

COVERAGE IMPROVEMENT OF TERMINAL KINDERGARTEN PROGRAMS FROM ALTERNATIVE SOURCES IN THE PRIVATE SCHOOL SURVEY

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I. Introduction

This paper discusses efforts to represent kindergarten programs in the universe of private elementary and secondary schools developed by the U.S. Census Bureau for the National Center for Education Statistics (NCES). This private school universe was initially developed in 1987, and was subsequently updated six times with the seventh update currently in progress.

The private school universe before 1993 included kindergarten programs only if they were a part of a school containing any of grades 1-12. In 1993 the NCES asked the U.S. Census Bureau to expand the private school universe to include programs where kindergarten is the highest grade. We call these programs K-terminals. (For more details on K-terminals, see the explanation of Early Childhood Care programs and K-terminals in section II.)

This paper provides details of an alternative frame approach in the Private School Survey (PSS) that significantly increased our coverage of K-terminal programs (and, to a lesser extent, the coverage of programs containing a kindergarten and one or more higher grades) during the last two universe list frame updating operations.

II. Background

Every two years the PSS (which is actually a census) collects and reports data on private schools that are comparable to public school data. It builds as accurately and completely as possible a universe list of private schools from which we can select samples for a variety of NCES surveys of private schools.

The private school universe is defined as including all private schools that provide instruction for at least one of grades 1-12, have one or more teachers, are not administered by a public agency, and are not operated in a private home. This traditional private school universe consists of two coverage improvement operations -- List

Frame updating and Area Search Frame updating. List Frame updating is a national coverage improvement operation designed to locate private elementary and secondary schools not already on the existing private school universe. The updating operation uses lists from private school associations, the 50 states plus Washington, D.C., and sometimes private vendors. Area Search Frame updating is a coverage improvement operation consisting of an independent search in a nationally representative sample of counties. This operation locates private schools still missing from the private school universe after completion of the list frame updating.

In 1993-94, we began to collect information on K-terminal school programs and to build a K-terminal frame for use in NCES surveys interested in these types of private schools, specifically the Early Childhood Longitudinal Survey (ECLS). As lists were collected from the states and associations, we identified and separated those programs that contained, at most, a kindergarten. (Programs with a kindergarten and one or more higher grades went into the traditional list frame.) A kindergarten (KG) is a program providing instruction primarily for 5-year-old children who will enter first grade in the upcoming school year. This includes transitional KGs and transitional first grades if these children are expected to enter first grade upon completing these programs. Some of these K-Terminal programs may contain nursery or preschool age children.

In the 1995-96 list frame updating operation we added an alternative frame approach that collected lists of early childhood care programs from state day care licensing agencies and private child care resource and referral organizations. An Early Childhood Care program (ECC) is a center-based program for young children (generally 3-5 year-olds). These include preschools, prekindergartens, day care centers, nurseries, and other early childhood programs. A number of ECCs also provide a KG and, sometimes, higher grades. For the PSS, only programs containing a KG (or higher) grades are in-scope.

We felt this alternative frame would improve the coverage of K-terminal programs in the list frame private school

¹This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone a more limited review than official Census Bureau Publications. This report is released to inform interested parties of research and to encourage discussion.

universe and, to a lesser extent, the coverage of schools containing a KG and one or more higher grades.

III. List Frame Kindergarten Coverage Rates

Table 1 shows the list frame coverage of K-terminal programs, programs with KG and a higher grade, and the overall KG coverage for three of the private school universe updating operations: 1993-94, 1995-96, and 1997-98. The coverage rate is the ratio of list frame schools to the combined list frame and area frame schools and indicates the extent of undercoverage of schools in the list frame.

Table 1: Percent Coverage of List Frame Schools with Kindergarten

	1993-94	1995-96	1997-98
K-terminal	32%	57%	87%
KG and higher grade	90%	93%	95%
Overall KG	73%	83%	93%

Our initial effort in 1993-94 produced a coverage rate of 32% for the K-terminal programs in our list frame. In the 1995-96 updating operation, we added an alternative frame that improved the coverage of K-terminal programs to about 57% for the list frame. Additional improvements in the 1997-98 list frame updating operation improved the coverage of K-terminal programs to about 87% of our area frame universe estimate.

The coverage of programs in the list frame containing KGs with one or more higher grades made a small, yet significant increase. In 1993-94 the universe had a coverage of 90% of the KGs with a higher grade. This rate increased to 93% in 1995-96 and to 95% in 1997-98.

Of course, the overall KG coverage increased as well. In 1993-94 the overall coverage of KG programs on the list frame universe was 73%. In 1995-96 the overall KG coverage rate increased to 83%. This coverage rate increased to 93% in 1997-98.

Note on Sampling Error - The standard error is a measure of the variability due to sampling when estimating a parameter. It indicates how much variability there is in the population of possible estimates of a parameter for a given sample size. For PSS, only the area frame contributes to the standard error. The list frame component of the standard error is always zero (0). We did not compute standard errors for all of the area frame statistics presented

here. In 1995-96, when we first computed it, the standard error for the K-terminals was about 4%. The KG and higher standard error was about 1%. Standard errors for 1997-98 are not available.

IV. The 1993-94 PSS List Frame Updating

The 1993-1994 PSS was the initial attempt to add K-terminal programs to the private school universe. For this first effort, we made only minor modifications to our traditional procedures for collecting private schools.

The 1993-1994 strategy involved collecting both pre-kindergarten (pre-K) and KG programs in the list frame, reinstating out-of-scope programs (i.e., programs identified as pre-K or KG in 1991-92), and collecting pre-K and KG programs in the area frame. We hypothesized that some programs identified as pre-Ks may also include KG instruction so we collected pre-Ks to test this theory. An analysis of the 1993-94 results indicated that so few of the pre-Ks actually have a KG that it was not worthwhile to collect and include pre-Ks on the universe. The three parts of our strategy are described next.

When we contacted the sources (states and associations) requesting their lists of private schools, we asked them to include programs where kindergarten is the highest grade in addition to the traditional schools containing grades 1-12 that they had provided in previous PSS cycles. We then processed these pre-K/KG programs similar to the way we processed traditional list frame private schools. Using this strategy, we obtained about 1,900 KG program births from the traditional list frame.

The second part of our strategy was to reinstate the out-of-scope programs from the 1991-92 PSS that contained grades pre-K or KG. Previously, the PSS identified these programs as out-of-scope and excluded them. We believed that pre-K programs from previous years had the potential to contain a KG in the current year. By reinstating these programs, we obtained about 600 in-scope KG programs out of about 2,500 1991-92 out-of-scope cases.

The third part of our strategy was to collect pre-K/KG programs in the area frame. In our area frame operation, we identified approximately 17,000 programs as early childhood care programs containing a pre-K or KG. This unexpected workload was unmanageable from both budgetary and timing points of view so, for data collection, we sent questionnaires to a subsample of 5,979 of these programs. After tabulating the interview results, this operation added a weighted count of 5,231 pre-K and KG births.

The poor coverage rate of only 32% for K-terminals in the list frame indicated that our 1993-94 strategy was inadequate so for the next updating cycle we developed an alternative frame approach.

V. The 1995-96 PSS List Frame Updating

For the 1995-96 PSS we expanded our effort to include K-terminal programs in the universe by adding an operation parallel to our traditional list frame operation. The NCES felt that states may have lists specifically for Early Childhood Care (ECC) facilities. These facilities sometimes include KG programs. To track down these additional or "alternative" lists of ECCs, the NCES and the U.S. Census Bureau contacted our state department of education sources, as well as state health departments or social service agencies, to ask for possible sources of alternative lists containing kindergarten programs.

The results of this effort to find alternative lists for kindergarten programs achieved partial success and looked promising for future updating efforts. Most of the states either claimed that they had no lists for ECCs or no lists other than the lists they provided for the traditional list frame operation. Only eight states provided new lists of ECCs containing adds to the private school universe. Most of these new lists were from state agencies that license day care programs. Half of these lists were highly productive (i.e., they added a relatively high number of schools containing KGs to the universe.)

Overall, the coverage of K-terminal programs in the list frame increased to 57%. While this was a significant increase from the rate of 32% in 1993-94, the number of states providing separate lists was disappointing. After reviewing our experience, we felt that lists of ECCs probably did exist in many of the states but that we were not successful in contacting the appropriate sources.

VI. The 1997-98 PSS List Frame Updating

Our 1995-96 experience led us to an extensive search on the Internet for state agency contacts, such as day care licensing agencies, or other private organizations that may have lists of ECCs. We were successful in obtaining contacts which provided more lists. Unfortunately, we still had problems trying to collect lists from these kinds of contacts:

- Many states did not have a central agency that kept a list of ECCs. Sometimes county or regional agencies within a state maintained lists, which made it very hard to obtain a comprehensive list for a state. In a couple of states, private child care resource and referral organizations cooperated in providing us with

lists. However, most of these private organizations were reluctant to help because they were concerned that their lists would get into competitors' hands.

- Some states could not give us a list, or if they did, some of the files were not in a compatible format and required extra time and manipulation before they were useable.
- When contacts at the agencies were asked if their lists were any different from the traditional lists the U.S. Census Bureau collects from the state departments of education, many said no. We suspect that some may have misunderstood the question and really did have lists that were different from the department of education lists.

Another difference in the alternative lists when compared to the traditional lists is that half of the alternative sources asked for money to provide their list. While this was not a problem, it did involve the extra work of setting up a system by which the U.S. Census Bureau could pay the agencies.

In the 1997-98 PSS we received lists from 30 state day care licensing agencies or private child care resource and referral organizations. Processing these ECC lists was more challenging and more costly than processing traditional lists. Some of the reasons they were more challenging are:

- The size of the ECC lists is usually much greater than the size of the traditional lists because these agencies frequently license other types of day care, such as family and adult day care. Some agencies sent files that even included all of the licensed babysitters in the state. Thus, the lists typically contain a large number of out-of-scope programs. For example, in 1997-1998 the 30 lists contained about 95,000 total ECC programs. (In comparison, the state and association lists for the 1997-98 traditional portion of the list frame contained about 54,000 total schools.)
- The nature of the lists varied widely among the states. They did not always have helpful information such as grade ranges, ages, number of children, or type of ECC (family, group, or center based) included on their lists. Not all of the agencies that sent a computer file sent it as an ASCII file. This caused some problems when trying to make it useable. (Note: In 1995-96 we automated a portion of the matching operation. Computer files in a useable format allow us to make maximum use of this automation and save money on processing.)

- To determine the true in-scope or out-of-scope status of many of the early childhood programs, it was necessary to contact the program and ask. This meant a substantial number of phone calls. In the 1997-1998 ECC operation, our clerical staff called nearly 24,000 programs. (In the 1997-98 traditional operation, they made only about 2,900 calls.) Some programs could not be reached, either because they were no longer in existence or they were not returning the calls. Also, timing constraints made contacting some of the programs impossible.
- Not all contacts could provide a list to meet our scheduled dates, so some lists came at a later date.

The above mentioned challenges resulted in a few changes in procedure. The major changes were:

- We processed the ECC lists in two waves - an 'early' ECC and a 'late' ECC. As a result, we had to do some steps twice. We also had to add an operation that compared the new schools found in each wave to eliminate duplicate schools between the waves.
- In order to obtain a realistic workload and save on processing costs, the clerical staff in the U.S. Census Bureau's National Processing Center (NPC) did a substantial amount of screening out of programs on each list. We provided them with a list of the types of programs that were not likely to contain KGs. For example, we considered all family day cares and any programs with less than 12 children as out-of-scope and screened them out.
- Due to the large number of phone calls and limited processing time, NPC was instructed to call each program only once. This saved both time and processing costs. It did increase the number of questionnaires mailed because we sent questionnaires to programs we could not contact in case they were in-scope. (Mailing a questionnaire is generally cheaper than the effort required to track down and contact each program to determine its in-scope or out-of-scope status. We discovered that ECC programs were difficult to contact. There was a larger than expected number of answering machines, disconnected numbers or numbers not in service, and wrong numbers many of which we suspected were errors on the ECC list. A large number of programs did not even have telephone numbers listed on the ECC lists.)

Otherwise, the 1997-98 ECC operation followed the same criteria specified for traditional PSS processing.

Our effort in 1997-98 improved our coverage of K-terminals from 57% in 1995-96 to 87%. In the 1997-98 ECC operation we also looked at how many of the new KG programs from the alternative lists had a KG and one or more higher grades. Of the universe adds found in the ECC operation, 18% of these contained a KG plus higher grade. We added these programs to the traditional list frame universe. This proved that these alternative lists also provided updates that improved the coverage of schools on the traditional PSS universe. The coverage of KG plus higher grades improved to 95%.

VII. Conclusions

- *Lists from day care licensing agencies or private child care resource and referral organizations did significantly improve coverage of KGs on the universe.* The initial attempt to add K-terminal programs to the universe in 1993-94 produced only a 32% coverage of these programs. The development of an alternative frame approach starting in 1995-96 improved the coverage to 57%. Additional improvements in 1997-98 increased the coverage of K-terminal programs to 87%. The coverage of programs with a KG and one or more higher grades also improved. The coverage of KGs with a higher grade increased from 90% in 1993-94 to 93% in 1995-96 and to 95% in 1997-98.
- *Traditional state and association source lists do not have complete coverage of K-terminal or KG with higher grades.* If the states and associations did have complete or nearly complete coverage, then we would expect to increase the universe by only a very small percentage. The improvement in coverage by going to an alternative frame approach indicates that state and association lists do not cover all KG programs, especially K-terminal programs.
- *Lists from day care licensing agencies (and private child care resource and referral organizations) are inefficient and costly sources to process.* They are inefficient and costly because of the following:
 1. They contain a huge number of out-of-scope programs (such as babysitters and family day care) that results in more processing effort.
 2. They do not contain all the information (age ranges, type of facility, mention of a KG, telephone number, etc . . .) we need to determine whether a program is a private school containing any of the grades KG-12. This also results in greater processing resources.

We have found effective methods that reduce costs and make the workloads more manageable. These methods include:

- a. The staff pre-screened ECC lists to quickly remove probable out-of-scope programs from consideration. (See section VI for more information.)
- b. When calling facilities to determine their in-scope or out-of-scope status, staff limited telephone calls to one per facility. (See section VI for more information.)
- c. As a result of the 1997-98 operation, we realized that we could identify and target lists that appeared the most productive (i.e., lists that were the most likely to provide adds to the universe and that were easier to process). In future PSS cycles when either budgetary or timing considerations are restrictive, this targeting of lists will allow us to process only the most promising lists at a reduced cost.

It is important to note that even though they are inefficient, these sources (day care licensing and referral agencies) are the best alternative sources for finding additional kindergarten programs that we are aware of. We believe our KG frame has provided a valuable sample frame for NCES programs including the ECLS.