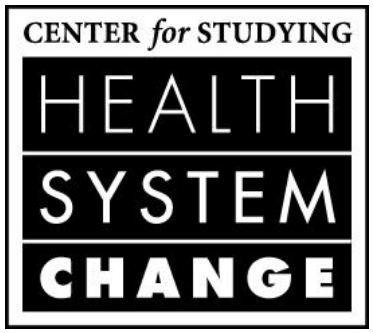


# Estimates of Health Insurance Coverage in the Community Tracking Study and the Current Population Survey

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This is one of a series of technical documents that have been done as part of the Community Tracking Study being conducted by the Center for Studying Health System Change. The study will examine changes in the local health systems and the effects of those changes on the people living in the area.

The Center welcomes your comments on this document. Write to us at 600 Maryland Avenue, SW, Suite 550, Washington, DC 20024-2512 or send your comments to center@hschange.org .

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# EXECUTIVE SUMMARY

Policymakers and researchers are eager to measure more precisely the number of uninsured in the United States to estimate potential eligibility for new health insurance initiatives, as well as to provide accurate estimates of the impact of these initiatives. Indeed, efforts to design, implement, and monitor the state Children's Health Insurance Program (CHIP) are made more complex because of inconsistencies in the uninsured estimates across data sources. For example, recent analyses found that the uninsured rates for children age 0 to 17 ranged from 11.7 percent to 15.4 percent across four national surveys.

The Center for Studying Health System Change asked Mathematica Policy Research, Inc. (MPR) to explore the reasons for differences in the insurance estimates between two of these surveys, the Community Tracking Study (CTS) 1996-1997 household survey and the March 1997 Current Population Survey (CPS). This study was motivated by findings of substantial differences in estimates of insurance coverage between the CPS and CTS: the March 1997 CPS estimated 25 percent more uninsured children than did the 1996-1997 CTS (10.6 million versus 8.0 million) and the uninsured rate differed by about 3 percentage points (14.8 percent versus 11.7 percent). This executive summary begins with an overview of insurance coverage estimates from the two surveys, then identifies factors that account for the differences, and concludes with suggested areas for future research.

## OVERVIEW OF INSURANCE COVERAGE ESTIMATES

The CTS and CPS reported similar percentages of nonelderly persons with private insurance coverage (Table 1). However, the surveys differed considerably in their estimates of

TABLE 1

NON ELDERLY PERSONS WITH SELECTED SOURCES OF HEALTH INSURANCE COVERAGE: CTS VERSUS CPS
(Numbers in Thousands)

| | CTS | | CPS | | Differential | |
|---|---|---|---|---|---|---|
| Insurance Status | Weighted Population | Percent | Weighted Population | Percent | Number | Percent |
| **All Ages (0-64)** | | | | | | |
| Total | 229,631 | 100.0 | 234,049 | 100.0 | 4,419 | 0.0 |
| Private | 165,308 | 72.0 | 165,829 | 70.9 | 521 | -1.1 |
| Medicaid | 17,414 | 7.6 | 28,227 | 12.1 | 10,813 | 4.5 |
| Medicare | 6,102 | 2.7 | 4,608 | 2.0 | –1,494 | -0.7 |
| Other | 10,284 | 4.5 | 6,848 | 2.9 | –3,436 | -1.6 |
| Uninsured | 35,440 | 15.4 | 41,379 | 17.7 | 5,940 | 2.2 |
| **Children (Age 0-17)** | | | | | | |
| Total | 68,347 | 100.0 | 71,222 | 100.0 | 2,875 | 0.0 |
| Private | 47,820 | 70.0 | 47,217 | 66.3 | -603 | -3.7 |
| Medicaid | 10,334 | 15.1 | 15,502 | 21.8 | 5,168 | 6.6 |
| Medicare | 528 | 0.8 | 484 | 0.7 | -44 | –0.1 |
| Other | 2,855 | 4.2 | 2,289 | 3.2 | -566 | -1.0 |
| Uninsured | 7,981 | 11.7 | 10,554 | 14.8 | 2,573 | 3.1 |
| **Adults (Age 18-64)** | | | | | | |
| Total | 161,283 | 100.0 | 162,827 | 100.0 | 1,544 | 0.0 |
| Private | 117,488 | 72.8 | 118,612 | 72.8 | 1,124 | 0.0 |
| Medicaid | 7,080 | 4.4 | 12,725 | 7.8 | 5,645 | 3.4 |
| Medicare | 5,574 | 3.5 | 4,124 | 2.5 | –1,450 | -0.9 |
| Other | 7,429 | 4.6 | 4,559 | 2.8 | –2,870 | -1.8 |
| Uninsured | 27,459 | 17.0 | 30,825 | 18.9 | 3,366 | 1.9 |

the number with Medicaid coverage and the number who were uninsured. For example, according to the CTS, 17.4 million nonelderly persons had Medicaid coverage, versus 28.2 million according to the CPS. The differences in the number and rate of uninsured were less pronounced: 35.4 million were uninsured, according to the CTS, versus 41.4 million, according to the CPS. The uninsured rate differed by 2.3 percentage points--15.4 percent (CTS), versus 17.7 percent (CPS). The differential in the uninsured rate was larger for children (3.1 percentage points) than for adults (1.9 percentage points).

The most common reason cited for differences in uninsured rates among various surveys is differences in the reference period. Indeed, the CTS asked about insurance coverage at the time of the interview (that is, a "point-in-time" estimate), whereas the CPS asked about insurance coverage at any time in 1996. Another difference is that the number of uninsured is captured directly in the CTS, but the CPS measures the uninsured as a *residual* of those with insurance at any time in 1996. Strictly interpreted, the CPS provides a measure of those who are uninsured *continuously throughout* the year.[1] Therefore, all else being equal, we would have expected the proportion of uninsured in the CTS to be *greater* than that in the CPS, because the number who are uninsured at any given time (the CTS estimate) should be greater than the number uninsured continuously throughout a one-year period (the CPS estimate), given the likelihood of obtaining coverage during the year.

What, then, accounts for the differences between the two surveys in their estimates of insurance coverage and, in particular, the number who are uninsured or receiving Medicaid? We sought possible explanations based primarily on differences in sample coverage and instrumentation in the two surveys. First, we discuss differences in the uninsured estimates, then

[1] Researchers acknowledge that the CPS estimate probably is a mix between an estimate of those uninsured at a point-in-time and those uninsured continuously throughout the previous calendar year, probably due to respondent recall error concerning insurance coverage the previous year.

address differences in the Medicaid estimates. Table 2 summarizes the factors that may account for differences in insurance coverage estimates between the two surveys.

## EXPLAINING DIFFERENCES IN THE UNINSURED ESTIMATES

We identified several factors that may account for differences in the number and rates of uninsured in the two surveys:

- **Differences in the universe of the two surveys.** The CTS excluded residents of Alaska and Hawaii, persons in group quarters, and children who are not householders and are unclaimed by parents or guardians.

- **Differences in instrumentation.** The CTS included an uninsured probe that directly verified whether individuals were uninsured. In contrast, the CPS classified the uninsured as a residual of those reporting insurance.

- **Differences in the samples.** The CTS had a higher proportion of one-person families, and a lower proportion of Asians, higher-income families, and children than the CPS; In addition, the CTS had a smaller weighted population on nontelephone households; the CTS had a lower response rate than the CPS.

We adjusted the CPS and CTS estimates for the first two factors by (1) excluding from the CPS those groups of individuals who were ineligible for the CTS, and (2) including in the CTS uninsured estimate those who would have been classified as uninsured in the absence of the uninsured probe. The adjustments for differences in the universes had a trivial effect on the CPS uninsured numbers and rates, while the adjustments for the CTS uninsured probe effectively eliminated the significant differences in the rates for nonelderly adults (Table 3).

Our analysis of the CTS uninsured probe revealed that 34.6 million cases (on a weighted basis) were asked the uninsured probe because they reported no insurance coverage in response to the previous insurance questions. Of these, 2.1 million persons (6 percent) specified insurance

TABLE 2

SUMMARY OF FACTORS THAT MAY ACCOUNT FOR DIFFERENCES IN INSURANCE COVERAGE ESTIMATES BETWEEN THE CURRENT POPULATION SURVEY (CPS) AND THE COMMUNITY TRACKING STUDY (CTS)

| Factors | Description | Empirical Results |
|---|---|---|
| **Reconciling Uninsured Estimates** | | |
| Universe Differences | The CTS excludes households in Alaska and Hawaii, persons in group quarters, and children who are not householders and are unclaimed by parents or guardians | Adjusting the CPS to look like the CTS results in a reduction of about 0.4 million individuals from the CPS universe; however, the uninsured rates remain significantly different |
| Instrumentation Differences | The CTS includes a probe to verify current uninsured status, while the CPS calculates the uninsured as a residual of those reporting insurance during the previous calendar year | In the absence of the uninsured probe, the CTS uninsured rate would have increased nearly one percentage point; this difference is no longer significant for nonelderly adults and all nonelderly persons. The uninsured estimate for children remains statistically significant (with a differential of 1.9 percentage points) |
| Differences in Characteristics of the Samples | The CTS sample had a higher proportion of one-person families and a lower proportion of Asians, higher income families, and children than the CPS sample | The impact on the uninsured rates is complex and unclear; for example, higher income families (400 percent FPL and above) account for 39 percent of the differential in the number of uninsured between the two surveys because of the composite effect of the lower weighted population and lower uninsured rate in the CTS |
| Differences in Coverage of Nontelephone Households | The CPS conducted personal interviews with nontelephone households; the CTS included a small sample of nontelephone households in large metropolitan areas (who were interviewed by cellular phone) and disproportionately weighted households in small and nonmetropolitan areas with intermittent telephone coverage | The uninsured rate among households in large metropolitan areas without telephones was higher in the CTS than in the CPS (40 percent versus 32 percent), although the weighted population of nontelephone households in the CTS was smaller than in the CPS 6.7 versus 10.4 million) |

Table 2 (*continued)*

| Factors | Description | Empirical Results |
|---|---|---|
| Response Rate Differences | The CTS response rate was lower than the CPS response rate (65 versus 84 percent) | Unexpectedly, those who initially refused to participate in the CTS had lower uninsured rates than those who initially responded (11.7 percent versus 17.0 percent) suggesting that refusal conversion efforts in the CTS may have led to lower uninsured rates; however, it is unknown whether nonrespondents to the CTS have systematically higher uninsured rates than respondents |
| **Reconciling Medicaid Estimates** | | |
| Coding Differences | The CPS includes Indian Health Service, other government healthcare, and "other insurance" coverage in Medicaid; the CTS excludes dual Medicare/Medicaid coverage from Medicaid | Once these two adjustments are made, the CTS estimate of Medicaid coverage increases from 17.4 to 18.9 million and the CPS estimate decreased from 28.2 to 26.0 million; the Medicaid differential narrows from 10.8 to 7.1 million |
| Overlapping Coverage Differences | Overlapping coverage can occur both concurrently (multiple coverage at one point in time) or during the year due to coverage changes; the CTS is less likely to obtain overlapping coverage because it collects current coverage (rather than coverage at any time during the previous year) and it included skip patterns to elicit the primary coverage | 12 percent of Medicaid beneficiaries in the CTS, but 26 percent of those in the CPS had Medicaid coverage plus another type of coverage; restricting the analysis to those with Medicaid coverage only (and no other type of coverage), the CTS reported 16.6 million Medicaid beneficiaries and the CPS reported 19.1 million |
| State-Specific Plan Name Differences | Both surveys probe for state-specific plans, but the CPS used a more comprehensive list; in addition, the CTS did not count the Medicaid waiver programs as Medicaid coverage | Approximately 165,000 persons in Medicaid waiver programs should be classified by the CTS as Medicaid, raising the estimate by about 0.7 percent |
| Imputation Differences | The CPS imputed Medicaid coverage using statistical and logical imputation methods; the CTS did not impute Medicaid coverage | Approximately 3.9 million persons would have been classified as uninsured in the CPS, but were imputed to have Medicaid coverage; NOTE: the differential in uninsured estimates would have been even greater in the absence of imputation |

TABLE 3
ADJUSTED ESTIMATES OF THE UNINSURED
(Numbers in Thousands)

| | CTS | | | CPS | | | Differential (CPS minus CTS) | |
|---|---|---|---|---|---|---|---|---|
| | Weighted Population | Number Uninsured | Percent Uninsured | Weighted Population | Number Uninsured | Percent Uninsured | Number Uninsured | Percent Uninsured |
| **Nonelderly Persons (Age 0-64)** | | | | | | | | |
| Unadjusted Sample | 229,631 | 35,440 | 15. (14.2, 16.7) | 234,049 | 41,379 | 17.7 (17.2, 18.1) | 5,939 | 2.3* |
| Adjusted for Universe Differences | 229,631 | 35,440 | 15.4 (14.2 16.7) | 231,873 | 40,935 | 17.7 (17.2, 18.2) | 5,495 | 2.3* |
| Adjusted for CTS Uninsured Probe | 229,631 | 37,529 | 16.3 (15.1, 17.6) | 231,873 | 40,935 | 17.7 (17.2, 18.1) | 3,406 | 1.4 |
| **Children (Age 0-17)** | | | | | | | | |
| Unadjusted Sample | 68,347 | 7,981 | 11.7 (10.4, 12.9) | 71,222 | 10,554 | 14.8 (14.2, 15.5) | 2,573 | 3.1* |
| Adjusted for Universe Differences | 68,347 | 7,981 | 11.7 (10.4, 12.9) | 70,162 | 10,269 | 14.6 (14.0, 15.3) | 2,288 | 2.9* |
| Adjusted for CTS Uninsured Probe | 68,347 | 8,714 | 12.7 (11.5, 14.0) | 70,162 | 10,269 | 14.6 (14.0, 15.3) | 1,555 | 1.9* |
| **Adults (Age 18-64)** | | | | | | | | |
| Unadjusted Sample | 161,283 | 27,459 | 17.0 (15.7, 18.4) | 162,827 | 30,825 | 18.9 (18.4, 19.4) | 3,366 | 1.9* |
| Adjusted for Universe Differences | 161,283 | 27,459 | 17.0 (15.7, 18.4) | 161,711 | 30,667 | 19.0 (18.5, 19.5) | 3,208 | 2.0* |
| Adjusted for CTS Uninsured Probe | 161,283 | 28,815 | 17.9 (16.5, 19.2) | 161,711 | 30,667 | 19.0 (18.5, 19.5) | 1,852 | 1.1 |

NOTE: Standard errors in parentheses.

*Difference significant at the 0.05 level, using two-tailed t-test

coverage as a result of the probe. Overall, two-thirds (66.6 percent) of those identifying coverage reported private coverage, and another 17.7 percent reported Medicaid. In other words, these 2.1million people would have been coded as uninsured in the absence of the CTS uninsured probe. Had the 2.1 million persons been classified as uninsured, the number of nonelderly uninsured projected by the CTS would have risen from 35.4 million to 37.5 million, and the uninsured rate would have risen from 15.4 percent to 16.3 percent. This would narrow the differential in the uninsured rate between the CPS and CTS to only 1.4 percentage points--a difference that is no longer statistically significant.

For adults, the differential between the percentage uninsured in the CPS and CTS decreased from 1.9 percentage points in the unadjusted samples to 1.1 percentage points in the adjusted samples (a difference that is no longer statistically significant). For children, the uninsured rate differential decreased from 3.1 percentage points to 1.9 percentage points, although this difference remains statistically significant. It is not clear why, after these adjustments, the differences in the estimates of uninsured children remain significantly different between the two surveys.

We identified three other factors that may affect the insurance estimates, although the direction and magnitude of their impacts is unclear; we raise these issues for future consideration. We found that the characteristics of the CPS and CTS samples differed in a number of important ways that could contribute to the differences in uninsured rates.

- **Family Size.** The CTS had a higher proportion of one-person families than the CPS (19.6 percent versus 13.1 percent) and a smaller proportion of families with three or more members (58.4 percent versus 65.7 percent). (This may be due in part to how the CTS constructed family insurance units [FIUs] for the purpose of the interview.) Interestingly, there were no significant differences in the uninsured rates for one-person families in the two surveys. In all other categories of family size, the CTS had significantly lower uninsured rates than the CPS.

- **Race/Ethnicity.** We also found differences in the racial/ethnic distribution between the two surveys, especially in the representation of Asians in the CTS. The CTS had only

half as many Asian respondents as the CPS--4.7 million in the CTS, versus 8.5 million in the CPS. Moreover, the CTS uninsured rate for Asians was significantly lower--10.6 percent in the CTS versus 23.3 percent in the CPS. As a result, Asians accounted for a disproportionate share of the differential in uninsured rates. It is not clear whether the lower representation of Asians is a function of nonresponse or due to the sample design.

- **Poverty Status.** There is some evidence that the CTS may under represent higher-income families (400 percent of the poverty level and above) relative to the CPS. Such families represent 34.5 percent of the weighted population in the CPS, but only 30.5 percent of the CTS weighted population. Even though the differential in the uninsured rate is only 2 percentage points, this group accounts for 39 percent of the differential in the number of uninsured between the two surveys because of the composite effect of the lower weighted population and the lower uninsured rate in the CTS. In contrast, there were no significant differences in uninsured rates among individuals below poverty; moreover, the number of uninsured below poverty projected by the two surveys is almost identical. Therefore, we conclude that differences in uninsured rates between the two surveys appear to be accounted for by the differential representation of higher-income families in the two surveys.

- **Coverage of Children** One result we have yet to explain is why the differences in uninsured rates remained significant for children even after adjustments for differences in the sample coverage and instrumentation. The CTS gathered data on one randomly sampled child per FIU, while the CPS gathered data on all household members. The combined effect of the lower uninsured rates among children in the CTS and their lower overall representation in the sample resulted in children being a smaller proportion of the nonelderly uninsured in the CTS (22.5 percent) than in the CPS (25.1 percent). Further analysis is required to determine whether differences in the uninsured rates may be accounted for by the strategy used for interviewing and weighting children in the CTS.

We also examined coverage of nontelephone households in the two surveys. We hypothesized that the lower uninsured rates in the CTS were, at least in part, a function of the mode of administration of the survey over the telephone. In other words, we assumed that the uninsured rates were lower because nontelephone households were systematically excluded from the CTS and that these households had higher uninsured rates. However, the CTS included two features to adjust for coverage of nontelephone households. First, in 12 large metropolitan areas (populations greater than 200,000), the CTS included a small supplemental sample of nontelephone households that were interviewed via cellular phone. Second, in small and nonmetropolitan areas, the CTS weighted households with intermittent telephone coverage more

heavily, to account for households without phones. Unexpectedly, the uninsured rate among households without telephones in large metropolitan areas was *higher* in the CTS than in the CPS (40.0 percent versus 32.0 percent), although the weighted population of nontelephone households in large metropolitan areas in the CTS was considerably smaller than in the CPS -- 6.7 million versus 10.4 million, respectively -- leading to a lower overall number of uninsured in the CTS. If this difference represents coverage differences between the two surveys (as opposed to differences in how households are classified in terms of telephone or metropolitan status), then it may explain part of the differential in estimates of the uninsured between the two surveys.

A final issue is the difference in the response rates between the two surveys. The CTS response rate (65 percent of FIUs) was quite a bit lower than that obtained by the March 1997 CPS (84 percent of persons). This large differential could mean that certain groups are disproportionately underrepresented in the CTS and not accounted for by nonresponse and poststratification adjustments. As a proxy for the impact of hard-to-reach populations on the uninsured rates in the CTS, we compared the rates for those who initially responded to the CTS with those who responded after one or more refusal conversion efforts. We found that persons who initially refused, then later converted, had substantially lower uninsured rates than those who initially responded (11.7 percent versus 17.0 percent, respectively).[2] This suggests that refusal conversion efforts in the CTS may have led to *lower* uninsured rates. What this analysis does not indicate is whether those who responded after multiple refusal conversion efforts are representative of those who did not respond, or whether those not responding to the CTS are from groups with higher uninsured rates.

## EXPLAINING DIFFERENCES IN THE MEDICAID ESTIMATES

[2] Conversely, rates of private insurance coverage were higher among those who initially refused to participate (32.4 percent) than among those who initially responded (21.8 percent).

In addition to exploring differences in the uninsured estimates between the CTS and CPS, we attempted to explain differences in the number of Medicaid beneficiaries reported in the two surveys. Indeed, as shown in Table 1, the Medicaid differences were larger than the uninsured differences. The CTS reported 17.4 million Medicaid beneficiaries, whereas the CPS reported 28.2 million--a difference of nearly 10.8 million. We identified four factors that may account for these differences: (1) how the data are coded, (2) the effects of overlapping coverage, (3) the use of state-specific plan names, and (4) imputation methodology. We discuss each of the factors and, when possible, adjust the estimates of Medicaid coverage to account for them.

**Coding Differences.** Most published estimates of Medicaid coverage in the CTS and CPS differ in part because of differences in who is coded as covered by Medicaid: (1) the CPS includes Indian Health Service, other government health care, and "other insurance" coverage in the Medicaid category; and (2) the CTS excludes dual Medicare/Medicaid coverage from the Medicaid category. To make the Medicaid estimates more comparable, we excluded the "non-Medicaid" categories from the CPS estimate and included dual eligibles in the CTS estimate. We found that the differential in the Medicaid estimates narrowed substantially: the CTS estimate increased to 18.9 million with Medicaid coverage, while the CPS estimate decreased to 26.0 million.

**Overlapping Coverage**. Medicaid coverage differences between the two surveys also may be a function of the degree to which the surveys report Medicaid coverage when it overlaps with private coverage. Because of the skip patterns in the CTS questionnaire, persons in families where everyone had private coverage were not asked whether they also had Medicaid, thereby reducing the amount of overlapping coverage in the CTS. In contrast, the CPS asks each person about Medicaid, regardless of that person's response to the other insurance questions. In addition, the CPS may report more overlapping coverage than the CTS because the CPS asks

about coverage at any time during 1996, thereby increasing the likelihood of reporting Medicaid and other coverage during the previous year, but at different times. As a result, 26 percent of the Medicaid beneficiaries in the CPS had overlapping coverage, compared to only 12 percent in the CTS. Thus, if we compare only those with Medicaid coverage and no other coverage, the CTS reported 16.6 million with Medicaid coverage, and the CPS reported 19.1 million--a difference of only 2.5 million beneficiaries.

**State-Specific Plan Names**. Some of the Medicaid coverage difference may have to do with the extent to which state-specific plan names were used in the surveys. Both the CTS and CPS included state-specific program names in the Medicaid question; however, the CPS used a more comprehensive list of plan names and, therefore, may have elicited more Medicaid coverage than the CTS. It is not possible to quantify the magnitude of this difference, using the CPS and CTS data. In addition, the CTS did not count those participating in the Section 1115 Medicaid waiver programs (for example, TennCare, Oregon Health Plan, RiteCare) as Medicaid beneficiaries, but rather as being covered under another state program (not Medicaid). This amounts to about 165,000 persons in the CTS. Had they been counted as Medicaid beneficiaries, the number of Medicaid beneficiaries in the CTS would have risen by 0.7 percent.

**Imputation Methodology**. A final reason for the Medicaid coverage difference is that the CPS conducted statistical and logical imputations that assigned Medicaid to 7.5 million persons who did not actually report it, whereas the CTS performed no imputations. However, the issue of the effect of imputations on CPS insurance coverage estimates is complicated. Without the Medicaid imputations in the CPS, the difference between estimates of the uninsured in the CPS and CTS would become even greater, since many of those for whom Medicaid coverage was imputed would otherwise have been coded as uninsured in the CPS. Without the statistical and logical Medicaid imputations, the number of uninsured in the CPS would have increased by 3.9

million persons (from 41.4 million to 45.2 million), and the uninsured rate would have increased by 1.6 percentage points (from 17.7 percent to 19.3 percent).

## AREAS FOR FURTHER RESEARCH

This analysis suggests three areas for further research. First, we recommend that further analysis be performed concerning differences in the sample characteristics and the extent to which unanticipated differences in the sample coverage may contribute to differences in insurance estimates. We identified several differences in the population distributions between the two surveys. One-person families were more likely to be represented in the CTS than in the CPS. Asians, children, and higher-income families were less likely to be represented. Whether this is a function of lower response rates in the CTS, the community-based sampling methodology, the weighting methodology, or some other factor is unknown.

Second, we recommend further research to understand better the cognitive process in reporting insurance coverage. Why is insurance coverage missed initially for a nontrivial portion of the sample? The CTS analysis demonstrated that 6 percent of those who initially reported being uninsured were, upon further probing, reclassified as insured. It is not clear why some families failed to report insurance coverage until they were asked the uninsured probe in the CTS. For example, did respondents forget to report coverage for certain household members because of the open-ended nature of the question ("Who else in your household was covered")? Or, did respondents misunderstand the wording of the questions? With the proliferation of state-specific programs for the uninsured, whether through CHIP or other initiatives, identifying those with coverage (and, by extension, those without coverage) will become more complex because the traditional categories of insurance coverage may not elicit such coverage. Therefore, it will be increasingly important for surveys to ask about participation in state-specific programs.

Moreover, our analysis has revealed the importance of direct probing of those specifying no coverage to determine if they are, in fact, uninsured.

Finally, we recommend additional research related to the magnitude of Medicaid underreporting. Researchers need to understand more fully the sources of Medicaid underreporting among those enrolled. Is it because they do not recognize the terms *Medicaid* or *medical assistance*, or because they perceive Medicaid managed care as private coverage? Is it because they do not recall they were enrolled during the time frame to which the survey refers? Is it perhaps because of discomfort (stigma) in admitting they are enrolled in a public assistance program? Or, could they have obtained other insurance coverage since they were last certified for Medicaid (yet the Medicaid program still counts them as covered by Medicaid)? Some researchers have made adjustments for underreporting in the CPS based on Medicaid administrative data.[3] However, one issue that has not been addressed is whether inaccuracies in administrative data may result in overadjusting survey data for underreporting of Medicaid enrollment.[4] This study indicates the need for future surveys to explore the phenomenon of Medicaid underreporting, using prospective and/or retrospective approaches. With a prospective approach, the survey sample could include a stratum of "known" Medicaid beneficiaries (drawn from Medicaid administrative records). Those who do not identify Medicaid as their type of insurance coverage could be queried more directly about whether they were ever covered by Medicaid and, if so, when their coverage ended; who pays for their care; and, if they have an insurance card, what the card says. Under a retrospective approach, Medicaid records could be

[3] For example, Medicaid underreporting was estimated at 21 percent in 1995, although children tended to have slightly higher levels of underreporting (23 percent)(Fronstein 1997). Ullman et al. (1998) estimated the number of uninsured children before and after adjusting the CPS data for Medicaid underreporting. Unedited data indicated that 10.6 million children were uninsured, whereas edited data suggest that the number may be closer to 7.6 million. This example demonstrates that adjustments for Medicaid underreporting can have huge implications for estimates of uninsured.

matched against survey records to determine who may be covered by Medicaid but is not reporting such coverage. It should be recognized, however, that administrative records may not be a perfect gold standard either, thus suggesting the need for a combination of records matching and follow-up contacts with beneficiaries to understand better the phenomenon of Medicaid underreporting.

## CONCLUSION

Our comparison of the CTS and CPS has identified potential sources of differences in the insurance coverage estimates between the two surveys. In particular, we were able to reconcile differences in the uninsured rates among nonelderly adults resulting from known differences in the universes and the instrumentation. We also identified potential sources of differences in the Medicaid estimates, due mainly to differences in classification, skip patterns, and reference periods. Further analysis revealed differences in sample characteristics that may also contribute to differences in insurance estimates--in particular, coverage of children, Asians, one-person families, and higher-income families.

With the implementation of the Children's Health Insurance Program, as well as other initiatives aimed at the uninsured, it will be important to develop reliable, consistent sources of information on health insurance coverage. National, state, and local estimates of insurance trends for children and families will be required for monitoring and evaluation. Knowledge of the properties of the data sources used for evaluations and policy analyses (including sample coverage, survey administration, survey instrumentation, and estimation procedures) is imperative to ensure that significant differences are not simply an artifact of survey design. As

[4] Bilheimer (1998) suggests that double counting by states may contribute to overestimates of Medicaid enrollment in administrative data. She notes: "…one is left to conclude that CPS may underestimate Medicaid enrollment and that HCFA data may overstate it."

this analysis shows, minor differences in survey design can have a large impact on estimates of insurance coverage.

# I. INTRODUCTION

Recent analyses of the number and characteristics of the uninsured in the United States have raised important questions about the comparability of data produced by various national surveys. For example, estimates of the number of uninsured children age 0 to 17 ranged from 8 to 11 million across four national surveys, primarily as a result of differences in the definition of uninsured and the reference period (Table I.1). The uninsured rates among children varied from 11.7 percent to 15.4 percent.

The Office of the Assistant Secretary of Planning and Evaluation (U.S. Department of Health and Human Services, 1998) identified the following generic reasons that could account for differences in uninsured estimates produced by various national population-based surveys:

- Differences in the length of time an individual must have been without health insurance to be counted as uninsured.
- Differences in the age range used to define the population.
- Differences in the way insurance is defined.
- Differences in survey design (for example, point-in-time versus period of time; recall periods; family respondents; question presentation).
- Differences in data handling (including data adjustments for under/overreporting or nonresponse).
- Differences in timeliness of data (for example, the timelag between data gathering and data availability).

Although inconsistencies in estimates of the uninsured have long been acknowledged (Monheit 1994; and Swartz 1986), there is increasing urgency to measure more precisely the number of uninsured to estimate potential eligibility for new initiatives, such as the state children's health insurance program (CHIP) authorized under the 1997 Balanced Budget Act

**TABLE I.1**

**COMPARISON OF ESTIMATES OF UNINSURED CHILDREN AGE 0 TO 17, 1995-1996**

| Data Source | Estimate of Uninsured Children (Age 0 to 17) | Comments |
|---|---|---|
| March Current Population Survey (CPS) | Uninsured throughout 1996: 10.6 million (14.8 percent) Uninsured throughout 1995: 9.8 million (13.3 percent) | Intended to reflect lack of coverage for the entire year; however, some researchers believe it may be closer to an estimate of currently uninsured. |
| National Health Interview Survey (NHIS) | Uninsured in an "average month" of 1995: 9.5 million (13.3 percent) | Reflects lack of coverage in month prior to survey. Uninsurance data for each month consolidated into an average monthly estimate. NHIS estimate for 1995 not significantly different from CPS estimate for 1995. |
| Medical Expenditure Panel Survey (MEPS) | Uninsured continuously from January 1996 until first round interview 3 to 5 months later: 11.0 million (15.4 percent) | Expected to be somewhat higher than CPS because MEPS reflects lack of coverage continuously for 3 to 5 months whereas the CPS reflects lack of coverage for 12 months. |
| Community Tracking Study 1996-1997 Household Survey (CTS) | Uninsured at time of interview (1996-1997): 8.0 million (11.7 percent) | Expected to be higher than CPS and MEPS because the CTS measures those currently uninsured, while the CPS and MEPS are intended to measure those uninsured continuously over a specified reference period. The CTS may elicit more insurance coverage because it probes those reporting no coverage to verify whether they are uninsured. |

SOURCES: Office of the Assistant Secretary for Planning and Evaluation (1998); Lewis et al. (1997)

or the proposed Medicare buy-in for uninsured near-elderly people. As a result, policymakers and researchers are increasingly focusing their attention on the quality of existing data on the number and characteristics of the uninsured in the United States.

This study was motivated by findings of substantial differences in estimates of insurance coverage between the Current Population Survey (CPS) and the Community Tracking Study (CTS) Household Survey. For example, as shown in Table I.1, the March 1997 CPS estimated 25 percent more uninsured children than the 1996-1997 CTS, and the uninsured rate differed by about 3 percentage points. This study explores the reasons for differences in the insurance estimates between the CTS and the CPS. We conducted an in-depth assessment of the characteristics of the two data sources and performed additional analyses to elucidate the sources of differences in the estimates.

This report contains three additional chapters. Chapter II presents an in-depth description of the two data sources, to provide the background necessary for reconciling differences in the estimates. We focus on the features that might be expected to result in variations in the insurance estimates. Chapter III presents the results of our analyses, exploring the factors that may account for the differences. Finally, Chapter IV discusses the results and identifies areas for additional research.

## II. COMPARISON OF THE SURVEY DESIGNS

Prior to analyzing the sources of differences in the estimates of insurance coverage generated by the CPS and the CTS, we present a detailed discussion of the characteristics of the two surveys. This information provides important background to the empirical analyses that attempt to reconcile differences between the two surveys. We examined the following four features:

1. **Sample Coverage.** What were the characteristics of the sample frame? Which strata were used for sampling? What were the response rates?

2. **Survey Administration.** What was the mode of administration (in-person, telephone)? How were proxies used? What was the level and scope of interviewer training, especially with regard to the administration of insurance questions?

3. **Health Insurance Instrumentation.** How were the health insurance questions phrased and sequenced? How many insurance questions were asked? What types of skip patterns were imposed? How were the uninsured identified? What was the recall period (for example, current, past year)? How were multiple types of insurance handled?

4. **Estimation Procedures.** How was the sample weighted? What types of imputations were performed on the insurance questions, including logical and statistical imputations? What types of recodes were performed?

We begin with a description of the CPS, which is followed by a description of the CTS. The discussion is organized around the four features summarized above. Appendix A presents a side-by-side chart summarizing the key features of the two surveys. Appendix B contains a side-by-side comparison chart of the health insurance questions from the two surveys.

### A. THE CURRENT POPULATION SURVEY

The CPS is a monthly labor-force survey conducted by the Census Bureau and is the official source of Government statistics on employment. The main purpose of the CPS is to collect information on the employment status of the population during the survey month. In addition, supplemental questions are regularly added to the core questionnaire on such topics as

health, education, income, and previous work experience. These questions usually refer to the previous year rather than the survey month. The March CPS contains supplemental questions on the health insurance status of each person in the household in the prior calendar year. The data presented in this report are based on the March 1997 CPS, reflecting health insurance coverage during 1996.

**1. Sample Coverage**

The CPS is a nationally representative monthly survey of households in the United States, based on a multistage, stratified systematic cluster sample of the noninstitutionalized resident population of the United States. The sample is located in 792 sample areas comprising 2,007 counties and independent cities, with coverage in every state and the District of Columbia. Although the sample is representative of each of the 50 states and the District of Columbia, for most states, the samples are too small for precise state-level estimates.[1] The sample is supplemented with an additional 2,500 Hispanic households.

Approximately 60,000 households are assigned for interview each month, of which about 48,000 are interviewed. Most of the 12,000 noninterview households were found to be not eligible for interview because they were vacant, demolished, converted to nonresidential use, or contained persons who reside elsewhere; the remaining households either refused to be interviewed or could not be located. The response rate for the March 1997 CPS was approximately 84 percent.

The sample is based on the civilian, noninstitutionalized population of the United States, which includes persons living in households and group quarters (for example, college dormitories and rooming houses), but it does not include residents of institutions (for example, homes for the aged) or those living abroad. The sample does include armed forces personnel living with civilian family members and residing in the United States.

The sample for each CPS monthly survey is not an independent sample. Persons selected for the survey are interviewed for four consecutive months, left out of the survey for eight months, then interviewed for four more months. As a result of this rotation schedule, half of the sample in a given year's March CPS survey were present in the previous year's March CPS survey.

The CPS, like all demographic surveys, suffers from undercoverage of the population. Undercoverage results from missed housing units in the sampling frame and missed persons within sampled households. The Census Bureau estimates that the overall CPS undercoverage rate is about 7 percent and that undercoverage varies with age, sex, and race (Bennefield 1996a). For some groups, such as 20- to 24-year-old black males, the undercoverage rate may be as high as 27 percent. The Census Bureau notes that, even though its weighting procedures partially correct for the bias due to undercoverage, the final impact of undercoverage on estimates is unknown.

**2. Survey Administration**

The CPS uses a mixed mode of administration, including a combination of in-person and telephone interviews. Two of the eight interviews--the two that begin each of the four-month interview cycles to which a household is assigned--are conducted in person via computer-assisted personal interviewing (CAPI). The remaining six interviews are conducted with computer-assisted telephone interviews (CATI), if amenable to the respondent. Therefore, about 75 percent of the interviews for the March CPS are conducted by telephone.

Questions are asked about each individual in the household, and it is preferred that adult sample members respond for themselves. However, any well-informed person in the household who is 15 years or older may provide a proxy response if a particular individual is unavailable. According to Robison (1992), about 54 percent of adult sample members responded for

[1] Much of the description of the CPS survey design is drawn from Robison (1992)

themselves, 44 percent of adult sample members were interviewed via a proxy, and the remainder were a mix of self- and proxy responses.

Most interviews are conducted by field representatives, most of whom are part-time workers. They are intensively trained when first recruited, then given monthly at-home study and periodic refreshers. Re-interviews by Census Bureau staff are conducted on a sample of surveyed households to assess the performance of field interviewers. Interviewers are not specifically trained on health insurance issues and, according to the Census Bureau, they do not use flash cards or other props for the health insurance questions during the in-person interviews.

**3. Health Insurance Instrumentation**

Respondents to the March 1997 CPS were asked whether they had specific types of private or public health insurance *at any time* during 1996 (see Appendix B for questionnaire wording). The CPS asked about the following seven types of coverage: (1) coverage through a current or former employer or union; (2) coverage purchased directly (that is, not related to current or past employment); (3) coverage through a health plan of someone who does not live in the household; (4) Medicare; (5) Medicaid; (6) military health care (CHAMPUS, CHAMPVA, VA, military health care) or Indian Health Service (IHS); and (7) any other type of insurance such as state-only health plans. Because some states do not refer to their Medicaid programs as such, the CPS often used the state-specific name to refer to Medicaid. In addition, for some states, the CPS also used the names of state-only health plans for the last question about other types of insurance. The state-specific names for Medicaid and state-only plans used in the CPS are presented in Appendix C.

Figure II.1 is a flow chart showing the sequence of the health insurance questions in the March 1997 CPS. Respondents are asked about each of the seven types of health insurance coverage mentioned above and are permitted to report more than one type of coverage. However,

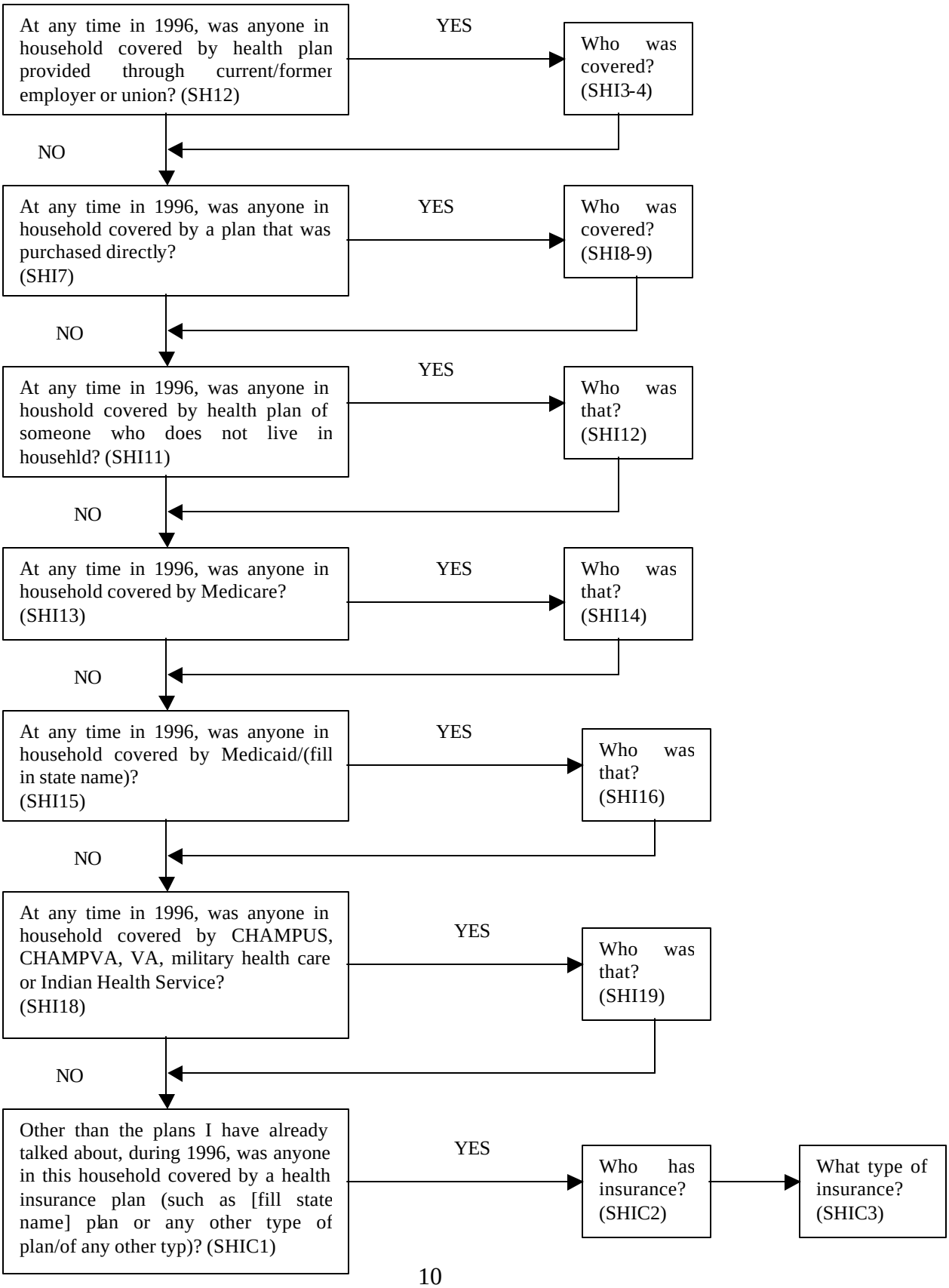
it is impossible to tell from the data whether persons with multiple types of coverage had the coverage concurrently or at different times during the previous year.

Notice, in Figure II.1, that respondents are never asked directly whether they were uninsured during the year. Instead, estimates of the uninsured are calculated as a *residual*--that is, the uninsured are those who do not report having some type of coverage at any time in the previous year. As a result, the CPS estimates of the uninsured are intended to represent those uninsured *continuously throughout* the previous year. However, researchers have debated how to interpret the CPS health insurance data; some believe that the CPS estimates of the uninsured are too high to reflect uninsured throughout the year. To account for the high rates of uninsured, these researchers suggest that many respondents may be reporting their health insurance status as of the interview date. Alternatively, because of the relatively long recall period, some may fail to report coverage altogether.

At a minimum, the CPS probably contains a mix of reporting--that is, some respondents report health insurance status during the previous year, and some report it as of the interview date--which, in the end, yields estimates that are somewhere on the continuum between an estimate of those currently uninsured and those continuously uninsured throughout the year. Although one would expect CPS estimates of uninsured rates to be *lower* than comparable estimates from surveys that ascertain insurance status at a point in time, this may not be the case, given the likelihood of recall bias in the CPS toward current insurance status. Appendix D provides a more detailed discussion of how to interpret CPS insurance estimates.

**FIGURE II.1**

**QUESTIONNAIRE FLOW: MARCH 1997 CURRENT POPULATION SURVEY**



## 4. Estimation Procedures

Estimation procedures refer to the weighting of the sample and the types of imputations and recodes that were performed on the data. The CPS sample is weighted, based on the probability of selection (with adjustments for noninterviews and nonresponse), then poststratified to independent population control totals.

All survey data have some degree of nonresponse. Some surveys retain missing data and have a coverage category called "unknown." Other surveys exclude persons with missing data from tabulations and reweight the remaining persons to a population control total. Some surveys impute data for the missing values. The public use file for the CPS contains no missing data for the health insurance questions because the Census Bureau imputes data in all instances of item nonresponse, using either the "hot-deck" method or logical imputation, as appropriate. In the hot-deck method, persons are sorted in a particular order and then missing items for a person are obtained from the previous responding person in the same age, sex, and race category.

The CPS also performs "logical imputations" of health insurance, assigning insurance coverage based on certain characteristics. For example, Medicaid is assigned to children under age 21 in families where either the householder or spouse reports being covered by Medicaid. In addition, all adult AFDC recipients and their children, as well as SSI recipients living in states that legally require Medicaid coverage of all SSI recipients, were also assigned Medicaid.[2] The CPS also logically imputes Medicare coverage, but only to those age 65 and older.

For the public use file, the CPS classifies health insurance data into the five insurance variables used in most published CPS estimates of health insurance coverage: (1) total private

[2] Of the 28.2 million persons age 0 to 64 with Medicaid in 1996, according to the Census Bureau, Medicaid coverage was imputed for 7.5 million (26.6 percent). Of these, 4.6 million had Medicaid coverage logically imputed, and 2.9 million had Medicaid coverage statistically (hot deck) imputed. Medicaid coverage was more often imputed for adults than for children (30.1 percent of adults versus 23.7 percent of children). Logical imputations were performed for about two-thirds of the cased and statistical imputation for one-third of the cases, regardless of age.

health insurance for adults; (2) total private health insurance for children; (3) Medicare for all persons; (4) Medicaid for all persons; and (5) CHAMPUS, VA, or military health care.[3] The Census Bureau recodes two additional categories to Medicaid: (1) those reporting IHS in response to the question about military and IHS coverage (question SHI18); and (2) those reporting IHS, other government health care, or other insurance in the final CPS question that asks about any other types of coverage not already mentioned (question SHIC1).[4] All other responses to the final CPS question are recoded to their respective categories (private coverage for children or adults, Medicare, or military health).

**B. COMMUNITY TRACKING STUDY**

The CTS Household Survey is sponsored by the Robert Wood Johnson Foundation and is conducted by the Center for Studying Health System Change under a subcontract to Mathematica Policy Research, Inc. (MPR). The survey was designed to track changes in the health care system over time and to gain a better understanding of how health system changes are affecting both consumers and providers at the community level. Data collection and analysis for the CTS occur in approximately two-year intervals. The information presented here is based on the household component of the first round, which was conducted between July 1996 and July 1997. Health insurance coverage was measured at the time of the interview (that is, current coverage).

[3] Reports published by the Census Bureau (Bennefield 1996a), the General Accounting Office (GAO 1997), and the Employee Benefit Research Institute (Fronstin 1997) all use the Census Bureau recode variables in their estimates of insurance coverage.

[4] Of the 28.2 million persons age 0 to 64 with Medicaid in 1996, about 1.8 million were recoded to Medicaid in this manner.

**1. Sample Coverage**

Central to the design of the CTS is its focus on communities (Kemper et al. 1996). Sixty sites were selected for the survey through a process of stratified random selection. Together, these sites provided a representative sample of the 48 contiguous states and the District of Columbia. A random subset of 12 sites from metropolitan areas with populations over 200,000 were selected for more intensive study; these high-intensity sites had sample sizes of approximately 1,225 households. The other 48 sites, which were studied less intensively, helped ensure that the findings from the surveys were not the result of idiosyncracies of the high-intensity sites and to permit generalization to the nation. These low-intensity sites had sample sizes of approximately 375 households and were located in both urban and rural areas. In all, the survey yielded a sample of 29,465 families from the 60 sites.

Although the 60 sites were nationally representative of the 48 contiguous states and the District of Columbia, clustering of the sample resulted in an effective sample size for national estimates that was substantially smaller. To permit national tracking with greater precision, the CTS included an additional national sample of 3,276 families that was not confined to the 60 sites in the site-specific sample. Altogether, the survey has information on 60,446 individuals. The overall response rate was 65 percent.

The sample was based on the civilian noninstitutionalized population. Unlike the CPS, the CTS excluded persons in group quarters and unrelated children who were not householders and were unclaimed by parents or guardians.

**2. Survey Administration**

The CTS household survey was conducted via telephone. To ensure that households without telephones were represented in the sample, interviews were conducted in the field with 635 "nontelephone" households in the high-intensity sites via cellular phones provided by field

staff.[5] As a result, all interviews were conducted by CATI, avoiding differences in responses by interviewing mode.

Nontelephone households in nonmetropolitan areas were not represented in the survey because the nontelephone sample was drawn from the 12 high-intensity sites, which were located only in metropolitan areas. To account for possible bias from excluding nontelephone households in nonmetropolitan areas, the CTS weighted more heavily those households in the nonmetropolitan telephone sample who reported interruptions in telephone coverage for two weeks or longer.

Within sampled households, information was first collected on household composition. Next, family insurance units (FIUs) were formed, and interviews were conducted with an adult informant for each FIU. The FIU was defined to reflect groupings typically used by insurance carriers, which included the family head, spouse, and dependent children up to age 18 (or age 23, if the person was in school). Each interview collected information about the FIU, *all adults* in the FIU, and *one randomly selected child* in the FIU.

Proxy responses were permitted on questions about health insurance coverage. Because the CTS household survey definition was based on the *family insurance unit,* proxy respondents were almost always spouses or parents. The FIU informant answered questions about the sampled child.

New interviewers were given MPR's standard general interviewer training program, consisting of three 4-hour sessions. Training on the survey instrument took another 12 hours and included specific training on health insurance terminology and the administration of the health insurance questions.

[5] "Nontelephone" means that the household is intermittently or chronically without telephone service.

### 3. Health Insurance Instrumentation

Respondents to the CTS were asked whether they *currently* had various types of private or public health insurance (see Appendix B for questionnaire wording). The CTS asked about the following nine types of coverage: (1) health insurance plan from a current or past employer or union; (2) health insurance plan bought on their own; (3) health insurance plan provided by someone outside the household; (4) Medicare; (5) Medicaid; (6) military health (CHAMPUS, CHAMPVA, VA, military health care); (7) IHS; (8) state-specific plan; and (9) and any other type of insurance not previously mentioned. Like the CPS, the CTS often used a state-specific name to refer to Medicaid and used the names of state-only health plans for the question about other types of insurance. The state-specific names for Medicaid and state-only plans used in the CTS are presented in Appendix C. The CTS list is based on that used in the 1995 CPS.

Unlike the CPS, the CTS had separate questions for military coverage and the IHS, and separate questions for state-specific plans and other coverage. The most noticeable difference between the CTS and CPS, however, was that the CTS estimate of the uninsured was not a residual. Instead, the CTS asked a final question to verify whether those not reporting any coverage in the previous questions were *currently* uninsured. At this point, respondents either verified that they were uninsured or reported some other type of coverage.

Figure II.2 is a flowchart of the health insurance questions in the CTS. Unlike the CPS, the CTS employed skip patterns to reduce the overall number of questions respondents were asked. The emphasis was on identifying the primary payer, rather than all possible payers. For example, persons in families where all members were covered by one type of private health plan were not asked about other types of private plans. Similarly, those in families where all members were covered by private plans were not asked whether they also were covered by Medicaid. Additional skip patterns ended the health insurance questions once it was determined that all

**FIGURE II.2**
**QUESTIONNAIRE FLOW: COMMUNITY TRACKING STUDY**

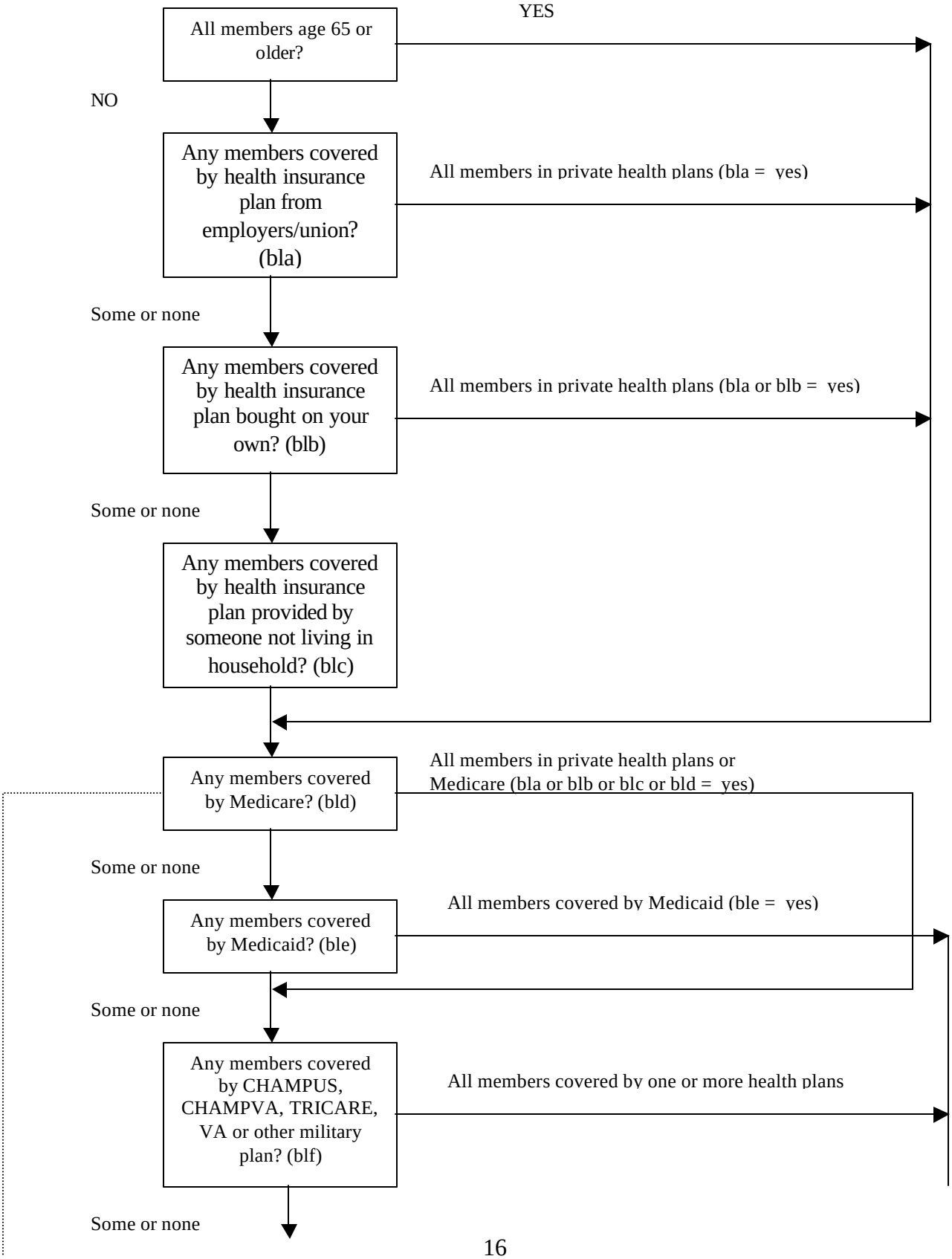
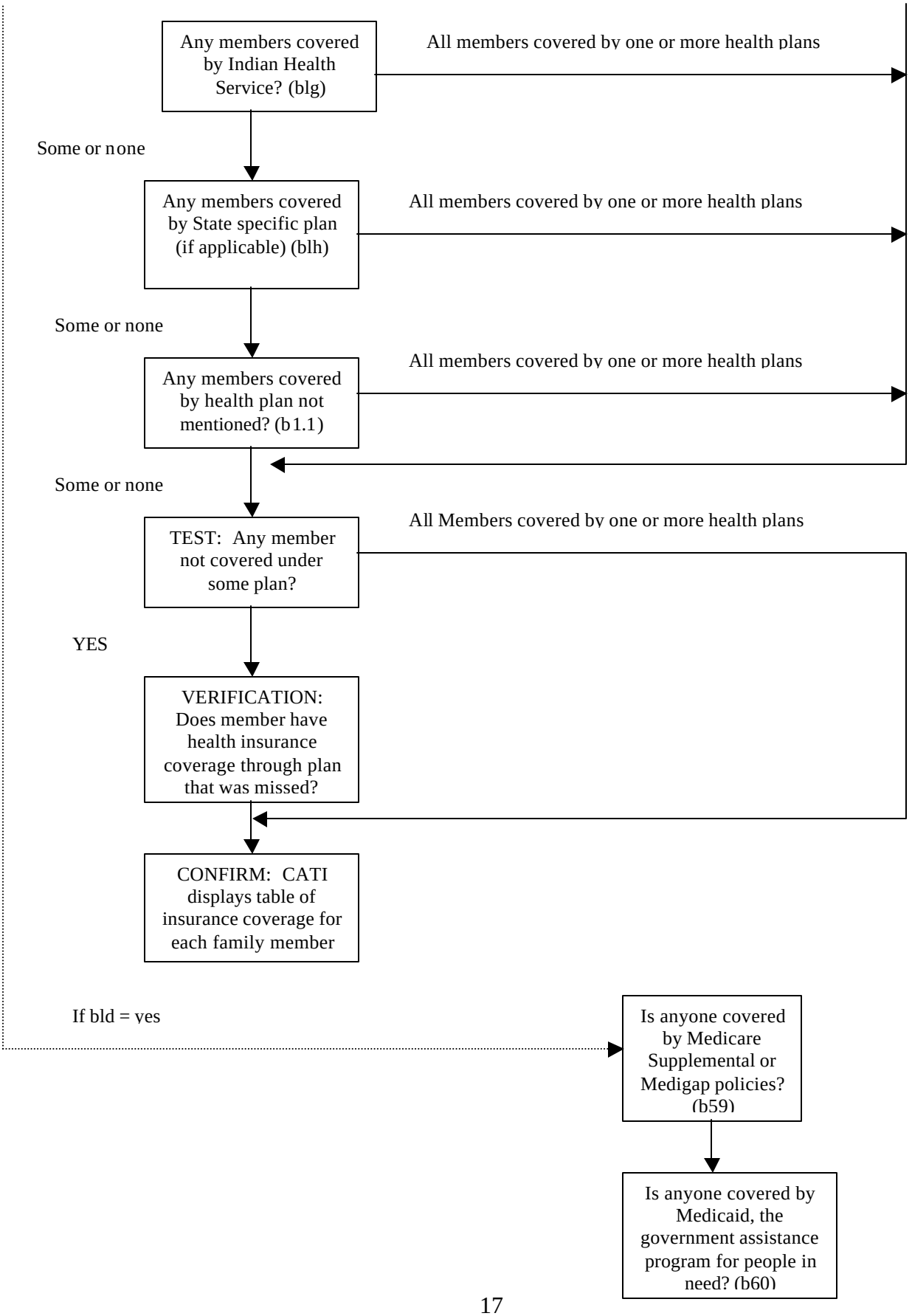


FIGURE II.2 (*continued)*



members were covered by one or more of the previously mentioned health plans. Only the Medicare question was asked of all respondents. Supplemental private "Medigap" coverage and dual Medicare/Medicaid coverage were captured later in the questionnaire (questions b59 and b60).

The main implication of the skip patterns used by the CTS was that persons with multiple types of concurrent overage were likely to be reported as having only one type of coverage. For example, those covered by both private insurance and Medicaid usually were reported as covered by private insurance only. Other types of overlapping coverage also may have been missed. The CTS's skip patterns, however, should have had no effect on estimates of the uninsured.

**4. Estimation Procedures**

Weights were constructed for the CTS, to allow for both site-specific and national estimates for individuals and FIUs. The weight for national estimates that combines data from the 60 sites and the supplemental national sample was used for all analyses in this report. Like the CPS, this combined weight was poststratified to independent population control totals. As mentioned earlier, the weighting methodology also gave additional weight to households with intermittent phone coverage, to compensate for the omission or underrepresentation of nontelephone households in the sample.

The CTS did no imputations of insurance coverage for nonresponse. However, persons with all "missing" or "don't know" responses to the health insurance questions were recoded to "uninsured." In all, 110 sample members age 0 to 64 (0.2 percent of the sample) were recoded to "uninsured," based on this criterion. These persons represent 499,000 weighted persons, or 1.4 percent of all uninsured nonelderly according to the CTS. In addition, some persons with "missing" or "don't know" responses to a particular question were recoded to "no," depending on

the value of other supporting variables. For example, missing values for Medicare were recoded to "no" for persons under age 65 who had a self-reported health status of excellent, very good, or good.

Some recoding was performed on responses to question b1i1: "Are you covered by a health insurance plan that I have not mentioned?" For example, those who responded affirmatively to this question, then reported Medicaid or the state name for a Medicaid program as their plan name, were recoded to "Medicaid." It was not possible to recode some cases in which a plan name was given but where it was ambiguous whether the coverage was employer-sponsored, through Medicaid managed care, or some other arrangement.

# III. ANALYSIS OF INSURANCE ESTIMATES IN THE CTS AND CPS

As revealed in Chapter II, the CPS and CTS differ on a number of key dimensions that could account for differences in insurance estimates. This chapter begins with an overview of the insurance estimates in the two surveys and quantifies the magnitude of the differences. Next, we discuss factors that may explain differences in the uninsured estimates, followed by an analysis of differences in the Medicaid estimates. The chapter concludes with a discussion of other coverage issues that may contribute to differences in insurance estimates.

## A. OVERVIEW OF INSURANCE COVERAGE ESTIMATES IN THE CTS AND CPS

Table III.1 presents estimates of insurance coverage in the nonelderly population, based on the CTS and CPS, by age and type of coverage. The CTS and CPS reported similar percentages of nonelderly persons with private insurance coverage--72.0 percent and 70.9 percent, respectively. However, the surveys differed considerably in their estimates of the number with Medicaid coverage and the number who were uninsured. For example, according to the CTS, 17.4 million nonelderly persons had Medicaid coverage, versus 28.2 million, according to the CPS. The differences in the number and rate of uninsured were less pronounced: 35.4 million were uninsured, according to the CTS, versus 41.4 million, according to the CPS. The uninsured rate differed by 2.3 percentage points--15.4 percent (CTS) versus 17.7 percent (CPS). The differential in the uninsured rate was larger for children (3.1 percentage points) than for adults (1.9 percentage points).

TABLE III.1
NON ELDERLY PERSONS WITH SELECTED SOURCES OF HEALTH INSURANCE COVERAGE: CTS VERSUS CPS
(Numbers in Thousands)

| | CTS | | CPS | |
|---|---|---|---|---|
| Insurance Status | Weighted Population | Percent | Weighted Population | Percent |
| **All Ages (0-64)** | | | | |
| Total | 229,631 | 100.0 | 234,049 | 100.0 |
| Private | 165,308 | 72.0 | 165,829 | 70.9 |
| Medicaid | 17,414 | 7.6 | 28,227 | 12.1 |
| Medicare | 6,102 | 2.7 | 4,608 | 2.0 |
| Other | 10,284 | 4.5 | 6,848 | 2.9 |
| Uninsured | 35,440 | 15.4 | 41,379 | 17.7 |
| **Children (Age 0-17)** | | | | |
| Total | 68,347 | 100.0 | 71,222 | 100.0 |
| Private | 47,820 | 70.0 | 47,217 | 66.3 |
| Medicaid | 10,334 | 15.1 | 15,502 | 21.8 |
| Medicare | 528 | 0.8 | 484 | 0.7 |
| Other | 2,855 | 4.2 | 2,289 | 3.2 |
| Uninsured | 7,981 | 11.7 | 10,554 | 14.8 |
| **Adults (Age 18-64)** | | | | |
| Total | 161,283 | 100.0 | 162,827 | 100.0 |
| Private | 117,488 | 72.8 | 118,612 | 72.8 |
| Medicaid | 7,080 | 4.4 | 12,725 | 7.8 |
| Medicare | 5,574 | 3.5 | 4,124 | 2.5 |
| Other | 7,429 | 4.6 | 4,559 | 2.8 |
| Uninsured | 27,459 | 17.0 | 30,825 | 18.9 |

The most common reason cited for differences in uninsured rates among various surveys is differences in the reference period. Indeed, the CTS asked about insurance coverage at the time of the interview (that is, a "point-in-time" estimate), whereas the CPS asked about insurance coverage at any time in 1996. Another difference is that the number of uninsured is directly captured in the CTS, while the CPS measures the uninsured as a *residual* of those with insurance at any time in 1996. Strictly interpreted, the CPS provides a measure of those who are uninsured *continuously throughout* the year.[1] Therefore, all else being equal, we would have expected the proportion of uninsured in the CTS to be *greater* than that in the CPS, because the number who are uninsured at any given time (the CTS estimate) should be greater than the number who are uninsured continuously throughout a one-year period (the CPS estimate), given the likelihood of obtaining coverage during the year. What, then, accounts for the differences between the two surveys in their estimates of insurance coverage and, in particular, the number who are uninsured or receiving Medicaid? We sought possible explanations based primarily on differences in sample coverage and instrumentation in the two surveys. First, we discuss differences in the uninsured estimates and then address differences in the Medicaid estimates.

## B. EXPLAINING DIFFERENCES IN THE UNINSURED ESTIMATES

We identified several factors that may account for differences in the number and rates of uninsured in the two surveys:

- **Differences in the universe of the two surveys.** The CTS excluded residents of Alaska and Hawaii, persons in group quarters, and children who are not householders and are unclaimed by parents or guardians.

[1]Recall from the discussion in Chapter II, on the CPS health insurance instrumentation, that researchers acknowledge that the CPS estimate probably is a mix between an estimate of those uninsured at a point in time and those uninsured continuously throughout the previous year, probably due to recall error. Again, Appendix D presents a more detailed discussion of the literature on this topic.

- **Differences in instrumentation.** The CTS included an uninsured probe that directly verified whether individuals were uninsured. In contrast, the CPS classified the uninsured as a residual of those reporting insurance.

- **Differences in the samples.** The CTS had a higher proportion of one-person families and a lower proportion of Asians, higher-income families, and children than the CPS. In addition, the CTS had a smaller weighted population of nontelephone households and a lower response rate than the CPS.

### 1. Adjusting for Differences in the Universe

As discussed in Chapter II, the CTS and CPS were drawn from different universes--the CTS excluded residents of Alaska and Hawaii, persons in group quarters, and children who are not householders and are unclaimed by parents or guardians. Recall, from Table III.1, that the CTS projects to a national (nonelderly) population of 229.6 million persons, versus 234.0 million for the CPS--a difference of more than 4 million. Table III.2 adjusts the uninsured estimates for these universe differences. Before adjustments are made to the CPS universe, the differential in percent uninsured is 2.3 percentage points (15.4 versus 17.7) for persons age 0-64. This difference is significant at the 0.05 level, using a two-tailed t-test (which took into account the complex sample design). When we exclude Alaska and Hawaii households from the CPS, the weighted population decreases from 234.0 million to 232.4 million, although the CPS uninsured rate remains unchanged (row 2, Table III.2).[2] When we exclude household members who are eligible for the CPS but not for the CTS (row 3, Table III.2), the CPS weighted population decreases to 231.9 million and the CPS uninsured rate remains at 17.7 percent. Thus, these two adjustments to the CPS universe had a trivial effect on the CPS uninsured numbers and rates. We now turn to a discussion of differences in instrumentation.

[2] The uninsured rate among Alaska and Hawaii households was 11.6 percent.

TABLE III.2

ADJUSTED ESTIMATES OF THE UNINSURED
(Numbers in Thousands)

| | CTS | | | CPS | | | Differential (CPS minus CTS) | |
|---|---|---|---|---|---|---|---|---|
| | Weighted Population | Number Uninsured | Percent Uninsured | Weighted Population | Number Uninsured | Percent Uninsured | Number Uninsured | Percent Uninsured |
| **Nonelderly Persons (Age 0-64)** | | | | | | | | |
| Full CPS Sample (Age < 65) | 229,631 | 35,440 | 15.4 (14.2, 16.7) | 234,049 | 41,379 | 17.7 (17.2, 18.1) | 5,939 | 2.3* |
| Excluding Alaska and Hawaii Households | 229,631 | 35,440 | 15.4 (14.2 16.7) | 232,443 | 41,193 | 17.7 (17.2, 18.2) | 5,753 | 2.3* |
| Excluding Ineligible Household Members | 229,631 | 35,440 | 15.4 (14.2, 16.7) | 231,873 | 40,935 | 17.7 (17.2, 18.1) | 5,495 | 2.3* |
| Adjusted for CTS Uninsured Probe | 229,631 | 37,529 | 16..3 (15.1, 17.6) | 231,873 | 40,935 | 17.7 (17.2, 18.1) | 3,406 | 1.4 |
| **Children (Age 0-17)** | | | | | | | | |
| Full CPS Sample (Age <18) | 68,347 | 7,981 | 11.7 (10.4, 12.9) | 71,222 | 10,554 | 14.8 (14.2, 15.5) | 2,573 | 3.1* |
| Excluding Alaska and Hawaii Households | 68,347 | 7,981 | 11.7 (10.4, 12.9) | 70,696 | 10,511 | 14.9 (14.2, 15.5) | 2,530 | 3.2* |
| Excluding Ineligible Household Members | 68,347 | 7,981 | 11.7 (10.4, 12.9) | 70,162 | 10,269 | 14.6 (14.0, 15.3) | 2,288 | 2.9* |
| Adjusted for CTS Uninsured Probe | 68,347 | 8,714 | 12.7 (11.5, 14.0) | 70,162 | 10,269 | 14.6 (14.0, 15.3) | 1,555 | 1.9* |
| **Adults (Age 18-64)** | | | | | | | | |
| Full CPS Sample (Ages 18-64) | 161,283 | 27,459 | 17.0 (15.7, 18.4) | 162,827 | 30,825 | 18.9 (18.4, 19.4) | 3,366 | 1.9* |
| Excluding Alaska and Hawaii Households | 161,283 | 27,459 | 17.0 (15.7, 18.4) | 161,747 | 30,682 | 19.0 (18.5, 19.5) | 3,223 | 2.0* |
| Excluding Ineligible Household Members | 161,283 | 27,459 | 17.0 (15.7, 18.4) | 161,711 | 30,667 | 19.0 (18.5, 19.5) | 3,208 | 2.0* |
| Adjusted for CTS Uninsured Probe | 161,283 | 28,815 | 17.9 (16.5, 19.2) | 161,711 | 30,667 | 19.0 (18.5, 19.5) | 1,852 | 1.1 |

NOTE: Standard errors in parentheses.

*Difference significant at the 0.05 level using two-tailed t-test

## 2. Accounting for Instrumentation Differences

Although there were a number of differences in instrumentation that might affect the insurance estimates, only one was expected to affect the estimates of the uninsured--namely, the presence of the uninsured probe in the CTS. As discussed in Chapter II, the CTS directly verified whether individuals were uninsured, rather than classifying the uninsured as a residual of those reporting insurance, as was done in the CPS. This path in the CTS is graphically depicted in Figure II.2, where those with no other insurance were directed to the "CONFIRM" box and asked question <bij>: "According to the information we have, [name] does not have health care coverage of any kind. Does s/he have health insurance coverage through a plan I might have missed?"

We were able to quantify the impact of the uninsured probe by referring back to a file that contained information on whether the uninsured status was confirmed, and if not, what type of insurance was reported. To account for the effect of the uninsured probe, we identified those in the CTS reporting coverage only as a result of the final probe and recalculated what the uninsured rate would have been in the absence of the final probe.

Our analysis revealed that 34.6 million cases in the CTS (on a weighted basis) were asked the uninsured probe because they did not report any insurance coverage in response to the previous insurance questions (Table III.3). Of these, 32.1 million (93 percent) confirmed that they were uninsured. Another 0.4 million (1 percent) said "don’t know, refused, or missing" to the probe; following other conventions, these individuals would have been coded as "uninsured." The remaining 2.1 million persons (6 percent) specified insurance coverage as a result of the probe.

**TABLE III.3**

**EFFECT OF THE CTS UNINSURED PROBE ON THE NUMBER OF UNINSURED, BY AGE GROUP**
**(Numbers in Thousands)**

| | All Ages (0-64) | | Children (0-17) | | Adults (Age 18-64) | |
|---|---|---|---|---|---|---|
| Status on Uninsured Probe | Weighted Population | Percent | Weighted Population | Percent | Weighted Population | Percent |
| Total | 34,581 | 100.0 | 8,448 | 100.0 | 26,133 | 100.0 |
| Confirmed Uninsured Status | 32,104 | 92.8 | 7,619 | 90.2 | 24,485 | 93.7 |
| Specified Insurance Coverage | 2,089 | 6.0 | 733 | 8.7 | 1,356 | 5.2 |
| Unknown | 388 | 1.1 | 96 | 1.1 | 292 | 1.1 |

NOTES: Unknown includes “don’t know,” “refused,” and “missing.”
Unknowns are recoded as uninsured in public use file.

in other words, these 2.1 million people would have been coded as uninsured in the absence of the CTS uninsured probe.[3]

The net effect of the uninsured probe on the uninsured rate is shown in the last row of each panel in Table III.2. Had the 2.1 million persons been classified as uninsured, the number of nonelderly uninsured projected by the CTS would have risen from 35.4 to 37.5 million, and the uninsured rate would have risen from 15.4 to 16.3 percent. This would narrow the differential in the uninsured rate between the CPS and CTS to only 1.4 percentage points--a difference that is no longer statistically significant.

We performed the same analysis for adults and children. For adults, the differential between the percentage uninsured in the CPS and CTS decreased from 1.9 percentage points in the unadjusted samples to 1.1 percentage points in the adjusted samples, a difference that is no longer statistically significant. For children, the uninsured rate differential decreased from 3.1 to 1.9 percentage points, although this difference remains statistically significant.

As shown in Table III.3, respondents were more likely to specify insurance coverage for children than for adults when asked the final probe (8.7 versus 5.2 percent). Nevertheless, the gap between the CTS and CPS uninsured rates for children remained significant even after this adjustment.

Table III.4 shows the types of insurance identified through the uninsured probe. Overall, two-thirds (66.6 percent) of those identifying coverage reported private coverage, another 17.7 percent reported Medicaid, 2.0 percent Medicare, and the remaining 15.0 percent other

[3] These results were confirmed in an analysis of the uninsured probe in the Maine and North Dakota Health Insurance Surveys (Carlson 1998). Among those asked the uninsured probe, 9 percent in Maine and 12 percent in North Dakota specified they were covered by an insurance plan that had not been reported elsewhere.

**TABLE III.4**

**TYPE OF COVERAGE SPECIFIED THROUGH THE CTS UNINSURED PROBE, BY AGE GROUP (Numbers in Thousands)**

| | All Ages (0-64) | | Children (Age 0-17) | | Adults (Age 18-64) | |
|---|---|---|---|---|---|---|
| Type of insurance | Weighted Population | Percent | Weighted Population | Percent | Weighted Population | Percent |
| Total | 2,089 | 100.0 | 733 | 100.0 | 1,356 | 100.0 |
| Private | 1,392 | 66.6 | 309 | 42.1 | 1,084 | 79.9 |
| Medicaid | 369 | 17.7 | 271 | 37.0 | 98 | 7.2 |
| Medicare | 41 | 2.0 | 6 | 0.8 | 35 | 2.6 |
| Other | 318 | 15.0 | 160 | 21.8 | 149 | 10.7 |

coverage.[4] The distribution was considerably different for children than for adults. About one-third of children with coverage specified through the uninsured probe reported Medicaid, whereas only 7.2 percent of adults reported Medicaid. Adults usually reported private coverage (80 percent) through the uninsured probe.

In summary, differences in the uninsured rates for all nonelderly persons, and specifically for adults, appear to be explained by differences in the instrumentation (that is, the uninsured probe). For children, however, significant differences remained. Additional research is required to understand better why some respondents do not report insurance coverage in the initial pass through the insurance questions.

### 3. Other Factors that May Affect Insurance Estimates

This section discusses three additional factors that may affect insurance estimates, although the direction and magnitude of their impacts is unclear. First, we focus on characteristics of the CPS and CTS samples that appear to differ--including family size, race/ethnicity, poverty status, and coverage of children. Second, we examine variations in the coverage of nontelephone households. Third, we discuss differences in response rates.

#### a. Characteristics of the Sample

The characteristics of the CPS and CTS samples differed in several of important ways that could contribute to differences in uninsured rates. We raise these issues for future consideration.

[4] Numbers sum to more than 100 percent because respondents may report more than one type of coverage

**Family Size.** The CTS had a higher proportion of one-person families than the CPS (19.6 percent versus 13.1 percent) and a smaller proportion of families with three or more members (58.4 percent versus 65.7 percent). We defined families in the CTS based on the family insurance unit (FIU). In the CPS, we used the most disaggregated measure of families (whereby primary families are separated from their related subfamilies), which should be roughly equivalent to the FIU.[5]

As shown in Table III.5, there was no significant difference in the uninsured rates for one-person families, although a clear disproportion of the uninsured were in one-person families in the CTS (34.1 percent) versus the CPS (19.1 percent). This is because of the much larger weighted population in one-person families in the CTS, compared to the CPS. In all other categories of family size, the CTS had lower uninsured rates than the CPS. Not surprisingly, we found that the uninsured probe elicited greater coverage in large families than in one-person families. For example, the uninsured probe elicited coverage for 2.7 percent of those in one-person families who originally reported they were uninsured, versus 7.8 percent in 2 to 4 person families and 6.5 percent in families with five or more persons (data not shown).

**Race/Ethnicity.** We also found differences in the racial/ethnic distribution between the two surveys, especially in the representation of Asians in the CTS. The CTS had only half as

[5] The FIU is somewhat different from the Census family as defined by most researchers using the CPS, which includes all people related to the household head either by blood or by marriage. The CPS, however, also provides information on related subfamilies, which are defined as married couples with or without children, or one parent with children living in a household and related to the household head. In addition, CPS identifies single individuals not related to the household head. Using information on related subfamilies and unrelated familes and individuals, a CPS-based FIU can be created that is similar to the CTS's FIU

**TABLE III.5**
**UNINSURED RATES IN THE CTS AND CPS FOR NONELDERLY WITH VAROUS DEMOGRAPHIC CHARACTERISTICS**
**(Numbers in Thousands)**

| | CTS | | | | CPS | | | | Differential of Uninsured (CTS minus CPS) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Weighted Population | | Uninsured | | Weighted Population | | Uninsured | | | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| **Total** | 229,631 | 100.0 | 35,440 | 15.4 | 231,873 | 100.0 | 40,935 | 17.7 | -5,496 | -2.2 * |
| **Family Size** | | | | | | | | | | |
| **1** | 44,969 | 19.6 | 12,091 | 26.9 | 30,373 | 13.1 | 7,813 | 25.7 | 4,278 | 1.2 |
| **2** | 50,490 | 22.0 | 6,357 | 12.6 | 49,300 | 21.3 | 8,646 | 17.5 | -2,289 | -4.9 * |
| **3-5** | 120,438 | 52.4 | 14,840 | 12.3 | 135,769 | 58.6 | 20,816 | 15.3 | -5,976 | -3.0 * |
| **6+** | 13,733 | 6.0 | 2,152 | 15.7 | 16,431 | 7.1 | 3,660 | 22.3 | -1,508 | -6.6 * |
| **Race/Ethnicity** | | | | | | | | | | |
| **White** | 162,386 | 70.7 | 19,547 | 12.0 | 163,043 | 70.3 | 21,738 | 13.3 | -2,191 | -1.3 * |
| **Black** | 29,875 | 13.0 | 5,571 | 18.6 | 30,509 | 13.2 | 7,077 | 23.2 | -1,506 | -4.5 * |
| **Hispanic** | 27,254 | 11.9 | 8,959 | 32.9 | 27,963 | 12.1 | 9,792 | 35.0 | -833 | -2.1 |
| **Asian** | 4,724 | 2.1 | 499 | 10.6 | 8,500 | 3.7 | 1,981 | 23.3 | -1,482 | -12.7 * |
| **Other** | 5,390 | 2.3 | 862 | 16.0 | 1,857 | 0.8 | 346 | 18.6 | 516 | -2.6 |
| **Poverty Level**** | | | | | | | | | | |
| **0 -<100%** | 34,426 | 15.0 | 10,847 | 31.5 | 32,904 | 14.2 | 11,085 | 33.7 | -238 | -2.2 |
| **100 - <150 %** | 23,631 | 10.3 | 6,470 | 27.4 | 20,849 | 9.0 | 7,038 | 33.8 | -568 | -6.4 * |
| **150 -<200%** | 23,447 | 10.2 | 5,351 | 22.8 | 21,809 | 9.4 | 5,914 | 27.1 | -563 | -4.3 * |
| **200 -<300%** | 41,430 | 18.0 | 6,015 | 14.5 | 41,199 | 17.8 | 7,253 | 17.6 | -1,238 | -3.1 * |
| **300- -<400%** | 36,659 | 16.0 | 3,224 | 8.8 | 35,100 | 15.1 | 3,944 | 11.2 | -720 | -2.4 * |
| **400%+** | 70,038 | 30.5 | 3,533 | 5.0 | 80,011 | 34.5 | 5,702 | 7.1 | -2,169 | -2.1 * |

*Difference significant at the 0.05 level, using two-tailed t-test
**For households with related subfamilies, poverty level for CPS is the combined poverty level of the primary family and related subfamily.

many Asian respondents as the CPS--4.7 million in the CTS versus 8.5 million in the CPS (Table III.5).[6] Moreover, the CTS uninsured rate for Asians was significantly lower--10.6 percent in the CTS versus 23.3 percent in the CPS. As a result, Asians accounted for a disproportionate share of the differential in uninsured rates.

It is possible that Asian respondents to the CTS more often classified themselves in the "other" race/ethnicity category, which could explain the much higher proportion of the population classified in this category in the CTS (3.8 percent) versus the CPS (0.8 percent). However, the possible coding of Asians as other race/ethnicity in the CTS does not appear to account for the difference in uninsured estimates, because the combined uninsured rate for persons who are either Asian or "other" race/ethnicity in the CTS is significantly lower than that of the CPS (14.5 percent versus 22.5 percent).[7]

It is not clear whether the CTS sample has achieved an adequate representation of the Asian population. This could be a function of the interview mode or the sample design. Language barriers may be a greater impediment to a phone survey than to a survey that, at least initially, occurs in person. The CTS did not employ interviewers trained in Asian languages, whereas the CPS interview may be conducted in a number of languages.[8] Another possible explanation for the lower proportion of Asians in the CTS is potential underrepresentation of Asians in the CTS "community-based" sampling strategy, despite augmentation of a national sample.

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[6] The mid-decade Census Bureau estimate of the Asian population was about 8.7 million, including those in Alaska and Hawaii (Day 1996). Although neither the CTS nor the CPS explicitly poststratified for the number of Asians in the U.S. population, the CPS estimate is quite similar to the mid-decade census estimate. Factors that may account for the lower number of Asians in the CTS sample include nonresponse and sampling error.

[7] The Difference between the uninsured rates in the other category alone was not significant.

[8] Gregory D. Weyland [gregord.d.weyland@ccmail.census.gov]. "Languages for CPS Interviews." E-mail message to Vicki Huggins of the Census Bureau, forwarded to Kimball Lewis.

**Poverty Level.** Given the sharp variations in uninsured rates by poverty level, we hypothesized that the lower uninsured rates in the CTS could be attributable to differences in the income distribution of the samples. There is some evidence that the CTS may underrepresent higher-income families (400 percent of the poverty level and above) relative to the CPS. Such families represent 34.5 percent of the weighted population in the CPS, but only 30.5 percent of the CTS weighted population (Table III.5).[9] Even though the differential in the uninsured rate is only 2 percentage points, this group accounts for 39 percent of the differential in the number of uninsured between the two surveys because of the composite effect of the smaller weighted population and the lower uninsured rate in the CTS. In contrast, there were no significant differences in uninsured rates among individuals below poverty; moreover, the number of uninsured below poverty projected by the two surveys is almost identical. Therefore, we conclude that differences in uninsured rates between the two surveys appear to be accounted for by the differential representation of higher-income families in the two surveys.

**Coverage of Children.** One result we have yet to explain is why the differences in uninsured rates remained significant for children even after adjusting for differences in the sample coverage and instrumentation. The CTS gathered data on one randomly sampled child per FIU, whereas the CPS gathered data on all household members. Both surveys poststratified the samples to external population controls. Nevertheless, children represented a slightly smaller proportion of the CTS sample than the CPS sample (29.8 versus 30.3 percent), and the CTS sample projected 1.8 million fewer children than the CPS (68.3 versus 70.2 million). The combined effect of the

[9] It should be noted that the CPS asks multiple questions on sources of income, which is expected to elicit more income than the single question asked in the CTS. However, we do not believe that explains why the CPS has a higher proportion of families above 400 percent FPL, whereas the CTS has a higher proportion below 200 percent FPL. It is unlikely that the CTS income distribution would shift so markedly with a more detailed series of income questions.

lower uninsured rates among children in the CTS and their lower overall representation in the sample resulted in children being a smaller proportion of the nonelderly uninsured in the CTS (22.5 percent) than in the CPS (25.1 percent). Further analysis is required to determine whether differences in the uninsured rates may be accounted for by the strategy used for interviewing and weighting children in the CTS.

**b. Coverage of Nontelephone Households**

We hypothesized that the lower uninsured rates in the CTS were at least in part a function of the mode of administration of the survey over the telephone. In other words, we assumed that the uninsured rates were lower because nontelephone households were systematically excluded from the CTS and that these households had higher uninsured rates. However, the CTS included two features to adjust for coverage of nontelephone households. First, in 12 large metropolitan areas (populations greater than 200,000), the CTS included a small supplemental sample of nontelephone households that were interviewed via cellular phone. Second, in small metropolitan and nonmetropolitan areas, the CTS weighted households with intermittent telephone coverage more heavily, to account for households without phones.

As shown in Table III.6, the CTS and CPS exhibited significant differences in the uninsured rates between large metropolitan and small or nonmetropolitan areas, between telephone and nontelephone households, and within metropolitan areas, according to whether the household had a phone.[10] In general, the CTS had lower rates of uninsured than the CPS, with one exception. Unexpectedly, the uninsured rate among households without telephones in large

[10] The definition of "small metropolitan area" differs somewhat in the CTS and CPS. Small metropolitan areas are defined as those with populations of under 200,000 in the CTS versus 250,000 in the CPS.

## TABLE III.6
## NUMBER AND RATE OF UNINSURED, BY GEOGRAPHIC LOCATION AND TELEPHONE STATUS
## (Weighted in Thousands)

| | CTS | | | CPS | | | Differential (CTS minus CPS) | |
|---|---|---|---|---|---|---|---|---|
| | Weighted Population | Number Uninsured | Percent Uninsured | Weighted Population | Number Uninsured | Percent Uninsured | Number Uninsured | Percent Uninsured |
| Total | 229,631 | 35,440 | 15.4 | 231,873 | 40,935 | 17.7 | (5,496) | (2.2)* |
| **Metro Status** | | | | | | | | |
| Large Metro Area | 168,484 | 25,941 | 15.4 | 180,735 | 31,509 | 17.4 | (5,568) | (2.0)* |
| Small and Non-Metro Areas | 61,147 | 9,499 | 15.5 | 51,138 | 9,427 | 18.4 | 72 | (2.9)* |
| **Telephone Status** | | | | | | | | |
| Telephone | 222,954 | 32,768 | 14.7 | 216,561 | 36,033 | 16.6 | (3,265) | (1.9)* |
| No Telephone | 6,676 | 2,671 | 40.0 | 15,312 | 4,903 | 32.0 | (2,231) | 8.0* |
| **Telephone/Metro Status** | | | | | | | | |
| Large Metro Area | | | | | | | | |
| Telephone | 161,808 | 23,270 | 14.4 | 170,299 | 28,358 | 16.7 | (5,088) | (2.3)* |
| No Telephone | 6,677 | 2,671 | 40.0 | 10,436 | 3,151 | 30.2 | (480) | 9.8* |
| Small and Non-Metro Areas | | | | | | | | |
| Telephone | 61,147 | 9,499 | 15.5 | 46,262 | 7,675 | 16.6 | 1,824 | (1.1) |
| No Telephone | 0 | 0 | 0 | 4,876 | 1,751 | 35.9 | (1,751) | (35.9)* |

*Difference significant at the 0.05 level, using two-tailed t-test.

metropolitan areas was higher in the CTS than in the CPS (40.0 percent versus 30.2 percent), although the weighted population of nontelephone households in large metropolitan areas in the CTS was considerably smaller than in the CPS--6.7 million versus 10.4 million, respectively--leading to a lower overall number of uninsured in the CTS. If this difference represents coverage differences between the two surveys (as opposed to differences in how households are classified in terms of telephone or metropolitan status), that may explain part of the differential in estimates of the uninsured between the two surveys.

We also hypothesized that the lack of direct coverage of nontelephone households in small metropolitan or nonmetropolitan areas in the CTS might result in lower rates of uninsured in the CTS compared with the CPS. As can be seen in Table III.6, the CPS uninsured rate was 35.9 percent for nontelephone households in small metropolitan or nonmetropolitan areas. If we exclude these households from the CPS estimate, the CPS uninsured rate is reduced by 0.2 point to 17.3 percent, still well above the CTS rate of 15.4 percent. It should be noted, however, that this adjustment overstates the difference between the two surveys because the CTS already adjusts by disproportionately weighting households in small metropolitan or nonmetropolitan areas with intermittent telephone coverage. Such households had an uninsured rate of 33 percent, which is similar to the CPS rate of 36 percent for households without a phone.

### c. Response Rates

A final issue is the difference in the response rates between the two surveys. The CTS response rate (65 percent of FIUs) was quite a bit lower than that obtained by the March 1997 CPS (84 percent of persons).[11] This large differential could mean that certain groups are disproportionately underrepresented in the CTS and not accounted for by nonresponse and

[11]Note that the CTS response rate is for FIUs, while the CPS rate is for persons. For details on calculation of the CTS response rate, see Strouse et al. (1998). The Census Bureau does not publish the response rate for the March

poststratification adjustments. If these groups have high uninsured rates, then this could further explain why the CTS uninsured rate is lower than the CPS rate.

As a proxy for the impact of hard-to-reach populations on the uninsured rates in the CTS, we compared the rates for those who initially responded to the CTS with those who responded after one or more refusal conversion efforts. We found that persons who initially refused and then later converted had substantially lower uninsured rates than those who initially responded (11.7 percent versus 17.0 percent, respectively).[12] This suggests that refusal conversion efforts in the CTS may have led to *lower* uninsured rates. What this analysis does not indicate is whether those who responded after multiple refusal conversion efforts are representative of those who did not respond, or whether those not responding to the CTS are from groups with higher uninsured rates.

**C. EXPLAINING DIFFERENCES IN THE MEDICAID ESTIMATES**

In addition to exploring differences in the uninsured estimates between the CTS and CPS, we attempted to explain differences in the number of Medicaid beneficiaries reported in the two surveys. Indeed, as shown in Table III.1, the Medicaid differences were larger than the uninsured Differences. The CTS reported 17.4 million Medicaid beneficiaries, while CPS reported 28.2 million—a difference of nearly 10.8 million.

Below, we discuss four factors that might account for this difference: (1) differences in how the data are coded, (2) the effects of overlapping coverage, (3) the use of state-specific plan names, and (4) imputation methodology. We discuss each of the factors and, when possible, adjust the estimates of Medicaid coverage to account for these factors.

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CPS. According to a Census Bureau official, a good proxy for the response rate is the percentage of persons in the sample with a March Supplement record present in the public-use file (CPS variable FL-665=1).

[12] Conversely, rates of private insurance coverage were higher among those who initially refused to participate (32.4 percent) than among those who initially responded (21.8 percent).

**1. Coding Differences**

Most published estimates of Medicaid coverage in the CTS and CPS differ in part because of differences in who is coded as covered by Medicaid: (1) the CPS includes the Indian Health Service, other government health care, and "other insurance" coverage in the Medicaid category; and (2) the CTS excludes dual Medicare/Medicaid coverage from the Medicaid category.[13] Therefore, to make the Medicaid estimates more comparable, we needed to adjust the CPS estimates by *excluding* IHS, other state plans, and other coverage from the Medicaid category, while the CTS estimates were adjusted by *including* Medicare beneficiaries with dual Medicaid coverage (who reported that coverage through question B60).

To account for these coding differences, we needed to perform a more detailed disaggregation of insurance coverage. Table III.7 shows the amount of insurance coverage elicited from each question in the CTS and CPS. (Table III.8 shows the disaggregation for children, and Table III.9 shows the disaggregation for nonelderly adults.) For this analysis, the CPS data were adjusted for the differences in the sampling universes between the CPS and CTS. In addition, the raw CPS variable for Medicaid was used rather than the Census Bureau's recoded variable that is used in most published reports so that Indian Health Service, other

[13] Beginning with the March 1998 CPS, the Census Bureau no longer includes the IHS in the Medicaid category. People with IHS coverage are now counted as uninsured.

**TABLE III.7**

**DETAILED DISAGGREGATION OF INSURANCE COVERAGE IN THE CTS AND CPS: ALL NONELDERLY (Age 0-64)**
**(Numbers in Thousands)**

| | Community Tracking Study | | | | Current Population Survey | | | |
|---|---|---|---|---|---|---|---|---|
| **Coverage Type** | **Question Number** | **Variable Name** | **Weighted Population** | **Percent Of Total** | **Question Number** | **Variable Name** | **Weighted Population** | **Percent Of Total** |
| Total Private | | | 166,356 | 72.4 | | | 164,003 | 70.7 |
| Through employer/union | B1A | PRIVJOB | 146,937 | 64.0 | SHI2, SHI4 | HI, DEPHI | 148,305 | 64.0 |
| Buy directly | B1B | PRIVDIR | 14,608 | 6.4 | SHI7, SHI9 | PRIV, DEPRIV | 16,308 | 7.0 |
| From outside household | B1C | PRIVOTH | 4,016 | 1.7 | SHI11 | OUT | 6,678 | 2.9 |
| Medigap coverage* | B59 | MCRSUP | 1,048 | # | n.a | n.a. | | |
| Medicare | B1D | MCARE | 6,102 | 2.7 | SHI13 | CARE | 4,565 | 2.0 |
| Total Medicaid | | | 18,923 | 8.2 | | | 25,989 | 11.2 |
| Medicaid | B1E | MCAID | 17,414 | 7.6 | SHI15 | CAID | 25,989 | 11.2 |
| With Medicare** | B60 | MCRMCD | 1,509 | 0.7 | n.a. | n.a. | | |
| Military | B1F | MILINS | 6,122 | 2.7 | SHI18 | OTYP_1 TO 3 | 6,500 | 2.8 |
| Indian Health Service | B1G | IHSINS | 614 | 0.3 | SHI18 | OTYP_4 | 586 | 0.3 |
| Total Other | | | 3,567 | 1.6 | | | 3,504 | 1.5 |
| State-specific plan | B1H | STINS | 582 | 0.3 | n.a. | n.a. | | |
| Other | B11I | OTHINS | 2,995 | 1.3 | SHI18, SHIC1 | OTYP_5, OTHSTPER | 3,504 | 1.5 |
| Uninsured | | | 35,440 | 15.4 | | | 40,935 | 17.7 |
| **Total** | | | **229,631** | **100.0** | | | **231,873** | 100.0 |

NOTES:
n.a.= not applicable
# = less than 0.05
*Includes only persons who reported private Medigap coverage but no other private coverage. Does not include those who reported private coverage initially, then later indicated that it was Medigap coverage.
**Includes only those dual Medicare/Medicaid beneficiaries who did not report Medicaid under question B1E

**TABLE III.8**

**DETAILED DISAGGREGATION OF INSURANCE COVERAGE IN THE CTS AND CPS:**
**ALL CHILDREN (Age 0-17)**
**(Numbers in Thousands)**

| | Community Tracking Study | | | | Current Population Survey | | | |
|---|---|---|---|---|---|---|---|---|
| **Coverage Type** | **Question Number** | **Variable Name** | **Weighted Population** | **Percent Of Total** | **Question Number** | **Variable Name** | **Weighted Population** | **Percent Of Total** |
| Total Private | | | 47,850 | 70.0 | | | 46,565 | 66.4 |
| Through employer/union | B1A | PRIVJOB | 41,803 | 61.2 | SHI2, SHI4 | HI, DEPHI | 41,448 | 59.1 |
| Buy Directly | B1B | PRIVDIR | 3,783 | 5.5 | SHI7, SHI9 | PRIV, DEPRIV | 3,750 | 5.3 |
| From outside household | B1C | PRIVOTH | 2,331 | 3.4 | SHI11 | OUT | 3,343 | 4.8 |
| Medigap coverage* | B59 | MCRSUP | 30 | # | n.a | n.a. | | |
| Medicare | B1D | MCARE | 528 | 0.8 | SHI13 | CARE | 470 | 0.7 |
| Total Medicaid | | | 10,555 | 15.4 | | | 14,565 | 20.8 |
| Medicaid | B1E | MCAID | 10,334 | 15.1 | SHI15 | CAID | 14,565 | 20.8 |
| With Medicare** | B60 | MCRMCD | 221 | 0.3 | n.a. | n.a. | | |
| Military | B1F | MILINS | 1,396 | 2.0 | SHI18 | OTYP_1 TO 3 | 2,134 | 3.0 |
| Indian Health Service | B1G | IHSINS | 260 | 0.4 | SHI18 | OTYP_4 | 222 | 0.3 |
| Total Other | | | 1,199 | 1.8 | SHI18, SHIC1 | OTYP_5,OTHSTPER | 1,287 | 1.8 |
| State-specific plan | B1H | STINS | 294 | 0.4 | | . | | |
| Other | B11I | OTHINS | 915 | 1.3 | | | | |
| Uninsured | | | 7,981 | 11.7 | | | 10,269 | 14.6 |
| **Total** | | | **68,347** | **100.0** | | | **70,162** | **100.0** |

NOTES:
n.a.= not applicable
# = less than 0.05
*Includes only persons who reported private Medigap coverage but no other private coverage. Does not include those who reported private coverage initially, then later indicated that it was Medigap coverage.
**Includes only those dual Medicare/Medicaid beneficiaries who did not report Medicaid under question BIE

**TABLE III.9**

**DETAILED DISAGGREGATION OF INSURANCE COVERAGE IN THE CTS AND CPS: ADULTS (Age 18-64) (Numbers in Thousands)**

| | Community Tracking Study | | | | Current Population Survey | | | |
|---|---|---|---|---|---|---|---|---|
| Coverage Type | Question Number | Variable Name | Weighted Population | Percent Of Total | Question Number | Variable Name | Weighted Population | Percent Of Total |
| Total Private | | | 118,506 | 73.5 | | | 117,437 | 72.6 |
| Through employer/union | B1A | PRIVJOB | 105,135 | 65.2 | SHI2, SHI4 | HI, DEPHI | 106,856 | 66.1 |
| Buy Directly | B1B | PRIVDIR | 10,825 | 6.7 | SHI7, SHI9 | PRIV, DEPRIV | 12,558 | 7.8 |
| From outside household | B1C | PRIVOTH | 1,685 | 1.0 | SHI11 | OUT | 3,336 | 2.1 |
| Medigap coverage* | B59 | MCRSUP | 1,018 | 0.6 | n.a | n.a. | | |
| Medicare | B1D | MCARE | 5,574 | 3.5 | SHI13 | CARE | 4,095 | 2.5 |
| Total Medicaid | | | 8,368 | 5.2 | | | 11,424 | 7.1 |
| Medicaid | B1E | MCAID | 7,080 | 4.4 | SHI15 | CAID | 11,424 | 7.1 |
| With Medicare** | B60 | MCRMCD | 1,288 | 0.8 | n.a. | n.a. | | |
| Military | B1F | MILINS | 4,726 | 2.9 | SHI18 | OTYP_1 TO 3 | 4,366 | 2.7 |
| Indian Health Service | B1G | IHSINS | 354 | 0.2 | SHI18 | OTYP_4 | 364 | 0.2 |
| Total Other | | | 2,368 | 1.5 | SHI18, SHIC1 | OTYP_5, OTHSTPER | 2,217 | 1.4 |
| State-specific plan | B1H | STINS | 288 | 0.2 | | | | |
| Other | B11I | OTHINS | 2,080 | 1.3 | | | | |
| Uninsured | | | 27,459 | 17.0 | | | 30,667 | 19.0 |
| **Total** | | | **161,283** | **100.0** | | | **161,711** | **100.0** |

NOTES:
n.a.= not applicable
*Includes only persons who reported private Medigap coverage but no other private coverage. Does not include those who reported private coverage initially, then later indicated that it was Medigap coverage.
**Includes only those dual Medicare/Medicaid beneficiaries who did not report Medicaid under question BIE

government health care, or other insurance are not counted as Medicaid. The question number and variable names are provided in the table, so that each insurance type can be mapped to the questionnaire flowcharts presented in Figures II.1 and II.2.

We found that the CPS estimate of Medicaid beneficiaries decreased from 28.2 to 26.0 million, whereas the CTS estimate increased from 17.4 to 18.9 million. Thus, the Medicaid differential narrowed from 10.8 to 7.1 million as a result of these adjustments. Nevertheless, the Medicaid coverage rates still varied between the two surveys: the CTS showed that 8.2 percent of persons age 0 to 64 had Medicaid versus 11.2 percent in the CPS (Table III.5). Among children, the CTS showed a Medicaid coverage rate of 15.4 percent versus 20.8 percent in the CPS (Table III.8). Among nonelderly adults, the Medicaid coverage rate was 5.2 percent in the CTS and 7.1 percent in the CPS (Table III.9).[14]

**2. Overlapping Coverage**

Medicaid coverage differences between the two surveys also may be a function of the degree to which the surveys report Medicaid coverage when it overlaps with private coverage. Because of the skip patterns in the CTS questionnaire, persons in families where everyone had private coverage were not asked whether they also had Medicaid, thereby reducing the amount of

[14] The number of persons reporting being enrolled in Medicaid according to the CTS, CPS, and most other surveys usually is substantially lower than the number of persons ever enrolled in Medicaid in a given year, according to administrative data from the Health Care Financing Administration (HCFA). This problem is often referred to as "underreporting." In 1996, 36.5 million nonelderly individuals were enrolled in Medicaid at some point during the year according to HCFA--a number substantially larger than the CTS or CPS, even when one takes into account the fact that the CTS reflects coverage at a point in time and the CPS reflects coverage somewhere between a point in time and ever enrolled. Underreporting is thought to occur because survey respondents may not admit to being covered due to the stigma associated with public assistance programs, because they are not currently receiving health services, or because they may not realize they are enrolled in Medicaid. Another possibility is that respondents who are enrolled in a Medicaid managed care plan report being enrolled in private managed care. If so, the problem of Medicaid underreporting could get worse as more states adopt Medicaid managed care programs.

overlapping coverage in the CTS.[15] In contrast, the CPS asks each person about Medicaid, regardless of the person's responses to the other insurance questions. In addition, the CPS may report more overlapping coverage than the CTS, because the CPS asks about coverage at any time in 1996, thereby increasing the likelihood of reporting Medicaid and other coverage during the previous year but at different times.

Of the 18.9 million Medicaid beneficiaries reported in the CTS, 12 percent had overlapping coverage. In contrast, 26 percent of the Medicaid beneficiaries reported in the CPS had overlapping coverage. Thus, if we compare only those with Medicaid coverage and no other coverage, the CTS reported 16.6 million with Medicaid coverage and the CPS reported 19.1 million, a difference of only 2.5 million beneficiaries.[16]

**3. State-Specific Plan Names**

Some of the Medicaid coverage difference may have to do with the extent to which state-specific plan names were used in the two surveys. Both the CTS and CPS included state-specific program names in the Medicaid question; however, the CPS used a more comprehensive list of plan names and thus, may have elicited more Medicaid coverage than the CTS (see Appendix C). Unfortunately, it is not possible to quantify the magnitude of this difference, using the CPS and CTS data. In addition, the CTS did not count those participating in the Section 1115 Medicaid waiver programs (for example, TennCare, Oregon Health Plan, and RiteCare) as Medicaid

[15] One exception to this rule is that those who also have Medicare are asked about supplemental Medigap coverage and dual Medicaid coverage in questions b59 and b60, respectively.

[16] The remaining difference may be due to differences in the reference period for the two surveys; the CTS refers to current Medicaid coverage, while the CPS refers to Medicaid coverage at any time during 1996

beneficiaries, but rather as being covered under another state program. This amounts to about 165,000 persons in the CTS. Had they been counted as Medicaid beneficiaries, the number of Medicaid beneficiaries would have risen by 0.7 percent.

**4. Imputation Methodology**

A final reason for the Medicaid coverage difference is that the CPS conducted statistical and logical imputations that assigned Medicaid to 7.5 million persons who did not actually report it, whereas the CTS performed no imputations. However, the issue of the effect of imputations on CPS insurance coverage estimates is complicated. Without the Medicaid imputations in the CPS, the difference between estimates of the uninsured in the CPS and CTS would become even greater, since many of those for whom Medicaid coverage was imputed otherwise would have been coded as uninsured in the CPS. Without the statistical and logical Medicaid imputations, the number of uninsured persons in the CPS would have increased by 3.9 million (from 41.4 to 45.2 million), and the uninsured rate would have increased by 1.6 percentage points (from 17.7 to 19.3 percent).

# IV. DISCUSSION

This analysis has sought to explain differences in insurance coverage estimates between two national household surveys, the Community Tracking Study (CTS) and the Current Population Survey (CPS). We would have expected CTS estimates of the uninsured to be higher than those from the CPS because the CTS is a point-in-time estimate, whereas the CPS is intended to capture the number of persons uninsured throughout the previous year. Indeed, the opposite was found; CTS estimated 35.4 million uninsured (15.4 percent) and the CPS estimated 41.4 million (17.7 percent).

After we adjusted for differences in the universes of the two surveys (exclusion of households in Alaska and Hawaii and ineligible household members in the CTS), as well as differences in instrumentation (most notably, verification of lack of insurance coverage in the CTS), the gap in uninsured rates was no longer statistically significant in the sample as a whole or for nonelderly adults as a subgroup. Significant differences remained for children--differences that we could not explain based on the available data.

This chapter highlights three areas for further research. First, we recommend that further analysis be performed concerning differences in the sample characteristics and the extent to which unanticipated differences in the sample coverage may contribute to differences in insurance estimates. Second, we recommend further research to understand better the cognitive process in reporting insurance coverage in light of the results of the CTS uninsured probe. Finally, we recommend additional research related to the magnitude of Medicaid underreporting. This is linked to efforts to understand the cognitive process of reporting on insurance coverage more generally.

## A. CHARACTERISTICS OF THE CTS SAMPLE

We identified several differences in the population distributions between the two surveys. One-person families were more likely to be represented in the CTS than in the CPS. Asians, children, and higher-income families were less likely to be represented. Whether this is a function of lower response rates in the CTS, the community-based sampling methodology, the weighting methodology, or some other factor is unknown.

We also explored the impact of restricting the sample to households with telephones with the exception of a small supplemental in-person sample in 12 sites. Our results suggest that the CTS had higher estimates of the uninsured than the CPS among nontelephone households in metropolitan areas. Nontelephone households in nonmetropolitan areas were not directly interviewed in the CTS, although adjustments were made by disproportionately weighting households with intermittent phone coverage. The CTS and CPS yielded similar estimates of uninsured rates within these groups (33 percent and 36 percent, respectively), suggesting that these groups were indeed similar. Therefore, we cannot conclude that the limited representation of nontelephone households is responsible for the differences in the uninsured rates. It is possible, however, that the weights assigned to these groups may account for some of these differences in the uninsured rates, given the lower representation of nontelephone households in metropolitan areas.

## B. THE CTS UNINSURED PROBE

Another issue that merits further consideration is the respondent cognitive process during the interview, to understand why insurance coverage initially can be missed for a nontrivial portion of the sample. The CTS analysis demonstrated that 6 percent of those who initially reported being uninsured were, after further probing, reclassified as insured. We found that missed coverage was more pronounced for children than for adults, since the uninsured probe detected

more coverage for children than for adults. This finding suggests that the number of uninsured may be overstated when uninsured status is constructed as a residual of those specifying insurance coverage, as is done with the CPS. These results have been validated in the Maine Health Insurance Coverage Survey, suggesting that the CTS finding is not anomalous.

It is not clear why some families failed to report insurance coverage until they were asked the uninsured probe in the CTS. For example, did respondents forget to report coverage for certain household members because of the open-ended nature of the question (for example, "who else in your household was covered")? Or did respondents misunderstand the wording of the questions?

With the proliferation of state-specific programs for the uninsured, whether through the Children's Health Insurance Program (CHIP) or other initiatives, identifying those with coverage (and, by extension, those without coverage) will become more complex because the traditional categories of insurance coverage may not elicit such coverage. Therefore, it will be increasingly important for surveys to ask about participation in state-specific programs. Moreover, our analysis has revealed the importance of direct probing of those not specifying any coverage, to determine if they are, in fact, uninsured.

With Medicaid managed care often being marketed (and possibly perceived) as "private" coverage, and with public agencies often purchasing or subsidizing private coverage for those not able to afford the premium, the lines between public and private coverage are becoming blurred. The traditional categories of insurance coverage may no longer be meaningful to some respondents; therefore, they may not identify coverage when it, indeed, exists. Thus, the process of calculating the uninsured as an implicit residual of the insured may be an even less reliable and valid method of counting the uninsured, given the increasing complexity of the insurance world in which we live.

## C. MEDICAID UNDERREPORTING

Another focus of this analysis was on differences in estimates of Medicaid coverage. The CTS reported far lower rates of Medicaid coverage than the CPS. After adjusting for differences in the classification of Medicaid between CTS and CPS, the difference in the number of Medicaid beneficiaries was 7.1 million persons (18.9 million in the CTS versus 26.0 million in the CPS). Reasons for the remaining difference include: (1) skip patterns in the CTS, which skipped families with all members covered by private health plans out of the Medicaid question; (2) less overlapping Medicaid coverage at a point in time (CTS) than over an entire year (CPS); (3) possible misclassification of some Medicaid coverage in the CTS as state-specific programs or other coverage; and (4) lack of logical or statistical imputations in the CTS for those who did not report Medicaid coverage. Another unmeasured source is underreporting due to ignorance about coverage or denial of participation in a public program. Researchers believe that even the CPS contains Medicaid underreporting, and some have made adjustments for underreporting based on Medicaid administrative data.[1]

Researchers need to understand more fully the sources of Medicaid underreporting among those who are enrolled. Is it because they do not recognize the terms "Medicaid" or "medical assistance" or because they perceive Medicaid managed care as private coverage? Is it because they do not recall that they were enrolled during the time frame to which the survey refers? Is it perhaps because of discomfort (stigma) in admitting they are enrolled in a public assistance program? Or could they have obtained other insurance coverage since they were last certified for

[1] For example, Medicaid underreporting was estimated at 21 percent in 1995, although children tended to have slightly higher levels of underreporting (23 percent) (Fronstin 1997). Ullman et al. (1998) estimated the number of uninsured children before and after adjusting the CPS data for Medicaid underreporting. Unedited data indicated that 10.6 million children were uninsured, whereas edited data suggest the number may be closer to 7.6 million. This example demonstrates that adjustments for Medicaid underreporting can have huge implications for estimates of the uninsured.

Medicaid (yet the Medicaid program still counts them as covered by Medicaid)?

One issue that has not been addressed is whether inaccuracies in administrative data may result in overadjusting survey data for underreporting of Medicaid enrollment. Bilheimer (1998) suggests that double counting by states may contribute to overestimates of Medicaid enrollment in administrative data: ". . . one is left to conclude that CPS may underestimate Medicaid enrollment and that HCFA data may overstate it."

This study indicates the need for future surveys to explore the phenomenon of Medicaid underreporting, using prospective and/or retrospective approaches. With a prospective approach, the survey sample could include a stratum of "known" Medicaid beneficiaries (drawn from Medicaid administrative records). Those who do not identify Medicaid as their type of insurance coverage could be queried more directly about whether they were ever covered by Medicaid and, if so, when their coverage ended; who pays for their care; and, if they have an insurance card, what the card says. Under a retrospective approach, Medicaid records could be matched against survey records to determine who may be covered by Medicaid but not reporting such coverage. It should be recognized, however, that administrative records may not be a perfect gold standard either, suggesting the need for a combination of records matching and follow-up contacts with beneficiaries to better understand the phenomenon of Medicaid underreporting.[2]

[2] Such an analysis is not straightforward, as revealed by a recent comparison of survey responses and administrative records. Mathematica Policy Research linked Medicaid eligibility records for respondents to the Maine Health Insurance Coverage Survey based on telephone numbers and found that, among known Medicaid enrollees, 6 percent did not report Medicaid coverage in the survey. On the other hand, 7 percent who reported Medicaid coverage in the survey were found to have once been eligible but not at the time of the survey. (Over 90 percent of the cases were closed within the previous 6 months, according to administrative records.) A significant caveat to the analysis is that many survey records could not be linked to administrative records due to nonmatching telephone numbers. For example, among the 447 households reporting at least one member covered by Medicaid, 32 percent did not link by telephone number to the state file. Conversely, 184 persons on the state files, linked by telephone number to the survey file, did not match any persons in the household based on age and gender..

## D. CONCLUSION

Our comparison of the CTS and CPS has identified potential sources of differences in the insurance coverage estimates between the two surveys. In particular, we were able to reconcile differences in the nonelderly uninsured rates resulting from known differences in the universes and instrumentation. We also identified potential sources of differences in the Medicaid estimates, due mainly to differences in classification, skip patterns, and reference periods. Further analysis revealed differences in sample characteristics that may also contribute to differences in insurance estimates--in particular, coverage of children, Asians, one-person families, and higher-income families.

With the implementation of the Children's Health Insurance Program, as well as other initiatives aimed at the uninsured, it will be important to develop reliable and consistent sources of information on health insurance coverage. National, state, and local estimates of insurance trends for children and families will be required for monitoring and evaluation. Knowledge of the properties of the data sources used for evaluations and policy analyses (including sample coverage, survey administration, survey instrumentation, and estimation procedures) is imperative to ensure that significant differences are not simply an artifact of survey design. As this analysis has shown, minor differences in survey design can have a large impact on insurance coverage estimates.

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# APPENDICES

## APPENDIX A

## SIDE-BY-SIDE COMPARISON OF THE CHARACTERISTICS OF THE MARCH 1997 CURRENT POPULATION SURVEY AND THE COMMUNITY TRACKING STUDY 1996-1997 HOUSEHOLD SURVEY

| Characteristics | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| Frequency of Survey | Monthly; health insurance questions fielded annually in March | Every two years; first round fielded July 1996- July 1997 |
| **Sample Coverage** | | |
| Sample of Frame | National survey of households; multistage cluster sample of 792 sample areas comprising 2,007 counties and cities; supplemental sample of 2,500 Hispanic households. | National survey of communities; 60 sites selected through stratified random selection, including 12 high-intensity sites; augmented with a national sample of households to increase precision of national estimates; excludes residents of Alaska and Hawaii. |
| Sample Size | 131,854 | 60,446 |
| Response Rate | 90 percent of persons | 65 percent FIUs` |
| Definition of Reporting Unit | Household units; includes persons living in group quarters, but excludes those who are institutionalized or living abroad. | Family insurance unit (FIU) comprised of family head, spouse, and dependent children up to age 18 (or age 23 if full time student); interview includes one randomly selected child per household; excludes individuals in group quarters and children who are not householders and are unclaimed by parents or guardians. |

| Characteristic | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| **Survey Administration** | | |
| Mode of Administration | About three-fourths of interviews conducted by telephone, the remainder in person. | Interviews conducted by telephone; 635 nontelephone households in the 12 high-intensity sites interviewed in the field via cellular telephone |
| Use of proxies | Self-reporting preferred, Although any knowledgeable Individual age 15 or older Can serve as proxy for other Household members (about 54 percent were self, 44 percent were proxy, and 2 percent were mixed) | Proxy responses permitted within FIU |
| Interviewer Training | No specific training on health insurance questions; no flash cards or props used during in-person interviews | Trained specifically on health insurance questions |
| **Health Insurance Instrumentation** | | |
| Reference Period | Coverage at any time during previous calendar year | Current coverage (at time of interview) |
| Types of Coverage | (1) Private coverage through a current or former employer or union; (2) Private coverage purchased directly (3) Private coverage provided by someone outside of the household; (4) Medicare; (5) Medicaid; (6) Military health and Indian Health Service; (7) Other type of insurance such as state-only plans | (1) Private coverage through a current or former employer or union; (2) Private coverage bought on your own; (3) Private coverage provided by someone outside of the household; (4) Medicare; (5) Medicaid; (6) Military health; (7) Indian Health Service; (8) State-specific plans; (9) Any other type of insurance not previously mentioned |

| Characteristic | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| Skip Patterns | None | FIUs with all members covered by private health plans skipped out of Medicaid; additional skip patterns for other types of coverage |
| Calculation of Uninsured | Calculated as residual of those who report having some type of coverage at any time during the previous year | Direct verification of uninsured status; final probe asked respondents who reported no types of coverage if they were uninsured |
| **Estimation Procedures** | | |
| Weights | Based on probability of selection with adjustments for nonresponse and poststratified to independent population controls | Multiple weights constructed for site-specific and national estimates, poststratified to independent population controls; additional adjustments made for coverage of nontelephone households |
| Imputation of Insurance Coverage | Uses hot-deck method for statistical imputation; performed logical imputations where appropriate (27 percent of cases with Medicaid coverage were imputed) | None |
| Insurance Recodes | Reclassifies Indian Health Service, "other government," and "other" to Medicaid | Reclassifies individuals with all "missing" or "don't know" responses on health insurance questions to uninsured |

## APPENDIX B

## SIDE-BY-SIDE COMPARISON OF THE HEALTH INSURANCE QUESTIONS IN THE MARCH 1997 CURRENT POPULATION SURVEY AND THE COMMUNITY TRACKING STUDY 1996-1997 HOUSHOLD SURVEY

| Type of Question | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| **Introduction** | >SHI1< These next questions are about health insurance coverage during the *calendar year 1996*. The questions apply to ALL persons of ALL ages. | The rest of the interview is about [fill FAMILY MEMBERS NAMES, INCLUDING RANDOMLY SELECTED CHILD]<br><br>[IF MULTIPLE FAMILY HH: I will call the other adults who live here to schedule separate interviews with them.]<br><br>>bl> Next, I will list several types of health insurance or health coverage obtained through jobs, purchased directly, or from government programs. For each one, please tell me if (you/either of you/any of you) are *currently* covered by that type of plan. |
| **Private Insurance** | >SHI2< At any time in 1996, (were you/was anyone in this household) covered by a health plan provided through (their/ your) current or former employer or union?<br><br>>SHI3< Who in this household were policy holders? PROBE: Anyone else?<br><br>>SHI4< In addition to (you/name), who else in this household was covered by (name's/your) plan? PROBE: Anyone else? | >bla< (Are you/either of you/any of you) covered by a health insurance plan from (your/any of your/either of your) current or past employers or unions. IF YES: Who is covered? |

APPENDIX B (*Continued*)

| Type of Question | March 1997 Current Population Survey | | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|---|
| **Private Insurance** (*continued*) | >SHI5< | Did (name's/your) plan cover anyone living outside this household? | |
| | >SHI6< | Did (name's/your) former or current employer or union pay for all, part, or none of the health insurance premium? | |
| | >SHI7< | At any time during 1996, (were your/was anyone in this household) covered by a plan that (you/they) PURCHASED DIRECTLY, that is, not related to current or past employment? | >blb< (Are you/either of you/any of you) covered by a health insurance plan bought on your own. IF YES: Who is covered? |
| | >SHI8< | Who in this household were policyholders? PROBE: Anyone else? | |
| | >SHI9< | In addition to (you/name), who else in this household was covered by (name's/your) plan? PROBE: Anyone else? | |
| | >SHI10< | Did (name/your) plan cover anyone living outside this household? | |
| | >SHI11< | At any time in 1996, (were you/was anyone in this household) covered by the health plan of someone who does not live in this household? | >blc< (Are you/either of you/any of you) covered by a health insurance plan provided by someone who does not live in this household. IF YES: Who is covered? |
| | >SHI12< | Who was that? PROBE: Anyone else? | |

APPENDIX B (*continued)*

| Type of Question | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| **Medicare** | >SHI13< At any time in 1996, (were you/was anyone in this household) covered by Medicare?<br><br>>SHI14< Who was that? PROBE: Anyone else? | >bld< (Are you/any of you/either of you) covered by Medicare, the health insurance plan for people 65 years old and older or persons with certain disabilities. IF YES: Who is covered?<br>>b59< (Are/Is) [Fill NAME OF MEDICARE ENROLLEES] covered by Medicare supplemental or Medigap policies? These policies are designed to cover the costs of health care that are not covered by Medicare.<br>>b60< (Are/Is) [Fill NAME OF MEDICARE ENROLLEES] covered by [Medicaid/Fill STATE NAME], the government assistance program for people in need? |
| **Medicaid** | >SHI15< At any time in 1996, (were you/was anyone in this household) covered by Medicaid (fill state name)?<br><br>>SHI16< Who was that? PROBE: Anyone else?<br>>SHI17< How many months during 1996, (were/was) (name/you) covered by Medicaid (local name)? | >ble< (Are you/any of you/either of you) covered by [Medicaid/fill STATE NAME], the government assistance Program for people in need. IF YES: Who is covered? |
| **Military Coverage/Indian Health Service Coverage** | >SHI18< At any time in 1996, (were you/was anyone in this household) covered by CHAMPUS, CHAMPVA, VA, military health care, or Indian Health Service? | >blf< (Are you/any of you/either of you) covered by CHAMPUS, CHAMP-VA, TRICARE, VA, or some other military health care. [NHIS]. IF YES: Who is covered? |

APPENDIX B (*conintued*)

| Type of Question | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| **Military Coverage/Indian Health Service Coverage** (*continued*) | >SHI19< Who was that? PROBE: Anyone else? | >blfl< Which plan is that – CHAMPUS, CHAMP-VA, TRICARE STANDARD OR PRIME, VA or some other military health plan?<br>>blg< (Are you/any of you/either of you) covered by the Indian Health Service. IF YES: Who is covered |
| **Other Plans** | >SHIC1< Other than the plans I have already talked about, during 1996, was anyone in this household covered by a health insurance plan (such as the [use fill specified for particular state shown below] plan or any other type of plan/of any other type)?<br>>SHIC2< Who has insurance? PROBE: Anyone else?<br><br>(Ask SHIC3 for each person listed in SHIC2)<br>>SHIC3< What type of insurance did (you/name) have in 1996? | >blh< (Are you/any of you/either of you) covered by [INSERT STATE-SPECIFIC PLAN]. IF YES: Who is Covered?<br><br>>blil< (Are you/any of you/either of you) covered by a health insurance plan that I have not mentioned, IF YES: What is the name of the plan?<br>>bli2< Who is covered by [fill NAME SPECIFIED]? |

APPENDIX B (*continued*)

| Type of Question | March 1997 Current Population Survey | Community Tracking Study 1996-1997 Household Survey |
|---|---|---|
| **Other Plans** (*continued*) | <1> Medicare<br><2> Medicaid<br><3> CHAMPUS<br><4> CHAMPVA ("CHAMPVA" IS THE CIVILIAN HEALTH AND MEDICAL PROGRAM OF THE DEPARTMENT OF VETERAN'S AFFAIRS.)<br><5> VA health care<br><6> Military health care<br><7> Indian Health Service<br><8> Other government health care<br><9> Employer/union-provided (policy holder)<br><10> Employer/union-provided (as dependent)<br><11> Privately purchased (policy holder)<br><12> Privately purchased (as dependent)<br><13> Plan of someone outside the household<br><14> Other | |
| **Uninsured** | | <bij> INTERVIEWER: READ FOR FIRST PERSON ONLY (According to the Information we have, [Fill NAME] does not have health care coverage of any kind). Does (he/she) have health insurance or coverage through a plan I might have missed? |

# APPENDIX C

# STATE-SPECIFIC PLAN NAMES

| State | Current Population Survey March 1997 (SHI15) | Community Tracking Study 1996-1997 Household Survey (ble) |
|---|---|---|
| **Medicaid Plan Names** | | |
| Alaska | Medical Assistance Program | Medical Assistance |
| Arizona | AHCCCS, Acute Care Program, or Long Term Care System (ALTCS) | None |
| California | Medi-Cal | Medi-Cal |
| Connecticut | Connecticut Access (CONNECT CARD) | None |
| D.C. | Medical Assistance | Medical Assistance |
| Florida | MediPass | None |
| Georgia | Better health Care Program or Medical Assistance | Medical Assistance |
| Hawaii | Med-Quest, Maluhia, or Medical Assistance | Medical Assistance |
| Idaho | Healthy Connections or Medical Assistance | Medical Assistance |
| Illinois | MediPlan | None |
| Indiana | Hoosier Healthwise | None |
| Iowa | MediPAS (Medical Assistance) | None |
| Kansas | PrimeCare, Community Care Kansas (CCK), or HealthConnect | MEDIKAN |
| Kentucky | Kentucky Patient Access and Care System (KenPAC) or Medical Assistance | Medical Assistance |
| Louisiana | CommunityCARE Program | Medical Assistance |
| Maine | PrimeCare | Medical Assistance |
| Maryland | Maryland Access to Care (MAC) or Medical Assistance | Medical Assistance |
| Massachusetts | MassHealth | Medical Assistance |
| Minnesota | Prepaid Medical Assistance Program (PMAP) or Health Care Programs | Medical Assistance |
| Mississippi | HealthMCS | None |
| Missouri | MC Plus | None |
| Montana | Passport to Health | None |

APPENDIX C (*continued)*

| State | Current Population Survey March 1997 (SHI15) | Community Tracking Study 1996-1997 Household Survey (ble) |
|---|---|---|
| **Medicaid Plan Names** (*continued*) | | |
| Nebraska | Primary Care Plus (+) or Health Connection | None |
| Nevada | MAPnet | None |
| New Jersey | New Jersey Care 2000 | Medical Assistance |
| New Mexico | Primary Care Network | None |
| New York | MAX | None |
| North Carolina | Carolina Access | None |
| North Dakota | North Dakota Access to Care (No DAC) | None |
| Ohio | Accessing Better Care (ABC) Program | None |
| Oklahoma | Sooner Care | Medical Assistance |
| Oregon | Oregon Health Plan (OHP), Kaiser-S/HMO Or Medical Assistance | Welfare |
| Pennsylvania | Health PASS, Family Care Network (FCN), Lancaster Community Health Plan, Blue Card or Green Card or ACCESS | Medical Assistance |
| Rhode Island | RiteCare or Medical Assistance | Medical Assistance |
| South Carolina | South Carolina Health Access Plan (SCHAP) | Medical Assistance |
| South Dakota | Primary Care Provider Program | None |
| Tennessee | TennCare | None |
| Texas | LoneSTAR (State of Texas Access Reform) | Medical Assistance |
| Vermont | Dr. Dynosaur, Vermont Health Access Program (VHAP) or AIM | None |
| Virginia | Medallion, Options or Medical Assistance | Medical Assistance |
| Washington | Health Access Spokane, Kaiser-S/HMO or Healthy Options | Medical Assistance |
| West Virginia | West Virginia Physician Assured Access System (PAAS) | None |
| Wisconsin | Medical Assistance Program | Medical Assistance |

| State | Current Population Survey (SHIC1) | Community Tracking Study (ble) |
|---|---|---|
| **State-Only Plan Names** | | |
| Alaska | General Relief Medical (GRM) | None |
| California | County Medical Services Program (CMSP), Children's Services (CCS) | AIM (Access for Infants and Mothers) |
| Colorado | Child Health Plan | Children's Health Plan |
| Connecticut | Healthy Steps, General Assistance Program (GA) | Healthy Steps |
| Florida | Healthy Kids | Healthy Kids |
| Illinois | General Assistance Program (State Child and Family Assistance, SCFA or Transitional Assistance, TA) | None |
| Iowa | Caring Program for Children | Iowa coverage for unemployed workers |
| Kansas | MediKan, Caring Program for Kids | Kansas Caring Program for Kids |
| Massachusetts | CommonHealth Program, Medical Security Plan (MSO), CenterCare Program, Children's Medical Security Plan | Healthy Kids, CenterCare Program, or Medical Security Plan |
| Michigan | Wayne County Plus Care Program, Medical Assistance Program, Care Program for Children | Caring for Kids |
| Minnesota | MinnesotaCare, Minnesota General Assistance Medical Program (GAMC) | None |
| Missouri | General Relief Medical Assistance | Missouri's coverage for unemployed |
| Nebraska | State Disability Program | None |
| New Jersey | Health Access New Jersey | Health Access New Jersey |
| New York | Home Relief, Child Health Plus (CHP) | Child Health Plus |
| North Carolina | Caring Program for Children | None |
| Ohio | Ohio Disability Assistance Medical Program | Children's Health Care Program |
| Pennsylvania | Children's Health Insurance Programs (CHIP), General Assistance Medical Program | Children's Health Insurance Programs |
| Rhode Island | General Public Assistance (GPA) Medical Program | RiteCare |
| Utah | Utah Medical Assistance Program (UMAP) | None |
| Virginia | State and Local Hospitalizations (SLH) Program, Caring Program for Children | None |

| State | Current Population Survey (SHIC1) | Community Tracking Study (ble) |
|---|---|---|
| **State-Only Plan Names** (*continued*) | | |
| Washington | Basic Health Plan, Children's Health Program, General Assistance Unemployable Program (GA-U) | Children's Health Plan, or Basic Health Plan |
| Wisconsin | General Relief Medical | Healthy Start |

NOTE: The state-specific plan names for the CTS were based on the list used for the March 1995 CPS.

# APPENDIX D

## INTERPRETATION OF CPS INSURANC COVERAGE: POINT-IN-TIME VERSUS PREVIOUS-YEAR COVERAGE

How researchers should interpret the insurance coverage estimates from the Current Population Survey has been the subject of considerable debate. Interpreted literally, the questions are designed to elicit coverage during the previous calendar year. The uninsured estimate should reflect lack of coverage *throughout* the previous year. The purpose of this appendix is to review the evidence in the published literature concerning interpretation of CPS estimates of insurance coverage.

First, we review the studies that suggest CPS respondents report their insurance status as of the previous year, rather than simply reporting their current status. The first three studies compare CPS estimates with those from other surveys. Bennefield (1996b), for example, compared longitudinal data from the Survey of income and Program Participation (SIPP) with the standard health insurance data from the CPS and with data from experimental questions on the March 1995 CPS. Bennefield's results indicated that CPS respondents interpreted the standard health insurance questions correctly and provided their health insurance status as of the previous year. However, he found that respondents may have had recall problems and failed to report some coverage which may have caused the CPS estimates of the uninsured to look more like point-in-time estimates.

Other indirect support is found in a study that compared CPS uninsured rates with those from the Medical Expenditure Panel Survey (MEPS). The first round of the MEPS asked respondents whether they were uninsured *continuously* from January 1, 1996 to their interview date 3 to 6 months later, and yielded uninsured estimates that were slightly higher than the CPS (Beauregard et

al. 1997).[1] If the CPS were a point-in-time estimate, then the MEPS estimate should have been *lower* than the CPS. This suggests that the CPS is not strictly a point-in-time estimate.

Long and Marquis (1996) compared the March 1993 CPS estimates of the uninsured in 10 states with the findings from the Robert Wood Johnson Foundation (RWJF) Family Health Insurance Survey. During 1993, the RWJF survey was administered to approximately 2,00 families each in Colorado, Florida, Minnesota, New Mexico, New York, North Dakota, Oklahoma, Oregon, Vermont, and Washington.[2] The uninsured and those covered by Medicaid were oversampled. The content includes considerable detail on insurance status—both current and throughout the previous year. Across the 10 states included in the RWJF survey, the CPS estimate of the uninsured for all persons (14.7 percent) fell between the RWJF estimate of the currently uninsured (15.7 percent) and the uninsured throughout the previous year (12.2 percent). Long and Marquis also examined each state individually and found that for 9 of 10 states, the CPS measure fell between the two RWJF measures; in the remaining state, the CPS estimate was above the RWJF estimate of the currently uninsured by only 0.2 percentage point. Long and Marquis concluded tha tusing the CPS as if it were a measure of the currently uninsured generally will understate estimates of the uninsured at a point in time.

The next two studies relied on internal analysis of the CPS to draw inferences about the reference period. Kronick (1989)[3] found that private employer-sponsored health insurance coverage in the CPS was more consistent with employment status in the previous year than in the interview month. Again, this suggests that respondents tended to use the previous year as a reference period.

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[1] Of course, the MEPS could have similar reporting problems to the CPS. However, the MEPS health insurance questions are much more detailed than the CPS questions, and interviewers are trained specifically on asking health-related questions.

[2] The Family Health Insurance Survey was conducted by Mathematica Policy Research in conjunction with RWJF's State Initiatives in Health Care Reform. Like the CTS, the Family Health Insurance Survey included the uninsured probe.

[3] As cited in Monheit (1994)

Fronstin (1996a) examined CPS estimates of health insurance of children in 1995 and found that 15 percent of children enrolled in Medicaid also reported private health insurance coverage. This likely reflects a combination of concurrent Medicaid and private coverage, and part-year Medicaid and private coverage at different times during the year. Again, this would support the notion that CPS is not simply a point-in-time estimate of insurance coverage, but that it also captures coverage dynamics during the year.[4]

Evidence to support the argument that CPS provides a point-in-time estimate of the uninsured comes from two main sources. Swartz(1986) compared CPS estimates of the uninsured with estimates from three other surveys that asked respondents about their health insurance coverage as of the interview date and found that the CPS estimates more closely resembled the point-in-time estimates of these surveys.[5] CBO also considers its CPS-based estimates of the uninsured to be closer to a point-in-time estimate, rather than an estimate of those uninsured throughout the previous year (Bilheimer 1997).

The evidence presented in this appendix demonstrates the lack of consensus about how to interpret the CPS estimates of the uninsured. In general, most researchers believe that the estimate is somewhere between currently uninsured and uninsured throughout the previous year, due to limitations of respondent recall.

[4] Rosenbach (1993) examined insurance coverage of low-income children in 1980, based on the National Medical Care Utilization and Expenditure Survey, and found considerable overlapping coverage between Medicaid and private insurance. Among low-income children with Medicaid, 25 percent had private insurance coverage for all or part of the year. The most common patterns were Medicaid and private coverage each part year (34 percent), Medicaid coverage full year with private coverage part year (31 percent), both Medicaid and private coverage full year (18 percent), and Medicaid part year and private coverage full year (17 percent).

[5] The three other surveys were the National Medical Care Expenditure Survey (1977), the Health Interview Survey (1978), and the National Medical Care Utilization and Expenditure Survey (1980).