its position on providing help to others requesting publicly available data.<sup>53</sup>

Various advocates saw the issues listed above as linked to their own acceptance, as well as to respondent acceptance, of a survey. Linking these issues to respondent acceptance of a survey was, in some cases, echoed by other immigration experts we consulted.<sup>54</sup> Some immigrant advocates and other immigration experts counseled us that if there were an increase in enforcement efforts in the interior of the United States (as opposed to border-crossing areas), foreign-born respondents' acceptance of the grouped answers questions would be likely to decrease—at least, if the questions were asked in a survey fielded by the government.

One advocate expressly stated a preference for a grouped answers survey with funding by a nongovernment entity, such as a foundation. We discussed with a number of immigrant advocates who objected to a government-fielded survey the possibility of a survey fielded by a private

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<sup>51</sup>See Samia El-Badry and David A. Swanson, "Providing Special Census Tabulations to Government Security Agencies in the United States: The Case of Arab-Americans," paper presented at the 25th International Population Conference of the International Union for the Scientific Study of Population, Tours, France, July 18–23, 2005. One advocate was particularly concerned about the possibility that lower respondent cooperation might have resulted from these incidents and, if so, might have led to underrepresentation of these communities in Census Bureau data. Additionally, one advocate questioned whether local estimates of the undocumented might, in future, facilitate possible efforts to base apportionment on population counts that do not include undocumented residents. We note that most large-scale personal-interview surveys do not include sufficient numbers of foreign-born respondents to allow indirect grouped answers estimates of undocumented persons for small geographic areas, such as zip codes.

<sup>52</sup>See "U.S. Customs and Border Protection Statement on Census Data," Department of Homeland Security, Press Office, Washington, D.C., August 13, 2004.

<sup>53</sup>Charles Louis Kincannon, Director, "Procedures for Providing Assistance to Requestors for Special Data Products Known as Special Tabulations and Extracts," memorandum to Associate Directors, Division Chiefs, Bureau of the Census, Washington, D.C., August 26, 2004.

<sup>54</sup>It might be noted that SIPP officials told us that when the Census Bureau conducted the SIPP survey and asked about immigration status, interviewers did not experience field problems. However, SIPP asks about immigration status at the time when respondents came to this country (and one other question); SIPP stopped short of a specific question on current undocumented status—and the SIPP data do not allow indirect estimation of the number who are currently undocumented.

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sector organization with government funding. In some cases, we specifically referred to one or both of the following surveys, which (1) have been conducted for many years without inappropriate data disclosures and (2) ask direct sensitive questions:

- the National Survey on Drug Use and Health (NSDUH), fielded by RTI International under a contract from HHS’s Substance Abuse and Mental Health Services Administration (SAMHSA), and
- the National Agricultural Workers Survey (NAWS), fielded by Aguirre International, under a contract from the Department of Labor.<sup>55</sup>

The advocates’ response was generally to accept the concept of government funding of a university’s or private sector survey organization’s field work, provided that appropriate protections of the data were built into the funding agreement.

GAO’s contract with Aguirre International for early testing of the grouped answers approach with farmworker respondents specified that data on respondents’ answers would be “stripped of person-identifiers and related information.” Additionally, the GSS “core funding” grant with NSF and its contractual arrangements with sponsors of question modules—such as the grouped-answers question insert contracted for by the Census Bureau—do not involve the transfer of any data other than publicly available data, stripped of identifiers, and limited so as to avoid the possibility of “deductive disclosure” with respect to respondent identities or local areas.<sup>56</sup>

Various advocates said that their acceptance was also contingent on factors such as

1. high-quality data, including coverage of persons who have limited English proficiency, with special attempts to reach those who are linguistically isolated (that is, members of households in which no one

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<sup>55</sup>These two examples involve agencies that are viewed neutrally by the immigrant advocates we talked with. (Agencies that are viewed negatively by some immigrant advocates are DHS and the Census Bureau.)

<sup>56</sup>GSS receives funding for its core questions through a grant from NSF. GSS interviewers and advance letters told respondents about the NSF sponsorship. Additionally, respondents were told that one purpose of the survey was to inform government officials.

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14 or older speaks English “very well”) and to overcome other potential barriers (such as cultural differences);

2. appropriate presentation of the survey, including an appropriate explanation of its purpose and how respondents were selected for interview; and
3. transparency—that is, keeping the immigrant community informed about or involved in the development and progress of the survey.

One advocate specifically said that her organization’s support would be contingent on both (1) the development of more information on respondent acceptance within the Asian community—particularly among Asians who have limited English proficiency or are linguistically isolated—and (2) a survey implementation that is planned to adequately communicate with Asian respondents, including those who are linguistically isolated or have little education.<sup>57</sup> Although one-fourth of the 2004 GSS test respondents were Asian, the test was conducted in English (allowing help from bilingual household members), and no other tests have included linguistically isolated Asians.<sup>58</sup>

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### Advocates and Experts Suggest Ways to Maximize Respondent Cooperation and Offer Their Assistance

Advocates and other experts made several suggestions for maximizing respondent cooperation with a survey using the grouped answers question series—that is, maximizing response rates for such a survey as well as maximizing authentic participation.

Advocates suggested that the survey (1) avoid taking names or Social Security numbers,<sup>59</sup> (2) hire interviewers who speak the respondents’ home-country language, (3) let respondents know why the questions are being asked and how their households came to be selected, (4) conduct

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<sup>57</sup>This would mean communication that takes account of cultural as well as language concerns.

<sup>58</sup>The 2004 GSS was limited to respondents who either were fluent in English or were helped by a household member who was fluent in English; some persons with limited English proficiency are likely to have been reached. The preliminary testing and development of the grouped answers approach offered a choice of Spanish or English interviews. However, linguistically isolated *non*-Hispanics have not yet been included in any test.

<sup>59</sup>Later in this report, we describe potential ways of testing whether respondents “pick the correct box”—ways that do *not* require routine collection of respondent names and Social Security numbers as part of the main survey.

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public relations efforts, (5) obtain the support of opinion leaders, (6) select a survey group from a well-known and trusted university to collect the data, and (7) ask respondents about their contributions to the American economy through, for example, working and paying taxes.

Additionally, survey experts suggested

- using audio–Computer Assisted Self Interview (audio-CASI),<sup>60</sup>
- carefully explaining to respondents how anonymity of response is protected, and
- paying respondents \$25 or \$30 for participating in the interview.

Survey experts viewed these elements as key ways of boosting response rates or encouraging authentic responses to sensitive questions. For example, NAWS, which uses respondent incentives, achieves extremely high response rates within cooperating farms—97 percent in 2002, with a \$20 payment to farmworkers selected.

Some immigrant advocates also offered suggestions for how their organizations or other advocates might help the effort to develop and field the grouped answers approach, including

1. providing contacts at local organizations to help with arrangements for future research,
2. developing or reviewing Box A follow-up questions, and
3. serving on an advisory board with other representatives from immigrant communities.<sup>61</sup>

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<sup>60</sup>CASI, or Computer Assisted Self Interview, means that the respondent himself or herself uses a laptop to view the questions and flash cards and to indicate his or her answers. Audio-CASI adds earphones so that questions and instructions can be spoken to the respondent while he or she views the questions on the screen. Audio-CASI programming can be completed in any one of several languages. Experts told us that studies have shown increased reporting of sensitive items when audio-CASI is used.

<sup>61</sup>Two advocates mentioned positively the transparency that the Census Bureau works toward through outreach to immigrant-advocate organizations. This outreach includes explanation of data collection goals and policies.

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## GSS Data and Independent Statistical Consultant Review Show “General Usability” of the Grouped Answers Approach

As we report above, the Census Bureau’s recent analysis of the 2004 GSS grouped answers data concluded that the “overwhelming majority of foreign-born respondents” picked a box without objection, hesitation, or silence. The Census Bureau reported, more specifically, that roughly 90 percent (216 of 237 respondents) chose a box, 4 gave other answers, and 17 refused to answer or said “don’t know.”

Our subsequent analysis excluded 19 of the 237 respondents in the Census Bureau analysis because

- 4 were not foreign-born (for example, 1 had been born abroad to parents who had, by the time he was born, become naturalized U.S. citizens);
- 1 was not classifiable as either foreign-born or not foreign-born (because he did not know whether his parents were born in the United States);
- 4 others were known to have been interviewed on the telephone, based on written-in interviewers’ comments recorded in the computer file (for example, one wrote that the respondent could not see the cards because the interview was on the telephone); and
- 10 others were subsequently found to have been interviewed on the telephone, based on a special GSS hand check of the interview forms for respondents who had refused or said “don’t know,” which was carried out in response to our request.<sup>62</sup>

As a result, in our analysis we found that only 6 personally interviewed foreign-born GSS respondents refused or said “don’t know.”<sup>63</sup> One of the 6 was an 18-year-old Mexican who told the interviewer that he did not know whether or not he was a legal immigrant. Additionally, we found that the 4 respondents who gave “other answers” had provided usable

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<sup>62</sup>GSS Director Tom Smith graciously arranged for a hand check of interviews coded refusal or “don’t know,” thus providing key information to us in time for this report. (Specific mode-of-interview data for all 2004 GSS respondents will not be available until the end of 2006.) The GSS Director also said that, overall, about 10 percent of the 2004 GSS interviews were conducted over the telephone.

<sup>63</sup>Similar numbers refused or said “don’t know” on the two 3-box training cards. Specifically, 8 respondents refused or said “don’t know” on the housing card, 6 on the transportation card.

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information (for example, one called out that he had a student visa) and thus could be recoded into an appropriate box.

After reviewing the two analyses of the GSS test data—the one that the Census Bureau performed and the other we performed—Dr. Zaslavsky concluded that

The test confirms the general usability of the [grouped-answers approach] with subjects similar to the target population for its potential large-scale use—that is, foreign-born members of the general population. Out of about 218 respondents meeting eligibility criteria and who were most likely administered the cards in person (possibly including a few who had telephone interviews but responded without problems), only 9 did not respond by checking one of the 3 boxes. Of these, 3 provided verbal information that allowed coding of a box, and 6 declined to answer the question altogether. Furthermore, several of these [6] raised similar difficulties with other 3-box questions on nonsensitive topics (type of house where born, mode of transportation to enter United States), suggesting that the difficulties with the question format were at least in part related to the format and not to the particular content of the answers. Thus, indications were that there would not be a systematic bias due to respondents whose immigration status is more sensitive being unwilling to address the 3-box format.

Dr. Zaslavsky emphasized the importance of minimizing or completely avoiding telephone interviews when using the grouped answers approach—or, alternatively, providing advance copies of the cards to respondents before interviewing over the telephone.<sup>64</sup> (Dr. Zaslavsky’s written review is presented in full in appendix III.)

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## Various Tests Are or May Be Needed

The findings on respondent acceptance—that is, the GSS test—raised some unanswered questions about acceptance that experts said should be addressed. Additionally, the experts said that one or more tests of response validity are needed to determine whether respondents “pick the correct box” versus systematically avoiding Box B.

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<sup>64</sup>Alternatively, we believe that it might be possible to estimate the bias incurred by including a small number of telephone interviews in the analysis (or by eliminating them from the analysis).

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## Questions for Further Research Were Suggested by the GSS Test

The independent reviewer of the GSS analyses (Dr. Zaslavsky) concluded that

four issues should be addressed in future field tests:

- (a) Equivalent acceptability of all forms of the response card,
- (b) Usability with special populations including those with low literacy, the linguistically isolated, and concentrated immigrant populations,
- (c) Methods that avoid telephone interviews, or reduce bias and nonresponse due to use of the telephone,
- (d) Use of follow-up questions to improve the accuracy of box choices.

As the independent expert explained with respect to point (b), GSS undercoverage of the foreign-born population occurred at least in part because interviews were conducted only in English, although household members could help respondents with limited English.<sup>65</sup> Various colleagues and experts we talked with supported points (a) through (d). We further note that points (a) and (c) were covered or touched on in the Census Bureau's paper reporting its analysis of the 2004 GSS data. In our discussions with Census Bureau staff, they also mentioned that further tests of acceptance should include (d) follow-up questions for Box A respondents.

Additionally, some advocates and an immigration researcher suggested improving the cards, which might minimize the potential for "don't know" or inaccurate answers. A survey expert suggested using focus groups to further explore respondent perceptions of the cards—and to potentially improve them.<sup>66</sup>

Earlier testing covered a key portion of the populations (Hispanic farmworkers) cited in (b) above, was conducted in Spanish, and included

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<sup>65</sup>Questions were asked and answers were apparently given in English.

<sup>66</sup>The pretesting and cognitive testing conducted on the cards so far has been limited to certain groups of Hispanics. We believe that testing with other groups, potentially including focus group testing, could be important before large-scale implementation. It also might be appropriate to change specific categories and definitions of statuses on the cards, depending on future changes in laws.



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Box A follow-up questions as recommended in (d) above.<sup>67</sup> In those interviews, every respondent picked a box. However,

1. No language other than Spanish or English has been used in testing; thus, as one immigrant advocate pointed out, no testing has focused on linguistically isolated Asians (those living in households in which no adult member speaks English).
2. The interviews with Hispanic farmworkers were not conducted under typical conditions of a household survey.
3. Only one immigration status card was tested with Hispanic farmworkers and in the GSS.

Therefore, we agree that the acceptance-testing issues the experts raised should be considered in assessing the grouped answers approach.

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### Studies Should Test Whether Respondents Pick the Correct Box

Several experts told us that tests of respondent accuracy—or at least respondents' intent to respond accurately—should be conducted. These experts emphasized that grouped answers data would not be useful if substantial numbers of respondents were to systematically avoid picking Box B (that is, to not pick the box with the undocumented category). However, one immigration study expert believed that if a response validity study involved lengthy delays, fielding a grouped answers survey should proceed in advance of a validity study.

We agree with the experts' position that tests are needed to determine whether respondents systematically avoid Box B (even after Box A follow-up check questions). Tests of response validity would ideally be conducted with the methods of encouraging truthful answers that experts mentioned, such as (1) explaining why the survey is being conducted, how the respondent was selected, and how the anonymity of answers is ensured, and (2) using audio-CASI and, if appropriate, paying respondents for participating in the interview. And, as the Census Bureau pointed out, such a study should include the full grouped answers question series, including follow-up questions, and it should test both Card 1 and Card 2. Even if small numbers of respondents were to respond inaccurately, it would be helpful to estimate this and adjust for any resulting bias.

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<sup>67</sup>In fact, a key part of the earlier testing focused on the development of icons to help respondents with limited literacy.

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We discussed various approaches to conducting validity studies with immigration experts, including immigrant advocates, and with agencies conducting surveys. In reviewing these approaches, we found that response validity tests vary according to whether they are conducted before, during, or after a survey is fielded.

**Before a large-scale survey is conducted.** The grouped answers question series could be asked of a special sample of respondents for whom the answers are known, in advance, by study investigators on an individual-respondent basis. Such knowledge might be based, for example, on information that recent applicants for green cards have submitted to DHS.<sup>68</sup> “Firewalls” could be used to prevent survey information from being given to DHS. We discussed this approach with DHS; however, experts criticized a DHS-based validity study on both methodological and public relations grounds.<sup>69</sup> An alternative source of data on individuals’ immigration statuses might avoid these problems, but no alternative source has yet been identified.

**Before or as part of a large-scale survey.** In either situation (that is, in a presurvey study or as part of a survey), respondents could be asked if they would be willing to participate in special validity-test activities in return for a payment of, say, \$25 or \$30 for each activity. Later, after interviewing had been completed in a given location—not as part of the interview process—a sample of respondents who chose Box A (that is, those who claimed to be here legally) could be asked to

- participate in a focus group in which respondents would discuss how they felt answering the grouped answers questions when the interviewer came to their house and, also, could possibly be asked to fill out a “secret ballot” indicating whether they had answered authentically in the earlier home interview;
- give permission for a record check and provide information that could subsequently be used in a record check (for example, their

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<sup>68</sup>NCHS has suggested that some kind of validity test at the individual level is needed. Interviewing persons whose status is known in advance is a classic approach.

<sup>69</sup>One expert scoffed at a validity test limited to persons whose immigration status is known to DHS. An immigrant advocate pointed to the issues that arose when the Census Bureau helped DHS obtain publicly available information on ethnicity by zip code; she indicated that a public relations problem could result even if only carefully crafted, carefully protected sharing of information took place.

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name, date of birth, and Social Security number) and permission to check these data with the Social Security Administration;<sup>70</sup> or

- show his or her documentation (for example, green card) to a documents expert.<sup>71</sup>

These checks would logically be focused on Box A respondents, for most of whom such checks would be less threatening. We believe that it is reasonable to assume that most respondents who chose Box B picked the correct box. Further, because the survey interview states that there are no more questions on immigration if the respondent picks Box B, pursuing follow-up validity checks might be deemed inappropriate for Box B respondents.<sup>72</sup>

**After data are collected.** With a large-scale survey, it would be possible to conduct comparative analyses after the data were collected. We provide three examples.<sup>73</sup>

1. Grouped answers estimates of the percentage undocumented could be compared for (a) all foreign-born versus (b) high-risk groups, such as those who arrived in the United States within the past 5 or 10 years. The expectation would be that with valid responses, a higher estimate

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<sup>70</sup>One immigrant advocacy organization pointed out that it would be important in such a study to protect the data so that the agency checking records (in this instance, the Social Security Administration) could not discover information about any identifiable respondent. Protective approaches might include (1) using code numbers and a “third party” model and (2) adding numerous “fake” cases to the checklist and notifying the agency that this was being done. (See GAO, *Record Linkage and Privacy: Issues in Creating New Federal Research and Statistical Information*. [GAO-01-126SP](#) (Washington, D.C.: April 2001).)

<sup>71</sup>The ideas for these approaches are an outgrowth of our discussions concerning NSDUH with SAMSHA. The NSDUH project officer said that as part of that survey (which is fielded by RTI International in Research Triangle Park, N.C., under a contract with SAMHSA), a sample of respondents were offered \$25 for a hair sample and \$25 for a urine sample. Ninety percent of those offered the incentive payments provided one or both samples.

<sup>72</sup>It would be important to craft such a study so that respondents would not be tempted to distort information in order to receive payment. One immigrant advocate suggested asking “what other experience federal agencies have had with paying a select group of respondents to participate in a validity test” to determine “whether the payment approach is considered scientifically sound.” One way of addressing this concern might be to offer all or some Box B respondents a “minimal threat” follow-up opportunity, such as participating in a focus group, which could also be associated with a payment.

<sup>73</sup>Other possible comparative analyses might also be useful. DHS suggested comparisons to results from the Latin American Migration Project and the New Immigrant Survey.

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of the percentage undocumented would be obtained for those who arrived more recently—because, for example, persons who had arrived recently were not here during the amnesty in the late 1980s.<sup>74</sup>

2. Comparisons could be made of (a) Box A estimates of specific legal statuses and the approximate dates received—notably, the numbers of persons claiming to have received valid green cards in 1990 or more recently—with (b) publicly available DHS reports of the numbers of green cards issued from 1990 to the survey date.<sup>75</sup>
3. Analysts could compare (a) grouped answers estimates of the number undocumented overall to (b) estimates of total undocumented obtained by the residual method.<sup>76</sup>

Wherever possible, Card 1 and Card 2 should be tested separately for accuracy of response.

The advantage of conducting a validity study in advance of a survey is that if significant problems surface, adjustments in the approach can be made. Or if the problems are substantial and cannot be easily corrected—and if the anticipated survey were to be fielded mostly or only to collect grouped answers data—then that survey could be postponed or canceled. However, the results of validity tests conducted during or after a survey can be used to interpret the data and, potentially, to adjust estimates if it appears that, for example, 5 to 10 percent of undocumented respondents had erroneously claimed to be in Box A of Card 1. As one expert noted,

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<sup>74</sup>This is a version of the standard “known groups” validity test—an approach that NCHS suggested using if it is not possible to conduct individual checks.

<sup>75</sup>An expert in immigration studies suggested this test. As DHS’s comments indicate, such a test would involve adjusting the DHS figures on, for example, the number of green cards issued in specific years to account for subsequent return-migration and mortality, as well as taking account of survey undercoverage. For information on adjustments needed in comparisons involving green cards, see Nancy F. Rytina, *Estimates of the Legal Permanent Resident Population and Population Eligible to Naturalize in 2004* (Washington, D.C.: Department of Homeland Security, Office of Immigration Statistics, February, 2006), p. 3, table 2. For an analogous comparison for U.S. citizenship, see Jeffrey S. Passel, Rebecca L. Clark, and Michael Fix, “Naturalization and Other Current Issues in U.S. Immigration: Intersections of Data and Policy,” in *Proceedings of the Social Statistics Section of the American Statistical Association: 1997* (Alexandria, Va.: American Statistical Association, 1997).

<sup>76</sup>This test was suggested by another expert in immigration studies. Residual estimates are based primarily on comparing (1) administrative data on the number of *legal* immigrants with (2) census counts or survey estimates of the number of foreign-born residents who have not become U.S. citizens.

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conducting an advance study does not preclude conducting a subsequent study during or after the survey.

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## Some 6,000 Foreign-Born Respondents Are Needed for “Reasonably Precise” Estimates of the Undocumented

Although several factors are involved, and it is not possible to guarantee a specific level of precision in advance, we estimate that roughly 6,000 foreign-born respondents, or more, would be needed for a grouped answers survey.<sup>77</sup> As we explain below, this is based on (1) a precision requirement (that is, a 95 percent confidence interval consisting of plus or minus 3 percentage points), (2) assumptions about the sampling design of the survey in which the questions are asked, and (3) the assumption that approximately 30 percent of the foreign-born population is currently undocumented.

An indirect grouped answers estimate of the undocumented population generally requires interviews with more foreign-born respondents than a corresponding hypothetical direct estimate would—assuming it were possible to ask such questions directly in a major national survey. One key reason is that the main sample of foreign-born respondents must be divided into two subsamples. Half the respondents answer each immigration status card. On this basis alone, one would have to double the sample size required for a direct estimate based on a question asked of all respondents. Further, the estimate of undocumented, which is achieved by subtraction, combines two separate estimates, each characterized by some degree of uncertainty.<sup>78</sup>

Determining the number of respondents required for a “reasonably precise” estimate of the percentage of the foreign-born population who are undocumented involves three key factors:

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<sup>77</sup>A sample of foreign-born is contained within a general sample of the household population. As we explain in a later section of this report, an efficient way to survey the foreign-born is by piggybacking on an existing, ongoing large-scale survey of the total household population, which includes foreign-born persons—if an appropriate ongoing survey can be identified. A higher-cost alternative would be to identify a new sample of the total household population and screen (by mini-interviews conducted by telephone or in person or both) for households that contain one or more foreign-born persons.

<sup>78</sup>The size of the error associated with a grouped answers estimate relative to a direct estimate depends on the distribution of immigration statuses. Assuming that 33.3 percent of foreign-born persons are in the undocumented category, 33.3 percent are in the set of legal statuses in Card 1, Box A, and 33.3 percent are in the set in Card 2, Box A, we would expect the error associated with a grouped answers estimate of the percentage undocumented to be twice that associated with a corresponding direct estimate.

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1. specification of a precision level—that is, choice of a 90 percent or 95 percent confidence level and an interval defined by plus or minus 2, 3, or 4 percentage points;
  2. information on (or assumptions about) the sampling design for the main survey and for subsamples 1 and 2; and
  3. to the extent possible, consideration of the likely distribution of the foreign-born population across immigration status categories, including the various legal categories and the undocumented category.<sup>79</sup>

With respect to the first factor involved in determining sample size, some agencies—for example, the Census Bureau and the Bureau of Labor Statistics (BLS)—use the 90 percent confidence level. Other agencies use the 95 percent level.

With respect to the second factor, the sampling design of a large-scale, nationally representative, personal-interview survey is based on probabilistic area sampling rather than simple random sampling of individuals. This often *reduces* the precision of estimates (relative to simple random sampling).<sup>80</sup> The reason is that persons selected for interview are clustered in a limited number of areas or neighborhoods (and residents of a particular neighborhood may tend to be similar). It is possible that the design for selecting subsamples 1 and 2 could *increase* precision; however, it is not possible to predict by how much.<sup>81</sup>

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<sup>79</sup>If there is no information on the distribution of immigration status, then a potentially very large sample size would be estimated, based on a “worst case scenario” distribution. However, if there is information, this may allow a given level of precision to be attained with a smaller sample.

<sup>80</sup>To illustrate how this occurs in practice, referring to the National Health Interview Survey (NHIS), NCHS told us that an estimate of the percentage of persons who are foreign-born, 18 to 39 years old, and U.S. citizens is characterized by a variance that is roughly 1.6 times the variance that would be associated with a corresponding estimate based on simple random sampling. (In theory, a complex sampling design could reduce the variance rather than increasing it.)

<sup>81</sup>The independent statistical consultant (Dr. Zaslavsky) advised us that rotating the use of immigration status cards 1 and 2 in every other household interviewed (balancing the use of alternative cards within areas or clusters) might increase precision. The logic is that because some areas are defined by factors such as income and ethnicity—which might be related to immigration status—rotation would help ensure balance on these factors.

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With respect to the third factor, existing residual estimates point to a fairly even 3-way split between three main categories—undocumented, U.S. citizen, and legal permanent resident. However, there is some uncertainty associated with these estimates, the distribution may vary across subgroups, and the percentages may change in future.<sup>82</sup> Therefore, a range of distributions is relevant.

Taking each of these factors into account (to the extent possible) and using conservative assumptions, we estimated the approximate numbers of respondents required for indirect estimates of the undocumented population that are “reasonably precise.”

Table 1 shows required sample sizes for the 90 percent confidence level, table 2 for the 95 percent level, with precision at plus or minus 2, 3, and 4 percentage points. In estimating these required sample sizes, we made conservative assumptions and specified a range of possibilities for the distribution with respect to the undocumented category.

To identify a single, rough figure for the sample size needed for reasonably precise estimates, we focused on

1. the 95 percent level, which is more certain and, we believe, preferable;
2. the 30 percent column, because a current residual estimate of the undocumented population is in this range; and
3. the middle row (for plus or minus 3 percentage points), which is a midpoint within the area of “reasonable precision” as defined above.

With this focus, we estimate that roughly 6,000 or more respondents would be required.<sup>83</sup>

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<sup>82</sup>For example, it is possible that new immigration laws would allow large numbers of currently undocumented persons to legalize their status.

<sup>83</sup>We believe these are reasonable choices but we realize that others might focus on, for example, more precise estimation (plus or minus 2 percentage points).

**Table 1: Approximate Number of Foreign-Born Respondents Needed to Estimate Percentage Undocumented within 2, 3, or 4 Percentage Points at 90 Percent Confidence Level, Using Two-Card Grouped Answers Data**

| Estimate within 2, 3, or 4 percentage points | Percent undocumented foreign-born (range of possibilities) |       |       |       |       |
|--|--|-------|-------|-------|-------|
|  | 10%  | 30%   | 50%   | 70%   | 90%   |
| 2  | 10,700   | 9,900 | 8,100 | 5,500 | 2,100 |
| 3  | 4,800  | 4,400 | 3,600 | 2,500 | 900   |
| 4  | 2,700  | 2,500 | 2,000 | 1,400 | 500   |

Source: GAO analysis.

Note: Estimated numbers of respondents were calculated assuming that (1) foreign-born persons who are not undocumented are evenly split between the legal statuses in Box A, Card 1, and Box A, Card 2 (a conservative assumption in that it maximizes the required number of respondents), (2) sample selection design for the main survey and for subsamples 1 and 2 increases the variance of an estimate of undocumented by 1.6 (which does not build in potential reductions in variance that might occur with a careful design for the selection of subsamples 1 and 2); and (3) for simplicity, no respondents choose Box C.

**Table 2: Approximate Number of Foreign-Born Respondents Needed to Estimate Percentage Undocumented, within 2, 3, or 4 Percentage Points, at 95 Percent Confidence Level, Using Two-Card Grouped Answers Data**

| Estimate within 2, 3, or 4 percentage points | Percent undocumented foreign-born (range of possibilities) |                    |        |       |       |
|--|--|--------------------|--------|-------|-------|
|  | 10%  | 30%                | 50%    | 70%   | 90%   |
| 2  | 15,200   | 14,000             | 11,500 | 7,800 | 2,900 |
| 3  | 6,800  | 6,200 <sup>a</sup> | 5,100  | 3,500 | 1,300 |
| 4  | 3,800  | 3,500              | 2,900  | 2,000 | 700   |

Source: GAO analysis.

Note: Estimated numbers of respondents were calculated assuming that (1) foreign-born persons who are not undocumented are evenly split between the legal statuses in Box A, Card 1, and Box A, Card 2 (a conservative assumption in that it maximizes the required number of respondents), (2) sample selection design for the main survey and for subsamples 1 and 2 increases the variance of an estimate of undocumented by 1.6 (which does not build in potential reductions in variance that might occur with a careful design for the selection of subsamples 1 and 2); and (3) for simplicity, no respondents choose Box C.

<sup>a</sup>This is the approximate number of foreign-born respondents needed for an overall estimate of the percentage undocumented with a confidence interval of plus or minus 3 percentage points at the (preferred) 95% confidence level, assuming that 30% of the foreign-born are undocumented.

High-risk subgroups—subgroups with higher percentages of undocumented (such as adults 18 to 44 and persons who arrived in the United States within the past 10 years)—would require fewer respondents for the same level of precision, as illustrated in the tables’ middle and right columns. For example, if about 70 percent of a subgroup were undocumented, a survey with about 3,500 respondents *in that subgroup* would produce an estimate of the percentage of the subgroup that is



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undocumented, correct to within approximately plus or minus 3 percentage points at the 95 percent confidence level.

Low precision could obtain for smaller subgroups in which there are relatively few undocumented persons (for example, 10 percent or less), particularly if—as assumed in tables 1 and 2—there is an even split of legally present foreign-born persons across the Box A categories of immigration status cards 1 and 2.<sup>84</sup>

The independent statistician we consulted indicated that if more than one grouped answers survey is conducted, combining data across two or more surveys could help provide larger numbers of respondents for subgroup analysis. For example, if a large-scale survey were conducted annually, analysts could combine 2 or 3 years of data to obtain more precise estimates. (One caveat is that combining data from multiple survey years reduces the time-specificity associated with the resulting estimate.)

Finally, we note that to estimate the *numerical size* of the undocumented population,

- A grouped answers estimate of the percentage of the foreign-born who are undocumented would be combined with a census count of the foreign-born or an updated estimate. For example, the 2000 census counted 31 million foreign-born persons, and the Census Bureau later issued an updated estimate of 35.7 million for 2005.
- The specific procedure would be to multiply the percentage undocumented (based on the grouped answers data and the subtraction procedure) by a census count or an updated estimate of the foreign-born population for the year in question.

The precision of the resulting estimate of the numerical size of the undocumented population would be affected by (1) the precision of the grouped answers percentage estimate, which is closely related to sample size, as described above, and (2) any bias in the census count or updated estimate of the foreign-born population.<sup>85</sup> The precision of the grouped

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<sup>84</sup>However, if the percentage undocumented overall were to sharply decrease, it might be appropriate to change the groupings on the cards to mitigate this factor.

<sup>85</sup>Such bias might arise from problems in accurately covering the foreign-born population. An additional caveat is that coverage of the undocumented may be lower than coverage of other foreign-born persons. We examined coverage issues in [GAO/GGD-98-164](#).

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answers percentage is taken into account by using a percentage range (for example, the estimate plus or minus 3 percentage points) when multiplying. Although the amount of bias in a census count or updated estimate is unknown, we believe that any such bias would have a *proportional* impact on the calculated numerical estimate of the undocumented population.<sup>86</sup>

To illustrate the proportional impact, we assume that a census count for total foreign-born is 5 percent too low. Using that count in the multiplication process would cause the resulting estimate of the size of the undocumented population to be 5 percent lower than it should be.<sup>87</sup> The situation is analogous for subgroups.<sup>88</sup>

Overall, it seems clear that reasonably precise grouped answers estimates of the undocumented population and its characteristics require large-scale data collection efforts but not impossibly large ones.

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## The Most Efficient Field Strategy Does Not Seem Feasible

A low-cost field strategy would be to insert the new question series in an existing, nationally representative, large-scale survey—that is, to pose the grouped answers questions to the foreign-born respondents already being interviewed. However, based on our review of on-going large-scale surveys, the insertion strategy does not seem feasible. Specifically, we identified four potentially relevant surveys but none met criteria based on the grouped answers design and other criteria based on immigrant advocates' concerns.

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<sup>86</sup>This assumes that the census count or updated estimate is a constant.

<sup>87</sup>Suppose hypothetically that an updated estimate for some future year estimates the foreign-born population as 40 million and that a grouped answers estimate of the percentage of foreign-born who are undocumented is 30 percent. Multiplying 40 million by 30 percent would yield an estimate of 12 million undocumented (hypothetical data). Further suppose that the true size of the foreign-born population, in that future year, were actually 42 million. Multiplying 42 million by 30 percent would yield 12.6 million—a result just 5 percent higher than 12 million.

<sup>88</sup>In contrast, analysts have pointed to a potentially disproportionate, magnifying impact of bias in census counts (or error in updated estimates of the size) of the foreign-born population on residual estimates of the number who are undocumented. See Kenneth Hill, "Estimates of Legal and Unauthorized Foreign-Born Population for the United States and Selected States Based on Census 2000," presentation at the U.S. Census Bureau Conference, Immigration Statistics: Methodology and Data Quality, Alexandria, Virginia, February 13–14, 2006. Siegel and Swanson (p. 479) make a similar point.

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The dollar costs associated with inserting a grouped answers module are difficult to calculate in advance because many factors are involved. However, to suggest the “ball park” within which the cost of a grouped answers insert might be categorized, if an insertion were possible, we present the following two examples.

- The GSS test, in which a grouped answers question module was inserted, cost approximately \$100 per interview (more than 200 interviews were conducted). On average, the question series took 3.25 minutes. Logically, per-interview costs are likely to be higher in relatively small surveys than in larger surveys with thousands of foreign-born respondents.
- For the much larger Current Population Survey (CPS), with interviews covering native-born and foreign-born persons in more than 50,000 households, the Census Bureau and BLS told us that “an average 10-minute supplement cost \$500,000 in 2005.”<sup>89</sup> This implies \$10 per interview at the 50,000 level, but per-interview costs might be higher when the question series applied to only a portion of the respondents. Additional costs might apply for flash cards and foreign-language interviews. BLS noted that still other costs would apply for advance testing and subsequent analyses requested by the customer.

A more costly option would be to ask the grouped answers question series in a follow-back survey of foreign-born respondents identified in interviewing for an existing survey. (In-person self-report interviews can cost \$400 to \$600 each.) More costly still would be the development of a new, personal-interview survey of a representative sample of the foreign-born population devoted to migration issues; the main reason is that there would be additional costs in “screening out” households without foreign-born persons.

We identified four potentially relevant ongoing large-scale surveys. All have prerequisites and processes for accepting (or not accepting) new questions. We also developed six criteria for assessing the appropriateness of each survey as a potential vehicle for fielding the grouped answers approach. Three criteria are based on design requirements, and three are based on the views of immigrant advocates. We found that no ongoing large-scale survey met all criteria.

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<sup>89</sup>More than 6,000 of these households included one or more foreign-born persons.

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## Four Ongoing Large-Scale Data Collections Sometimes Accept Additional Questions

We identified four nationally representative, ongoing large-scale surveys in which respondents are or could be personally interviewed.<sup>90</sup> Three of these conduct most or all interviews in person:

1. the Current Population Survey (CPS), sponsored by BLS and the Census Bureau and fielded by Census;
2. the National Health Interview Survey (NHIS), sponsored by the National Center for Health Statistics (NCHS) and fielded by the Census Bureau; and
3. the National Survey on Drug Use and Health (NSDUH), sponsored by SAMHSA and fielded by RTI International, a private sector contractor.

The fourth survey is the American Community Survey (ACS), a much larger survey fielded by the Census Bureau and using “mixed mode” data collection. The majority of the data are based on mailed questionnaires or telephone interviews, with the remaining data based on personal interviews. In addition, there is one personal-interview follow-back survey that uses the ACS frame and data to draw its sample.<sup>91</sup> Other follow-back surveys might eventually be possible.

For any of these four surveys, inserting a new question or set of questions (or fielding a “follow-back” survey based on respondents’ answers in the main survey) requires approvals by the Office of Management and Budget (OMB), the agencies that sponsor or field the surveys, and in cases in which data are collected by a private sector organization, the organization’s institutional review board.

The prerequisites for an ongoing survey’s accepting new questions typically include low anticipated item nonresponse, pretesting and pilot

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<sup>90</sup>A fifth survey, SIPP, a large-scale in-person survey, is scheduled to be “reengineered” to provide an “effective alternative to the current SIPP.” It is anticipated that administrative data will be combined with survey data, although the exact directions that the revised effort will take are not yet known. (We defined large-scale as 50,000 or more interviews, including native-born and foreign-born respondents. The foreign-born represent about 12 percent of the national population, implying that a survey of 50,000 U.S. residents could be expected to collect data on roughly 6,000 foreign-born persons.)

<sup>91</sup>This follow-back survey concerns alcohol use and alcoholism; it is sponsored by the National Institute of Alcohol Abuse and Alcoholism. OMB told us that, in part because ACS is a new survey, very few other follow-up efforts, if any, are likely to be approved in the next few years.

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testing (including debriefing of respondents and interviewers) that indicate a minimum of problems, review by stakeholders to determine acceptability, and tests that indicate no effect on either survey response rates or answers to the main survey's existing questions.<sup>92</sup> Another prerequisite would be the expectation of response validity.<sup>93</sup>

Additionally, multiple agencies mentioned a need for prior "cognitive interviewing," compatibility with existing items (so that there is no need to change existing items), and no significant increase in "respondent burden" (by, for example, substantially lengthening the interview).<sup>94</sup>

Agencies sponsoring or conducting large-scale surveys varied on the perceived relevance of immigration to the main topic of their survey. For example, BLS noted that some of its customers would be interested in data on immigration status by employment status (among the foreign-born), and the Census Bureau has indicated the relevance of undocumented immigration to population estimation. But some other agencies saw little relevance to the large-scale surveys they sponsored or conducted. Resistance to including a grouped answers question series might occur where an agency perceives little or no benefit to its survey or its customers.

Additionally, one agency raised the issue of informed consent, which we discuss in appendix V.

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<sup>92</sup>For example, with respect to possible impacts on answers to main-survey questions, SAMHSA (which sponsors the NSDUH) indicated a concern that asking about immigration status might make respondents less likely to provide honest answers to questions about illegal behaviors such as drug use (potentially because of fear of such actions as deportation).

<sup>93</sup>As we discussed in a previous section, experts told us that it is important to demonstrate that respondents, especially undocumented respondents, "pick the correct box"—or at least to demonstrate that they intend to pick the correct box (rather than avoiding Box B).

<sup>94</sup>Cognitive interviewing focuses on the mental processes of the respondent while he or she is answering a survey question. The goals are to find out what each respondent thinks the question is asking, what the specific words or phrases (or icons on a card) mean to him or her, and how he or she formulates an answer. Typically, cognitive interviewing is an iterative process in which the findings or problems identified in each set of interviews are used to modify the questions to be tested in the next set of interviews.

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## No Ongoing Large-Scale Data Collection Met Our Criteria

Based on the design of the grouped answers approach, as tested to date, two criteria for an appropriate survey are (1) personal interviews in which respondents can view the 3-box cards and (2) a self-report format in which questions ask the respondents about their own status (rather than asking one adult member of a household to report information on others). A third criterion is that the host survey not include highly sensitive direct questions that could affect foreign-born respondents' acceptance of the grouped answers questions.<sup>95</sup> We based these criteria on the results of the GSS test, our knowledge of the grouped answers approach, and general logic.

As shown in table 3, one of the surveys we reviewed (the CPS) does not meet the self-report criterion; that is, it accepts proxy responses. Two other surveys (the NHIS and NSDUH) do not meet the criterion of an absence of highly sensitive questions, since they include questions on HIV status (NHIS) and the use of illegal drugs (NSDUH). Conducting a follow-back survey based on ACS would meet all three criteria.<sup>96</sup>

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<sup>95</sup>For example, if a respondent had already admitted engaging in a behavior related to illegal activity, he or she might be less likely to accurately answer a question on immigration status. Of course, if future testing were to indicate that a particular type of sensitive item did not affect immigration responses, this criterion would be dropped.

<sup>96</sup>The ACS is a mixed-mode rather than a solely personal-interview survey. It gathers information on all members of a household based, in some cases, on a single adult respondent-informant rather than randomly selecting one or more respondents in each household and asking them to provide information about themselves. However, one follow-back personal interview survey has based its sample selection on the ACS frame and its data. We further note that if a follow-back survey based on the CPS could be conducted, then—provided that the follow-back was designed for self-report personal interviews—it would meet the criteria in table 3.

**Table 3: Survey Appropriateness: Whether Surveys Meet Criteria Based on the Grouped Answers Design**

| Survey type                  | Specific survey   | Three design-based criteria   |  |  |
|------------------------------|---|---|--|--|
|                              |   | 1. Are the data gathered in personal interviews?  | 2. Are all respondents selected to self-report?  | 3. Are direct questions <i>not</i> highly sensitive?   |
| Ongoing survey               | Current Population Survey (CPS)   | <b>YES.</b> Mostly, for in-person waves; 16% of foreign-born interviewed by telephone, in the in-person waves. <sup>a</sup> | No. An adult respondent reports on self and provides proxy responses for others in his or her household. In-person data for 6,744 households with 1 or more foreign-born members (2006). | <b>YES,</b> not highly sensitive. <sup>b</sup>   |
|                              | National Health Interview Survey (NHIS)   | <b>YES.</b> Mostly; 17% of foreign-born sample adults interviewed by telephone.   | <b>YES.</b> For some questions, but not all, 4,829 foreign-born adults self-report (2004).   | No. There are direct questions on HIV, other STDs. <sup>c</sup>                                  |
|                              | National Survey of Drug Use and Health (NSDUH)  | <b>YES.</b> All interviewed in person.  | <b>YES.</b> 7,364 foreign-born age 12 and older and 4,934 foreign-born age 18+ self-report (2004).   | No. There are direct questions on respondent's use and sale of drugs like marijuana and cocaine. |
| Potential follow-back survey | Potential American Community Survey (ACS) follow-back survey, by the Census Bureau—on all or a sample of all foreign-born on whom ACS data were collected | <b>YES. A follow-back could specify personal interviews only.</b> (ACS is mixed mode, mostly mail.)                         | <b>YES. A follow-back could specify self-report only.</b> (ACS data include both self-report data and proxy data in which one member of a household provides responses for others.)      | <b>YES,</b> not highly sensitive.  |

Source: GAO analysis.

<sup>a</sup>The CPS includes successive data collections or “waves” to update data over time, at selected households. In some waves, interviews are conducted in person; in others, by telephone.

<sup>b</sup>Based on the core CPS questionnaire. (Different modules or supplements may be added in particular survey years or CPS waves.)

<sup>c</sup>HIV refers to human immunodeficiency virus. STDs refers to sexually transmitted diseases.

The views of immigrant advocates, which were echoed by some other experts, suggested three additional criteria for a candidate “host” survey:

1. data collection by a university or private sector organization,
2. no request for the respondent’s name or Social Security number, and
3. protection from possible release of grouped answers survey data for small geographic areas (to guard against estimates of the undocumented for such areas).

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The experts based their views on (1) methodological grounds (foreign-born respondents would be more likely to cooperate, and to respond truthfully, if all or some of these criteria were met) and (2) concerns about privacy protections at the individual or group levels.<sup>97</sup> These criteria are potentially important, in part because the success of a self-report approach hinges on the cooperation of individual immigrants and, most likely, also on the support of opinion leaders in immigrant communities.<sup>98</sup> With respect to the first criterion above, we note that with the exception of initial GAO pretests, all tests of the grouped answers approach have involved data collection by a university or private sector organization. Without further tests, we do not know whether acceptance would be equally high in a government-fielded survey.

As shown in table 4, an ACS follow-back would potentially not meet *any* of the three criteria based on immigrant advocates' views. Only one survey (NSDUH) met all three criteria based on immigrant advocates' views—and because of its sensitive questions on drug use, that survey did not meet the design-based table 3 criteria.

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<sup>97</sup>With respect to the individual level, Census Bureau staff told us that they are extremely careful not to disclose information, that such disclosure is prohibited by law, and that the Census Bureau explains this to respondents. However, they also said that some respondents erroneously believe that all government agencies share information with one another or might do so under certain circumstances.

<sup>98</sup>We note that the relevance of the criteria in table 4 would likely be heightened if interior enforcement efforts (that is, those conducted away from border areas) were to sharply increase.



**Table 4: Survey Appropriateness: Whether Surveys Meet Table 3 (Design Based) Criteria and Additional Criteria Based on Immigrant Advocates' Views**

| Survey type           | Specific survey   | Meets all table 3 (design based) criteria | Three additional criteria based on immigrant advocates' views |  |   |
|-----------------------|---|---|---|--|---|
|                       |   |   | 1. Does a nongovernment organization conduct field work?      | 2. Are interviews anonymous (that is, no names or Social Security numbers are taken)?                      | 3. Is sample too small for reliable small-area estimates of undocumented? <sup>a</sup>                                    |
| Ongoing survey        | Current Population Survey (CPS)   | No.                                       | No. The Census Bureau conducts field work. <sup>b</sup>       | No. Takes names.   | <b>YES.</b>   |
|                       | National Health Interview Survey (NHIS)   | No.                                       | No. The Census Bureau conducts field work. <sup>c</sup>       | No. Takes both names and Social Security numbers.  | <b>YES.</b>   |
|                       | National Survey of Drug Use and Health (NSDUH)  | No.                                       | <b>YES.</b>   | <b>YES.</b>  | <b>YES.</b>   |
| Potential follow-back | Potential American Community Survey (ACS) <i>follow-back</i> survey by the Census Bureau—on all or a sample of foreign-born on whom data were collected | <b>YES.</b>                               | No. Only the Census Bureau can conduct field work.            | No. Takes names in the initial survey, and a follow-back would be based on knowing each person's identity. | Potentially, no. A follow-back might be extremely large. (Also, small-area releases are not prohibited by law or policy.) |

Source: GAO analysis.

Note: Table 3 criteria are personal interviews; respondent reports on himself or herself; no highly sensitive direct questions.

<sup>a</sup>For this report, we define “small area” as below the county level.

<sup>b</sup>For CPS, only the Census Bureau can conduct a follow-back.

<sup>c</sup>For NHIS, a follow-back by a private sector organization might be possible.

In conclusion, we did not find a large-scale survey that would be an appropriate vehicle for “piggybacking” the grouped answers question series.

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## Observations

For more than a decade, the Congress has recognized the need to obtain reliable information on the immigration status of foreign-born persons living in the United States—particularly, information on the undocumented population—to inform decisions about changing immigration law and policy, evaluate such changes and their effects, and administer relevant federal programs.

Until now, reliable data on the undocumented population have seemed impossible to collect. Because of the “question threat” associated with directly asking about immigration status, the conventional wisdom was that foreign-born respondents in a large-scale national survey would not accept such questions—or would not answer them authentically.

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## Testing So Far Affirms That the Grouped Answers Approach Is Promising

Using the grouped answers approach to ask about immigration status seems promising because it reduces question threat and is statistically logical. Additionally, this report has established that

- The grouped answers approach is acceptable to most foreign-born respondents tested (thus far) in surveys fielded by private sector organizations; it is also acceptable—with some conditions, such as private sector fielding of the survey—to the immigrant advocates and other experts we consulted.
- A variety of research designs are available to help check whether respondents choose (or intend to choose) the correct box.
- The grouped answers approach requires a fairly large number of personal interviews with foreign-born persons (we estimate 6,000) to achieve reasonably precise indirect estimates of the undocumented population overall and within high-risk subgroups.

However, the most cost-efficient method of fielding a grouped answers question series—piggybacking on an existing survey—does not seem feasible. Rather, fielding the grouped answers approach would require a new survey focused on the foreign-born. This raises two new questions about “next steps”—and the answers depend, in large part, on policymaker judgments, as described below.

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## Two New Questions about “Next Steps”

**Question 1: Are the costs of a new survey justified by information needs?** DHS stated (in its comments on a draft of this report) that the “information on immigration status and the characteristics of those immigrants potentially available through this method would be useful for evaluating immigration programs and policies.” The Census Bureau has indicated that information on the undocumented would help estimate the total population in intercensal years. And an expert reviewer emphasized that a new survey of the foreign-born would be likely to help estimate the total population.<sup>99</sup>

Additionally, policymakers might deem a new survey of the foreign-born to be desirable for other reasons than obtaining grouped answers data. Notably, an immigration expert who reviewed a draft of this report pointed out that a survey focused on the foreign-born might provide more in-depth, higher-quality data on that population than existing surveys that cover both the U.S.-born and foreign born populations. For example, more general surveys, such as the ACS and CPS (1) ask a more limited set of migration questions than is possible in a survey focused on the foreign-born, (2) are not designed with a primary goal of maximizing participation by the foreign-born (for example, are not conducted by private sector organizations), and (3) as DHS pointed out in comments on a draft of this report, may not be designed to cover persons who are only temporarily linked to sampled households, because such persons may have arrived only recently in the United States and are temporarily staying with relatives.<sup>100</sup>

A new survey aimed at obtaining grouped answers data on immigration status would require roughly 6,000 (or more) personal, self-report interviews with foreign-born adults. Other in-person, self-report interviews in large-scale surveys have cost \$400 to \$600 each. A major additional cost

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<sup>99</sup>This expert reviewer told us: “One of the biggest issues surrounding immigration is the scale of in- and out-migration. The failure to understand this process is one of the biggest reasons that the population estimates were so far off at the time of the 2000 census. A survey devoted to the foreign-born could be especially helpful in ensuring that we have the best weights [information on population] possible, particularly if the survey could accurately estimate illegal aliens.”

<sup>100</sup>The ACS defines residence in a household as living there for 2 months (either completed or ongoing). For a discussion of other quality issues in the ACS, see Steven A. Camarota and Jeffrey Capizzano, “Assessing the Quality of Data Collected on the Foreign Born: An Evaluation of the American Community Survey (ACS): Pilot and Full Study Findings,” Immigration Studies White Papers, Sabre Systems Inc., April 2004. [http://www.sabresys.com/whitepapers/CIS\\_whitepaper.pdf](http://www.sabresys.com/whitepapers/CIS_whitepaper.pdf) (Sept. 6, 2006).

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would be obtaining a representative sample of foreign-born persons; this would likely require a much larger survey of the general population in which “mini-interviews” would screen for households with one or more foreign-born individuals.

We did not study the likely costs of such a data collection or options for reducing costs. However, survey costs can be estimated (based on, for example, the experience of survey organizations), and policymakers can, in future, weigh those costs against the information need—keeping in mind the results of research on the grouped answers approach, to date, and experts’ opinions on research needed.

**Question 2: What further tests of the grouped answers method, if any, should be conducted *before* planning and fielding a new survey?** On one hand, advance testing could

- assess response validity (that is, whether respondents pick—or intend to pick—the correct box) before committing funds for a survey and in time to allow adjustments to the question series;
- further delineate respondent acceptance and explore the impact on acceptance of factors such as government funding—or funding by a particular agency—in order to inform decisions about whether or how to conduct a survey;<sup>101</sup> and
- as suggested in DHS’s comments on a draft of this report, help determine the cost of a full-scale survey.<sup>102</sup>

On the other hand, extensive advance testing would likely delay the survey—and may not be needed because

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<sup>101</sup>Potentially, the prospects for private sector funding could be explored. One question would be whether it is possible to identify a willing private sector source that is not aligned with a particular perspective on immigration issues.

<sup>102</sup>Alternatively, survey costs can be estimated—albeit more roughly—on the basis of the experience of survey organizations.

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- response validity could be assessed—and respondent acceptance could be further delineated—concurrently with or subsequent to the survey rather than in advance,<sup>103</sup>
  - the need for advance testing of response validity would be lessened if policymakers see a need for more or better survey data on the foreign-born *additional to* the need for grouped answers data on immigration status (see discussion in question 1, above);
  - the value of advance testing would be lessened if changes in immigration law and policy occurred between the time of an advance test and the main survey, because such changes could affect the context in which the survey questions are asked and, hence, change the operant levels of acceptance and validity; and
  - survey costs can be estimated—albeit more roughly—on the basis of the experience of survey organizations.

Given the arguments for and against advance testing, it seems appropriate for these to be weighed by policymakers.

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## Agency Comments

We provided a draft of this report to and received comments from the Department of Commerce, the Department of Homeland Security, and the Department of Health and Human Services (see appendices VII, VIII, and IX, respectively). The Office of Management and Budget provided only technical comments, and the Department of Labor did not comment.

The Census Bureau agreed with the report’s discussion of

- the grouped answers method, including its strengths and limitations;
- the Census Bureau-GSS evaluation, including the conclusions of the independent consultant (Alan Zaslavsky); and
- the need for a “validity study” to determine whether the grouped answers method can “generate accurate estimates” of the undocumented population.

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<sup>103</sup> Validity tests conducted concurrent with the survey and follow-on checks that compare survey results against (adjusted) administrative information would seem to be appropriate, if a survey is, in fact, fielded.

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The Census Bureau also provided technical comments, which we used to clarify the report, as appropriate.

The Department of Homeland Security stated that the kinds of information that the grouped answers approach would provide, if successfully implemented, would be useful for evaluating immigration programs and policies. DHS further called for pilot testing by GAO to assess the reliability of data collection and to help estimate the costs of an eventual survey.<sup>104</sup> As we indicate in the “observations” section of this report, two key decisions for policymakers concern

- whether to invest in a new survey and
- whether substantial testing is required in advance of planning and fielding a survey.

We believe that depending on the answers to these questions, another issue—one we cannot address in this report—would concern identifying the most appropriate agency for conducting or overseeing (1) tests of the grouped answers and (2) an eventual survey of the foreign-born population. However, we believe that conducting or overseeing such tests or surveys is a management responsibility and, accordingly, is not consistent with GAO’s role or authorities. DHS made other technical comments which we incorporated in the report where appropriate.<sup>105</sup>

The Department of Health and Human Services (HHS) agreed that the NSDUH would not be an appropriate vehicle for a grouped answers question series. Commenting on a draft of this report, HHS said that the report should include more information on variance calculations and on

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<sup>104</sup>DHS suggested that the pilot testing be conducted within a limited geographic area.

<sup>105</sup>For example, DHS pointed to the issue of an existing survey (the American Community Survey) defining residence in a household as living there for 2 months (either completed or ongoing). DHS said this would likely exclude some unauthorized and temporary migrants and indicated that, if a new survey needs to be conducted, it should be designed to cover all foreign-born persons residing here.

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“mirror-image” estimates.<sup>106</sup> Therefore, we (1) added a footnote illustrating the variance costs of a grouped answers estimate relative to a corresponding direct estimate and (2) developed appendix VI, which gives the formula for calculating the variance of a grouped answers estimate and discusses “mirror image” estimates.

Additionally, HHS said that interviewers should more accurately communicate with respondents when presenting the three-box cards. We believe that the text of appendix V on informed consent, based on our earlier discussions with privacy experts at the Census Bureau, deals with this issue appropriately. As we state in appendix V, it would be possible to explain to respondents that “there will be *other* interviews in which *other* respondents will be asked about *some* of the Box B categories or statuses.” Finally, HHS made other, technical comments, which we incorporated in the report, as appropriate.

The Office of Management and Budget provided technical comments. In addition, our discussions with OMB prompted us to re-order some of the points in the “observations” section of the report.

The Department of Labor informed us that it had no substantive or technical comments on the draft of the report.

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We are sending copies of this report to the Director of the Census Bureau, Secretary of Homeland Security, Secretary of Health and Human Services, Secretary of Labor, Director of the Office of Management and Budget, and to others who are interested. We will also provide copies to others on request. In addition, the report will be available at no charge on GAO’s Web site at <http://www.gao.gov>.

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<sup>106</sup>A grouped answers estimate of the percentage of the foreign born who are undocumented can be defined as the percentage of subsample 1 who are in Box B, Card 1, minus the percentage of subsample 2 who are in Box A, Card 2. Alternatively, a grouped answers estimate could be defined as the percentage of subsample 2 who are in Box B, Card 2, minus the percentage of subsample 1 who are in Box A, Card 1. If both calculations are performed and two estimates are derived, they might be termed “mirror image” estimates.

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If you or your staff have any questions regarding this report, please call me at (202) 512-2700. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Other key contributors to this assignment were Judith A. Droitcour, Assistant Director, Eric M. Larson, and Penny Pickett. Statistical support was provided by Sid Schwartz, Mark Ramage, and Anna Maria Ortiz.

A handwritten signature in black ink that reads "Nancy R. Kingsbury". The signature is written in a cursive style with a large, sweeping 'N' and a long, trailing 'y'.

Nancy R. Kingsbury, Managing Director  
Applied Research and Methods



# Appendix I: Scope and Methodology

To gain insight into the acceptability of the grouped answers approach, we discussed the approach with numerous experts in immigration studies and immigration issues, including immigrant advocates. Table 5 lists the experts we met with and their organizations.

**Table 5: Experts GAO Consulted on Immigration Issues or Immigration Studies**

| Name and title   | Organization   |
|--|--|
| Steven A. Camarota, Director of Research   | Center for Immigration Studies                           |
| Robert Deasy, Director, Liaison and Information<br>Crystal Williams, Deputy Director   | American Immigration Lawyers Association <sup>a</sup>    |
| J. Traci Hong, Director of Immigration Program<br>Terry M. Ao, Director of Census and Voting Programs  | Asian American Justice Center <sup>a</sup>               |
| Guillermina Jasso, Professor of Sociology  | New York University                                      |
| Benjamin E. Johnson, Director of Policy, Immigration Policy Center   | American Immigration Law Foundation <sup>a</sup>         |
| John L. (Jack) Martin, Director, Special Projects<br>Julie Kirchner, Deputy Director of Government Relations   | Federation for American Immigration Reform               |
| Douglas S. Massey, Professor of Sociology and Public Affairs   | Princeton University                                     |
| Mary Rose Oakar, President<br>Thomas A. Albert, Director of Government Relations<br>Leila Laoudji, Deputy Director of Legal Advocacy<br>Kareem W. Shora, Director, Legal Department and Policy | American-Arab Anti-Discrimination Committee <sup>a</sup> |
| Demetrios G. Papademetriou, President  | Migration Policy Institute                               |
| Jeffrey S. Passel, Senior Research Associate   | Pew Hispanic Center                                      |
| Eric Rodriguez, Director, Policy Analysis Center<br>Michele L. Waslin, Director, Immigration Policy Research   | National Council of La Raza <sup>a</sup>                 |
| Helen Hatab Samhan, Executive Director   | Arab American Institute Foundation <sup>a</sup>          |
| James J. Zogby, President<br>Rebecca Abou-Chedid, Government Relations and Policy Analyst<br>Nidal M. Ibrahim, Executive Director  | Arab American Institute <sup>a</sup>                     |

Source: GAO.

Note: Other immigration experts we briefly consulted with by telephone or e-mail or in conversations at an immigration conference included George Borjas, Professor of Economics and Public Policy, Harvard University; Georges Lemaitre, Directorate for Employment, Labour, and Social Affairs, Organisation for Economic Co-operation and Development, Paris, France; Enrico Marcelli, Assistant Professor of Economics, University of Massachusetts at Boston; Randall J. Olson, Director, Center for Human Resource Research, The Ohio State University; and Michael S. Teitelbaum, Vice President, Alfred P. Sloan Foundation, New York.

<sup>a</sup>Organization advocating for immigrants or expressly dedicated to representing their views. We call such organizations immigrant advocates, although some may not, for example, lobby for legislation.

To ensure that we identified immigration experts from varied perspectives, we consulted Demetrios G. Papademetriou, who is among the immigration experts listed in table 5, and Michael S. Teitelbaum, Vice President of the Alfred J. Sloan Foundation. With respect to immigrant advocates, we sought to include advocates who represented (1) immigrants in general, without respect to ethnicity; (2) Hispanic immigrants, as these are the largest group of foreign-born residents; (3) Asian American immigrants, as these are also a large group; and (4) Arab American immigrants, as these have been the target of interior (that is, nonborder) enforcement efforts in recent years.

To determine what the 2004 General Social Survey (GSS) test indicated about the acceptability of grouped answers questions to foreign-born respondents and its “generally usability” in large-scale surveys, we obtained the Census Bureau’s report of its analysis of those data, and we assessed the reliability of the GSS data through a comparison of answers to interrelated questions. Then we

- submitted the Census Bureau’s report of its analysis to Dr. Alan Zaslavsky, an independent expert, for review;
- developed our own analysis of the GSS data and submitted our paper describing that analysis to the same expert;<sup>1</sup> and
- summarized the expert’s conclusions and appended his report and the Census Bureau’s report (reproduced in appendixes III and IV), as well summarizing our conclusions.<sup>2</sup>

We used these procedures to ensure independence, given that the GSS test was based on our earlier recommendation that the Census Bureau and the

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<sup>1</sup>The independent review considered the Census Bureau and GAO analyses of the GSS data in terms of (1) their overall reasonableness and thoroughness, given the general objective (describing respondents’ acceptance and understanding), (2) key points of difference (if any) between the two analyses or differences in conclusions, (3) whether the analyses raised unanswered questions that should be addressed, and (4) whether the conclusions appeared to be justified. The reviewer was also free to comment on other aspects of the analyses.

<sup>2</sup>We believe this report independently addresses respondent acceptability because we (1) focus on the results of the GSS test (rather than critiquing the Census Bureau’s work), (2) report how the method performed rather than subjectively assessing its merit, and (3) relied on an independent expert.

Department of Homeland Security (DHS) test the grouped answers approach.<sup>3</sup>

To describe additional research that might be needed, we outlined the grouped answers approach and reviewed the main conclusions of the GSS test in meetings with the immigration experts listed in table 5 and with private sector statisticians.<sup>4</sup> Additionally, we discussed the approach with various federal officials and staff at agencies responsible for fielding large-scale surveys.<sup>5</sup>

To assess the precision of indirect estimates, we addressed questions to Dr. Zaslavsky, developed illustrative tables showing hypothetical calculations under specified assumptions, and subjected those tables to review.

To identify and describe candidate surveys for piggybacking the grouped answers question series, we set minimum criteria for consideration (nationally representative, mainly or only in-person interviews, and data on at least 50,000 persons overall, including native-born and foreign-born). Then we identified surveys that met those criteria, collected documents concerning the surveys, and interviewed officials and staff at federal agencies that sponsored or conducted those surveys. We also talked with experts in immigration about additional key criteria for selecting an appropriate survey.

The scope of our work had several limitations. We did not attempt to collect new data from foreign-born respondents in a survey, focus group, or other format. We did not assess census or survey coverage of the

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<sup>3</sup>DHS contributed to the funding of the Census Bureau's contract with the National Opinion Research Center (NORC) for the insertion of a module (question series) into the GSS.

<sup>4</sup>We consulted with Alan Zaslavsky, Fritz Scheuren, and Mary Grace Kovar.

<sup>5</sup>In our earlier work, we consulted with numerous other private sector experts on immigration and statistics. For those experts, see [GAO/GGD-00-30](#), p. 29.

foreign-born or undocumented populations.<sup>6</sup> We did not assess nonresponse rates among foreign-born or undocumented persons selected for interview. We did not review alternative methods of obtaining estimates of the undocumented.

While we consulted a number of private sector experts and sought to include a range of perspectives, other experts may have other views. Finally, we do not know to what extent the broad range of persons who compose immigrant communities share the views of the immigrant advocates we spoke with.

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<sup>6</sup>In 1998, we recommended that the Commissioner of the Immigration and Naturalization Service (INS) and the Director of the Census Bureau “devise a plan of joint research for evaluating the quality of census and survey data on the foreign-born,” based on our discussion of the need to evaluate coverage and possible methods for doing so (see [GAO/GGD-98-164](#)). This recommendation is still open. In 2002, Census Bureau staff assumed that 15 to 20 percent of the undocumented were not enumerated in the 1990 census and stated the belief that coverage of this group improved in the 2000 census. (See Joseph Costanzo and others, “Evaluating Components of International Migration: The Residual Foreign-Born,” Population Division Working Paper 61, U.S. Census Bureau, Washington, D.C., June 2002, p. 22.) However, the Census Bureau has not quantitatively estimated the coverage of either the foreign-born population overall or the undocumented population.

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# Appendix II: Estimating Characteristics, Costs, and Contributions of the Undocumented Population

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## Key Characteristics Can Be Estimated

Logically, grouped answers data can be used to estimate subgroups of the undocumented population, using the following procedures:

1. isolate survey data for (a) the subsample 1 respondents who are in the desired subgroup, based on a demographic or other question asked in the survey (for example, if the survey included a question on each respondent's employment, data could be isolated for foreign-born who are employed), and (b) subsample 2 respondents in that subgroup;
2. calculate (a) the percentage of the subsample 1 subgroup respondents who are in each box of immigration status card 1 and (b) the percentage of subsample 2 subgroup respondents who are in each box of immigration status card 2; and
3. carry out the subtraction procedure (percentage in Box B, Card 1, minus percentage in Box A, Card 2), thus estimating the percentage of the subgroup who are undocumented.

The resulting percentage can be multiplied by a census count or an updated estimate of the foreign-born persons who are in the subgroup (for example, multiply the estimate of the percentage of employed foreign-born who are undocumented by the census count or updated estimate of the number of employed foreign-born).

These steps can be repeated to indirectly estimate the size of the undocumented population within various subgroups defined by activity, demographics, and other characteristics (such as those with or without health insurance) that are asked about in the survey. Without an extremely large survey, it would be difficult or impossible to derive reliable estimates for subgroups with few foreign-born persons or few undocumented persons. Ongoing surveys conducted annually have sometimes combined 2 or 3 years of data in order to provide more reliable estimates of low-prevalence groups; however, there is a loss of time-specificity.

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## Some Program Costs Can Be Estimated

Program cost data are sometimes available on an average per-person basis, and surveys sometimes ask about benefit use. In such cases, the total costs of a program associated with a certain group can be estimated. Program costs associated with the undocumented population might be estimated by either (1) multiplying the estimated numbers of undocumented persons receiving benefits by average program costs or (2) performing the following procedures:

1. Isolate survey data for all foreign-born subsample 1 respondents who said they were in Box B of Card 1 and estimate each individual respondent's program cost.<sup>1</sup> Then aggregate the individual costs to estimate the total program cost (potentially, millions or billions of dollars) associated with the population of foreign-born persons defined by the group of immigration statuses in Box B, Card 1.
2. Isolate data for all foreign-born subsample 2 respondents who said they were in Box A of Card 2 and, as above, estimate each individual respondent's program costs, aggregating these to estimate the total program costs associated with the population of foreign-born persons defined by the immigration statuses in Box A, Card 2 (again, potentially millions or billions of dollars).
3. Because the only difference between the immigration statuses in Box B, Card 1, and Box A, Card 2, is the inclusion of the undocumented status in Box B, Card 1, start with the total program cost estimate for all Box B, Card 1, respondents and subtract the corresponding cost estimate for Box A, Card 2, respondents.

The result of the subtraction procedure represents an indirect estimate of program costs associated with the undocumented population. A more precise cost estimate can be obtained by calculating an additional “mirror image” cost estimate—this time, starting with costs estimated for respondents in Box B of *Card 2* and subtracting costs associated with respondents in Box A of *Card 1*. The two “mirror image” estimates could then be averaged.

The key limitations on such procedures are sample size and the representation of key subgroups—for example, foreign-born respondents residing in small states and local areas. Thus, for example, it is possible that state-level costs associated with undocumented persons might be estimated with reasonable precision for a large state or city with many foreign-born persons and a relatively high percentage of undocumented (potentially, California or New York City) but not for many smaller states

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<sup>1</sup>Estimation of program costs associated with an individual respondent (or those in very refined subgroups) is sometimes calculated based on a combination of (1) answers to specific questions (such as whether the person is attending public school in the school district where he or she lives or how many emergency room visits he or she made) and (2) separately available information on program costs per individual (for example, the per-pupil costs of public education in specific school districts or the per-visit costs of emergency room care).

or areas, unless very large samples (or samples focused on selected areas of interest) were drawn. Further work could explore the ways that complex analyses could be conducted to help delineate costs.

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## Contributions Might Be Estimated

Contributions can be conceptualized as contributions to the economy through work or, potentially, through taxes paid. Such contributions might be estimated by combining grouped answers data with other survey questions to estimate relevant subgroups, such as employed undocumented persons. In complex analyses, these data could potentially be combined with other data to help estimate taxes paid.

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## Logically, Estimates Can Be Made of Undocumented Children

Logically, other quantitative estimates might be obtained through procedures similar to those outlined above for estimating program costs. For example, the numbers of children in various immigration statuses might be estimated by asking an adult respondent how many foreign-born children (or how many foreign-born school-age children) reside in the household and then—using the 3-box card assigned to the adult respondent—asking how many of these children are in Box A, Box B, and Box C.<sup>2</sup> We note that, thus far, testing has not asked respondents to report children’s immigration status with the grouped answers approach.

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## Other Estimates May Be Possible

If subsamples 1 and 2 are sufficiently large, it might also be possible to estimate the portion of the undocumented population represented by

- “overstays” who were legally admitted to this country for a specific authorized period of time but remained here after that period expired (without a timely application for extension of stay or change of status)<sup>3</sup> and

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<sup>2</sup>Potentially, based on the location of the responding household, state and local per-pupil school costs could be obtained. Totaling state and local school costs for foreign-born children in each box would be followed by a group-level subtraction. In this way, the costs of schooling undocumented immigrant children could be estimated—nationally and potentially for key states—without ever categorizing any child as undocumented and without ever estimating the number of undocumented children in any school district.

<sup>3</sup>See GAO, *Overstay Tracking: A Key Component of Homeland Security and a Layered Defense*, [GAO-04-82](#) (Washington, D.C.: May 21, 2004).

- currently undocumented persons who are *applicants* for legal status and are waiting for DHS to approve (or disapprove) their application.

To estimate overstays would require a separate question on whether the respondent had *entered* the country on a temporary visa.<sup>4</sup> To estimate undocumented persons with pending applications would require a separate question concerning pending applications for any form of legal status (including, for example, applications for U.S. citizenship as well as applications for legal permanent resident status and other legal statuses).

The precision of such estimates would depend on factors such as sample size, the percentages of foreign-born who came in on temporary visas or who have pending applications of some kind, and the numbers of undocumented persons within these groups.

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<sup>4</sup>See Judith A. Droitcour and Eric M. Larson, "An Innovative Technique for Asking Sensitive Questions: The Three-Card Method," *Bulletin de Méthodologie Sociologique*, 75 (July 2002): 5-23.



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# Appendix III: A Review of Census Bureau and GAO Reports on the Field Test of the Grouped Answer Method

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## A Review of Census Bureau and GAO Reports on the Field Test of the Grouped Answer Method

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July 8, 2006

A field test of the “Grouped Answer Method” (GAM) for estimating the number of undocumented immigrants was conducted by the National Opinion Research Center (NORC) in the context of the 2004 General Social Survey (GSS). A descriptive report on this test was prepared by the Bureau of the Census and a further report by the Government Accountability Office (GAO). This is a review of these two documents, focusing on what is shown by the analyses and what questions remain to be answered. (The Census Bureau report refers to the method as the “Three Card Method” (3CM), but in fact the method could be implemented with two or three different card forms.)

### Major findings

**General usability:** The test confirms the general usability of the GAM with subjects similar to the target population for its potential large-scale use, that is, foreign-born members of the general population. Out of about 218 respondents meeting eligibility criteria and who were most likely administered the cards in person (possibly including a few who had telephone interviews but responded without problems), only 9 did not respond by checking one of the 3 boxes. Of these, 3 provided information, verbal information that allowed coding of a box, and 6 declined to answer the question altogether. Furthermore, several of these raised similar difficulties with other 3-box questions on nonsensitive topics (type of house where born, mode of transportation to enter United States), suggesting that the difficulties with the question format were at least in part related to the format and not to the particular content of the answers. Thus indications were that there would not be a systematic bias due to respondents whose immigration status is more sensitive being unwilling to address the 3-box format.

**Telephone administration:** Of 232 otherwise eligible respondents, 14 were identified as telephone respondents. Of these, 10 were identified because they were followed up in tracking data after failing to provide usable information in response to the GAM item. While it is not known how many interviews were done by telephone altogether, the number is believed to be only a relatively small fraction of the entire survey. Thus, item nonresponse was largely a problem of telephone interviewing. The higher nonresponse rate for telephone interviewees was not surprising given the complexity of the response format (6 categories grouped into 3 boxes), the reliance of the item on the visual metaphor of boxes, the use of graphics to assist in remembering the categories, and the difficulty of comprehending the categories verbally and remembering the groupings while answering. In particular, the way in which the 3-box method conceals the sensitive responses would be much less obvious in a telephone interview. Unfortunately NORC was unable at the present time to tell exactly how many telephone interviews were administered altogether, so an item nonresponse rate among telephone interviews could not be calculated. (NORC plans to disclose individual data on mode of interview (telephone versus in-person) by the end of 2006, which will make possible calculation of item response rates by response mode, mail versus telephone.) However, it seems likely for

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the reasons mentioned, as well as from the concentration of problems in telephone interviews, that the success rate of the method for telephone respondents would be much lower than for in-person respondents. In future implementations of this method it would be crucial to address this issue, either by (1) attaching the question to a survey that makes relatively little use of telephone interviews, or by (2) sending a card to the respondent in advance of the interview that could be referred to for visual cues for the item. If these solutions were not practical, then it might be possible to develop a verbal form of the item adapted to telephone use, but this would require some laboratory testing.

**Limitations of this study**

**Single card form:** An important limitation of the NORC field test is that only one card form was tested. This was very understandable as a design limitation in the test since implementation of a multiform protocol adds to the complexity of implementation of a study and might well be judged to be excessively burdensome for a supplementary item. Nonetheless this means that this test cannot answer questions about differential rates of nonresponse or procedural difficulties in responding to the items. It is also likely that even with multiple forms, this test would have been underpowered to answer more refined questions about differential rates of nonresponse. With only 9 nontelephone item nonrespondents, a split sample comparison would have had power to detect only the most extreme differences in nonresponse rate. However, it is reasonable to generalize about the comprehensibility of the items from this test, even with a single form, since the modification of rearranging the options in boxes would not be expected to affect the usability of the question.

**GSS coverage limitations:** GSS coverage had some limitations that made the test unrepresentative of the target population of foreign-born. Compared to rates estimated from the Current Population Survey, the foreign-born are undercovered by the GSS (8.4% in the GSS versus 14.5% in the CPS), with particular undercoverage of recent immigrants and those from Latin America. The CPS itself likely undercovers recent immigrants, particularly the undocumented, so the undercoverage problem might be even greater than revealed by comparison to the CPS. Of course, by the same token, the CPS and other existing surveys are likely to be affected by undercoverage to some extent. Special methods might be required to cover concentrations of immigrant population that include high rates of undocumented immigrants. The main concern in relation to the conclusions of the field test is whether the performance of the items, that is their acceptability and comprehensibility, would be different either in these special populations or with special method used to target these populations. Within the GSS test, the problem cases were not notably concentrated among recent immigrants or those with more limited English proficiency. This suggests that the methods of the GAM did not rely on highly culturally specific references or potentially confusing language. However, within a community that is largely made up of undocumented immigrants, even a "mixed" box might be regarded as more identifying and therefore sensitive than in a more heterogeneous community. For example in a migrant labor camp in which there are few citizens, identifying oneself as "citizen or undocumented immigrant" (as opposed to a noncitizen with legal status) might be regarded as tantamount to admitting illegal status, while this would not be the case in a general population.

**English only:** Another concern is the use of English only in the GSS. Many of the issues here are similar to those identified in relation to undercoverage of recent immigrants in the preceding paragraph. Indeed the restriction to English-speaking respondents might explain some of the

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undercoverage of recent immigrants noted above. The additional issue raised specifically by English is whether the instructions are clear in other languages. It might be expected, however, that because the format of the item is largely graphical, it would not be highly sensitive to translation.

**Questions for further study**

***Equivalence of acceptability of the alternative response cards:*** As noted above, only one form of the response card was tested in the GSS implementation. Future studies should use all (two or three) alternative versions of the card, to evaluate whether item nonresponse is equivalent for all of the forms, indicating comparable acceptability of the forms.

***Effects of nonresponse and incorrect responses on estimates:*** The effect of problems of nonresponse and noncomprehension on the quality of estimates from the GAM depends critically on the exact form they take, not just on the percentage of responses that are missing or invalid. If the group that does not respond to the item is the same regardless of which card form is used, then the effect of nonresponse can be understood as simple undercoverage of that nonrespondent group. Thus within the respondents the analysis proceeds as if with complete data and the unknowns only concern the characteristics of the nonrespondents, a group whose size is known. The effects of nonresponse can be bounded by assuming alternatively that none or all of the nonrespondents are undocumented immigrants. These extremes might be implausible, especially if qualitative information about the nonrespondents (like that collected in the GSS test, or potentially relationships of nonresponse to characteristics from larger implementations) suggests that the nonrespondents do not generally look like undocumented immigrants. Such an argument could be used to develop plausible tighter bounds on the fraction of undocumented immigrants overall. A simple assumption would be that the nonrespondents have a similar fraction of undocumented immigrants to respondents, which would allow use of the respondents to make estimates for the entire population.

If nonresponse depends on which card is presented, the analysis of the implications is somewhat more complex, since not only the size of the nonrespondent group but also its distribution across categories could depend on the card. Note that the latter effect would not be evident if nonresponse rates overall are the same across cards. For a simple example, suppose that 10% of citizens would decline to respond to the card that groups citizens with undocumented immigrants, but would respond when citizens are ungrouped. Suppose that legally resident noncitizens behave similarly. Then the boxes including undocumented immigrants would be reduced by 10% with either card, reducing the estimate of undocumented immigrants by the same amount even if all the undocumented immigrants responded accurately. Many other such scenarios could be constructed. Thus it would be useful to study in larger samples the factors associated with refusal to respond, particularly to investigate whether the reasons given by the respondents seem to be associated with the grouping on the card. The evidence from the GSS test, however, do not point in the direction of complex nonresponse patterns like those hypothesized in this paragraph.

Finally, similar issues apply with respect to response errors (responding but checking the wrong box). A number of possibilities must be considered. If a subgroup of legal immigrants systematically report the wrong immigration status (for example legal immigrants authorized to work in the United States who check the box for citizens) but this is unaffected by the grouping of categories, this will have no effect on the estimates for the undocumented. This might be the

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case, for example, if some of these respondents are misinformed about their own status or confused about the meaning of the categories. However, if they systematically *avoid* the box for the undocumented (checking that for citizens or legal noncitizen immigrants as the case may be), this will tend toward underestimation of the undocumented. If some undocumented immigrants systematically misreport their status, this will also create biases in the estimates, especially if they systematically avoid the box containing undocumented status. The GSS study does not address this issue.

***Effects of mode and mode alternatives:*** The GSS results support the view that the multiple-card items are usable with in-person interviews but more problematical with telephone interviews. Some questions of interest include the following:

- (1) Can the problems with telephone surveys be remedied by sending a response card before the interview? What would the effect of such a card be on rates of difficulties in telephone interviews?
- (2) Is there potential for use of mail as a response mode for GAM surveys? A mail survey would benefit from the same graphical presentation as with the card used in person, but there would be no opportunity to explain the question further to respondents who were confused by the format. However, if the method were workable in a mail survey, it would open up many more potential applications for the method.
- (3) Computer-aided self-interview (CASI) allows a respondent to provide answers directly to the computer, without letting them be seen by the interviewer. CASI has been used to reduce the effect of sensitive items by giving the respondent a greater sense of privacy. Might CASI have a similar effect with respect to items about immigration status?

***Special populations: non-English speaking (linguistically isolated), low literacy, high density of (undocumented) immigrants:*** Tests should be conducted to evaluate the performance of the items in populations with these characteristics, each of which was poorly or not at all represented in the GSS and might have an effect on ability or willingness to complete the item.

***Screening questions:*** The description of possible citizenship questions in the GAO report (page 17-18) suggests the possibility of doing some further screening for citizenship to improve the precision of the estimates for the undocumented. To explain this concept, suppose that a 3-box item question is asked in which undocumented immigrant status appears in a box combined with citizens, and in the alternative card form the citizens appear alone. The estimate of the undocumented is obtained by subtracting the percentage in the latter box from the percentage in the former (based on two distinct halves of the split sample). If there were no other questions about citizenship, then the estimate would be subject to large variance because it would be based on the subtracting two large percentages, each subject to sampling variability, to obtain a small difference. At the other extreme, if there were another item or set of items on the survey that asked about citizenship, then all of the citizens could be identified directly and in the first card form, undocumented status could be deduced for each respondent. In that case the second form could be dispensed with, and the precision of estimates using the first form would be the same as with a direct question on status. (This configuration of items is described purely to illustrate a statistical principle. It must be emphasized that a questionnaire set up in this way would be contrary to the methodological and ethical principles underlying use of the GAM. It would be unethically deceptive since the implicit promise that undocumented status is not revealed for individuals would be violated. It would also be methodologically dubious since at least some

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respondents would likely sense the revealing nature of the combination of items.) The method used in the GSS excludes the native-born from answering the GAM item, thereby limiting the population for this item to the foreign-born. This represents a beneficial compromise between the two extreme options described above because it makes the “citizen” group smaller and therefore reduces error. Note that although this exclusion was used as a screener in the GSS (skipping out the native-born from the 3-box item) to shorten average survey length, this was not necessary statistically since the native-born could have been excluded afterwards. This suggests, however, that there might be other ways of asking additional immigration questions that would not fully identify the undocumented but would still assist in cutting down the number of respondents sharing a box with the undocumented. The concerns in doing this would be the ethical (confidentiality) concern and the possibility that including too many items on status would interfere with respondent cooperation, so any changes in this direction should be considered with the utmost caution to make sure that they are improvements on the current proposal of using a nativity question as a screener.

**Summary of questions for future field tests:** To summarize points appearing above, the following issues should be addressed in future field tests:

- (a) Equivalent acceptability of all forms of the response card,
- (b) Usability with special populations including those with low literacy, the linguistically isolated, and concentrated immigrant populations,
- (c) Methods that avoid telephone interviews, or reduce bias and nonresponse due to use of the telephone,
- (d) Use of followup questions to improve the accuracy of box choices.

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# Appendix IV: A Brief Examination of Responses Observed while Testing an Indirect Method for Obtaining Sensitive Information

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## **A Brief Examination of Responses Observed While Testing an Indirect Method for Obtaining Sensitive Information**

*March 2, 2006*

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**The Three-Card Method**

Developed by the U.S. Government Accountability Office (GAO) in the late 1990s, the three-card method (3CM) is designed to obtain accurate estimates of the unauthorized foreign-born population in the United States while accomplishing the following tasks:

- Reducing the psychological stress that stems from asking a question about such a sensitive topic as illegal immigration and
- Eliminating the possibility that any one respondent could be identified as an illegal immigrant.<sup>1</sup>

This is accomplished by drawing three random sub-samples from the foreign-born population and administering to each sub-sample a different variation of the migrant status question (each in the form of a card that is shown to respondents, hence the name “three-card method”). For this question, foreign-born respondents are asked to indicate one of three migrant-status categories to which each of them belongs:

- A specific status, such as “lawful permanent resident,”
- A collection of four other statuses, including “unauthorized migrant,” or
- A “catch-all” group for people whose statuses do not fit into the other two categories.

For each question variant, the status in the first group is swapped with one of the statuses in the second group, so that each sub-sample has a different configuration of categories (in no instance is the unauthorized migrant status listed in the first group). When the data have been collected, the various migrant status estimates from all three sub-samples are combined to obtain an indirect estimate of undocumented migrants in the entire sample.

In a 1998 “recommendations report,” GAO requested that the U.S. Census Bureau conduct a test of the 3CM in a field environment.<sup>2</sup> To perform this test, the Census Bureau contracted with the National Opinion Research Center (NORC) of the University of Chicago to add a set of 3CM-oriented questions, including one designed to ask about migrant status, to their 2004 General Social Survey (GSS).

**About NORC and the GSS**

Established in 1941, NORC specializes in objective public opinion research in many areas of public policy interest, including health, labor, and education. Many survey projects administered by NORC provide a wealth of social indicators based on the attitudes and opinions of the public, while other studies focus on program evaluation, social experiments, needs assessments, and epidemiological case control designs. NORC has also proven itself to be a pioneer in the growing field of survey methodology, pushing forward improvements in data collection through electronic means and emphasizing the importance and utility of objective public opinion research.

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<sup>1</sup>The foreign-born population includes anyone who was not a U.S. citizen or a U.S. national at birth. All others – including those who were born abroad or at sea of at least one parent who was a U.S. citizen – belong to the native population.

<sup>2</sup>U.S. Government Accountability Office. Immigration Statistics: Information Gaps, Quality Issues Limit Utility of Federal Data to Policymakers. (GAO/GGD-98-164). Washington, D.C.: GAO, July 1998.

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Prominent among survey products administered by NORC is the GSS, a biennial (since 1994, nearly annual from 1972-1993) survey that collects data about a number of demographic and attitudinal variables from a national area probability sample of adult respondents. In addition to the core demographic and attitudinal variables, the GSS also implements a series of special interest topical question modules on a rotational basis and, from time to time, experiments based on question wording, context effects, validity/reliability assessments, and other methodological issues. Because of the wide scope of topical content and the focus on objective data collection, the GSS has become a popular and valuable resource for academic researchers, policy makers, and the mass media alike.

**Methodology**

The 3CM, as originally developed by GAO, did not conform to the survey design specifications of the GSS. Therefore, NORC was unable to administer three variations of the migrant status question to each of three separate samples. Instead, NORC used a modified version of the 3CM, wherein only one version of the migrant status question (in which Box A is for those who are lawful permanent residents) was administered within the entire GSS sample. Though this modification limited our ability to analyze the full 3CM and draw conclusions, we can use the 3CM data from the GSS to test how respondents react to the migrant status question and how well they understand the question format.

NORC did not insert the 3CM questions directly into the core survey instrument, but instead appended them to the survey in the form of a question module. This module was not given to all respondents; rather, it was administered only to those who were born outside the United States (as determined by their responses to a question in the core instrument). Thus, while this filtering method was successful in exposing all foreign-born respondents to the 3CM question module, it also allowed born-abroad U.S. natives to answer the module. However, the focus of this analysis is solely on the foreign born.

The 3CM question module in the 2004 GSS consisted of three 3CM-designed questions to be administered to the respondent and two standard questions asked of the field representative (FR). The first two 3CM questions are primer questions that served to familiarize the respondent with the question format, the visual aids, and expected response behavior (specifically, indicating to which of the three groups the respondent belongs). The third question, which asks about the respondent's migrant status, is the focal point of the question module. When the respondent has completed these three questions, the FR was then asked to evaluate whether the respondent appeared to understand the 3CM question format and whether the respondent objected or hesitated to answer the migrant status question.



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**Analysis**

*Demographic Characteristics*

The total respondent count – both native and foreign born – of the 2004 GSS was 2,812 people;<sup>3</sup> of the total respondent pool, 237 people (8.4 percent) were foreign born.<sup>4</sup> The distributions of the foreign-born-in-sample and the total sample from the 2004 GSS are shown in Table 1 across six demographic variables: sex, age, Hispanic origin, marital status, educational attainment, and world region of birth.<sup>5</sup> Additionally, it would be worthwhile to know how these distributions compare to national estimates produced by the Census Bureau. We can obtain this information by using estimates provided by the 2004 Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS). For example, in 2004, the U.S. adult (aged 18 years and over) foreign-born population<sup>6</sup> of 31.1 million people represented 14.5 percent of the total adult population according to the 2004 ASEC, a share that is significantly larger than the 8.4 percent given by the GSS sample.<sup>7</sup> The distributions of the foreign-born population and the total population from the 2004 ASEC across the same demographic variables are also shown in Table 1.

Comparing the GSS and ASEC distributions revealed some interesting information about the composition of the GSS sample.<sup>8</sup> For example, the foreign-born and total distributions by age and the foreign-born distributions by sex were not statistically different between the two data sources; however, the total GSS sample had a larger proportion of women than that represented by the ASEC estimates. Also, foreign-born distributions of world region of birth showed that the GSS sample has less representation (relative to the

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<sup>3</sup>This is the number of completed cases and does not include refusals, break-offs, and other forms of non-response. According to NORC, the 2004 GSS had a non-response rate of 29.6 percent. For more details, see Davis, James Allan; Smith, Tom W.; and Marsden, Peter V. *General Social Surveys, 1972-2004: Cumulative Codebook*. Chicago: National Opinion Research Center, 2005. (National Data Program for the Social Sciences Series, no. 18).

<sup>4</sup>The GSS does not have a variable that directly identifies respondents as being U.S. natives or foreign born. For this review, the foreign born were designated as those who reported being born outside the United States, were not born in Puerto Rico, and reported neither parent as being born in the United States.

<sup>5</sup>The GSS data cited in this report are unweighted counts and should not be construed as population estimates.

<sup>6</sup>The population universe of the ASEC is limited to the civilian non-institutionalized population in the United States, though some members of the armed forces may be included if they live with family members in off-post housing; for brevity, this universe will be denoted in this report as the total population. Likewise, the civilian non-institutionalized foreign-born population as measured by ASEC will simply be referred to as the foreign-born population.

<sup>7</sup>All comparison tests presented in this report have taken sampling error into account and are significant at the 90-percent confidence level, unless otherwise stated.

<sup>8</sup>Comparisons by marital status, educational attainment, and Hispanic origin are not described in the text because the population universes for the GSS data and the publicly available ASEC data lack comparability. See Table 1 for further details.

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point estimates from the ASEC distributions) of those born in Latin America and more representation of those born in Europe.<sup>9</sup>

*Responses to the Migrant Status Question*

Among the 237 foreign-born respondents in the GSS sample, 87 people (36.7 percent) indicated belonging to Box A (lawful permanent resident), 128 people (54.0 percent) indicated belonging to Box B (U.S. citizen, student/work/tourist visa, undocumented, or refugee/asylee), 1 person (0.4 percent) indicated belonging to Box C (other category not in Boxes A or B), 4 people (1.7 percent) gave a response other than Box A, B, or C, and 17 people (7.2 percent) were non-respondents who either refused to answer the question or gave a “don’t know” response. That roughly 90 percent of foreign-born respondents gave preferred responses (Boxes A, B, or C) is an indication that most foreign born who are asked about their migrant status in this format would understand the question, know the answer, and answer willingly.

*Field Representative Responses to the “Understand” and “Objection” Questions*

The field representatives reported that 190 of the foreign-born respondents (80.5 percent) appeared to understand the 3CM question format, whereas 22 respondents (9.2 percent) appeared not to understand the format. Also, the field representatives for another 14 respondents (5.9 percent) gave an “other” response to this question, and 10 more field representatives (4.2 percent) were non-respondents (of which one field representative response was missing). It appears that there was some confusion among the field representatives in how to answer this question, since all responses should have been “yes” or “no.” The crossed data between the migrant status question and the understanding question appears to support this statement; for example, of the 14 respondents whose field representatives assigned an “other” response to the understanding question, 12 gave preferred responses to the migrant status question. Depending on whether the “other,” “refused,” and “don’t know” responses are assigned as “yes” or “no,” the results indicate that between 10 and 20 percent of the respondents did not appear to understand the 3CM question format.

The field representatives also reported that 216 of the foreign-born respondents (91.5 percent) did not raise an objection, hesitate, or remain silent when asked the migrant status question. Only 5 respondents (2.1 percent) raised a verbal objection and 4 respondents (1.7 percent) either hesitated to answer or remained silent. As with the “understanding” question, there appeared to be a slight issue with field representatives misunderstanding the “objection” question, as 2 respondents were assigned a response of “other” and 9 were designated as non-respondents (once again, one field representative response was missing). Interestingly, 3 respondents who objected to the migrant status question actually gave a preferred response, as did 3 respondents who hesitated to answer (obviously they did not remain silent). Also, 3 people who answered the question immediately gave an “other” response, and 3 more either refused to answer or replied with “don’t know.” However, the overwhelming majority of foreign-born respondents gave a

<sup>9</sup>The representation of those born in either Asia or Other Regions was not significantly different between the GSS sample and the ASEC estimates. “Other Regions” includes Northern America, Africa, and Oceania.

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Responses Observed while Testing an Indirect  
Method for Obtaining Sensitive Information**

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preferred response (Boxes A, B, or C) to the migrant status question without objection, hesitation, or silence.

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**Appendix IV: A Brief Examination of  
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*Response Patterns to the Migrant Status Question by Characteristic*

Twenty-one foreign-born respondents (8.9 percent) in the survey did not give a preferred answer to the migrant status question; that is, they either gave an “other” response (4 people, or 1.7 percent), a “don’t know” response (11 people, or 4.7 percent), or a refusal to answer the question (6 people, or 2.5 percent). It is important to know whether these non-preferred responses to the 3CM-based migrant status question are more likely to occur for certain demographic cohorts among the foreign-born population. Therefore, we examined the distribution of non-preferred responses to the migrant status question across dimensions of age, sex, Hispanic origin, marital status, educational attainment, and world region of birth. Keeping in mind that there are not enough cases under consideration to establish that non-preferred responses are influenced by one or more characteristics, we can study these data for clues to patterns that might exist, had we a larger response pool with which to work.

Of the six demographic variables being studied, only age and sex appeared to show disproportionate distributions of non-preferred responses. Specifically, the “don’t know” responses were more prevalent among the older foreign born (aged 45 years and over; 7 people) than the younger foreign born (18 to 44 years old; 4 people), even though the younger group outnumbered the older group by a strong margin. Also, refusals were more prevalent among foreign-born females (5 people) than males (1 person), even though the foreign-born-in-sample were about equally distributed by sex. Outside of these two instances, the data suggested no relationship between each of the four remaining demographic variables and the patterns of non-preferred responses to the migrant status question. However, the small number of foreign-born-in-sample – and the subsequently smaller number of respondents with non-preferred responses – makes it difficult to determine whether these trends are particularly pronounced.

*Respondent Comments Regarding the 3CM*

While administering the 3CM question module, field representatives were instructed to collect verbal comments from the respondents regarding each question and to submit their own comments for the two representative-directed questions. They were also instructed to enter respondents’ answers when they did not conform to the 3CM format, thus comprising the category of responses known as “other.” We shifted away from quantitative analysis to examine this qualitative data in an attempt to learn more about how respondents and field representatives perceive and respond to the 3CM questions. One piece of information gleaned from this analysis is that 25 respondents (10.5 percent) tended not to simply state to which migrant status group they belonged, but to state what their status was in both implicit (“been in country since age 6”) and explicit (“I have a visa”) terms. This number may actually be larger, since some field representatives might not have entered the respondents’ comments. However, this raises the issue of how field representatives handled responses such as these. In some cases, when a respondent made such a comment, the field representative entered a response of “other,” but in other cases, the response was set to one of the boxes. This pattern of inconsistent coding suggests that field representatives may have used their own judgment to set responses according to respondents’ actual answers.



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**Appendix IV: A Brief Examination of Responses Observed while Testing an Indirect Method for Obtaining Sensitive Information**

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Another useful piece of information is that the 3CM question format became problematic when attempts were made to administer the survey over a telephone. As previously stated, the GSS is conducted in a face-to-face environment in most cases, but in the event that a sampled person is not available when the field representative comes to the home, a follow-up attempt is made via telephone. However, since the 3CM is designed for use in a face-to-face setting, both respondents and field representative had trouble with the question module over the phone. This is evidenced in the comment fields, wherein field representatives stated in two cases that they were unable to do the questions over the phone. Because we cannot assume that every field representative made a note regarding difficulty with administering the module over the phone, we don't know how many follow-up interviews this problem affected.

**Conclusion**

In compliance with the GAO recommendations, the U.S. Census Bureau was able to conduct a field test of the three-card method (via NORC and the GSS) and analyze the results. In summary, we found that nine out of ten foreign-born respondents to the migrant status question gave format-appropriate answers (Box A, B, or C), eight out of ten appeared to understand the format of the 3CM questions, and nine out of ten did not raise an objection, remain silent, or hesitate to answer when asked the migrant status question. Furthermore, the non-preferred responses to the migrant status question ("other," "don't know," or "refusal") did not appear to be strongly related with any of the six demographic variables under consideration. We also found a number of operational issues with the data, such as the tendency of some respondents to indicate their specific migrant status despite instructions not to do so, the inconsistent coding of proper responses among field representatives when given an answer other than a "box" response, and the difficulty in administering 3CM-designed questions in a situation other than a face-to-face environment.

**Appendix IV: A Brief Examination of Responses Observed while Testing an Indirect Method for Obtaining Sensitive Information**

**Table 1: Comparison of 2004 GSS Sample and 2004 CPS ASEC Estimates by Nativity and Selected Characteristics (in percent)<sup>1</sup>**

| Characteristics                        | 2004 GSS               |              | 2004 CPS ASEC <sup>2</sup> |                  |
|--|------------------------|--------------|----------------------------|------------------|
|  | Foreign Born in Sample | Total Sample | Foreign-Born Population    | Total Population |
| Sex <sup>3</sup>                       |                        |              |                            |                  |
| <i>Male</i>                            | 48.9                   | 45.5         | 50.3                       | 48.3             |
| <i>Female</i>                          | 51.1                   | 54.5         | 49.7                       | 51.7             |
| Age <sup>3</sup>                       |                        |              |                            |                  |
| <i>18 to 44 years</i>                  | 63.6                   | 50.2         | 60.9                       | 51.5             |
| <i>45 years and over</i>               | 36.4                   | 49.8         | 39.1                       | 48.5             |
| Hispanic Origin <sup>4</sup>           |                        |              |                            |                  |
| <i>Hispanic (of any race)</i>          | 27.4                   | 8.7          | 45.2                       | 12.4             |
| <i>Not Hispanic</i>                    | 72.6                   | 91.3         | 54.8                       | 87.6             |
| Marital Status <sup>5</sup>            |                        |              |                            |                  |
| <i>Currently or previously married</i> | 80.2                   | 78.0         | 74.4                       | 71.0             |
| <i>Never married</i>                   | 19.8                   | 22.0         | 25.6                       | 29.0             |
| Educational Attainment <sup>6</sup>    |                        |              |                            |                  |
| <i>At least high school diploma</i>    | 53.4                   | 87.0         | 67.2                       | 85.6             |
| <i>At least bachelor's degree</i>      | 39.8                   | 28.0         | 27.3                       | 26.3             |
| World Region of Birth <sup>3,7</sup>   |                        |              |                            |                  |
| <i>Europe</i>                          | 23.8                   | X            | 13.9                       | X                |
| <i>Asia</i>                            | 28.5                   | X            | 25.8                       | X                |
| <i>Latin America</i>                   | 38.3                   | X            | 52.9                       | X                |
| <i>Other Regions<sup>8</sup></i>       | 9.3                    | X            | 7.4                        | X                |
| <i>Africa</i>                          | 7.2                    | X            | NA                         | X                |
| <i>Australia</i>                       | 0.4                    | X            | NA                         | X                |
| <i>Canada</i>                          | 1.7                    | X            | NA                         | X                |

Sources: National Opinion Research Center (2004 GSS) and U.S. Census Bureau (2004 CPS ASEC)

"X" indicates "not applicable"; "NA" indicates "not available"; Some distributions may not add to 100.0% due to rounding.

<sup>1</sup> - The GSS data cited in this table are based on unweighted counts and should not be construed as population estimates.

<sup>2</sup> - The population universe of the CPS is restricted to the civilian non-institutionalized population in the United States, though some members of the armed forces may be included if they live with family members in off-post housing. For brevity, this report will refer to this population as the total population.

<sup>3</sup> - The ASEC-based foreign-born and total population estimates for age, sex, and world region of birth are for the adult (18 years or older) population, in order to be more comparable with the adult-only GSS sample.

<sup>4</sup> - The ASEC-based total population estimates regarding Hispanic origin are for the adult population, while the foreign-born estimates regarding Hispanic origin are for those aged 25 years or older. Since most of the Hispanic foreign born were born in Latin America, and because most of the foreign-born aged 18 to 24 years were born in Latin America (66.0 percent, based on 2004 CPS ASEC data), the share of Hispanic foreign-born adults in the U.S. would likely be more than the share of Hispanic foreign born aged 25 years or older.

<sup>5</sup> - The ASEC-based foreign-born and total population estimates regarding marital status are for those who are aged 15 years or older. Since relatively few people under the age of 18 tend to get married, the share of currently or previously married people aged 18 and older among the foreign-born and total populations would likely be greater than the foreign-born and total population shares of currently or previously married people aged 15 and over, and the corresponding never married shares would likely be lower.

<sup>6</sup> - The ASEC-based foreign-born population estimates for educational attainment are based on those who are aged 25 years or older, while the total population estimates are based on those who are aged 18 years or older. Since those aged 18 to 24 years are less likely than older people in the total population to have attained either at least a high school diploma (77.9 percent and 85.2 percent, respectively) or at least a bachelor's degree (8.4 percent and 27.7 percent, respectively), the shares of adult foreign born who attained at least a high school diploma or at least a bachelor's degree would likely be smaller than those shares shown for the foreign born aged 25 years or older, assuming that educational attainment trends for the total population aged 18 and 24 years can be transferred to the foreign-born population of the same age group.

<sup>7</sup> - Because the focus of this report is upon the foreign-born population, we chose to examine the world regions of birth only for the foreign born.

<sup>8</sup> - "Other Regions" includes Northern America, Africa, and Oceania.

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# Appendix V: The Issue of Informed Consent

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Appropriately informing each respondent about what information he or she is being asked to provide is a key issue. On one hand, the grouped answers approach logically conveys to each respondent exactly what he or she is being asked to reveal about himself or herself; no one we spoke with suggested otherwise. On the other hand, the grouped answers question series does not indicate that the respondent is being asked to participate in an effort that will result in estimates of *all* immigration statuses. Therefore, a statement is needed to convey this information.

Officials and staff at the National Center for Health Statistics (NCHS) were particularly concerned about this issue and believed that failing to adequately address informed consent issues could be considered unethical.<sup>1</sup>

Privacy protection specialists at the Census Bureau said that

- An introductory statement before the first immigration-related question might be phrased, “The next questions are geared to helping us know more about immigration and the role that it plays in American life.”
- When each respondent is shown the 3-box training cards, it would be possible to explain to him or her that—while the survey does not ask, and does not want to know, the specifics of which Box B category applies to him or her—there will be *other* interviews in which *other* respondents will be asked about *some* of the Box B categories or statuses.<sup>2</sup>
- Just before showing each respondent the immigration status card, it should be stated—and, in fact, interviewers stated in the test with Hispanic farmworkers—that “Using the boxes allows us to obtain the information we need, without asking you to give us information that you might not want to.” Further: “Because we’re using the boxes, we WON’T ‘zero in’ on anything somebody might not want to tell us.”<sup>3</sup>

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<sup>1</sup>None of the immigration experts we interviewed raised this issue, however.

<sup>2</sup>Thus far, testing has included only one immigration status card, so test interviewers have not told respondents that other respondents will be providing information on some of the Box B statuses.

<sup>3</sup>See [GAO/GGD-00-30](#).

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- It may also be possible to explain that the study's goal is to allow researchers to broadly estimate all categories or statuses on the card for the population of immigrants—but to indicate that this will be done *without ever* asking questions that “zero in” on something that some respondents might not want to disclose in an interview.
  - Neither the estimation method (that is, the two cards) nor the specific policy relevance of immigration-status estimates would have to be described to all respondents. However, interviewer statements should be provided for responding to respondents who have doubts or questions.



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# Appendix VI: A Note on Variances and “Mirror Image” Estimates

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The statistical expression and variance of a grouped answers estimate is as follows, with the starting point being the percentage or proportion of subsample 1 who are in Box B, Card 1, and the procedure being to subtract from this the proportion of subsample 2 who are in Box A, Card 2 (with cards and boxes as defined as in figure 3):<sup>1</sup>

Grouped answers estimate =  $p_1 - p_2$ .

where

$p_1$  = the proportion of subsample 1 in Box B, Card 1

$p_2$  = the proportion of subsample 2 in Box A, Card 2

Variance ( $p_1 - p_2$ ) =  $[(p_1 q_1 / n_1) + (p_2 q_2 / n_2)]$

where

$q_1 = 1 - p_1$  = the proportion of subsample 1 not in Box B, Card 1

$q_2 = 1 - p_2$  = the proportion of subsample 2 not in Box A, Card 2

$n_1$  and  $n_2$  = numbers of respondents in subsamples 1 and 2, respectively.

The immigration status cards in figure 3 are designed so that Boxes A and B include all major immigration statuses. This design ensures that, on each card, the Box B categories apply to the largest possible number of legally present respondents. In designing the cards this way, we reasoned that this should reduce the question threat associated with choosing Box B.

As a result, few respondents are expected to choose Box C (“some other category not in Box A or Box B”). For example, in the 2004 GSS test, only one foreign-born respondent of more than 200 chose Box C. Therefore, we believe that for purposes of illustrative variance calculations, it is reasonable to assume that no one chooses Box C. Under this assumption, the two mirror-image estimates of the percentage of the foreign-born who are undocumented would *necessarily* be exactly the same, as explained below.

Assuming that no respondent chooses Box C, then

$q_1 = 1 - p_1$  = the proportion of subsample 1 in Box A, Card 1

$q_2 = 1 - p_2$  = the proportion of subsample 2 in Box B, Card 2

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<sup>1</sup>For simplicity, the discussion in this appendix assumes simple random sampling, for both the main sample and the selection of the two subsamples.

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The alternative, mirror-image estimate can then be defined as follows:

$$\text{Mirror-image estimate} = q_2 - q_1$$

As indicated above,  $q_1$  and  $q_2$  are defined in terms of  $p_1$  and  $p_2$ . Using algebraic substitution, we have:

$$p_1 - p_2 = (1 - q_1) - (1 - q_2) = 1 - 1 - q_1 + q_2 = q_2 - q_1$$

In other words, under the assumption that no one chooses Box C, the mirror-image estimates of the percentage undocumented are, by definition, identical. Thus, no precision gain follows from combining them.<sup>2</sup> No additional information is provided by a second, mirror-image estimate.

In contrast, quantitative indirect estimates are based on a *combination* of (1) grouped answers data and (2) additional, separate quantitative data or estimates (for example, per-person estimates of emergency-visit costs based on respondent reports of number of emergency room visits in the past year and other information from hospitals on per-visit costs). If the quantitative data are tallied or totaled for individuals in each box of each card, the result is *four* different figures, none of which can be derived from the others. (There are different respondents in each box, and each would have separately reported how many emergency room visits, for example, he or she made in the past year.) Thus, for quantitative estimates of this type, calculating two independent mirror-image estimates, and averaging them, may yield a more precise result.

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<sup>2</sup>Logically, if very few persons choose Box C, the precision gains from combining the mirror-image estimates (which would necessarily be very similar to each other) would be very small.

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# Appendix VII: Comments from the Department of Commerce

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**THE DEPUTY SECRETARY OF COMMERCE**  
Washington, D.C. 20230

September 19, 2006

Ms. Judith A. Droitcour  
Assistant Director  
Applied Research and Methods  
United States Government Accountability Office  
Washington, DC 20548-0001

Dear Ms. Droitcour:

The U.S. Department of Commerce appreciates the opportunity to comment on the United States Government Accountability Office's draft report entitled *Estimating the Undocumented Population: A "Grouped Answers" Approach to Surveying Foreign-Born Respondents* (GAO-06-775). I enclose the Department's comments on this report.

Sincerely,

A handwritten signature in black ink, appearing to read "David A. Sampson", with a long, sweeping flourish extending to the right.

David A. Sampson

Enclosure

U.S. Department of Commerce  
Comments on the  
United States Government Accountability Office  
Draft Report Entitled *Estimating the Undocumented Population: A “Grouped Answers”  
Approach to Surveying Foreign-Born Respondents* (GAO-06-775)  
September 2006

The U.S. Census Bureau generally agrees with the observations in this report but has some comments and clarifications about various statements.

Regarding footnote 1 on page 1:

**GAO Report:** “Our previous reports and those of other government agencies have sometimes used the terms *undocumented*, *illegal aliens*, *illegal immigrants*, *unauthorized immigrants*, and *not legally present*. We use *undocumented* here, because this report concerns a technique for surveying the foreign-born, an ongoing federal survey uses this term as a response category when asking about legal status, and foreign-born respondents appear to understand the term. We define undocumented as foreign-born persons who are illegally present in the United States. Foreign-born persons (i.e., those not born a U.S. citizen) were born outside the United States to parents who were both not U.S. citizens at the time of the birth.”

**Census Bureau Response:** Although the Census Bureau has used the term “undocumented,” we generally prefer the term “unauthorized” rather than “undocumented.” When legal statuses associated with the “unauthorized” category are not separately estimable or are demographically not meaningful, we use the term “residual” to describe this group.

Regarding footnote 2 on page 1:

**GAO Report:** “Most recently, the Census Bureau has stated that among its “enhancement priorities” to “improve estimates of net international migration” are efforts to estimate “international migrants by migrant status (legal migrants, temporary migrants, quasi-legal migrants, unauthorized migrants, and emigrants)” with the overall purpose being to produce annual estimates of the U.S. population. (“The U.S. Census Bureau’s Intercensal Population Estimates and Projections Program: Basic Underlying Principles,” paper distributed by the Bureau of the Census at its conference on “Population Estimates: Meeting User Needs,” Embassy Suites, Alexandria, Virginia, July 19, 2006.)”

**Census Bureau Response:** The Census Bureau is researching methods of estimating the size of the foreign-born population by legal status.

Regarding footnote 51 on page 29:

**GAO Report:** “We note that these two examples involve agencies that are apparently viewed neutrally by the immigrant community. Agencies that are negatively viewed by at least some are the Department of Homeland Security (DHS) and Census.”

**Census Bureau Response:** We are not aware of empirical evidence that the Census Bureau is viewed negatively by any specific groups.

Our specific comments about the report are as follows:

**Pages 6 to 15:** The description of the “grouped response” method is accurate, including the discussion of strengths and limitations.

**Pages 21 to 26 and pages 64 to 68:** The discussion of the Census Bureau-sponsored General Social Survey evaluation, including its strengths and limitations, and Dr. Zaslavsky’s evaluation are accurately described.

**Pages 35 to 38:** The Census Bureau agrees that a “validity study” is a good idea. The “validity study” of the grouped response methods would need to be performed to determine if the “grouped response” method can be used and will generate accurate estimates.

# Appendix VIII: Comments from the Department of Homeland Security

U.S. Department of Homeland Security  
Washington, DC 20528



**Homeland  
Security**

September 12, 2006

Ms. Nancy R. Kingsbury  
Managing Director  
Applied Research and Methods  
US General Accountability Office  
Washington, DC 20548

Re: Draft Report GAO-06-775 "Estimating the Undocumented Population: A "Grouped Answers" Approach to Surveying Foreign-Born Respondents."

Thank you for the opportunity to review the draft report. GAO demonstrates that the "grouped answers" approach to surveying foreign-born respondents has the potential to capture information on unauthorized aliens in the United States that is not available using existing methods and sources. They also serve notice that there are significant hurdles to implementing the approach. The Office of Immigration Statistics (OIS) believes that information on immigration status and the characteristics of those immigrants potentially available through this method would be useful for evaluating immigration programs and policies (e.g., characteristics of unauthorized aliens, program benefit use, and method of entry). We therefore recommend that GAO pilot the methodology in a limited geographic area in order to determine whether the information can be collected reliably, and to better estimate costs of a national survey. Our more specific comments to the report are listed below.

If a new survey needs to be developed then it should be designed to cover all foreign-born persons in the country no matter their time in the United States. The current, national surveys are limited to those who have lived here at least 2 months and likely exclude some unauthorized and temporary migrants.

The GAO report (page 53) suggests that the reliability of lawfully admitted immigrant's responses could be tested by making comparisons with publicly available administrative information. The comparisons may not be made as directly as implied because administrative data on immigrant flows will have to be adjusted for estimated changes in population, such as through emigration and mortality.

Sincerely,

A handwritten signature in black ink that reads "Steven J. Pecinovsky".

Steven J. Pecinovsky  
Director  
Departmental GAO/OIG Liaison Office

[www.dhs.gov](http://www.dhs.gov)

# Appendix IX: Comments from the Department of Health and Human Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of the Assistant Secretary  
for Legislation

Washington, D.C. 20201

SEP 12 2006

Nancy R. Kingsbury  
Managing Director, Applied Research and Methods  
U.S. Government Accountability Office  
Washington, DC 20548

Dear Ms. Kingsbury:


Enclosed are the Department's comments on the U.S. Government Accountability Office's (GAO) draft report entitled, "Estimating the Undocumented Population: A Grouped Answers Approach to Surveying Foreign-Born Respondents" (GAO-06-775), before its publication.

These comments represent the tentative position of the Department of Health and Human Services and are subject to reevaluation when the final version of this report is received.

The Department provided several technical comments directly to your staff.

The Department appreciates the opportunity to comment on this draft report before its publication.

Sincerely,

*for*   
Vincent J. Ventimiglia, Jr.  
Assistant Secretary for Legislation

**COMMENTS FROM THE DEPARTMENT OF HEALTH AND HUMAN  
SERVICES ON ESTIMATING THE UNDOCUMENTED POPULATION:  
A GROUP ANSWERS APPROACH TO SURVEYING FOREIGN-BORN  
RESPONDENTS GAO-06-775**

**HHS Comments**

GAO is correct in their assessment that the National Survey on Drug Use and Health (NSDUH) is NOT appropriate for collecting data on immigration status. NSDUH has a large number of sensitive questions on the use of illicit drugs that may cause persons with undocumented status to not select the correct box in the "grouped answers" section out of fear of somehow being identified. Also, the fact that NSDUH is sponsored by a government agency may not be acceptable to foreign-born respondents. The report indicated that this population may feel more comfortable responding to a study sponsored by a university or private sector organization.

The procedure used to estimate the size of the undocumented population is provided on page 12; however, it does not indicate that the "mirror-image" estimate could be used in combination with the other estimate in an attempt to reduce variance. If there is some variance reduction, this could mean that a smaller sample size is needed; thus reducing costs.

Add an appendix where formulas are presented on the estimation of the undocumented population along with its variance. Include the combination of the "mirror-image" estimate and its variance. How does the variance of the "grouped answers" estimate compare to an estimate based on a question asked directly? Even though asking a direct question is not feasible, we can get a perspective on how different the "grouped answers" variance is from a the variance from a more traditional estimator.

Disclosure of use of data: The respondents are shown three boxes. Each one lists several possible immigration statuses, including United States citizen and legal permanent resident, as well as undocumented resident (See pages 8-9). The undocumented status always appears in Box B along with other responses. The respondents are asked to choose the box that contains their immigration status. If they choose the one with the undocumented status which is always Box B, they are told, "If the specific category that applies to you is in Box B, we do not want to know which one it is because we are focusing on Box A categories." While it's true that the interviewers do not want to know the specific immigration status for any specific respondent, it is not true that they are focusing on Box A categories. In fact, the entire purpose of the exercise is to estimate how many people are undocumented by extrapolating from the number that choose Box B.



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# Appendix X: GAO Contact and Staff Acknowledgments

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## GAO Contact

Nancy R. Kingsbury, (202) 512-2700 or [kingsburyn@gao.gov](mailto:kingsburyn@gao.gov).

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## Staff Acknowledgments

Key GAO staff contributing to this report include Judith A. Droitcour, Eric M. Larson, and Penny Pickett. Statistical support was provided by Sid Schwartz, Mark Ramage, and Anna Maria Ortiz.

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