

*Fourth National Incidence  
Study of Child Abuse and  
Neglect (NIS-4)*

Design and Methods  
Summary

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## TABLE OF CONTENTS

<u>Chapter/topic</u>	<u>Page</u>
OVERVIEW .....	1
NIS–4 main study design .....	1
NIS–4 enhancements .....	2
Supplementary studies .....	2
SAMPLES.....	3
Counties .....	3
CPS agencies and cases .....	4
Sentinel agencies.....	4
Sentinels .....	6
RECRUITMENT .....	8
SENTINEL AGENCY RECRUITMENT .....	10
DATA COLLECTION .....	14
EVALUATIVE CODING .....	17
Evaluative coding procedures .....	17
Reliability coding procedures .....	18
Evaluative coding statistics.....	19
UNDUPLICATION .....	20
Candidate pairs.....	20
True duplicates.....	20
Reliability.....	21
CPS Summary data form duplicates .....	21
Unifying duplicates.....	21
Improved methodology .....	22
Extended CPS unduplication .....	22
WEIGHTING.....	23
Base weights .....	23
Special weighting adjustments.....	23
Nonresponse adjustments.....	24
Multiplicity adjustments .....	24
Annualization adjustments.....	25

**TABLE OF CONTENTS (continued)**

<u>Chapter/topic</u>	<u>Page</u>
CPS STRUCTURE AND PRACTICES	
MAIL SURVEY (SPM).....	26
CPS SCREENING POLICIES STUDY (SPS).....	29
Phase I .....	29
Phase II .....	31
SENTINEL DEFINITIONS SURVEY (SDS).....	32
Instrument .....	32
Samples and method .....	33

**List of Tables**

<u>Table</u>		<u>Page</u>
1	Definitions of Eligible Units and Staff Within Each Agency Type; Total Eligible Staff in Participating Sentinel Agencies and Numbers of Staff Sampled to Serve as Sentinels,.....	7
2	NIS-4 Agency Participation, Numbers and Rates.....	12
3	Sentinel Agency Participation Rates NIS-1 through NIS-4 (Unweighted, After Replacement).....	13
4	Distribution of PSUs, Counties, and Agencies by Reference Period.....	14
5	Participating Sentinel Agencies, Sentinels, and Data Forms by Agency Type.....	15
6	NIS-4 60-form Typology for Classifying Maltreatment.....	18
7	Numbers of Child-level Records Completed During Each Phase of Evaluative Coding .....	20
8	Agreement Rates for Overall Countability of Child-level Records.....	20
9	Kappa Scores for Countability of Maltreatment Forms and Child-level Records.....	20
10	Unduplication Decisions on Candidate Pairs.....	22
11	Unduplication Results for CPS Summary Data Forms.....	22
12	Topics Covered in the 4 SPM Modules .....	28
13	SDS Samples and Response Rates.....	35

## OVERVIEW

The fourth National Incidence Study of Child Abuse and Neglect (NIS–4) is a congressionally mandated study designed to measure the total number of children who are abused or neglected in the United States. It was also designed to indicate the degree to which this number has changed since the earlier cycles collected similar data (the NIS–1 in 1979, the NIS–2 in 1986, and the NIS–3 in 1993). In 2001, DHHS contracted with Westat to plan the NIS–4. With input from a large Technical Advisory Group, that effort identified, prioritized, and pilot-tested a number of enhancements to the NIS design. The NIS–4 incorporates these improvements.

**NIS–4 main study design.** The NIS–4 main study provides the basis for estimating the overall incidence of maltreated children and for assessing changes in incidence from the earlier studies. In contrast to the National Child Abuse and Neglect Data System (NCANDS), which captures annual statistics on cases of child maltreatment that come to the attention of the child protective services (CPS) system, the NIS measures the scope of child maltreatment in a way that goes beyond these official statistics. To do so, NIS gathers and integrates data from multiple sources, using standardized definitions.

The NIS–4 used a national sample of 122 counties. In each county, NIS collected data on all children investigated by child protective service (CPS) agencies as well as on maltreated children who were identified in 1,094 community agencies by professionals (“sentinels”) who regularly come into contact with children and families. Participants included the 126 local CPS agencies that serve the NIS–4 counties, as well as sentinels in the county sheriff’s office, the county departments of juvenile probation, health, and public housing, municipal police departments, hospitals, public schools, day care centers, shelters, and voluntary social services and mental health agencies. Data collection focused on maltreatment that took place during specific 3-month reference periods—either in the fall of 2005 (for two-thirds of the counties) or in the spring of 2006 (for the remaining one-third of counties). CPS submitted data on children they investigated during the reference period and sentinels submitted data on children they suspected to be maltreated during the reference period. The NIS–4 study team unduplicated the data (so the study estimates represent each maltreated child only once), evaluated the case details against standardized definitions of abuse and neglect (so estimates are based only on “countable” children, whose maltreatment meets the study standards), and weighted the records (so the sample data can provide national estimates of the numbers of maltreated children).

**NIS-4 enhancements.** The NIS-4 sample design improved on that used in the NIS-3 by tripling the number of counties (122 vs. 42) as well as increasing the number of sentinel agencies (nearly 1,100 vs. 800). The NIS-4 also expanded sentinel coverage through two new categories of sentinel agencies—public housing authorities and shelters for victims of domestic violence and for runaway or homeless youth. In evaluating the data, the NIS-4 evaluative coders applied a refined typology of abuse and neglect definitions, using 60 separate forms of maltreatment. They also provided a more detailed coding of serious injury or harm resulting from maltreatment. Finally, the NIS-4 team designed and applied a number of new computer systems to manage, implement, track, and apply quality checks during recruitment, data collection, evaluative coding, and unduplication. These included a NIS website for the public and participants, a Sample Tracking and Recruitment System (STARS) for recruiters, an FTP website for file transfers from CPS agencies, an online sentinel data form to facilitate sentinels' submissions, several sampling and receipt control systems to support various study components, a Collection Activity Tracking System (CATS) for managing and monitoring field operations, a data form viewing system that offered quick and simultaneous access to electronic images of detailed data forms to authorized users as needed while maintaining data security on password-protected drives, a Computer-Assisted Evaluative Decision System (CAEDS) to facilitate the evaluative coding operations and record the detailed codes, and an unduplication system that supported coders in identifying candidate record pairs and documenting their decisions about true duplicates.

**Supplementary studies.** In addition to the main study, the NIS-4 project included several supplementary studies that were designed to enhance the quality and/or interpretability of the NIS findings (as discussed in the *Final Report*). Two were surveys of CPS agencies—one on their overall policies, procedures and practices and the second on their screening standards, to determine how they would treat referrals concerning the uninvestigated cases identified to the study by sentinels. The third supplementary study was a survey of sentinels on their backgrounds and definitions of child abuse and neglect and concerning their standards for reporting suspected maltreatment to CPS or submitting data on maltreated children to the NIS.

## SAMPLES

The NIS target population is the set of children under 18 years of age who are maltreated during the study period, including all who are reported to child protective services (CPS) agencies and accepted for investigation by those agencies and any others who come to the attention of community professionals working in specific categories of agencies (such as police, teachers, social workers, nurses, and child care providers).

The three-stage sample design involves: (1) a first-stage, nationwide sample of primary sampling units (PSUs) that are single counties or clusters of contiguous counties, (2) a second-stage selection of all CPS agencies and samples of sentinel (non-CPS) agencies within the selected PSUs, and (3) case-level samples of abused and neglected children in CPS agencies and samples of sentinels (professionals who have direct contact with children) in sentinel agencies. The sampled sentinels are asked to report on all abused and neglected children that they encounter in the course of their work during the study reference period.

The NIS-4 used two reference periods, one of which conformed to that used in the NIS-2 and NIS-3: a 3-month period from the first week in September 2005 through the first week in December 2005. The second reference period occurred the following spring, from the first week in February 2006 through the first week in May 2006. The CPS case samples were selected retrospectively from records on all cases reported during the study reference period that the agency accepted for investigation. Sentinel data collection was prospective, with sampled sentinels asked to be on the lookout for maltreated children during the study reference period and to submit detailed data forms describing any such children they encounter.

Compared with earlier NIS cycles, the NIS-4 substantially increased sample sizes and broadened sentinel agency coverage. Relative to the NIS-3, the NIS-4 essentially tripled the samples of counties (from 42 to 122), CPS agencies (from 42 to 126), and CPS cases (from 3,368 to 11,930) and nearly doubled the samples of sentinel agencies (from 981 to 1,679) and sentinels (from 5,889 to 11,321).

**Counties.** The NIS-4 Primary Sampling Units (PSUs) were constructed from the list of 3,141 counties in the 2000 Census. This list was updated to reflect county definitions and boundaries at the time of NIS-4 sampling in 2004. The NIS-4 selected a sample of 110 PSUs (122 counties) using a probability-proportional-to-size (PPS) sampling method and a stratified design. The measure of size was the population of children under 18 years old in Census 2000. Large counties with a child population over 400,000 were selected with certainty. Undersized counties (those with fewer than 4,000 children) were combined with contiguous counties to form geographically compact PSUs with sufficiently large populations to justify data collection

efforts. Constructing multi-county PSUs considered local CPS agency jurisdictions (which usually, but not always, follow county boundaries) and limited the number of counties in a PSU to no more than six.

Under this scheme, the 14 largest counties were selected with certainty, leaving a listing of 2,282 noncertainty PSUs nationwide, 1,685 of which were single-county and rest multiple-county PSUs. Statisticians allocated these noncertainty PSUs to 48 strata, based on Census region, metro status, the NCANDS child victim substantiation rate, FBI crime rate, and percentage of households headed by single females with children. (Choice of these factors derived from prior analyses on predictors of child maltreatment rates.) Two PSUs were selected from each stratum, using probability-proportionate-to-size (PPS) of the Census 2000 population of children, which identified 96 noncertainty PSUs: 88 single-county PSUs, 6 two-county PSUs, 1 three-county PSU and 1 five-county PSU. Thus, the final NIS–4 sample consisted of 110 PSUs (14 certainty and 96 noncertainty), which included 122 counties—14 certainty and 108 noncertainty counties.

**CPS agencies and cases.** The CPS agency sample comprised all 126 CPS agencies serving all or part of a sampled county. Most were county-level agencies serving individual counties. Eligible CPS cases were those reported to these CPS agencies during the 13-week study reference period and assigned for investigation. CPS case sampling followed the approach used in the NIS–3. Fatality cases were included with certainty. An approximately equal-probability sample was randomly selected from the remaining eligible cases. Sampled cases were assigned to receive CPS Maltreatment data forms, while CPS Summary data forms were assigned to the remaining eligible cases for use during unduplication and weighting, as described in those sections. (The *Data Collection* section describes the different data forms.) These procedures resulted in listings of 140,206 CPS case investigations during the study reference periods, and identified a sample of 11,930 of these for CPS Maltreatment data forms. To support special analyses examining whether any of the children not investigated during the study period were reported to CPS and investigated later, the NIS–4 also obtained Summary data forms on all cases reported and assigned for investigation during the month following the reference period. The NIS–4 gathered an additional 38,398 Summary data forms for this component.

**Sentinel agencies.** Sentinel agency categories in the NIS–4 included:

- Law enforcement agencies—sheriff and county police departments, municipal police agencies, and juvenile probation departments;
- Health services—children’s hospitals, short-stay general hospitals, and public health departments;

- Schools and day care centers—public K-12 schools and licensed day care centers; and
- Housing, shelters and others—public housing departments, shelters for battered women and runaway and homeless youth, social service and mental health agencies.

Agencies in these categories that were physically located in NIS-4 counties were eligible for the study (with one exception—the study also included children’s hospitals within 25 miles of a NIS-4 county that had none of its own). The above list broadens sentinel coverage by including two new agency categories: Public housing and shelters for battered women and for runaway and homeless youth. Both of these new categories were introduced based on the results of explorations in several counties during the NIS-3. Whereas public housing was entirely new, shelters were previously included in NIS but only as part of the varied group of social service and mental health agencies.

The NIS-4 sentinel agency samples were structured according to local CPS agency/county clusters. For the most part, a cluster reflected a single county. However, small counties that were served by the same local CPS agency were handled as a single cluster. There were 115 local CPS agency county clusters in the NIS-4.

The NIS-4 aimed to approximately double the NIS-3 sentinel agency sample. However, rather than simply doubling the sample in every category, statisticians computed an optimum allocation of the doubled-sample across the sentinel agency categories. The optimum allocation first took into account both the within-category precision of estimates of uninvestigated maltreated children and the relative costs of recruiting and collecting data from an agency in the category. The resulting allocation was then modified to attempt to provide each agency category with at least one representative in each CPS agency-county cluster—with the exception of the law enforcement agencies. Because these computations determined that the optimal sample sizes from law enforcement agencies were relatively small (with little gain to be had in the precision of national estimates by adding more of these agencies), they were included in a sample of 62 PSUs (the 14 certainty PSUs and one-half, or 48, of the noncertainty PSUs).

With two exceptions, the final allocation plan targeted a sample of one agency for each category in every CPS agency-county cluster. The allocation plan dictated that more agencies be sampled to represent day care centers (2 per cluster) and schools (5 per cluster). In actually implementing this plan, statisticians selected the sentinel agencies in five categories with certainty—sheriff departments, juvenile probation departments, public health departments, children’s hospitals, and public housing agencies—because there is typically only one such agency per county. Agencies in the other categories are generally more numerous, so they were sampled for the study. Because size measures were available for schools, general hospitals, and municipal police departments, agencies in those categories were sampled by the PPS method.

Simple random sampling was applied in the other sampled agency categories (day care centers, shelters, and social service/mental health agencies).

On average, 14.6 sentinel agencies were sampled in a given CPS-county cluster, but this varied, ranging from 5 in a very small site to more than 40 in the largest county. Despite the broad range, however, the distribution was fairly tight: only 6 clusters had fewer than 10 sentinel agencies sampled, and only 6 had more than 18.

The numbers of sentinel agencies selected for the NIS-4 in the different agency categories are listed in the Sentinel Recruitment discussion.

**Sentinels.** Within each sentinel agency, staff who were eligible to serve as sentinels were identified and sampled. This process required identifying eligible units within the agency, listing (and sometimes sampling) those units, enumerating the eligible staff, and sampling staff to be recruited as sentinels. Sampling from the staff roster used a probability-based method. First, sentinels in certainty selection units (as defined by the particular job category, such as school counselors and truancy officers) were all included in the sample. The remaining sentinels were sampled from the roster of eligible staff using a predetermined sampling rate for the agency or following standards for targeted minimum sample sizes (e.g., at least one sentinel per functional unit and no fewer than two sentinels per agency). For each agency category, Table 1 identifies the eligible units and eligible staff positions and gives the numbers of eligible staff that were listed on rosters and sampled as sentinels in each category.

**Table 1. Definitions of Eligible Units and Staff Within Each Agency Type; Total Eligible Staff in Participating Sentinel Agencies and Numbers of Staff Sampled to Serve as Sentinels**

<b>Agency Category</b>	<b>Eligible Units</b>	<b>Eligible Staff</b>	<b>Number of Eligible Staff</b>	<b>Sentinel Sample</b>
<b>County Sheriff and/or State Police Departments</b>	Criminal Investigation, Homicide, Sex Crimes, Juvenile, Child/Family Crimes, Domestic Violence	Officers assigned to investigate child crimes, usually detectives.	1,614	321
<b>Juvenile Probation Departments</b>	Supervision, Investigation, Intake, Other	Juvenile Probation Officers	2,790	373
<b>Municipal Police Departments</b>	Criminal Investigation, Homicide, Sex Crimes, Juvenile, Child/Family Crimes, Domestic Violence	Officers assigned to investigate child crimes, usually detectives	1,626	521
<b>Short-Stay General and Children’s Hospitals</b>	Emergency Room, Pediatric or Acute Care	Head Nurses, Acute Care/Pediatric Social Workers.	1,602	912
<b>Public Health Departments</b>	Units where staff has sufficient interaction with children and families to learn about maltreatment events, effects, outcomes, and perpetrators.	Public Health Nurses, Social Workers.	1,670	372
<b>Voluntary Social Service/ Mental Health Agencies</b>	Units where staff has sufficient interaction with children and families to learn about maltreatment events, effects, outcomes, and perpetrators.	Professional Staff working with children and families.	907	276
<b>Shelters for Runaway and Homeless Youth Shelters or Domestic Violence Victims</b>	Shelter, Other	Counselors/ Caseworkers	330	127
<b>Licensed Day Care Centers</b>	Classrooms/ Service units	Day Care Teachers/ Aides	685	681
<b>Elementary and Secondary Public Schools</b>	Non-rotating/Rotating Classrooms, Units with targeted professionals	Teachers, Counselors, Nurses, Truancy Officers.	10,793	7,684
<b>Public Housing Authorities</b>	Units where staff has sufficient interaction with children and families to learn about maltreatment events, effects, outcomes, and perpetrators.	Public Housing Social Workers/ Caseworkers	100	54
<b>Total</b>			<b>22,117</b>	<b>11,321</b>

## CPS RECRUITMENT

In order to develop child-level estimates and to quantify the number of abused and neglected children in the U.S. beyond those that come to the attention of CPS, it is critical to unduplicate data from sentinels against data on children in CPS investigations. Because of this, the NIS design requires 100 percent participation by CPS agencies, at least to the extent needed to accomplish this unduplication. The NIS-4 met this goal by achieving 100 percent participation for CPS agency Summary Data (N=126 agencies). This ensured the usability of sentinel data in all sampled counties. However, state offices (in 3 states) declined to permit 6 local CPS agencies to complete the CPS Maltreatment data form. Data forms are described in the *Data Collection* section. The *Weighting* section explains how CPS Maltreatment data forms from participating agencies were weighted to correct for the loss of these nonrespondent agencies.

Attaining this high participation rate required time, persistence in negotiating and renegotiating, and the addition of a second reference period.<sup>1</sup> CPS recruiters were senior staff both from Westat and Walter R. McDonald and Associates (WRMA). These staff had expertise in child welfare programs; most specifically in CPS. During the height of recruitment, 14 senior staff (10 at Westat and 4 at WRMA) actively recruited CPS agencies for participation. Recruiters attended a 2-day training session in September 2004 and received additional training as recruitment proceeded and negotiations with agencies progressed to more advanced stages. Recruitment meetings were held weekly during the first 5 months, and biweekly after that. In these meetings, staff discussed common problems, identified emerging issues, and determined modified NIS participation arrangements the study could accommodate without compromising the core integrity of the study design and estimates.

It took about as much time to gain approval from agencies requiring state approval as from county-administered agencies that did not need state clearance. For the former agencies, it took an average of 245 days (median=204 days) to obtain the needed state-level approval and an additional 95 days on average (median=30 days) to get local-level approval. For agencies that did not require state approval, approval took a 276 days on average (median=288 days).

From September 2004 through September 2005 (slightly after the start of the first reference period), 107 agencies had approved participation (85%). The remaining CPS agencies took an additional 12 months to recruit. The last agency agreed to participate September 2006. This extended recruitment period was possible because CPS data were retrospective, as explained in the *Data Collection* section.

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<sup>1</sup> Primary Sampling Units were assigned to one of two reference periods (Sept.4—Dec.3, 2005 or Feb.4—May 3, 2006).

Some of these delays were caused by the need to submit applications for IRB reviews (n=26), research committee reviews (n=27), court orders (n=4), and to establish workable data transfers. However, refusal conversion efforts also explain much of these delays. Reasons agencies gave for refusing included the burden associated with the CFSR or the state's resulting Performance Improvement Plan, their participation in another study, staff shortages, court-ordered improvement efforts underway, scheduling conflicts, changes in directors, and level of burden. There were five initial state-level refusals (affecting 18 agencies) that took an average of more than 17 months (514 days) from their first contact to final approval. There were initial refusals by four local agencies that took an average of more than 14 months (431 days). The project director personally visited all five initially refusing state agencies and two of the initially refusing local agencies to further explain the study and explore the possibilities of accommodations that might allow them to participate. These visits were successful in negotiating some degree of participation from all the agencies.

## SENTINEL AGENCY RECRUITMENT

The sentinel agency sample in the NIS–4 was twice as large as that in the NIS–3. The project team developed the NIS–4 Sample Tracking and Recruitment System (STARS) to manage and support this large-scale effort. Recruiters used STARS to receive their assignments, maintain and update agency contact information, record all communications and any special requirements or arrangements, document progress in finalizing participation agreements, and identify or sample the individual staff who would serve as sentinels within the agency.

The NIS–4 used professional-level hourly staff to recruit sentinel agencies, a proven cost effective strategy in previous Westat studies. Recruiters were male and female with strong interviewing skills and work experience in many of the sentinel categories—police, teachers, day care providers, and juvenile probation officers. The work team ranged from 10 to 20 recruiters over the course of recruitment. Recruiters were hired in waves, in response to variations in workload and recruiter attrition over time. New recruiters were trained over an intensive 2-week period. Training sessions first provided an overview of the study, administrative procedures, recruitment goals and objectives, and the use of the computerized tracking system. Next, training focused on strengthening their interviewing skills and recruitment strategies, understanding the different agency structures, and detailed procedures for sampling agency units and individual sentinels. Finally, new trainees were carefully observed to ensure their competency in all aspects of the recruitment process.

The first set of columns in Table 2 show the number of NIS–4 agencies originally sampled, number of agencies in-scope in the original sample, the number of replacements for refusals, and the number of agencies agreeing to participate. Out-of-scope agencies were those who did not qualify as representatives of their category for various reasons (e.g., they no longer existed, were not located in the sampled county or PSU, or had no staff with direct contact with children or families). Note that some in-scope replacement agencies also refused, which is why column C plus column D does not equal column E.

The last series of columns in Table 2 give unweighted and weighted participation rates. The different participation rate computations correspond to different response rate formulas (see the table footnotes). The weighted response rates are higher than the unweighted response rates for all agency types except social service/mental health agencies and shelters, indicating that sample agencies with larger weights were more willing to participate. Agencies with larger weights are those in smaller PSUs or are themselves smaller in size; they represent more others like themselves in the national estimates. The participation rate for all sentinel agencies was 71.8% unweighted (76.9% weighted).

Table 3 shows the final participation rates achieved for all four NIS cycles. NIS-4 rates were lower than those attained in earlier NIS cycles. The lower rates were largely attributable to increased concerns with privacy and resulting changes in policies, procedures, and state and Federal laws since the NIS-3. New laws, such as the Health Insurance Portability and Accountability Act (HIPAA), seriously limited access to data for any “voluntary” study.

Recruitment staff developed 35 IRB applications and 23 school district research committee reviews (affecting 73 schools). Figure 1 summarizes the number of days from initial contact to approval, final refusal and out-of-scope classification, by agency type and overall. Public health took the longest to win approval (an average of 306 days, ranging from 39 to 546 days). County law enforcement followed (averaging 273 days to gain approval); hospitals were next (averaging 254 days). School recruitment was a lengthy process, in part because of the need to go to three levels of authority for approval (state, district, and individual school). State level recruitment took an average of 38 days (all states agreed to participate). Districts took 82 days and schools took 129 days.

Recruiters always attempted to convert an initial refusal, so refusals occupied considerable time as well. Refusal conversion work ranged from minor adjustments to the protocol to intervention by senior staff and site visits. Refusing hospitals averaged 322 days until final disposition. County law enforcement averaged 340 days. Refusing school districts were pursued for an average of 173 days and individual refusing schools took an average of 113 days. The number of contacts involved also varied. Contacts for approvals ranged from 13 for juvenile probation agencies to 40 for hospitals. Contacts for refusals ranged from 15 for juvenile probation to 44 for hospitals. The average number of contacts for all agencies and levels was 16 for approvals and 22 for refusals.

**Table 2. NIS-4 Agency Participation, Numbers and Rates**

Agency type	Agencies					Rates				
	Sample size	In-scope original agencies	Participating original agencies	In-scope replacements for refusals	Total participating agencies <sup>1</sup>	Unweighted Cooperation Rate <sup>2</sup>	Unweighted participation rate before replacement <sup>3</sup>	Weighted participation rate before replacement	Unweighted participation rate after replacement <sup>4</sup>	Weighted participation rate after replacement <sup>4</sup>
	A	B	C	D	E	F=E/(B+D)	G=C/B	G (wtd)	H=E/B	H(wtd)
County Sheriff/State Police	71	58	44	0	44	76	76	88	76	88
Juvenile Probation	65	65	54	0	54	83	83	88	83	88
Municipal Police	83	81	55	17	63	64	68	76	78	88
Hospitals	159	152	104	1	105	69	68	81	69	81
Public Health	117	106	82	0	82	77	77	82	77	82
Social Service/Mental Health	106	88	60	0	60	68	68	64	68	64
Shelters	95	83	69	2	71	84	83	76	86	78
Day Care	240	217	170	11	176	77	78	78	81	81
Schools	670	657	336	190	423	50	51	54	64	70
Public Housing	73	17	16	0	16	94	94	100	94	100
<b>Total</b>	<b>1,679</b>	<b>1,524</b>	<b>990</b>	<b>221</b>	<b>1,094</b>	<b>63</b>	<b>65</b>	<b>68</b>	<b>72</b>	<b>78</b>

<sup>1</sup>This column includes all in-scope agencies (both from the original sample or replacement sample) that participated for all or part of the reference period.

<sup>2</sup>The formula used for this column computes the percentage of all participating agencies of all eligible agencies targeted for recruitment, including replacements in both the numerator and denominator. This is defined by the American Association for Public Opinion Research (AAPOR) as formula COOP4. See AAPOR's *Standard Definitions* (2006). Available online at: [http://www.aapor.org/uploads/standarddefs\\_4.pdf](http://www.aapor.org/uploads/standarddefs_4.pdf), p.34.

<sup>3</sup>The formula used for this column is based solely on the eligible agencies in the original sample, disregarding replacements. Also known as the "effective participation rate," it is equivalent to AAPOR formula RR6 (*Ibid.*, p33).

<sup>4</sup>This is equivalent to the "after replacement" participation rate measure used in the National Assessment of Educational Progress (NAEP), an example of which can be seen at [http://nationsreportcard.gov/science\\_2005/s0117.asp?printver=](http://nationsreportcard.gov/science_2005/s0117.asp?printver=)

**Table 3. Sentinel Agency Participation Rates NIS-1 through NIS-4 (Unweighted, After Replacement)**

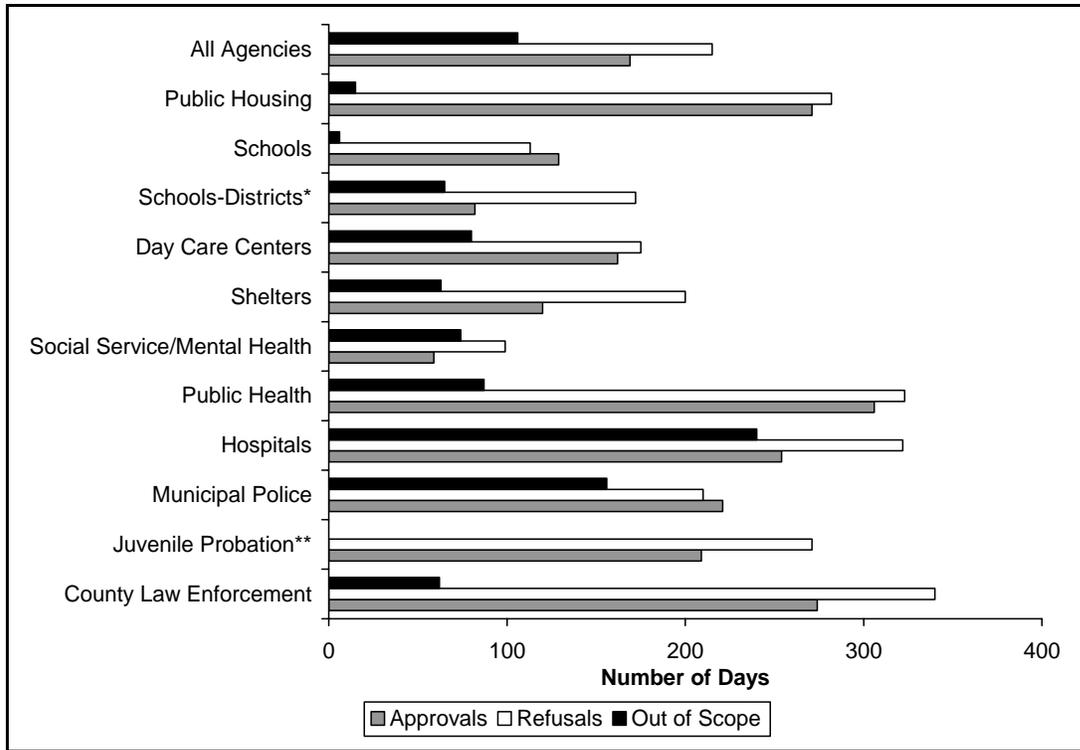
Agency Category	NIS-4 Participation Rate (%)	NIS-3 Participation Rate (%)	NIS-2 Participation Rate (%)	NIS-1 Participation Rate(%)
County Sheriff/State Police	76	97	92	92 <sup>a</sup>
Juvenile Probation	83	93	94	
Municipal Police	78	96	93	82
Hospitals	69	100	96	76
Public Health	77	100	100	91 <sup>c</sup>
Social Service/Mental Health	68	91 <sup>b</sup>	88 <sup>b</sup>	
Shelters	86			
Day Care Centers	81	100	89	
Schools	64	75	82	89
Public Housing	94	NA	NA	NA
<b>Total</b>	<b>72</b>	<b>82</b>	<b>88</b>	<b>87</b>

<sup>a</sup>In the NIS-1 these agency categories were combined with the county medical examiner in a single “Other Law Enforcement” category .

<sup>b</sup>These categories were combined with the “Social Service/Mental Health” category in the NIS-2 and NIS-3.

<sup>c</sup>These agency categories were combined in a single “Other Agencies” category in the NIS-1.

**Figure 1. Average Days from First to Last Contact for Approvals, Refusals, and Out-of-Scopes**



\*One hundred and ninety-four schools were lost due to district-level refusals. No contact was made with these schools.

\*\*Three county probation offices were associated with state refusals. No contact was made with these agencies.

## DATA COLLECTION

The goals of the NIS–4 data collection were to maximize agency and sentinel participation and to collect complete and accurate data forms on every maltreated child whom sentinels identified or whom CPS agencies accepted for investigation during the NIS–4 reference periods. NIS–4 used two 3-month reference periods (9/4/05–12/3/05 and 2/4/06–5/3/06). Table 4 shows the distribution of the NIS–4 sample across these reference periods.

**Table 4. Distribution of PSUs, Counties, and Agencies by Reference Period**

Reference Period	PSUs	Counties	CPS Agencies	Sentinel Agencies
Fall 2005	72	83	85	754
Spring 2006	38	39	41	340
Total	110	122	126	1,094

CPS agencies provided data on all cases they accepted for investigation that were reported during their assigned reference period, whereas sentinels described all maltreated children they encountered whose maltreatment occurred during their assigned reference period. CPS agencies also provided summary level data about cases they accepted during the month following their reference period for special analyses to explore the effects of allowing more time for reports to CPS, especially on children sentinels observed late in their reference period.

The fall and spring reference periods required two cohorts of field managers in the home office and local coordinators in the field. Local coordinators lived in or near the NIS–4 counties. They trained sentinels, motivated them throughout the data collection period, collected sentinel data forms, trained CPS agency staff (as needed), and coordinated CPS data collection tasks (as needed). Subsets of local coordinators were actively working over a 22-month period from September 2005 through June 2007. Most sentinel data collection activity coincided with the two 13-week reference periods, but CPS data collection extended for more than a year beyond the end of the second reference period due to agencies' schedule, budget, or staffing constraints and the challenges of negotiating data extracts from agencies' electronic information systems.

The NIS–4 used three primary data collection instruments: the CPS Maltreatment data form, the CPS Summary data form, and the Sentinel data form. CPS agencies used the CPS Maltreatment data form to provide details concerning the children and maltreatment events for a sample of cases reported to the agency during the study reference period that they accepted for investigation. They used the CPS Summary data form to capture primarily demographic information on the remaining, unsampled cases, for use in unduplication. Sentinels used the

Sentinel data form for all children they suspected were maltreated during the reference period. The CPS Maltreatment and Sentinel data forms collected many of the same details, but differed in format: the Sentinel data form described a single child, whereas the CPS data form described all children in the household, since CPS agencies typically organize records around household-level investigations rather than around individual children.

During training, sentinels and CPS agency staff were given booklets with general instructions, definitions, and item-by-item specifications for completing their data forms. Local coordinators reinforced the sentinels’ role in the study through regular agency visits. Local coordinators visited 70% of the agencies biweekly and 18% of the agencies every three weeks or monthly. Four percent of the agencies permitted the local coordinator fewer than three visits during the reference period or did not allow the local coordinator on site. (For 8%, records on frequency of visits were incomplete.)

Both CPS agencies and sentinels had multiple options for submitting data to the NIS–4. Almost all CPS agencies submitted their summary data via electronic file uploads and about one-half also submitted a portion or all of the case maltreatment details electronically. The NIS–4 collected Maltreatment data forms on 10,667 sampled cases and Summary data on all 140,206 listed cases. Sentinels could submit hardcopy data forms or complete data forms online. They provided almost one-half of Sentinel data forms online. Table 5 shows the 1,094 participating agencies, 10,791 sentinels, and 6,208 data forms submitted by sentinel agency type.

**Table 5. Participating Sentinel Agencies, Sentinels, and Data Forms by Agency Type**

<b>Agency Type</b>	<b>Agencies</b>	<b>Sentinels</b>	<b>Data Forms</b>
County Sheriff/State Police	44	313	574
Juvenile Probation	54	364	251
Municipal Police	63	499	606
Hospitals	105	853	1,986
Public Health	82	340	268
Social Service/Mental Health	60	254	198
Shelters	71	123	403
Day Care	176	624	59
Schools	423	7,372	1,845
Public Housing	16	49	18
<b>Total</b>	<b>1,094</b>	<b>10,791</b>	<b>6,208</b>

At the end of data collection, local coordinators contacted each sentinel one final time to collect any outstanding data forms; they also completed an exit evaluation form assessing the sentinel’s level of commitment and enthusiasm for the study. Local coordinators rated 35%

of sentinels as “enthusiastic and supportive” or “cooperated with interest” and 46% as “cooperative.” They classified 13% as begrudging or unresponsive. The sentinel agency did not permit local coordinators direct contact with 3% of sentinels, and 2% of sentinels had no ratings information. Statisticians examined these ratings and determined that, except for classifying 3 sentinels as nonrespondents, no additional adjustments to sentinel weights were needed.

## EVALUATIVE CODING

The purpose of evaluative coding is to judge the details of each case of suspected maltreatment reported to the NIS–4 against the required elements of the countability criteria defined for the study. The NIS definitions specify all of the elements that must be met for the child to be countable. Separate evaluations are made as to whether the case fits each of these elements and only children who fit the standardized definitions are classified as countable and used as the basis for the study estimates of the number of children maltreated in the nation.

**Evaluative coding procedures.** The CPS Maltreatment Data form and the Sentinel Data form gathered details on maltreatment. These data forms required respondents to answer pre-coded questions about the maltreatment and to briefly describe certain details about the maltreatment event(s). Evaluative coders used these narratives and the respondent-assigned codes to classify the form(s) of maltreatment according to the NIS–4 60-form typology shown in Table 6. In doing so, they also evaluated the circumstances against definitional criteria, and judged the child’s overall countability under the study standards. As in past NIS cycles, two definitional standards were used in parallel—the Harm Standard and the Endangerment Standard. The Harm Standard has been used since the NIS–1 and is the more stringent. For the most part, it requires that the child have experienced observable harm from maltreatment in order to be deemed countable. The Endangerment Standard has been in use since the NIS–2. It is more lenient, requiring that source of the study report (CPS or the sentinel) consider the perpetrator’s actions or omissions to have placed the child at serious risk of harm. The key decisions elements included:

- The age of the child (the NIS includes all maltreatment events that occurred to children from birth to their 18<sup>th</sup> birthday);
- The custody status of the child (NIS includes only abuse and neglect in the purview of CPS, that is, maltreatment of children living in household settings);
- Child victim status (applies on CPS forms only)—whether an alleged victim (child was an alleged victim or the CPS investigation record described his or her countable maltreatment), substantiated/indicated victim, or not a victim of maltreatment;
- The relevant form(s) of maltreatment;
- The certainty with which the events met the study’s time-period eligibility;
- The nature of harm (injuries to the child);
- The severity of harm to the child and whether it met the required harm for the form of maltreatment according to the standard under consideration—Harm or Endangerment;

- The person(s) responsible for the maltreatment, their role in the maltreatment (maltreated, permitted), and whether they met the requirement for who the perpetrator has to be according to the definitional standard under consideration (Harm Standard or Endangerment Standard);
- Degree of evidence for holding alleged perpetrator(s) responsible for maltreatment event(s);
- Whether alcohol, drugs, or mental illness were factors in the maltreatment events;
- Countability of each *form of maltreatment* according to the Harm Standard and the Endangerment Standard; and
- Overall countability of the *child* according to the Harm and Endangerment Standards.

**Table 6. NIS–4 60-form Typology for Classifying Maltreatment**

<p><b>Sexual Abuse (10 codes)</b></p> <ul style="list-style-type: none"> <li>Intrusion sex without force</li> <li>Intrusion sex involving use of force</li> <li>Child’s prostitution or involvement in pornography with intrusion</li> <li>Molestation with genital contact</li> <li>Exposure/Voyeurism</li> <li>Providing sexually explicit materials</li> <li>Child’s involvement in pornography without intrusion</li> <li>Failure to supervise child’s voluntary sexual activity</li> <li>Attempted/threatened sexual abuse with physical contact</li> <li>Other/unknown sexual abuse</li> </ul>	<p><b>Physical Neglect (12 codes)</b></p> <ul style="list-style-type: none"> <li>Refusal to allow or provide needed care for diagnosed condition or impairment</li> <li>Unwarranted delay or failure to seek needed care</li> <li>Refusal of custody/abandonment</li> <li>Other refusal of custody</li> <li>Illegal transfers of custody</li> <li>Other or unspecified custody-related maltreatment -- unstable custody arrangements</li> <li>Inadequate supervision</li> <li>Inadequate nutrition</li> <li>Inadequate personal hygiene</li> <li>Inadequate clothing</li> <li>Inadequate shelter</li> <li>Other/unspecified disregard of child’s physical needs and physical safety</li> </ul>
<p><b>Physical Abuse (6 codes)</b></p> <ul style="list-style-type: none"> <li>Shake, throw, purposefully drop</li> <li>Hit with hand</li> <li>Hit with object</li> <li>Push, grab, drag, pull</li> <li>Punch, kick</li> <li>Other physical abuse</li> </ul>	<p><b>Educational Neglect (4 codes)</b></p> <ul style="list-style-type: none"> <li>Permitted chronic truancy</li> <li>Other truancy</li> <li>Failure to register or enroll</li> <li>Other refusal to allow or provide needed attention to diagnosed educational need</li> </ul>
<p><b>Emotional Abuse (8 codes)</b></p> <ul style="list-style-type: none"> <li>Close confinement: tying/binding</li> <li>Close confinement: other</li> <li>Verbal assaults and emotional abuse</li> <li>Threats of sexual abuse (without contact)</li> <li>Threats of other maltreatment</li> <li>Terrorizing the child</li> <li>Administering unprescribed substances</li> <li>Other/unknown abuse</li> </ul>	<p><b>Emotional Neglect (11 codes)</b></p> <ul style="list-style-type: none"> <li>Inadequate nurturance/affection</li> <li>Domestic violence</li> <li>Knowingly permitting drug/alcohol abuse</li> <li>Knowingly permitting other maladaptive behavior</li> <li>Refusal to allow or provide needed care for diagnosed emotional or behavioral impairment/problem</li> <li>Failure to seek needed care for emotional or behavioral impairment/problem</li> <li>Overprotectiveness</li> <li>Inadequate structure</li> <li>Inappropriately advanced expectations</li> <li>Exposure to maladaptive behaviors and environments</li> <li>Other inattention to development/emotional needs</li> </ul>
<p><b>Other Maltreatment (6 codes)</b></p> <ul style="list-style-type: none"> <li>Lack of preventive health care</li> <li>General neglect -- other/unspecified neglect allegations</li> <li>Custody/child support problems</li> <li>Behavior control/family conflict issues</li> <li>Parent problem</li> <li>General maltreatment -- unspecified/other (not coded above)</li> </ul>	<p><b>Not Countable by any NIS Standard (3 codes)</b></p> <ul style="list-style-type: none"> <li>Involuntary neglect</li> <li>Chemically dependent newborns</li> <li>Non-maltreatment cases</li> </ul>

The evaluative coders recorded these key decision elements using a specially designed Computer Assisted Evaluative Decision System (CAEDS). CAEDS offered several advantages over the paper transmittal forms that were used to record evaluative coding decisions in previous NIS cycles: it offered automated reminders and consistency-checks as the coder entered the key decision elements for each maltreatment form; it allowed simultaneous and efficient electronic access to a particular scanned data form by anyone who needed it at the time (the primary evaluative coder, the reliability coder, the unduplication team); it served as the management system for allocating coding assignments and monitoring reliability; and it provided a secure paperless process in which all confidential details on data forms were stored electronically on a secure password-protected network, eliminating the need for transport of confidential paper forms.

**Reliability coding procedures.** After the initial evaluative coding was completed for a child, the case could be sampled for assignment to another evaluative coder for reliability coding. The reliability coder completed the case without knowledge of the initial coder's decisions. Inter-coder reliability was assessed throughout the evaluative coding operation.

Two measures of inter-coder reliability were applied. The first was the simple percentage rate of agreement between the initial evaluative coders and the reliability coders on each decision element. The second was a computation of the Kappa coefficient for each decision, which took account of the level of agreement expected by chance, based on the distribution of codes on the item. The Kappa also helped identify coders who were performing below the average level relative to other coders.

The evaluative coding task leader and all evaluative coders participated in bi-weekly "Committee Review" meetings. The primary purpose of these meetings was to resolve the discrepancies found through reliability coding, review the difficult-to-code cases, and to clarify any questions concerning coding procedures or instructions. These ongoing assessment procedures only tracked important information about the overall reliability of the evaluative coding decisions, but the team meetings also alerted the coders to any slippages or discrepancies in their standards, ensuring that they applied the criteria evenhandedly across all forms of maltreatment and all children.

**Evaluative coding statistics.** The evaluative coding began with the first training session on August 28, 2006 and ended with the final resolution of discrepant cases on October 10, 2007. The tables below present the number of cases coded and the overall agreement rates and Kappa.

**Table 7. Numbers of Child-level Records Completed During Each Phase of Evaluative Coding.**

	<b>Initial Evaluative Coding (EC)</b>	<b>Blind Reliability Coding (RC1)</b>	<b>Blind Reliability Coding Rate</b>	<b>Committee Review (CR)</b>
<b>Cases Completed</b>	30,539	12,358	40%	3,874

**Table 8. Agreement Rates for Overall Countability of Child-level Records**

<b>Measure</b>	<b>Cases in Agreement</b>	<b>Total Cases</b>	<b>Agreement Rate</b>
<b>Countability under the Harm Standard</b>	11,386	11,604	0.981
<b>Countability under the Endangerment Standard</b>	11,407	11,604	0.983

**Table 9. Kappa Scores for Countability of Maltreatment Forms and Child-level Records**

<b>Measure</b>	<b>Kappa Score</b>
<b>Child Case:</b>	
Countability Harm Standard agreement	0.95
Countability Endangerment Standard agreement	0.91
<b>Forms of Maltreatment:</b>	
Countability Harm Standard agreement	0.96
Countability Endangerment Standard agreement	0.95

## UNDUPLICATION

NIS provides estimates of the numbers of maltreated children, so it is critical for the study to avoid counting the same child more than once. The purpose of unduplication is to identify children who enter the study data on multiple data forms and reduce their information to a single record for analysis. Unduplicating NIS–4 data consisted of three main steps:

- 1) Identifying child-level records that may be duplicates (candidate pairs)
- 2) Deciding whether the candidate pair records were true duplicates
- 3) Unifying duplicate records

**Candidate pairs.** Matches on subsets of 8 key data items helped to identify candidate pairs:

First name	Age
Last name initial	Ethnicity/race
Gender	City of residence
Date of birth	Number of children in family

Candidate pairs for child-level records from CPS Maltreatment and Sentinel data forms were identified 3 ways:

- (1) Manually using a computerized sorting system
- (2) Using the NIS–3 rule-based algorithm that identified 2 of 3 matching patterns
- (3) Using a probability-based matching software designed to identify matches

During the first stage, all data forms in 9 small counties were examined manually. This entailed unduplication staff sorting all the child-level records in each county by various key data items and flagging pairs of records that appeared to be potential duplicates. Statisticians used the data in these counties and these initial candidate-duplicate decisions to guide the settings of parameters on the probability-based matching software so that it would, as closely as possible, identify the same candidate pairs. In addition, the unduplication task leader adjusted the NIS–3 rule-based algorithm so that it would not generate numerous false-positive candidates. Once these preparations were completed, the adjusted NIS–3 rule-based algorithm and the probability-based matching software were applied to the remaining counties to generate the candidate duplicate pairs in those locales.

**True duplicates.** Staff examined details on the records in candidate pairs and decided whether they were true duplicates. During this process, they accessed the scanned data forms electronically, using the form viewer system that also supported the evaluative coding operation. As discussed there, this offered simultaneous and efficient electronic access to a particular scanned data form by anyone who needed it at the time (the primary evaluative coder,

the unduplication coder, or reliability coders); and the paperless process it supported secured all confidential details on data forms on a password-protected network.

Table 10 shows that the unduplication team processed 3,236 candidate pairs, deciding that 40% of these pairs were true duplicates.

**Table 10. Unduplication Decisions on Candidate Pairs**

True duplicates	1,280
Not duplicates	1,956
<b>Total Number of candidate pairs</b>	<b>3,236</b>

**Reliability.** Reliability of unduplication decisions was tested by obtaining a second blind decision on all candidate duplicate pairs in the nine manual sites and on a 10 percent sample for the remaining sites. The reliability rate for manual unduplication was 100 percent and 99.9 percent for the remaining sites.

**CPS Summary data form duplicates.** CPS Summary data forms had no information beyond the key demographic data items, so a different method was used to decide candidate pairs and resolve duplicates among them and between them and the more detailed data forms. Statisticians used the information about the true duplicate decisions on the detailed data forms to adjust the parameters of the probability-based matching software so that it could generate, as closely as possible, the same final decisions about true duplicate status. They then applied the software, with these parameters, to generate true duplicate pairs involving CPS Summary data form records. Table 11 gives the results of this fully-automated unduplication process with the CPS Summary data forms.

**Table 11. Unduplication Results for CPS Summary Data Forms**

CPS maltreatment and CPS summary form true duplicates	1,520
Sentinel and CPS summary form true duplicate	1,534
<b>Total Number of true duplicates</b>	<b>3,054</b>

**Unifying duplicates.** In order to resolve records classified as true duplicates, analysts selected one record to represent the child in the final database and “credited” the child’s recognition to a particular source, while statisticians assigned the record a unified weight.

Selecting a single record to represent an unduplicated child followed similar decision rules to those used in previous NIS cycles, giving preference to records with countable maltreatment under the Harm and/or Endangerment standards, to those with more complete

demographic information, to records from sources higher in the traditional NIS hierarchy of recognition sources, and to those describing more forms of maltreatment. Statisticians assigned the unified child record a weight that adjusted for the multiple probabilities of sampling the child from the sources represented in the duplicate grouping.

The NIS–4 unduplication team processed 30,543 child records. After identifying and unifying duplicate records, the final database contained 29,488 records on individual children.

**Improved methodology.** The NIS–4 unduplication process mimicked methods used in prior NIS cycles, but also introduced innovations to identify potential duplicate pairs and determine duplicates more efficiently. Substantive differences from earlier NIS cycles included using probability-based matching software both to identify candidate pairs and decide true duplicate status of CPS Summary data records, and adjusting the rules of the NIS–3 algorithm. These improvements were tested to verify their comparability with previous NIS studies.

**Extended CPS unduplication.** As an enhancement to earlier NIS methods, the NIS–4 collected CPS Summary forms for an additional month after the study reference period. Statisticians, using the probability-based matching software, unduplicated the uninvestigated Sentinel cases against this added month of CPS data to identify any additional duplicates. This special analysis ensured that the study would not underestimate the percentage of countable children investigated by CPS.

## WEIGHTING

Sampling weights were developed so the NIS–4 data can provide national estimates of the incidence of child abuse and neglect in the U.S. in 2005-2006. The weights:

- account for the differential selection probabilities for the sample units at each successive sampling stage,
- compensate for unit nonresponse from sentinel agencies, and for incomplete or partial response from sentinels and CPS agencies,
- adjust for multiple probabilities of identifying the same maltreated child through multiple reports to CPS or through multiple sentinel sources, and
- provide an annualization adjustment to transform reference-period data to represent a full-year and account for seasonality differences between the two study reference periods (fall 2005, spring 2006).

**Base weights.** For each sample unit, the base weight is the reciprocal of the probability of including the unit in the sample. In the NIS–4, the first-stage primary sampling units (counties or county clusters) were selected with probability proportional to the Census 2000 population of children under age 18 in the PSU. The PSU base weight is the reciprocal of the probability of selection of the PSU. Within PSUs, the agency weight is a function of the sample design used to select agencies in the PSU. The agency base weight is a product of the PSU weight and the reciprocal of the conditional selection probability of the agency given the sample PSU. Likewise, the base weight for sentinels, maltreatment case reports and children are derived in the same manner, taking into consideration the sample design used to select the sample units in each successive sampling stage.

**Special weighting adjustments.** There were two adjustments to the PSU base weight. First, the PSU sample was divided into two subsamples. A subsample of 62 PSUs (69 counties) was selected for a full-scale survey involving all 11 sentinel agency categories in the NIS–4. The remainder sample of 48 PSUs (53 counties) was allocated for a reduced-load survey to include 8 sentinel agency categories only and exclude the three law enforcement agency types—juvenile probation, sheriff/county police, and municipal police. As a result, a PSU subsample weight was computed for estimation involving law enforcement agencies.

Second, population adjustment factors were applied to the PSU base weights to ensure that study estimates would be accurate relative to the size and distribution of the child population at the time of the NIS–4 reference periods. The NIS–4 survey was conducted in the fall 2005 and the spring 2006. The U.S. child population was larger at this time than it was at the

time of the 2000 census (when sampling probabilities were set). Moreover, Hurricanes Katrina and Rita caused relatively large population mobility within the U.S. just prior to the NIS–4 reference periods. To estimate incidence rates, the NIS–4 uses the average of the Census child population estimates for July 2005 and July 2006 as the reference population. To simplify analyses relative to this population, population adjustment factors were used to update the PSU base weights. To address the effects of the hurricanes on the distribution of the child population, PSU base weights were also adjusted to reflect the proportion of the national child population in the NIS–4 counties in July 2006 (i.e., after the hurricanes).

**Nonresponse adjustments.** The objective of adjusting base weights for nonresponse is to reduce bias by compensating for lost data. The NIS–4 had three types of nonresponse: nonparticipating sentinel agencies, refusals or incomplete participation by sentinels, and missing CPS Maltreatment data forms on sampled cases.

Nonresponse adjustments were developed within homogeneous weighting classes. Statisticians defined adjustment factors by using a sample-based method to distribute the base weights of the nonresponding units to the responding sample units. With this adjustment, the sum of the adjusted weights divided by the sum of the responding units equals the sum of the base weights for the entire sample.

**Multiplicity adjustments.** All duplicate records were identified and, where appropriate, linked together in a “duplicate grouping” in order to adjust for multiplicity of sampling. The multiplicity adjustments used the same modified single-frame approach developed in the NIS–3, correcting for a duplicated child’s multiple chances of coming into the study through all the sources that submitted records on the child. In each PSU, duplicate groupings predominantly included duplicates among CPS data forms and between CPS and sentinel data forms. This reflects a dual-frame design, where frame *A* was the frame of maltreated children investigated by CPS and frame *B* was the list of maltreated children reported by sentinels, with the large majority of duplicates involving overlap between these frames. Based on the special *Hidden Duplication* substudy in the NIS–3, children duplicated on records from multiple sentinel sources but never reported to CPS are rare. This finding is consistent with the dynamics of recognizing and reporting maltreated children: when more community professionals recognize a child as maltreated, it is more likely that one or more of them will report the child to CPS, which in turn makes it more likely that CPS will investigate the child’s maltreatment.

**Annualization adjustments.** Statisticians developed annualization adjustment factors using a calendar year of maltreatment child data from the National Child Abuse and Neglect Data System (NCANDS). Walter R. McDonald and Associates prepared a calendar year file from the FY2005 and FY2006 NCANDS child files, including child records where the (1) county of report was in the NIS-4 (2) date of report was in calendar year 2005, and (3) report disposition was substantiated or indicated. Four adjustment factors were derived, distinguished by season (fall versus spring) and by source of report (school versus other sources). In each case, the multiplier was the unduplicated total number of substantiated/indicated children reported during the full calendar year divided by the unduplicated total reported during the 2005 months that corresponded to the months of the NIS-4 reference periods (i.e., September 4—December 3 or February 4—May 3).<sup>2</sup>

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<sup>2</sup> At the time of the annualization work, the NCANDS FY2006 file was not yet finalized, but it was deemed sufficiently complete and accurate to cover the full calendar year and these reference periods in 2005. Comparing multipliers derived from this file to multipliers computed from the NCANDS 2004 data showed only small differences (school multipliers were 3.50 in the NCANDS FY2005 data and 3.64 in the 2004 NCANDS data; multipliers for all other sources were 3.99 in the NCANDS FY2005 data and 3.90 in the 2004 data). This indicated that the multipliers change only slightly from one year to the next, implying that little would be gained by delaying the analyses to integrate multipliers from the finalized NCANDS FY2006 file. The forthcoming Analysis Report provides further details.

## **CPS STRUCTURE AND PRACTICES MAIL SURVEY (SPM)**

The CPS Structure and Practices Mail Survey (SPM) is a NIS–4 supplementary study, designed to assist in interpreting the main study findings. The SPM was modeled after the Local Agency Survey (LAS) in the National Study of Child Protective Service and Reform Efforts, which was conducted in 2002 with CPS agencies in 375 counties in the United States. The SPM used a slightly modified version of the LAS questionnaire.

The principal purposes of the SPM are to provide a basis for understanding the findings of the NIS–4 main study by identifying differences in local CPS agency structures and practices that relate to

- (1) local differences in CPS investigation coverage, and
- (2) differences in rates of abuse and neglect the agencies' jurisdictions.

The SPM questionnaire included 4 modules, each focused on a specific CPS function: Administration, Screening/Intake, Investigation, and Alternative CPS Response. Table 12 lists the topics covered in each module. Survey instructions were to describe the agency's organization and practices as they were during the NIS–4 reference period. The instructions also specified that the person(s) most knowledgeable about the topics covered in a given module should complete the survey questions. Respondents were told that, if they encountered any question beyond the scope of their knowledge, they should consult with persons who could provide the most informed response.

The SPM surveys were mailed to CPS agencies only after firm agreements to participate were in place and the agency had determined who on their staff would complete or coordinate their agency's responses to the SPM survey modules. Because the SPM schedule followed CPS recruitment for the main NIS–4 study and that recruitment occurred over an extended period, the SPM data collection period was also lengthy. The first set of SPM mailings occurred in February 2006 and the last completed survey was returned in May 2007.

After the initial mailing, there were a number of follow-up contacts, depending on the agency's responses and circumstances: to verify that they received the survey, to provide them another copy, to ask about its status and about when they would return the completed modules. To facilitate progress in some agencies, the survey was administered via telephone.

The survey achieved a 98 percent response rate, receiving 118 completed responses (94%) and 5 partially completed responses (4%). Only 3 agencies (2%) refused to participate in the survey.

**Table 12. Topics Covered in the 4 SPM Modules**

<b>Module 1: Administration/ organization</b>
<p>number of staff, their education and years of experience            budget for CPS activities            whether any CPS staff were located in satellite offices or in other agencies            whether a citizen review panel or community board reviewed local agency practice            whether the agency contracted with other agencies to provide any CPS functions            whether the agency collaborated with other agencies in providing CPS services</p>
<b>Module 2: Screening/Intake</b>
<p>whether the agency had specialized screening/intake workers            the number of staff who handled the screening/intake functions during the NIS–4 reference period            whether the agency experienced an excessive screening/intake workload during the NIS–4 reference period            the relative rank of referral sources according to the volume of referrals they provided to the agency            whether any referrals came from a state hotline and if so what percent of referrals the hotline provided            mechanism(s) for handling calls during non-business hours and from non-English speakers            whether the agency maintained records on all calls received            whether the agency shared responsibility for screening referrals with any other agency            what the available response options were for different types of referrals            whether the agency prioritized responses to referrals            whether the agency had any mandated limit on caseload size when responding to referrals            what response options were available for screened-out referrals            whether the agency automatically accepted referrals from certain types of reporters</p>
<b>Module 3: Investigation</b>
<p>whether the agency had specialized investigation workers            whether different workers conducted screening/intake and investigations            the number of staff who handled the investigation functions during the NIS–4 reference period            preferences for assigning workers with different experiences depending on the referred child or household            whether the agency experienced an excessive investigative workload during the NIS–4 reference period            the agency’s role in investigating different types of maltreatment and different kinds of perpetrators            standard activities of workers who investigate referrals            standard activities during investigation for different types of cases            the agency’s use of structured instruments or tools during the investigation process            factors considered in determining whether maltreatment had occurred or the child was at risk of maltreatment            factors that present problems for the agency in completing investigations in a timely and accurate manner            actions taken after a determination that maltreatment had occurred            treatment of investigations that are not completed within the time frame specified by agency policy            provision of short term services after an investigation is completed</p>
<b>Module 4: Alternative CPS Response (if applicable)</b>
<p>objective of the alternative response as it operated during the NIS–4 reference period            differences between the agency’s investigation response and the alternative response            numbers of alternative response cases and children handled during the NIS–4 reference period            whether the children receiving alternative response were alleged victims of maltreatment in the referral            whether the agency had specialized alternative response workers            whether workers conducting alternative response are different from those conducting other CPS functions            the number of staff who handled the alternative response function during the NIS–4 reference period            whether the agency experienced an excessive alternative response workload during the NIS–4 reference period            the agency’s methods for managing excessive workload demands            the agency’s role in providing the alternative response to referrals involving different types of maltreatment            criteria used to assign cases to alternative response            standard activities of workers who conduct the alternative response            the agency’s use of structured instruments or tools during the alternative response            factors that present problems for the agency in conducting the alternative response            services provided as part of the alternative response</p>

Statisticians weighted the survey data to permit national estimates concerning local CPS structure and practices. An agency's final weight was the product of its PSU weight (the reciprocal of the conditional selection probability of the agency's PSU from the stratified list as described in the section on *Samples*), and a nonresponse adjustment within weighting classes to compensate for the lost data from the nonresponding agencies. The final analysis file contained 123 records, one for each responding agency.

The SPM data will be analyzed in conjunction with the main study findings, determining whether features of CPS organization and practice relate to the percentage of maltreated children that CPS investigates or to the overall rates of different categories of maltreatment in the local jurisdiction.

## CPS SCREENING POLICIES STUDY (SPS)

The CPS Screening Policies Study (SPS) is a NIS–4 supplementary study, designed to aid in interpreting the main study findings. The NIS–4 main study provides estimates of the numbers and percentages of maltreated children who were investigated by CPS. However, children who were not investigated represent an enigma to the NIS because it is not possible to say whether they were not reported to CPS or whether they were reported to CPS but not investigated because they did not fit the agency’s screening criteria. The policy implications of these alternative situations are quite different. This supplementary study obtained detailed information about CPS screening criteria to illuminate the main study findings.

The NIS–3 included a limited precursor to SPS: a brief questionnaire that examined general CPS agency policies and practices. Analyses that examined relationships between responses on this survey and patterns in the NIS–3 main study data suggested the value of further developing this strategy for the NIS–4. Two pilot studies during the *NIS–4 Planning Project* helped to shape the final SPS design and content.

The SPS included two phases. Phase I entailed conducting the survey itself, as an independent study to characterize CPS screening criteria in the United States at the time of the NIS–4. This involved telephone interviews with intake/screening supervisors (or their delegates) in participating NIS–4 CPS agencies and analyzing those data to provide national estimates of the percentages of local CPS agencies that apply different screening criteria to specific allegations of abuse or neglect. In Phase II, coders applied the SPS screening criteria to the uninvestigated children in the NIS–4 main study to decide whether the criteria in their jurisdiction would have screened these children in for CPS investigation during the NIS–4 study period.

**Phase I.** The interview instrument used for Phase I data collection consists of 60 vignettes, each reflecting one of the forms of maltreatment in the refined NIS–4 maltreatment typology. All of the vignettes described the child’s parent as the alleged perpetrator and described circumstances of maltreatment and outcomes to the child that would qualify the scenario as countable under the NIS–4 Harm Standard. After each vignette was a series of questions asking whether the agency would

- accept the case described for CPS investigation,
- assign the case for agency assessment or services but not investigation,
- screen the case out with no further agency action, or
- take other action (if so, specify what other action the agency would take).

If the respondent said the agency would need additional information in order to decide how to respond, they were asked what additional information the agency would need and what activities staff would undertake to gather that additional information. A series of follow-up questions then asked how changes in key features of the base vignette would affect the agency's response; specifically, would the agency's response be different depending on who the perpetrator was alleged to be (not a parent but another adult left in charge of the child, or an adolescent left in charge, or another person not responsible for the child's care) or depending on the child's age, the harm or injury that resulted, whether there was a history of similar events, or the duration or frequency of the event.

The SPS was viewed and presented as an in-depth follow-up to the SPM *Screening/Intake* module, so SPS data collection began in a CPS agency only after that SPM module was complete. In some cases, SPS interviewers facilitated completing that SPM module by administering it via telephone. SPS data collection occurred began in February 2006 and ended in August 2007.

Trained interviewers conducted the telephone interviews with the CPS agency's screening supervisor or other expert on screening decisions. They first administered a background screener to determine whether the jurisdiction screened referrals at the local CPS agency level, the state hotline level or both. Interviews proceeded at all levels where screening occurred in order to gather information about all screening decision making that affected which children received investigation in the jurisdiction.

The interviewers obtained the SPS data on the screening policies in 123 (98%) of the local CPS agencies in the NIS-4 sample; the remaining 3 NIS-4 CPS agencies refused to participate in the SPS. However, because a number of agencies relied solely on centralized screening at the state hotline, while several others applied the same state-wide screening policies, the interviewers were able to achieve this coverage through only 81 individual interviews, as follows:

- for 50 agencies SPS data were gathered via 13 state hotline interviews,
- for 11 agencies SPS data were obtained by 2 local agency proxies,
- 52 agencies provided their own SPS data through direct interviews, and
- for 10 agencies SPS screening data were obtained through two interviews at different levels—through a direct interview with the local intake/screening supervisor and through an interview with their state hotline (this entailed 4 state hotline interviews)

NIS-4 analysts designed a detailed coding system to identify the specific factors that affected decisions about whether to screen a referral in for investigation and whether to assign a referral to the agency's alternative response track. The SPS data analysis used the same weights

that were developed for the SPM and described in that section. These weights allow the SPS agency-level data to provide estimates that characterize the screening policies in all local CPS agencies in the United States.

**Phase II.** In Phase II of the SPS, coders applied each agency's screening criteria to the NIS-4 countable uninvestigated maltreated children in the agency's jurisdiction to identify those who (if they had been reported to their local CPS) would have been screened in for an investigation. If the agency consistently applied the screening criteria described in the SPS interview, then one can assume that these children were never reported to CPS. CPS may or may not have received a report on the remaining children.

SPS coders had been NIS-4 evaluative coders, so they were thoroughly familiar with the data forms and the complexity of information in the records. For the SPS, they revisited data forms from the NIS-4 main study on all children who were countable by NIS standards but not investigated by CPS. From November 2007 to February 2008, they reviewed all specific forms of maltreatment described on these data forms, whether or not they were countable in the NIS-4 classifications. This was done to be certain to identify any reason the agency would have screened the child in for investigation, regardless of whether this agreed with the reason the child was considered countable in the NIS. Coders were assisted in this task by a computerized system where they could view complete images of the data forms (see CAEDS in the *Evaluative Coding* section) and could directly enter their decisions about whether the agency's policies would have screened the case in for investigation of the alleged maltreatment.

Cases were coded in relation to all screening policies that could apply to them. That meant that records on 721 uninvestigated countable children were coded at both the local agency and state hotline levels. Including these, coders assessed 3,962 uninvestigated child records, which entailed 6,683 separate assessments of how agency policy would have responded to the specific forms of maltreatment described in these records. For reliability purposes, a second coder independently processed 429 child records (including 726 forms of maltreatment). The kappa statistic, used to index inter-coder reliability on these decisions, was .61, indicating a moderate level of inter-coder agreement on this complex task.

Tabulations based on the SPM Phase II codes will be analyzed to help in understanding the NIS-4 main study findings on the percentages of uninvestigated maltreated children. These results will indicate the degree to which sentinel nonreporting contributes to the set of uninvestigated countable children as well as the extent to which these uninvestigated children may be referred elsewhere or would qualify for services under alternative response tracks at agencies that have this option.

## SENTINEL DEFINITIONS SURVEY (SDS)

The NIS goes beyond maltreated children who come to the attention of CPS agencies by relying on community professionals (sentinels) who encounter child maltreatment in the course of their work in various agency sectors, including health, law enforcement, schools, and other agencies such as social services and mental health agencies, day care centers, and shelters. In most states, the sectors of professionals represented by NIS sentinels are mandated to report maltreated children they identify to CPS. However, except for a supplementary survey of school sentinels in the NIS-3, previous NIS cycles have not directly asked sentinels about their training on mandated reporting or the standards they apply in deciding whether to report suspected maltreatment to CPS. Also, although NIS has always trained the sentinels to be on the lookout for the full scope of maltreatment situations that are, or could be, countable under the study definitions, NIS has never examined sentinels' own definitions of maltreatment, or asked about their standards for submitting children to the study. This has hampered interpreting changes in the size of the maltreated child population from one NIS cycle to the next, since the study has had no means of determining whether or to what extent the changes reflected true changes in the occurrence of child maltreatment as opposed to shifts in sentinels' definitions or in their standards for submitting data to the study. The purpose of the *Sentinel Definitions Survey* (SDS) was to fill these important gaps.

**Instrument.** The SDS used multiple versions of a questionnaire. Each version began with an introductory section that asked the sentinels about their characteristics and background—including their sex, age, ethnicity, race, level of education, job title and tenure, their agency's setting (rural, suburb, city, etc.), whether they had received any written information or training on reporting child abuse and neglect while working at their agency, their agency's policy on reporting to CPS, and whether they had made any reports while working at their agency.

The rest of each questionnaire included vignettes (selected, as described below, from the 60 vignettes used in the SPS—see the *CPS Screening Policies* section). Every vignette described a situation where a parent abused or neglected a child in a way that corresponded to a specific maltreatment form in the NIS typology and each vignette included features that qualified the child as countable under the Harm Standard. After each vignette, follow-up questions asked the respondent whether they considered the case to be maltreatment, whether they would report it to the local CPS agency, whether they would submit it to a national study on child abuse and neglect, or whether they would not respond in any of these ways. Then, paralleling the SPS strategy, additional follow-up questions asked how changes in key features of the base vignette

would affect the sentinel's response; specifically, would their answers be different depending on who the perpetrator was (not a parent but another adult left in charge of the child, or an adolescent left in charge, or another person not responsible for the child's care) or would their answers differ depending on features such as the child's age, the harm or injury that resulted, whether there was a history of similar events, the duration or frequency of the maltreatment event, or the family's financial resources.

**Samples and method.** The SDS included all 60 SPS vignettes. However, in order to reduce respondent burden, the SDS used a factorial design in which each questionnaire included only a subset of 10 of the 60 vignettes. Thus, the 60 vignettes were divided into 6 groups of 10 vignettes each. The allocation of vignettes across these subsets attempted to distribute examples of the major categories of maltreatment (physical, sexual and emotional abuse, and physical, educational, and emotional neglect). Also, in order to minimize any influence that unique combinations of vignettes might have, 4 different divisions of the 60 vignettes were constructed. Thus, there were 24 unique versions of the questionnaire (4 divisions of the set of 60 vignettes, with 6 groups of 10 vignettes in each division).

Respondents for the SDS were actual sentinels who had participated in the NIS-4. They were eligible for the SDS if they had participated during the last two weeks of the NIS-4 reference period and the sentinel sampling system included their name and address information. Survey questionnaires were mailed to all eligible sentinels in all agencies except schools. Because there were many more school sentinels (see the *Samples* section) and because the second reference period in spring 2006 ended just before the start of summer break, school sentinels were sampled from those eligible in the first reference period (fall 2005). Sentinels were classified into the four main groups listed in Table 13, which also gives the sample size of each group.

To avoid any potential influence on sentinels' submissions during the NIS-4 main study, SDS questionnaires were mailed after the end of the sentinels' reference period. The mailings ensured that the 24 questionnaire versions were evenly distributed across the 4 sentinel groups. The instructions assured sentinels that, after they returned their completed questionnaire, their names and addresses would be destroyed, so their survey responses would be anonymous. Until then, their contact information was used to send follow-up mailings to those who had not yet responded. The initial mailing was followed by a series of follow-ups (a postcard reminder, another full mailing containing a paid Fed-Ex return envelope, and a final postcard reminder). The first surveys were mailed in March 2006 and nearly all returns were received by September 2006, with only a few late arrivals.

As shown in Table 13, 41% of the sentinels responded, for a total of 2,455 completed questionnaires. Response rates were similar across the four sentinel groups.

Analyses will examine variations in responses to different types of maltreatment and will identify differences across the sentinel groups. In addition, the data will be examined to determine whether changing the perpetrator makes a difference and which factors, such as age and harm, are most important to sentinels in deciding what to do about cases of suspected child maltreatment.

**Table 13. SDS Samples and Response Rates**

<b>Sentinel Group</b>	<b>SDS Sample</b>	<b>Completed Surveys</b>	<b>Response Rate</b>
Health (children’s hospitals, general hospitals, public health agencies)	929	405	44%
Law Enforcement (sheriffs, county police, municipal police, juvenile probation agencies)	939	395	42%
School (teachers, administrators, counselors)	3,499	1389	40%
Other (day care centers, shelters, public housing, social services, mental health services)	682	266	39%
<b>Total</b>	<b>6,049</b>	<b>2,455</b>	<b>41%</b>