Special Studies and Strategic Planning:
National Incidence Study of Child Abuse and Neglect

A History of the National Incidence Study of Child Abuse and Neglect

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TABLE OF CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

This report provides a history of the core methodology of the National Incidence Study of Child Abuse and Neglect. The National Incidence Study (NIS) is a congressionally mandated, periodic effort of the United States Department of Health and Human Services. The first NIS (NIS–1), mandated under Public Law (P.L.) 93–247 (1974), was conducted in 1979 and 1980 and published in 1981. The second NIS (NIS–2), mandated under P.L. 98–457 (1984), was conducted in 1986 and 1987, and published in 1988. The third NIS (NIS–3) was mandated under both the Child Abuse Prevention, Adoption, and Family Services Act of 1988 (P.L. 100–294) and the Child Abuse, Domestic Violence, Adoption and Family Services Act of 1992 (P.L. 102–295), conducted between 1993 and 1995, and published in 1996.[i]

Included here are discussions of the basic study design and methodology, definitions of maltreatment, and the various modifications of these that have been made over the three implementations to date. Also noted are the various subsidiary studies that have accompanied the main study at different times, and these are summarized if germane to the basic methodology. Finally, the discussion overviews the central strengths and vulnerabilities of the general NIS design and considers the different critiques and issues that have been raised in connection with past national incidence studies.

1.1 Background

Federal involvement in addressing the problems of child abuse and neglect dates from 1935, when the Social Security Act first funded public welfare services "for the protection and care of homeless, dependent and neglected children and children in danger of becoming delinquents."[1] It was not until the mid-1960's, however, that the first State laws were enacted mandating reporting to public agencies of suspected cases of child abuse and neglect and offering reporters protection from retaliatory litigation (e.g., slander suits, suits alleging breach of confidentiality). By 1967, all States had enacted such child abuse reporting laws.[2]

In the early 1970's, with the awakening of public concern about child abuse and neglect, questions arose about both the overall magnitude of the problem of child abuse and neglect in the United States and the adequacy of existing mechanisms for identifying and protecting abused and neglected

[i] Westat has won the competitive bid to implement each of the three NIS efforts. The author was Westat's project director on both the NIS–2 and NIS–3.

children. A series of hearings on these subjects, held by the Senate Subcommittee on Children and Youth in 1973, resulted in the passage of P.L. 93–247, the Child Abuse Prevention and Treatment Act (CAPTA), which was signed into law in early 1974.[3]

The Act created the National Center on Child Abuse and Neglect (NCCAN), within what was then the Department of Health, Education and Welfare (DHEW). The Center was to support state and local efforts for the prevention and treatment of child abuse and neglect. The Act specifically mandated the Secretary of DHEW, through NCCAN, to "make a full and complete study and investigation of the national incidence of child abuse and neglect, including a determination of the extent to which incidents of child abuse and neglect are increasing in number or severity" (Section 2(b)(6)).

To respond to this mandate, NCCAN awarded a contract in 1976 for the design and implementation of the first national study of the incidence and severity of child abuse and neglect.[i] After two years of design and pretest work, the first National Incidence Study (the NIS–1) was conducted in 1979-80. The NIS–1 was the first large-scale, comprehensive research on this important subject.

As was intended, the NIS–1 data provided a baseline against which findings from subsequent national incidence studies could be compared in assessing changing national patterns in the frequency, severity, and distribution of child abuse and neglect.

Recognizing the need for updated information on the national incidence of child maltreatment, Congress mandated incidence studies in the Child Abuse Amendments of 1984 (P.L. 98-457), the Child Abuse Prevention, Adoption, and Family Services Act of 1988 (P.L. 100–294), and the Child Abuse, Domestic Violence, Adoption and Family Services Act of 1992 (P.L. 102–295). The purposes of the second and third National Incidence Studies (NIS–2 and NIS–3) were not only to assess the current national incidence of child abuse and neglect, but also to determine how the severity, frequency, and character of child maltreatment had changed since the prior implementation(s) of the NIS.

1.2 The NIS Objectives, Basic Sentinel Study, and Supplementary Studies

The principal purpose of all three national incidence studies was to go beyond cases of child maltreatment that come to the attention of the official child protective services system (CPS) and attempt to assess the overall national incidence of the problem of child maltreatment. In all three

[i] This had been preceded by a feasibility study in 1975.

implementations, the *Basic NIS Sentinel Study* provided sufficient information to reveal the relationship between maltreatment and

- the characteristics of the children: their sex, age, and race or ethnicity;
- the characteristics of the families: their income, two-parent or single-parent status, parents' age and employment status, number of children in the household, residence in a metropolitan vs. rural area; and
- the maltreatment circumstances: the perpetrator's relationship to the child, the perpetrator's sex, age, employment status, the nature and severity of harm, and for children investigated by CPS, whether any previous reports of maltreatment in this family had been substantiated by the agency.

In addition, the *Basic NIS Sentinel Study* provides information concerning the children who experience different types of abuse and neglect, indicating the agencies that typically recognize the children and the proportion of these children whose maltreatment was reported to and investigated by CPS. Various technical reports on the three national incidence studies provide further information about many of the methods summarized here and served as general resources for this history.[4,5,6,7,8,9,10]

Over the evolution of the legislative mandates, and to meet the needs of various recommended refinements of its design, each NIS has been required to address a number of ancillary and supplementary objectives. These are summarized in Table 1–1.

Apart from assessing the incidence and distribution of abuse and neglect, the NIS–1 also had the tasks of developing standardized definitions and designing the basic NIS methodology. These activities are briefly described in this history in Chapters 5 and 6. In addition to the basic incidence assessment, the NIS–2 was also required to examine any relationship between nonpayment of child support and the occurrence of child maltreatment. This supplementary study is outside the scope of this history, which focuses on the basic NIS methodology; interested readers should consult the separate report on its methodology and findings.[11]

Table 1–1. Other Components of the NIS–1, NIS–2, and NIS–3 Beyond the Basic NIS Sentinel Study.

NIS	Other Component	Purpose/Activity
NIS–1	*Design and Pretest the Basic Study Methodology*	• Developed study methodology to go beyond official reports to child protective services • Conducted large-scale pretest of sentinel methodology in 8 counties
	Design and Conduct Pretest of a General Population Survey	• Conducted telephone and in-person interviews with parents in six pretest sites
	Standardized Definitions	• Developed definitions to standardize the classification and countability of child abuse and neglect cases across diverse respondent groups
NIS–2	*Nonpayment of Child Support and Child Maltreatment*	• Examined the relationship between child maltreatment and the nonpayment of child support
NIS–3	*Court Referral Study*	• Examined national sample of substantiated CPS cases and extracted information on referral to civil or criminal courts • Conducted telephone discussions with civil court representatives in all NIS counties on their child abuse and neglect case processing and recordkeeping practices
	Sentinel Questionnaire Follow-up Study	• Surveyed the Basic NIS school sentinels about their reporting decisions and experiences; identified barriers to their official reporting of suspected cases
	CPS Screening Policy Study	• Interviewed CPS supervisors in the NIS–3 counties about criteria for deciding whether to investigate a reported case • Identified recordkeeping practices between initial case contacts and the final decision to proceed with a full investigation.
	Annualization Basis Study	• Updated the basis for annualizing the information reflecting a 3-month data period in order to provide estimates reflecting a complete year
	New Sentinel Agency Categories Study	• Explored the utility of adding sentinels in 5 new non-CPS agency categories: pediatric practices, HMO clinics, clergy, public housing authorities, and shelters for runaway or homeless youth and for battered women
	Analysis of Hidden Duplication Bias[i,12]	• Established an upper bound to the amount of bias in the NIS estimates due to hidden duplication of cases

The NIS–3 legislative mandate also specifically assigned two ancillary objectives, which were addressed in three independent, supplementary studies. The NIS–3 mandate to "conduct research on ... the incidence of substantiated reported child abuse cases that result in civil child protection proceedings or criminal proceedings, including the number of such cases with respect to which the court makes a

[i] This study received supplementary funding under a subcontract on an NCCAN task order contract issued to Walter R. McDonald & Associates, Inc. An additional effort under that subcontract involved a formal comparison of the NIS and the NCANDS studies.

finding that abuse or neglect exists and the disposition of such cases" (P.L. 100–294, Section 6) was partly addressed in the *Court Referral Study*.[13] To further address this mandate, the findings of this NIS-3 court study were supplemented with information obtained by the National Institute of Justice (NIJ) in its study on *Justice System Processing of Child Abuse Cases* (not officially part of the NIS and not shown in Table 1–1). That NIJ study tracked physical and sexual child abuse and serious neglect cases from their official point of entry into either CPS or law enforcement to their disposition in the criminal and/or dependency court, thereby providing case-level information about the factors associated with different court responses and dispositions.[14] In addition, this NIJ study included interviews with prosecutors and criminal court representatives in all the NIS–3 counties in order to identify the processing and records that are characteristic at various stages of case flow.[15]

The NIS–3 mandate to examine the relationships among incidents, their observation, and actions taken focused on improved understanding of whether or not abused and neglected children are reported to CPS agencies and the response of CPS to reported cases. A key finding in both the NIS–1 and the NIS–2 was that only a minority of the children who were countable as abused or neglected had been reported to and investigated by CPS. The NIS–3 Basic Sentinel Study was designed to provide comparable estimates of the proportions of maltreated children who were reported to and investigated by CPS, so that changes since the earlier studies could be examined. In addition, the NIS–3 included two studies that provided further information bearing on this objective—one designed to examine the reporting behaviors of school sentinels (the *Sentinel Questionnaire Follow-up Study*[16]) and the other to examine CPS agency policies and practices in responding to reports that are received (the *CPS Screening Policy Study*[17]). These studies are not considered further in this history, so readers should consult their separate reports.

In addition to the above studies that were included in the NIS–3 to meet the legislative mandates, the NIS–3 also included several other studies that were designed to enhance the quality of the final incidence estimates derived from the Basic NIS Sentinel Study data and to inform future NIS efforts: the *New Sentinel Agency Categories Study*, the *Analysis of Hidden Duplication Bias*, and the *Annualization Basis Study*. Because of their central relevance to the NIS–3 basic study, there are no stand-alone reports on these studies. Their methodology and results are incorporated in the NIS–3 technical reports. They are summarized in this history in Chapters 5, 7, and 8, respectively.

Readers are referred to the final reports of the three national incidence studies for information about specific findings,[18,19,20] as they are not provided in this document.

2. BASIC SENTINEL STUDY METHODOLOGY

The basic goal of every NIS is to go beyond cases of child maltreatment that come to the attention of the official Child Protective Services (CPS) system and to assess the annual national prevalence of the problem of child maltreatment at the time of the study. The NIS methodology is based on the assumption that children who are officially reported to Child Protective Services (CPS) agencies represent only the "tip of the iceberg," and that there are considerable numbers of children who are recognized as abused or neglected by community professionals who are not investigated by CPS. For this reason, the NIS obtains data about abused and neglected children who come to the attention of CPS as well as about those who are recognized by community professionals in a broad spectrum of agencies.

2.1 Overview of the NIS Sentinel Methodology

Figure 2–1 provides a schematic overview of the Basic NIS Sentinel Study methodology. In order to provide nationally representative estimates of the prevalence and distribution of all categories of abuse and neglect, the NIS is conducted in a nationally representative sample of counties. As depicted in the figure, every NIS has followed the same basic framework within the selected counties. In each county, the county CPS agency is a key participant. The data collected in the participating CPS agencies represent all the children whose abuse or neglect is reported and accepted for investigation during the study data period. Non-CPS participants in the county include professional staff in specific categories of agencies. The targeted community professionals are people who are likely to come into contact with maltreated children in public schools, day care centers, short-stay general and children's hospitals, municipal police departments, voluntary social services agencies, mental health agencies, the county juvenile probation and public health departments, and the county sheriff or State police division with jurisdiction over any unincorporated areas not served by municipal law enforcement.

The community professionals at non-CPS agencies serve as "sentinels" by remaining on the lookout for child maltreatment cases. They are trained in the study definitions of maltreatment at the outset of the study and submit a study data form on each child they encounter whom they suspect was maltreated during the study period.

Each child who is reported to the study, whether through CPS or by a participating sentinel, is evaluated as to his or her "countability" as abused or neglected in relation to the study definitions. Only children who fit the standards are considered "countable" and entered into the national estimates.

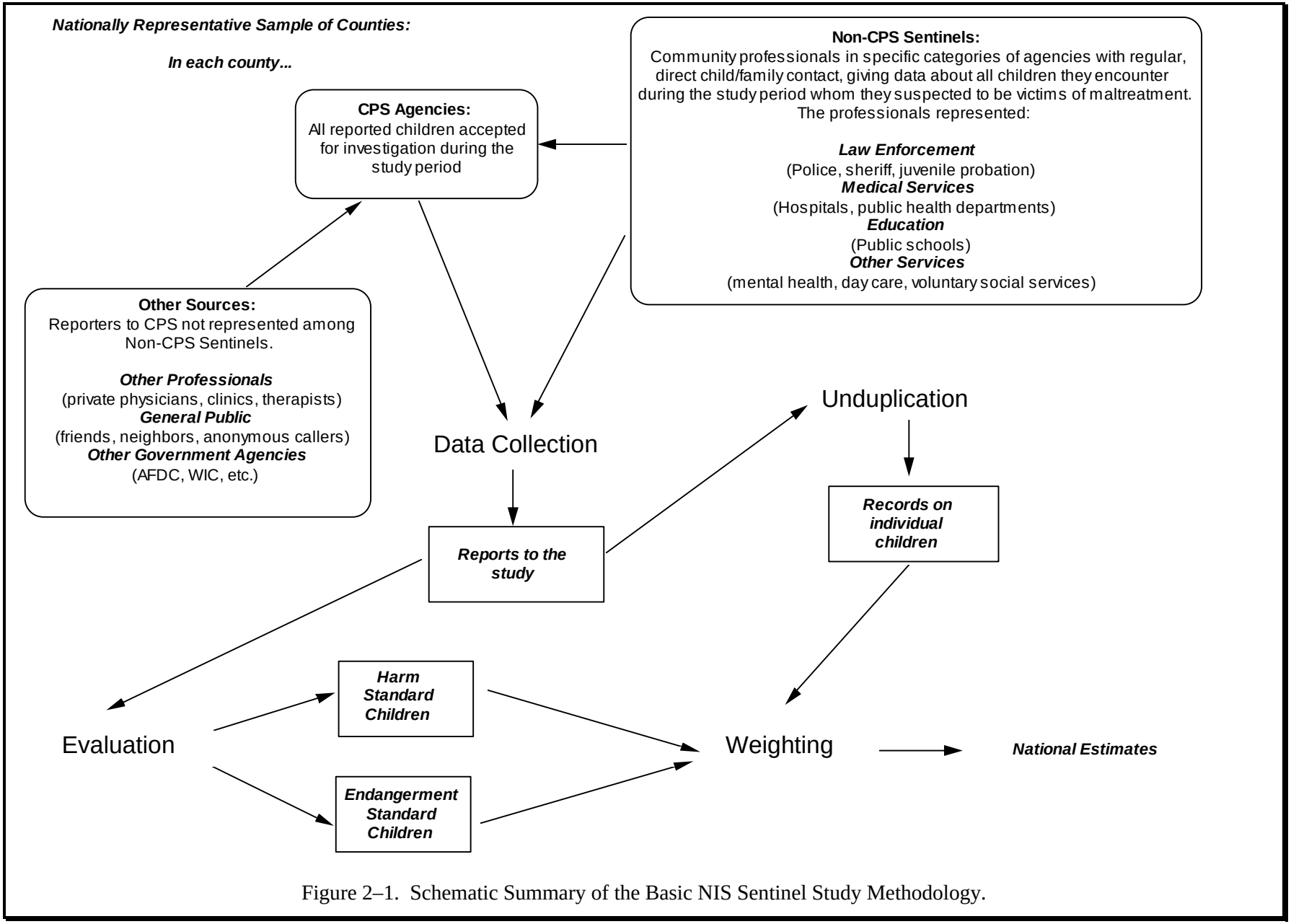

Figure 2–1. Schematic Summary of the Basic NIS Sentinel Study Methodology.

Figure 2–1 shows that two different countability standards have been used in the NIS. At this point, it is important to recognize that, while the Harm Standard was used in all three implementations of the NIS, the Endangerment Standard was used only in the NIS–2 and NIS–3. That is, the NIS–1 applied only the Harm Standard. The details of these different definitional standards are discussed in Chapter 3.

For the issues treated here, there are two other key features to note in Figure 2–1. First, duplicate data forms about the same child are identified and "unduplicated" so that each child is counted by the study only once. Second, the data are weighted to represent the total number of children abused or neglected in the U.S. during the study year. Because sentinel data have never been collected for a full year, this weighting process has always involved efforts to annualize part-year information to estimate numbers of children maltreated over the course of the year.

2.2 Critical Challenges to Meeting the NIS Primary Goal

The primary goal of the NIS is to estimate the total number of children who are abused or neglected annually. We face four key challenges in meeting this goal.[21] Specifically, there are difficulties that arise in connection with ensuring that:

1) the study estimate reflects the total number of abused or neglected children and that it does not miss any qualifying children—the challenge of **Coverage**;

2) the estimate accurately reflects the number of individual children who are abused or neglected and avoids double-counting the same child—the challenge of **Unduplication**;

3) the study estimate reflects the number of children abused or neglected annually despite the fact that the data collection itself might need to be more abbreviated—the challenge of **Annualization**; and

4) the study findings reflect children who are abused or neglected by some systematic definitional standard despite widely varying opinions of study participants concerning what constitutes abuse or neglect—the challenge of **Definition**.

The main task of the study is to estimate the total number of abused or neglected children in the nation. The study will fail its essential task to the extent that qualifying children are "missed" by the study. This is the challenge of *coverage* that the NIS must address.

Recognizing that there are great variations among abused or neglected children in the degree to which they *can* be observed, the NIS task was defined by referring to the conceptual "iceberg" model shown in Figure 2–2. Using this model, the NIS adopted a modified goal of estimating the set of abused

or neglected children who are recognized as abused or neglected by professionals in the community. Specifically, the modified goal of the NIS was to represent Levels 1, 2, and 3.

Given this modified goal, one can identify several ways in which the NIS must contend with the question of adequate "coverage" of these abused or neglected children: (1) coverage in representing the nation, (2) coverage in defining the non-CPS agency categories themselves, and (3) coverage of the cases encountered by individual non-CPS sentinels, which may be reduced to an indeterminate extent by passive nonresponse.[i] These issues are discussed in the ensuing chapters in terms of the NIS county samples, CPS agency case samples, non-CPS agency samples, sentinel samples, and sentinel participation. Following those discussions are chapters that consider how the three incidence studies have addressed the challenges of definition, unduplication, and annualization. The final chapter overviews the strengths of the NIS, the various critiques of the NIS, the special supplementary studies that were undertaken to address these critiques or enhance the interpretability of the NIS findings, and identifies several recommendations for future implementations of the NIS.

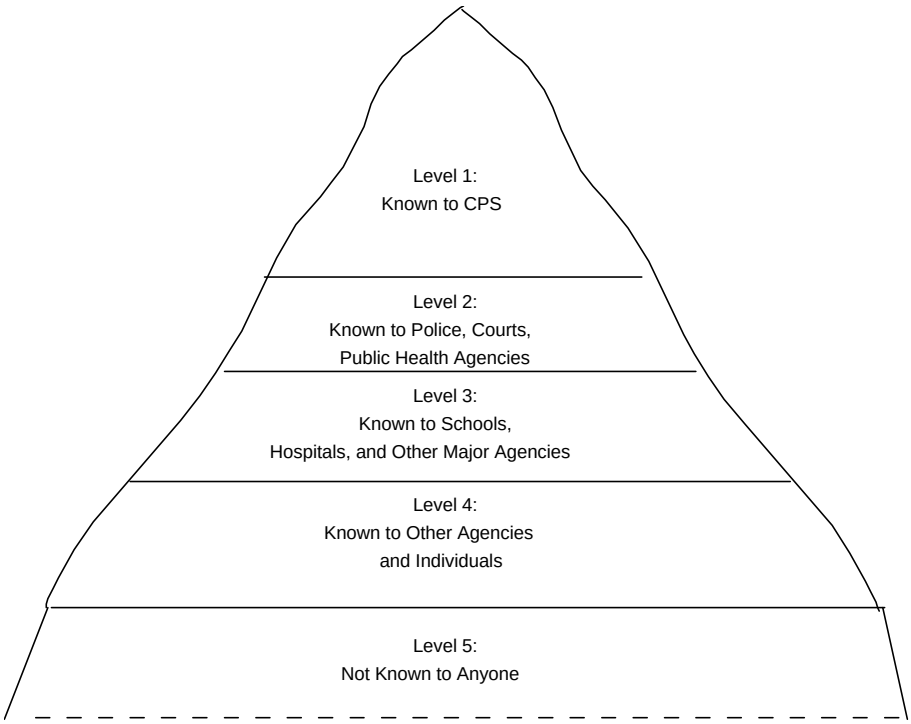

Figure 2-2. Levels of Recognition of Child Abuse and Neglect

[i]Overt nonresponse, by agencies and/or individual sentinels, can be addressed by nonresponse adjustment, and so does not affect coverage per se. Instead, overt nonresponse has implications for the representativeness of the study findings.

3. COUNTY SAMPLE

Meeting the challenge of coverage begins with the selection of an appropriate county sample. Historically, whole counties or small county clusters have been the Primary Sampling Units (PSUs) in the NIS design. Defining the PSUs this way is a common strategy in large-scale national studies because it offers several advantages. First, agencies are typically organized either along or within county lines, so that most agency jurisdiction falls entirely within the boundaries of a single PSU. Second, such PSUs are sufficiently geographically compact to make the workload within each PSU feasible and cost-effective. Local data coordinators are not required to travel extensively in order to accomplish the data collection within a selected PSU. Third, a variety of data available at the county level can be used to stratify and sort the population of PSUs prior to drawing the sample. These procedures increase the efficiency of the sample design and result in estimates with lower sampling error.

The county sample has evolved in size and methods of selection from the NIS–1 to NIS–3. The approaches used in selecting the county samples in the different NIS implementations are summarized in Table 3–1.

The NIS–1 design used a simple random sample of counties, whereas the counties were selected with probability proportionate to population size in the NIS–2 and NIS–3. As a result, the NIS–1 was conducted primarily in relatively small counties (the two largest being Maricopa, AZ, and Cuyahoga, OH). This was a conscious strategy at the time, since there was considerable concern about the manageability of attempting to "cover" all the targeted agencies in large and complex counties. By ensuring that very few large counties would be selected, the NIS–1 was able to bypass several of the complicating factors that had to be faced in the NIS–2 and NIS–3, as discussed below. However, it also meant that the NIS–1 provided a national sample that likely underrepresented large urban counties. It should also be noted that the representativeness of the NIS–1 county sample was further undermined by the fact that three of the sampled NIS–1 counties did not participate because of State-level refusals. Although they were replaced by the use of back-up selections, this approach does not remedy the bias that refusals may contribute to study findings.

In the NIS–2, the county sample was selected with probability proportional to size (PPS)—an approach that ensures the inclusion of large counties. To contend with the problem that rural areas may be underrepresented with that strategy, the NIS–2 provided a method for including rural counties, by clustering them and drawing a separate supplementary sample from the rural, multi-county clusters. While this provided notable improvements over the NIS–1 county selection procedures, the NIS–2 county

sample could nevertheless be faulted for not representing the entire United States (Alaska and Hawaii were excluded) and for its still relatively small sample size (only 28 PSUs, reflecting 29 counties).

The NIS–3 county sample methodology addressed both of these shortcomings. It included the entire U.S. in its sampling frame, and drew a notably larger sample of PSUs than either previous NIS (40 PSUs with 42 counties). Furthermore, in order to increase the precision of measures of change from the NIS–2 to the NIS–3, the NIS–3 county sample was designed to have maximum overlap with the NIS-2 county sample. In fact, all 28 NIS–2 PSUs were included in the resulting NIS–3.

Table 3–1. Methods of Selecting National County Samples in the NIS–1, NIS–2, and NIS–3.

NIS–1[5]	**NIS–2**[6]	**NIS–3**[8]
26 Counties selected via equal probability sampling Frame: Counties in the contiguous 48 States and D.C. (i.e., Alaska and Hawaii were excluded). Measure of Size: 1975 total county population Large: Counties with 1975 pop >750,000 divided into 2 strata—11 largest and 28 next-largest; one county sampled with equal probability from each stratum; Others: 24 counties were drawn from remaining counties using a 2-stage process: 1) States were classified into 8 strata based on geographic region and size; one State was sampled from each stratum by equal probability; 2) Within the selected States, counties were substratified on the basis of geographical proximity and county size; one county was selected from the final strata using equal probability.	**28 PSUs (29 counties) selected with probability proportional to size (PPS)** Frame: Counties in the contiguous 48 States and D.C. (i.e., Alaska and Hawaii were excluded). Measure of Size: Children enrolled in school, 1983 Main Sample: Counties with 1983 pop $\geq$ 2,800 children in school sorted by geographic region and degree of urbanization; 27 counties were sampled PPS from this listing; Small Rural Supplement: A cluster of geographically proximate small counties was selected by a 4-step process: 1) Counties with <2,800 children in school were sorted by State and urbanization level; 2) Within urbanization level, counties were sorted by location Northeast to Southwest); 3) Adjacent counties were grouped until the group met the 2,800 criterion; and 4) a single county cluster was selected with simple random sampling from these groups.	**40 PSUs (42 counties) selected with probability proportional to size (PPS) and conditional on NIS–2 to maximize sample overlap**[i,22] Frame: Counties in the 50 States and D.C. (i.e., including Alaska and Hawaii). Single & Multiple county PSUs were defined as in NIS–2, with added PSUs reflecting Alaska and Hawaii and new counties created since the NIS–2. Measure of Size: 1990 county child population (ages 0 through 17) Sample: Los Angeles, CA, and Cook, IL, were taken with certainty. The remaining counties and multiple county clusters were implicitly stratified (sorted by geographic region and degree of urbanization) and 38 PSUs were selected with probability proportional to 1990 child population and using the Keyfitz procedure to maximize the overlap with the NIS–2 counties.[22]

[i] The procedure used is a generalization of the procedures described in a paper by Brick, Morganstein and Wolters.[22] Under this sampling method, PSUs previously selected for NIS–2 had a high probability of being retained for NIS–3, while any new PSUs not included in the NIS–2 frame were given appropriate chances of selection for NIS–3 on the basis of their measures of size.

4. CPS CASE SAMPLES

The NIS aims to represent all children who are investigated by CPS agencies over the course of the study year. There are two principal uses for these data—to contribute to the national estimates of the numbers and types of maltreatment investigated by CPS during the course of a year, and to unduplicate study reports on the same child within the county. The first purpose can be fulfilled by means of a representative sample of cases. However, use of a sample hampers unduplication, as will be seen below and revisited in Chapter 7. On the other hand, characterizing maltreatment requires details that unduplication does not.

These considerations were weighed when the NIS–1 was designed, and the resolution in that study was to devise two CPS data forms—a long form that obtained sufficient details on the case to allow it to be assessed for countability according to study definitions, and a short form, for the specific purpose of identifying duplicate reports concerning the same child, that obtained the key data items used to identify duplicated child records: child's first name, last initial, age and/or date of birth, sex, and city of residence.[i]

Table 4–1 summarizes the CPS case sampling approaches that were used in the three national incidence studies. Note that the NIS–1 CPS data collection continued for a full year, whereas both the NIS–2 and NIS–3 adopted 3-month data collection periods, in the fall of their study years.[ii] The approaches used to annualize the NIS–2 and NIS–3 (i.e., to use the 3 months of data to represent a full year) are described in Chapter 8.

In every NIS, large CPS agency caseloads have made it necessary to sample cases for the long forms to get case details on a representative sample. The table indicates that the methods of drawing the long form case samples have varied across the three incidence studies. The sampling strategies used in the NIS–1 and the NIS–2 resulted in widely varying sampling rates over the study counties. In the NIS–1, where cases were sampled, within-county sampling rates varied from 10 to 60 percent. In the NIS–2, constant sample sizes were used within an agency size class, an approach that resulted in effective sampling rates ranging from less than one percent to 12 percent for large agencies and from 10 percent to

[i] All CPS data forms were "family level" forms, which documented the information concerning all children in a report on a given household or family.

[ii] When the NIS–2 was designed, the project schedule and resources dictated a reduced data period. The NIS–1 had shown seasonal variation in reports to CPS, and it was deemed advisable to conduct the study when school was in session, but to avoid overlapping the data period with significant breaks (i.e., Christmas or Spring break week). For this reason, the September 7 through December 6 period was selected. When the NIS–3 was designed, it was considered advisable to adopt a data period that would be seasonally as close as possible to that used in the NIS–2.

42 percent for medium-sized agencies. Recall that the NIS–2 and NIS–3 designs included much larger PSUs (and hence, much larger CPS agencies) than the NIS–1 had, so the later national incidence studies were forced to sample agencies in more counties, and at lower sampling rates, in order to both contain the costs of data collection and minimize the response burden on participating CPS agencies.

Table 4–1. Methods of Selecting CPS Case Samples in the NIS–1, NIS–2, and NIS–3.

NIS–1[5]	**NIS–2**[6]	**NIS–3**[8]
CPS Cases Collected over a full year (May 1979–Apr 1980)	**Cases Sampled over the 3-month study period (Sep 7–Dec 6, 1986)**	**Cases Sampled over the 3-month study period (Sep 5–Dec 4, 1993)**
Small Agencies (≤250 cases per year): long forms used for all cases; **Other Agencies** (>250 cases per year): fatalities, sex abuse cases, and cases involving "critical injury" all received long forms; other cases were sampled for long forms at 10% or higher to ensure selecting at least 150 cases over the year; **Nonsampled cases** All received short forms.	**Small Agencies** (<200 cases per year): all cases received long forms; **Medium-sized Agencies** (200 to 2,000 cases per year): fatalities all received long forms; for rest, 15 cases per month sampled for long forms and nonsampled received short forms; **Large Agencies** (>2,000 cases per year): fatalities all received long forms; for the rest, 25 cases per month sampled for long forms. **Nonsampled cases** Only received short forms in medium-sized agencies.	**All Agencies.** Agencies projected the number of cases they expected to investigate over the 3-month study period. Within-county sampling rate was set to be inversely proportional to the PSU selection probability and to provide a total sample of approximately 4,000 long form cases. Long forms were obtained on all fatality cases and all sampled cases. **Nonsampled cases:** All received short forms.

While the NIS–2 CPS case sampling approach met the need for a procedure that was easy to implement and that could be done reliably and accurately, the wide variability in sampling rates considerably reduced the precision of study estimates.[i] Associated with each sampled case is a weight, usually the inverse of the probability of selection adjusted for nonresponse. The weight is a multiplicative factor that allows one to use survey data to generate estimates that describe the entire population of interest, not just the sampled cases. Generally speaking, highly variable weights produce estimates with lower precision.

In the NIS–3, there was a concerted effort to ensure that the CPS sampling plan would be more efficient. Using their past experiences as guides, participating CPS agencies offered approximate

[i] NIS–2 specified a fixed sample size per PSU, a scheme that would have resulted in nonvariable weights only if the number of CPS cases eligible for sampling in each NIS–2 PSU in 1986 had been exactly proportional to the PSU measure of size (the 1980 census count of children in school). An examination of records documenting NIS–2 data collection indicated that the variance of the CPS estimate was increased by nearly 27 percent because this assumption of proportionality was not met.

projections as to the number of cases they expected to investigate during the 3-month study period. Then, working from a targeted final NIS–3 sample of approximately 4,000 cases for long form data collection, the appropriate sampling rates were set so that they were inversely proportional to the PSU selection weight. This approach was designed to make the NIS–3 CPS weights more nearly uniform across PSUs and throughout the NIS–3 study data period. The resulting plan targeted using long forms for all cases in ten small counties.

Note that the strategy of using short forms for nonsampled cases (to support unduplication) was consistently applied in the NIS–1 and the NIS–3, but not in the NIS–2. The NIS–2 was the first effort to incorporate extremely large counties into the NIS design, and there was a great deal of concern about the feasibility of obtaining accurate and timely short form data on very large numbers of cases from those agencies, and about the willingness of these agencies to participate under the burden of such a requirement.[i] As a result, only long data forms were obtained in the large CPS agencies in the NIS–2, meaning that direct unduplication of cases in the NIS–2 large CPS agencies was not possible—an issue that will be further discussed in Chapter 7.

Table 4–2 shows the numbers of long and short CPS data forms that were collected during the three national incidence studies. Bear in mind that the NIS–1 figures are for a full year, whereas the NIS–2 and NIS–3 reflect only 3-month data periods. Additionally, the NIS–3 sample included the CPS agencies serving 42 counties, whereas the NIS–2 data were for a 29-county sample.

Table 4–2. CPS Data Forms Completed in the NIS–1, NIS–2, and NIS–3.

Data	**NIS–1**[ii]	**NIS–2**	**NIS–3**[iii]
Long forms	5,572	1,624	3,154
Short forms	12,073	2,285	56,153
Total CPS forms	17,645	3,909[iv]	59,307

[i] The largest CPS agency projected that it would investigate nearly 10,000 cases during the 3-month study data period, and in fact investigated over 15,000.

[ii] The NIS–1 collected data for a full year; the NIS–2 and NIS–3 data reflected a 3-month period.

[iii] The totals here differ from those given in the NIS–3 findings report.[20] Those figures had erroneously omitted the CPS short forms that were completed entirely manually, as well as some of the last-minute updates of the frame totals (and hence short forms) from several study counties. The figures here are the final totals. They appear in Table 4-1 of the NIS–3 *Data Collection Report*.[9]

[iv] If short forms had been completed on all cases that were investigated during the NIS–2 study data period, the NIS–2 would have collected a total of 36,719 CPS data forms.

5. SENTINEL SAMPLES

After the county-level of the sample design, what agency categories and sentinel groups should be included in order to "cover" the targeted children as completely as possible? In answering this question, one needs to recognize that it is not feasible to have the study include every conceivable community professional. The costs of enumerating those individuals, recruiting them, training them, and maintaining ongoing contact during data collection would be prohibitive. As a result, this question has been rephrased to "what is the optimum set of agency categories and sentinel groups that should be included in order to ensure that most or all of the targeted children will be included in the study?" To identify the optimum set of sentinels, one must consider what sectors of community professionals are likely to encounter children who are *not* encountered by other sectors of community professionals. Thus, the problem is not simply one of coverage, but of *productive and efficient* coverage of the targeted children.

The rationale for including a wide variety of non-CPS agency types in NIS data collection is to ascertain the number and characteristics of countable cases that have not been investigated by CPS. That is, the primary goal of the NIS is to establish estimates of the annual prevalence of child abuse and neglect which go beyond the cases that come to the official attention of CPS. Table 5–1 shows the non-CPS agency sample designs across the three national incidence studies, indicating both what agency categories were specifically represented in each NIS as well as how agencies within each category were selected for the study.

5.1 Non-CPS Agency Categories

At about the time the first NIS contract was awarded, NCCAN received the first draft of a report on a survey of professional staff at a wide variety of non-CPS community agencies.[23] The survey found that many non-CPS agency professionals admitted that they often encountered cases of serious child or neglect that they did not report to CPS. These findings were compatible with the goal of the NIS, to assess the number of abused or neglected beyond those who come to the attention of CPS, and the study inspired the NIS sentinel methodology. The premise was that if professionals in institutions such as schools, hospitals, and police departments were really seeing large numbers of maltreated children whom they were not reporting to CPS, and if they could be persuaded to systematically describe these cases to a national incidence study, it would be possible to obtain a more comprehensive understanding of the scope of the child maltreatment problem. This type of methodology additionally held the promise of supporting

program and policy planning, since appropriate interventions or casefinding mechanisms might be developed to bring these unreported cases into the child protective services system.

Given this background, the NIS–1 research team developed the Basic Sentinel methodology and refined it on the basis of a preliminary field test in 8 counties. Its final design included the agency categories described under the NIS–1 column in Table 5–1. Besides these agency categories, the NIS–1 had pretested and eliminated six other agency categories:

- *Visiting nurse associations*: These agencies produced no cases; they dealt mostly with elderly patients and had very little opportunity to observe eligible cases of child maltreatment.

- *General/family physicians in private practice*: These offices were extremely hard to recruit (refusal rates were very high); very low productivity, submitting almost no cases.

- *Private practice pediatricians*: Willing to participate, but very expensive to contact, recruit, and orient and then they submitted very few cases; most were affiliated with local hospitals (more efficient to tap their cases through that agency category).

- *Medical clinics*: As with pediatricians, the response was reasonable but low enough to raise questions about the cost-effectiveness of including this category.

- *County Department of Social Services (Divisions Other than CPS)*: High refusal rates on the grounds that they automatically refer all eligible cases to CPS.

- *Private schools*: Relatively high refusal rate; submitted very few cases, all of which were among those investigated by CPS (hence obtained by the study through that route).

- *Day care/preschools*: High participation rate; low volume response likely a function of the small size of these agencies; on a per-enrollment basis, they were as productive as public schools.

The NIS–1 did not include day care centers, despite their apparent productivity in this pretest. It was not considered efficient to include them, since they provided a low yield in terms of absolute numbers of cases per agency yet demanded considerable investment of resources per agency for recruitment, sentinel training, and data collection monitoring. In hindsight, however, that decision was reconsidered. The NIS–1 findings indicated disproportionately low incidence of abused and neglected children in the younger age groups, and there was some concern that this might have stemmed from inadequate "coverage" of these age groups by the NIS–1 sentinels.

Table 5–1. Non-CPS Agency Categories and Sampling Procedures in the NIS–1, NIS–2, and NIS–3.

Agency Category	NIS–1	NIS–2	NIS–3
Juvenile Probation	Usually one juvenile probation department and one sheriff/state police agency per county; both always selected with certainty (not sampled); these agencies were combined as "Other Law Enforcement" in NIS–1 (N=79 for this combined category).	Usually one per county (n=36) Always selected with certainty (not sampled)	Usually one per county (n=42) Always selected with certainty (not sampled)
Sheriff/ State Police		Usually one per county (n=24) Always selected with certainty (not sampled)	Usually one per county (n=42) Always selected with certainty (not sampled)
Medical Examiner		*[Not included].*	*[Not included].*
Municipal Police	Frame: (N=143) All departments serving jurisdictions with 1970 pop 5,000+; listed 0 to 38 per county Sample: (n=78) Included with certainty in all but 3 counties, where samples of 4 or 5 (in the largest county) were drawn PPS, using 1970 population of jurisdiction as measure of size.	Frame: (N=363) All departments serving jurisdictions with pop 5,000+; listed 0 to 97 per county Sample: (n=88) Departments serving cities with pop >500K were certainty selections; rest were stratified by pop size and sampled; up to 7 were selected per county, using a systematic random sampling method (SRS).	Frame: (N=436) All departments serving jurisdictions with pop 5,000+; (but lower pop allowed in 4 counties[i]); listed 0 to 95 per county Sample: (n=54) After eligibility screening, sampled up to 3 per county; 25 were certainty selections; 23 were selected PPS; 6 by equal probability.
Hospitals	Frame: (N=100) All short stay general hospitals with an emergency room and/or pediatric section; in 3 counties with 6 or more such hospitals, frame was limited to those with at least 4,000 admissions per year. Sample: (n=92) Included with certainty in all counties but the largest, where 5 very large hospitals were certainty selections and a 50% SRS was selected from the remaining 16 hospitals.	Frame: (N=316) Short-stay general medical or children's hospitals with 4,000+ admissions per year; listed 0 to 77 per county Sample: (n=110) Children's hospitals were certainty selections; rest were stratified by public/private and size and sampled; up to 6 were selected per county, by SRS	Frame: (N=394) Short-stay general medical or children's hospitals with 4,000+ admissions per year (but lower allowed in 9 counties); listed 0 to 76 per county Sample: (n=53) Children's hospitals were certainty selections; public were oversampled; PSU allocation was proportional to admissions, with at least one per county, if available; up to 4 were selected per county

[i] Where adhering to the normal criterion would have excluded all agencies in this category.

Table 5–1. (Continued).

Agency Category	NIS–1	NIS–2	NIS–3
Schools	Frame: (N=2,087) All regular public schools;[i] listed 3 to 421 per county Sample: (282) Included all schools in counties with 11 or fewer; sampled 24-25 in the two largest counties (with 421 and 345 schools); sampled 10 schools in each of the remaining counties (with 13 to 229 schools)	Frame: (N=6,192) All regular public schools; listed 7 to 1,667 per county Sample: (n=278) Eligible schools were stratified by grade and sometimes by size and/or race composition (if numerous); up to 10 were selected per county, by SRS	Frame: (N=8,341) All regular public schools; listed 7 to 1,667 per county Sample: (n=638) Eligible schools were implicitly stratified by geographic region, urbanicity, PSU, grade, enrollment, and percent minority students; sample was selected by PPS (where size=enrollment*PSU weight); 6 to 24 were sampled per county
Day Care Centers	*[Not included].*	Frame: (N=6,052) All licensed day care centers and Head Start programs; listed 3 to 1,474 per county Sample: (n=141) Selected 5 per county by PPS	Frame: (N=10,428) All licensed day care centers and Head Start programs; listed 3 to 2,132 per county Sample: (n=42) Sampled 126 by PPS, screened for eligibility; sampled 0 to 2 per county by SRS.
Public Health	Usually one public health agency per county; generally selected with certainty (see text); these categories were combined as "Other Agencies"; agencies in this combined category were purposively selected for the study on the basis of referrals (N=79 for this combined category).	Usually one per county (n=25) Always selected with certainty (not sampled)	Usually one per county (n=42) Always selected with certainty (not sampled)
Social Services/ Mental Health		Frame: (N=1,264) All nonresidential public and private mental health and voluntary social services agencies, serving the general population & having direct contact with children and families; listed 2 to 249 per county Sample: (n=117) Up to 5 were selected per county	Frame: (N=1,326) All nonresidential public and private mental health and voluntary social services agencies, serving the general population & having direct contact with children and families; listed 1 to 149 per county Sample: (n=211) Sample was allocated across PSUs by # Agencies*PSU Weight and drawn within PSU by SRS. Selected 3 to 10 per county
Total sampled	610	819	1,124

[i] Only public schools are included in the study because private schools had contributed very few cases in the NIS–1 pretest. (See text.)

As a result, the NIS–2 added day care centers as a specifically targeted sentinel category. Note that this meant that the NIS–2 analyses were computed in two ways—the changes from the NIS–1 had to be calculated without the contribution of the children who were uniquely seen by day care center sentinels, and the overall NIS–2 study estimates had to be calculated with day care center cases included.

While adding day care centers as a separate category, the NIS–2 also dropped coroners from the design. This was because, of 24 coroners offices that participated in the NIS–1, a total of only 7 cases were submitted, and none of these cases was unique (i.e., known only to coroners). It is interesting to note that no cases were submitted by coroners in the pretest, despite the fact that other sentinel agencies submitted information about eligible child fatalities. Given the consistent nonproductivity of this agency category, it was dropped from subsequent incidence studies as an efficiency measure.

The problem of ensuring adequate coverage still remains, and both the NIS–2 and NIS–3 findings continue to reveal disproportionately low rates of abuse and neglect for preschool children. The NIS–2 sentinels in day care centers submitted little data to the study about additional children not already among those who had been reported to CPS. But despite the relatively low productivity of this agency category, it was not defensible to drop it from the NIS–3 design in the face of the continuing concern about coverage among younger children. Also, given that school sentinels are by far the most productive source of additional information about countable children, there has been some concern about the adequacy of the coverage afforded older children who may have dropped out of school—especially since these may be particularly likely to be among those who are abused or neglected.

For these reasons, the NIS–3 explored the utility of adding other sentinel agency categories, even revisiting the possibility of including pediatricians in the study design. Given the expense of adding entirely new agency categories and in light of the NIS–2 experience of having added day care centers and then being constrained against dropping that category, the NIS–3 explored the addition of new agency categories through a pilot study in only two of the NIS–3 PSUs. Two medium-sized NIS–3 counties were purposively selected for this pilot.

The *New Sentinel Agency Categories Study* explored the potential of adding agencies representing five new categories:[8] pediatric practices, clinics run by health maintenance organizations (HMOs), clergy, public housing authorities, and shelters for runaway or homeless youth or for battered women. Agencies in this last category were already included among the mixture represented in the social services/mental health category, but the pilot study explored the potential benefit of establishing a separate category explicitly for these agencies that would ensure their systematic representation.

The results of this exploration indicated that shelters provided substantially more data forms than non-shelter social services/mental health agencies—more than four and one-half times as many, whether measured in terms of the number of data forms per agency or the number per sentinel (key participant). Moreover, a substantial proportion of the children identified in shelters were countable under the NIS definition (97 of the 114 children, or 85% of them), and most of these countable children (85 of these 97 countable children, or 88% of them) were *not* found among the set of children whose maltreatment was investigated by CPS. Among the other new agency categories, only the public housing authority provided information on a child not reported to CPS.[i] Thus, the *New Sentinel Agencies* study indicated that public housing authorities and shelters contribute countable children who would not otherwise be included in the NIS estimates. As a result, it was recommended that future NIS designs include these two agency categories as independent, new categories so that they can be systematically represented in every PSU to improve the coverage of the countable child population.[9]

The remaining agency categories explored in this special study were rejected as additions to the NIS design:

- *Pediatric practices*: These had a very high ineligibility rate,[ii] an extremely low rate of participation (only 2 of 60 eligible), and submitted no unique cases not investigated by CPS;
- *HMO clinics*: These had very high ineligibility and refusal rates[iii] and submitted no unique cases not investigated by CPS;
- *Clergy*: Although it was possible to construct a reasonable sampling frame that yielded an acceptable ineligibility rate, the relatively high refusal rate was disappointing.[iv] The participating clergy submitted no data forms at all throughout the 3-month study period.

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[i] Pediatricians, consistent with the NIS–1 experience, required substantial labor-intensive screening activities and very few of the eligible individuals contacted were interested in participating in the study, despite extensive recruitment efforts. After screening 194 pediatricians in the two pilot counties, only two actively participated in the study—the remainder were found to be ineligible, refused, or failed to respond to numerous contact efforts. Neither of the two participating pediatricians provided any information beyond what was already known through other study sources. Clergy also exhibited very low participation rates—of 65 contacted, only 9 participated, the remainder being ineligible, having refused, or having failed to respond. None of these participants submitted any data forms to the study. The New Sentinel Agency Categories study also encountered considerable difficulty in identifying eligible HMO's that operated clinics or provided direct services to children and families in the targeted counties, and the one HMO that agreed to participate did not provide the study with any unique cases not known through other study sources.

[ii] Sixty-nine percent were classified as ineligible after initial contact for various reasons (the pediatricians worked solely at a hospital or HMO that was already represented in the NIS–3; although they were licensed to practice within the targeted county, their practice was located outside of the boundaries of the county; they did not see families and children but were solely engaged in research activities, were retired, etc.)

[iii] Ninety-five percent of those initially listed proved ineligible; some because they did not provide services in the specific targeted counties or were not actually HMOs or PPOs; others because they did not operate any clinics in the targeted counties. Of two eligible HMOs located in the two pilot counties for this special study, one refused to participate.

[iv] Only 25% of those screened proved ineligible, but 40% of those successfully contacted refused to participate.

Note that the potential of pediatric practices has now been twice assessed in the history of the NIS, and both explorations have emerged with similar conclusions, indicating that it would not be useful to attempt to add these as a new agency category in the study design.

5.2 Non-CPS Agency Samples

In the NIS–1, there was a concerted effort to limit the use of sampling in selecting the non-CPS agencies. The reason for this will be revisited in Chapter 7, when the issue of hidden duplication is discussed. Here, it is sufficient to note that Table 5–1 indicates that sampling in the NIS–1 was very limited, primarily occurring only in the category of schools, although municipal police agencies were also sampled in three counties, and hospitals were sampled in one county.

Recall that the NIS–2 county sample included some very large counties—a circumstance that did not affect the NIS–1. As a result, in marked contrast to the NIS–1, where sampling was rarely applied to non-CPS agencies, the NIS–2 non-CPS agency design had to apply a sampling approach in the majority of agency categories. At the same time, the NIS–2 non-CPS agency design incorporated several refinements over the NIS–1 design. As noted above, the NIS–1 included an "Other Agencies" category, which combined public health departments and social services/mental health agencies. Notably, the agencies in this category were not systematically listed or sampled in the NIS–1, but were identified to that study by referrals. In the NIS–2, and continuing in the NIS–3, this category was divided up, and systematic listing and sampling efforts were made for each of its components, as shown in the table.

Similar improvements in the quality and efficiency of the agency sample design were undertaken in the NIS–3. In designing the samples for NIS–3, the NIS–2 results were examined to determine whether the allocation of the non-CPS agency samples across the various agency categories could be improved. To determine the most productive allocation of the study resources across non-CPS agency categories, the NIS–2 estimates of total countable cases not investigated by CPS and their standard errors were examined, by agency type. The goal of this exercise was to see whether the sampling errors on the non-CPS estimates could be notably reduced (i.e., the sample design made more efficient) by concentrating the sample in the categories that were likely to yield information about higher numbers of uninvestigated maltreated children. In that way, more of the study cases would be from better represented agency sectors (i.e., having lower sampling errors).

This exercise led to the conclusion that by changing the allocation of the non-CPS agency sample across agency categories, the precision of the NIS–3 study estimates could be substantially

improved. The central conclusion was that the efficiency of the design could be dramatically improved by increasing the representation of schools. Whereas schools accounted for about one-third of the participating agency sample in NIS–2, the NIS–3 design exercise revealed that an optimal allocation would take nearly 70 percent of the non-CPS agency sample from that agency category. This reflects the substantial contribution of school sentinels to the numbers of countable children beyond those investigated by CPS. This shift toward greater representation of schools in the agency sample would ideally be offset by profound reductions in sample sizes for most of the other agency categories. The exercise also indicated that an optimal allocation would include a modest increase in sample size for the social service/mental health agency category.

In fact, the optimal extremes were moderated when the NIS–3 non-CPS agency samples were selected. It was deemed equally important to ensure that at least one agency would be sampled (if such an agency existed) from each agency category in each of the 42 counties in the NIS PSUs. As shown in Table 5–1, the representation of schools was dramatically increased in the NIS–3, but all agency categories were represented in all PSUs, wherever possible. Thus, the NIS–3 samples reflect reallocations of the non-CPS agency samples toward a more optimal design, without sacrificing the representation across PSUs of any of the NIS–2 agency categories.

5.3 Non-CPS Agency Participation

Table 5–2 indicates the agency participation rates for the three national incidence studies. The NIS–2 overall participation rate (88.5 percent) closely resembled that obtained in the earlier NIS–1 (87.0 percent). However, this overall similarity belied the fact that the NIS–2 and the NIS–3 both obtained higher participation from hospitals and municipal police departments than the NIS–1 and that schools' participation in the NIS–3 was below their participation levels in both previous studies.

Agency participation rates for the NIS–3 ranged from a high of 100 percent for county public health departments to a low of 74.6 percent for schools. The NIS–3 participation rates were notably lower than the NIS–2 rates for schools. These NIS–3 rates convey the context of heightened concern about confidentiality issues and greater constraints on available staff time, both of which were raised more frequently during recruitment in NIS–3 than they were in the NIS–2. In all studies, nonresponse adjustments were applied to case weights to correct for the losses of nonparticipating agencies.

Table 5–2. Rates of Non-CPS Agency Participation in the Three National Incidence Studies

Agency Category	NIS–1	NIS–2	NIS–3
County Sheriff/State Police	92.4%[a]	91.7%	97.4%
Juvenile Probation		94.4%	92.9%
Municipal Police	82.1%	92.9%	94.5%
Hospitals	76.0%	96.2%	98.0%
Public Health	91.1% [b]	100.0%	100.0%
Social Services & Mental Health		88.0%	89.8%
Day Care Centers	[not included]	88.7%	84.0%
Schools	89.4%	82.1%	74.6%
Overall	87.0%	88.5%	81.4%

[a] These categories were combined with Medical Examiner in the NIS–1.
[b] These categories were combined into "Other agencies" in the NIS–1.

5.4 Sentinel Samples

Sentinels were identified within participating non-CPS agencies. As noted in Chapter 2, the sentinels were agency staff who were instructed to be on the lookout during the study data period for children whom they suspected were abused or neglected. The methods of identifying within-agency sentinels across the three incidence studies are summarized in Table 5–3.

All agency staff who serve as sentinels must be trained in the study procedures and instructed in the study's definitions before the study data period, and mechanisms have to be established so that there is ongoing contact with them to collect data forms and answer any questions they may have throughout the data period. In the NIS–1, the methodology identified "key respondents" and "other respondents." The key respondents served as direct liaisons to the study. The NIS project staff trained these individuals, and the NIS study data coordinators maintained ongoing contact with these key respondents throughout the data period. In turn, the key respondents were responsible for orienting all the staff in their units (or, if applicable, in their agency as a whole) to the study's procedures and definitions, and for gathering information about potentially relevant cases seen by all the agency's professional staff. Key participants were deployed within each non-CPS agency in a manner that ensured that, as a group, they would "cover" all the eligible cases encountered at the agency during the data period. As Table 5–3 indicates, the exact number and positions of the key respondents varied from one type of agency to another. In some cases, key respondents were located in a specific unit or department of the agency and were responsible only for

their specific division. When an agency was very small (e.g., a small mental health clinic) a single key respondent might be responsible for cases encountered by all the professional staff at the agency. In any event, note that the NIS–1 sentinels encompassed *all the professional staff* at the agency that might have contacts with children and their families where they might encounter eligible study cases. Everyone with direct child/family contact was defined to be among the NIS–1 respondents, whether serving as "key" respondents or only as "other" respondents at the NIS–1 agency.

The NIS–2 adopted a more circumscribed approach to identifying sentinels. Again, this modification stemmed from the fact that the NIS–2 was conducted in very large and complex counties, and in some extremely large agencies, where it was impractical to have all the agency staff serve as sentinels. The NIS–2 took the approach of representing all the eligible agency staff through sampling. This had the dual benefit of manageability during data collection (limiting the number of liaisons that had to be trained and monitored by the local NIS data coordinator) and acceptability to the participating agencies (whose administrators were understandably reluctant to have their entire staff affected by the study throughout the 3-month data period).

Thus, as shown in Table 5–3, the data collection burden was reduced in the NIS–2 by the use of representative samples of the targeted staff. This was accomplished by sampling the targeted participants as individuals (e.g., listing all social workers on staff in a participating hospital and drawing a simple random sample to serve as study sentinels).

Sometimes the complexity of the agency or the size of the relevant caseloads necessitated further sampling. When the agency was large and complex, certain units might be strategically targeted to ensure that the most relevant divisions would be covered (e.g., juvenile units) while other units might be subsampled to represent the eligible cases that were seen in the rest of the agency overall. For instance, in some of the large municipal police departments (e.g., New York, Los Angeles), it was necessary to sample precincts for study participation. There were occasional instances where an agency had extremely large relevant caseloads (e.g., juvenile probation departments), and when such an agency requested further relief of its data collection burden, the NIS–2 implemented a special case sampling arrangement to ensure that all eligible cases would be accurately represented in the study data.[i]

[i] In the interest of simplicity, unit sampling and case sampling arrangements are not shown in Table 5-2. Interested readers are referred to the technical project reports for details on how and exactly where such arrangements were implemented.

Table 5–3. Sentinel Identification and Sampling Procedures in the NIS–1, NIS–2, and NIS–3.[a]

Agency Category	NIS–1	NIS–2	NIS–3
Juvenile Probation	Key Respondents: All probation officers and all professional staff dealing with juveniles in the affiliated court (friends-of-the-court, guardians *ad litem*, or (in small agencies) court clerk or other court officer	Frame: Officers with active or intake cases involving children Sample: Sampled at least 4	Frame: As for NIS–2 Sample: NIS–2 effective sampling rate was optimally allocated over NIS–3 PSUs
Sheriff/State Police	Key Respondent: Juvenile officer or officer most familiar with juvenile cases Others: All other officers	Frame: Juvenile officers and others likely to encounter in-scope cases Sample: Sampled at least 5	Frame: As for NIS–2 Sample: NIS–2 effective sampling rate was optimally allocated over NIS–3 PSUs
Public Health	Key Respondents: All nurses Others: Other professional staff, if any (physicians, social workers, etc.)	Frame: Nurses and/or social workers likely to encounter in-scope cases Sample: Sampled at least 4	Frame: As for NIS–2 Sample: NIS–2 effective sampling rate was optimally allocated over NIS–3 PSUs
Municipal Police	Key Respondents: One liaison each from juvenile, sex or vice, and homicide units; if no juvenile unit, then the officer most familiar with juvenile cases Others: All officers in the department	Frame: Juvenile officers and officers in other units who were likely to encounter in-scope cases Sample: Sampled at least 5	Frame: As for NIS–2 Sample: As for NIS–2
Hospitals	Key Respondents: Head social worker, emergency room head nurse, pediatric unit and outpatient department head nurses, chief physician in pediatrics, head of child abuse team (if any) Others: All social workers likely to encounter in-scope cases (i.e., with child contact), all professional staff (physicians & nurses) in emergency rooms, pediatrics or outpatient units, all professionals on any child abuse team	Frame: All social workers likely to encounter in-scope cases; head nurses in children's units and emergency rooms without regular social worker coverage Sample: Sampled at least 4	Frame: As for NIS–2 Sample: Sampled 5 social workers; took at least one nurse or social worker from each children's unit and ER

[a] The table omits medical examiners, or coroners, because this category was eliminated from the NIS–2 and the subsequent NIS–3.

Table 5–3. (Continued).

Agency Category	NIS–1	NIS–2	NIS–3
Schools	Key Respondents: Principal, all counselors, nurse, truancy officer, and others designated by the principal because of interest or expertise. Others: All faculty and administrators	Frame: Counselors, nurses, truancy officers, teachers Sample: *Teachers* Sampled at least 3 with nonrotating classes *Counselors* Sampled at least 3 *Nurses* Included all *Truancy officers* Included all	Frame: Counselors, nurses, truancy officers, teachers Sample: *Teachers:* Sampled 6 teachers with nonrotating (or nonduplicated) classes *Counselors:* Included all *Nurses:* As for NIS–2 *Truancy officers:* As for NIS–2
Day Care Centers	*Not included*	Frame: All staff with direct caretaking responsibilities Sample: All staff identified, or at least one per child group	Frame: As for NIS–2 Sample: One designated staff member in each child group or functional unit
Social Services/ Mental Health	Key Respondents: One liaison from each major department or unit Others: All other professional staff	Frame: All professional staff who see children an/or families Sample: Sampled at least 4	Frame: As for NIS–2 Sample: All staff identified, or at least one per functional unit
Total (key) participants selected	[not reported]	3,080	5,926

When identifying agency staff for participation or sampling, the NIS–2 generally targeted the same types of agency departments and staff as had been targeted in the NIS–1—with a few modifications. Principals were no longer identified as key (or targeted) participants, because they were only aware of cases that were brought to their attention by other staff members, who were already represented in the study, and because of concerns about their potential for gatekeeping (keeping relevant cases from being submitted to the study). In practice, if a NIS–2 principal specifically requested to participate, he or she was permitted to do so, but it was ensured that the other sentinels in the school would submit their cases to the study independently, and not through the principal as a study liaison as in the NIS–1. In the NIS–2, hospital sentinels did not include physicians or the child abuse team. This was because the NIS–1 had shown that these participants only submitted data on cases that they also sent to CPS for investigation, so they made no unique contributions to the study other than cases that the study would obtain through its CPS data collection arrangements. Participants in the category of juvenile probation included individuals who were actually affiliated with the court in the NIS–1, but the scope of participants in this category was reduced in the NIS–2 because the NIS–1 experience showed that it was not cost effective to include them. The NIS–1 research team found it very difficult to identify and recruit the potentially relevant court staff—many of the individuals they spoke with told them they should really be dealing with someone else. Then, having identified and recruited representatives from the court, this sector proved nonproductive, submitting no cases beyond what CPS already provided to the study.[i]

It should also be noted that there was a circumstance where sampling from among a number of qualifying staff persons was actually avoided. Specifically, in order to reduce the potential for the sampling procedures to generate undetected duplication (hidden duplication) of reports to the study within a study agency, those personnel likely to be aware of essentially a common pool of maltreatment cases were treated as a whole, with one individual in the group being assigned the responsibility for reporting on what the entire pool encountered.

To summarize, two kinds of modifications in sentinel identification were made in the NIS–2: categories of sentinels that had been nonproductive (i.e., that had not submitted any unique cases to the study) were eliminated in the interest of design efficiency and, rather than including all eligible sentinels at an agency, samples of participants were selected to represent them in order to reduce the response burden and enhance agency participation rates.

As in other aspects of the NIS–3 sample design, the NIS–2 experience was used to guide improvements that would enhance the sample efficiency and reduce sampling variance on the study

[i] In fact, most of the cases submitted to the NIS–1 by court participants were cases that were sent to the courts from CPS!

estimates. For Juvenile Probation, Sheriff/State Police, and Public Health participants, the optimal NIS–3 within-agency selection rate for a particular PSU was identified by dividing the overall NIS–2 sampling fraction for participants in the agency sector by the NIS–3 PSU selection probability. However, in those counties where applying the "optimal" rate would not have guaranteed at least one participant from a unit that was likely to be highly productive of cases, we selected one participant at random from the unit's staff. Thus, the NIS–3 sampling approach ensured that all highly productive units would continue to be represented in the study. Note that the NIS–3 approach to identifying sentinels in the remaining agency categories closely followed the NIS–2 approach, with slight increases in the number of individuals sampled in several categories.

5.5 Sentinel Participation

Rates of participation by sentinels were recorded only in the NIS–2 and NIS–3. Because the NIS–1 had targeted all agency professional staff as participants, there was no explicit attempt to track overt agreements and refusals at the level of within-agency sentinels. Table 5–4 shows the number of sentinels who ultimately participated in each of these studies, by agency category and overall, and the participation rates that these totals represented.

Table 5–4. In-Scope Sentinel Participation by Agency Category in NIS–2 and NIS–3.

Agency Category	NIS–2		NIS–3	
	Number of Participants	Participation Rate	Number of Participants	Participation Rate
County Sheriff/State Police	124	93%	280	94%
Juvenile Probation	144	99%	130	92%
Public Health	190	100%	191	96%
Municipal Police	302	99%	219	98%
Hospitals	343	99%	214	99%
Social Services/Mental Health	346	97%	226	95%
Day Care Centers	602	100%	199	98%
Schools	1,086	98%	4,153	95%
TOTAL	3,137	99%	5,612	95%

Both national incidence studies where sentinel participation was tracked reported very high participation rates—over 90 percent in all categories. Nonresponse adjustments were applied to case weights within sampled sentinel groups within agencies to correct for the losses due to refusals. Additionally, when sentinels did not function as sentinels for the full 13 weeks of the study period in either NIS–2 or NIS–3, efforts were made to find a replacement staff person to "cover" their caseloads for study purposes during their period of absence. If an appropriate stand-in could not be found, a correction

factor was applied to the cases they submitted to correct for the loss of data during the weeks that they were not on duty as sentinels.

5.6 Passive Nonparticipation by Sentinels

A key difference between the NIS and traditional surveys is in the difficulty of detecting case level nonresponse. In a traditional survey, one knows how many data forms to expect from each participant, so case-level nonresponse can be gauged against that standard. In the NIS, sentinels are to submit data forms on all suspected abuse/neglect cases they encounter, and there is no independent index of the expected number. In fact, the rate at which the NIS sentinels encounter cases is used to index the measure which is the focus of the survey—incidence. Because there is no way to gauge the number of cases they encounter except by the number of data forms they submit, there is no way to assess the degree to which study estimates may be reduced by passive nonresponse (i.e., the failure to submit a data form on an encountered and recognized case).

This concern arose early in the NIS–1 data collection. There, only 16 percent of all cases reported to the study were submitted during the first 2 months of the data collection period. Several measures were taken to address this apparent problem during the data collection period itself. In the NIS-1, where targeted respondents in most agencies were *not* sampled, but included all professional staff likely to encounter countable cases, the methodology had initially identified one "key respondent" in each agency to serve as the direct liaison to the local study coordinator in the county. The original arrangement was for this key respondent to be the keeper of study data forms at the agency and to conduct orientation sessions with all potential study respondents at the agency. However, when this plan appeared to be resulting in less-than-ideal awareness and involvement by the "other" study respondents, a modified approach was adopted. In this modified arrangement, data forms were distributed to all potential respondents in an agency, rather than just to the person who had been designated as the "key respondent"; the local study coordinator was instructed to conduct full-staff orientations him/herself whenever this was feasible; and a newsletter was sent to all participants to increase respondent awareness of and involvement in the study.

The NIS–2 also included efforts to widely disseminate study information to participants and to directly orient all study participants whenever feasible. But it introduced another mechanism as well, in a more focused attempt to identify passive nonresponse. To begin with, it is important to recognize that it is not possible to define passive nonresponse solely on the basis of a failure to submit study data forms. A sentinel can be a very active and involved participant in the study and submit no study data

forms because he or she does not encounter any children he/she regards as abused or neglected. Such a sentinel does provide information to the study, information about the frequency with which sentinels like himself/herself encounter qualifying cases of abuse or neglect. But for another sentinel, the failure to submit study data forms might arise from a lack of interest in (or inattention to) the study. In the NIS–2, we considered it important to provide some way of distinguishing this lack of interest in order to avoid regarding low numbers of data forms (or complete lack of any data forms) as information about the prevalence of abused or neglected children.

All NIS–2 non-CPS sentinels were evaluated on their level of enthusiasm for and/or commitment to the study. The study's local county coordinator was required to rate the participants in his/her assigned agencies on a five point scale, with ratings of "1" reflecting low enthusiasm for and/or commitment to the study and ratings of "5" indicating high enthusiasm/commitment. This exercise determined that the general level of involvement in the study was very good. Only about 5 percent of the participants received ratings toward the lower end of the scale (i.e., ratings of "1" or "2"). During the data analysis, an adjustment was made for the fact that these participants were likely to have underreported the numbers of abused or neglected children they had encountered. They were treated as "refusal" participants, and a special non-response adjustment factor was computed to replace their data in the analysis with the data submitted to the study by other, equivalent study participants. Note that this meant that the information these "refusal" participants had provided about the number of eligible study cases they had encountered was replaced by having the remaining study participants in the same sentinel category provide all information about the numbers of eligible study cases encountered.

The NIS–3 also employed an exit evaluation to identify sentinels who may have underreported their cases to the study. Compared to the NIS–2 pattern, a slightly higher proportion of NIS–3 sentinels received poor participation ratings (about 12%). Preliminary analyses of the relation between sentinels' ratings and the number of data forms they submitted indicated that those with poor ratings had underreported cases by about 50 percent.[8] Weight adjustments were made for the data forms these sentinels had submitted to take account of this computed degree of underreporting. Unlike the correction strategy that had been used in the NIS–2, the NIS–3 approach did not require discarding the cases submitted by poor participants or assuming that the cases seen by the poorly rated participants were the same as those seen by participants with better participation ratings.

6. DEFINITIONS OF MALTREATMENT

Ensuring that the study is "covering" the same phenomenon in all sentinel sectors is a separate, though related, problem. Which children are considered to be "abused or neglected" in CPS may systematically differ from children considered to be "abused or neglected" by the non-CPS community professionals who serve as sentinels.

To a considerable extent, state legislatures have left it up to professionals in the field to interpret specifically what constitutes "abuse" or "neglect." At the same time, consensus has yet to be reached as to the precise meaning of these terms, with different professional groups maintaining widely varying perceptions concerning the kinds and degrees of problems that constitute "child abuse" and "child neglect."[24] Moreover, the non-CPS sentinel categories themselves comprise different people, with different personal perspectives as to what constitutes abuse or neglect. Not only might the perspectives of different sentinel categories differ from each other (e.g., school teachers may have very different standards from police officers, and both of these may differ substantially from the personal standards of psychologists in mental health clinics), but different individuals within a given sentinel group may also have different opinions about what constitutes abuse or neglect. This means that, if the data were based on these differing perspectives, the meaning of the study findings would be indeterminate. What was clearly needed was some way to standardize the definitions of what the study "counts" from all the non-CPS sentinels.

One of the key achievements of the NIS–1 was the development of operational definitions of child maltreatment that were both clear and objective in specifying the kinds of situations encompassed by the study. In all three NIS implementations, CPS long forms and non-CPS forms require respondents to provide information about the case in coded form, as well as to complete a brief narrative concerning the maltreatment event(s) for each case.[i] All information on these data forms is evaluated to fit the case details into a standardized format and then the case is "screened" for conformity to the definitional standards. Only those cases that fit the standards are considered "countable" and used as the basis for generating incidence estimates.

[i] The CPS long form requested this information only for cases which had been founded (i.e., substantiated) or which were "indicated" (i.e., still under investigation) at the time of submission to the study.

6.1 The NIS–1 Development of Standardized Definitions

The development of the NIS definitions began in July 1976, shortly after the award of the contract to design and conduct the NIS–1. At the time, it was determined that there were no existing definitions of child abuse and neglect that would fulfill the objectives of the incidence study. The definitions needed to be both sufficiently broad and sufficiently specific—broad to ensure that they would cover the full range of phenomena that the national incidence study should encompass, and specific to ensure that they would support reliable and replicable findings.

Development of the NIS definitions entailed a lengthy, multi-phase process. NIS–1 project staff reviewed the recent model federal legislation, State laws, and the professional literature. Then followed a series of discussions with project consultants, staff of public and private social service agencies, law enforcement personnel who dealt with child maltreatment, and other identified experts on child abuse and neglect.

A set of draft definitions was developed that drew heavily on the concepts and language used in the definitions section of the 1976 draft NCCAN Model Child Protective Services Act. At the same time, however, the draft NIS definitions departed from the provisions of the model legislation in several ways. First, there was an explicit decision to exclude circumstances that reflected "threat of harm," despite the fact that these circumstances were covered in the Model Act. The NIS was to focus on counting children who had been abused or neglected during a specific time period, and so should not attempt to include children who were judged to be at risk of harm in the future. Second, the NIS definitions were intended to be applied nationally in a standardized manner across all jurisdictions regardless of variations in State laws, so the NIS definitions were standardized even in areas where the Model Act deferred to State law (e.g., sexual abuse, abandonment, educational neglect). Third, rather than rely on judgments to determine thresholds, the NIS definitions included specific, albeit sometimes arbitrary, thresholds for determining whether a child should be counted (e.g., specific number of days missed from school, or length of time an injury persisted). Fourth, the NIS methodology was not intended to include institutional maltreatment, and so this sector of abused and neglected children were excluded by the NIS definitions.

The draft definitions defined an abused or neglected child as one whose physical or mental health or welfare was harmed by the acts or omissions of parent(s) or other person(s) responsible for the child's welfare. Two key criteria were established: the child must have been harmed to a specified degree, and the maltreatment must have been non-accidental in nature. The definitions also precisely described the situations that would or would not meet the criteria. These initial definitions were widely

circulated for review by project advisors, state child protective service officials, and other researchers in the field, and were revised based on the input received from these sources.

In the fall of 1977, a pretest of the NIS sentinel methodology was implemented in 8 counties (4 in Michigan and 4 in West Virginia). Community professionals who participated in the pretest had been asked to fill out a study form on any situation where, in their professional judgment, there was reason to suspect that a child had been mistreated by a caretaker so as to cause harm to the child's physical or mental health or welfare. The cases obtained in this pretest were used to further revise the definitions. A panel of three expert subject matter consultants was established, representing education, pediatrics, and social work. The panel met weekly over a 3-month period, generally for daylong sessions. During each intervening week, the panel members independently used a set of draft definitions and specifications to evaluate a group of 50-75 cases. During their meetings, the panel members convened to discuss the problems they had encountered and to propose modifications to enhance the clarity and workability of the definitions. The project design staff often attended these sessions, sharing both their observations on the summaries of previously rated cases and their ideas for alleviating problems that were identified. The modified specifications were then used in evaluating the next group of cases. This iterative process produced the final definitions that were applied to all pretest findings.

6.2 The Core NIS Definitions

The objective definitions of child abuse and neglect that were established were one of the chief achievements of the NIS–1. To begin with, the NIS–1 definitions restricted countable maltreatment to cases that generally come into the purview of CPS.[i] This had four important implications:

First, *countable children had to be live-born and under 18 years of age at the time of the maltreatment*. Acts or omissions that occurred during pregnancy or delivery were excluded as noncountable. Only in the past decade or so, with large numbers of addicted newborns, have mothers' prenatal acts or omissions received CPS attention. Most often, these have been considered not in their own right but as indicators of risk (predictors of the likelihood that the parent will subsequently neglect the infant).

[i] The definitional standards discussed here concern what constitutes countable *abuse or neglect;* questions concerning whether a child is "in-scope" in relation to the study design are separable. Thus, apart from the issues discussed here, children were also required to meet two other criteria in order to be "countable" in the NIS: they had to live in (or be homeless in) a study county during the study period and their maltreatment experiences had to have occurred during the study period. These requirements stem from the sample design, which defines the geographic and temporal bounds of selected cases.

Second, *institutional abuse or neglect was excluded*. The child had to have been a non-institutionalized dependent of parents or parent-substitutes at the time of the maltreatment. Other county or State agencies (e.g., those responsible for licensing the institutions) are often responsible for investigation of allegations of institutional abuse or neglect. The NIS–1 framers made a conscious decision to exclude institutional abuse and neglect on the grounds that a considerably different (or expanded) methodology would be required to include institutionalized child victims in the study estimates, involving different investigative agencies as well as different agency categories and sentinels.

Third, *abuse and neglect by nonfamily members or noncaretakers of the child was excluded*. The perpetrator of the abuse or neglect had to be the child's caretaker or parent. Physical and/or sexual abuse by persons outside of the family or by those not in a caretaker role in relation to the child are generally referred to law enforcement for investigation. CPS agencies require that emotional abuse and the different types of neglect be perpetrated by persons who have primary responsibility for the child's emotional and physical welfare.

Fourth, *accidents and involuntary or unavoidable situations were excluded*, and only purposive and avoidable acts or omissions were candidates for countable abuse or neglect. This standard also corresponds to typical CPS practice whereby neglect due to extreme poverty is not within CPS purview.[i] Also excluded was lack of care stemming from parent/substitute death, hospitalization, incarceration or other circumstances that made it physically impossible to provide or arrange for adequate care. The children in such cases are often adjudicated dependent and placed in foster care, but they are not considered to have been neglected.

Besides conforming to cases that would be within the jurisdiction of CPS, the definitional standards that were developed in the NIS–1 also specified criteria for deciding whether certain types of acts or omissions should be considered abuse or neglect. As detailed in the ensuing paragraphs, the NIS-1 definitional standards:

- established a system for classifying specific forms or categories of maltreatment;
- specified the required types of perpetrators for each form of maltreatment, and
- dictated the degree of harm that was necessary in order for the child to be countable as abused or neglected and included in the NIS estimates.

[i] Such cases are referred to income support services in the community. The case will enter CPS purview only if the parent fails to pursue obtaining available assistance.

Classification of Maltreatment. The standardized definitions developed in the NIS–1 provided classifications for specific forms or categories of maltreatment. Maltreatment circumstances were classified into a number of specific forms, which were then categorized into six major types: physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect, and educational neglect. Over the course of the three NIS implementations, these categories have been carried forward, with some combinations (5 categories to two) and some differentiations (6 categories to 13). Table 6–1 describes the substantive classification for specific kinds of maltreatment that were applied in the most recent NIS (the NIS–3), indicating how these categories were represented in the two earlier studies.

As given in the table, the NIS–1 system had differentiated physical assault with an implement from physical assault without an implement, but these were reportedly not always reliably discriminated in the NIS–1, so they were combined in the NIS–2 and NIS–3. Similarly, the NIS–1 had differentiated several types of physical neglect (disregard of physical hazards in the home, other disregard of the child's safety, and inadequate nutrition, clothing and hygiene). Because these, too, had posed similar coding problems and had often co-occurred, they were combined in the NIS–2 and NIS–3. Other categories that had not been differentiated in the NIS–1 were coded separately in the NIS–2 and NIS–3: under sexual abuse, non-penile intrusion was discriminated from other, nonintrusion forms of genital molestation; under emotional abuse, tying and binding were distinguished from other forms of close confinement; under physical neglect, blatant refusals of custody (apart from abandonment) were distinguished from unstable custody situations; in the educational neglect area, failure to enroll or intentionally keeping a child from school was differentiated from inattention to a child's educational problem, learning disability, or special education need; under emotional neglect, inadequate nurturance and affection was coded separately from domestic violence in the child's presence; permitting drug and alcohol abuse by the child was differentiated from permitting other maladaptive behaviors; and refusal to seek care for a diagnosed emotional or psychological problem was differentiated from failure to obtain care for other evident emotional or behavior problems and from other forms of inattention to a child's emotional/development needs.

It should be noted that these various reconfigurations of the specific categories had no impact on what maltreatment was or was not "counted" in the NIS (i.e., included in the national estimates)—their only consequence was to provide slightly different configurations of codes that could be used to subdivide the countable children for more refined analyses in the future.

Perpetrator Requirements. As noted above, another critical component of the NIS definitions is the set of requirements concerning allowable perpetrators. The definitional standards established in the NIS–1 required that when the perpetrator was not the child's parent, he or she had to be

an adult (18 years or older). For each specific form of maltreatment, the standards also indicated whether, in order for the child to be countable, the perpetrator could be any adult caretaker (such as a babysitter) or had to be the child's legal parent.

Harm Requirements. For the most part, the NIS–1 definitional standards required that an act or omission result in demonstrable harm in order to be countable. Because of this criterion, the NIS–1 definitions of countable abuse or neglect have come to be referred to as the *Harm Standard* definitions, although this oversimplifies their difference from later revisions, as discussed below. For each form of maltreatment, the harm requirements specified the degree of harm that was required for the child to be countable. Some forms of maltreatment required serious harm in order to be considered countable, while others were permitted to count in the study estimates if they resulted in moderate harm to the child. Exceptions were made in a few categories where the nature of the maltreatment itself was so egregious that harm could be inferred when direct evidence of it was not available. Those categories included abandonment, the more extreme types of sexual abuse, and the emotional abuse category of close confinement.

The first two columns in Table 6–2 schematically summarize the NIS–1 (Harm Standard) specifications concerning the perpetrator's relation to the child (parent vs. other caretaker) and the minimum degree of harm to the child required for the case to be countable. The forms of maltreatment correspond to the categories described in Table 6–1. As this table suggests, there were subsequent changes to the NIS–1 definitional standards. These are discussed in the next section.

6.3 Revised Definitional Standards

The chief advantage of the Harm Standard definitions was their strongly objective character; their principal disadvantage was that they were extremely stringent—and were considered to be far too narrow by many practitioners and researchers in the child abuse field. In fact, the Harm Standard definitions were so stringent that they excluded the majority of children whose maltreatment had been substantiated or indicated as abuse or neglect by CPS agencies. Those children whose cases were substantiated by CPS but not classified as "countable" under the Harm Standard were entirely excluded from the NIS–1 estimates of the national prevalence of abused or neglected children.

Table 6–1. NIS Definitions of Specific Forms of Maltreatment Within Major Maltreatment Categories

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Sexual Abuse		
Penile Intrusion (01.0)	Sexually assaulting or exploiting a child or permitting sexual assault or exploitation of a child where acts involving penile penetration of or by child have occurred. Such acts include oral (fellatio), anal (sodomy), or genital intercourse, whether heterosexual or homosexual. Category includes cases where sexual exploitation (involving intrusion) by other persons was knowingly permitted by a person responsible for the child (e.g., child's prostitution, child's involvement in pornography with intrusion, child's nonvoluntary involvement in intrusion sex). Category does **not** include sexual abuse of an unknown nature, situations encompassed by categories in 02 or 03, nor inadequate supervision of child's voluntary sexual activities. The mere presence of venereal disease does not constitute adequate evidence to support that this form of maltreatment occurred.	[No changes]
Intrusion by Finger or Any Object (01.1)	Sexually assaulting or exploiting a child or permitting sexual assault or exploitation of a child where acts involving penetration with fingers or any object, of or by child, have occurred.	This category and the next one were explicitly differentiated only in the NIS–3.
Molestation with Genital Contact (02.0)	Sexually assaulting or exploiting a child or permitting sexual assault or exploitation of a child where acts involving genital contact of or by child—but not involving (specific indications of) actual intrusion—have occurred. Such acts would include penile or vaginal fondling or stimulation of or by child, whether heterosexual or homosexual.	[See previous category.]
Other or Unknown Sexual Abuse (03.0)	Committing or permitting sexual assault, exploitation, maltreatment, or abuse other than categories 01 and 02, above. This could include: sexual assault or exploitation where acts did not involve actual intrusion or genital contact (e.g., exposure, inappropriate kissing, hugging, fondling of breasts, buttocks, or other nongenital areas; etc.); and sexual assault or molestation where acts were of unknown or unspecified nature (i.e., no specific indication that intrusion or genital contact had occurred). Category includes all allegations involving child's voluntary sexual activities, such as allegations concerning inadequate or inappropriate supervision of child's voluntary sexual activities. Category does <u>not</u> include attempted, threatened, or potential sexual assault or exploitation if no actual sexual contact was indicated to have occurred. When no physical contact appears to have occurred, allegation should be coded elsewhere (see categories 06 and 07).	[No changes]

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Physical Abuse		
Physical Assault (04.0)	Nonaccidental physical assault with or without an implement: weapon, foreign object, or foreign substance (such as hitting with a stick, strap, or other hard object, as well as scalding, burning, poisoning, suffocating, and drowning). Category also includes slapping, spanking with hand, hitting with fist, biting, kicking, shoving, shaking, throwing, Nonaccidental dropping, stabbing, choking, and physical assaults of these types using unknown means (e.g., unknown whether beating was done with hand or with implement). Category also includes permitting of physical assault, as described. Also includes "semi-accidental" injuries foreseeably resulting from physical assault (e.g., child injured from fall caused by slap or shove, infant injured when deliberately dropped or thrown). Does not include assaults involving actions not listed above (such assaults should be coded in category 07), nor does it include threatened assault or attempted assault which is not actually enacted. Category does not apply when physical injuries or conditions result from other forms of maltreatment (e.g., attempted suicide resulting from emotional assault, venereal disease or intrusion-caused injuries resulting from sexual abuse).	NIS–1 differentiated physical assault "with implement" and "without (evidence of) implement." These were combined in NIS–2 and NIS–3.
Emotional Abuse		
Close Confinement: Tying/Binding (05.1)	Tortuous restriction of movement as a means of punishment or control, such as by tying a child's arms or legs together or binding child to a chair, bed, or other object, or a responsible person permitting another to do so. Does not include generally accepted practices of care, such as swaddling infants or use of safety harnesses on toddlers.	This category and the next were combined in the NIS–1, but were differentiated in the NIS–2 and NIS–3.
Close Confinement: Other (05.2)	Confinement of child to an enclosed area (such as a closet) as a means of punishment. The category does not include minor forms of confinement such as requiring that the child stay in his/her room or "grounding" him/her for a few days.	[See previous category.]
Verbal or Emotional Assault (06.0)	Verbally assaultive or abusive treatment which reflects a systematic pattern of belittling, denigrating, scapegoating, or other nonphysical forms of overtly hostile or rejecting treatment as well as excessive nonphysical discipline. Also includes verbal threats of other forms of maltreatment, such as abandonment, suicide, beating, sexual assault, etc. This category is not used if this maltreatment occurred in conjunction with abuse in any of categories 01.0 through 05.2, or category 07.0, unless acts and adverse effects occurred which were separate and distinct from those in other categories.	[No changes]

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Emotional Abuse (Continued)		
Other or Unknown Abuse (07.0)	Forms of overtly punitive, exploitative, or abusive treatment other than above, or unspecified abusive treatment. Category includes attempted or potential physical or sexual assault or exploitation where actual physical contact was not indicated to have occurred, intentional withholding of food, shelter, sleep, or other necessities as a form of punishment, overworking or economic exploitation of child (e.g., excessive responsibilities or excessive demands for income-producing work by child); and unspecified abusive treatment or assaultive/exploitative treatment other than that referred to in categories 01 through 06.	[No changes]
Physical Neglect		
Refusal to Allow or Provide Needed Care for Diagnosed Condition or Impairment (08.0)	Failure to provide or obtain needed assessment or treatment, in accord with recommendations by a competent health care professional, for an apparent physical injury, illness, condition, or impairment (e.g., a physical handicap, vision, hearing or speech problem, a dental problem or any other apparent physical problem). Category includes failure to (1) obtain or allow further diagnosis of an apparent problem detected by a competent health care professional, (2) obtain or allow professional treatment for a diagnosed condition, or (3) provide needed treatment in accord with professional recommendation (e.g., by administering needed medication). Category does <u>not</u> include situations of (1) neglect to provide or seek assessment in the absence of explicit professional recommendation to do so (see category 09.0), or (2) failure to allow or provide recommended assessment or treatment for an educational, emotional, or behavior problem. (See categories 14, 16, and 17 below.)	[No changes]
Unwarranted Delay or Failure to Seek Needed Care (09.0)	Failure to seek timely and appropriate medical care for a "serious" health problem, through extraordinary inattention to the child's health care needs. The child's problem must have been acute, serious, and of such a nature that any reasonable layman would have recognized the need for professional medical attention. An exception to the one-maltreatment-per-injury-or-impairment rule: If injury is originally caused by one form of maltreatment (e.g., physical assault) and is then unreasonably prolonged through delay in obtaining medical care, both forms of maltreatment apply. The category does <u>not</u> include emotional problems, speech impediments, hearing problems, minor cuts and bruises and the like. Also <u>not</u> included are: (1) failure to have child vaccinated or inoculated (even if required by law) unless the caretaker had been explicitly informed of the advisability of such action, (2) failure to obtain medical care because of good-faith and reasonable judgment that professional medical care was not needed, (3) unsuccessful efforts to obtain competent, timely medical care or advice, and (4) refusals or failures to obtain preventive medical or dental care even if its lack resulted in unnecessarily delayed detection and treatment of a health problem.	[No changes]

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Physical Neglect (Continued)		
Refusal of Custody/ Abandonment (10.1)	Through apparent unwillingness to retain custody (i.e., to provide shelter and other physical necessities), child was permanently or indefinitely deserted without prearranged provision for reasonable care and supervision. Included are infants deserted at birth and not claimed within two days, children left by caretakers who gave false (or no) information about their whereabouts and did not return or otherwise claim custody within two days. Category does not include cases where one parent/substitute abandons the family, leaving child in care of the other (see category 20.1 concerning custody allegations not involving inadequate provision for care), cases where parent/substitute(s) indicate(s) desire or intention to relinquish custody due to unwillingness or inability to control or provide necessities for the child (see categories 18 and 20.3), or cases where parent/substitute(s), through prearrangements with other adults, indefinitely leave(s) child in their care—unless such arrangements are obviously and conspicuously inadequate to meet the child's needs (e.g., leaving a six year old in the care of an elderly invalid, psychotic, or other person clearly unable to care for the child—see category 11.0).	[No changes]
Other Refusal of Custody (10.2)	Blatant refusals of custody other than abandonment, such as permanent or indefinite expulsion of child from home without adequate arrangement for care by others, or refusal to accept custody of a returned runaway. Category does not include temporary lockouts (see category 11.0). If it is unclear whether a case should be in 11.0 or 10.2 due to vagueness about whether the occurrence was a brief and temporary arrangement, then code as 11.0.	This category and the next were combined in the NIS–1, but were differentiated in the NIS–2 and NIS–3.
Other Custody-related Maltreatment (10.3)	Other custody-related forms of inattention to the child's needs other than those described above. Category includes unstable living arrangements where child is repeatedly shunted back and forth from one household to another due to unwillingness to maintain custody, as well as situations where the parent/substitute chronically or repeatedly leaves the child with other caretakers for days/weeks at a time.	[See previous category.]

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Physical Neglect (Continued)		
Inadequate Supervision (11.0)	Child left unsupervised or inadequately supervised. Examples include cases where there is a recurrent pattern of (1) leaving a 6-year-old alone or unsupervised in the home for several hours at a time, (2) leaving a child under 13 years alone in the home to supervise younger children for several hours at a time, (3) leaving a child under 10 unsupervised out-of-doors after sundown, (4) allowing a child of any age to remain away from home overnight without knowledge of parent/substitute (or attempts to discover) whereabouts, or to remain at home alone and unsupervised overnight, and (5) denying a child physical access to home (e.g., house locked until parents arrive home, "kicking child out" temporarily while parents entertain, fight, etc.). Category does not include situations where apparent lack of supervision results in some form of foreseeable abuse (categories 1 through 7). Such situations should be coded as the parent/substitute or caretaker having permitted the abuse.	[No changes]
Other Physical Neglect (12.0)	Conspicuous inattention to (1) physical hazards in the home or grounds (such as exposed wiring, broken glass, accessible dangerous substances, "filth," dangerous or unhygienic pets, etc.), (2) the child's needs for nutritious foods, adequate clothing and/or adequate personal hygiene, and (3) other forms of "reckless disregard" of the child's safety and welfare (e.g., driving with child while intoxicated, leaving young child unattended in motor vehicle). Category does not include cases where parents/substitutes are financially unable to provide (or obtain through AFDC) reasonably safe hygienic living conditions.	NIS–1 differentiated circumstances (1), (2) and (3). These were combined in NIS–2 and NIS–3.
Educational Neglect		
Knowingly Permitted Chronic Truancy (13.0)	Includes all cases where the parent knowingly permitted the child's chronic absence (tardiness or truancy). Key requirements are that (1) child has regularly been truant (entirely absent or absent at least 2 hours of the school day) an average of at least 5 days per month, (2) parents/substitutes had been made aware of the problem, and (3) parents/substitutes had not attempted to alleviate the problem, through apparent lack of concern for the child's well-being. Lack of effort, rather than lack of success is the key requirement: Not included are cases of children 12 years or older where truancy has persisted despite reasonable parent/substitute efforts to modify the child's behavior.	[No changes]

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Educational Neglect (Continued)		
Other Truancy/ Failure to Register or Enroll (14.1)	Marked education-related inattention to child's needs other than above. Category includes (1) cases where there is a pattern of keeping the child home for nonlegitimate reasons (e.g., to baby-sit for younger siblings) an average of at least 3 days per month, and (2) failure to register or enroll child in school in violation of state law causing child to miss one or more months of school. Category does not apply above age of mandatory school attendance (considered to be 16 years for study purposes). In such cases, allegations of failure to enroll receive a code of 20.3.	This category and the next were combined in the NIS–1, but were differentiated in the NIS–2 and NIS–3.
Other Refusal to Allow or Provide Needed Attention to Diagnosed Educational Need (14.2)	Refusal to allow or failure to obtain (professionally) recommended assessment or treatment of child's (professionally) diagnosed educational problem, learning disorder, or other special education need, without reasonable cause.	[See previous category.]
Emotional Neglect		
Inadequate Nurturance/ Affection (15.1)	Marked inattention to child's needs for affection, emotional support, attention, or competence or control. Includes (1) passive emotional rejection of child or apparent lack of concern for child's emotional well-being or development, and (2) conspicuous absence of emotional support during emotional crises or lack of care or concern about child's emotional or behavior problems (except as given in category 16). Included here are allegations that the parent refused to be supportive of the child's treatment/probation program.	This category and the next were combined in the NIS–1, but were differentiated in the NIS–2 and NIS–3.
Domestic Violence (15.2)	Spouse abuse or other domestic violence in child's presence (e.g., grandfather chronically beating child's mother). Also includes cases where child was injured as a result of physical fighting between parent/substitute.	[See previous category.]
Knowingly Permitting Drug/ Alcohol Abuse (16.1)	Key requirements are (1) child exhibits drug/alcohol abuse, (2) parents/substitutes had cause to be aware of the nature and seriousness of the problem (e.g., have been told by the police or others on previous occasions), and (3) parents/substitutes had encouraged the child's maladaptive behavior or had not attempted to correct the problem. As with truancy, lack of effort, rather than lack of success is the key to this category. Note that giving a child drugs/alcohol is included here for school-aged children (who might be behaviorally influenced by this). It is considered abusive behavior and categorized in category 07 for younger children.	This category and the next were combined in the NIS–1, but were differentiated in the NIS–2 and NIS–3.

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Emotional Neglect (Continued)		
Knowingly Permitting Other Maladaptive Behavior (16.2)	Key requirements are as in 16.1 above, except that the child exhibits a chronic pattern of other type(s) of maladaptive behavior (e.g., severe assaultiveness, chronic delinquency). Not included are cases of inattention to a child's sexual "misbehavior" (see "permitting" in category 03) or school problems (see categories 13.0 and 14.1) or failure to seek help for child's emotional problems (see category 17).	[See previous category.]
Refusal to Allow or Provide Needed Care for Diagnosed Emotional or Behavioral Impairment/ Problem (17.1)	Category includes refusing to allow needed and available treatment for a child's emotional or behavioral impairment or problem in accord with competent professional recommendation (for reasons other than reasonable judgment that treatment was not in the child's best interest).	This category and the next two were combined in the NIS–1, but were differentiated in the NIS–2 and NIS–3.
Failure to Seek Needed Care for Emotional or Behavioral Impairment/ Problem (17.2)	Category includes failure to seek or provide needed treatment for a child's emotional or behavior impairment or problem. Not included in this category are allegations that parents/substitutes failed to cooperate with law enforcement authorities for purposes of prosecuting an alleged perpetrator. Also, if category 16.1 applies, it is not also coded here for the same behavior problem.	[See previous category.]
Other Inattention to Developmental/ Emotional Needs (17.3)	Category includes (1) markedly overprotective treatment which fosters immaturity or emotional overdependence, (2) failure to provide adequate attention to child's needs for sensible rule structures, (3) chronically applying clearly inappropriate age expectations to a child, or failing to provide attention/affection in ways not encompassed by any of the above categories (especially 10, 15, and 16). Included here are parent/substitute behaviors or practices which presume an inappropriate level of maturity on the child's part (e.g., viewing pornography) or behaviors that provide an extremely poor role model (e.g., practicing prostitution, using illegal drugs in the child's presence, trafficking or dealing in drugs).	[See previous category.]
Other Maltreatment		
General or Unspecified Neglect (19.0)	Used in three types of cases: (1) for multiple neglect allegations—when two or more categories 9, 11 or 12 are alleged or suspected *and these would not be countable under the Harm Standard*, (2) for vague or unspecific neglect allegations (e.g., "child is being neglected by mother," "living in abysmal conditions," etc.) and categories 9, 11 or 12 have not been applicable, (3) lack of preventive health care, or (4) for neglect allegations not codeable elsewhere in any category.	Not countable in the NIS–1; countable only under the Endangerment Standard in the NIS–2 and the NIS–3.

Table 6–1. (Continued).

Specific Form of Maltreatment (NIS–3 code)	Acts/Omissions Included	Changes over NIS's
Other Maltreatment (Continued)		
Other or Unspecified Maltreatment (20.1)	Problems or allegations not classifiable elsewhere. Include cases where description does not clarify whether alleged maltreatment involved abuse, neglect, or both; allegations which imply suspicion of maltreatment but too nonspecific to code elsewhere (e.g., child support problem, difficulty controlling child's behavior, custody-related problem/dispute not alleging improper care and not codeable in any of the 10 categories (e.g., noncustodial parental abduction), parent/substitute problem such as alcoholism, prostitution, or drug abuse without indication of how this problem is thought to have affected the parent's treatment of the child, reference to child's problem or need for care but without indication of whether problem resulted from maltreatment, domestic conflict (parental discord) in which child was not directly involved or in which the child was a much an aggressor as the parent, and vague or unclassifiable descriptions of maltreatment).	Not countable in the NIS–1; countable only under the endangerment standard in the NIS–2 and the NIS–3.
Not Countable in Any NIS		
Involuntary Neglect (18.0)	Child is not provided with needed care or services because of physical or financial inability by parents/substitutes (e.g., due to parent/substitute death, hospitalization, incarceration, incapacitating illness or impairment (other than drug or alcohol abuse), poverty, or other external circumstances beyond the parent/substitute's control.	[No changes]
Chemically Dependent Newborns (20.2)	Newborn infants born to alcohol- or drug-addicted mothers with positive toxicology tests at birth.	[No changes]
Nonmaltreatment Cases (20.3)	Routine inquiry to an agency for referral or investigation not involving maltreatment; non-maltreatment-related reasons for CPS case status. Category is also used for any cases (CPS or non-CPS) not involving any maltreatment codeable in above categories (e.g., situations where a parent/substitute voluntarily relinquishes custody of the child *by making provisions for adequate care of the child*).	[No changes]

Table 6–2. Schematic Comparison of the Harm Standard and Endangerment Standard Requirements for Perpetrator and Harm

Maltreatment Type	Harm Standard		Endangerment Standard	
	Perpetrator	Degree of Harm	Perpetrator	Degree of Harm
Sexual Abuse				
Intrusion or Genital Molestation Committed Permitted	Adult caretaker Parent	Assumed	Minor caretaker	
Other/Unknown Sex Abuse Committed Permitted	Adult caretaker Parent	Moderate	Minor caretaker	Endangered
Physical Abuse				
Committed Permitted	Adult caretaker Parent	Moderate		Endangered
Emotional Abuse				
Tying or Binding Committed Permitted	Adult caretaker Parent	Assumed		
Other Close Confinement Committed Permitted	Adult caretaker Parent	Moderate		Endangered
Verbal/Emotional Assault Committed Permitted	Adult caretaker Parent	Moderate		Endangered
Other/Unknown Abuse Committed Permitted	Adult caretaker Parent	Moderate		Endangered
Physical Neglect				
Refusal of Health Care	Parent	Moderate		Endangered
Delay in Health Care	Parent	Serious		Endangered
Abandonment	Parent	Assumed		
Expulsion/Refusal of Runaway	Parent	Assumed		
Other Custody-related Maltreatment	Parent	Moderate		Endangered
Inadequate Supervision	Parent	Serious	Adult caretaker	Endangered
Other Physical Neglect	Parent	Serious	Adult caretaker	Endangered

Same as Harm Standard Requirement

Table 6–2. (Continued)

Maltreatment Type	Harm Standard		Endangerment Standard	
	Perpetrator	**Degree of Harm**	**Perpetrator**	**Degree of Harm**
Educational Neglect				
Permitted chronic truancy	Parent	Assumed		
Other truancy/failure to enroll	Parent	Assumed		
Inattention to Special Educational Need	Parent	Assumed		
Emotional Neglect				
Inadequate Nurturance/Affection	Parent	Serious		Endangered
Chronic/Extreme Spouse Abuse	Parent	Serious		Endangered
Permitted Drug/Alcohol Abuse	Parent	Serious		Endangered
Permitted Other Maladaptive Behavior	Parent	Serious		Endangered
Refusal to Provide Needed Psychological Care	Parent	Moderate		Endangered
Delay/Failure to Provide Needed Psychological Care	Parent	Serious		Endangered
Other Inattention to Emotional Needs	Parent	Serious		Endangered
Other Maltreatment				
General or Unspecified Neglect			Parent	Endangered
Other or Unspecified Maltreatment			Adult Caretaker	Endangered

Same as Harm Standard Requirement

This category not countable under the Harm Standard

In order to permit comparison with the NIS–1 estimates, the NIS–2 was constrained to use the Harm Standard as well. However, in order to meet the criticism leveled against the stringency of the Harm Standard, the NIS–2 also generated an alternative set of estimates that were based on a more relaxed set of definitions, which have become known as the Endangerment Standard. As depicted in the last two columns of Table 6–2, the Endangerment Standard relaxed the Harm Standard requirements on all three dimensions. The Endangerment Standard definitions:

1) permitted that, even when the perpetrator was not the child's parent, he or she could be under the age of 18 in cases of sexual abuse;[i]

2) enlarged the number of abuse and neglect categories in which the child was countable even when the perpetrator was a caretaker other than the child's legal parent;[ii] and

3) did not require actual harm to count the child, but allowed cases to be countable if the child was thought to have been seriously endangered by maltreatment or when the child's maltreatment had been substantiated or indicated by CPS.

Note that referring to the two definitional standards as the "Harm" and "Endangerment" standards is a convenience that emphasizes their most salient difference. However, it implies that their only difference was the change listed as (3) above, when in fact the revised definitions also entailed the modifications to the perpetrator requirement specified in changes (1) and (2).

6.4 Application of the Definitional Standards

In NIS–1, coders classified the maltreatment, rated the severity of harm to the child, and then determined the overall "countability" to capture the degree of fit or nonfit of the case regarding harm, perpetrator, and responsibility criteria. In the NIS–2, the coding structure was expanded so that coders could differentiate their assessments of these separate criteria, thereby allowing each to be judged and recorded independently of the others.

In each NIS, prior to data collection, the non-CPS sentinels were trained in the study definitions and asked to stay on the lookout for such cases during the data period. Note, however, that

[i] The effort to include minors who were perpetrators was not introduced until after the NIS–2 data had already been collected. As a result, non-CPS sentinels had not been explicitly instructed to be on the lookout for such cases and the study may not have systematically included when sentinels did encounter them. During the NIS–2 data analysis, preliminary calculations indicated that including minor caretakers as perpetrators in other categories of maltreatment did not affect the number of countable cases in those instances, so the perpetrator's age criterion was not changed in other categories of abuse or neglect.

[ii] As shown in Table 6-2, cases were countable under the Endangerment Standard, when other caretakers permitted sexual abuse, were responsible for inadequate supervision, inadequate food, clothing, or shelter, disregarded physical hazards, or were responsible for other types of inattention to the child's physical safety and well-being.

because the study definitions themselves were expanded in the NIS–2 to include Endangerment Standard cases, the NIS–2 instructions to sentinels had to cast a slightly larger "net" than in the NIS–1. Whereas NIS–1 sentinels had been told that the study was concerned with maltreatment that had caused harm, NIS–2 sentinels were told that the study was particularly concerned with maltreatment that had caused harm, but that the study would additionally welcome information about other maltreatment situation, which in their professional judgment had seriously endangered the child's physical, mental, or emotional health, and which they believed should be included in a comprehensive national study of child maltreatment. NIS–3 sentinels were given instructions similar to those used in NIS–2. Sentinels in all studies were told that if they had doubts about a case, they should review the study guidelines, and submit the case if they suspected it might be relevant, thus leaving it to the NIS project staff to evaluate the case against the study standards.

After cases were received, intensively trained evaluative coders rated the cases on the different criteria determining their countability and also judged their overall case countability under the study definitions. A 10 percent sample of all evaluated cases was selected for reliability coding, and the extent of interrater agreement is shown in Table 6–3 for all three incidence studies.

Table 6–3. Within-Study Reliability of Evaluative Coding in the NIS–1, NIS–2, and NIS–3.

Study/Measure	Reliability Case Sample	% Agreement		
		All evaluative ratings	Overall Harm Standard Assessment	Overall Endanger-ment Standard Assessment
NIS–1	298	68%	87%	[not applicable]
NIS–2				
All Disagreements	440	72%	74%	76%
Only Independent Disagreements	440	88%	95%	93%
NIS–3				
All Disagreements	737	81%	78%	84%
Only Independent Disagreements	737	95%	98%	99%

Note that NIS–2 and NIS–3 raters were asked to code more evaluative elements in connection with each definitional standard (25 for each standard, as compared to an average of 12 evaluative decisions per case in the NIS–1). Moreover, because the component decisions underlying overall countability were coded separately, there were considerable logical interdependencies among

many of these evaluative elements. For instance, if a coder concluded that the severity of harm was only moderate, but the form of maltreatment being evaluated required serious injury under the Harm Standard requirement, then the coder would also rate the case as having failed the harm requirement and as not countable under the Harm Standard. In order to avoid penalizing the evaluative coders for appropriately following such rules concerning the interdependencies among different component decisions in the coding system, the intercoder percent agreements were computed in two ways. One computation simply followed the NIS–1 approach of counting all disagreements, entirely ignoring any interdependencies. The other computation considered only independent disagreements—disagreements that did not stem from appropriately following the logical interrelationships among the codes. This second computation is a measure of the extent of agreement when both coders have exactly the same decision facing them. As shown in the NIS–2 and NIS–3 sections of Table 6–3, when only independent disagreements were considered, intercoder agreement was substantially higher. Also note that all measures of intercoder agreement in the NIS–3 were higher than the corresponding measures in the NIS–2.

7. UNDUPLICATION

The NIS goal is to provide estimates based on the number of children as the unit of measurement. To do this, it is necessary to ensure that the study does not count the same child more than once. To address this challenge, both explicit duplication of reports on the same child and hidden duplication in the study estimation procedures must be considered.

7.1 Removing Direct Duplication

More than one data form can be submitted to the study concerning an individual child. Such duplicates can occur because the same maltreatment event is reported by more than one study source, or because the same child experiences more than one occurrence of maltreatment during the study period. In either case, it is necessary to identify and resolve all such duplicate reports in order to permit estimates in which the child was the unit of measurement.

Identifying Duplicate Records. Unduplication has to be accomplished without the use of fully identifying information, to preserve the anonymity and confidentiality of the study data. The NIS–1 established a basic methodology for unduplicating study data forms. Enough close-to-identifying information was obtained to allow fairly certain judgments as to whether or not two data forms described the same child. Specifically, information was obtained about the child's first name, last name initial, age, birthdate, sex, and city of residence.

The basic methodology relies on these data items to uncover pairs of child-level records[i] that are candidate duplicates. The final decision about whether or not the records in a pair are duplicates depends on whether or not any of these key data items are missing or contradictory on the two records. If they precisely match, the conclusion that the records are duplicates can be made with a fair degree of confidence, without further exploration of the data. Often, however, there is some degree of missing information or nonexact similarities between the two records, which raise some doubt about whether they constitute exact matches. In these cases, the final decision about whether the records are duplicates needed to consider other data items, such as the first names, last initials, and dates of birth of the child's siblings (if available), the household size and family structure, and the nature of the alleged maltreatment.

[i] Prior to unduplication, all CPS data, which are submitted on family-level forms, are transformed to child-level records.

The NIS–1 and the NIS–2 applied this basic, fully manual unduplication methodology to all study data. Recall that the NIS–2 did not obtain short CPS data forms in large CPS agencies—a strategy that minimized the amount of direct duplication with which that study had to contend. That strategy raised other problems in connection with duplication, as discussed below, but it enabled the NIS–2 to use the fully manual unduplication method of the NIS–1 without adaptation.

In NIS–3, however, it was necessary to move beyond the fully manual process in order to contend with the sheer number of CPS data forms received into the study. As Table 2–2 showed earlier, the NIS–3 collected a total of 59,307 CPS forms (3,154 long forms and 56,153 short forms). This included over 15,000 forms from one county alone. In comparison, the NIS–2 had collected a total of only 3,909 CPS forms. The tremendous increase in the number of CPS data forms in the NIS–3 over the NIS–2 meant that the manual unduplication process used in the NIS–2 was no longer feasible for all counties, so methods of automating the steps of unduplication had to be developed.

The NIS–3 followed the same rules and standards for unduplication that were established in the NIS–1 and the NIS–2, but it also incorporated automated procedures. In the NIS–3 duplicates were identified in one of three ways, depending on the size of the county:

1) the fully manual method, identical to the method used in the NIS–1 and the NIS–2 (described above), was used in 7 counties with small numbers of CPS reports;

2) a computer-assisted (algorithm-based) method was applied in counties with larger numbers of CPS reports; and

3) a fully automated method, based on a statistical decision model, was implemented with the short CPS forms in the 12 counties with the largest numbers of CPS reports.

In the computer-assisted method, the unduplication task was streamlined by devising a system for having the computer generate candidate duplicate pairs from the sorted listings. The manual method was examined carefully, and a simple computer algorithm was designed to assist project staff in flagging candidate pairs. The rest of the unduplication task then proceeded in the same manner as it had under the fully manual method, with project staff reviewing these possible duplicates and determining whether to accept or reject a grouping as a true duplicate.

In the very large NIS–3 counties, the process of identifying duplicate reports on the same child was very labor intensive, even using the computer assisted approach where likely duplicates were identified in advance by machine. It was not practical, particularly in the larger counties, to identify duplicate pairs involving CPS short forms manually. A fully automated system was developed to handle

these short form pairs by statistically modeling the results of the manual and computer assisted unduplication and applying the resulting logistic regression to estimate the probability that a specific candidate duplicate pair was a true duplicate. In moving from this predicted probability to a categorical decision, a cut-off threshold was identified that balanced out the expected kinds of misclassification (i.e., was expected to yield as many false positives as false negatives), and that was expected to provide correct classifications 97.1 percent of the time.

The fully automated unduplication approach using this statistical model was applied to the short form data in the larger counties. Its application was limited to candidate pairs that involved short forms because, in those instances, there were no other data available (e.g., details of maltreatment) that could guide the final decision. Thus, there was no real benefit to having project staff explicitly examine those candidate pairs, as they would not be in any position to render a more informed decision than could be achieved through the statistical model. Even when project staff had made these decisions in these cases in other NIS–3 counties and in the earlier NIS–1 and NIS–2, they had been forced to do so on the basis of the preponderance of the information. Note that whenever the duplicate pairs did not involve CPS short forms, NIS–3 project staff always made the unduplication decision after examining other information in the data forms—as had been the procedure in the NIS–1 and NIS–2.

Unifying Duplicates. The process of unifying the duplicate records in the NIS has been identical across the three incidence studies. It involves three independent decisions.

First, if any of the sentinel agencies had recognized the child as abused or neglected, then one of these had to be credited with this recognition. When more than one NIS–2 sentinel category had recognized the child, the selection between them was made on the basis of a hierarchical classification system that had been established in the NIS–1, based on the "iceberg" model which had guided the study design. In this scheme, law enforcement and other investigatory agencies are credited with having recognized a child even when other professionals in noninvestigatory agencies such as schools or mental health clinics also recognized the same child as maltreated.

Second, one record had to be retained to represent an individual child. In making this selection, preference was given to records which were countable, which had more complete demographic information, and which came from a recognition source of higher priority in the ranking scheme (see below). Note that the NIS has never attempted to consolidate information across different data forms to provide a hybrid amalgam of the information submitted from different sources. While some information may be sacrificed through this approach, its great benefit is in avoiding a number of complications that

would otherwise ensue, including concerns about accurately crediting the recognition of different forms of maltreatment and assigning appropriate weights to the data.

Third, it was necessary to resolve the duplicate grouping into a single weight for estimation purposes. In doing this, it was necessary to take into account the probabilities of selection of all the records comprising the duplicate grouping and appropriately represent the maltreated child in the study estimates.

7.2 Avoiding Hidden Duplication

If direct duplication were the only problem in the NIS, the task would be a relatively straightforward one, albeit sometimes unwieldy. More troublesome is the fact that the study estimates are vulnerable to inflation by hidden duplication, due to the extent and distribution of sampling used in the sample design. This problem was only a minor concern in the NIS–1, where a concerted effort was made at all levels (agency and sentinel) to avoid using sampling. Table 5–1 indicated that sampling was generally necessary only for schools in the NIS–1 counties (with municipal police sampled in only a few counties and hospitals sampled in only one). As has been noted earlier, the NIS–1 was largely able to avoid further sampling of agencies because of the fact that the county sample for that study was drawn with equal probability and consisted primarily of relatively small counties.

By contrast, considerably more extensive use of sampling was necessary in the NIS–2 and NIS–3, where counties had been selected with probability proportionate to size and the sample included some extremely large counties with large numbers of non-CPS agencies. Sampling non-CPS agencies allows the study estimates to adequately cover the targeted universe, but it also raises concerns about the amount of hidden duplication that can then affect the sector of cases recognized by the non-CPS sentinels. Because case details are available for only samples of maltreated children recognized by sentinels in the different non-CPS agency categories, children seen by sentinels in one agency category may be duplicated among those seen by unsampled sentinels in another agency category.

In the NIS–2, where short forms were not obtained in the very large CPS agencies, hidden duplication, could arise in two other areas:

- *Within the CPS agency cases.* Since case details were available for only a sample of children in CPS investigated cases in large agencies, sampled cases could be duplicated among the set of unsampled CPS cases in the frame; and

- *Between the CPS cases and cases seen by non-CPS sentinels*. Since case details were available for only samples of children in both sectors, sampled cases in one sector could be duplicated among the set of unsampled cases in the other sector.

In designing the NIS–1, this problem was recognized and the short CPS data form was developed specifically to meet the need to unduplicate the full set of CPS cases, both within itself and in relation to the sentinel data from non-CPS agencies, through the process described above. Short form data were not always obtained in the NIS–2, however, and this meant that the study estimates were susceptible to inflation through hidden duplication. In order to avoid inflation in the NIS–2 estimates from this type of hidden duplication, the case weights were designed in a manner that adjusted for the problem. Specifically, two different case weights were assigned to NIS–2 cases. For most of the cases in the data, these weights were identical to each other. However, for CPS cases in large agencies that had been reported to CPS by an agency of type that was represented in the non-CPS agency sample, two weights were devised. One weight allowed the case to appropriately represent the CPS case universe from which it had been drawn, and this was to be used for analyses focused only on CPS cases. The other weight deflated the case's contribution to the overall total of countable study children, permitting it to only represent itself in analyses that focused on all the NIS children (both those investigated by CPS and those not). This second weight assumed that all of the children who had been reported to CPS through a represented non-CPS agency were already adequately and fully included in the study through the cases contributed by participating non-CPS agencies.

As noted in later discussion, this solution to the hidden duplication in the NIS–2 has raised a good number of complaints from users of the database, who found the two different case weights confusing. Also, note that this solution essentially ignored the possibility of hidden duplication within the CPS sector itself (or within the non-CPS sector of cases). Clearly, a preferable approach would have been to avoid the problem of hidden duplication in the first place.

In the NIS–3, data forms were obtained for the full set of CPS cases—a sample of cases were targeted for long forms, and short forms were required for the remaining unsampled cases. This permitted full direct unduplication of CPS cases, as described above, thus avoiding the problem of hidden duplication within CPS cases and between CPS and non-CPS cases.

7.3 Analysis of Hidden Duplication Bias

A special study was undertaken as a supplement to the NIS–3 to examine the issue of hidden duplication bias. This analytic effort had two primary aims—one was to establish an upper bound on the degree to which bias due to hidden duplication in the non-CPS data in the NIS–3 might have inflated the study estimates, the other was to determine how much undercoverage bias would be introduced into the NIS–3 estimates if the study design had attempted to completely eradicate the potential for any inflation by hidden duplication.

Estimated Amount of Hidden Duplication Bias. As described above, when the full census of CPS cases during the study data period is collected on study data forms, complete direct unduplication is possible both within CPS and between CPS and every category of non-CPS agency. There is no inflation of estimates from duplicated children in these overlaps because all duplicated children were detected and removed and hence do not get double-counted in the study estimates. However, the maltreated children who are represented in the study through non-CPS agency samples and who are not also investigated by CPS have some potential of being implicitly double-counted in the study estimates. This happens for maltreated children who are seen at two or more sampled non-CPS agencies when they are only represented in the study through one of these agency samples.

Consider an abused child who has not been reported to CPS but is recognized as abused by a teacher and by a hospital. If this child attended a sampled school and his teacher was sampled to participate in the NIS, then he should be directly included in the NIS data through the NIS school sample. If the hospital where he was recognized as abused happened to also be among the sampled NIS agencies and the social worker or nurse who recognized this child's maltreatment was included in the sentinels sampled within that hospital, then he would also be directly included in the NIS data through that non-CPS agency sample. In this example, the duplicate data forms on this child would be located during the unduplication process and one would be removed so that he would only be counted once in computing the estimated number of maltreated children. Modify this example only slightly, however, and this child would be a hidden duplicate, contributing an inflation bias to the study estimate. This would happen if he were sampled into the study through only one of the agencies where his maltreatment was recognized. Consider that he is sampled directly into the study through a data form submitted by his teacher. The fact that he is also recognized at a hospital is not detected by the study because he was not directly sampled there. Nevertheless, the study has attempted to represent all children who are recognized at hospitals through its hospital sample. Notwithstanding the fact that our example child does not appear in the hospital data directly, he is represented in the data from that sector. Because his duplication is hidden from the study, it is not removed when the estimates are generated. As a result, under this second

scenario, the child is effectively double-counted in the study estimate of the total number of maltreated children.

In order to compute how much this type of hidden duplication may have inflated the NIS–3 estimates, the duplicates observed in the sample were used to develop an estimate of the duplicated composition of the sampling frames.[25] The hidden duplication potential is limited to children who are not investigated by CPS, so this analysis was restricted to that sector of children. Then, children whose duplication across different non-CPS agencies was detected during the unduplication procedures were identified, and these children were weighted by the inverse of their probabilities of selection in order to estimate the total number of duplicated children among those only represented by non-CPS data. In terms of the above example, the duplication bias may be removed by using the known duplicates in the hospital and school samples to estimate the number of duplicates on the frames for these two sources.

This approach indicated that NIS–3 estimates may have been overstated by an estimated 25,500 children as a result of hidden duplication bias. A confidence interval was computed for this estimate of bias, by assuming that all the hidden duplicates had weights on the order of the largest weight for an observed duplicated child (a worst-case scenario assumption). This approach provided a 95 percent upper bound estimate of overestimation of 100,700 children. The study concluded that the hidden duplication bias in the NIS–3 estimates was relatively small in the context of the estimates themselves. Even under the worst-case assumptions, it represents a maximum of about 6 percent of the overall Harm Standard estimate, and less than 4 percent of the overall Endangerment Standard estimate.

Thus, the overestimation in the NIS–3 due to hidden duplication bias is relatively small. This primarily stems from the fact that most duplicates in the NIS–3 were either duplicate reports from within a single agency (e.g., a teacher and a school nurse submitted the same child) or they involved CPS as one of the sources. In either of these cases, there was no potential for associated hidden duplication bias. Hidden duplication bias in the NIS–3 arises specifically from children who are *not* investigated by CPS yet who are identified by multiple non-CPS sources—children who should be relatively rare under normal circumstances. Consider that children who are identified by multiple non-CPS sources are probably more likely to be reported to CPS by at least one of their recognition sources, and are thus more likely to be on the CPS frame than children who are recognized as maltreated by only a single non-CPS source. Thus, the very nature of the dynamics of recognizing and reporting maltreated children probably acts to constrain the amount of hidden duplication in the NIS.

Estimated Undercoverage When Hidden Duplication Is Eliminated. As noted in the earlier discussions, the potential for hidden duplication bias in the NIS arises from the multiple-frame

sample design, which is used in order to increase the coverage of the maltreated child population. In order to understand fully the role of hidden duplication bias in the study, the upward bias it contributes needs to be weighed against the undercoverage bias that would otherwise result if the multiple-frame sample design were abandoned. That is, it is possible to simplify the NIS design so that the potential for hidden duplication is entirely eradicated. This can be done by limiting the use of sampling to only *one* non-CPS agency category. Under those conditions, the data could be fully unduplicated against the census of data forms from CPS, with no intersecting sampled categories to harbor any hidden duplicates. At the same time, by sacrificing data sources in the interests of completely reining in any hidden duplication bias, the study will assuredly have reduced coverage of the maltreated child population. The question in this component of the special study was whether the degree of coverage loss that might be expected would be acceptable in light of the fact that the study estimates would then be unbiased.

To explore this question, the maltreated children were divided into two sectors—those under 5 year olds and those 5 to 17 years old—and the "best" non-CPS source was identified for each sector to estimate the number of maltreated children not investigated by CPS. For the school-age sector, the school sample was used as the single best non-CPS agency source; for the younger children, the hospital sample was used.[i,ii] This analysis indicated that curtailing the NIS design so that hidden duplication bias would be entirely excluded would result in considerable undercoverage. NIS–3 estimates under this approach were only 82 percent of what they were under the full NIS design. Moreover, the greatest undercoverage was for the younger maltreated children, only 63 percent of whom would be included in the study estimates if the uninvestigated children were only contributed to the study by hospitals. The restricted-source approach would produce very serious undercounts in certain categories of maltreatment. For instance, using the restricted-source approach, the estimate of the number of children who were sexually abused would be 29 to 35 percent below the full-design estimate, depending on the definitional standard used.

Thus, this special hidden duplication study indicated that the NIS–3 estimates are only slightly inflated by hidden duplication bias, and that even carefully designed attempts to eradicate this slight bias would introduce serious undercoverage bias.

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[i] These non-CPS sources were used in addition to any certainty children in other non-CPS agencies. That is, there were some children who had been selected with certainty in nonsampled non-CPS agencies such as juvenile probation, public health, and sheriff departments, when sentinels were not sampled in those agencies.

[ii] The hospital sample size is the largest for the preschool-age domain. The day-care center weighted estimate is larger than the hospital sample estimate; however, the hospital sample estimate has substantially higher precision than the day-care estimate because of the larger sample of children.

8. ANNUALIZATION

NIS estimates are intended to reflect the number of children abused or neglected *annually*, but invariably there is at least some portion of the study database that reflects only part-year information. There are two reasons why simply multiplying by a factor that reflects the data period portion of the year is not sufficient. The proportion of maltreated children who are maltreated during the study period may differ from the proportion of the year covered because of seasonal trends in the incidence of child maltreatment and because a given child may be maltreated throughout the year.

8.1 NIS–1 Annualization

In the NIS–1, CPS data were collected for a full year, but the sentinel data reflected cases participants encountered during a 4-month data period.[i] In order to annualize the NIS–1 data, the fully unduplicated database was subdivided by whether the children had been investigated by CPS and the non-CPS agency source (if any) that submitted the report to CPS or to the study. As described above ("Unifying Duplicates" in §7.1), when resolving the duplicate records that are directly encountered in the data, each child is uniquely assigned to one agency source, using a hierarchical listing of the different agency categories. Table 8–1 indicates question marks for the categories of children whose numbers were not directly derivable from the NIS–1 data without annualization.

Table 8–1. Information Available for Annualizing the NIS–1 Non-CPS Data

Source	Children Investigated by CPS			Additional Children Recognized Only by Non-CPS Sentinels		
	A	B	C	D	E	F
	During 4 mo. non-CPS period	During other 8 mos. of study year	Total (A+B)	During 4 mo. non-CPS period	During other 8 mos. of study year	Total (D+E)
All Non-CPS Sentinel Agencies					?	?
All Other Sources (CPS-only)						

Information available in unduplicated NIS-1 database

Not represented among Non-CPS sentinels

[i] NIS–1 counties were divided into 3 'Waves," and depending on which Wave they were in, data collection occurred from Sept 1979-Jan 1980, from Oct 1979-Feb 1980, or from Nov 1979-Mar 1980.

The NIS–1 annualization procedure assumed that, for any given source, the proportion of the total represented by the 4-month subtotal would be the same for uninvestigated children as for investigated children. The procedure specified an annualization multiplier for each non-CPS agency category. Thus, the annualization factor was calculated as the ratio of the total number of investigated children credited to a particular source (the column C total for the agency category) to the number of investigated children credited to that source during the 4-month data period (the column A total for the category). Using this as the annualization multiplier for the column D total provided an estimate of the total number of additional children who were recognized by the source throughout the year, over and above those investigated by CPS. The NIS–1 annualization multipliers for the different agency categories ranged from 1.9 to 3.3, being notably lower for schools than for any of the other sentinel agencies. This pattern derived from the fact that schools submitted substantially fewer reports to CPS over the summer months than they did during the school year.[i]

8.2 NIS–2 Annualizaton

The NIS–2 faced a similar, but even more difficult, annualization problem, because both CPS and sentinel data collection in the NIS–2 only reflected a 3-month period. The annualization factors used in NIS–1 were used as the basis for the annualization factors applied in NIS–2. It was necessary to adapt the NIS–1 multipliers to the NIS–2 situation, however, since the NIS–2 data period was only three months,[ii] whereas the NIS–1 multipliers were designed to adjust data collected over a 4-month period.

Because the NIS–1 annualization multipliers were relatively consistent across all non-CPS agencies other than schools (which are obviously affected by a major seasonal variation), it seemed reasonable to use the same annualization factor for CPS data as for other non-school agencies. Given these considerations, two summary annualization factors were obtained from NIS–1 factors—one for schools and one for all other sentinel agencies—and these were the basis for deriving two annualization factors for NIS–2.

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[i] Note that the approach used here also assumes that the degree of duplication between children investigated by CPS and those recognized by non-CPS sentinels does not show substantial seasonality. That is, the approach assumes that whatever case duplication may exist in connection with the column E children (whether among the group itself or between that group and those in columns A, B, and D) will have been adequately estimated and addressed through the direct identification of duplicates in the data available to the study. However, there are no data that bear on these assumptions.

[ii] Except that schools had a more delimited data period of 10 weeks rather than the 13 weeks that applied to the remaining non-CPS agencies. This was the result of providing a 3-week delay after the start of school in September before orienting school sentinels and beginning school data collection—an arrangement that was necessary to ensure cooperation.

Although cases might be expected to increase by 33 percent by adding a fourth month, a portion of these should be children who were already maltreated during the first three months. To prevent the overstatement that would arise from simply adjusting the NIS–1 annualization rates by a factor of 4/3, the solution was derived by using a Poisson process model to approximate the incidence of child abuse. While this is a simplified approximation, it appeared to be the best available approach, given the constraints in the NIS–2 information base. The NIS–1 summary factors were 2.75 for all non-CPS agencies other than schools, and 1.99 for schools. The annualization factors for use in NIS–2 were computed from the NIS–1 summary rates as 3.63 for all agencies other than schools, and 2.52 for schools.

8.3 The Annualization Basis Study and NIS–3 Annualization

Admittedly, the principal problem with the annualization method that was used in the NIS–2 is that it was based on considerably outdated information about seasonal patterns. This limitation was recognized when the NIS–3 design was formulated, and that study included a special supplementary study to obtain updated information about CPS case patterns over the course of a full year—closely paralleling the information that had been available in the NIS–1.

The Annualization Basis Study was a retrospective study of reports to CPS. Each of the 42 CPS agencies in the NIS–3 sample was asked to provide a list of all 1992 reports on cases that were ultimately substantiated.

A systematic sample of reports was selected from each list, at rates chosen to yield a nearly self-weighting sample of approximately 2,000 reports across all 42 CPS agencies. Since the unit of analysis for this study was the family and reports were sampled, each CPS agency was recontacted and asked to identify, for each sampled family, all reports on their list relating to that same family. As it turned out, there were up to 9 reports on the same sampled family. This information was used to construct an analysis file containing one record per sampled family, with date and source of report, and number of children in the household for each separate report on that family, sampled or not. A family base weight equal to the inverse of the family probability of selection was computed, by taking account of the systematic nature of the sampling and the exact position in the frame of each report on that family.

Following the approach used in the NIS–1, the reports were classified into two categories based on the date of report to CPS, one category corresponding to the same seasonal period (September 5 to December 4) that defined the NIS–3 study data period, and the other category corresponding to the

remaining months and days of the year. Two annualization factors were computed from these data, one for schools (3.12), and one for all other sources to the study (3.87).

Unlike the NIS–1 annualization basis, which included all investigated cases, the NIS–3 annualization basis data were limited to substantiated cases. This was a result of the fact that many of the CPS agencies indicated that their policies required them to purge records on unsubstantiated cases and they would be unable to give a yearlong retrospective sample of such cases to the study. Note also that the NIS–3 approach shares an assumption with the NIS–1 approach: that the unobserved children who are only recognized by non-CPS sources have the same duplication patterns over the course of the year and in relation to the children who are reported to CPS.

9. REVIEWS, CRITIQUES, AND NIS MODIFICATIONS

This chapter highlights some of the key criticisms and recommendations for modifying the NIS methodology that have been offered since the first NIS findings were published. It begins by describing the contexts of the three most comprehensive review efforts, all of which have occurred during more recent years, since the NIS–2 findings were published. Subsequent sections topically organize and summarize a variety of criticisms and recommendations, both from the three organized review efforts and from other, more circumscribed commentaries, some of them offered after NIS–1 and prior to NIS–2. Each topical summary also briefly recaps responses as well as subsequent modifications of the NIS methodology, if any, that have attempted to address the issue.

9.1 Formal Reviews of the NIS Methodology

To date, there have been three formally sponsored, comprehensive and independent reviews of the Basic NIS Sentinel Study methodology. The first of these was conducted in 1989, when the Office of the Assistant Secretary for Planning and Evaluation (ASPE), in the Department of Health and Human Services, issued a contract for a review of the NIS–2 methodology to SysteMetrics/McGraw Hill and what was then the National Committee for Prevention of Child Abuse (now known as Prevent Child Abuse America).[26] The criticisms raised in that review were revisited before the NIS–3 was implemented, during the discussions by the Conference of Experts, the NIS–3 Advisory Board, and the NIS–3 Symposium, as described below.

The second review occurred at the outset of the NIS–3,[i] when the National Center on Child Abuse and Neglect arranged for CSR, Inc., to convene a large group of experts to review the NIS methodology and consider what further refinement of the study was both desirable and possible.[27] The attendees at this "Conference of Experts" included approximately 20 carefully selected professionals with expertise in child abuse in different domains, including research, social services, health, law enforcement, the law, and advocacy organizations. This group deliberated for more than 2 days and offered recommendations for refinements or improvements in three major areas: the core NIS methodology, the capacity of the NIS to address key policy questions, and the NIS database, analyses, and reporting of findings. Following this meeting, the NIS–3 Advisory Board devoted multiple meetings to deliberating the Conference of Experts' recommendations and offered guidance for NCCAN's final decisions

[i] This conference was held on October 30 and 31 and November 1, 1991, which was approximately one month after the award of the NIS–3 contract to Westat.

concerning the NIS–3 design. NCCAN's final decisions reflected the full range of potential outcomes—adding several independent studies to the NIS–3 project, rejecting some suggestions as outside the appropriate scope of the NIS, and taking other recommendations under advisement.[28]

The third and most recent review of the NIS methodology occurred at the NIS–3 Symposium meeting, which was held in February 1997, several months after the public release of the NIS–3 findings.[29] This one and a half-day meeting considered the NIS–3 approaches in connection to a number of the concerns that had been raised previously, revisited some older concerns, and raised some new issues for consideration.

Apart from these formally sponsored reviews, there have been occasional commentaries and publications that have voiced specific concerns, mostly in relation to topics that were also addressed in the three major forums. For clarity of exposition, the remainder of this chapter considers the different critiques and recommendations by organizing them under eight main themes: definitions, hidden duplication, samples, weights, coverage of uninvestigated children, interpreting changes across studies, policy implications of uninvestigated children, and usability of the NIS data.

9.2 NIS Definitions

Over the years, several issues have been raised about the NIS definitions. On the one hand, the early definitions were criticized as excessively stringent or overly narrow, excluding children whom many feel ought to be counted in the study estimates. On the other hand are those who have pointed out that the study's definitions are actually broader in some maltreatment domains than current CPS practice would include.

NIS Definitions Considered Overly Stringent or Too Narrow. As noted in Chapter 6, the NIS–1 Harm Standard definitions for the most part required children to have already suffered demonstrable harm in order to be included in the study estimates. Many children whose maltreatment is substantiated by CPS agencies have not experienced demonstrable physical or emotional harm as yet, consequently do not meet the Harm Standard criteria, and so were not counted as maltreated under that standard. The CPS substantiation in these cases typically hinges on the decision that the child is endangered by the acts or omissions of parents/caretakers. The endangerment vs. harm disparity is especially pronounced for CPS cases of physical neglect or lack of supervision, where CPS agency substantiation practices seldom key on whether or not actual injury has yet occurred.

Finkelhor and Hotaling also offered several explicit criticisms of the NIS–1 sexual abuse definitions.[30] They argued that the constraint requiring the perpetrator to be a parent, parent substitute, or other *adult* caretaker is too restrictive and suggested that the NIS should more clearly distinguish between cases where a parent or caretaker expressly committed the sexual abuse from cases where the parent or caretaker had *permitted* it. Their other suggestions were that the NIS attempt to code the ages of the children at the time of the onset of the sexual abuse and provide greater differentiation of the subtypes of sexual abuse.

To address these concerns, the Endangerment Standard was developed during the NIS–2. This revised definitional standard relaxed the harm criterion to permit cases to be counted when the maltreatment was substantiated by CPS or when non-CPS professionals judged that the maltreatment seriously endangered the health or well-being of the child. In addition, the Endangerment Standard relaxed the definitional standards concerning the identity of the perpetrators(s) of maltreatment in connection with several maltreatment categories: sexual abuse, inadequate supervision and other physical neglect. Note, however, that the continued requirement for the perpetrator/permitter to have a caretaker role in relation to the child remains as an important differentiation between NIS sex abuse cases and all other cases of sexual abuse of children.[i] To provide further clarity, the NIS–2 and NIS–3 evaluative coding structures differentiated whether parents or caretakers had actually committed the abuse or had simply allowed it to occur, and the tabulations of perpetrators in the reports on NIS–2 and NIS–3 findings included only those who had committed maltreatment.[31,9] Finally, the NIS–3 expanded the sexual abuse subcodes to distinguish different forms of intrusion.

NIS Definitions Considered Too Broad. There are some respects in which the NIS definitions have been broader than those used at many CPS agencies. This has been especially true in the areas of educational neglect, emotional abuse or neglect, and abuse or neglect of older children. These categories of maltreatment were all retained under both the Harm Standard and Endangerment Standard definitions in the NIS–2. The NIS definitions in these areas reflected, and were entirely consistent with, NCCAN's Model Act and authorizing legislation; the disparities were mainly between federal standards on the one hand and local CPS practices on the other. At the same time, the analyses of NIS data have generally differentiated the results for each of these categories, so conclusions can exclude these areas, as desired.

[i] Thus, the revised sexual abuse criteria were *not* so broadly enlarged as to include all third party sexual abuse, as Finkelhor and Hotaling would have preferred. Specifically, whereas the Harm Standard included only cases where adult caretakers directly perpetrated the sexual abuse, or where parents or parent-substitutes permitted sexual abuse to occur, the Endangerment Standard included cases where nonparental caretakers had permitted sexual abuse to occur as well as cases where teenage caretakers had perpetrated the sexual abuse.

After the introduction of the Endangerment Standard definitions in the NIS–2, that alternative standard has been criticized as being too broad or open, and as too subjective.[29] In fact, this consideration led analysts to focus solely on the Harm Standard data in a number of subsequent intensive analyses of NIS data.[32,33,34] Nevertheless, the motivating reason for formulating the Endangerment Standard still remains—the Harm Standard remains much more stringent than the definition of abuse and neglect that is applied by CPS agencies in substantiating abuse or neglect allegations.[29]

9.3 Hidden Duplication

As discussed in Chapter 5, the fact that the NIS–2 and NIS–3 have attempted to "cover" the maltreated child population by sampling non-CPS agencies and sentinels within them has allowed for the possibility of hidden duplication in the study estimates, which could add an upward bias. The SysteMetrics and NCPCA review of the NIS–2 was pointed in its criticism of the vulnerability of the NIS–2 in this regard.[26] The NIS–2 was especially vulnerable both because a full census of CPS cases was not obtained in the largest agencies and because the non-CPS agency samples were thin and widely spread. The reviewers of the NIS–2 methodology also noted that by relying on the older NIS–1 annualization information, the NIS–2 estimates may not have accurately reflected the current patterns of duplication over time. That is, the NIS–1 annualization figures might underestimate the repeat reports over the year and, in doing so, provide too high an annualization multiplier. Overall, these critics concluded that the magnitude of the upward bias in the NIS–2 estimates stemming from these various sources of unaccounted-for duplication was "virtually impossible to define." [i].

To avoid hidden duplication within CPS and between CPS and Non-CPS sources, the NIS–3 took a full census of all CPS cases in all counties on the short CPS data forms (as detailed in Chapter 4). Based on the NIS–1 experience, it was believed that this strategy would eliminate the majority of hidden duplication bias. In the NIS–1, where sampling was extremely limited so nearly all duplication was observable, duplication involving CPS (within CPS and between CPS and other agencies) was by far the most frequently occurring pattern. As described in Chapter 7, an additional effort was undertaken in the NIS–3 to quantify the extent of any remaining hidden duplication bias, by using the observed duplicates in the sample to estimate the occurrence of unobserved duplicates in the frames. This special study concluded that, even under a worst-case scenario (where the hidden duplicates would have all had weights equivalent to the highest weight associated with the observed duplicates), the remaining hidden duplication bias in the overall NIS–3 estimates represents a maximum of about 6 percent of the overall

[i] Daro *et al*.,[26] p. 9

Harm Standard estimate, and less than 4 percent of the overall Endangerment Standard estimate. Thus, the remaining hidden duplication bias in the NIS–3 estimates is relatively small in the context of the estimates themselves.

At the same time, the *Analysis of Hidden Duplication Bias* study indicated that there would be serious undercoverage of the maltreated child population, if one were to design the NIS so as to completely eradicate the *possibility* of hidden duplication by sampling in only one non-CPS agency category.[i] NIS–3 estimates under this approach would have been only 82 percent of what they were under the full NIS design, and only about 63 percent of maltreated children at the younger ages would have been represented.

As described in Chapter 8, the annualization method used in the NIS–3 was based on updated information, thereby avoiding the potential of inappropriate adjustments for duplication over time to distort the study estimates.

Thus, the NIS–3 addressed a number of the criticisms that were leveled at the NIS–2 concerning upward biases of the study estimates from hidden duplication and quantified the maximum amount of hidden duplication that might remain in the study, due to the use of sampling in multiple non-CPS agency categories. At the same time, the special NIS–3 *Analysis of Hidden Duplication Bias* explicitly described the trade-off between hidden duplication bias on the one hand and undercoverage of abused and neglected children on the other, by computing the reduction in coverage that would be expected if all potential for hidden duplication bias were eliminated by design. It is intriguing to note that, in large measure, hidden duplication appears to be a self-limiting problem in the context of the NIS design. This is because children who are recognized as maltreated by multiple non-CPS sentinels are probably more likely be among the CPS investigated cases. But in order for hidden duplication to exist, multiple non-CPS sentinels have to recognize a given child as being maltreated *without* CPS investigating that child's maltreatment.[29]

9.4 Samples

Whereas the NIS–1 sample underrepresented large counties, the NIS–2 and NIS–3 county samples have been accepted as appropriate. However, there was criticism that the NIS–2 representation of

[i] This assumed that the study would include very large counties. Also note that the analysis assumed sampling in only one non-CPS category per age group. (See Chapter 7 for details on use of schools for school-age children and use of hospitals for preschoolers.)

non-CPS sentinels had relied on samples that were "too thin."[26] As discussed in Chapter 5, the NIS–2 included many very large counties and was forced to draw non-CPS agency samples in the absence of any past experiences in these contexts that could provide guidelines. In contrast, it was possible to design the NIS–3 agency sampling plan more carefully, using the NIS–2 experience for guidance. Thus, the NIS–3 non-CPS agency sample was expressly designed for greater efficiency and precision.

Following the public release of preliminary NIS–3 findings, there were questions concerning the NIS–3 samples:[35] whether the NIS–3 estimates may have been substantially larger than the NIS–2 estimates because (1) the NIS–3 had used a larger sample of counties than used in the NIS–2; (2) the NIS–3 had deployed the non-CPS agency samples in a way that emphasized categories found to be more productive of data on maltreated children; or (3) the NIS–3 sentinels within agencies had been selected so as to better represent categories of professionals who were more likely to encountered suspected maltreatment cases.

These concerns reflected a misunderstanding of survey sampling methodology and traditional estimation procedures. All the samples at every level (county, agency, and within-agency sentinels) were designed in both incidence studies to accurately reflect the nation per se. Both the NIS–2 and the NIS–3 samples provided equally valid representation of the nation at their respective timeframes.[29] The fact that the NIS–3 included more counties means that its estimates can be more precise than the NIS–2 estimates (not necessarily different in magnitude). When one representative sample is larger than another representative sample (as the NIS–3 sample of counties was relative to the NIS–2 sample of counties), there is no impact on the size of the overall estimates from the two samples, but on the precision of the estimates in each case. Larger representative samples produce more precise estimates (estimates with more narrow confidence bounds) than do smaller representative samples.

In the NIS–3, an essentially same-sized sample of non-CPS agencies was more efficiently allocated across PSUs, agency categories, and sentinels within agencies. When a design oversamples more productive agencies and/or sentinels, these entities are sampled at higher rates than other entities and more data forms will be received into the study. However, when estimates are produced, the weights assigned to cases submitted by these highly-represented sources are computed to appropriately reflect their higher sampling rates (that is, each data form is given a lower weight than it would have had without oversampling—in essence, each maltreated child who is observed in the study is considered to represent fewer other maltreated children in the nation. As with the increase in the overall size of the sample, this more efficient deployment of the sample is expected to improve the precision of estimates, but it is irrelevant to the overall size of the estimates themselves. It should be recognized that there was nothing

in the NIS–3 design that precluded the NIS–3 estimates from being even lower than those found in the NIS–2, if the patterns in the population nationwide had indicated that finding.

9.5 Weights

Following the NIS–2, there were two major criticisms of the weighting approaches that had been used. First, the NIS–2 used annualization multipliers that were derived from the NIS–1 data. (See Chapter 8.) Thus, the NIS–2 relied on information from the NIS–1 concerning seasonality patterns and duplication over the calendar year, information that could well be seriously out-of-date six years after it had been gathered.[26]

Second, the NIS–2 had not obtained short CPS data forms in the largest counties, which meant that it could not directly identify and remove all duplicated cases within CPS and between CPS and non-CPS in those counties. To avoid inflating study estimates with hidden duplication, the NIS–2 applied an adjustment to the study weights that resulted in there being two weights for each CPS case—one for use when analyzing all countable children and one for use in analyzing children whose maltreatment was investigated by CPS. (See Chapter 7.) Critics wondered whether the weighting adjustments had been sufficient, and database users complained that the need to decide which weights were appropriate for a specific purpose complicated analysis efforts. Further, there were some analyses that were entirely precluded by the weighting structure in the NIS–2 public use file. In order to compute logistic models to predict whether or not CPS investigated a child's maltreatment, it was necessary reconfigure the original public use weights.[i]

To avoid use of outdated annualization information, the NIS–3 included a special study to obtain updated data on CPS cases over a full year, the *Annualization Basis Study* (Chapter 8). To ensure that all CPS data could be directly unduplicated both within itself and against the non-CPS data, the NIS–3 obtained short CPS data forms on all cases accepted for CPS investigation during the study data period (Chapter 7). However, other complications made it impossible to integrate all NIS data, both countable children and all CPS children, in the same weighting structure.[36] Anticipating complaints from users if a dual-weighting scheme were again provided in a single public use data file, the NIS–3 project team constructed two public use analysis files—one for analyses concerning all maltreated children and the

[i] In the original NIS–2 database, cases associated with sentinel agency categories in large counties had been assigned A-weights and B-weights. The A-weight was to be used for CPS-only estimates and analyses; the B-weight was for estimates and analyses concerning all maltreated children (i.e., involving cases that spanned the investigated and noninvestigated cases). The estimates concerning numbers of children not known to CPS were originally obtained by subtraction. However, in order to use logistic regression with the data, each child's record had to be uniquely identified as either "investigated by CPS" or "not investigated by CPS"—i.e., the latter category had to be derivable directly from the weighted case data (not simply by subtraction). To address this need, Westat statisticians developed a C-weight database.[32]

other for analyses concerning all children who were subjects of CPS investigation. It should also be noted that, unlike the situation in the NIS–2, no analyses were precluded in the NIS–3 data.

9.6 Coverage of Uninvestigated Children

At the opposite side of the spectrum are concerns about downward biases or undercounts of the maltreated child population. With each implementation of the NIS, the issue concerning the adequacy of non-CPS coverage is revisited. Suggestions for improving non-CPS coverage fall into two general arenas: to increase the categories of non-CPS sentinel agency categories that are represented and to add a general population survey to the NIS to tap maltreated children who have not come into the study through any of its existing sources and may not be observable through any agency sources.

Expand the Representation of Non-CPS Sentinel Agency Categories. As discussed in Chapter 5, the Non-CPS sentinel agency categories were first formulated in the NIS–1 on the basis of a large pretest of the methodology in eight counties. When the NIS–2 was conducted, researchers who noted the lower incidence of maltreated children in the younger, preschool age groups suggested enhancing the types of sentinels who observe these groups. As a result, the NIS–2 and NIS–3 sample designs included day care centers as a separate non-CPS sentinel agency category. Given the importance of school sentinels as a source of maltreated children outside of those known to CPS, concerns have also been raised about the potential undercoverage of older children who are not regularly attending school.

The possibility of including additional agency categories was further explored in the NIS–3 through the separate *New Sentinel Agency Categories Study*, which was summarized earlier. (See Chapter 5.) This will not be reiterated here, except to note, first, that the potential of pediatricians as sentinels has now been explored and rejected twice during the NIS history and, second, that the study concluded that future NIS implementations should add two new agency categories—public housing authorities and shelters for runaway youth and battered women, both of which provided information about maltreated children not otherwise observed through NIS data sources.

General Population Survey. On every implementation of the NIS, serious consideration has been given to incorporating a general population survey to identify children at lower levels of the "iceberg." (See Figure 2–2.) Table 9–1 schematically presents the coverage limits of the NIS design, and is helpful in understanding the coverage gap that a general population survey would fill.

Table 9–1. Conceptual Framework Showing NIS Coverage of Recognized Maltreated Children

Recognition Source	CPS Investigation Status	
	Investigated by CPS	Not Investigated by CPS
Recognized by NIS Sentinels (professionals in hospitals, schools, law enforcement agencies, day care centers, etc.)	*Quadrant 1* Covered by NIS	*Quadrant 2* Covered by NIS
Recognized by Others (e.g., family, friends, neighbors, etc.)	*Quadrant 3* Covered by NIS	*Quadrant 4* NOT covered by NIS

The table illustrates the NIS design in relation to a four-quadrant categorization of the full population of children who are recognized as maltreated. The NIS represents only children whose maltreatment is investigated by CPS agencies and, beyond those, children whose maltreatment is recognized by sentinels in specified categories of community agencies. A broad spectrum of potential reporters of maltreatment are not represented among the NIS sentinels, including physicians, therapists, and social workers in private practice and the family, friends and neighbors of maltreated children.

Recognizing that a survey of the general population has the potential of identifying a larger sector of the maltreated child population because it would delve deeper into the "iceberg" of this population, each successive national incidence study has, at some point, included a general population survey component.

During the NIS–1, a survey of parents was designed and pretested, but it was not included during the implementation of the main study. The interview questionnaire was formulated with two major sections—the first pertaining to the general health and safety of children in the household, and the second including questions relevant to the major categories of abuse and neglect. Two modalities were examined, telephone interviews and in-person interviews, with follow-up questions to acknowledgements of abusive or neglectful behavior only included in the telephone interviews.[i] The parent interviews were conducted in the same counties where the sentinel methodology was pretested, but the results of the two

[i] The followup questions were designed to ascertain the two key criteria of the NIS–1 Harm Standard definitions—parental culpability and actual harm to the child. They were not included in the in-person interviews because of legal and ethical concerns about interviewers becoming aware of reportable abuse or neglect. The abuse and neglect questions in the in-person interviews were administered by having respondents answer confidentially on notecards, while the interviewers read the questions aloud. Under these conditions, it was not possible to ask about circumstances following an affirmative answer, since the interviewers were unaware of whether respondents had answered affirmatively or negatively.

methodologies were not directly integrated. In the in-person modality, 1,273 dwelling units were listed and screened to identify 373 eligible households (with children in residence during the study data period),[i] in which 32 children were reported as potentially maltreated based on parents' affirmative answers to one or more of the abuse/neglect questions. The limited information obtained in the in-person interviews meant that the countability of these children under the Harm Standard definitions could not be determined. In the telephone modality, 1,527 random telephone numbers were called to identify 341 eligible households, in which 21 children were reported as potentially maltreated. When the answers concerning parental culpability and harm were examined, none of these children were countable under the Harm Standard definitions. These disappointing results led the NIS–1 project team to conclude that, while the general population survey of parents was feasible, it was not effective in identifying any additional countable children to the study. It appeared that parents who offered affirmative responses concerning potentially abusive or neglectful situations had submitted trivial, noncountable cases, quite different from the cases submitted by the community professionals who were pretested as sentinels in the same locales.[ii] In the face of these disappointing pretest results, the general population survey of parents was not pursued in the NIS–1 main study.

At the time of the NIS–2, there were plans to attempt a general population at the outset. In the interval since the NIS–1 pretest of a parent survey, findings of several other investigators indicated that it would be possible, with a well-designed interview instrument, to identify far more cases in a telephone survey than through the Basic NIS Sentinel methodology.[37,38,39,40] The NIS–2 Request For Proposals (RFP) asked offerers to include such a study in their proposals, and a general population survey was part of the study plan at the time the NIS–2 contract was awarded. Following contract award, the NIS–2 research team designed a general population survey and prepared the supporting document for the OMB application. The instrument took a different approach than was used in the NIS–1 parent survey, focusing instead on care and discipline of the children in the household. It included a broad array of questions intended to assess countable occurrences of all forms of abuse and neglect. However, serious concerns about the validity of the self-report data that would be gathered led NCCAN to drop plans for this survey at this stage, after the draft instrument and OMB supporting document was completed. DHHS never submitted the application for the general population survey to OMB for clearance and it was not pursued further.

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[i] The study data period for this Parent Survey pretest was October-December, 1977.

[ii] In marked contrast to the sentinel survey findings, parents primarily reported emotional abuse and educational neglect during the general population interviews, and offered no positive responses concerning sexual abuse or inadequate food, clothing, shelter, or supervision. It was suspected that some parents had not reported on maltreatment that had actually occurred, but the pretest did not assess response validity as had originally been hoped. (The NIS–1 project team was unable to establish arrangements for "salting" the pretest samples as they had initially planned).

Finally, when the RFP to conduct the NIS–3 was issued, it explicitly asked for a general population survey component. However, NCCAN decided to eliminate this component during the negotiations for best and final bids, prior to the award of the NIS–3 contract, and a general population survey was never part of the NIS–3 effort.

Thus, across the three national incidence studies, plans for a general population survey have been dropped at successively earlier stages in the project. It should be noted that a NIS general population survey was always regarded as providing an *alternative estimate* to that developed through the Basic NIS Sentinel methodology. That is, in both the NIS–1 and NIS–2 plans, the parent survey component was viewed as a supplementary approach. It would not be a replacement for the Basic Sentinel Study, and the results of the sentinel survey could not be directly integrated with the results of the general population survey. For the two components to be fully integrated, they would need to provide a combined, integrated estimate of the number of maltreated children, and that can only be achieved if they are conducted in the same locales (e.g., counties) and all the children identified through both components are unduplicated in an integrated database. To date, a solution for achieving this type of full integration has not been found, because it would mean compromising respondents' perceived anonymity in the parent survey in order to obtain the data needed for unduplication (child's first name, last initial, date of birth, etc., as given in Chapter 7). By default then, the general population survey would only provide a stand-alone estimate of the incidence of child maltreatment. It has been noted that this might parallel the alternative data systems in the area of crime (the Uniform Crime Reports and the National Crime Victimization Survey), where, despite the independence of the indicators, the systems yield worthwhile information.[29]

Nevertheless, because a general population survey would reduce the scope of the Basic Sentinel Study that could be supported for the same total cost,[i] and in view of ongoing concern about the validity of the resulting self-report data, it has not garnered sufficient support to be incorporated into any NIS effort. At the same time, researchers[41,42] have continued to express concern about the number and kinds of maltreated children who are left out of the NIS because the study does not attempt to include children unknown to CPS outside of those seen by the sentinel categories. While there has always been tension at the boundary of NIS coverage, as evidenced by the repeated efforts to explore other potentially

[i] Additionally, the costs of the general population survey would be considerable because of the large sample size needed for adequate precision, given that child abuse and neglect are relatively infrequent occurrences in the general child population.

relevant sentinel sources, there has as yet been no satisfactory resolution of the difficulties of integrating data from the general population.[i,43]

9.7 Interpreting Changes Across Studies

Ever since the NIS–2 findings were reported, providing a measure of changes since the NIS-1, researchers, policymakers, and practitioners have debated about whether the observed increases reflect true changes in incidence (i.e., in the actual occurrence of abuse and neglect) or only increases in recognition (i.e., heightened awareness or sensitivity).

Both the NIS–2 and NIS–3 findings reports have treated this issue, considering the increases at different severity levels to arrive at somewhat different conclusions. In the NIS–2, the fact that the increase in countable maltreatment occurred principally for cases involving moderate injury suggested that increased recognition on the part of sentinels provided a more plausible explanation for the findings than an increase in the actual occurrence of maltreatment (i.e., in incidence per se). This conclusion was based on the assumption that cases that involve highly noticeable harm, such as fatal or serious injury/impairment would have been recognized at close-to-ceiling level at the time of the NIS–1, so their numbers would not have appreciably increased as professionals improved their ability to recognize abuse and neglect. Cases involving moderate injury, however, would increase with improved recognition. Thus, the differences between the NIS–1 and the NIS–2 were consistent with the interpretation that professionals had become better attuned to the cues of maltreatment, particularly in cues of moderate injury.[19]

In the NIS–3, the fact that the increases occurred at the two extremes of the injury continuum—among children who were seriously injured and among children who were endangered—suggested that increases in both true incidence and recognition contributed to the observed increases, with each dynamic affecting a different sector of the abused and neglected population. The NIS–3 report concluded that

> The rise in the number of seriously injured children probably reflects a real increase in child abuse and neglect, because it cannot plausibly be explained on the basis of heightened sensitivity. It is unreasonable to suppose that quadruple the number of seriously injured victims of abuse and neglect existed at the time of the NIS–2 and somehow escaped notice by community professionals.[20]

[i] Ards, Chung, and Myers (1998, 1999) characterized the exclusion of children recognized by the general population who are not known to CPS as a "bias." We have argued (Sedlak, Bruce and Schultz (in press) that this exclusion is more appropriately termed a "coverage limit" of the NIS. It is a freely admitted limitation of the NIS design and always has been.

On the other hand, the NIS–3 report also concluded that the rise in the number of endangered children probably derived from improved recognition of more subtle cues—those that indicate abusive and neglectful behaviors that have not yet resulted in harm or injury. This explanation was considered plausible, not only in the context of the subtlety of the cues involved, but also because it completed an account of consistent progression in recognition across the three national incidence studies. The NIS–2 had demonstrated an increase in the number of moderately injured children—ascribed to improved attentiveness to moderate-injury indicators of abuse and neglect. The NIS–3, which found no statistical increase in moderately injured children, revealed a fourfold increase in the number of endangered children—plausibly explained by assuming that further improvements in recognition had occurred in connection with the even subtler cues associated with not-yet-injurious abusive actions and neglectful omissions.[20]

Nevertheless, despite appeals to the plausibility of different inferences, there are no data that bear directly on whether shifts in recognition or changes in incidence underlie observed changes in estimates across studies. The ambiguity of the study data on this point received considerable discussion during the NIS–3 Symposium, and was at the crux of arguments that questioned whether the NIS–3 findings reflected real changes in incidence.[44] One would expect that "Professionals who become more sensitive to possible abuse, or more adept at noticing it, would make more reports to Westat—even if the actual incidence had not risen."[44] Some have noted that heightened sensitivity need not be limited to enhanced attentiveness to cues of injury, but could also be evidenced in an increased willingness to ascribe observed symptoms to maltreatment.[29]

There are no data allowing comparison of the sentinels from study to study in terms of their characteristics or perceptions. One suggestion has been to index sentinels' perceptions and decisionmaking standards by having them rate a standard set of scenarios to provide a basis for "calibrating" differences in perceptions across studies on a common scale.[29]

In a related vein, reviewers have wondered about coder consistency across the studies in their methods of rating injury severity and applying the definitional standards. However, given the constraints of the coding system itself, this was considered unlikely. More plausible was the possibility that sentinels were more willing to describe a child as "endangered" in the NIS–3 than they were in the NIS–2, although here again, there are no data that bear on the question.[29]

The fact that the NIS relies on the perceptions of sentinels makes its estimates vulnerable to some amount of subjectivity even when the Harm Standard definitions are used, although to date no one has proposed a satisfactory alternative.

9.8 Policy Implications of Uninvestigated Children

One of the greatest strengths of the NIS is its capacity to assess the national scope of the abused and neglected child population independent of whether the children have been seen by the child protective services system, while at the same time delineating what portion of the maltreated child population is and is not seen by CPS. From the outset, the policy relevance of such information was recognized. The NIS essentially provides a "national needs assessment" that indicates the numbers and types of maltreated children who are not receiving CPS attention.

Despite the evident relevance of the NIS information, however, the implications of the NIS findings are not straightforward. This is because the maltreated children whose maltreatment is not investigated by CPS represent an enigma to the study: it is not possible to determine the reason they were not investigated. The NIS only obtains sufficient information to conclude that they were not among the children investigated by CPS (or that they were merely listed as uninvolved children during a CPS investigation of their family). The information gathered for the study does not address whether a child was not investigated by CPS because no one reported the child as a suspected victim or because CPS screened out the child's case prior to investigation. As a result, the implications of the NIS findings for policy and practice remain ambiguous[i]—should interventions target reporting practices of community professionals, CPS screening practices, or both?

Note that this question cannot be resolved within the context of Basic NIS Sentinel Study. On the one hand, although it has been suggested on numerous occasions that the NIS should simply add a question to the data forms, asking the non-CPS sentinels whether or not they reported the case to CPS, this suggestion has always been rejected. Doing this would certainly affect the natural reporting behaviors of the sentinels and thereby render the NIS findings on uninvestigated maltreated children unrepresentative. On the other hand, many CPS agencies do not maintain the records on cases screened out without investigation that would be necessary to unduplicate these screened out cases against the cases submitted to NIS by non-CPS sentinels. While the question may not be directly answerable within the main NIS study, reviewers of the NIS methodology have suggested that it would certainly be useful to

[i] For this reason, the most recent NIS reports do *not* use the phrase "reporting rate," but instead refer to "CPS investigation" of the children. The NIS–1 report did use the phrase "reporting rate," but that is misleading for the reasons discussed here. The NIS–2 reports attempted to clarify this by variously referring to "CPS awareness" of the children, or to children who were "officially known to CPS," but those labels could have been misinterpreted to refer to all reported cases, whether or not CPS accepted them for investigation. The NIS–3 reports used the phrase "CPS investigation" because it more clearly indicated that screened-out cases are not included, despite the fact that CPS had been made aware of them to some extent.

study the screening policies of the CPS agencies, as well as the various sentinel agencies, in NIS counties.[26]

This was the motivation for two of the special NIS–3 substudies, the results of which are described in independent reports, as mentioned in the Chapter 1—the *Sentinel Questionnaire Follow-up Study*[16] and the *CPS Screening Policy Study*.[17]

The *Sentinel Questionnaire Follow-up Study* was undertaken to determine how nonreporting contributes to the large percentage of countable children whose maltreatment was not investigated by CPS. The study focused on sentinels in schools, because the NIS has consistently found that these sentinels see the majority of maltreated children who are not investigated by CPS.[i] The *Sentinel Questionnaire Follow-up Study* was an independent mail survey of school sentinels who had participated in the NIS–3, and it concentrated on identifying barriers to reporting suspected cases of child maltreatment.[ii] Key findings were that more than one-fourth of the school sentinels had not received (or had not remembered receiving) any written information about reporting requirements that affected them, and nearly one-half had not attended any workshop that included information on their State's reporting requirements. These findings were consistent with those of other researchers who had examined this question.[45,46,47,iii] The *Sentinel Questionnaire Follow-up Study* found that a substantial minority of sentinels in schools (40%) claimed to work under policies that, while not explicitly involving a blanket prohibition against reporting suspected cases directly to CPS or to the police, did not require such direct reporting. Instead, it was commonplace for sentinels to report school policies that merely required them to report suspected cases to designated school officials. This documented the potential for school officials to act as "gatekeepers" in the reporting process, a dynamic that had been anecdotally reported to NIS–2 researchers by school sentinels in that study and that conforms with the findings of other researchers as well.[48]

The *CPS Screening Policy Study* examined the screening policies of the 42 CPS agencies that participated in the NIS–3. Interviews with CPS administrators and supervisors who were knowledgeable about intake procedures were conducted during the *Basic Sentinel Study* data period. Every CPS agency reported that it screened out some subset of cases, which was consistent with the

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[i] The NIS–2 found that nearly three-fourths (74%) of the children who fit the Harm Standard were recognized by sentinels in schools. In the NIS–3, school sentinels recognized more than two-thirds (68%) of the uninvestigated maltreated children.

[ii] The survey was mailed to 4,402 NIS–3 schools sentinels, and achieved a 64 percent response rate. The survey was returned anonymously, and so the data were not weighted in any way, nor could the responses be directly linked to the main NIS–3 study data.

[iii] Abrahams, Casey, and Daro[45] conducted their survey with teachers from a purposive subsample of 40 of the school districts that had participated in the NIS–2.

findings of other researchers.[49] Some agencies acknowledged that they vary their screening standards in response to workload, reiterating the results of Westat's earlier *Study of High Risk Child Abuse and Neglect Groups*.[50] In conclusion, the *CPS Screening Policy Study* found that CPS screening policies policies and practices could have contributed to the main NIS–3 finding, that many children who are counted as maltreated under the NIS definitions did not receive CPS investigation.

9.9 Usability of the NIS Database

Researchers have expressed various complaints about the NIS database: it is difficult to use, there is a considerable amount of missing data, using the weights poses an impediment to prospective analysts.[26,51]

All NIS public use files are accompanied by a manual that summarizes the study design and indicates the variable names and codes in the file. To provide more in-depth guidance in response to analysts' requests, the National Data Archive on Child Abuse and Neglect (NDACAN) constructed a separate user manual to supplement the NIS–2 public use code manual.[52] The NIS–3 *Public Use Files Manual* provided much more detailed guidance than had the NIS–2 (or NIS–1) manuals, including step-by-step instructions for sample analyses.[36]

In addition to providing enhanced documentation, NIS project staff and NDACAN staff have jointly offered a number of workshops and training sessions for potential NIS users.[53,54,55,56,57,58,59] The NIS data are complex in that, although all records have been transformed to the child level, each child's record indicates multiple forms of maltreatment (up to three), and each form of maltreatment is associated with codes that indicate its countability, the severity of any resulting injury or harm, and who the perpetrators were (up to four perpetrators are identified for each form). The characteristics of parents and of others who were involved as perpetrators of maltreatment are also provided on the child's record, in fields that are not associated with the details of maltreatment forms. Analyses of the data are complicated by the need to construct derived variables in order to address the questions of interest. For instance, to estimate the number of physically neglected children who are seriously injured:

- the three variables indexing the different forms of maltreatment must all be examined to identify those with codes that reflect any of the subtypes of physical neglect;
- for any form(s) of physical neglect on the record, the associated countability code(s) must be examined;

- for any countable physical neglect form(s) on the record, the associated severity code(s) must be examined.

Many of the derived variables that were required to produce the tables in the NIS–3 final report are included in the NIS–3 public use tape. However, given the richness of the information on the public use tape, the myriad ways in which different forms of maltreatment can be grouped, and the variety of research questions that might be asked of the data, most researchers will still need to develop new derived variables to address their own particular needs.

Some of the past complaints about there being "a large amount of missing data" in the NIS stemmed from misunderstandings about the coding system—up to three forms of maltreatment were coded for a child, but this meant that, for many children, only one or two forms of maltreatment were coded. Also, the NIS public use file conjoins data that come from two types of data forms—CPS long forms and Non-CPS data forms—and some data items are only obtained on one type of data form (e.g., items about CPS case processing, such as whether there were any past substantiated reports on the family, are only found on the CPS forms). Finally, researchers who attempted to analyze data on children who were not countable under the NIS definitions have been frustrated by substantial missing information on these children.[i]

Beyond such misunderstandings, however, certain data items do have a notable amount of missing information, generally because the sentinel did not know the information about the family. Among the 5,427 NIS–3 children who were countable under the Endangerment Standard, 40 percent were missing information about household income[ii] and 7 percent were missing information about the number of other children in the household. Other data items had much lower rates of missing information (e.g., only 3.4% were missing child's race/ethnicity, 1.9% child's age, 1.3% child's sex, and 1.1% single-vs.-both-parent status information).

Finally, the need to use sampling weights generated a number of complaints and some analysts argued that it was not necessary to use weights if one were simply interested in identifying relationships within the NIS data, pointing out that this was defensible as long as the weights are not a function of the dependent variable.[51] The problem with this stance, however, is that there are serious problems with assuming that the NIS weights are independent of variables that are of analytic interest,

[i] The NIS databases include all CPS long form children and all children submitted on non-CPS data forms, regardless of whether they were judged to be countable during the evaluative coding procedures. It is not surprising that children with substantial missing information were often not countable—given that there is missing information about the characteristics of these children and their family circumstances, there is also likely to be insufficient information concerning the various countability criteria.

[ii] It should be noted that this degree of missing information about household income is not atypical in survey research.

especially since fatalities were oversampled (i.e., taken with certainty) and different sentinel groups (which are sampled at different rates) may well tend to encounter different types of abuse and neglect.[60] Although statisticians disagree about whether it is always necessary to use weighting information in regression analyses,[61,62] there is consensus on the need to take sample design factors into account in the model in order to obtain meaningful results—at least if such factors are likely to be related to the outcome of interest.

Any significance tests on the NIS data must use a method for computing variance that is appropriate for the NIS multi-stage sample design—meaning that standard statistical packages cannot be used. Standard statistical packages assume that the data derive from simple random samples with the elements of the sample statistically independent of each other. However, as described in Chapters 2 through 5 above, the NIS uses a multi-stage sample design that involves clustering of CPS cases within counties, as well as sentinels within non-CPS agencies, and non-CPS agencies within counties, so there is a considerable degree of covariance in the NIS data. In order for significance tests to yield meaningful results in this context, users must take special measures to compute unbiased variance estimates.[63] Otherwise, findings will be distorted by the misspecification effect.[64] This effect varies with the specific analysis in the NIS data, meaning that there is no simple "fix" for it in the context of standard statistical packages.

To facilitate appropriate analyses of the NIS data, a replication method, jackknife, was used to estimate the sampling variance. This method provided unbiased estimates of variance in multi-stage cluster sample designs.[65]

The NIS public use files provide the full sample weight and the replicate weights on every child's record.[i] Westat has developed a software package, WesVar,[66,67] that makes use of these weights appropriately in computing the variance on estimates and calculating significance tests. Step-by-step sample analyses using WesVar are given in the NIS–3 *Public Use Files Manual.*[36]

[i] The original public use files on the NIS–1 did not provide replicate weights. In fact, the NIS–1 findings report did not provide sampling errors or confidence intervals on estimates. Replicate weights for NIS–1 data were developed at the time of the NIS–2 analyses, to support comparisons of estimates across the two studies, and are provided in the NIS–2 documentation.

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