

## **APPENDIX G**

### **Result Codes**

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NHES:2001 RESULT CODES

	Code	Label	Description	Screener /extended
<b>INTERIM</b>	-1	New Work	Work that has yet to receive an attempt	S/E
	1	RNA	The call attempt resulted in a ring, no answer	S/E
	2	Initial Ref.	Respondent refuses to do the interview or refuses to continue with the interview.	S/E
	3	Busy	Call results in "regular" busy signal.	S/E
	41	Appoint. General	Respondent requests a callback to complete the interview at a general time, e.g., day, evening or weekend.	S/E
	42	Appoint. Exact	Respondent requests a callback to complete the interview at a specific date and time.	S/E
	5	Answer Machine	Telephone is answered by an answering machine.	S/E
	61	Initial Lang. Problem Hear/Speech	Initial hearing or speech problem	S/E
	62	Initial Lang. Problem Other Lang.	Initial language problem, language other than English	S/E
	7	Questionable Ring	Code used anytime the call results in a sound that cannot be identified. Examples include dead air, "fast" busy signals, possible modem or fax tones.	S/E
	8	Problem	All other situations that are not included in other interim codes. If initial TRC supervisory review does not resolve the "problem", questionnaires may be coded 81, 82 or 83.	S/E
	9	Mailout needed	Respondent requested a mailout describing the study before completing. The case will be "aged" before being made available for callback.	S/E

NHES:2001 RESULT CODES

	Code	Label	Description	Screener /extended
<b>FINAL Response</b>	C0	Complete Interview	Complete Screener with no extended Interviews.	S
	C1	Complete Interview	Complete Screener with ECPP Interview(s) only.	S
	C2	Complete Interview	Complete Screener with ASPA Interview(s) only.	S
	C3	Complete Interview	Complete Screener with ECPP and ASPA Interviews..	S
	C4	Complete Interview	Complete Screener with AELL Interview(s) only.	S
	C5	Complete Interview	Complete Screener with AELL and ECPP Interviews.	S
	C6	Complete Interview	Complete Screener with AELL and ASPA Interviews.	S
	C7	Complete Interview	Complete Screener with ECPP, ASPA and AELL Interviews.	S
	CS	Complete Interview	Complete ASPA Interview for a school-age child.	E
	CH	Complete Interview	Complete ASPA Interview for a home schooler.	E
	CI	Complete Interview	Complete ECPP Interview for an infant/toddler	E
	CN	Complete Interview	Complete ECPP Interview for a preschooler.	E
	CP	Complete Interview	Complete AELL Interview; sampled as participant, completed as participant.	E
	CU	Complete Interview	Complete AELL Interview; sampled as non-participant, completed as non-participant.	E
	CX	Complete Interview	Complete AELL Interview; sampled as participant, completed as non-participant.	E
	CZ	Complete Interview	Complete AELL Interview; sampled as non-participant, completed as participant.	E
	IA	Ineligible Interview	Ineligible AELL Interview. Adult is in military or living in another private home/apartment.	E
	IP	Ineligible Interview	Ineligible ECPP or ASPA Interview; sampled child has AGE2000 > 15 or is enrolled in above eighth grade in extended.	E

NHES:2001 RESULT CODES

	Code	Label	Description	Screener/extended
FINAL Non-Response	LH	Final Language Problem - Hearing/Speech	Two calls to this respondent resulted in a hearing or speech communication problem.	S/E
	LM	Max Call Language	Questionnaire had an additional language problem and has reached the maximum calling algorithm.	S/E
	LP	Final Language Problem	Two calls to this respondent resulted in a non-English communication problem.	S/E
	MC	Max Call	The calling algorithm has been fulfilled. At least one "human" contact has been made at the number and there are no refusals or language problems in the call history for the household.	S/E
	ML	Max call Lang	The calling algorithm has been fulfilled. An attempt to contact <i>someone else</i> in the HH resulted in an interim language problem, but this particular questionnaire has had no interim language problem in its call history.	E
	MP	Max Phones	The maximum number of phone numbers has been tried and the respondent can not be found.	E
	MR	Max call Ref	The calling algorithm has been fulfilled. An attempt to contact <i>someone else</i> in the HH resulted in an interim refusal, but this particular questionnaire has had no refusal in its call history.	E
	NA	No Answer	The calling algorithm has been fulfilled with no "human" or answering machine contact.	S
	NM	No Answer: Answering Machine	The calling algorithm has been fulfilled for a telephone number and only answering machine contact was made.	S
	NO	Other non-response	Non-response: other. Questionnaire for which no other final result code is applicable.	S/E
	NS	Subject Sick	Non-response: subject physically or mentally incapable of completing interview	S/E
	NZ	Deleted Subject	Deleted subject was a household member on SCRNDATE.	E
	RB	Final refusal	Refusal - On at least two calls, the respondent refused to be interviewed or broke off during the interview and refused to continue.	S/E
	R3	Final refusal for Re-Released RBs	A Re-Released Final Refusal (RB) has received an additional refusal.	S/E
	RM	Max Call Refusal	Questionnaire had an additional refusal code and has reached the maximum calling algorithm.	S/E
RX	Max Call Re-Released RBs	A Re-Released Final Refusal (RB), has reached the maximum calling algorithm.	S/E	

NHES:2001 RESULT CODES

	Code	Label	Description	Screener/ extended
<b>FINAL Out of Scope</b>	OE	Enumeration Error	Enumeration error - The respondent enumerated in the screener and selected for the extended interview is not a member of the household.	E
	OZ	Out of scope	Deleted subject was NOT a household member on SCRNDATE.	E
	NR	Non-Residential	The number called was not a residential number. Included are businesses, institutions, agencies, modems, public facilities, vacation homes, group quarters. (Only considered out of scope for cluster or screener questionnaires; non-response for extended.)	S/E
	NB	Non-residential, Business purge	Identified as non-residential during business purge preprocessing prior to Cheshire load.	S
	NW	Non-Working	On three call attempts, the call was coded a non-working number. Included are temporary and permanent disconnects, fast busy's, and "dead" air. (Only considered out of scope for cluster or screener questionnaires; non-response for extended.)	S/E
	NT	Non-working, Tritone match	Identified as non-working during Tritone match preprocessing prior to Cheshire load.	S

## **APPENDIX H**

### **Answering Machine Messages**

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**Answering machine message for interviews in the initial and language problem strategies:**

Hello, this is {INTERVIEWER NAME} and I'm calling for the U.S. Department of Education from Westat, a social science research firm. We are conducting a study about the educational experiences of adults and children. We'll call back another time. If you have questions or would like to schedule an appointment, please call our toll-free number, 1-888-594-8692. Thank you.

Buenos dias/Buenas tardes, me llamo {interviewer name} y estoy llamando de parte del Departamento de Educacion de Estados Unidos, desde Westat, una compania que hace estudios de ciencias sociales. Estamos llevando a cabo un estudio acerca de la experiencias educativas de adultos y niños. Llamaremos de nuevo en otro momento. Si usted tiene preguntas o le gustaria hacer una cita, por favor llame al 1-888-594-8692. Muchas gracias.

**Answering machine message for Screeners in the refusal strategy:**

Hello, this is {INTERVIEWER NAME} and I'm calling for the U.S. Department of Education from Westat, a social science research firm. We are conducting a study about the educational experiences of adults and children. Your phone number was selected as part of a scientific random sample. Your participation is important so our study can accurately represent all households in the nation. Initial questions only take about 4 minutes, and your answers will be kept confidential. We'll call back another time. If you have questions or would like to schedule an appointment, please call our toll-free number, 1-888-594-8692. Thank you.

Buenos dias/Buenas tardes, me llamo {interviewer name} y estoy llamando de parte del Departamento de Educacion de los Estados Unidos, desde Westat, una compania de investigacion de ciencias sociales. Estamos llevando a cabo un estudio acerca de las experiencias educativas de adultos y niños. Su numero telefonico fue seleccionado como parte de una muestra científica aleatoria. Su participacion es importante para que nuestro estudio pueda representar con exactitud a todos los hogares en el pais. Las preguntas iniciales solo toman como 4 minutos y sus respuestas se mantendran confidenciales. Llamaremos de nuevo en otro momento. Si usted tiene preguntas o quisiera hacer una cita, por favor llame al 1-888-594-8692. Muchas gracias.

**Answering machine message for extended interviews in the refusal strategy:**

Hello, this is {INTERVIEWER NAME} and I'm calling for the U.S. Department of Education from Westat, a social science research firm. I'm calling to complete an interview with a member of your household who was scientifically selected for our study about the educational experiences of adults and children. Your participation is important so our study can accurately represent the experiences of people throughout the nation. We'll call back another time. If you have questions or would like to schedule an appointment, please call our toll-free number, 1-888-594-8692. Thank you.

Buenos días/Buenas tardes, me llamo {interviewer name} y estoy llamando del departamento de Educacion de los Estados Unidos, desde Westat, una compania de investigacion de ciencias sociales. Estoy llamando para completar una entrevista con un miembro de su hogar que fue seleccionado cientificamente para nuestro estudio, acerca de las experiencias educativas de adultos y niños. Su participacion es importante para que nuestro estudio pueda representar con precision las experiencias de personas en todo el pais. Llamaremos de nuevo en otro momento. Si usted tiene preguntas o quisiera hacer una cita, por favor llame al 1-888-594-8692. Muchas gracias.

**Appendix I**

**TRC Monitoring Form**

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# COACHING/MONITORING FORM

Interviewer: \_\_\_\_\_

NAME

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INITIALS

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M O D D Y R

Reviewer Signature: \_\_\_\_\_

NAME

TIME					
BEGIN	____:____	AM	END	____:____	AM
		PM			PM
BEGIN	____:____	AM	END	____:____	AM
		PM			PM

Project: \_\_\_\_\_

NAME

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NUMBER

Interviewing Characteristics	Very Successful		Successful		Not Successful	N/A
1. <i>Gaining Cooperation</i>						
2. <i>Conducting the Interview</i>						
3. <i>Refusal Conversion</i>						
4. <i>Teamwork</i>						
5. <i>Productivity</i>						

**Special Tasks:**

- Language
- Inbound (ACD)
- Tracing
- Other \_\_\_\_\_



Thank you!

**List Areas of Strength:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**List Coaching Tips:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

FEEDBACK GIVEN TO INTERVIEWER : \_\_\_\_\_ : \_\_\_\_\_

AM / PM

DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

CHECK BOX INDICATING MONITORING SHEET WAS **DISCUSSED** WITH INTERVIEWER

CASE ID (If CATI)	START TIME (If PAPER)	CALL RESULT	Question #

CASE ID (If CATI)	START TIME (If PAPER)	CALL RESULT	Question #

**Notes:**

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## **APPENDIX J**

### **Range and Logic Edit Specifications**

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## Range and Logic Edit Specifications

### *Screeners*

**S6.** Age entered at “children only” enumeration matrix

If SCRN\_15 = 1 (household has children) and the household is not designated for adult enumeration, all ages entered at S6 must be  $\leq 15$ .

**S8C.** Number of hours each week home-schooled child attends school for instruction

1–30 (hard range)

1–20 (soft range)

**S9, S15.** Grade or year of school person attending (**Confirmation screen check**)

If age = 3–4, then grade = -1, N, T, P, K, U, S

If age = 5, then grade = -1, N, T, K, P, 1, U, S

If age = 6, then grade = -1, N, T, K, P, 1, 2, U, S

If age = 7, then grade = -1, N, T, K, P, 1, 2, 3, U, S

If age = 8, then grade = -1, 1, 2, 3, 4, U, S

If age = 9, then grade = -1, 2, 3, 4, 5, U, S

If age = 10, then grade = -1, 3, 4, 5, 6, U, S

If age = 11, then grade = -1, 4, 5, 6, 7, U, S

If age = 12, then grade = -1, 5, 6, 7, 8, U, S

If age = 13, then grade = -1, 6, 7, 8, 9, U, S

If age = 14, then grade = -1, 7, 8, 9, 10, U, S

If age  $\geq 15$ , then grade = -1, 8, 9, 10, 11, U, S

**S10, S16.** Grade or year equivalent (**Confirmation screen check**)

If age = 3–4, then grade equivalent = -1, N, T, P, K, U,

If age = 5, then grade equivalent = -1, N, T, K, P, 1, U,

If age = 6, then grade equivalent = -1, N, T, K, P, 1, 2, U,

If age = 7, then grade equivalent = -1, N, T, K, P, 1, 2, 3, U,

If age = 8, then grade equivalent = -1, 1, 2, 3, 4, U,

If age = 9, then grade equivalent = -1, 2, 3, 4, 5, U,

If age = 10, then grade equivalent = -1, 3, 4, 5, 6, U,

If age = 11, then grade equivalent = -1, 4, 5, 6, 7, U,

If age = 12, then grade equivalent = -1, 5, 6, 7, 8, U,

If age = 13, then grade equivalent = -1, 6, 7, 8, 9, U,

If age = 14, then grade equivalent = -1, 7, 8, 9, 10, U,

If age  $\geq 15$ , then grade equivalent = -1, 8, 9, 10, 11, U,

**S12.** Relationship between child and most knowledgeable parent/guardian (**Confirmation screen check**)

If S12 = 1, 2, then parent's age  $\geq$  (child's age + 12)  
If S12 = 5, 6, then grandparent's age  $\geq$  (child's age + 24)  
If S12 = 1, then parent's gender = F  
If S12 = 2, then parent's gender = M  
If S12 = 3, then brother's gender = M  
If S12 = 4, then sister's gender = F  
If S12 = 5, then grandmother's gender = F  
If S12 = 6, then grandfather's gender = M  
If S12 = 7, then aunt's gender = F  
If S12 = 8, then uncle's gender = M

**S13.** AELL matrix– (if household does not have children and is designated for AELL enumeration)

All ages entered must be  $> 15$ .

**S25.** Number of additional telephone numbers for home use

0–5 (hard range)  
0–3 (soft range)

**S27.** Number of home use telephone numbers used for computer or fax lines

Cannot be greater than number in S24 (**Until statement edit**)  
0–5 (hard range)  
0–3 (soft range)

**S29.** Computer or fax telephone numbers answered for talking

Cannot be greater than number in S27 or S28 (**Until statement edit**)  
1–5 (hard range)  
1–3 (soft range)

#### **ECPP\_ASPA**

**PA1.** Month and year of child's birth

Month: 1–12 (hard range)  
Year: 1985–2000 (all entries confirmed in PA2)

**PA5OV.** Age of child when first moved to US

Years: 0–current age (**Until statement edit**)

**PA8.** Relationships of household members to child (**Confirmation screen check**)

If PA8 = 1, 2, then parent's age = > (AGE2000 + 12)  
If PA8 = 5, 6, then grandparent's age = > (AGE2000 + 24)  
If PA8 = 1, then parent's gender = F  
If PA8 = 2, then parent's gender = M  
If PA8 = 3, then brother's gender = M  
If PA8 = 4, then sister's gender = F  
If PA8 = 5, then grandmother's gender = F  
If PA8 = 6, then grandfather's gender = M  
If PA8 = 7, then aunt's gender = F  
If PA8 = 8, then uncle's gender = M  
For each child, only 1 household member can have PA8 = 1  
For each child, only 1 household member can have PA8 = 2

**PB5.** Number of hours homeschooled child attends school for instruction

1–30 (hard range)  
1–20 (soft range)

**PB6.** Grade or year child is attending (**Confirmation screen check**)

If AGE2000 = 3–4, then grade = -1, N, T, K, P, U, S  
If AGE2000 = 5, then grade = -1, N, T, K, P, 1, U, S  
If AGE2000 = 6, then grade = -1, N, T, K, P, 1, 2, U, S  
If AGE2000 = 7, then grade = -1, T, K, P, 1, 2, 3, U, S  
If AGE2000 = 8, then grade = -1, 1, 2, 3, 4, U, S  
If AGE2000 = 9, then grade = -1, 2, 3, 4, 5, U, S  
If AGE2000 = 10, then grade = -1, 3, 4, 5, 6, U, S  
If AGE2000 = 11, then grade = -1, 4, 5, 6, 7, U, S  
If AGE2000 = 12, then grade = -1, 5, 6, 7, 8, U, S  
If AGE2000 = 13, then grade = -1, 6, 7, 8, 9, U, S  
If AGE2000 = 14, then grade = -1, 7, 8, 9, 10, U, S  
If AGE2000 = 15, then grade = -1, 8, 9, 10, 11, U, S

**PB7.** Grade equivalent (**Confirmation screen check**)

If AGE2000 = 3–4, then grade equivalent = -1, N, T, K, P, U  
If AGE2000 = 5, then grade equivalent = -1, N, T, K, P, 1, U  
If AGE2000 = 6, then grade equivalent = -1, N, T, K, P, 1, 2, U  
If AGE2000 = 7, then grade equivalent = -1, T, K, P, 1, 2, 3, U  
If AGE2000 = 8, then grade equivalent = -1, 1, 2, 3, 4, U  
If AGE2000 = 9, then grade equivalent = -1, 2, 3, 4, 5, U  
If AGE2000 = 10, then grade equivalent = -1, 3, 4, 5, 6, U  
If AGE2000 = 11, then grade equivalent = -1, 4, 5, 6, 7, U  
If AGE2000 = 12, then grade equivalent = -1, 5, 6, 7, 8, U  
If AGE2000 = 13, then grade equivalent = -1, 6, 7, 8, 9, U  
If AGE2000 = 14, then grade equivalent = -1, 7, 8, 9, 10, U  
If AGE2000 = 15, then grade equivalent = -1, 8, 9, 10, 11, U

## ECPP

- ED3.** Age of child when first received care on a regular basis
- Years: 0–current age (**Until statement edit**)  
Months: 0–24 [maximum of current age]
- If years > 0, then months must be <12. (**Until statement edit**)  
If years = 0, then months must be >=0.
- ED5OV.** Age of relative care provider
- 10–99 (hard range)  
16–80 (soft range)
- ED7.** Relative care provider lives in household
- Consistency check on household relationships:  
Person with care provider’s relationship to child must be enumerated. (**Until statement edit**).
- ED8.** Length of time from home to relative’s home
- Minutes  
1–90 (hard range)  
1–60 (soft range)
- ED11.** Number of days each week child is cared for by relative
- 1–7 (hard range)  
1–5 (soft range)
- ED12.** Number of hours each week child is cared for by relative
- 1–72 (hard range)  
1–50 (soft range)
- ED13.** Number of weeks each month child is cared for by relative
- 1–3 (hard range)  
1–2 (soft range)
- ED14.** Number of days each week child is cared for by relative
- 1–7 (hard range)  
1–5 (soft range)

**ED15.** Number of hours each week child is cared for by relative

1–70 (hard range)

1–50 (soft range)

**ED16/EE15/EG15.**

Hours cannot be > than 14 per day when averaged (**Until statement edit**)

**ED17.** Number of children cared for together by relative

1–10 (hard range)

1–5 (soft range)

**ED18.** Number of adults who usually care for child

1–8 (hard range)

1–4 (soft range)

Check on child/staff ratio: (**Confirmation screen check**)

0.5:1 to 8:1 (hard range)

1:1 to 5:1 (soft range)

**ED19.** Age of child when current relative care arrangement began

Years: 0–current age (**Until statement edit**)

Months: 0–24 [maximum of current age]

If years > 0, then months must be <12. (**Until statement edit**)

If years = 0, then months must be >=0.

Age must be greater than or equal to that in ED3. (**Until statement edit**)

Consistency check:

ED19 must be >= ED3. (**Until statement edit**)

**ED23.** Number of days per month relative cancels care arrangement

1–30 (hard range)

1–15 (soft range)

Consistency check on days cancelled per month:

If ED9 = 1 then ED24 must be < ED11 \* 4 (**Until statement edit**)

Else, if ED10 = 1 then ED24 must be < ED13 \* ED14

**ED26.** Cost of relative care to child's household (**Confirmation screen check**)

per hour:	0.50–12.00 (hard range) 1.00–6.00 (soft range)
per day:	1.00–100.00 (hard range) 1.00–10.00 (soft range)
per week:	5.00–500.00 (hard range) 10.00–100.00 (soft range)
per month:	20.00–800.00 (hard range) 40.00–240.00 (soft range)
per year:	240.00–8,000.00 (hard range) 480.00–2,000.00 (soft range)

Consistency check on cost series:

If ED25 = 1 (there is a fee), and ED26a–d = 2 (no assistance), then ED27 cannot = 0 (no cost to household). (**Until statement edit**)

**ED27OV.** Number of children cost of relative care applies to

This number cannot exceed the number of children age 15 or younger enumerated in the household. (**Until statement edit**)

2–12 (hard range)  
2–6 (soft range)

**EE3.** Age of child when first received care on a regular basis

Years: 0–current age (**Until statement edit**)  
Months: 0 – 24 [maximum of current age]

If years > 0, then months must be <12. (**Until statement edit**)  
If years = 0, then months must be >=0.

**EE6.** Does nonrelative care provider live in child's household

If yes, there must be someone in the HH whose relationship to the child is a nonrelative. (**Until statement edit**)

**EE7.** Length of time from home to person's home

Minutes  
1–90 (hard range)  
1–60 (soft range)

**EE10.** Number of days each week child is cared for by nonrelative

1–7 (hard range)  
1–5 (soft range)

**EE11.** Number of hours each week child is cared for by nonrelative

1–70 (hard range)  
1–50 (soft range)

- EE12.** Number of weeks each month child receives nonrelative care  
1–3 (hard range)  
1–2 (soft range)
- EE13.** Number of days each week child is cared for by nonrelative  
1–7 (hard range)  
1–5 (soft range)
- EE14.** Number of hours each week child is cared for by nonrelative  
1–70 (hard range)  
1–50 (soft range)
- EE16.** Number of children cared for together by nonrelative  
1–30 (hard range)  
1–20 (soft range)
- EE17.** Number of adults who usually care for child  
1–8 (hard range)  
1–4 (soft range)
- Check on child/staff ratio: **(Confirmation screen check)**  
1:1 to 8:1 (hard range)  
1:1 to 5:1 (soft range)
- EE18.** Age of child when current nonrelative care arrangement began  
Years: 0–current age **(Until statement edit)**  
Months: 0–24 [maximum of current age]  
If years > 0, then months must be <12. **(Until statement edit)**  
If years = 0, then months must be >=0.  
Age must be greater than or equal to that in EE3. **(Until statement edit)**
- EE21A.** Age of nonrelative care provider  
10–17 (hard range)  
13–17 (soft range)
- EE27.** Number of days per month nonrelative cancels care arrangement  
1–30 (hard range)  
1–15 (soft range)
- Consistency check on days cancelled per month:  
If EE8 = 1 then EE26 must be < EE10 \* 4 **(Until statement edit)**  
Else if EE9 = 1 then EE26 must be < EE12 \* EE13 **(Until statement edit)**

**EE30.** Cost of nonrelative care to child's household (**Confirmation screen check**)

per hour:	1.00–15.00 (hard range) 1.00–6.00 (soft range)
per day:	3.00–200.00 (hard range) 10.00–40.00 (soft range)
per week:	5.00–800.00 (hard range) 30.00–200.00 (soft range)
per month:	30.00–3,000.00 (hard range) 120.00–800.00 (soft range)
per year:	360.00–20,000.00 (hard range) 1,400.00–5,000.00 (soft range)

Consistency check on cost series:

If EE27 = 1 (there is a fee), and EE28a–d = 2 (no assistance), then ED29 cannot = 0 (no cost to household). (**Until statement edit**)

**EE31V.** Number of children cost of relative care applies to

This number cannot exceed the number of children age 15 or younger enumerated in the household. (**Until statement edit**)

2–12 (hard range)  
2–6 (soft range)

**EG3.** Age of child when first attended a center-based program

Years: 0–current age (**Until statement edit**)  
Months: 0–24 [maximum of current age]

If years > 0, then months must be <12. (**Until statement edit**)  
If years = 0, then months must be >=0.

**EG4.** Number of center-based programs child currently goes to

1–4 (hard range)  
1–2 (soft range)

**EG8.** Length of time from home to program

Minutes  
1–90 (hard range)  
1–60 (soft range)

**EG11.** Number of days each week child attends center-based program

1–7 (hard range)  
1–5 (soft range)



- EG12.** Number of hours each week child attends center-based program  
Hours cannot be > than 14 per day when averaged. **(Until statement edit)**  
1–70 (hard range)  
1–50 (soft range)
- EG13.** Number of weeks each month child attends center-based program  
1–3 (hard range)  
1–2 (soft range)
- EG14.** Number of days each week child attends center-based program  
1–7 (hard range)  
1–5 (soft range)
- EG15.** Number of hours each week child attends center-based program  
1–70 (hard range)  
1–50 (soft range)
- EG17.** Number of children cared for in same room at center-based program  
1–50 (hard range)  
5–25 (soft range)
- EG18.** Number of adults in room or group at center-based program  
1–10 (hard range)  
1–5 (soft range)  
Check on child/adult ratio: **(Confirmation screen check)**  
1:1 to 20:1 (hard range)  
3:1 to 12:1 (soft range)
- EG19.** Age of child when current center-based care arrangement began  
Years: 0–current age (hard range) **(Until statement edit)**  
Months: 0–24 [maximum of current age] (hard range)  
If years > 0, then months must be <12. **(Until statement edit)**  
If years = 0, then months must be >=0.  
Age must be greater than or equal to that in EG3. **(Until statement edit)**

**EG30.** Cost of center-based care to child's household **(Confirmation screen check)**

per hour:	1.00–20.00 (hard range) 1.00–6.00 (soft range)
per day:	3.00–250.00 (hard range) 10.00–40.00 (soft range)
per week:	5.00–800.00 (hard range) 30.00–200.00 (soft range)
per month:	30.00–3,500.00 (hard range) 120.00–800.00 (soft range)
per year:	360.00–20,000.00 (hard range) 1,400.00–5,000.00 (soft range)

Consistency check on cost series:

If EG29 = 1 (there is a fee), and EG30 a–d = 2 (no assistance), then EG31 cannot = 0 (no cost to household). **(Until statement edit)**

**EG31OV.** Number of children cost of center-based care applies to

This number cannot exceed the number of children age 15 or younger enumerated in the household. **(Until statement edit)**

2–12 (hard range)  
2–6 (soft range)

**EH7.** Number of care arrangements since past September

1–10 (hard range)  
1–5 (soft range)

**EH10.** Start and end date of previous arrangement

Start dates must be later than child's birth date **(Until statement edit)**

End months must fall within the range September – month of interview **(Until statement edit)**

If end month = September–December, end year must = 2000 **(Until statement edit)**

If end month = January–interview month, end year must = 2001 **(Until statement edit)**

The end date must be later than or equal to the start date. **(Until statement edit)**

**EK2.** Number of minutes each day family reads to child

1–120 (hard range)  
1–30 (soft range)

**ASPA**

- SD6, SD7.** Lowest/highest grade taught in child's school
- Child's GRADE/GRADEEQ must be  $\leq$  highest grade in school (SHIGH) and  $\geq$  lowest grade in school (SLOW). **(Until statement edit)**
- SD8.** Number of students in child's school (or grade at school)
- 1-5,000 (hard range)  
1-1,200 (soft range)
- SD9.** Time child's school starts
- |         |  |
|---------|--|
| Hours   | 6 am-2 pm (hard range)<br>7 am-1 pm (soft range) |
| Minutes | 0-59 (hard range)                                |
- SD9.** Time child's school lets out
- |         |  |
|---------|--|
| Hours   | 10 am-5 pm (hard range)<br>11 am-4 pm (soft range) |
| Minutes | 0-59 (hard range)                                  |
- SD11/SF6/SF7/SG5/SG6/SH6/SH7** Length of time to go from point A to point B.
- |         |  |
|---------|--|
| Minutes | 1-90 (hard range)<br>1-60 (soft range) |
|---------|--|
- SF3OV.** How old is the relative care provider
- 10-100 (hard range)  
16-80 (soft range)
- SF5.** Does relative care provider live in child's household
- If SF5 = yes and SF3 = grandparent, there must be a grandparent of the child in the HH  
**(Until statement edit)**
- If SF5 = yes and SF3 = brother or sister, there must be a sibling of the child in the HH  
**(Until statement edit)**
- In all other cases where SF5 = yes, there must be another relative in the HH other than the mother or father who is related to the subject child.  
**(Until statement edit)**

- SF11.** Number of days each week child is cared for by relative  
1–5 (hard range)
- SF12.** Number of hours each week child is cared for by relative before school  
1–20 (hard range)  
1–10 (soft range)
- SF18/SG17/SH18.**  
Hours cannot be > than 14 per day when averaged (**Until statement edit**)
- SF13.** Number of hours each week child is cared for by relative after school  
1–30 (hard range)  
1–20 (soft range)
- SF15.** Number of hours after 6:00 pm each week  
0–30 (hard range)  
0–10 (soft range)  
SF15 must be <= SF13 (**Until statement edit**)
- SF16.** Number of weeks each month child receives care from relative  
1–3 (hard range)  
1–2 (soft range)
- SF17.** Number of days each week during those weeks  
1–5 (hard range)
- SF18.** Number of hours each week during those weeks  
1–70 (hard range)  
1–50 (soft range)
- SF19.** Number of children cared for together by relative  
1–10 (hard range)  
1–5 (soft range)
- SF20.** Number of adults who usually help care for child  
1–8 (hard range)  
1–4 (soft range)  
Check on child/adult ratio: 0.5 to 8:1 (hard range) (**Confirmation screen check**)  
1:1 to 5:1 (soft range)

**SF27.** Cost of relative care to child's household (**Confirmation screen check**)

per hour	0.50–12.00 (hard range) 1.00–6.00 (soft range)
per day:	1.00–100.00 (hard range) 1.00–10.00 (soft range)
per week:	5.00–500.00 (hard range) 10.00–100.00 (soft range)
per month:	20.00–800.00 (hard range) 40.00–240.00 (soft range)
per year:	240.00–8,000.00 (hard range) 480.00–2,000.00 (soft range)

Consistency check on cost series:

If SF27 = 1 (there is a fee), and SF28a–d = 2 (no assistance), then SF29 cannot = 0 (no cost to household).

**(Until statement edit)**

**SF28OV.** Number of children cost of relative care applies to

This number cannot exceed the number of children age 15 or younger enumerated in the household.

**(Until statement edit)**

2–12 (hard range)  
2–6 (soft range)

**SG4.** Does nonrelative care provider live in child's household

If yes, there must be someone in the HH whose relationship to the child is a nonrelative.

**(Until statement edit)**

**SG10.** Number of days each week child is cared for by nonrelative

1–5 (hard range)

**SG11.** Number of hours each week child is cared for by nonrelative before school

1–20 (hard range)  
1–10 (soft range)

**SG12.** Number of hours each week child is cared for by nonrelative after school

1–30 (hard range)  
1–20 (soft range)

**SG14.** Number of hours after 6:00 pm each week

0–30 (hard range)  
0–10 (soft range)

SG14 must be <= SG12 **(Until statement edit)**

**SG15.** Number of weeks each month child receives care from nonrelative

1–3 (hard range)

1–2 (soft range)

**SG16.** Number of days each week during those weeks

1–5 (hard range)

**SG17.** Number of hours each week during those weeks

1–70 (hard range)

1–50 (soft range)

**SG18AOV.** Age of nonrelative care provider under 18.

10–17 (hard range)

13–17 (soft range)

**SG19.** Number of children cared for together by nonrelative

1–30 (hard range)

1–20 (soft range)

**SG20.** Number of adults who usually help care for child

1–8 (hard range)

1–4 (soft range)

Check on child/adult ratio: 1:1 to 8:1 (hard range) (**Confirmation screen check**)

1:1 to 5:1 (soft range)

**SG27.** Cost of nonrelative care to child’s household (**Confirmation screen check**)

per hour: 1.00–15.00 (hard range)

1.00–6.00 (soft range)

per day: 3.00–200.00 (hard range)

10.00–40.00 (soft range)

per week: 5.00–800.00 (hard range)

30.00–200.00 (soft range)

per month: 30.00–3,000.00 (hard range)

120.00–800.00 (soft range)

per year: 360.00–20,000.00 (hard range)

1,400.00–5,000.00 (soft range)

Consistency check on cost series:

If SG26 = 1 (there is a fee), and SG27a–d = 2 (no assistance), then SG28 cannot = 0 (no cost to household). (**Until statement edit**)

- SG280V.** Number of children cost of nonrelative care applies to  
This number cannot exceed the number of children age 15 or younger enumerated in the household.  
**(Until statement edit)**  
2–12 (hard range)  
2–6 (soft range)
- SH11.** Number of days each week child attends center-based program  
1–5 (hard range)
- SH12.** Number of hours each week child attends center-based program before school  
1–20 (hard range)  
1–10 (soft range)
- SH13.** Number of hours each week child attends center-based program after school  
1–30 (hard range)  
1–20 (soft range)
- SH15.** Number of hours after 6:00 pm each week  
0–30 (hard range)  
0–10 (soft range)  
  
SH15 must be  $\leq$  SH13 **(Until statement edit)**
- SH16.** Number of weeks each month child attends program  
1–3 (hard range)  
1–2 (soft range)
- SH17.** Number of days each week during those weeks  
1–5 (hard range)
- SH18.** Number of hours each week during those weeks  
1–30 (hard range)  
1–20 (soft range)
- SH19.** Number of children in center-based program group  
1–50 (hard range)  
5–25 (soft range)

**SH20.** Number of adults in center-based program group (**Confirmation screen check**)

1–10 (hard range)  
1–5 (soft range)

Check on child/staff ratio: 1:1 to 20:1 (hard range)  
3:1 to 12:1 (soft range)

**SH35.** Cost of attending program to child’s household (**Confirmation screen check**)

per hour: 1.00–20.00 (hard range)  
1.00–6.00 (soft range)  
per day: 3.00–250.00 (hard range)  
10.00–40.00 (soft range)  
per week: 5.00–800.00 (hard range)  
30.00–200.00 (soft range)  
per month: 30.00–3,500.00 (hard range)  
120.00–800.00 (soft range)  
per year: 360.00–20,000.00 (hard range)  
1,400.00–5,000.00 (soft range)

Consistency check on cost series:

If SH35 = 1 (there is a fee), and SH36a–d = 2 (no assistance), then SH37 cannot = 0 (no cost to household). (**Until statement edit**)

**SH36OV.** Number of children cost of program applies to

This number cannot exceed the number of children age 15 or younger enumerated in the household. (**Until statement edit**)

2–12 (hard range)  
2–6 (soft range)

**SI2.** If all of SI2a–i = 2, then collect ASOTHEOS (ask “What before- or after-school activities does (CHILD) currently participate in?”), set ASOTHER =1, and ask ASSCOTHR.

**SI6.** Number of weeks each month child participates in activities/lessons after school

1–3 (hard range)

**SI7.** Number of days each week during those weeks

1–5 (hard range)

**SI8.** Number of hours each week during those weeks

1–30 (hard range)  
1–20 (soft range)

**SI10.** Number of days each week child participates in activities/lessons after school

1–5 (hard range)



- SI11.** Number of hours each week child participates in activities/lessons before school  
1–20 (hard range)  
1–10 (soft range)
- SI12.** Number of hours each week child participates in activities/lessons after school  
1–30 (hard range)  
1–20 (soft range)
- SI14.** Number of hours after 6:00 pm each week  
0–30 (hard range)  
0–10 (soft range)  
SI12 must be  $\leq$  SI10 (**Until statement edit**)
- SJ5.** Number of days each week child cares for self before/after school  
1–5 (hard range)
- SJ6.** Number of hours each week child cares for self before school  
1–20 (hard range)  
1–10 (soft range)
- SJ7.** Number of hours each week child cares for self after school  
1–30 (hard range)  
1–20 (soft range)
- SJ8.** Number of hours after 6:00 pm each week  
0–30 (hard range)  
0–10 (soft range)  
SJ8 must be  $\leq$  SJ7 (**Until statement edit**)
- SJ9.** Number of weeks each month child is in self-care  
1–3 (hard range)  
1–2 (soft range)
- SJ10.** Number of days each week during those weeks  
1–5 (hard range)
- SJ11.** Number of hours each week during those weeks  
1–30 (hard range)  
1–20 (soft range)

**SK5.** Number of other out-of-school arrangements used since beginning of school year.

1–10 (hard range)

1–5 (soft range)

**SK8.** Start and end date of previous arrangement

Start dates must be later than child’s birth date. **(Until statement edit)**

End months must fall within the range September–month of interview **(Until statement edit)**

If end month = September–December, end year must = 2000 **(Until statement edit)**

If end month = January–interview month, end year must = 2001.

### **ECPP\_ASPA**

**PT2** Length of time since child saw a medical doctor for routine health care

If child’s age < 2, PT2 does not equal 3. If child’s age <1, PT3 does not equal 2 or 3.

**PU3.** Age first became mother/stepmother/guardian

The age reported must be less than or equal to the mother’s current age **(Until statement edit)**

12–45 (hard range)

15–40 (soft range)

**PU6OV.**Age mother first moved to U.S.

The age reported must be less than or equal to the mother’s current age **(Until statement edit)**

1–80 (hard range)

1–40 (soft range)

**PU11.** Hours per week mother usually works for pay

1–99 (hard range)

1–60 (soft range)

**PU12.** Number of months mother worked for pay in past 12 months

0–12 (hard range)

Cannot equal 0 if mother was employed last week for pay **(Until statement edit)**

**PU14.** What have you been doing in the past 4 weeks?

At least one of PU12 must not be 2 **(Until statement edit)**

**PU17.** Number of hours each week attending school or training

1–50 (hard range)

1–25 (soft range)

**PU30.** Number of days each week in main arrangement

- 1-7 (hard range)  
1-5 (soft range)
- PU31.** Number of hours each week in main arrangement  
1-40 (hard range)  
1-30 (soft range)
- PU37.** Number of days each week in other arrangement  
1-7 (hard range)  
1-5 (soft range)
- PU38.** Number of hours each week in other arrangement  
1-40 (hard range)  
1-30 (soft range)
- PV50V.** Age father first moved to U.S.  
The age reported must be less than or equal to the father's current age (**Until statement edit**)  
1-80 (hard range)  
1-40 (soft range)
- PV10.** Hours per week father usually works for pay  
1-99 (hard range)  
1-60 (soft range)
- PV13.** What have you been doing in the past 4 weeks?  
At least one of PV11 must not be 2. (**Until statement edit**)
- PV16.** Number of hours each week attending school or training  
1-50 (hard range)  
1-25 (soft range)
- PW4.** Number of additional telephone numbers for home use, not including cell numbers  
0-9 (hard range)  
0-3 (soft range)
- PW6.** Number of additional telephone numbers for computer or fax lines  
0-5 (hard range)  
0-3 (soft range)
- PW8.** Number of computer or fax telephone numbers also answered for talking  
1-5 (hard range)  
1-3 (soft range)

- PW9.** ZIP Code
- Match first three digits to three digit ZIP Code loaded with list-assisted sample from Genesys.  
**(Until statement edit)**  
 Edit will allow respondent to verify their response.  
 Zip code must be 5 characters in length  
**(Until statement edit)**
- PW12.** Month and year stopped receiving benefits
- Date (month and year) respondent stopped receiving benefits must be within 3 years before interview date.  
**(Until statement edit)**
- PW17.** Household income to the nearest thousand
- Response must fall within the range reported at PW12.  
**(Until statement edit)**

**AELL**

- AA9.** Number of employers
- 1–10 (hard range)  
 1–5 (soft range)
- AB4.** Reasons for taking ESL
- At least one category must be equal to 1 **(Until statement edit)**
- AB10.** Total hours for ESL
- 1–100 (hard range)  
 1–75 (soft range)
- AB11.** Number of weeks attended ESL **(Confirmation screen check)**
- Days: 1–365 (hard range)  
 1–30 (soft range)
- Weeks: 1–52 (hard range)  
 1–20 (soft range)
- Months: 1–12 (hard range)  
 Semesters: 1–3 (hard range)  
 Quarters: 1–4 (hard range)
- AB12.** Hours for ESL
- 1–100 (hard range)  
 1–75 (soft range)

- AB13.** Personal expenses for ESL.
- |                      |  |
|----------------------|--|
| Tuition and fees:    | 0–3,000 (hard range)<br>0–1,000 (soft range) |
| Books and materials: | 0–1,000 (hard range)<br>0–500 (soft range)   |
- AC4.** Reasons for taking ABE/GED
- At least one category must be equal to 1 (**Until statement edit**)
- AC10.** Total hours for ABE/GED
- |  |   |
|--|---|
|  | 1–100 (hard range)<br>1–75 (soft range) |
|--|---|
- AC11.** Number of weeks attended ABE/GED (**Confirmation screen check**)
- |            |   |
|------------|---|
| Days:      | 1–365 (hard range)<br>1–30 (soft range) |
| Weeks:     | 1–52 (hard range)<br>1–20 (soft range)  |
| Months:    | 1–12 (hard range)                       |
| Semesters: | 1–3 (hard range)                        |
| Quarters:  | 1–4 (hard range)                        |
- AC12.** Hours for ABE/GED
- |  |   |
|--|---|
|  | 1–100 (hard range)<br>1–75 (soft range) |
|--|---|
- AC13.** Personal expenses for ABE/GED
- |                      |  |
|----------------------|--|
| Tuition and fees:    | 0–3,000 (hard range)<br>0–1,000 (soft range) |
| Books and materials: | 0–1,000 (hard range)<br>0–500 (soft range)   |
- AD11.** Month and year started college or university programs
- |        |  |
|--------|--|
| Month: | 1–12 (hard range)                                |
| Year:  | 1985–2001 (hard range)<br>1995–2001 (soft range) |
- AD12.** Month and year completed college or university programs
- |        |  |
|--------|--|
| Month: | 1–12 (hard range)                                |
| Year:  | 1995–2010 (hard range)<br>2000–2005 (soft range) |
- AD18.** Number of semesters or quarters for college or university programs

Semesters: 1–5 (hard range)  
Quarters: 1–6 (hard range)

- AD19.** Number of courses for college or university programs  
0–30 (hard range)  
0–15 (soft range)
- AD20.** Number of total credit hours for college or university programs  
1–70 (hard range)  
1–45 (soft range)
- AD21.** Number of classroom hours for college or university programs  
0–80 (hard range)  
0–60 (soft range)
- AD23.** Number of courses taught by using technology  
Must be <= to number of courses at AD14.
- AD24.** Percentage of technology instruction for college or university programs  
1–100 (hard range)
- AD25.** Personal expenses for college or university programs  
Tuition and fees: 0–50,000 (hard range)  
0–20,000 (soft range)  
Books and materials: 0–10,000 (hard range)  
0–5,000 (soft range)
- AE9.** Month and year starting vocational or technical programs  
Month: 1–12 (hard range)  
Year: 1985–2001 (hard range)  
1995–2001 (soft range)
- AE10.** Month and year completing vocational or technical programs  
Month: 1–14 (hard range)  
Year: 1995–2010 (hard range)  
2000–2005 (soft range)
- AE16.** Number of semesters or quarters for vocational or technical programs  
Months: 1–12 (hard range)  
Semesters: 1–5 (hard range)  
Quarters: 1–6 (hard range)

- AE17.** Number of courses for vocational or technical programs  
0–30 (hard range)  
0–15 (soft range)
- AE18.** Number of total credit hours for vocational or technical programs  
1–70 (hard range)  
1–45 (soft range)
- AE19.** Number of classroom hours for vocational or technical programs  
0–400 (hard range)  
0–200 (soft range)
- AE21.** Number of courses taught by using technology  
Must be <= to number of courses at AE14.
- AE22.** Percentage of technology instruction for vocational or technical programs  
1–100 (hard range)
- AE23.** Personal expenses for vocational or technical programs
- |                      |  |
|----------------------|--|
| Tuition and fees:    | 0–50,000 (hard range)<br>0–20,000 (soft range) |
| Books and materials: | 0–10,000 (hard range)<br>0–5,000 (soft range)  |
- AF4.** Month and year starting apprenticeship programs
- |        |  |
|--------|--|
| Month: | 1–12 (hard range)                                |
| Year:  | 1985–2001 (hard range)<br>1995–2001 (soft range) |
- AF5.** Month and year completing apprenticeship programs
- |        |  |
|--------|--|
| Month: | 1–13 (hard range)                                |
| Year:  | 1995–2010 (hard range)<br>2000–2005 (soft range) |
- AF6.** Number of classroom hours for apprenticeship programs  
0–100 (hard range)  
0–50 (soft range)

- AF9.** Personal expenses for apprenticeship programs
- |                      |  |
|----------------------|--|
| Tuition and fees:    | 0–50,000 (hard range)<br>0–20,000 (soft range) |
| Books and materials: | 0–10,000 (hard range)<br>0–5,000 (soft range)  |
- AG5.** Total hours for formal courses
- 1–500 (hard range)  
1–150 (soft range)
- AH2.** Reasons for taking work-related courses
- At least one category must be equal to 1 (**Until statement edit**)
- AH9.** Percentage of technology instruction for work-related courses
- 1–100 (hard range)
- AH11.** Personal expenses for work-related courses
- |                      |   |
|----------------------|---|
| Tuition and fees:    | 0–10,000 (hard range)<br>0–3,000 (soft range) |
| Books and materials: | 0–1,000 (hard range)<br>0–500 (soft range)    |
- AI8.** Percentage of technology instruction for personal interest courses
- 1–100 (hard range)
- AI9.** Personal expenses for personal interest courses
- |                      |   |
|----------------------|---|
| Tuition and fees:    | 0–10,000 (hard range)<br>0–3,000 (soft range) |
| Books and materials: | 0–1,000 (hard range)<br>0–500 (soft range)    |
- AK1.** Month and year born
- |        |  |
|--------|--|
| Month: | 1–12 (hard range)                                |
| Year:  | 1901–1985 (hard range)<br>1920–1985 (soft range) |
- AK8OV.** Age when first moved to U.S.
- Age must be less than or equal to current age (**Until statement edit**)
- 1–80 (hard range)  
1–40 (soft range)



- AK12.** Number of months worked in past 12 months  
1–12 (hard range)
- AK15.** Number of total hours per week work for pay  
1–99 (hard range)  
1–60 (soft range)
- AK21.** Earnings (**Confirmation screen check**)
- |               |  |
|---------------|--|
| Per hour:     | 1–40 (hard range)<br>1–25 (soft range)                 |
| Per day:      | 1–350 (hard range)<br>1–200 (soft range)               |
| Per week:     | 10–2,000 (hard range)<br>50–1,000 (soft range)         |
| Per biweekly: | 20–4,000 (hard range)<br>100–2,000 (soft range)        |
| Per month:    | 40–10,000 (hard range)<br>200–5,000 (soft range)       |
| Per year:     | 500–300,000 (hard range)<br>1,000–100,000 (soft range) |
- AL4.** Number of additional telephone numbers for home use  
0–9 (hard range)  
0–3 (soft range)
- AL6.** Number of additional lines for computer or fax  
0–5 (hard range)  
0–3 (soft range)
- AL8.** Number of computer or fax lines for talking  
1–5 (hard range)  
1–3 (soft range)
- AL9.** ZIP code  
Match first three digits to three-digit ZIP code loaded with list-assisted sample from Genesys.  
**(Until statement edit)**  
Edit will allow respondent to verify their response  
Zip code must be 5 characters in length (**Until statement edit**)
- AL12.** Month and year stopped receiving benefits  
Date (month and year) respondent stopped receiving benefits must be within 3 years before interview date.  
**(Until statement edit)**
- AL17.** Household income to the nearest thousand (**Until statement edit**)  
Response must fall within the range reported at AL12.

## Batch Data Integrity Edit Specifications

Various data integrity edits were run against completed interviews to verify between-item skips and copying of data from one interview to another. These were run by data preparation staff to be sure that updates posted to cases took into account all variable settings that may have been affected by the change. These edits differ from the range and logic edits because they were not done during interview administration. They are different from the structural edits because they did not check the integrity of database records, but the integrity of the relationships between data items. These edits were developed to assist frequency review during data collection and after imputation. There were no changes to these edits after delivery of the final Data Editing Plan.

### ECPP/ASPA Interviews

1. Confirmation of HHMOM, HHDAD with FEMGUARD, MALGUARD setting:
  - If HHMOM = 1 then FEMGUARD[MOMNUM] must = 1,2;
  - If HHMOM = 2 then FEMGUARD[MOMNUM] must = 3,4;
  - If HHMOM = 4 then all FEMGUARD array cells must = -1.
  
  - If HHDAD = 1 then MALGUARD[DADNUM] must = 1,2;
  - If HHDAD = 2 then MALGUARD[DADNUM] must = 3,4;
  - If HHDAD = 4 then all MALGUARD array cells must = -1.
  
2. Confirmation of PATH:
  - If AGE2000 = 0, 1, 2 then PATH must = I (infants/toddlers).
  
  - If [(AGE2000 >= 3 and AGE2000 <= 6) and not enrolled in school (ENROLL = 2) and not in home school (HOMESCHL not = 1 or HOMECON not = 1)] or [GRADE/GRADEEQ = N] or [GRADEEQ = U, -7, -8 and AGE2000 = 3 or 4] then PATH must = N (preschool).
  
  - If [GRADE/GRADEEQ = T, K, P, 1, 2, 3, 4, 5, 6, 7 or 8 and not in home school (HOMESCHL not = 1 or HOMECON not = 1)] or [GRADEEQ = U, -7, -8 and AGE2000 >= 5 and <= 15 and not in home school (HOMESCHL not = 1 or HOMECON not = 1)] then PATH must = S (school-age).
  
  - If AGE2000 >= 5 and in home school (HOMESCHL = 1 and HOMECON = 1) and GRADEEQ not = N then PATH must = H (home school).
  
3. SD12 – If two children are sampled for ASPA in the same household (ASPASMP > 1), the respondent for both interviews is the same, neither child has PATH = 'H' and HOMSCFLG not = 1, and it is possible from the responses to GRADE and SGRADE, GRADEEQ and SGRADEQ that the two children go to the same school, SSAME must not = -1.
  
4. SD1 – SD11 – If two children go to the same school and the respondent is the same for both ASPA Interviews in the household (PARN.SSAME = 1 and ENUM.PARNUM is identical) then SPUBLIC, SCHOICE, SDISRCT, SRELGN, SCATHLIC, SLOW, SHIGH, SNUMSTUD, SNUMGRAD, SSTRTHR, SSTRTMN, SSTRAMP, SENDHR, SENDMN, SENDAMP, and SSCHOMM should be equal (“Same School” common items).

5. SJ1OV – If a school-aged child (PATH = S) has younger siblings in the household (any RELATION = 3,4 and AGE of child is less than sampled child’s AGE2000) then SCRESIB must not = -1.
6. SL1 – If a school-aged child (PATH = S) has no nonparental supervision before or after school (all RCNOW, NCNOW, CPSNOW and SCSELF = 2, -7, -8 and ASCOVER = 2, -7, -8, -1) or no before school arrangements (all RCBFAFT, NCBFAFT, CPBFAFT and SCBFAFT are not = 1,3) then PABHOME must not = -1. Conversely, if the child has before-school supervision or a before-school arrangement, then PABHOME must = -1.
7. SL2 – If a school-aged child (PATH = S) has no nonparental supervision before or after school (all RCNOW, NCNOW, CPSNOW and SCSELF = 2, -7, -8 and ASCOVER = 2, -7, -8, -1) or no after school arrangements (all RCBFAFT, NCBFAFT, CPBFAFT and SCBFAFT are not = 2,3) then PAAHOME must not = -1. Conversely, if the child has after-school supervision or an after-school arrangement, then PAAHOME must = -1.
8. SM7, SM8, SM9 – If multiple school-aged (PATH = S) children are sampled in a household and each child is in an arrangement or the parent/guardian would choose to place each child in an arrangement, then the ASPA variables PPBCHOIC, PPACHOIC and PPHWHLP – PPKNBEF must be equal (ASPA “Perception of Quality” common items).
9. EI6 – If multiple infants/toddlers (PATH = I) or preschoolers (PATH = N) are sampled in a household, then the ECPP variable PPCHOIC must be equal (ECPP “Perception of Quality” common item).
10. EJ1 – If an infant/toddler (PATH = I) and a preschooler (PATH = N) are sampled in a household, then the ECPP variables SFATTGRP and SFATTCLS must be equal (“Training and Support for Families of Preschoolers” common items).
11. EI3/SL5 – If a child has no current nonparental care arrangements (ECPP: RCNOW, NCNOW and CPNNOW all = 2, -7, -8; ASPA: RCNOW, NCNOW, CPSNOW, ASCOVER, SCSELF all = 2, -7, -8, -1) then PACHOOSE must NOT = -1. Conversely, if a child has at least one current nonparental care arrangement, then PACHOOSE must = -1.
12. PU24/PU25 and PV23/PV24 – Child and Dependent Care Tax Credit questions are asked once per household. The responses to MAMA.MOMTCRED/PAPA.DADTCRED and MAMA.MOMTCUSE/PAPA.DADTCUSE must be identical.
13. If the respondent to an ECPP or ASPA Interview was the parent or guardian (no parent in the household) of the sampled child and also completed an AELL Interview, the common items between the ECPP/ASPA and AELL Interviews must contain identical information (“Adult/MAMA/PAPA” common items).
14. If two sampled children in a household have the same mother/female respondent (DEMO.MOMNUM is identical for both), the non-child specific mother items (MOMSTAT, MOMPART, MOMNEW, MOMLANG, MOMLANOS, MOMSPEAK, MOMSPEOS, MOMBORN, MOMTEROS, MOMCONOS, MOMUSAGE, MOMGRADE, MOMGRAD1, MOMGRAD2, MOMVOTEC, MOMDIPL, MOMWORK, MOMLEAVE, MOMHOURS, MOMMTHS, MOMLOOK, MOMPUBL, MOMPRIV, MOMEMPL, MOMREL, MOMANSAD, MOMREAD, MOMOTHER, MOMOTHOS, MOMACTY, MOMACTOS, MOMENROL, MOMENHRS, MOMLVEAS, MOMACCT, MOMACUSE) must be identical.

15. If two sampled children in a household have the same father/male respondent (DEMO.DADNUM is identical for both), the non-child specific father items (DADSTAT, DADPART, DADNEW, DADLANG, DADLANOS, DADSPEAK, DADSPEOS, DADBORN, DADTEROS, DADCONOS, DADUSAGE, DADGRADE, DADGRAD1, DADGRAD2, DADVOTEC, DADDIPL, DADWORK, DADLEAVE, DADHOURS, DADMTHS, DADLOOK, DADPUBL, DADPRIV, DADEMPL, DADREL, DADANSAD, DADREAD, DADOTHER, DADOTHOS, DADACTY, DADACTOS, DADENROL, DADENHRS, DADLVEAS, DADACCT, DADACUSE, DADTCRED, DADTCUSE) must be identical.
16. PV27 – Parent work/stay home preference is asked once per household. The responses to DEMO.PWRKHOME must be identical.

### Household Characteristics

1. Number in household (HHNUM) should equal the total number of people enumerated as household members in S6, S13 and/or PA7.
2. If (Number in HH = 2,3 and HINCOME <= 3) or  
 (Number in HH = 4 and HINCOME <= 4) or  
 (Number in HH = 5,6 and HINCOME <= 5) or  
 (Number in HH = 7 and HINCOME <= 6) or  
 (Number in HH = 8 and HINCOME <= 7) or  
 (Number in HH >= 9 and HINCOME <= 8)  
 HINCMEXT must have been asked (HINCMEXT cannot = -1)

### Edits for Structural Completeness

The structural edits were run against completed interviews only. . There were no changes to these edits after delivery of the final Data Editing Plan. The completion codes (database variables SCR.N.SCRNRSLT for screener completes and BASM.MAINRSLT for extended completes) were as follows:

#### Screener (SCR.N.SCRNRSLT)

- C0 Complete screener with no extended interviews
- C1 Complete screener with ECPP Interviews(s) only
- C2 Complete screener with ASPA Interview(s) only
- C3 Complete screener with ECPP and ASPA Interviews
- C4 Complete screener with AELL Interview(s) only
- C5 Complete screener with AELL and ECPP Interviews
- C6 Complete screener with AELL and ASPA Interviews
- C7 Complete screener with ECPP, ASPA and AELL Interviews

#### ECPP (BASM.MAINRSLT)

- CI Complete ECPP Interview for an infant/toddler
- CN Complete ECPP Interview for a preschooler

#### ASPA (BASM.MAINRSLT)

- CE Complete ASPA Interview for a school-age child
- CH Complete ASPA Interview for a home schooler

AELL (BASM.MAINRSLT)

- CP Complete AELL Interview; sampled as participant, completed as participant
- CU Complete AELL Interview; sampled as nonparticipant, completed as nonparticipant
- CX Complete AELL Interview; sampled as participant, completed as nonparticipant
- CZ Complete AELL Interview; sampled as nonparticipant, completed as participant

The structural edits were grouped into four categories as described below.

**A. Interview Completeness**

These edits confirmed the completeness of the database. In other words, if there was a completed interview, all of the appropriate data records associated with that type of interview must exist.

- A1. Screeners completed with ECPP Interview(s) only (SCRN.SCRNRSLT = C1) must have ECPP extended(s) only (SELECTEX = EC for the BASM record(s)).
- A2. Screeners completed with ASPA Interview(s) only (SCRN.SCRNRSLT = C2) must have ASPA extended(s) only (SELECTEX = AS for the BASM record(s)).
- A3. Screeners completed with ECPP and ASPA Interviews (SCRN.SCRNRSLT = C3) must have at least one ECPP extended (SELECTEX = EC) and at least one ASPA extended (SELECTEX = AS).
- A4. Screeners completed with AELL Interview(s) only (SCRN.SCRNRSLT = C4) must have AELL extended(s) only (SELECTEX = HP, HU, LP, LU for the BASM record(s)).
- A5. Screeners completed with AELL and ECPP Interviews (SCRN.SCRNRSLT = C5) must have at least one AELL extended (SELECTEX = HP, HU, LP, LU) and at least one ECPP extended (SELECTEX = EC).
- A6. Screeners completed with AELL and ASPA Interviews (SCRN.SCRNRSLT = C6) must have at least one AELL extended (SELECTEX = HP, HU, LP, LU) and at least one ASPA extended (SELECTEX = AS).
- A7. Screeners completed with ECPP, ASPA and AELL Interviews (SCRN.SCRNRSLT = C7) must have at least one ECPP extended (SELECTEX = EC), one ASPA extended (SELECTEX = AS) and one AELL extended (SELECTEX = HP, HU, LP, LU).
- A8. Screeners completed with no sampled interviews (SCRN.SCRNRSLT = C0) must have no extendeds (BASM records).
- A9. Screeners completed with no extended interviews (SCRN.SCRNRSLT = C0) must have one and only one HOME record.
- A10. Each household in which there is a completed or ineligible extended (BASM.MAINRSLT = CI, CN, CS, CH, CP, CU, CX, CZ, IP, IA) must have one and only one HOME record.
- A11. For each completed ECPP Interview (BASM.MAINRSLT = CI or CN) there must be a DEMO record and a CHIL record.
- A12. For each completed ASPA Interview (BASM.MAINRSLT = CS or CH) there must be a DEMO record and a YUTH record.
- A13. For each completed AELL Interview (BASM.MAINRSLT = CP, CU, CX, CZ) there must be an ADLT record.
- A14. For each completed ECPP Interview (BASM.MAINRSLT = CI or CN) there must be no YUTH record and no ADLT record.

- A15. For each completed ASPA Interview (BASM.MAINRSLT = CS or CH) there must be no CHIL record and no ADLT record.
- A16. For each completed AELL Interview (BASM.MAINRSLT = CP, CU, CX, CZ) there must be no DEMO record, no CHIL record and no YUTH record.
- A17. Every ECPP or ASPA Interview in which the child is currently receiving care from a relative on a regular basis (DEMO.RCNOW = 1) must have one RELA record.
- A18. Every ECPP or ASPA Interview in which the child is NOT currently receiving care from a relative on a regular basis (DEMO.RCNOW not = 1) must have no RELA records.
- A19. Every ECPP or ASPA Interview in which the child is currently receiving care from a nonrelative on a regular basis (DEMO.NCNOW = 1) must have one NREL record.
- A20. Every ECPP or ASPA Interview in which the child is NOT currently receiving care from a nonrelative on a regular basis (DEMO.NCNOW not = 1) must have no NREL records.
- A21. Every ECPP or ASPA Interview in which the child is currently attending a center-based arrangement (DEMO.CPNNOW = 1 or DEMO.CPSNOW = 1) must have one CENT record.
- A22. Every ECPP or ASPA Interview in which the child is NOT currently attending a center-based arrangement (DEMO.CPNNOW not = 1 and DEMO.CPSNOW not = 1) must have no CENT records.
- A23. Every ECPP or ASPA Interview in which the child has had another care arrangement since September (DEMO.PCOTHER = 1) must have one CONT record.
- A24. Every ECPP or ASPA Interview in which the child has NOT had another care arrangement since September (DEMO.PCOTHER not = 1) must have no CONT records.
- A25. Every AELL Interview in which the adult has taken ESL classes in the past 12 months (ADLT.ESLANG = 1) must have one and only one LANG record.
- A26. Every AELL Interview in which the adult has NOT taken ESL classes in the past 12 months (ADLT.ESLANG not = 1) must have no LANG records.
- A27. Every AELL Interview in which the adult has taken basic skills or high school completion courses in the past 12 months and did not get a diploma through regular daytime high school in the past 12 months [(ADLT.BSIMPROV = 1 or ADLT.BSGED = 1 or ADLT.BSHSEQUV = 1) and not (ADLT.IBDIPLYR = 1 and ADLT.IBHSREQ = 1)] must have one SKIL record.
- A28. Every AELL Interview in which the adult has NOT taken basic skills or high school completion courses in the past 12 months or got a diploma through regular daytime high school in the past 12 months [(ADLT.BSIMPROV not= 1 and ADLT.BSGED not= 1 and ADLT.BSHSEQUV not= 1) or (ADLT.IBDIPLYR = 1 and ADLT.IBHSREQ = 1)] must have no SKIL records.
- A29. Every AELL Interview in which the adult has been enrolled in courses toward a college or university degree in the past 12 months or was enrolled in a post-degree certificate program in the past 12 months (ADLT.CRDEGREE = 1 or ADLT.CRPOSTDG = 1) must have one CRED record.
- A30. Every AELL Interview in which the adult has NOT been enrolled in courses toward a college or university degree in the past 12 months and was not enrolled in a post-degree certificate program in the past 12 months (ADLT.CRDEGREE not = 1 and ADLT.CRPOSTDG not = 1) must have no CRED records.
- A31. Every AELL Interview in which the adult has taken courses toward a vocational/technical credential in the past 12 months (ADLT.CRVCDIP = 1) must have one VOCA record.

- A32. Every AELL Interview in which the adult has NOT taken courses toward a vocational/technical credential in the past 12 months (ADLT.CRVOCDIP not = 1) must have no VOCA records.
- A33. Every AELL Interview in which the adult has been enrolled in an apprenticeship program in the past 12 months (ADLT.APPRENTI = 1) must have one APPR record.
- A34. Every AELL Interview in which the adult has NOT been enrolled in an apprenticeship program in the past 12 months (ADLT.APPRENTI not = 1) must have no APPR records.
- A35. Every AELL Interview in which the adult has taken work-related or personal interest courses in the past 12 months (ADLT.FCACTY = 1 or ADLT.FCACTOTH = 1) must have at least one CRSE record (CRSE records store all of the courses mentioned at AG2).
- A36. Every AELL Interview in which the adult has NOT taken work-related or personal interest courses in the past 12 months (ADLT.FCACTY not = 1 and ADLT.FCACTOTH not = 1) must have no CRSE records.
- A37. Every AELL Interview in which the adult has taken work-related courses in the past 12 months (ADLT.WRCOUNT > 0) must have at least one WORK record (WORK records are only created for sampled courses if ADLT.WRCOUNT > 4).
- A38. Every AELL Interview in which the adult has NOT taken work-related courses in the past 12 months (ADLT.WRCOUNT <= 0) must have no WORK records.
- A39. Every AELL Interview in which the adult has taken personal interest courses in the past 12 months (ADLT.PDCOUNT > 0) must have at least one ACTY record (ACTY records are only created for sampled courses if ADLT.PDCOUNT > 2).
- A40. Every AELL Interview in which the adult has NOT taken personal interest courses in the past 12 months (ADLT.PDCOUNT <= 0) must have no ACTY records.
- A41. All completed ECPP Interviews for infants/toddlers (BASM.MAINRSLT = CI) must have PATH equal to I.
- A42. All completed ECPP Interviews for preschool children who are not homeschooled (BASM.MAINRSLT = CN) must have PATH equal to N.
- A43. All completed ASPA Interviews for school-age children who are not homeschooled (BASM.MAINRSLT = CS) must have PATH equal to S.
- A44. All completed ASPA Interviews for children in home school (BASM.MAINRSLT = CH) must have PATH equal to H.
- A45. For completed AELL Interviews in which the respondent was sampled as a participant and completed as a participant (BASM.MAINRSLT = CP), the following conditions must be true:  
 The adult must have been sampled as a participant (SELECTED = HP or LP) AND  
 The adult must have taken courses of some sort (ESLANG = 1 or [BSIMPROV = 1 or BSGED = 1 or BSHSEQUV = 1 and not(IBDIPLYR = 1 and IBHSREQ = 1)] or CRDEGREE = 1 or CRPOSTDG = 1 or CRVOCDIP = 1 or APPRENTI = 1 or WRCOUNT > 0 or PDCOUNT > 0).

- A46. For completed AELL Interviews in which the respondent was sampled as a participant and completed as a nonparticipant (BASM.MAINRSLT = CX), the following conditions must be true:  
The adult must have been sampled as a participant (SELECTED = HP or LP) AND  
The adult must not have taken courses of any sort (ESLANG not = 1 and [BSIMPROV not = 1 and BSGED not = 1 and BSHSEQUV not = 1 or (IBDIPLYR = 1 and IBHSREQ = 1)] and CRDEGREE not = 1 and CRPOSTDG not = 1 and CRVODIP not = 1 and APPRENTI not = 1 and WRCOUNT <= 0 and PDCOUNT <= 0).
- A47. For completed AELL Interviews in which the respondent was sampled as a nonparticipant and completed as a participant (BASM.MAINRSLT = CZ), the following conditions must be true:  
The adult must have been sampled as a nonparticipant (SELECTED = HU or LU) AND  
The adult must have taken courses of some sort (ESLANG = 1 or [BSIMPROV = 1 or BSGED = 1 or BSHSEQUV = 1 and not(IBDIPLYR = 1 and IBHSREQ = 1)] or CRDEGREE = 1 or CRPOSTDG = 1 or CRVODIP = 1 or APPRENTI = 1 or WRCOUNT > 0 or PDCOUNT > 0).
- A48. For completed AELL Interviews in which the respondent was sampled as a nonparticipant and completed as a nonparticipant (BASM.MAINRSLT = CU), the following conditions must be true:  
The adult must have been sampled as a nonparticipant (SELECTED = HU or LU) AND  
The adult must not have taken courses of any sort (ESLANG not = 1 and [BSIMPROV not = 1 and BSGED not = 1 and BSHSEQUV not = 1 or (IBDIPLYR = 1 and IBHSREQ = 1)] and CRDEGREE not = 1 and CRPOSTDG not = 1 and CRVODIP not = 1 and APPRENTI not = 1 and WRCOUNT <= 0 and PDCOUNT <= 0).

## **B. Appropriate Person Records**

Every completed interview must have the appropriate associated person records. This includes person records for the subject and for the respondent, as well as for the mother, the father, and all other household members.

As in the NHES:1999, ENU2 records were identical in structure and content to the ENUM records. At the completion of the Screener, each ENUM record for a household was copied to a corresponding ENU2 record. These ENU2 records were not modified, so there was always a record of the persons enumerated and their characteristics *at the time of sampling*. During the ECPP or ASPA Interview for CHIL1, household members may be added, deleted or characteristics modified at PA7. These changes were applied to the ENUM records, but the number and content of the ENU2 records did not change.

- B1. Every BASM record must represent an enumerated, interview-eligible household member (ENU2.PERSNUM = BASM.ENUMNUM and ENU2.ELIGFLG = 1).
- B2. All completed ECPP and ASPA Interviews (BASM.MAINRSLT = CI, CN, CS, CH) must have been completed by an enumerated household member and this respondent's sex must match PARSEX for the child's interview. (There must be an ENUM where ENUM.PERSNUM = ENUM.PARNUM of child's ENUM and ENUM.SEX = ENUM.PARSEX of child's ENUM.)
- B3. If DEMO.MOMNUM not = -1 then there must be an ENUM record where ENUMID = the first 8 digits of DEMOID concatenated with DEMO.MOMNUM.
- B4. If DEMO.DADNUM not = -1 then there must be an ENUM record where ENUMID = the first 8 digits of DEMOID concatenated with DEMO.DADNUM.
- B5. NUMKID15 must equal the number of ENUM records with ENUM.AGE <= 15.
- B6. NUMKID20 must equal the number of ENUM records with ENUM.AGE <= 20.
- B7. If the ECPP or ASPA Interview respondent is not a parent of the sampled child (ENUM.PARRELN not = 1 or 2) then there must be an ENUM where ENUMID = the first 8 digits of BASMID concatenated with the child's ENUM.PARNUM and the respondent must be 12 or older (ENUM.AGE >= 12).



- B8. If the ECPP or ASPA Interview respondent is a grandparent of the child (ENUM.PARRELN = 5, 6) then there must be an ENUM where ENUMID = the first 8 digits of BASMID concatenated with the child's ENUM.PARNUM and the respondent must be 24 or more years older than the child (ENUM.AGE >= child's DEMO.AGE2000 + 24).
- B9. For every relationship recorded in the ECPP or ASPA Interview, (DEMO.RELATION[n] not = -1), there must be an ENUM record with ENUMID = BASEID concatenated with n.
- B10. If the ECPP or ASPA Interview respondent is the child's mother (ENUM.PARRELN = 1), then there must be an ENUM record with ENUM.PERSNUM = DEMO.MOMNUM.
- B11. If the ECPP or ASPA Interview respondent is the child's father (ENUM.PARRELN = 2), then there must be an ENUM record with ENUM.PERSNUM = DEMO.DADNUM.

### **C. Parent Relationships**

Every person defined as a parent must have had appropriate records and database values. The parent relationship structural edits checked that expected records and database relationships were correct.

- C1. If any mother relationship is recorded in the ECPP or ASPA Interview (DEMO.RELATION[n] = 1), then there must be an ENUM where ENUM.PERSNUM = DEMO.MOMNUM.
- C2. If any father relationship is recorded in the ECPP or ASPA Interview (DEMO.RELATION[n] = 2), then there must be an ENUM where ENUM.PERSNUM = DEMO.DADNUM.
- C3. If there is a mother or female guardian in the household (DEMO.HHMOM = 1, 2 or 3), then there must be a MAMA record.
- C4. If there is a father or male guardian in the household (DEMO.HHDAD = 1, 2 or 3), then there must be a PAPA record.
- C5. If there is a mother in the household (DEMO.HHMOM = 1, 2), then the child's ENUM should represent this in the RELATION cell corresponding to the mother's enumeration number (ENUM.RELATION[MOMNUM] = 1).
- C6. If there is a father in the household (DEMO.HHDAD = 1, 2), then the child's ENUM should represent this in the RELATION cell corresponding to the father's enumeration number (ENUM.RELATION[DADNUM] = 2).
- C7. If there is a birth mother in the household (not missing DEMO.MOMNUM and FEMGUARD[DEMO.MOMNUM] = 1) then there must be an ENUM record where ENUMID = the first 8 digits of BASMID concatenated with DEMO.MOMNUM and the mother must be between 12 and 55 years older (inclusive) than the child (ENUM.AGE <= child's AGE2000 + 55 and ENUM.AGE >= child's AGE2000 + 12).
- C8. If there is a birth father in the household (not missing DEMO.DADNUM and MALGUARD[DEMO.DADNUM] = 1) then there must be an ENUM record where ENUMID = the first 8 digits of BASMID concatenated with DEMO.DADNUM and the father must be between 12 and 55 years older (inclusive) than the child (ENUM.AGE <= child's AGE2000 + 55 and ENUM.AGE >= child's AGE2000 + 12).
- C9. Every child must have one and only one mother (for every BASM there must be one and only one RELATION[n] = 1). Note: a same-sex parent will have RELATION[n] = 12.
- C10. Every child must have one and only one father (for every BASM there must be one and only one RELATION[n] = 2). Note: a same-sex parent will have RELATION[n] = 12.

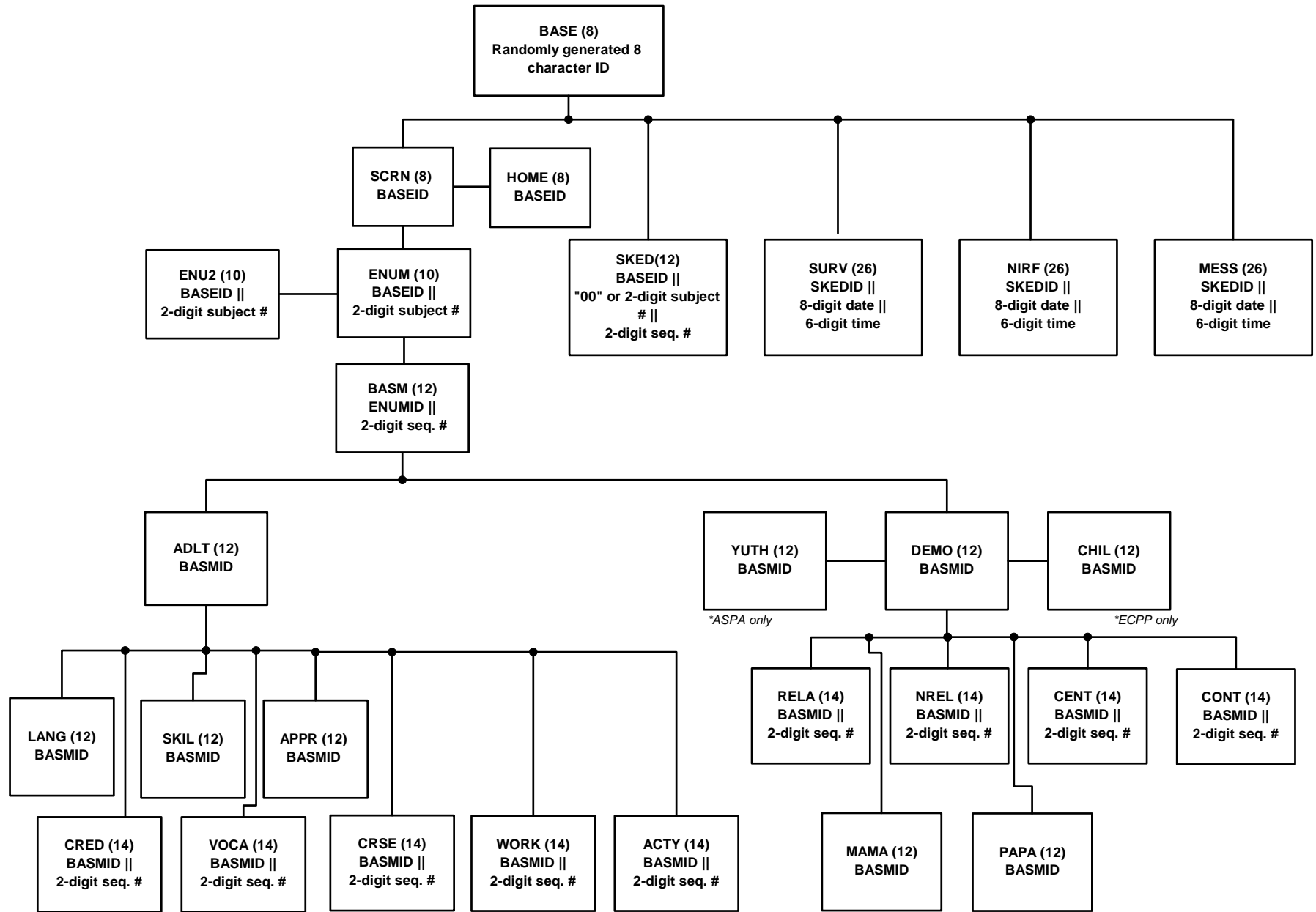
- C11. If there is no mother or father in the household (DEMO.HHMOM not = 1 or 2 and DEMO.HHDAD not = 1 or 2) and the respondent is female, there must be a MAMA record but no PAPA record.
- C12. If there is no mother or father in the household (DEMO.HHMOM not = 1 or 2 and DEMO.HHDAD not = 1 or 2) and the respondent is male, there must be a PAPA record but no MAMA record.

**D. Common Items**

Items asked only once per interview were copied over to successive records. These edits confirmed that parent information was identical for similar children.

- D1. All children with the same mother or same female respondent (all DEMO records with the same DEMO.MOMNUM) or (HHMOM = 3 and the same ENUM.PARNUM) must have a MAMA record with identical non-child specific information.
- D2. All children with the same father or same male respondent (all DEMO records with the same DEMO.DADNUM or (HHDAD = 3 and the same ENUM.PARNUM) must have a PAPA record with identical non-child specific information.

NHES:2001 Database Design Diagram



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## **APPENDIX K**

### **Review of Weighting for the ECPP and ASPA Surveys**

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## 1. INTRODUCTION

This appendix presents information on an investigation of technical issues associated with the survey weighting methods for children in the 2001 National Household Education Surveys Program (NHES). NHES is a random-digit-dial (RDD) telephone survey that collects information on the civilian, noninstitutionalized population of the 50 States and the District of Columbia. The NHES surveys are designed to allow repeated measures of various phenomena over time. Data from NHES surveys are weighted to national totals using a multistage weighting process that includes adjustments for nonresponse at the household and individual levels as well as adjustment to national totals at the household and person levels. The weights involved in this investigation were those for the Early Childhood Program Participation Survey (ECPN-NHES:2001), which included children from birth through age 6 who had not yet entered kindergarten, and the Before- and After-School Programs and Activities Survey (ASPA-NHES:2001), which included children enrolled in kindergarten through grade 8, with a maximum age of 15 years.

The objective of NHES:2001 is to make inferences about the entire civilian, noninstitutionalized population for the domains of interest. Although only telephone households are sampled, the estimates are adjusted to totals of persons living in both telephone and nontelephone households derived from the Current Population Survey (CPS). One of the main reasons for doing this is to reduce the bias arising from the noncoverage of households without telephones in NHES.<sup>1</sup>

Throughout the history of NHES, the weights from the topical surveys have been adjusted to population totals obtained from the CPS using a weighting method called raking. The October CPS Education Supplement is the source of percentage distributions of children by enrollment status and grade of school, race/ethnicity, and home tenure (own/rent). The March CPS is the source of population totals. The control totals are derived by multiplying the March totals by the percentage distributions from the October CPS data. For the NHES:2001 surveys, the October 1999 and March 2000 CPS data sets were used, as they were the most recent ones available at the time the weighting procedures were conducted.

The main reason for the current study is that the initial weights for the ECPN and ASPA resulted in a discrepancy in the estimated number of 5-year-olds when compared to the CPS estimates. Due to this discrepancy, the weighting procedure and the raking procedures in particular were revised. The revised weights produced estimates with a peculiar pattern. Specifically, the mean weight was found to

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<sup>1</sup> Beginning in 1994, the CPS weights were adjusted to population totals that were adjusted to account for the undercoverage from the 1990 decennial census. Any additional undercoverage in the census of special populations, such as the homeless, remains in the totals obtained from the CPS.

decline by age within grade of school. Following discussions with NCES on these issues, the current full scale study was conducted in order to examine the source of this problem, to make a recommendation concerning weights for data from the NHES:2001 surveys, and to inform the weighting procedures for NHES:2003.

The sections that follow document the original weighting procedures used in NHES:2001, the alternative raking procedures subsequently attempted, and the results of the current investigation of the source of the anomalous results. Recommendations for the NHES:2001 weights and the rationale for these recommendations are provided. The implications for NHES:2003 are also stated. The weighting procedures are described briefly below. More complete details are presented in chapter 7.



## 2. ORIGINAL WEIGHTING PROCEDURES

In NHES:2001, a screening interview was administered at the household level to provide information required to assess the eligibility of household members for an extended interview. Household-level information that is of analytic interest was also collected during the extended interview. Since no data intended for analyses were collected at the household level only, household-level weights were calculated solely for use as a basis for computing person-level weights for the analysis of the extended interview data. In computing household weights, a household base weight was developed to account for the RDD sampling of telephone numbers, including the sampling rate differences by minority concentration stratum<sup>2</sup> and listed stratum<sup>3</sup> and a factor to reflect the subsampling for follow-up of no-answer telephone numbers.

This household base weight was adjusted for Screener nonresponse and further adjusted for households that had more than one telephone number, hence more than one chance of being included in the sample. A CHAID analysis was run to identify characteristics most associated with Screener nonresponse.<sup>4</sup> These characteristics, which were primarily geographic characteristics associated with the telephone exchange, were used to form cells for nonresponse adjustment of the household weights.

The final step at this level was a poststratification adjustment of the household weights. The primary purpose of the poststratification adjustment was to account for undercoverage resulting from the sampling of telephone households only. Poststratification ensures that survey weights sum to known population totals. See attachment KA for a technical description of poststratification. The characteristics used in poststratification were Census region (Northeast/South/Midwest/West) and presence of children less than 18 years of age. Table K-1 presents the control totals used for poststratifying the household-level weights. The variables used in poststratification were chosen to address differences in coverage rates with respect to region in which the household is located and presence of children in the household.

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<sup>2</sup> The high-minority stratum included telephone numbers in areas with 20 percent or more Black residence or 20 percent or more Hispanic residence. All other telephone numbers were assigned to the low minority stratum.

<sup>3</sup> The listed stratum included residential numbers listed in the telephone company White Pages. All other telephone numbers were assigned to the nonlisted stratum.

<sup>4</sup> Chi-Square Automatic Interaction Detection (CHAID) is a categorical search algorithm that identifies characteristics associated with response propensity.

**Table K-1. Control totals for poststratifying the NHES:2001 household-level weights: CPS:2000**

Census region <sup>1</sup>	Children under 18 in household	Control total
Total .....		104,781,947
Northeast .....	Yes	13,123,145
Northeast .....	No	6,969,672
South.....	Yes	23,970,552
South.....	No	13,343,144
Midwest.....	Yes	15,639,333
Midwest.....	No	8,900,832
West.....	Yes	14,013,486
West.....	No	8,821,783

<sup>1</sup> The following states and the District of Columbia are in each Census region: Northeast: CT, MA, ME, NH, NJ, NY, PA, RI, VT; South: AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV; Midwest: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI; West: AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), March 2000.

## 2.1 Original Approach for Person-Level Weighting for ECPP and ASPA

The next set of weighting procedures produced person-level weights, i.e., weights used to estimate the number of persons and to produce estimates of characteristics of persons. The household-level weight was treated as the base or initial weight, and the weighting procedures included raking the weights to independent totals from the CPS. Before discussing the raking, a brief description of the other person-level weighting steps is given.

The sampling of persons within household used data collected in the Screener interview from the adult household member who responded to the Screener.<sup>5</sup> The eligibility of the sampled children was later verified or updated when the parent/guardian most knowledgeable about the child responded to the ECPP or ASPA interviews.

The same procedures were used for creating person-level weights for the ECPP interview and for the ASPA interview. Several of the weighting steps were performed simultaneously but independently for the two surveys. The first step in developing the person weights for the ECPP and ASPA surveys was to account for the probability of sampling the child's domain in the given household. For example, if there was one preschooler, one elementary school child (enrolled in kindergarten through 5th grade), and one middle school child (enrolled in 6th through 8th grade), then the preschooler and the

<sup>5</sup> A sampling algorithm was used to limit the number of persons sampled in each household while maintaining the sampling rates required to attain the target sample sizes.

middle school child were sampled with certainty, and the elementary school child was sampled with probability 0.5; the domain sampling adjustment factors for the preschooler and the middle school child were 1, and the factor for the elementary school child (if sampled) was 2. The second step accounted for the probability of sampling the child from among all eligible children in the given domain. For example, if there were three preschoolers in the household, then one was sampled, and the weighting factor was 3, the reciprocal of the probability of selecting the child from among all children in that domain. The application of these two adjustments to the household weight created a person-level base weight for the ECPP and the ASPA interviews.

The next step involved adjusting the person-level base weight for nonresponse to the ECPP or ASPA interviews. Nonresponse adjustment cells were created using age/grade combinations (data for these cells were collected in the Screener): children age 0, children age 1, children age 2, unenrolled children ages 3 through 6, preschoolers, kindergartners, and children enrolled in each single grade for grade 1 through grade 8. Enrolled children with no grade equivalent were included in the cell containing the modal grade for their age; that is, they were assigned to the grade in which most children their age are enrolled. For each cell, the ratio of the weighted<sup>6</sup> number of eligible sampled children to the weighted number of responding children was then computed. This ratio was multiplied by the person-level base weight to create the nonresponse-adjusted person-level ECPP and ASPA interview weight.

The final step of weighting for the ECPP and the ASPA interviews was a raking adjustment. Raking is a statistical method proposed by Deming and Stephan (1940) as a way to ensure consistency between complete counts and sample data from the 1940 U.S. census (see attachment KA for a detailed discussion of raking). The raking procedure typically improves the reliability of survey estimates, and also corrects for the bias due to households or persons not covered by the survey, e.g., households without telephones and households with unlisted telephone numbers belonging to zero-listed telephone banks. The raking procedure is carried out in a sequence of adjustments: first, the weights are adjusted to sum to the totals on one marginal distribution (or dimension), and then the adjusted weights are further adjusted to sum to the totals on the second marginal distribution, and so on. One sequence of adjustments to the marginal distributions is known as a cycle or iteration. The procedure is repeated until convergence of weighted totals is achieved as discussed in attachment KA.

As noted earlier, the raking procedure for the ECPP and ASPA weights involved adjusting the nonresponse-adjusted person-level weights to national totals obtained using the percentage distributions from the October 1999 CPS and the total number of children from the March 2000 CPS.

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<sup>6</sup> The weight was the person-level base weight.

The October 1999 CPS contains variables not available on the March 2000 CPS (such as grade of school), but the totals in the latter are more current. In the procedure used in NHES:2001, the control total for a raking cell is the proportion in that cell from the October 1999 CPS multiplied by the estimate of the total number of children from the March 2000 CPS. Separate sets of totals were derived for ECPP-eligible children and ASPA-eligible children.

Three raking dimensions were originally used for both the ECPP interview weights and the ASPA interview weights. The dimensions were created by crossing race/ethnicity of the child (Black, non-Hispanic/Hispanic/other) and household income categories (\$10,000 or less/\$10,001–\$25,000/\$25,001 or more), Census region (Northeast/South/Midwest/West), and urbanicity (urban/rural), and a home tenure (rent/own or other) and age or grade of child (with those enrolled in school but having no grade equivalent assigned to the modal grade for their age). These raking dimensions were used because they include important analysis variables (e.g., grade) and characteristics that have been shown to be associated with telephone coverage (e.g., race/ethnicity). Tables K-2 and K-3 show the control totals used in the original raking of the ECPP interview weights and the ASPA interview weights, respectively.

## **2.2 Estimated Totals With Original Weights**

Once the procedures described above were completed, estimates could be produced for the surveys. As a standard practice in NHES, estimates are compared to other sources to assess the credibility of the NHES weights. Table K-4 gives one such table, the age-by-grade distribution for children from birth to age 15 up to grade 8. For the NHES estimates in this table, the age of the child was calculated as of September 30, in order to match the CPS timeframe. The first page of the table presents estimates from ECPP and ASPA (combined) and the second page gives the estimates from CPS. Standard errors of the NHES estimates are given in table K-4A.

When the table was examined, the main concern was the discrepancy in the number of 5-year-olds. The estimate of 3,522,000 from NHES was considerably lower than the estimate of 4,037,000 from the CPS. There was also concern regarding the NHES estimate of 5-year-olds enrolled in kindergarten (86 percent). This estimate is greater than the CPS estimate (74 percent). These differences led to preliminary review of the weighting procedures that is described in the next section.

**Table K-2. Control totals for original raking of the ECPP-NHES:2001 person-level weights:  
CPS:1999**

Characteristics used in raking	Percent of total	Control total
Total.....	100	20,281,225
<b>Race/ethnicity of child by household income</b>		
Black, non-Hispanic		
\$10,000 or less .....	4.5	903,941
\$10,001-\$25,000.....	3.9	786,749
\$25,001 or more.....	6.4	1,299,255
Hispanic		
\$10,000 or less .....	2.9	585,259
\$10,001-\$25,000.....	6.7	1,361,729
\$25,001 or more.....	8.6	1,747,611
Other		
\$10,000 or less .....	3.9	789,577
\$10,001-\$25,000.....	9.9	1,999,918
\$25,001 or more.....	53.3	10,807,186
<b>Census region<sup>1</sup> by urbanicity</b>		
Northeast		
Urban .....	14.5	2,932,856
Rural .....	3.9	783,761
South		
Urban .....	23.0	4,674,758
Rural .....	10.5	2,135,003
Midwest		
Urban .....	17.2	3,488,476
Rural .....	6.8	1,378,273
West		
Urban .....	20.8	4,216,150
Rural .....	3.3	671,948
<b>Home tenure by age/grade of child</b>		
Rent		
Age 0 .....	7.5	1,515,009
Age 1 .....	7.3	1,484,801
Age 2 .....	7.8	1,582,170
Age 3-6, not enrolled .....	8.3	1,692,269
Nursery/Preschool/Head Start.....	7.0	1,417,237
Own or other		
Age 0 .....	11.6	2,352,826
Age 1 .....	11.9	2,417,177
Age 2 .....	11.6	2,348,363
Age 3-6, not enrolled .....	11.4	2,302,434
Nursery/Preschool/Head Start.....	15.6	3,168,939

<sup>1</sup> The following states and the District of Columbia are in each Census region: Northeast: CT, MA, ME, NH, NJ, NY, PA, RI, VT; South: AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV; Midwest: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI; West: AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), March 2000; October 1999.

**Table K-3. Control totals for original raking of the ASPA-NHES:2001 person-level weights:  
CPS:1990**

Characteristics used in raking	Percent of total	Control total
Total .....	100	36,679,001
<b>Race/ethnicity by household income</b>		
Black, non-Hispanic		
\$10,000 or less .....	3.4	1,254,638
\$10,001-\$25,000 .....	5.2	1,922,579
\$25,001 or more .....	7.3	2,685,666
Hispanic		
\$10,000 or less .....	2.2	791,211
\$10,001-\$25,000 .....	5.7	2,094,365
\$25,001 or more .....	7.8	2,857,845
Other		
\$10,000 or less .....	3.2	1,189,588
\$10,001-\$25,000 .....	9.6	3,518,165
\$25,001 or more .....	55.5	20,364,944
<b>Census region<sup>1</sup> by urbanicity</b>		
Northeast		
Urban .....	14.5	5,304,128
Rural .....	3.9	1,417,447
South		
Urban .....	23.0	8,454,393
Rural .....	10.5	3,861,196
Midwest		
Urban .....	17.2	6,308,980
Rural .....	6.8	2,492,634
West		
Urban .....	20.8	7,624,991
Rural .....	3.3	1,215,232
<b>Home tenure by age/grade of child</b>		
Rent		
Transitional kindergarten/Kindergarten/Pre-1st grade .....	3.8	1,390,202
1st grade .....	3.9	1,431,051
2nd grade .....	3.6	1,327,395
3rd grade .....	3.7	1,344,591
4th grade .....	3.6	1,314,613
5th grade .....	3.6	1,306,471
6th grade .....	3.3	1,217,448
7th grade .....	3.0	1,117,932
8th grade .....	3.0	1,102,602
Own or other		
Transitional kindergarten/Kindergarten/Pre-1st grade .....	6.7	2,440,869
1st grade .....	7.9	2,902,274
2nd grade .....	7.1	2,606,563
3rd grade .....	8.2	2,998,054
4th grade .....	7.9	2,899,098
5th grade .....	7.8	2,848,472
6th grade .....	7.6	2,804,840
7th grade .....	7.5	2,767,142
8th grade .....	7.8	2,859,384

<sup>1</sup> The following states and the District of Columbia are in each Census region: Northeast: CT, MA, ME, NH, NJ, NY, PA, RI, VT; South: AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV; Midwest: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI; West: AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), March 2000; October 1999.

**Table K-4. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below using original raking: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
NHES:2001												
0 .....	4,838	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,850	100	†	†	†	†	†	†	†	†	†	†
2 .....	4,027	94	6	†	†	†	†	†	†	†	†	†
3 .....	3,845	55	44	1	†	†	†	†	†	†	†	†
4 .....	3,779	27	64	9	#	†	†	†	†	†	†	†
5 .....	3,522	1	7	86	6	#	†	†	†	†	†	†
6 .....	4,217	#	#	11	83	6	#	†	†	†	†	†
7 .....	3,838	†	†	†	15	79	6	#	†	†	†	†
8 .....	4,090	†	†	†	1	15	77	6	†	†	†	†
9 .....	4,343	†	†	†	†	1	21	73	6	#	†	†
10 .....	4,177	†	†	†	†	†	1	17	75	7	#	†
11 .....	3,940	†	†	†	†	†	†	1	19	74	6	#
12 .....	3,873	†	†	†	†	†	†	#	1	20	74	5
13 .....	3,674	†	†	†	†	†	†	†	#	1	19	80
14 .....	861	†	†	†	†	†	†	†	†	1	10	89
15 .....	86	†	†	†	†	†	†	†	7	†	†	89

See notes at end of table.

**Table K-4. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below using original raking: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
CPS:1999												
0 .....	3,861	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,895	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,924	100	†	†	†	†	†	†	†	†	†	†
3 .....	3,862	61	38	1	†	†	†	†	†	†	†	†
4 .....	4,021	31	61	8	†	†	†	†	†	†	†	†
5 .....	4,037	6	15	74	5	#	†	†	†	†	†	†
6 .....	4,060	2	2	11	81	4	1	†	†	†	†	†
7 .....	4,083	1	†	1	18	73	6	#	†	†	†	†
8 .....	3,955	†	†	†	2	18	75	5	#	†	†	†
9 .....	4,269	†	†	†	1	1	23	70	5	1	†	†
10 .....	4,053	†	†	†	†	#	2	22	70	5	#	†
11 .....	4,042	†	†	†	†	†	#	2	24	68	4	1
12 .....	3,905	†	†	†	†	†	†	1	3	23	68	6
13 .....	3,709	†	†	†	†	†	†	†	#	3	25	71
14 .....	1,020	†	†	†	†	†	†	†	†	1	8	90
15 .....	166	†	†	†	†	†	†	†	†	†	24	76

† Not applicable.

# Rounds to zero.

NOTE: For NHES, kindergarten (K) includes grades classified as kindergarten, transitional kindergarten, and prefirst grade. Age in NHES:2001 was recalculated to match the CPS definition of the child's age as of September 30. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.



**Table K-4A. Standard errors of the percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001 and ASPA-NHES:2001**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade										
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8	
NHES:2001													
0 .....	4,838	(1)	†	†	†	†	†	†	†	†	†	†	
1 .....	3,850	(1)	†	†	†	†	†	†	†	†	†	†	
2 .....	4,027	0.7	0.7	†	†	†	†	†	†	†	†	†	
3 .....	3,845	1.1	1.1	0.2	†	†	†	†	†	†	†	†	
4 .....	3,779	1.1	1.3	1.1	(1)	†	†	†	†	†	†	†	
5 .....	3,522	0.4	0.8	1.1	0.8	(1)	†	†	†	†	†	†	
6 .....	4,217	(1)	(1)	1.1	1.4	1.0	(1)	†	†	†	†	†	
7 .....	3,838	†	†	†	1.5	1.5	1.0	(1)	†	†	†	†	
8 .....	4,090	†	†	†	0.5	1.1	1.5	1.0	†	†	†	†	
9 .....	4,343	†	†	†	†	0.4	1.6	1.6	0.7	(1)	†	†	
10 .....	4,177	†	†	†	†	†	0.4	1.2	1.4	0.7	(1)	†	
11 .....	3,940	†	†	†	†	†	†	0.5	1.5	1.6	0.6	(1)	
12 .....	3,873	†	†	†	†	†	†	(1)	0.4	1.1	1.2	0.5	
13 .....	3,674	†	†	†	†	†	†	†	(1)	0.3	1.0	1.0	
14 .....	861	†	†	†	†	†	†	†	†	0.7	1.8	1.9	
15 .....	86	†	†	†	†	†	†	†	6.7	†	†	3.1	7.3

† Not applicable.

<sup>1</sup> Standard errors are not provided for estimates of 100 percent or estimates of less than 1 percent.

NOTE: Standard errors increase for children who are 14 and 15 years old. This is because there are small numbers of those children in the grade categories shown above.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001.

Table K-5 shows a comparison of the age by grade distribution, where the NHES age has not been recalculated. That is, the age used for the NHES estimates is age as of December 31. Standard errors of the NHES estimates are given in table K-5A.

**Table K-5. Percentage distribution of children ages 0 through 15, not enrolled in school or enrolled in 8th grade or below using original raking: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade										
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8	
NHES:2001													
0 .....	3,868	100	†	†	†	†	†	†	†	†	†	†	
1 .....	3,902	100	†	†	†	†	†	†	†	†	†	†	
2 .....	3,931	100	†	†	†	†	†	†	†	†	†	†	
3 .....	3,808	63	37	#	†	†	†	†	†	†	†	†	
4 .....	3,976	36	62	3	†	†	†	†	†	†	†	†	
5 .....	3,525	5	20	74	1	†	†	†	†	†	†	†	
6 .....	4,062	#	1	26	73	1	†	†	†	†	†	†	
7 .....	3,817	†	†	2	34	63	2	†	†	†	†	†	
8 .....	4,178	†	†	†	1	34	63	2	†	†	†	†	
9 .....	4,264	†	†	†	#	2	36	61	1	†	†	†	
10 .....	4,146	†	†	†	†	†	3	34	62	1	†	†	
11 .....	4,021	†	†	†	†	†	†	3	36	60	1	#	
12 .....	3,969	†	†	†	†	†	†	#	2	37	61	1	
13 .....	3,753	†	†	†	†	†	†	†	#	3	34	63	
14 .....	1,547	†	†	†	†	†	†	†	†	1	10	89	
15 .....	194	†	†	†	†	†	†	†	†	3	†	3	94

See notes at end of table.

**Table K-5. Percentage distribution of children ages 0 through 15, not enrolled in school or enrolled in 8th grade or below using original raking: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
CPS:1999												
0 .....	3,861	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,895	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,924	100	†	†	†	†	†	†	†	†	†	†
3 .....	3,862	61	38	1	†	†	†	†	†	†	†	†
4 .....	4,021	31	61	8	†	†	†	†	†	†	†	†
5 .....	4,037	6	15	74	5	#	†	†	†	†	†	†
6 .....	4,060	2	2	11	81	4	1	†	†	†	†	†
7 .....	4,083	1	†	1	18	73	6	#	†	†	†	†
8 .....	3,955	†	†	†	2	18	75	5	#	†	†	†
9 .....	4,269	†	†	†	1	1	23	70	5	1	†	†
10 .....	4,053	†	†	†	†	#	2	22	70	5	#	†
11 .....	4,042	†	†	†	†	†	#	2	24	68	4	1
12 .....	3,905	†	†	†	†	†	†	1	3	23	68	6
13 .....	3,709	†	†	†	†	†	†	†	#	3	25	71
14 .....	1,020	†	†	†	†	†	†	†	†	1	8	90
15 .....	166	†	†	†	†	†	†	†	†	†	24	76

† Not applicable.

# Rounds to zero.

NOTE: For NHES, kindergarten (K) includes grades classified as kindergarten, transitional kindergarten, and prefirst grade. For NHES estimates, age is as of December 31; for CPS estimates, age is as of September 30. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-5A. Standard errors of the percentage distribution of children ages 0 through 15, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001 and ASPA-NHES:2001**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Center-based care	K	1	2	3	4	5	6	7	8
NHES:2001												
0 .....	3,868	(1)	†	†	†	†	†	†	†	†	†	†
1 .....	3,902	(1)	†	†	†	†	†	†	†	†	†	†
2 .....	3,931	(1)	†	†	†	†	†	†	†	†	†	†
3 .....	3,808	1.1	1.1	0.2	†	†	†	†	†	†	†	†
4 .....	3,976	1.1	1.1	0.6	†	†	†	†	†	†	†	†
5 .....	3,525	0.7	1.0	1.2	0.4	†	†	†	†	†	†	†
6 .....	4,062	(1)	0.3	1.5	1.5	0.4	†	†	†	†	†	†
7 .....	3,817	†	†	0.8	1.6	1.6	0.7	†	†	†	†	†
8 .....	4,178	†	†	†	0.7	1.5	1.7	0.6	†	†	†	†
9 .....	4,264	†	†	†	(1)	0.6	1.6	1.6	0.3	†	†	†
10 .....	4,146	†	†	†	†	†	0.6	1.4	1.6	0.3	†	†
11 .....	4,021	†	†	†	†	†	†	0.6	1.5	1.6	0.2	(1)
12 .....	3,969	†	†	†	†	†	†	(1)	0.5	1.0	1.0	0.2
13 .....	3,753	†	†	†	†	†	†		(1)	0.5	1.1	1.1
14 .....	1,547	†	†	†	†	†	†	†	†	0.4	1.3	1.3
15 .....	194	†	†	†	†	†	†	3	†	†	1.8	3.1

† Not applicable.

<sup>1</sup> Standard errors are not provided for estimates of 100 percent or estimates of less than 1 percent.

NOTE: Standard errors increase for children who are 14 and 15 years old. This is because there are small numbers of those children in the grade categories shown.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001.

In another comparison, estimates of the number of children age 3 through 8th grade, by school type and by student grade level, are presented in table K-6 for the ECPP and ASPA surveys and for CPS:1999. No differences were detected in comparisons of NHES:2001 and CPS:1999 estimates for numbers of children age 3 through 8th grade enrolled in public and private schools. The NHES:2001 estimates 31,885,000 children enrolled in public schools and 3,896,000 enrolled in private schools. The CPS:1999 estimates 32,192,000 children enrolled in public schools and 4,259,000 enrolled in private schools. The table also shows the NHES estimates of the number of children at each grade level from age 3 through grade 8 are comparable to the CPS estimates. This was expected to some degree because the NHES weights were raked to estimates of grade by home tenure from the CPS.

**Table K-6. Number of children age 3 through 8th grade, by school type and by student grade level using original raking: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

School type and grade	NHES:2001		CPS:1999
	Number (thousands)	s.e. (thousands)	Number (thousands)
Total number of children age 3 through 8th grade.....	45,260	99	45,183
<b>School type<sup>1</sup></b>			
Public .....	31,885	173	32,192
Private .....	3,896	138	4,259
<b>Student grade level</b>			
Not enrolled.....	3,995	0 <sup>2</sup>	3,988
Preschool/nursery school.....	4,586	0	4,578
K.....	3,831	0	3,825
1.....	4,333	0	4,326
2.....	3,934	0	3,927
3.....	4,343	0	4,335
4.....	4,214	0	4,207
5.....	4,155	0	4,148
6.....	4,022	0	4,015
7.....	3,885	0	3,878
8.....	3,962	0	3,955

<sup>1</sup> Preschoolers and children who are homeschooled are not included.

<sup>2</sup> The estimates of total number of students by grade level have standard errors of 0, because this characteristic was used (in combination with home tenure) in forming a raking dimension. (See section 2.1 of this appendix for more details.)

NOTE: s.e. is standard error. Age in the NHES:2001 estimates was recalculated to match the CPS definition of the child's age as of September 30. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

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### **3. PRELIMINARY INVESTIGATION**

Concerns about the discrepancy between the NHES:2001 and CPS estimates of the total number of 5-year-olds resulted in a limited investigation into the reasons for this discrepancy prior to the current study. A memorandum documenting this preliminary study is given in Attachment KB. The first step in this preliminary investigation was to review the implementation of the weighting methodology. Although careful checks had been conducted at each stage of weighting, the procedures were reviewed again to ensure that they had been correctly computed and applied. No problems were found in the computation or application of the weighting adjustments.

The next step in the preliminary investigation was to examine alternative sets of raking dimensions. The raking procedure was determined to be the probable step that led to the discrepancy since the previous weights; the nonresponse-adjusted person-level weights did not exhibit the problem. As noted in section 2.1, the dimensions originally used in raking the ECPP and ASPA weights were race/ethnicity by household income, Census region by urbanicity, and home tenure by age/grade of the child. For the last dimension, single year of age was used only for infants (ages 0–2). Unenrolled children ages 3 through 6 were grouped in one category, and enrolled children in this age range were classified into grade categories. Thus, although the NHES and CPS estimates match for unenrolled children ages 3 through 6, and for kindergartners, for example, the estimates of total number of 5-year-olds do not match.

For the evaluation of alternative raking dimensions, two alternative sets of raking dimensions were considered. In both cases, the first two dimensions (race/ethnicity by household income, and Census region by urbanicity) remained the same. In Alternative 1, the home tenure by age/grade dimension was replaced with two dimensions: single year of age (alone), and home tenure by grade. In Alternative 2, the home tenure by age/grade dimension was replaced with a single dimension: home tenure by single year of age.

#### **3.1 Comparison to Estimates from External Sources**

Tables K-7 and K-8 give estimates of the total number of children by age and by grade, respectively, for selected ages and grades (chosen because of their proximity to kindergarten). Due to the forced matching by age, Alternatives 1 and 2 both alleviate the shortfall of 5-year-olds that is present

under the original raking approach. However, as seen in table K-8, Alternative 2 results in a substantially higher estimate of the total number of kindergartners than the other approaches.

**Table K-7. Estimates of total number of children by age (in thousands): ECPP-NHES:2001, ASPA-NHE:2001, and CPS:1999**

Age	October 1999 CPS	NHES:2001—Raking dimensions		
		Original	Alternative 1	Alternative 2
4.....	4,021	3,976	4,028	4,028
5.....	4,037	3,525	4,044	4,044
6.....	4,060	4,062	4,067	4,067
7.....	4,083	3,817	4,090	4,090

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-8. Estimates of total number of children by grade (in thousands): ECPP-NHES:2001, ASPA-NHE:2001, and CPS:1999**

Grade	October 1999 CPS	NHES:2001—Raking dimensions		
		Original	Alternative 1	Alternative 2
Nursery school/preschool	4,578	4,586	4,586	5,104
Kindergarten.....	3,825	3,831	3,831	4,417
1st grade.....	4,326	4,333	4,333	4,269
2nd grade.....	3,927	3,934	3,934	4,093

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

### 3.2 Summary Statistics for Each Alternative

Table K-9 gives the mean weight obtained using each of the raking alternatives. Because no differential sampling or weighting was done by age within a given grade, it was expected that the mean weights would be relatively uniform for all ages within a given grade. This is the case under the original approach and Alternative 2, but not with Alternative 1.



**Table K-9. Mean weight for each of the raking alternatives, by grade and AGE2000**

Grade	AGE2000	Number of respondents	Mean nonresponse adjusted weight <sup>1</sup>	Mean raked weight (Figures in parentheses are estimated totals, in thousands)				
				Original	Alternative 1	Alternative 2	Alternative 3 <sup>2</sup>	Alternative 3 with adjusted control totals <sup>2</sup>
Not enrolled ...	0	1,070	2,987 (3,313)	3,615 (3,868)	3,615 (3,868)	3,615 (3,868)	2,812 (3,009)	3,459 (3,701)
Not enrolled ...	1	1,258	2,874 (3,747)	3,102 (3,902)	3,102 (3,902)	3,102 (3,902)	3,017 (3,796)	3,137 (3,946)
Not enrolled ...	2	1,271	2,997 (3,949)	3,092 (3,931)	3,092 (3,931)	3,092 (3,931)	3,099 (3,938)	3,049 (3,875)
Not enrolled ...	3	774	2,688 (2,156)	3,085 (2,388)	3,121 (2,416)	2,886 (2,234)	3,208 (2,483)	3,157 (2,443)
Not enrolled ...	4	470	2,571 (1,253)	3,011 (1,415)	2,981 (1,401)	2,635 (1,238)	4,085 (1,920)	4,020 (1,889)
Not enrolled ...	5	64	2,716 (180)	2,922 (187)	2,755 (176)	2,751 (176)	4,486 (287)	4,414 (282)
Not enrolled ...	6	2	1,613 (3)	2,148 (4)	752 (2)	1,650 (3)	2,990 (6)	2,953 (6)
Preschool .....	3	585	2,710 (1,587)	2,490 (1,407)	2,541 (1,436)	2,866 (1,619)	2,449 (1,384)	2,410 (1,362)
Preschool .....	4	992	2,690 (2,766)	2,465 (2,446)	2,498 (2,478)	2,682 (2,660)	2,361 (2,342)	2,324 (2,305)
Preschool .....	5	277	2,794 (802)	2,559 (709)	2,391 (662)	2,877 (797)	3,790 (1,050)	3,729 (1,033)
Preschool .....	6	6	4,830 (30)	4,195 (25)	1,727 (10)	4,561 (27)	10,995 (66)	10,823 (65)

See notes at end of table.

**Table K-9. Mean weight for each of the raking alternatives, by grade and AGE2000—Continued**

Grade	AGE2000	Number of respondents	Mean nonresponse adjusted weight <sup>1</sup>	Mean raked weight (Figures in parentheses are estimated totals, in thousands)				
				Original	Alternative 1	Alternative 2	Alternative 3 <sup>2</sup>	Alternative 3 with adjusted control totals <sup>2</sup>
Kindergarten .....	3	4	3,726 (15)	3,268 (13)	4,276 (17)	3,874 (15)	3,232 (13)	3,183 (13)
Kindergarten .....	4	30	4,304 (134)	3,848 (115)	4,970 (149)	4,297 (129)	3,826 (115)	3,766 (113)
Kindergarten .....	5	539	5,488 (3,066)	4,813 (2,594)	5,773 (3,112)	5,630 (3,035)	4,769 (2,571)	4,693 (2,529)
Kindergarten .....	6	194	5,960 (1,199)	5,414 (1,050)	2,774 (538)	6,022 (1,168)	5,534 (1,074)	5,446 (1,057)
Kindergarten .....	7	5	13,299 (69)	11,568 (58)	3,008 (15)	13,913 (70)	11,818 (59)	11,625 (58)
1 .....	5	8	4,487 (37)	4,361 (35)	11,721 (94)	4,527 (36)	4,164 (33)	4,098 (33)
1 .....	6	554	5,158 (2,962)	5,321 (2,948)	6,196 (3,433)	5,114 (2,833)	5,006 (2,773)	4,926 (2,729)
1 .....	7	235	5,275 (1,285)	5,473 (1,286)	3,367 (791)	5,702 (1,340)	6,129 (1,440)	6,031 (1,417)
1 .....	8	9	6,911 (64)	6,805 (61)	1,697 (15)	6,262 (56)	9,091 (82)	8,941 (80)
1 .....	9	1	3,262 (3)	3,359 (3)	484 (—)	3,214 (3)	4,623 (5)	4,558 (5)
2 .....	6	6	6,224 (39)	5,810 (35)	14,035 (84)	5,797 (35)	5,641 (34)	5,548 (33)
2 .....	7	484	4,980 (2,498)	4,946 (2,394)	6,352 (3,074)	5,363 (2,596)	4,785 (2,316)	4,709 (2,279)
2 .....	8	266	5,495 (1,515)	5,372 (1,429)	2,827 (752)	5,210 (1,386)	5,621 (1,495)	5,531 (1,471)
2 .....	9	15	5,020 (78)	5,095 (76)	1,551 (23)	5,131 (77)	5,921 (89)	5,826 (87)

See notes at end of table.

**Table K-9. Mean weight for each of the raking alternatives, by grade and AGE2000—Continued**

Grade	AGE2000	Number of respondents	Mean nonresponse adjusted weight <sup>1</sup>	Mean raked weight (Figures in parentheses are estimated totals, in thousands)				
				Original	Alternative 1	Alternative 2	Alternative 3 <sup>2</sup>	Alternative 3 with adjusted control totals <sup>2</sup>
3.....	7	13	5,972 (80)	6,097 (79)	16,077 (209)	6,478 (84)	5,439 (71)	5,338 (69)
3.....	8	476	5,305 (2,617)	5,478 (2,607)	6,376 (3,035)	5,124 (2,439)	5,256 (2,502)	5,173 (2,462)
3.....	9	260	5,677 (1,530)	5,897 (1,533)	4,031 (1,048)	5,587 (1,453)	6,238 (1,622)	6,136 (1,595)
3.....	10	23	4,286 (102)	5,172 (119)	1,954 (45)	5,038 (116)	6,257 (144)	6,165 (142)
4.....	8	15	5,257 (82)	5,089 (76)	10,278 (154)	5,052 (76)	4,659 (70)	4,582 (69)
4.....	9	545	4,972 (2,809)	4,774 (2,602)	5,691 (3,101)	4,938 (2,691)	4,436 (2,418)	4,366 (2,379)
4.....	10	299	4,955 (1,536)	4,731 (1,415)	3,045 (910)	4,586 (1,371)	5,271 (1,576)	5,187 (1,551)
4.....	11	20	4,701 (97)	5,075 (102)	1,917 (38)	5,089 (102)	6,355 (127)	6,245 (125)
4.....	12	3	2,898 (9)	2,706 (8)	526 (2)	2,459 (7)	3,496 (10)	3,428 (10)
4.....	15	1	4,893 (5)	5,632 (6)	560 (1)	5,719 (6)	6,888 (7)	6,798 (7)

See notes at end of table.

**Table K-9. Mean weight for each of the raking alternatives, by grade and AGE2000—Continued**

Grade	AGE2000	Number of respondents	Mean nonresponse adjusted weight <sup>1</sup>	Mean raked weight (Figures in parentheses are estimated totals, in thousands)				
				Original	Alternative 1	Alternative 2	Alternative 3 <sup>2</sup>	Alternative 3 with adjusted control totals <sup>2</sup>
5.....	9	14	3,359 (49)	3,134 (44)	6,859 (96)	3,296 (46)	2,851 (40)	2,807 (39)
5.....	10	572	4,837 (2,868)	4,488 (2,567)	5,268 (3,013)	4,421 (2,529)	4,091 (2,340)	4,025 (2,302)
5.....	11	297	5,286 (1,628)	4,934 (1,466)	3,420 (1,016)	4,976 (1,478)	5,613 (1,667)	5,523 (1,640)
5.....	12	20	3,512 (73)	3,856 (77)	1,485 (30)	3,839 (77)	5,335 (107)	5,254 (105)
5.....	13	1	1,408 (1)	1,089 (1)	230 (—)	1,062 (1)	1,455 (1)	1,419 (1)
6.....	10	18	2,734 (51)	2,487 (45)	5,087 (92)	2,454 (44)	2,363 (43)	2,326 (42)
6.....	11	948	2,771 (2,723)	2,552 (2,419)	3,072 (2,913)	2,566 (2,432)	2,400 (2,275)	2,361 (2,239)
6.....	12	548	2,785 (1,582)	2,647 (1,450)	1,780 (976)	2,605 (1,428)	2,864 (1,569)	2,818 (1,544)
6.....	13	38	2,307 (91)	2,601 (99)	1,065 (40)	2,834 (108)	3,268 (124)	3,213 (122)
6.....	14	3	2,223 (7)	3,105 (9)	738 (2)	2,133 (6)	3,805 (11)	3,748 (11)

See notes at end of table

**Table K-9. Mean weight for each of the raking alternatives, by grade and AGE2000—Continued**

Grade	AGE2000	Number of respondents	Mean nonresponse adjusted weight <sup>1</sup>	Mean raked weight (Figures in parentheses are estimated totals, in thousands)				
				Original	Alternative 1	Alternative 2	Alternative 3 <sup>2</sup>	Alternative 3 with adjusted control totals <sup>2</sup>
7.....	11	14	2,554 (37)	2,353 (33)	5,169 (72)	2,467 (35)	2,254 (32)	2,222 (31)
7.....	12	1,009	2,537 (2,653)	2,379 (2,400)	2,820 (2,845)	2,349 (2,370)	2,187 (2,206)	2,151 (2,171)
7.....	13	529	2,582 (1,416)	2,418 (1,279)	1,685 (891)	2,515 (1,330)	2,691 (1,424)	2,635 (1,394)
7.....	14	66	2,389 (163)	2,445 (161)	1,027 (68)	1,730 (114)	3,187 (210)	3,100 (205)
7.....	15	4	2,037 (8)	1,671 (7)	846 (3)	1,471 (6)	2,207 (9)	2,153 (9)
8.....	11	1	1,481 (2)	2,511 (3)	9,688 (10)	2,372 (2)	2,492 (2)	2,450 (2)
8.....	12	15	1,825 (28)	1,856 (28)	3,663 (55)	1,710 (26)	1,763 (26)	1,738 (26)
8.....	13	924	2,564 (2,456)	2,569 (2,374)	3,013 (2,784)	2,464 (2,277)	2,400 (2,218)	2,362 (2,182)
8.....	14	497	2,735 (1,409)	2,768 (1,376)	1,914 (951)	1,812 (901)	2,993 (1,488)	2,896 (1,440)
8.....	15	56	2,870 (167)	3,244 (182)	2,897 (162)	2,760 (155)	4,065 (228)	3,876 (217)
Ungraded .....	8	1	2,528 (3)	3,979 (4)	5,570 (6)	4,837 (5)	4,457 (4)	4,403 (4)
Ungraded .....	9	2	2,617 (5)	2,920 (6)	3,688 (7)	3,191 (6)	2,775 (6)	2,727 (5)
Ungraded .....	12	1	5,553 (6)	4,685 (5)	5,343 (5)	4,733 (5)	4,444 (4)	4,376 (4)

<sup>1</sup> Normalized so that the weighted total of the nonresponse adjusted weights is equal to the weighted total of the raked weights.

<sup>2</sup> Alternative 3 (including the variation using adjusted control totals) is described later in this appendix but is included in this table for completeness.

— Indicates an estimate of less than 1,000.

NOTE: Rows highlighted using boldface are the modal grades for each age (ages 3 and older). AGE2000 is the child's age as of December 31, 2000.

Tables K-10 through K-13 contain age by grade distributions similar to those given in table K-4, but computed using the NHES:2001 nonresponse adjusted, Alternative 1, and Alternative 2 weights, and the Alternative 3 weights computed using the adjusted control totals, respectively. As in table K-4, the NHES:2001 age has been recalculated to be the age as of September 30, to be comparable to the CPS age.

**Table K-10. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: Nonresponse adjusted NHES weights**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade										
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8	
NHES:2001													
0 .....	4,335	100	†	†	†	†	†	†	†	†	†	†	
1 .....	3,720	100	†	†	†	†	†	†	†	†	†	†	
2 .....	3,933	93	7	†	†	†	†	†	†	†	†	†	
3 .....	3,865	48	50	1	†	†	†	†	†	†	†	†	
4 .....	4,026	22	68	10	#	†	†	†	†	†	†	†	
5 .....	4,080	1	7	87	5	#	†	†	†	†	†	†	
6 .....	4,310	#	#	12	82	6	#	†	†	†	†	†	
7 .....	4,004	†	†	†	14	80	6	#	†	†	†	†	
8 .....	4,166	†	†	†	1	16	77	7	†	†	†	†	
9 .....	4,587	†	†	†	†	1	19	75	6	#	†	†	
10 .....	4,631	†	†	†	†	†	1	17	75	7	#	†	
11 .....	4,384	†	†	†	†	†	†	1	19	74	6	#	
12 .....	4,240	†	†	†	†	†	†	#	1	20	75	5	
13 .....	3,836	†	†	†	†	†	†	†	#	1	20	79	
14 .....	852	†	†	†	†	†	†	†	†	1	10	90	
15 .....	80	†	†	†	†	†	†	†	6	†	†	5	89

See notes at end of table.

**Table K-10. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: Nonresponse adjusted NHES weights—Continued**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
CPS:1999												
0 .....	3,861	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,895	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,924	100	†	†	†	†	†	†	†	†	†	†
3 .....	3,862	61	38	1	†	†	†	†	†	†	†	†
4 .....	4,021	31	61	8	†	†	†	†	†	†	†	†
5 .....	4,037	6	15	74	5	#	†	†	†	†	†	†
6 .....	4,060	2	2	11	81	4	1	†	†	†	†	†
7 .....	4,083	1	†	1	18	73	6	#	†	†	†	†
8 .....	3,955	†	†	†	2	18	75	5	#	†	†	†
9 .....	4,269	†	†	†	1	1	23	70	5	1	†	†
10 .....	4,053	†	†	†	†	#	2	22	70	5	#	†
11 .....	4,042	†	†	†	†	†	#	2	24	68	4	1
12 .....	3,905	†	†	†	†	†	†	1	3	23	68	6
13 .....	3,709	†	†	†	†	†	†	†	#	3	25	71
14 .....	1,020	†	†	†	†	†	†	†	†	1	8	90
15 .....	166	†	†	†	†	†	†	†	†	†	24	76

† Not applicable.

# Rounds to zero.

NOTE: For NHES, kindergarten (K) includes grades classified as kindergarten, transitional kindergarten, and prefirst grade. Age in NHES:2001 was recalculated to match the CPS definition of the child's age as of September 30. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-11. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: NHES Alternative 1 weights**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
NHES:2001												
0 .....	4,848	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,836	100	†	†	†	†	†	†	†	†	†	†
2 .....	4,052	94	6	†	†	†	†	†	†	†	†	†
3 .....	3,893	55	44	1	†	†	†	†	†	†	†	†
4 .....	3,846	26	62	11	1	†	†	†	†	†	†	†
5 .....	3,709	1	6	85	7	#	†	†	†	†	†	†
6 .....	4,257	#	#	5	87	8	#	†	†	†	†	†
7 .....	3,990	†	†	†	9	81	10	#	†	†	†	†
8 .....	4,043	†	†	†	#	8	83	9	†	†	†	†
9 .....	4,301	†	†	†	†	#	14	78	8	#	†	†
10 .....	4,158	†	†	†	†	†	#	11	79	9	#	†
11 .....	3,949	†	†	†	†	†	†	#	13	79	7	#
12 .....	3,844	†	†	†	†	†	†	#	#	13	80	6
13 .....	3,573	†	†	†	†	†	†	†	#	1	13	86
14 .....	592	†	†	†	†	†	†	†	†	#	6	93
15 .....	68	†	†	†	†	†	†	†	1	†	†	96

See notes at end of table.



**Table K-11. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: NHES Alternative 1 weights—Continued**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
CPS:1999												
0 .....	3,861	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,895	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,924	100	†	†	†	†	†	†	†	†	†	†
3 .....	3,862	61	38	1	†	†	†	†	†	†	†	†
4 .....	4,021	31	61	8	†	†	†	†	†	†	†	†
5 .....	4,037	6	15	74	5	#	†	†	†	†	†	†
6 .....	4,060	2	2	11	81	4	1	†	†	†	†	†
7 .....	4,083	1	†	1	18	73	6	#	†	†	†	†
8 .....	3,955	†	†	†	2	18	75	5	#	†	†	†
9 .....	4,269	†	†	†	1	1	23	70	5	1	†	†
10 .....	4,053	†	†	†	†	#	2	22	70	5	#	†
11 .....	4,042	†	†	†	†	†	#	2	24	68	4	1
12 .....	3,905	†	†	†	†	†	†	1	3	23	68	6
13 .....	3,709	†	†	†	†	†	†	†	#	3	25	71
14 .....	1,020	†	†	†	†	†	†	†	†	1	8	90
15 .....	166	†	†	†	†	†	†	†	†	†	24	76

† Not applicable.

# Rounds to zero.

NOTE: For NHES, kindergarten (K) includes grades classified as kindergarten, transitional kindergarten, and prefirst grade. Age in NHES:2001 was recalculated to match the CPS definition of the child's age as of September 30. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-12. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: NHES Alternative 2 weights**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
NHES:2001												
0 .....	4,844	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,843	100	†	†	†	†	†	†	†	†	†	†
2 .....	4,023	93	7	†	†	†	†	†	†	†	†	†
3 .....	3,899	50	49	1	#	†	†	†	†	†	†	†
4 .....	3,940	23	67	10	#	†	†	†	†	†	†	†
5 .....	4,011	1	7	87	5	#	†	†	†	†	†	†
6 .....	4,216	#	#	12	82	6	#	†	†	†	†	†
7 .....	4,010	†	†	†	15	79	6	#	†	†	†	†
8 .....	3,878	†	†	†	1	16	76	7	†	†	†	†
9 .....	4,360	†	†	†	†	1	20	74	5	#	†	†
10 .....	4,136	†	†	†	†	†	1	17	75	7	#	†
11 .....	3,933	†	†	†	†	†	†	1	19	74	6	#
12 .....	3,859	†	†	†	†	†	†	#	1	20	74	5
13 .....	3,347	†	†	†	†	†	†	†	#	1	21	77
14 .....	591	†	†	†	†	†	†	†	†	1	11	88
15 .....	72	†	†	†	†	†	†	†	8	†	†	88

See notes at end of table.

**Table K-12. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: NHES Alternative 2 weights—Continued**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
CPS:1999												
0 .....	3,861	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,895	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,924	100	†	†	†	†	†	†	†	†	†	†
3 .....	3,862	61	38	1	†	†	†	†	†	†	†	†
4 .....	4,021	31	61	8	†	†	†	†	†	†	†	†
5 .....	4,037	6	15	74	5	#	†	†	†	†	†	†
6 .....	4,060	2	2	11	81	4	†	†	†	†	†	†
7 .....	4,083	1	†	1	18	73	6	#	†	†	†	†
8 .....	3,955	†	†	†	2	18	75	5	#	†	†	†
9 .....	4,269	†	†	†	1	1	23	70	5	1	†	†
10 .....	4,053	†	†	†	†	#	2	22	70	5	#	†
11 .....	4,042	†	†	†	†	†	#	2	24	68	4	1
12 .....	3,905	†	†	†	†	†	†	1	3	23	68	6
13 .....	3,709	†	†	†	†	†	†	†	#	3	25	71
14 .....	1,020	†	†	†	†	†	†	†	†	1	8	90
15 .....	166	†	†	†	†	†	†	†	†	†	24	76

† Not applicable.

# Rounds to zero.

NOTE: For NHES, kindergarten (K) includes grades classified as kindergarten, transitional kindergarten, and prefirst grade. Age in NHES:2001 was recalculated to match the CPS definition of the child's age as of September 30. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-13. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999: NHES Alternative 3\* weights with adjustment to control totals**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
NHES:2001												
0 .....	4,758	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,840	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,868	93	7	†	†	†	†	†	†	†	†	†
3 .....	3,954	59	41	1	#	†	†	†	†	†	†	†
4 .....	4,121	37	55	8	#	†	†	†	†	†	†	†
5 .....	3,836	2	17	77	5	#		†	†	†	†	†
6 .....	3,986	#	#	12	82	6	#	†	†	†	†	†
7 .....	3,862	†	†	†	20	74	6	#	†	†	†	†
8 .....	3,987	†	†	†	1	18	75	6	†	†	†	†
9 .....	4,170	†	†	†	†	1	24	69	5	#	†	†
10 .....	4,065	†	†	†	†	†	1	23	69	7	#	†
11 .....	3,967	†	†	†	†	†	†	1	26	68	5	#
12 .....	3,771	†	†	†	†	†	†	#	2	25	68	5
13 .....	3,642	†	†	†	†	†	†	†	#	2	25	74
14 .....	1,035	†	†	†	†	†	†	†	†	1	11	88
15 .....	99	†	†	†	†	†	†	†	7	†	†	89

See notes at end of table.

**Table K-13. Percentage distribution of children ages 0 through 15 as of September 30, not enrolled in school or enrolled in 8th grade or below: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999NHES Alternative 3 weights with adjustment to control totals—Continued**

Child's age	Number of children (thousands)	Not enrolled	Child's current grade									
			Pre-school/nursery school	K	1	2	3	4	5	6	7	8
CPS:1999												
0 .....	3,861	100	†	†	†	†	†	†	†	†	†	†
1 .....	3,895	100	†	†	†	†	†	†	†	†	†	†
2 .....	3,924	100	†	†	†	†	†	†	†	†	†	†
3 .....	3,862	61	38	1	†	†	†	†	†	†	†	†
4 .....	4,021	31	61	8	†	†	†	†	†	†	†	†
5 .....	4,037	6	15	74	5	#	†	†	†	†	†	†
6 .....	4,060	2	2	11	81	4	1	†	†	†	†	†
7 .....	4,083	1	†	1	18	73	6	#	†	†	†	†
8 .....	3,955	†	†	†	2	18	75	5	#	†	†	†
9 .....	4,269	†	†	†	1	1	23	70	5	1	†	†
10 .....	4,053	†	†	†	†	#	2	22	70	5	#	†
11 .....	4,042	†	†	†	†	†	#	2	24	68	4	1
12 .....	3,905	†	†	†	†	†	†	1	3	23	68	6
13 .....	3,709	†	†	†	†	†	†	†	#	3	25	71
14 .....	1,020	†	†	†	†	†	†	†	†	1	8	90
15 .....	166	†	†	†	†	†	†	†	†	†	24	76

† Not applicable.

# Rounds to zero.

NOTE: Alternative 3 (including the variation using adjusted control totals) is described later in this appendix but is included in this table for completeness. For the NHES, kindergarten (K) includes grades classified as kindergarten, transitional kindergarten, and prefirst grade. Age in the NHES:2001 was recalculated to match the CPS definition of the child's age as of September 30. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of the NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

Based on this preliminary analysis, Westat recommended using the Alternative 1 weights because they force the NHES estimates by age and grade to match the CPS estimates. The variability in the mean weights under Alternative 1 was highlighted as being disconcerting, and further research was suggested. The need to locate additional sources for estimates of kindergartners was also mentioned. NCES agreed that further research was needed; the next section describes those efforts.

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#### 4. DETAILED STUDY

As noted in the previous section, the Alternative 1 weights were viewed as the best of the alternatives, but it was decided that further review of the weighting procedures should be undertaken. Four separate but potentially related concerns were:

- Differences in estimates of the number of kindergartners;
- Large number of iterations required for convergence of the raking algorithm;
- Inconsistent ages (CPS age is as of September 30, while the NHES age is as of December 31); and
- The effect of the interaction between age and grade in the raking procedure.

In order to examine these issues, four alternative raking schemes were considered (see exhibit K-1). In addition to the four raking alternatives, a “deaged” variation of Alternative 1, was also considered. The “deaged” approach, which used the NHES age as of September 30 (rather than age as of December 31) in raking, is discussed in section 4.4.<sup>7</sup> Each of the issues listed above is described below.

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<sup>7</sup> “Deaging” was used with the Alternative 1 and Alternative 3 dimensions because of concerns about the interaction between age and grade. It was not used with the Alternative 2 dimensions, since Alternative 2 uses age but not grade (thus, there is no age/grade interaction with which to be concerned).

## **Exhibit K-1. Raking schemes used in evaluation**

### **Original**

Three raking dimensions:

- Race/ethnicity of the child by household income
- Census region by urbanicity
- Home tenure by age or grade of child (age 0; age 1; age 2; ages 3-6, not enrolled; nursery/preschool; kindergarten; single grade, for grades 1 through 8)

### **Alternative 1**

Four raking dimensions:

- Race/ethnicity of the child by household income
- Census region by urbanicity
- Single year of age
- Home tenure by grade/enrollment of child (not enrolled; nursery/preschool; kindergarten; single grade, for grades 1 through 8)

### **Alternative 2**

Three raking dimensions:

- Race/ethnicity of the child by household income
- Census region by urbanicity
- Home tenure by age of child (single year of age, for ages 0 through 15)

### **Deaged**

Same dimensions as Alternative 1, but NHES age was recalculated to age as of September 30, 2000, for comparability to the CPS.

### **Alternative 3\***

Three raking dimensions:

- Race/ethnicity of the child by household income
- Census region by urbanicity
- Home tenure by grade/age classification of child. For each grade, two subclassifications were created: At or below modal age for the grade, and above modal age for the grade). Age was recalculated to age as of September 30, 2000, for comparability to the CPS.

\* Additionally, a variation of Alternative 3 was considered in which the control totals used for raking were adjusted. The aim of the adjustment was to account for the proportion of 0-year-olds (as of December 31, 2000) who would not have been eligible for NHES as of September 30, 2000, because they were unborn at that time, and 16-year-olds who would have been eligible for NHES as of September 30, 2000, because they were 15 at that time.



#### **4.1 Differences in Estimates of the Number of Kindergartners**

In order to examine the discrepancy in the estimates of the total number of kindergartners between CPS and NHES, estimates from other sources were obtained. Those estimates, as well as various estimates from the ASPA-NHES:2001 survey, are listed in table K-14.

The Common Core of Data (CCD) is a universe of public schools that has enrollment by grade, and the Private School Universe Survey (PSS) provides estimates of private school enrollment. The CCD (Fall 1999) estimated public school enrollment in kindergarten to be 3,397,199, and the PSS:1999-2000 estimated private kindergarten enrollment to be 593,687. Two different approaches were used with the CCD and PSS estimates to obtain an overall estimate of kindergarten enrollment. With the first approach, the CCD estimate was inflated using information on the proportion of kindergartners who are enrolled in public school. The October 1999 CPS estimates that 83 percent of kindergartners are enrolled in public school. Inflating the CCD estimate by the reciprocal of 0.83, the resulting estimate of the total number of kindergartners is 4,093,011. For the second approach, the CCD and PSS estimates were summed to obtain an estimated number of kindergartners of 3,990,886. The Census 2000 estimates that 3,536,045 children are enrolled in public kindergarten and 621,446 are enrolled in private kindergarten, for a total of 4,157,491.

Based on all of these sources, it seems reasonable to assume that the number of children in kindergarten is between 3.8 and 4.2 million. One point of interest is that while all the sources classify enrollment at the point of time of the interview (or of list collection for the Early Childhood Longitudinal Kindergarten Cohort—ECLS-K), the lower estimates are those collected in the fall and the higher estimates are those collected in the spring. Although not substantiated by research, it is possible that enrollment in kindergarten varies over the year, with somewhat higher enrollment in the spring than in the fall.

Table K-15 gives estimates of enrollment by grade from the CCD, the PSS, and the CPS. Additionally, for each grade, the CCD and PSS estimates were added to obtain an estimate of overall (public and private school) enrollment. There is less grade-to-grade variability in the CCD and PSS estimates (both individually and combined) than in the CPS estimates.

**Table K-14. Estimates of the total number of kindergartners: CCD:1999, PSS:1999–2000, and CPS:1999**

Source	Estimated number of kindergartners
<b>Census 2000 (Summary File 3)</b> .....	4,157,491
<b>October CPS</b>	
1997.....	3,933,383
1998.....	3,828,044
1999.....	3,824,540
2000.....	3,831,654
<b>Early Childhood Longitudinal Survey Kindergarten Cohort (ECLS-K): Fall 1998</b> .....	3,866,000
<b>Common Core of Data (CCD) Survey: Fall 1999, and Private School Universe Survey (PSS): 1999-2000<sup>1</sup></b> .....	3,990,886
<b>ASPA-NHES:2001</b>	
Base weights, with one overall adjustment for nonresponse .....	4,406,480
Nonresponse-adjusted weights .....	4,486,794

<sup>1</sup> The CCD provides an estimate of public school enrollment and the PSS provides an estimate of private school enrollment. These two estimates were summed to obtain an estimate of overall kindergarten enrollment.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD) survey, 1999. U.S. Department of Education, National Center for Education Statistics, Private School Universe Survey (PSS), 1999-2000. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-15. Estimates of enrollment by grade: CCD:1999, PSS:1999 – 2000, and CPS:1999**

Grade	CCD enrollment <sup>1</sup>	PSS enrollment	Sum of CCD and PSS enrollments	CPS enrollment
Kindergarten .....	3,397,199	593,687	3,990,886	3,824,539
1 <sup>st</sup> grade .....	3,683,877	472,110	4,155,987	4,325,937
2 <sup>nd</sup> grade.....	3,655,473	449,093	4,104,566	3,927,250
3 <sup>rd</sup> grade .....	3,690,418	436,732	4,127,150	4,335,241
4 <sup>th</sup> grade .....	3,686,366	425,140	4,111,506	4,206,527
5 <sup>th</sup> grade .....	3,603,664	407,590	4,011,254	4,147,860
6 <sup>th</sup> grade .....	3,564,116	403,114	3,967,230	4,015,431
7 <sup>th</sup> grade .....	3,541,274	384,144	3,925,418	3,878,450
8 <sup>th</sup> grade .....	3,496,977	369,579	3,866,556	3,955,231

<sup>1</sup> Excludes “Elementary unclassified” estimates.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD) survey, 1999. U.S. Department of Education, National Center for Education Statistics, Private School Universe Survey (PSS), 1999-2000. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

## 4.2 Slowness of Convergence

As described in attachment KA, raking is an iterative procedure, and the weights are said to converge when all the marginal constraints are met. For the raking using the original dimensions, convergence was achieved in 10 iterations for the ECPP weights and in 8 iterations for the ASPA weights. This is a relatively quick convergence and not a source of concern. The Alternative 1 set of dimensions required 941 iterations to converge. Slowness of convergence may be indicative of inconsistencies in the definitions of the dimensions between the survey and the source of the control totals or interactions between raking dimensions. It may also be due to sparse or small sample sizes in the cells.<sup>8</sup> Attachment KA discusses these issues in greater detail.

In an effort to understand why the Alternative 1 weights were so slow to converge, two separate evaluations were undertaken. In the first, the Alternative 1 dimensions were used without alteration, but the process was split into two separate raking adjustments. The first raking adjustment used race/ethnicity by household income and Census region by urbanicity. The converged weights from that process were then input to rake by age of the child and home tenure by grade/enrollment status of the child. The raking run involving the first two dimensions required six iterations for convergence. The second required 928 iterations to converge. It is worth noting that the weights created in this examination follow the same pattern that the Alternative 1 weights follow; i.e., within each grade, the mean weight decreases as age increases. This evaluation clearly indicates that the age and grade dimensions are responsible for the slow convergence of the weights.

For the second evaluation, the dimensions were altered so either age or grade/enrollment status alone was used, but not both.<sup>9</sup> The nonresponse-adjusted weights were raked first using the dimensions race/ethnicity by household income, Census region by urbanicity, and age. In a separate run, the nonresponse-adjusted weights were raked using the dimensions race/ethnicity by household income, Census region by urbanicity, and grade/enrollment status. With age as the third dimension, seven iterations were required for convergence. With grade/enrollment status as the third dimension, the raking procedure converged in 11 iterations. The pattern observed in the Alternative 1 weights (decreasing mean weight as age increases, within each grade) is not present in the weights created for the second evaluation.

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<sup>8</sup> A third possibility to consider is that the rate of convergence might depend on the order of the raking dimensions; however, using a different order did not affect the rate of convergence in this case. This conforms to theory when the estimates are raked to convergence.

<sup>9</sup> Grade must still be used to select the total eligible population for the control totals since the NHES eligibility is based on enrolled children. A substantial number of 6- and 7-year-olds and children around age 15 are not enrolled in preschool or in kindergarten through 8<sup>th</sup> grade.

Additionally, for Alternative 1, the mean raking adjustment factor and the mean weights for grade/age combinations were computed for each dimension, at each iteration. For selected iterations, these mean adjustment factors are tabulated in tables K-16 through K-19, and the mean weights for age/grade combinations are given in tables K-20 through K-23. As shown in tables K-16 and K-17, for the race/ethnicity by household income and Census region by urbanicity dimensions, the raking factors converged quickly to 1. For the age and home tenure by grade/enrollment status dimensions, relatively large adjustments are necessary, even after 25 iterations. Tables K-20 through K-23 demonstrate the evolution of the unusual pattern observed in the mean Alternative 1 weights for age/grade combinations. This pattern did not arise suddenly, either at the beginning or end of the raking process, but rather resulted from a slow progression.

**Table K-16. Mean raking adjustment factor at selected iterations, following the adjustment for dimension 1 (race/ethnicity by household income): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Race/ethnicity by household income	Iteration								
	1	2	3	4	5	25	500	900	941
<b>Black, non-Hispanic</b>									
Income under \$10,000 .....	1.893	0.994	0.990	0.997	1.000	1.000	1.000	1.000	1.000
Income \$10,000 – \$25,000 .....	1.460	0.993	0.993	0.999	1.000	1.000	1.000	1.000	1.000
Income over \$25,000 .....	1.062	1.030	1.001	0.999	0.999	1.000	1.000	1.000	1.000
<b>Hispanic</b>									
Income under \$10,000 .....	1.039	0.892	0.985	0.997	0.999	1.000	1.000	1.000	1.000
Income \$10,000 – \$25,000 .....	0.956	0.922	0.990	0.998	0.999	1.000	1.000	1.000	1.000
Income over \$25,000 .....	0.740	0.988	1.000	0.999	0.999	1.000	1.000	1.000	1.000
<b>Other race/ethnicity</b>									
Income under \$10,000 .....	1.482	0.945	0.987	0.997	0.999	1.001	1.000	1.000	1.000
Income \$10,000 – \$25,000 .....	1.047	0.975	0.992	0.998	1.000	1.000	1.000	1.000	1.000
Income over \$25,000 .....	0.903	1.023	1.005	1.001	1.000	1.000	1.000	1.000	1.000

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-17. Mean raking adjustment factor at selected iterations, following the adjustment for dimension 2 (census region by urbanicity): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Census region by urbanicity	Iteration								
	1	2	3	4	5	25	500	900	941
Northeast; urban .....	1.010	0.995	0.998	0.999	0.999	1.000	1.000	1.000	1.000
Northeast; rural.....	0.983	1.013	1.000	0.999	0.999	1.000	1.000	1.000	1.000
Midwest; urban.....	0.931	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Midwest; rural .....	1.094	1.014	1.004	1.002	1.001	1.001	1.000	1.000	1.000
South; urban.....	0.934	0.994	1.001	1.001	1.000	1.000	1.000	1.000	1.000
South; rural .....	1.012	1.020	1.005	1.001	1.001	1.000	1.000	1.000	1.000
West; urban.....	1.055	0.995	0.997	0.999	0.999	1.000	1.000	1.000	1.000
West; rural .....	1.437	1.008	0.998	0.999	1.000	1.000	1.000	1.000	1.000

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-18. Mean raking adjustment factor at selected iterations, following the adjustment for dimension 3 (age): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Age as of December 31, 2000	Iteration								
	1	2	3	4	5	25	500	900	941
0.....	1.224	0.982	0.994	1.004	1.009	1.019	1.000	1.000	1.000
1.....	1.084	0.981	0.994	1.004	1.009	1.019	1.000	1.000	1.000
2.....	1.034	0.983	0.994	1.004	1.009	1.019	1.000	1.000	1.000
3.....	1.074	1.033	1.023	1.019	1.018	1.018	1.000	1.000	1.000
4.....	1.010	1.070	1.045	1.032	1.026	1.018	1.000	1.000	1.000
5.....	1.053	1.133	1.089	1.065	1.050	1.016	1.000	1.000	1.000
6.....	0.994	1.033	1.046	1.045	1.041	1.011	1.000	1.000	1.000
7.....	1.074	1.025	1.014	1.016	1.018	1.005	1.000	1.000	1.000
8.....	0.953	0.976	0.990	0.996	0.999	0.998	1.000	1.000	1.000
9.....	0.980	0.980	0.987	0.990	0.992	0.992	1.000	1.000	1.000
10.....	0.920	0.997	0.994	0.992	0.990	0.984	1.000	1.000	1.000
11.....	0.938	0.996	0.995	0.988	0.982	0.977	1.000	1.000	1.000
12.....	0.924	0.989	0.970	0.962	0.959	0.971	1.000	1.000	1.000
13.....	0.967	0.900	0.912	0.922	0.929	0.967	1.000	1.000	1.000
14.....	0.662	0.859	0.894	0.911	0.922	0.966	1.000	1.000	1.000
15.....	0.845	0.839	0.889	0.909	0.921	0.966	1.000	1.000	1.000

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-19. Mean raking adjustment factor at selected iterations, following the adjustment for dimension 4 (home tenure by grade/enrollment status): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Home tenure by grade/ enrollment status	Iteration								
	1	2	3	4	5	25	500	900	941
Rent; not enrolled .....	1.156	1.027	1.001	0.992	0.988	0.982	1.000	1.000	1.000
Rent; preschool.....	0.957	0.953	0.961	0.968	0.973	0.982	1.000	1.000	1.000
Rent; kindergarten .....	1.030	0.926	0.933	0.945	0.955	0.985	1.000	1.000	1.000
Rent; 1st grade.....	1.092	0.994	0.969	0.966	0.967	0.991	1.000	1.000	1.000
Rent; 2nd grade.....	1.039	1.017	0.999	0.992	0.988	0.997	1.000	1.000	1.000
Rent; 3rd grade .....	0.988	1.036	1.014	1.006	1.002	1.003	1.000	1.000	1.000
Rent; 4th grade .....	1.043	1.031	1.015	1.010	1.009	1.011	1.000	1.000	1.000
Rent; 5th grade .....	1.145	1.024	1.011	1.012	1.014	1.018	1.000	1.000	1.000
Rent; 6th grade .....	1.129	1.031	1.024	1.027	1.030	1.026	1.000	1.000	1.000
Rent; 7th grade .....	1.144	1.069	1.059	1.056	1.054	1.031	1.000	1.000	1.000
Rent; 8th grade .....	1.328	1.158	1.110	1.090	1.079	1.034	1.000	1.000	1.000
Own/other; not enrolled.....	0.949	0.993	0.994	0.990	0.987	0.982	1.000	1.000	1.000
Own/other; preschool .....	0.872	0.924	0.953	0.966	0.973	0.983	1.000	1.000	1.000
Own/other; kindergarten.....	0.797	0.897	0.928	0.944	0.955	0.986	1.000	1.000	1.000
Own/other; 1st grade .....	0.982	0.962	0.964	0.966	0.968	0.991	1.000	1.000	1.000
Own/other; 2nd grade .....	0.923	0.984	0.992	0.990	0.988	0.997	1.000	1.000	1.000
Own/other; 3rd grade.....	1.097	1.010	1.008	1.006	1.003	1.004	1.000	1.000	1.000
Own/other; 4th grade.....	0.970	1.003	1.008	1.008	1.008	1.011	1.000	1.000	1.000
Own/other; 5th grade.....	0.953	0.992	1.003	1.009	1.013	1.018	1.000	1.000	1.000
Own/other; 6th grade.....	0.957	0.995	1.012	1.021	1.027	1.025	1.000	1.000	1.000
Own/other; 7th grade.....	0.959	1.034	1.050	1.053	1.053	1.031	1.000	1.000	1.000
Own/other; 8th grade.....	1.126	1.113	1.099	1.087	1.078	1.034	1.000	1.000	1.000

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPA) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-20. Mean weight by grade/enrollment status and age at selected iterations, following the adjustment for dimension 1 (race/ethnicity by household income): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade/ enrollment status	AGE2000	Number of respondents	Iteration								
			1	2	3	4	5	25	500	900	941
Not enrolled ....	0	1,070	2,978	3,681	3,636	3,602	3,582	3,548	3,615	3,615	3,615
Not enrolled ....	1	1,258	2,864	3,165	3,121	3,091	3,073	3,045	3,102	3,102	3,102
Not enrolled ....	2	1,271	2,992	3,149	3,111	3,081	3,064	3,035	3,092	3,092	3,092
Not enrolled ....	3	774	2,677	2,931	3,045	3,105	3,136	3,182	3,121	3,121	3,121
Not enrolled ....	4	470	2,571	2,673	2,876	2,995	3,061	3,165	2,982	2,981	2,981
Not enrolled ....	5	64	2,663	2,790	3,171	3,438	3,627	4,004	2,758	2,755	2,755
Not enrolled ....	6	2	1,544	1,680	1,775	1,858	1,925	1,992	755	752	752
Preschool .....	3	565	2,701	2,592	2,499	2,443	2,408	2,345	2,541	2,541	2,541
Preschool .....	4	992	2,667	2,417	2,412	2,410	2,404	2,389	2,497	2,498	2,498
Preschool .....	5	277	2,772	2,598	2,748	2,861	2,947	3,131	2,393	2,391	2,391
Preschool .....	6	6	4,702	4,090	3,959	3,966	4,011	4,027	1,731	1,727	1,727
Kindergarten ...	3	4	3,550	3,354	3,163	3,011	2,899	2,710	4,270	4,276	4,276
Kindergarten ...	4	30	4,171	3,723	3,633	3,534	3,446	3,285	4,964	4,970	4,970
Kindergarten ...	5	539	5,346	4,887	5,029	5,089	5,120	5,214	5,772	5,773	5,773
Kindergarten ...	6	194	6,095	5,192	4,868	4,736	4,677	4,490	2,779	2,774	2,774
Kindergarten ...	7	5	12,959	11,756	10,874	10,239	9,828	8,052	3,017	3,008	3,008
1 .....	5	8	4,075	4,482	4,960	5,213	5,357	5,929	11,698	11,721	11,721
1 .....	6	554	5,139	5,178	5,200	5,253	5,300	5,557	6,195	6,196	6,196
1 .....	7	235	5,337	5,785	5,761	5,644	5,539	4,973	3,370	3,367	3,367
1 .....	8	9	6,620	6,293	5,977	5,725	5,510	4,070	1,701	1,697	1,697
1 .....	9	1	3,593	3,326	3,121	2,970	2,841	1,764	486	484	484
2 .....	6	6	6,063	5,603	5,719	5,945	6,155	7,650	14,012	14,035	14,035
2 .....	7	484	4,999	5,148	5,243	5,285	5,321	5,665	6,351	6,352	6,352
2 .....	8	266	5,503	4,998	4,846	4,773	4,710	4,117	2,830	2,827	2,827
2 .....	9	15	5,379	4,920	4,773	4,680	4,591	3,384	1,554	1,551	1,551
3 .....	7	13	6,053	6,378	6,694	6,872	7,027	9,049	16,056	16,077	16,077
3 .....	8	476	5,350	5,448	5,417	5,418	5,426	5,753	6,375	6,376	6,376
3 .....	9	260	5,734	5,995	5,979	5,962	5,940	5,352	4,034	4,031	4,031
3 .....	10	23	5,262	5,104	5,185	5,205	5,195	3,918	1,957	1,954	1,954
4 .....	8	15	5,303	5,000	4,938	4,945	4,970	6,242	10,267	10,278	10,278
4 .....	9	545	4,970	4,907	4,865	4,851	4,847	5,144	5,689	5,691	5,691
4 .....	10	299	4,992	4,549	4,592	4,614	4,621	4,119	3,047	3,045	3,045
4 .....	11	20	5,362	4,861	4,927	4,965	4,953	3,633	1,919	1,917	1,917
4 .....	12	3	2,965	2,535	2,490	2,431	2,359	1,343	527	526	526
4 .....	15	1	5,312	4,999	4,348	3,934	3,621	1,649	562	560	560
5 .....	9	14	3,440	3,337	3,257	3,228	3,227	4,138	6,851	6,859	6,859
5 .....	10	572	4,757	4,457	4,454	4,453	4,462	4,795	5,267	5,268	5,268
5 .....	11	297	5,326	5,002	4,997	5,004	4,993	4,387	3,422	3,420	3,420
5 .....	12	20	4,076	3,919	3,887	3,793	3,686	2,543	1,487	1,485	1,485
5 .....	13	1	1,396	1,108	973	889	827	465	230	230	230

See notes at end of table.

**Table K-20. Mean weight by grade/enrollment status and age at selected iterations, following the adjustment for dimension 1 (race/ethnicity by household income): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Grade/ enrollment status	AGE2000	Number of respondents	Iteration								
			1	2	3	4	5	25	500	900	941
6.....	10	18	2,686	2,467	2,474	2,495	2,532	3,356	5,083	5,087	5,087
6.....	11	948	2,742	2,578	2,581	2,607	2,635	2,857	3,072	3,072	3,072
6.....	12	548	2,820	2,624	2,614	2,578	2,539	2,176	1,781	1,780	1,780
6.....	13	38	2,763	2,719	2,483	2,310	2,184	1,533	1,066	1,065	1,065
6.....	14	3	3,106	2,141	1,891	1,730	1,618	1,090	738	738	738
7.....	11	14	2,561	2,485	2,578	2,696	2,805	3,777	5,166	5,169	5,169
7.....	12	1,009	2,539	2,375	2,454	2,506	2,542	2,705	2,819	2,820	2,820
7.....	13	529	2,580	2,530	2,379	2,286	2,221	1,918	1,685	1,685	1,685
7.....	14	66	2,632	1,780	1,603	1,512	1,453	1,202	1,028	1,027	1,027
7.....	15	4	1,936	1,548	1,354	1,268	1,216	1,002	846	846	846
8.....	11	1	2,275	2,825	3,201	3,512	3,774	5,999	9,678	9,688	9,688
8.....	12	15	1,756	2,026	2,249	2,399	2,510	3,108	3,662	3,663	3,663
8.....	13	924	2,555	2,907	2,942	2,958	2,967	2,997	3,013	3,013	3,013
8.....	14	497	2,747	2,142	2,073	2,044	2,027	1,960	1,914	1,914	1,914
8.....	15	56	3,344	3,333	3,160	3,101	3,070	2,970	2,897	2,897	2,897
Ungraded .....	8	1	4,963	4,699	4,799	4,832	4,847	5,129	5,569	5,570	5,570
Ungraded .....	9	2	3,261	3,102	3,068	3,061	3,060	3,278	3,687	3,688	3,688
Ungraded .....	12	1	5,196	4,752	4,864	4,954	5,020	5,278	5,343	5,343	5,343

NOTE: Age2000 is the child's age as of December 31, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.



**Table K-21. Mean weight by grade/enrollment status and age at selected iterations, following the adjustment for dimension 2 (census region by urbanicity): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade/ enrollment status	AGE 2000	Number of respondents	Iteration								
			1	2	3	4	5	25	500	900	941
Not enrolled .....	0	1,070	2,953	3,679	3,637	3,602	3,582	3,548	3,615	3,615	3,615
Not enrolled .....	1	1,258	2,860	3,162	3,121	3,091	3,073	3,045	3,102	3,102	3,102
Not enrolled .....	2	1,271	2,989	3,147	3,110	3,081	3,064	3,035	3,092	3,092	3,092
Not enrolled .....	3	774	2,686	2,932	3,046	3,105	3,136	3,182	3,121	3,121	3,121
Not enrolled .....	4	470	2,606	2,674	2,875	2,994	3,061	3,165	2,982	2,981	2,981
Not enrolled .....	5	64	2,621	2,785	3,170	3,437	3,627	4,005	2,758	2,755	2,755
Not enrolled .....	6	2	1,440	1,672	1,776	1,859	1,925	1,993	755	752	752
Preschool .....	3	565	2,674	2,590	2,498	2,443	2,408	2,345	2,541	2,541	2,541
Preschool .....	4	992	2,657	2,416	2,412	2,410	2,404	2,389	2,497	2,498	2,498
Preschool .....	5	277	2,752	2,600	2,750	2,862	2,948	3,132	2,393	2,391	2,391
Preschool .....	6	6	4,557	4,105	3,966	3,969	4,013	4,028	1,731	1,727	1,727
Kindergarten ....	3	4	3,586	3,372	3,166	3,011	2,899	2,710	4,270	4,276	4,276
Kindergarten ....	4	30	4,190	3,731	3,635	3,535	3,447	3,285	4,964	4,970	4,970
Kindergarten ....	5	539	5,337	4,887	5,028	5,089	5,120	5,214	5,772	5,773	5,773
Kindergarten ....	6	194	6,073	5,198	4,871	4,738	4,677	4,490	2,779	2,774	2,774
Kindergarten ....	7	5	13,233	11,757	10,870	10,238	9,827	8,052	3,017	3,008	3,008
1 .....	5	8	4,172	4,480	4,955	5,210	5,355	5,928	11,698	11,721	11,721
1 .....	6	554	5,143	5,175	5,199	5,253	5,300	5,557	6,195	6,196	6,196
1 .....	7	235	5,315	5,789	5,764	5,644	5,540	4,974	3,370	3,367	3,367
1 .....	8	9	6,526	6,312	5,987	5,730	5,513	4,071	1,701	1,697	1,697
1 .....	9	1	3,357	3,305	3,123	2,972	2,842	1,764	486	484	484
2 .....	6	6	5,864	5,572	5,717	5,946	6,155	7,649	14,012	14,035	14,035
2 .....	7	484	4,994	5,144	5,241	5,285	5,320	5,665	6,351	6,352	6,352
2 .....	8	266	5,499	5,001	4,849	4,774	4,710	4,118	2,830	2,827	2,827
2 .....	9	15	5,219	4,895	4,769	4,679	4,591	3,384	1,554	1,551	1,551
3 .....	7	13	5,878	6,359	6,694	6,873	7,027	9,049	16,056	16,077	16,077
3 .....	8	476	5,364	5,450	5,416	5,418	5,425	5,752	6,375	6,376	6,376
3 .....	9	260	5,721	6,003	5,983	5,963	5,941	5,352	4,034	4,031	4,031
3 .....	10	23	5,499	5,127	5,188	5,206	5,196	3,918	1,957	1,954	1,954
4 .....	8	15	5,287	5,003	4,941	4,946	4,971	6,242	10,267	10,278	10,278
4 .....	9	545	5,029	4,905	4,863	4,850	4,847	5,144	5,689	5,691	5,691
4 .....	10	299	4,979	4,554	4,594	4,614	4,622	4,119	3,047	3,045	3,045
4 .....	11	20	5,261	4,878	4,934	4,967	4,954	3,633	1,919	1,917	1,917
4 .....	12	3	2,909	2,521	2,488	2,431	2,359	1,343	527	526	526
4 .....	15	1	5,813	5,068	4,366	3,941	3,625	1,650	562	560	560
5 .....	9	14	3,387	3,321	3,253	3,227	3,226	4,138	6,851	6,859	6,859
5 .....	10	572	4,812	4,459	4,453	4,452	4,462	4,795	5,267	5,268	5,268
5 .....	11	297	5,292	5,008	5,000	5,005	4,994	4,388	3,422	3,420	3,420
5 .....	12	20	4,123	3,913	3,885	3,792	3,685	2,543	1,487	1,485	1,485
5 .....	13	1	1,304	1,101	974	890	828	465	230	230	230

See notes at end of table.

**Table K-21. Mean weight by grade/enrollment status and age at selected iterations, following the adjustment for dimension 2 (census region by urbanicity): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Grade/ enrollment status	AGE 2000	Number of respondents	Iteration								
			1	2	3	4	5	25	500	900	941
6.....	10	18	2,653	2,464	2,471	2,494	2,531	3,356	5,083	5,087	5,087
6.....	11	948	2,742	2,577	2,581	2,607	2,634	2,857	3,072	3,072	3,072
6.....	12	548	2,812	2,624	2,615	2,578	2,539	2,176	1,781	1,780	1,780
6.....	13	38	2,693	2,723	2,486	2,312	2,185	1,533	1,066	1,065	1,065
6.....	14	3	3,109	2,178	1,900	1,732	1,619	1,090	738	738	738
7.....	11	14	2,655	2,486	2,576	2,695	2,804	3,777	5,166	5,169	5,169
7.....	12	1,009	2,548	2,375	2,454	2,506	2,542	2,705	2,819	2,820	2,820
7.....	13	529	2,601	2,533	2,380	2,286	2,222	1,918	1,685	1,685	1,685
7.....	14	66	2,589	1,780	1,604	1,512	1,453	1,202	1,028	1,027	1,027
7.....	15	4	1,844	1,549	1,356	1,269	1,216	1,002	846	846	846
8.....	11	1	2,401	2,812	3,190	3,507	3,771	5,997	9,678	9,688	9,688
8.....	12	15	1,863	2,020	2,244	2,397	2,509	3,107	3,662	3,663	3,663
8.....	13	924	2,557	2,906	2,942	2,958	2,967	2,996	3,013	3,013	3,013
8.....	14	497	2,741	2,144	2,074	2,044	2,027	1,960	1,914	1,914	1,914
8.....	15	56	3,275	3,334	3,162	3,102	3,071	2,970	2,897	2,897	2,897
Ungraded .....	8	1	5,023	4,795	4,825	4,839	4,850	5,130	5,569	5,570	5,570
Ungraded .....	9	2	3,204	3,086	3,065	3,060	3,059	3,277	3,687	3,688	3,688
Ungraded .....	12	1	5,248	4,729	4,855	4,950	5,017	5,276	5,343	5,343	5,343

NOTE: AGE2000 is the child's age as of December 31, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-22. Mean weight by grade/enrollment status at selected iterations, following the adjustment for dimension 3 (age): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade/ enrollment status	AGE 2000	Number of respondents	Iteration								
			1	2	3	4	5	25	500	900	941
Not enrolled...	0	1,070	3,615	3,615	3,615	3,615	3,615	3,615	3,615	3,615	3,615
Not enrolled...	1	1,258	3,102	3,102	3,102	3,102	3,102	3,102	3,102	3,102	3,102
Not enrolled...	2	1,271	3,092	3,092	3,092	3,092	3,092	3,092	3,092	3,092	3,092
Not enrolled...	3	774	2,883	3,028	3,116	3,165	3,193	3,241	3,121	3,121	3,121
Not enrolled...	4	470	2,633	2,860	3,006	3,089	3,139	3,222	2,982	2,981	2,981
Not enrolled...	5	64	2,760	3,157	3,451	3,661	3,808	4,068	2,758	2,755	2,755
Not enrolled...	6	2	1,431	1,727	1,858	1,942	2,003	2,014	755	752	752
Preschool .....	3	565	2,870	2,675	2,556	2,490	2,452	2,388	2,541	2,541	2,541
Preschool .....	4	992	2,685	2,585	2,521	2,486	2,466	2,432	2,497	2,498	2,498
Preschool .....	5	277	2,898	2,947	2,994	3,048	3,096	3,181	2,393	2,391	2,391
Preschool .....	6	6	4,529	4,241	4,149	4,147	4,176	4,071	1,731	1,727	1,727
Kindergarten..	3	4	3,850	3,482	3,239	3,069	2,952	2,760	4,271	4,276	4,276
Kindergarten..	4	30	4,233	3,991	3,800	3,647	3,535	3,345	4,965	4,970	4,970
Kindergarten..	5	539	5,621	5,538	5,474	5,420	5,376	5,296	5,772	5,773	5,773
Kindergarten..	6	194	6,035	5,370	5,096	4,950	4,867	4,538	2,779	2,774	2,774
Kindergarten..	7	5	14,208	12,046	11,023	10,403	10,004	8,094	3,017	3,008	3,008
1 .....	5	8	4,393	5,077	5,395	5,549	5,624	6,021	11,698	11,721	11,721
1 .....	6	554	5,111	5,346	5,440	5,489	5,515	5,617	6,195	6,196	6,196
1 .....	7	235	5,707	5,931	5,845	5,735	5,639	4,999	3,370	3,367	3,367
1 .....	8	9	6,217	6,158	5,929	5,705	5,509	4,063	1,701	1,697	1,697
1 .....	9	1	3,290	3,240	3,083	2,943	2,821	1,749	486	484	484
2 .....	6	6	5,827	5,756	5,981	6,212	6,405	7,731	14,013	14,035	14,035
2 .....	7	484	5,363	5,270	5,315	5,370	5,416	5,694	6,351	6,352	6,352
2 .....	8	266	5,239	4,879	4,802	4,753	4,708	4,111	2,830	2,827	2,827
2 .....	9	15	5,115	4,798	4,708	4,634	4,556	3,356	1,554	1,551	1,551
3 .....	7	13	6,311	6,515	6,789	6,984	7,154	9,095	16,056	16,077	16,077
3 .....	8	476	5,110	5,317	5,364	5,394	5,422	5,743	6,375	6,376	6,376
3 .....	9	260	5,607	5,884	5,906	5,906	5,896	5,308	4,034	4,031	4,031
3 .....	10	23	5,057	5,109	5,157	5,166	5,146	3,857	1,957	1,954	1,954

See notes at end of table.

**Table K-22. Mean weight by grade/enrollment status at selected iterations, following the adjustment for dimension 3 (age): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Grade/ enrollment status	AGE 2000	Number of respondents	Iteration									
			1	2	3	4	5	25	500	900	941	
4.....	8	15	5,036	4,881	4,894	4,925	4,968	6,231	10,266	10,278	10,278	
4.....	9	545	4,929	4,807	4,801	4,803	4,810	5,102	5,689	5,691	5,691	
4.....	10	299	4,579	4,538	4,566	4,579	4,578	4,054	3,047	3,045	3,045	
4.....	11	20	4,936	4,857	4,909	4,906	4,865	3,551	1,919	1,917	1,917	
4.....	12	3	2,686	2,493	2,413	2,339	2,262	1,304	527	526	526	
4.....	15	1	4,914	4,254	3,882	3,584	3,338	1,594	562	560	560	
5.....	9	14	3,320	3,255	3,211	3,196	3,202	4,104	6,851	6,859	6,859	
5.....	10	572	4,425	4,443	4,427	4,419	4,419	4,720	5,267	5,268	5,268	
5.....	11	297	4,965	4,987	4,975	4,944	4,904	4,288	3,422	3,420	3,420	
5.....	12	20	3,807	3,870	3,769	3,649	3,534	2,469	1,487	1,485	1,485	
5.....	13	1	1,261	991	888	820	769	450	230	230	230	
6.....	10	18	2,439	2,455	2,456	2,475	2,507	3,304	5,083	5,087	5,087	
6.....	11	948	2,572	2,566	2,567	2,575	2,587	2,792	3,072	3,072	3,072	
6.....	12	548	2,597	2,596	2,537	2,481	2,435	2,113	1,781	1,780	1,780	
6.....	13	38	2,605	2,450	2,268	2,131	2,029	1,483	1,066	1,065	1,065	
6.....	14	3	2,059	1,870	1,698	1,578	1,492	1,053	738	738	738	
7.....	11	14	2,491	2,475	2,563	2,662	2,754	3,691	5,165	5,169	5,169	
7.....	12	1,009	2,353	2,349	2,380	2,411	2,437	2,627	2,819	2,820	2,820	
7.....	13	529	2,516	2,279	2,171	2,107	2,064	1,855	1,685	1,685	1,685	
7.....	14	66	1,715	1,528	1,434	1,377	1,339	1,162	1,028	1,027	1,027	
7.....	15	4	1,559	1,300	1,206	1,154	1,120	968	846	846	846	
8.....	11	1	2,252	2,800	3,174	3,464	3,703	5,861	9,678	9,688	9,688	
8.....	12	15	1,721	1,998	2,177	2,307	2,405	3,017	3,662	3,663	3,663	
8.....	13	924	2,473	2,615	2,684	2,726	2,756	2,898	3,013	3,013	3,013	
8.....	14	497	1,815	1,841	1,854	1,863	1,868	1,894	1,914	1,914	1,914	
8.....	15	56	2,768	2,799	2,812	2,821	2,828	2,870	2,897	2,897	2,897	
Ungraded .....	8	1	4,785	4,678	4,778	4,818	4,847	5,121	5,569	5,570	5,570	
Ungraded .....	9	2	3,141	3,024	3,026	3,030	3,036	3,250	3,687	3,688	3,688	
Ungraded .....	12	1	4,846	4,677	4,710	4,763	4,810	5,124	5,343	5,343	5,343	

NOTE: AGE2000 is the child's age as of December 31, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-23. Mean weight by grade/enrollment status and age at selected iterations, following the adjustment for dimension 4 (home tenure by grade/enrollment status): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade/ enrollment status	AGE 2000	Number of respondents	Iteration									
			1	2	3	4	5	25	500	900	941	
Not enrolled..	0	1,070	3,688	3,637	3,602	3,582	3,569	3,549	3,615	3,615	3,615	
Not enrolled..	1	1,258	3,177	3,123	3,091	3,073	3,063	3,045	3,102	3,102	3,102	
Not enrolled..	2	1,271	3,161	3,112	3,082	3,064	3,054	3,036	3,092	3,092	3,092	
Not enrolled..	3	774	2,950	3,048	3,105	3,136	3,153	3,182	3,121	3,121	3,121	
Not enrolled..	4	470	2,698	2,880	2,995	3,061	3,100	3,163	2,982	2,981	2,981	
Not enrolled..	5	64	2,812	3,175	3,439	3,627	3,760	3,993	2,757	2,755	2,755	
Not enrolled..	6	2	1,655	1,774	1,859	1,926	1,979	1,977	755	752	752	
Preschool .....	3	565	2,577	2,496	2,443	2,408	2,386	2,346	2,541	2,541	2,541	
Preschool .....	4	992	2,406	2,410	2,409	2,404	2,399	2,390	2,497	2,498	2,498	
Preschool .....	5	277	2,597	2,748	2,861	2,947	3,011	3,125	2,393	2,391	2,391	
Preschool .....	6	6	4,053	3,953	3,964	4,010	4,062	4,000	1,731	1,727	1,727	
Kindergarten.	3	4	3,392	3,165	3,012	2,900	2,820	2,720	4,271	4,276	4,276	
Kindergarten.	4	30	3,711	3,627	3,533	3,446	3,377	3,297	4,964	4,970	4,970	
Kindergarten.	5	539	4,895	5,029	5,089	5,120	5,137	5,220	5,772	5,773	5,773	
Kindergarten.	6	194	5,197	4,869	4,736	4,676	4,650	4,473	2,779	2,774	2,774	
Kindergarten.	7	5	11,877	10,876	10,237	9,826	9,558	7,978	3,016	3,008	3,008	
1 .....	5	8	4,515	4,959	5,214	5,359	5,441	5,966	11,698	11,721	11,721	
1 .....	6	554	5,202	5,204	5,254	5,300	5,337	5,566	6,195	6,196	6,196	
1 .....	7	235	5,770	5,762	5,644	5,539	5,458	4,954	3,370	3,367	3,367	
1 .....	8	9	6,238	5,967	5,722	5,509	5,332	4,027	1,701	1,697	1,697	
1 .....	9	1	3,230	3,118	2,972	2,842	2,730	1,734	486	484	484	
2 .....	6	6	5,505	5,700	5,941	6,154	6,330	7,707	14,013	14,035	14,035	
2 .....	7	484	5,153	5,244	5,286	5,321	5,353	5,677	6,351	6,352	6,352	
2 .....	8	266	5,008	4,848	4,773	4,710	4,653	4,098	2,830	2,827	2,827	
2 .....	9	15	4,972	4,790	4,685	4,593	4,503	3,346	1,554	1,551	1,551	
3 .....	7	13	6,405	6,703	6,874	7,027	7,172	9,128	16,056	16,077	16,077	
3 .....	8	476	5,413	5,412	5,417	5,425	5,438	5,765	6,375	6,376	6,376	
3 .....	9	260	5,988	5,978	5,962	5,940	5,914	5,329	4,034	4,031	4,031	
3 .....	10	23	5,268	5,221	5,213	5,197	5,160	3,871	1,957	1,954	1,954	
4 .....	8	15	4,978	4,931	4,943	4,969	5,010	6,297	10,267	10,278	10,278	
4 .....	9	545	4,881	4,861	4,850	4,847	4,851	5,156	5,690	5,691	5,691	
4 .....	10	299	4,546	4,593	4,614	4,621	4,617	4,098	3,047	3,045	3,045	
4 .....	11	20	5,023	4,962	4,972	4,955	4,909	3,590	1,919	1,917	1,917	
4 .....	12	3	2,606	2,502	2,433	2,359	2,280	1,318	527	526	526	
4 .....	15	1	5,126	4,384	3,941	3,622	3,369	1,612	562	560	560	
5 .....	9	14	3,302	3,255	3,228	3,227	3,244	4,178	6,852	6,859	6,859	
5 .....	10	572	4,445	4,451	4,452	4,462	4,478	4,806	5,267	5,268	5,268	
5 .....	11	297	5,002	4,998	5,004	4,993	4,969	4,366	3,422	3,420	3,420	
5 .....	12	20	3,963	3,901	3,796	3,686	3,581	2,514	1,487	1,485	1,485	
5 .....	13	1	1,202	983	891	828	779	458	230	230	230	

See notes at end of table.

**Table K-23. Mean weight by grade/enrollment status and age at selected iterations, following the adjustment for dimension 4 (home tenure by grade/enrollment status): ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Grade/ enrollment status	AGE 2000	Number of respondents	Iteration									
			1	2	3	4	5	25	500	900	941	
6.....	10	18	2,430	2,466	2,494	2,532	2,576	3,387	5,083	5,087	5,087	
6.....	11	948	2,567	2,579	2,607	2,635	2,659	2,862	3,072	3,072	3,072	
6.....	12	548	2,616	2,614	2,578	2,539	2,503	2,166	1,781	1,780	1,780	
6.....	13	38	2,755	2,494	2,313	2,184	2,088	1,520	1,066	1,065	1,065	
6.....	14	3	2,176	1,903	1,732	1,618	1,535	1,080	738	738	738	
7.....	11	14	2,464	2,576	2,696	2,806	2,902	3,805	5,166	5,169	5,169	
7.....	12	1,009	2,366	2,453	2,506	2,542	2,568	2,708	2,819	2,820	2,820	
7.....	13	529	2,520	2,378	2,285	2,221	2,174	1,912	1,685	1,685	1,685	
7.....	14	66	1,806	1,610	1,513	1,453	1,411	1,197	1,028	1,027	1,027	
7.....	15	4	1,569	1,357	1,269	1,217	1,180	998	846	846	846	
8.....	11	1	2,991	3,242	3,522	3,776	3,997	6,061	9,678	9,688	9,688	
8.....	12	15	2,024	2,248	2,400	2,510	2,595	3,121	3,662	3,663	3,663	
8.....	13	924	2,900	2,941	2,958	2,967	2,973	2,997	3,013	3,013	3,013	
8.....	14	497	2,137	2,072	2,044	2,027	2,015	1,959	1,914	1,914	1,914	
8.....	15	56	3,340	3,170	3,104	3,071	3,051	2,968	2,897	2,897	2,897	
Ungraded .....	8	1	4,728	4,846	4,845	4,848	4,858	5,138	5,569	5,570	5,570	
Ungraded .....	9	2	3,197	3,088	3,065	3,060	3,063	3,285	3,687	3,688	3,688	
Ungraded .....	12	1	4,646	4,838	4,947	5,017	5,067	5,282	5,343	5,343	5,343	

NOTE: AGE2000 is the child's age as of December 31, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation (ECPP) Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

These results show that the slowness of convergence of the Alternative 1 raking procedure is due to including age and grade/enrollment status dimensions in the same raking procedure, and is not due to any other raking dimensions. The reason that the raking converges slowly when age and grade dimensions are included is because these two variables are highly correlated. Children of a particular age are in one of a few grades, so there is a high association between the two. This high association is referred to as an interaction between age and grade.

Attachment KA discusses the problems that may arise when two variables that are highly correlated are used to define different raking dimensions. Essentially, the raking procedure attempts to maintain the associations between age and grade that are computed based on the nonresponse-adjusted weights. The raked estimates, upon convergence, have the same cross-product ratios (a measure of association in two-way tables) that are in the estimates prior to raking. As pointed out in attachment KA, the use of dimensions with high interaction terms can result in some undesirable outcomes such as weights with greater variability than typical (table K-24). The Alternative 1 weights appear to exhibit this pattern.

**Table K-24. Overall raking adjustment and coefficient of variation (c.v.) of the raking adjustment factor, by grade/enrollment status and age: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade\ enrollment status	AGE 2000	Number of respondents	Alt. 1 weights		Alt. 2 weights		Deaged weights		Alt. 3 weights		Alt. 3 with adjusted control totals	
			Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)
Not enrolled ....	0	1,070	1.17	1,726	1.17	1,671	0.91	1,415	0.96	1,376	1.12	1,553
Not enrolled ....	1	1,258	1.04	1,649	1.04	1,363	1.01	1,539	1.07	1,413	1.05	1,486
Not enrolled ....	2	1,271	1.00	1,743	1.00	1,738	1.02	1,637	1.06	1,566	0.98	1,563
Not enrolled ....	3	774	1.12	1,656	1.04	1,584	1.20	1,776	1.26	2,019	1.13	2,014
Not enrolled ....	4	470	1.12	1,660	0.99	1,450	1.50	2,056	1.69	2,232	1.51	2,226
Not enrolled ....	5	64	0.98	1,285	0.98	1,291	2.12	3,143	1.67	1,554	1.57	1,543
Not enrolled ....	6	2	0.45	713	0.99	1,021	4.98	3,167	1.85	1,319	1.77	1,336
Preschool .....	3	565	0.90	1,267	1.02	1,546	0.70	1,068	0.91	1,250	0.86	1,247
Preschool .....	4	992	0.90	1,333	0.96	1,440	0.85	1,325	0.89	1,202	0.83	1,200
Preschool .....	5	277	0.83	1,253	0.99	1,578	1.30	3,035	1.80	3,409	1.29	3,390
Preschool .....	6	6	0.34	460	0.91	791	2.24	836	2.25	1,780	2.16	1,772
Kindergarten ...	3	4	1.11	761	1.00	689	0.28	436	0.84	658	0.82	645
Kindergarten ...	4	30	1.11	1,776	0.96	1,525	0.35	1,101	0.91	1,575	0.84	1,583
Kindergarten ...	5	539	1.01	2,118	0.99	2,074	0.82	2,052	0.89	1,849	0.82	1,841
Kindergarten ...	6	194	0.45	1,424	0.97	1,828	0.99	2,342	0.97	2,295	0.88	2,281
Kindergarten ...	7	5	0.22	1,145	1.01	963	1.07	1,881	0.90	3,074	0.84	3,072
1 .....	5	8	2.52	1,652	0.97	1,480	0.60	1,469	0.92	1,117	0.88	1,131
1 .....	6	554	1.16	1,925	0.96	1,840	0.92	1,717	0.98	1,682	0.92	1,677
1 .....	7	235	0.62	1,594	1.04	1,963	1.16	2,693	1.22	2,456	1.10	2,446
1 .....	8	9	0.24	520	0.87	855	1.41	1,175	1.29	1,221	1.25	1,210
1 .....	9	1	0.14	(1)	0.95	(1)	1.59	(1)	1.37	(1)	1.35	(1)
2 .....	6	6	2.18	1,414	0.90	1,050	0.57	784	0.88	911	0.86	920
2 .....	7	484	1.23	2,305	1.04	1,903	0.94	2,078	0.98	1,926	0.91	1,923
2 .....	8	266	0.50	1,497	0.91	1,688	0.98	2,165	1.06	2,369	0.97	2,358
2 .....	9	15	0.30	1,591	0.99	2,827	1.20	3,452	1.28	2,951	1.12	2,925
3 .....	7	13	2.60	2,401	1.05	1,816	0.82	1,556	0.91	1,543	0.86	1,547
3 .....	8	476	1.16	2,006	0.93	2,073	0.95	1,869	1.00	1,788	0.94	1,786
3 .....	9	260	0.68	1,408	0.95	1,853	1.06	1,813	1.11	1,821	1.04	1,815
3 .....	10	23	0.44	1,136	1.13	2,376	1.56	1,898	1.52	2,316	1.39	2,316

See notes at end of table.

**Table K-24. Overall raking adjustment and coefficient of variation (c.v.) of the raking adjustment factor, by grade/enrollment status and age: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Grade\ enrollment status	AGE 2000	Number of respondents	Alt. 1 weights		Alt. 2 weights		Deaged weights		Alt. 3 weights		Alt. 3 with adjusted control totals	
			Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)	Overall adjustment	c.v. of raking factor (%)
4.....	8	15	1.89	1,578	0.93	1,117	0.71	919	0.87	1,044	0.84	1,042
4.....	9	545	1.10	2,461	0.96	2,253	0.87	1,846	0.91	1,891	0.85	1,893
4.....	10	299	0.59	1,536	0.89	1,804	0.99	1,938	1.11	2,149	1.01	2,138
4.....	11	20	0.39	1,365	1.04	2,319	1.44	2,362	1.40	2,353	1.28	2,354
4.....	12	3	0.18	291	0.82	629	1.83	1,410	1.18	743	1.14	748
4.....	15	1	0.11	(1)	1.13	(1)	5.32	(1)	1.36	(1)	1.34	(1)
5.....	9	14	1.97	3,783	0.95	2,170	0.65	1,786	0.92	2,138	0.81	2,132
5.....	10	572	1.05	2,056	0.88	1,617	0.82	1,671	0.86	1,715	0.80	1,708
5.....	11	297	0.62	1,880	0.91	1,991	1.01	2,574	1.13	2,471	1.01	2,457
5.....	12	20	0.41	1,059	1.05	1,704	1.66	2,423	1.58	1,992	1.44	1,992
5.....	13	1	0.16	(1)	0.73	(1)	1.50	(1)	1.00	(1)	0.97	(1)
6.....	10	18	1.80	1,711	0.87	897	0.59	828	0.85	863	0.82	866
6.....	11	948	1.07	1,704	0.89	1,329	0.83	1,275	0.87	1,208	0.82	1,206
6.....	12	548	0.62	1,422	0.90	1,415	1.00	1,664	1.08	1,805	0.98	1,800
6.....	13	38	0.45	963	1.18	1,567	1.48	1,973	1.47	1,629	1.34	1,619
6.....	14	3	0.32	696	0.93	1,017	2.35	1,941	1.77	1,659	1.63	1,655
7.....	11	14	1.95	2,134	0.93	1,511	0.68	1,374	0.91	1,390	0.84	1,391
7.....	12	1,009	1.07	1,572	0.89	1,254	0.85	1,250	0.88	1,229	0.82	1,226
7.....	13	529	0.63	1,262	0.94	1,650	0.97	1,615	1.10	1,761	0.98	1,727
7.....	14	66	0.41	1,040	0.70	1,245	1.31	2,038	1.38	1,660	1.25	1,633
7.....	15	4	0.40	634	0.70	859	1.45	1,971	1.08	995	1.02	1,010
8.....	11	1	6.31	(1)	1.55	(1)	0.97	(1)	1.62	(1)	1.60	(1)
8.....	12	15	1.94	1,499	0.90	972	0.74	1,012	0.98	1,129	0.92	1,129
8.....	13	924	1.13	1,646	0.93	1,587	0.91	1,297	0.96	1,474	0.89	1,470
8.....	14	497	0.68	1,323	0.64	1,124	1.02	1,552	1.13	1,522	1.02	1,468
8.....	15	56	0.97	1,921	0.93	1,961	1.55	2,105	1.46	1,721	1.30	1,679
Ungraded.....	8	1	2.12	(1)	1.85	(1)	1.75	(1)	1.70	(1)	1.68	(1)
Ungraded.....	9	2	1.36	2,237	1.18	2,115	1.04	1,737	1.10	1,789	1.01	1,784
Ungraded.....	12	1	0.93	(1)	0.82	(1)	0.82	(1)	0.77	(1)	0.76	(1)

<sup>1</sup> The c.v. is not produced because there is only one observation in the row.

NOTE: AGE2000 is the child's age as of December 31, 2000. The deaged weight in the NHES:2001 was based on age calculated as of September 30, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of the NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.



### 4.3 Inconsistent Ages

As described in section 2 of this appendix, control totals used for raking the person-level weights for NHES are derived from two different CPS files. School enrollment and grade data are available on the October CPS file, but these data are not available on the March CPS file. However, the March CPS file is more contemporaneous with the NHES field period and contains data from the annual demographic survey of the CPS.

For each raking dimension, the control totals used for raking the ECPP-NHES:2001 and ASPA-NHES:2001 weights were obtained by applying percentage distributions from the October CPS to an overall estimated total number of children from the March CPS. Distributions of race/ethnicity by household income and of Census region by urbanicity remain stable throughout the year. Additionally, marginal grade distributions and age distributions are assumed to remain relatively stable throughout the year.<sup>10</sup> On the other hand, the joint distribution of age and grade changes throughout the year (specifically, over the period from October through March), as children typically remain in the same grade throughout this period while the age distribution within each grade shifts upward. This was demonstrated in table K-5, where for a given age, NHES (based on age as of December 31) estimates a larger proportion of children of a given age being in a higher grade than the CPS (based on September 30 age). For example, among 13-year-olds, NHES estimates (based on the original weights) that 63 percent are in 8<sup>th</sup> grade, 34 percent are in 7<sup>th</sup> grade, and 3 percent are in 6<sup>th</sup> grade; the CPS estimates that 71 percent are in 8<sup>th</sup> grade, 25 percent are in 7<sup>th</sup> grade, and 3 percent are in 6<sup>th</sup> grade. The original raking procedure did not require a large number of iterations to converge because it combined age and grade into a single raking dimension.<sup>11</sup> As noted in attachment KA, this is a technique that avoids problems when it can be used.

However, the fluctuation in population by the age/grade dimension over time described above does present a problem with this strategy. The CPS age/grade distribution from October is not consistent with the age/grade distribution captured in NHES in the spring. Once again, the interaction between age and grade is a problem; this time the problem is related to the temporal distribution. An alternative that attempts to address this specific issue is considered in the next section.

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<sup>10</sup> See the comment about possible variation in kindergarten enrollment over the year in section 4.1.

<sup>11</sup> The combination really used age for younger children and grade for older children.

#### 4.4 Interaction of Age and Grade

In order to examine the effect of the interaction between age and grade on the raking adjustment for the Alternative 1 weights, a variation on Alternative 1 was developed. For this variation, a new age variable was computed for each child with a completed ECPP or ASPA interview. NHES collects each child's current grade or grade equivalent (if enrolled), as well as the information needed to calculate the child's age as of December of the previous year. For NHES:2001, the age as of December 2000 is stored in the variable AGE2000. Because NHES collects the month and year of birth of the child (CDOBMM and CDOBY), the responses to these variables could be used to compute age as of any given date. For this variation, the child's age as of September 30 was completed and used in place of AGE2000 in raking.<sup>12</sup>

The raking dimensions for this "deaged" raking procedure were race/ethnicity by household income, Census region by urbanicity, single year of age as of September 30, and home tenure by enrollment status/grade of the child. The raking procedure was run to compute the adjusted deaged weights. This procedure required 805 iterations to converge.

For each alternative considered, table K-19 contains the overall raking adjustment (computed as the ratio of the sum of the raked weights to the sum of the nonresponse-adjusted weights) and the coefficient of variation of the raking adjustment factor, for each combination of grade/enrollment status and age. In general, among the three alternatives considered, the adjustments are greatest and most variable under Alternative 1, and smallest and least variable under Alternative 2.<sup>13</sup>

Table K-25 gives the estimated total and mean weight for each age/grade combination under each alternative raking scheme, as well as the estimated totals from the October 1999 CPS. The mean weights under Alternative 2 are less variable than under Alternative 1. Within each grade, the age distribution based on the Alternative 1 weights is similar to the CPS age distribution. However, the Alternative 2 weights and the deaged weights each produce age distributions that are "older" than the CPS age distribution within each grade. Because of the difference in the timing of the two surveys (specifically, the fact that the CPS age is as of September 30 but the NHES age is as of December 31), it is reasonable that for a given grade, the NHES age distribution should be older than the October CPS age distribution.

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<sup>12</sup> For children born between October 1, 2000, and December 31, 2000, an age of 0 was assigned.

<sup>13</sup> A fourth alternative, deaging the NHES sample (calculating the child's age as of September 30, 2000) and using the dimensions of the original raking procedure, was considered. However, the results of this approach were similar to the results of the original raking procedure with a substantial shortfall in the estimated number of 5-year-olds.

Table K-26 contains the estimated marginal totals for each age and each grade under each raking alternative. For selected alternatives, table K-26A gives the standard errors of these estimates. Because age was used as a raking dimension, with no manipulation of the age variable, Alternatives 1 and 2 each yield age estimates that are very close to the CPS estimates.<sup>14</sup> Because they used grade as a separate dimension, Alternative 1 and the deaged approach yield grade estimates that are most similar to those of the CPS. However, due to concerns about the variable estimates of kindergartners and the other concerns discussed in this appendix, matching CPS estimates of grade-level enrollment should not be of primary importance for the NHES estimates.

#### **4.5 Coverage**

In this study, telephone coverage rates by age and grade were also examined. As the discussion in attachment KA points out, when coverage rates (or unit response rates) do not follow a response model consistent with the model implicit in raking, the raked estimates are not unbiased. Moreover, unit response rates cannot readily be computed by age and grade because the biggest portion of nonresponse occurs in screening before age and grade can be determined.

The telephone coverage rates were computed from the October CPS by child's age and grade (see attachment KC). The pattern of coverage is somewhat unusual, with the coverage seeming to decline off the modal age/grade cell. However, these estimates are based on very small sample sizes in these cells. The overall estimate of household telephone coverage from the October 1999 CPS is that 94.1 percent of households have telephones. Telephone coverage rates from Census 2000 were also examined. The overall telephone coverage rate from Census 2000 is 97.6 percent of households, considerably higher than the CPS estimate.

The results of this part of the study are interesting but not very informative because of the small sample sizes in the CPS for computing the coverage rates.

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<sup>14</sup> Since the control totals were obtained by applying distributions from the October CPS to totals from the March CPS, the NHES estimates do not exactly match the October CPS estimates.

**Table K-25. Estimated totals and mean weights for grade/enrollment status, by age combinations for alternative raking procedures: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade\ enrollment status	Age	Number of respondents	Nonresp. adj. weights:	Final Alt. 1 weights		Final Alt. 2 weights		Final deaged weights		Final Alt. 3 weights		Alt. 3 with adj. control totals		Oct. 1999 CPS (age as of Oct.): estimated total
			Estimated total	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	
Not enrolled.....	0	1,070	3,313,066	3,867,834	3,615	3,867,835	3,615	3,008,148	2,811	3,008,721	2,812	3,701,058	3,459	3,861,241
Not enrolled.....	1	1,258	3,747,389	3,901,976	3,102	3,901,977	3,102	3,797,427	3,019	3,795,842	3,017	3,946,147	3,137	3,895,325
Not enrolled.....	2	1,271	3,949,450	3,930,531	3,092	3,930,532	3,092	4,024,148	3,166	3,938,267	3,099	3,875,374	3,049	3,923,831
Not enrolled.....	3	774	2,156,361	2,415,764	3,121	2,233,802	2,886	2,584,821	3,340	2,483,241	3,208	2,443,410	3,157	2,357,244
Not enrolled.....	4	470	1,252,609	1,401,148	2,981	1,238,408	2,635	1,881,152	4,002	1,919,990	4,085	1,889,359	4,020	1,252,396
Not enrolled.....	5	64	180,132	176,291	2,755	176,076	2,751	382,686	5,979	287,106	4,486	282,469	4,414	233,570
Not enrolled.....	6	2	3,344	1,505	752	3,300	1,650	16,668	8,334	5,979	2,990	5,907	2,953	89,302
Not enrolled.....	7	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	55,381
Preschool.....	3	565	1,587,020	1,435,880	2,541	1,619,449	2,866	1,112,347	1,969	1,383,870	2,449	1,361,902	2,410	1,480,031
Preschool.....	4	992	2,766,492	2,477,521	2,498	2,660,444	2,682	2,361,246	2,380	2,342,458	2,361	2,305,006	2,324	2,439,193
Preschool.....	5	277	802,235	662,415	2,391	797,027	2,877	1,045,430	3,774	1,049,781	3,790	1,032,920	3,729	587,120
Preschool.....	6	6	30,041	10,360	1,727	27,364	4,561	67,154	11,192	65,967	10,995	64,938	10,823	72,013
Kindergarten.....	3	4	15,446	17,103	4,276	15,497	3,874	4,360	1,090	12,930	3,232	12,732	3,183	24,877
Kindergarten.....	4	30	133,847	149,097	4,970	128,915	4,297	46,818	1,561	114,766	3,826	112,990	3,766	329,311
Kindergarten.....	5	539	3,066,152	3,111,612	5,773	3,034,769	5,630	2,522,639	4,680	2,570,655	4,769	2,529,405	4,693	2,983,685
Kindergarten.....	6	194	1,198,596	538,220	2,774	1,168,307	6,022	1,183,729	6,102	1,073,631	5,534	1,056,569	5,446	440,615
Kindergarten.....	7	5	68,928	15,038	3,008	69,567	13,913	73,525	14,705	59,090	11,818	58,127	11,625	46,052
1.....	5	8	37,211	93,767	11,721	36,213	4,527	22,274	2,784	33,308	4,164	32,782	4,098	213,652
1.....	6	554	2,962,180	3,432,673	6,196	2,833,214	5,114	2,721,516	4,912	2,773,282	5,006	2,728,897	4,926	3,285,861
1.....	7	235	1,284,963	791,128	3,367	1,340,034	5,702	1,493,266	6,354	1,440,291	6,129	1,417,346	6,031	732,310
1.....	8	9	64,474	15,273	1,697	56,356	6,262	90,906	10,101	81,821	9,091	80,465	8,941	71,660
1.....	9	1	3,382	484	484	3,214	3,214	5,362	5,362	4,623	4,623	4,558	4,558	22,454

See notes at end of table.

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**Table K-25. Estimated totals and mean weights for grade/enrollment status, by age combinations for alternative raking procedures: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999—Continued**

Grade\ enrollment status	Age	Number of respondents	Nonresp. adj. weights:	Final Alt. 1 weights		Final Alt. 2 weights		Final deaged weights		Final Alt. 3 weights		Alt. 3 with adj. control totals		Oct. 1999 CPS (age as of Oct.): estimated total
			Estimated total	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	
2.....	5	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	19,164
2.....	6	6	38,714	84,208	14,035	34,783	5,797	22,237	3,706	33,849	5,641	33,289	5,548	145,359
2.....	7	484	2,498,288	3,074,452	6,352	2,595,802	5,363	2,336,391	4,827	2,315,990	4,785	2,279,188	4,709	2,982,403
2.....	8	266	1,515,052	752,032	2,827	1,385,902	5,210	1,481,793	5,571	1,495,304	5,621	1,471,201	5,531	721,909
2.....	9	15	78,058	23,266	1,551	76,967	5,131	93,537	6,236	88,816	5,921	87,389	5,826	45,951
2.....	10	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	12,464
3.....	6	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	26,883
3.....	7	13	80,485	209,005	16,077	84,220	6,478	66,300	5,100	70,713	5,439	69,396	5,338	260,006
3.....	8	476	2,617,368	3,035,012	6,376	2,439,173	5,124	2,488,121	5,227	2,501,777	5,256	2,462,144	5,173	2,957,999
3.....	9	260	1,530,157	1,048,115	4,031	1,452,676	5,587	1,624,654	6,249	1,621,790	6,238	1,595,484	6,136	982,369
3.....	10	23	102,196	44,944	1,954	115,867	5,038	158,987	6,912	143,908	6,257	141,793	6,165	89,677
3.....	11	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	18,306
4.....	7	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	6,497
4.....	8	15	81,749	154,170	10,278	75,787	5,052	57,764	3,851	69,878	4,659	68,737	4,582	192,569
4.....	9	545	2,809,153	3,101,333	5,691	2,691,223	4,938	2,445,839	4,488	2,417,665	4,436	2,379,386	4,366	2,979,929
4.....	10	299	1,535,896	910,361	3,045	1,371,270	4,586	1,520,674	5,086	1,576,142	5,271	1,550,777	5,187	910,091
4.....	11	20	97,461	38,333	1,917	101,774	5,089	140,329	7,016	127,100	6,355	124,910	6,245	74,411
4.....	12	3	9,012	1,577	526	7,376	2,459	16,455	5,485	10,487	3,496	10,285	3,428	43,030
4.....	15	1	5,072	560	560	5,719	5,719	27,006	27,006	6,888	6,888	6,798	6,798	0
5.....	8	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	11,162
5.....	9	14	48,754	96,026	6,859	46,139	3,296	31,530	2,252	39,921	2,851	39,291	2,807	216,074
5.....	10	572	2,867,756	3,013,269	5,268	2,528,835	4,421	2,352,100	4,112	2,339,895	4,091	2,302,494	4,025	2,825,052
5.....	11	297	1,627,524	1,015,716	3,420	1,477,796	4,976	1,648,396	5,550	1,666,969	5,613	1,640,237	5,523	977,598
5.....	12	20	72,818	29,701	1,485	76,779	3,839	120,730	6,036	106,702	5,335	105,076	5,254	99,161
5.....	13	1	1,460	230	230	1,062	1,062	2,187	2,187	1,455	1,455	1,419	1,419	18,812

See notes at end of table.

**Table K-25. Estimated totals and mean weights for grade/enrollment status, by age combinations for alternative raking procedures: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Grade\ Enrollment status	Age	Number of respondents	Nonresp. adj. weights:	Final Alt. 1 weights		Final Alt. 2 weights		Final deaged weights		Final Alt. 3 weights		Alt. 3 with adj. control totals		Oct. 1999 CPS (age as of Oct.): estimated total
			Estimated total	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	Estimated total	Mean weight	
6.....	9	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	22,531
6.....	10	18	51,011	91,568	5,087	44,168	2,454	30,017	1,668	42,532	2,363	41,875	2,326	200,794
6.....	11	948	2,722,777	2,912,505	3,072	2,432,119	2,566	2,263,987	2,388	2,274,859	2,400	2,238,655	2,361	2,767,587
6.....	12	548	1,581,983	975,534	1,780	1,427,630	2,605	1,577,800	2,879	1,569,298	2,864	1,544,116	2,818	894,644
6.....	13	38	90,866	40,469	1,065	107,676	2,834	134,263	3,533	124,185	3,268	122,096	3,213	115,374
6.....	14	3	6,912	2,213	738	6,399	2,133	16,222	5,407	11,415	3,805	11,243	3,748	14,501
7.....	10	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	15,142
7.....	11	14	37,078	72,364	5,169	34,543	2,467	25,127	1,795	31,558	2,254	31,108	2,222	177,186
7.....	12	1,009	2,653,167	2,844,906	2,820	2,369,830	2,349	2,254,518	2,234	2,206,245	2,187	2,170,862	2,151	2,637,312
7.....	13	529	1,416,160	891,275	1,685	1,330,296	2,515	1,374,268	2,598	1,423,660	2,691	1,393,766	2,635	923,440
7.....	14	66	163,496	67,802	1,027	114,177	1,730	214,176	3,245	210,339	3,187	204,626	3,100	86,363
7.....	15	4	8,448	3,384	846	5,885	1,471	12,273	3,068	8,829	2,207	8,613	2,153	39,007
8.....	11	1	1,535	9,688	9,688	2,372	2,372	1,491	1,491	2,492	2,492	2,450	2,450	26,614
8.....	12	15	28,386	54,944	3,663	25,656	1,710	20,979	1,399	26,446	1,763	26,069	1,738	231,189
8.....	13	924	2,455,539	2,783,762	3,013	2,276,700	2,464	2,243,632	2,428	2,217,654	2,400	2,182,272	2,362	2,651,774
8.....	14	497	1,408,812	951,359	1,914	900,799	1,812	1,437,963	2,893	1,487,763	2,993	1,439,526	2,896	918,769
8.....	15	56	166,626	162,233	2,897	154,572	2,760	257,921	4,606	227,631	4,065	217,061	3,876	126,886
Ungraded.....	8	1	2,621	5,570	5,570	4,837	4,837	4,583	4,583	4,457	4,457	4,403	4,403	0
Ungraded.....	9	2	5,426	7,377	3,688	6,381	3,191	5,644	2,822	5,551	2,775	5,454	2,727	0
Ungraded.....	12	1	5,756	5,343	5,343	4,733	4,733	4,711	4,711	4,444	4,444	4,376	4,376	0

<sup>1</sup> NHES estimates are not given because there were no sample cases with the grade/age combinations.

NOTE: For NHES estimates, age is as of December 31. For deaged estimates and CPS estimates, age is as of September 30, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of the NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-26. Estimated totals from CPS and estimated NHES totals based on the nonresponse adjusted weight and the weight from each of the raking alternatives, by age and grade/enrollment status: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Characteristic	Estimated total <sup>1</sup>						
	Nonresponse adj. weight	Alt. 1 weight	Alt. 2 weight	Deaged <sup>2</sup> weight	Alt. 3 weight	Alt. 3 with adj. control totals	Oct. 1999 CPS
<b>Age</b>							
0 .....	3,313,066	3,867,834	3,867,835	3,008,148	3,008,721	3,701,058	3,861,241
1 .....	3,747,389	3,901,976	3,901,977	3,797,427	3,795,842	3,946,147	3,895,325
2 .....	3,949,450	3,930,531	3,930,532	4,024,148	3,938,267	3,875,374	3,923,831
3 .....	3,758,827	3,868,747	3,868,748	3,701,528	3,880,041	3,818,044	3,862,152
4 .....	4,152,948	4,027,766	4,027,767	4,289,216	4,377,214	4,307,355	4,020,900
5 .....	4,085,729	4,044,085	4,044,085	3,973,029	3,940,851	3,877,576	4,037,191
6 .....	4,232,875	4,066,966	4,066,967	4,011,304	3,952,708	3,889,600	4,060,033
7 .....	3,932,665	4,089,623	4,089,623	3,969,481	3,886,084	3,824,058	4,082,650
8 .....	4,281,265	3,962,056	3,962,055	4,123,168	4,153,237	4,086,949	3,955,299
9 .....	4,474,929	4,276,600	4,276,600	4,206,566	4,178,366	4,111,561	4,269,309
10 .....	4,556,859	4,060,142	4,060,141	4,061,777	4,102,477	4,036,939	4,053,219
11 .....	4,486,375	4,048,606	4,048,605	4,079,330	4,102,977	4,037,360	4,041,702
12 .....	4,351,123	3,912,006	3,912,005	3,995,192	3,923,622	3,860,784	3,905,335
13 .....	3,964,025	3,715,735	3,715,734	3,754,350	3,766,954	3,699,553	3,709,399
14 .....	1,579,220	1,021,374	1,021,374	1,668,361	1,709,517	1,655,395	1,019,633
15 .....	180,147	166,177	166,177	297,200	243,349	232,472	165,893
<b>Grade/enrollment status</b>							
Not enrolled .....	14,602,350	15,695,049	15,351,929	15,695,050	15,439,147	16,143,724	15,668,289
Preschool.....	5,185,787	4,586,176	5,104,284	4,586,177	4,842,076	4,764,766	4,578,357
Kindergarten .....	4,482,970	3,831,071	4,417,055	3,831,071	3,831,071	3,769,823	3,824,539
1 <sup>st</sup> grade.....	4,352,209	4,333,325	4,269,031	4,333,325	4,333,325	4,264,048	4,325,937
2 <sup>nd</sup> grade.....	4,130,112	3,933,958	4,093,454	3,933,958	3,933,959	3,871,067	3,927,250
3 <sup>rd</sup> grade .....	4,330,206	4,337,076	4,091,936	4,338,062	4,338,188	4,268,817	4,335,241
4 <sup>th</sup> grade .....	4,538,343	4,206,334	4,253,150	4,208,067	4,208,161	4,140,892	4,206,527
5 <sup>th</sup> grade .....	4,618,312	4,154,942	4,130,611	4,154,942	4,154,941	4,088,517	4,147,860
6 <sup>th</sup> grade .....	4,453,549	4,022,288	4,017,991	4,022,288	4,022,289	3,957,985	4,015,431
7 <sup>th</sup> grade .....	4,278,349	3,879,731	3,854,732	3,880,363	3,880,631	3,808,974	3,878,450
8 <sup>th</sup> grade .....	4,060,899	3,961,986	3,360,099	3,961,986	3,961,986	3,867,379	3,955,231
Ungraded/no equivalent.....	13,803	18,289	15,951	14,939	14,451	14,232	0

<sup>1</sup> Children ages 0 through 15, enrolled in grade 8 or below.

<sup>2</sup> Deaged weight was based on age calculated as of September 30, 2000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of the NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

**Table K-26A. Standard errors of estimated totals based on the weight from selected raking alternatives, by age and grade/enrollment status: ECPP-NHES:2001, ASPA-NHES:2001, and CPS:1999**

Characteristic	Standard error of the estimated total <sup>1</sup>		
	Original weight	Alt. 2 weight	Alt. 3 with adj. control totals
<b>Age</b>			
0 .....	0	0	60,844
1 .....	0	0	78,065
2 .....	0	0	87,879
3 .....	91,646	0	99,533
4 .....	98,376	0	87,838
5 .....	84,721	0	87,827
6 .....	117,634	0	109,978
7 .....	129,040	0	116,951
8 .....	129,735	0	101,013
9 .....	135,269	0	102,653
10 .....	125,347	0	106,582
11 .....	106,502	0	87,386
12 .....	74,608	0	58,510
13 .....	70,281	0	60,588
14 .....	59,895	0	56,516
15 .....	31,311	0	31,328
<b>Grade/enrollment status</b>			
Not enrolled .....	0	88,246	32,127
Preschool.....	0	99,442	32,127
Kindergarten .....	0	116,154	0
1 <sup>st</sup> grade.....	0	130,287	0
2 <sup>nd</sup> grade.....	0	107,104	0
3 <sup>rd</sup> grade .....	4,029	107,814	4,446
4 <sup>th</sup> grade .....	4,291	129,503	4,042
5 <sup>th</sup> grade .....	0	112,643	0
6 <sup>th</sup> grade .....	0	79,762	0
7 <sup>th</sup> grade .....	4,691	80,102	4,380
8 <sup>th</sup> grade .....	0	60,839	0
Ungraded/no equivalent.....	7,280	8,046	7,221

<sup>1</sup> Children ages 0 through 15, enrolled in grade 8 or below.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (NHES), 2001, and Before- and After-School Programs and Activities (ASPA) Survey of the NHES, 2001. U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.



## 5. SUMMARY AND RECOMMENDATIONS

The study of the weighting procedures for the ECPP and ASPA surveys from NHES:2001 is wide ranging and has several important findings. This section summarizes findings and presents recommendations for NHES:2001 and NHES:2003.

The weighting procedures in NHES:2001 were executed correctly. The original weights converged to the specified control totals with a small number of iterations, and the variability of the weights was reasonable. The original weighting procedure resulted in estimates of the number of 5-year-olds that differed from the CPS estimate by about 15 percent (500,000 children). The main reasons for the difference are the lower CPS estimate of the number of kindergartners and measurement issues. The distributions of age by grade for children as measured in the CPS and the NHES also differ, and this is mainly due to the difference in the time that data are collected.

Three alternative raking schemes were considered to deal with the concern arising from the original weights. The study focused on raking because it was determined that the unusual patterns and estimates were not present using weights prior to raking. In Alternative 1, the home tenure by age/grade dimension was eliminated, and a dimension of single year of age and a second dimension of home tenure/grade were substituted. The weights from this procedure matched the CPS estimates by age and by grade, but exhibited greater variability than desired. In particular, the mean raked weight for children within a grade decreased as age increased. Another issue noted was the large number of iterations required for the raking procedure to converge.

In Alternative 2, the home tenure by age/grade dimension was eliminated and replaced by the single dimension of home tenure by single year of age. When these weights were used to estimate the number of children in kindergarten, the raked NHES estimates were about 500,000 children higher than the CPS estimate.

A preliminary examination suggested using the Alternative 1 scheme because the weights from this approach produced estimates that agreed with the CPS by both age (the original weights did not have this property) and by grade (the Alternative 2 estimate of kindergarten children differed from the CPS estimate). However, the problem of the variability in the weights by age and grade and the need for a large number of iterations raised concerns and indicated further research would be beneficial.

As part of the additional research, a third alternative was considered. In Alternative 3, the home tenure by age/grade dimension was replaced by the single dimension of home tenure crossed with grade by age category. For each grade, two age categories were created: (1) at or below modal age for the grade and (2) above modal age for the grade. Prior to classifying children into raking cells for this dimension, the age of the child was recalculated as of September 30, to match the reference age used in computing the control totals from CPS.

The additional research found that the CPS estimate of the number of kindergarten children is at the lower end of the range computed using several sources. No study of CPS procedures was undertaken, but the method of classifying a child as being enrolled in kindergarten may differ between the CPS and some of the other sources. Another interesting finding from this part of the study is that there may be some variation in the number of children enrolled in kindergarten over the school year. The 2000 census and NHES were both measured during the second half of the school year and gave higher estimates of the number of kindergarten children than the other sources that were measured in the fall.

As a result of the comparisons, the need to match the CPS estimate of the number of children by grade was reconsidered. The CPS estimate, lower than that from most other sources, is collected in the fall when kindergarten enrollment might be slightly lower than in the spring. The CPS also suffers from its own measurement problems, and those might have a greater effect on the classification of children in the other grades. Although matching the CPS estimates by grade was critical in the preliminary recommendation, the findings from the comparisons of kindergarten estimates suggest the Alternative 2 weights that do not match the CPS estimates by grade are more acceptable. The original estimates that underestimated the number of 5-year-olds are not recommended, because the age distribution from the CPS does not have the same issues as the grade distribution.

The detailed study of the weights also found that the disconcerting features of the Alternative 1 weights noted in the preliminary analysis could be attributed to the use of two raking dimensions (age and grade) that are so highly correlated. When the raking dimensions are highly correlated, it is not uncommon for the raking process to take a large number of iterations to converge and for the weights to have higher variability than might otherwise be expected. In these cases, a solution is to combine the two variables to form a single dimension. The original raking procedure did include age and grade in the same dimension, but the problem encountered was the inconsistency between the age/grade distribution of the NHES and CPS distributions.

The effect of NHES and CPS having children whose ages are calculated at different months was examined by recomputing the ages of children in NHES to be more consistent with the October CPS

data collection. The raking procedure used the same dimensions as Alternative 1, but the NHES ages were computed as of September 30. The deaged raking procedure eliminated some of the problems noted with the Alternative 1 weights. In particular, the peculiar pattern of mean weights within grade decreasing as age increased is not evident with this weighting strategy. However, the number of iterations that were required to attain convergence was still large, and the overall variability in the weights was larger than with the original raking procedure or Alternative 2.

Essentially, the deaged raking scheme handled problems associated with ages being computed at different points in time, but it suffers from having two highly correlated raking dimensions. In addition, the NHES estimates by age that are computed by analysts will still use the standard December 31 date, so the correspondence between the CPS age and the NHES analysis age will not persist. That is, deaging is strictly for computing the weights, and analysis of the NHES data will not match the CPS estimates by age. Nevertheless, the deaged raked weights are preferred to the Alternative 1 weights because they do deal with the fact that the CPS and NHES classify children by age differently.

Based on the complete analysis, it was recommended that the Alternative 2 raking scheme be adopted for NHES:2001. The Alternative 2 weights give estimates of the number of children by age that correspond to the CPS estimates, and they also have good statistical properties in the sense that the raking does not introduce substantial variability into the weights. As noted above, the preliminary concern about the Alternative 2 weights was largely based on the perceived importance of matching the CPS estimates by grade (particularly the number of children in kindergarten). This should no longer be a concern. The data show the CPS estimate of the number of children in kindergarten is lower than other sources. The Alternative 2 raking scheme results in an estimate of the number of children in kindergarten higher than other sources, but the difference between this estimate and the 2000 census estimate is about the same magnitude as the difference between the CPS estimate and the 2000 census figure.

While it is no longer imperative to match the CPS estimates by grade, the CPS estimates should be matched by age. As noted above, the failure of the original raking scheme to approximate the CPS estimate of the number of 5-year-olds makes this approach unacceptable.

The Alternative 2 procedure also has the advantage of avoiding the problem of having two raking dimensions based on highly correlated variables—age and grade. This problem of having age and grade dimensions affects both the Alternative 1 and the deaged raking schemes. In both cases, the problem manifests itself by requiring a large number of iterations before the weights converge, and the resulting weights have greater variability than might be expected. The variability in the weights is an issue because some estimates may be greatly affected by cases with very high weights. Although no such

estimates were discovered in the preliminary analysis of the Alternative 1 weights, it is very possible that estimates for small groups could be unstable as a result of the variability in the weights.

After further discussion, and considering all the options explored, it was decided that the original weights should be used for analysis of the ECPP and ASPA surveys. Each of the alternatives considered had shortcomings, and no alternative was clearly preferable to the original weights. Thus, only the weights computed using the original methodology appear on the data files.

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**ATTACHMENT KA**

**THEORY OF ADJUSTING WEIGHTS USING AUXILIARY DATA**

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In this attachment, some of the theory on the use of poststratified and raking estimators is described. Both estimators are in a class of estimators that Deville and Särndal (1992) refer to as calibration estimators. A calibration estimator is one in which the base weights,  $d_i$ , the inverse of the probability of selection, are adjusted so that the revised weights,  $w_i$ , are close to the original weights but satisfy some constraints. Typically, the constraint is that the sum of the revised weights equals a known population total,  $\sum w_i = N$ , or more generally  $\sum w_i \mathbf{x}_i = \mathbf{X}$ , where  $\mathbf{x}_i$  is a vector of auxiliary data known for all sampled units and for the entire population. With poststratification, the constraint requires that the revised weights sum to the population total for groups or cells of the population. With raking, the constraints involve summing to the population or control totals for two or more variables at the same time, but the constraints are marginal and do not involve the cells formed by crossing the two variables.

Different calibration estimators can be constructed by changing the measure of closeness. The distance metric for poststratification is different from the one used for raking. For example, raking corresponds to a metric that measures the distance between the revised weight and the original weight (let  $x$  denote the ratio) by the function  $G(x) = x \log(x) - x + 1$ . Deville and Särndal (1992) show the different distance measures have little effect when the sample size is large.

Several reasons exist for using a calibrated estimator rather than an estimator that does not involve any auxiliary variables. One reason is that the constraints force the sum of the weights to equal known population totals for the selected dimensions, and this makes the estimates seem more reasonable to analysts. Since the totals are known from some other source, this is a form of conditioning the estimators that has statistical advantages over unconditional approaches (Holt and Smith, 1979). A second reason for calibrating the estimators is that it is a method of adjusting for other sources of error, including sampling, nonresponse, and noncoverage. In many RDD surveys, adjusting the estimates from a telephone survey to known population counts from the entire population (both telephone and nontelephone households) is the major reason for calibration and is critical to reducing the mean square error of the estimates. The reduction in the mean square error of the estimates is related to the predictive power of the auxiliary variables used in the adjustment. Choosing variables that are highly related to the primary outcome variables of the survey or that are highly related to the propensity to respond or the likelihood of being covered results in the greatest reduction in the mean square error. For example, with poststratification, the error in estimating a population total that is used as a constraint is zero (it is a known value that does not vary from sample to sample). Similarly, estimates of population totals that are highly correlated with the known cell totals used in poststratification have small sampling errors.

Below, poststratification and raking are described in more detail.



## Poststratification

Consider poststratification to population control totals, where the population count,  $N_h$  ( $h=1,\dots,H$ ), is known for each poststratum or cell  $h$ . The poststratified estimator of the population total is

$$\hat{Y}_{ps} = \sum_h N_h \sum_i \left( \frac{d_{hi} y_{hi}}{\sum_i d_{hi}} \right) = \sum_h \sum_i w_{hi} y_{hi}, \quad (\text{KA-1})$$

where  $d_{hi}$  is the inverse of the probability of selecting unit  $i$  in cell  $h$ ,  $w_{hi} = \frac{N_h}{\hat{N}_h} d_{hi}$ , and  $\hat{N}_h = \sum_{i \in h} d_{hi}$  is the unadjusted survey estimate of the population total in cell  $h$ .

The poststratified estimator assumes that all the sampled units respond. A generalization used in practice that handles unit nonresponse is the population cell weighting estimator. This estimator is

$$\hat{Y}_{pc} = \sum_h N_h \left\{ \frac{\sum_{i \in h_r} y_{hi} d_{hi}}{\sum_{i \in h_r} d_{hi}} \right\} = \sum_h \frac{N_h}{\hat{N}_h} \left( \sum_{i \in h_r} y_{hi} d_{hi} \right), \quad (\text{KA-2})$$

where the sums are over the set of respondents in cell  $h$ . As a convenience, the population cell weighting estimator is referred to as the poststratified estimator, ignoring the distinction noted above. The difference will be discussed later.

Two issues arise with using the poststratified estimator in practice. The first issue is that the poststratified estimator requires external data on the number of units in the population in each cell ( $N_h$ ). When several auxiliary variables are used in the adjustment, the counts in each cell of the cross-tabulation of the auxiliary variables are needed, and this level of detail is not always available. Even when the required counts are available, it may not be wise to use the full cross-classification for adjusting the estimator. The poststratified estimator is a ratio estimator, and its denominator is the sample estimate of the number of units in cell  $h$ . If the sample size in cell  $h$  is small, then the estimator is biased and the poststratified estimator could be unreliable. One way of dealing with this problem is to reduce the number of cells so that the sample size in each cell is large enough to provide a reliable estimator.

## Raking

The population raking estimator is an alternative that may be used when several auxiliary variables are available. Raking is often thought of as a multivariate version of poststratification since the process of raking involves repeated poststratification to multiple dimensions. One virtue of raking is that only the marginal control totals are needed, rather than counts for all the cells in the cross-classification such as would be required with poststratification.

To aid in the discussion, the raking estimator is described in a simple two-variable situation. The extension to more variables is immediate. Suppose there are two auxiliary variables with  $H$  and  $K$  classes, respectively. The raking estimator can be written as

$$\hat{Y}_{pr} = \sum_h \sum_k \tilde{w}_{hk} \left( \sum_{i \in (k,h)_r} y_{hki} d_{hki} \right), \quad (\text{KA-3})$$

where  $\tilde{w}_{hk}$  is the weight formed by raking the weighted count of the number of respondents in cell  $(h,k)$  to the marginal totals as described below.

- Let  $\hat{N}_{hk} = \sum_{i \in (h,k)} d_{(h,k)i}$  be the unadjusted estimate of the population in cell  $(h,k)$ .
- Compute weights at each iteration using the following:

$$\begin{aligned} \tilde{w}_{hk}^{(t)} &= \hat{N}_{hk} && \text{if } t = 0 \\ &= \frac{\tilde{w}_{hk}^{(t-1)} N_{h+}}{\tilde{w}_{h+}^{(t-1)}} && \text{if } t = \text{odd} \\ &= \frac{\tilde{w}_{hk}^{(t-1)} N_{+k}}{\tilde{w}_{+k}^{(t-1)}} && \text{if } t = \text{even} \end{aligned}$$

- Iterate to convergence (i.e., until the sums of the weights match all the marginal counts).

At each iteration the weights are poststratified twice, first to the row dimension and then to the column dimension. With more than two dimensions, this adjustment is repeated for each dimension. If the raked weights converge, then the order of introducing the dimensions does not matter, and the row and column variables can be interchanged without affecting the estimates. The formulation given above shows why raking is viewed as a multivariate type of poststratification.

Another way of writing the raked weight is

$$\tilde{w}_{hk} = \hat{N}_{hk} \hat{\alpha}_h \hat{\beta}_k, \quad (\text{KA-4})$$

where  $\hat{\alpha}_h = \lim_{t \rightarrow \infty} \prod_{l < t, l \text{ odd}} \frac{N_{h \cdot}}{\tilde{w}_{h \cdot}^{(l)}}$  and  $\hat{\beta}_k = \lim_{t \rightarrow \infty} \prod_{l < t, l \text{ even}} \frac{N_{\cdot k}}{\tilde{w}_{\cdot k}^{(l)}}$ . Using this formulation, the weight can be

viewed as being adjusted by a factor for each dimension,  $\alpha_h$  is the adjustment for the first dimension (level  $h$ ) and  $\beta_k$  is the adjustment for the second dimension (level  $k$ ). The row factor is the product of all the adjustments that are made to the row across iterations. Similarly, the column factor is the product of all the column adjustments across the iterations.

As an example, suppose a sample is selected of children between the ages of 5 and 7 enrolled in kindergarten, 1st or 2nd grade. Table KA-1 below is an illustrative example of the estimates from the survey before raking.

**Table KA-1. Illustration of unadjusted survey estimates by age and grade**

Grade	Age			Total
	5	6	7	
K.....	3,200	1,000	100	4,300
1 .....	200	2,500	1,200	3,900
2 .....	0	100	2,200	2,300
Total.....	3,400	3,600	3,500	10,500

SOURCE: Hypothetical data for illustrative purposes.

Suppose further that there are control totals that are known for both the age and grade margins. In particular, the control totals are 3,500, 3,800, and 3,700 for 5-, 6-, and 7-year-olds, respectively; the control totals are 4,000, 4,000 and 3,000 for kindergarten, 1st grade, and 2nd grade, respectively. After raking to these marginal totals, the adjusted estimates are given in Table KA-2.

**Table KA-2. Illustration of raked survey estimates by age and grade**

Grade	Age			Total
	5	6	7	
K.....	3,199	754	47	4,000
1 .....	301	2,843	856	4,000
2 .....	0	203	2,797	3,000
Total.....	3,500	3,800	3,700	11,000

SOURCE: Hypothetical data for illustrative purposes.

Using the factor notation given above, it is easy to compute the grade and age factors for this illustrative example. The grade factors are:  $\alpha_{kg} = 0.70$ ,  $\alpha_{1st} = 1.05$ , and  $\alpha_{2nd} = 1.88$ . The age factors are:  $\beta_{5yr} = 1.43$ ,  $\beta_{6yr} = 1.08$ , and  $\beta_{7yr} = 0.68$ .

### Raking with Dependent Dimensions

An important feature of raking that is not obvious from the presentation given above is that the procedure forces the weights to conform to the marginal totals without perturbing the two-way associations that exist in the unadjusted table. Another way of saying this is that raking retains the two-way associations (as measured by the cross-product ratio or odds ratio) in the observed data in producing estimates that are consistent with the marginal constraints. For example, in the illustration above notice that all nine cross-product ratios that can be formed are the same for the estimates in tables KA-1 and KA-2 (e.g., the cross-product ratio of the subtable of children aged 5 and 7 and in kindergarten or 1st grade has the value of 192 for both tables).

This feature of raking is implicit when the raked weights written as a product of row and column factors, such as given by expression (KA-4). The logarithm of the raked weight is the sum of a row and column effect, but contains no interaction term. The relationship may be clearer if the full table of survey estimates is written using a log-linear model. For example, when there are three dimensions, the survey estimates are fully determined by the model

$$\ln(e_{ijk}) = \mu + \alpha_i + \beta_j + \gamma_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_k + (\alpha\beta\gamma)_{ijk}, \quad (\text{KA-5})$$

where  $e_{ijk}$  are the unadjusted estimates in cell  $i$  of the first dimension, cell  $j$  of the second dimension, and cell  $k$  of the third dimension. The first term on the righthand side of the equation is an intercept term, the next three terms are the main effects corresponding to the specific level for each dimension, the next three terms are the second-order interactions, and the last term is the three-level interaction.

With poststratification, the survey estimates in the cells defined by the log-linear model in expression (KA-5) are replaced by the control totals. For example, when poststratification to cells in a two-way table is used, the original estimates in these cells are replaced by factors determined by the control totals. Thus, the model of unadjusted estimates given by  $\ln(e_{ij}) = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij}$  is replaced by  $\ln(p_{ij}) = \mu' + \alpha'_i + \beta'_j + (\alpha'\beta')_{ij}$ , where  $p_{ij}$  is the poststratified estimate in cell  $(i,j)$ .

With raking, the main effects are fully defined by the control totals, but the raked table retains the higher order interactions from the original table. Thus, with three dimensions the raked table is

$$\ln(r_{ijk}) = \mu' + \alpha'_i + \beta'_j + \gamma'_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_k + (\alpha\beta\gamma)_{ijk} \quad (\text{KA-6})$$

where the higher order interactions are identical to those prior to raking in (KA-5). Only the intercept and main effects are replaced by factors determined by the control totals. In the two-way example given above, all nine second-order interactions were preserved between the unadjusted and raked tables.

With this in mind, consider the raking example again. Table KA-3 gives the mean of the weight adjustments in each cell and for both margins. The adjustments can be derived by multiplying the corresponding grade and age factors given above, or by taking the ratio of the raked estimated to the unadjusted estimates for each cell. Notice that none of the margins for the unadjusted estimates differ by much from the control totals, with the largest mean raking factor of 1.30 applied to the unadjusted 2,300 2nd graders to match the control total of 3,000 2nd graders. However, now look at the mean cell factors. In the column corresponding to children who are 6 years old, the adjustment for those in kindergarten is 0.75 and for those in 2nd grade is 2.03. These factors occur even though the overall unadjusted estimate was only 6 percent less than the control total for all 6-year-olds. Across rows or columns, there is substantial variation in the mean raking factors.

**Table KA-3. Mean adjustments by cell for the raked survey estimates, by age and grade: 2001**

Grade	Age			Total
	5	6	7	
K.....	1.00	0.75	0.47	0.93
1 .....	1.51	1.14	0.71	1.03
2 .....	(1)	2.03	1.27	1.30
Total .....	1.03	1.06	1.06	1.05

<sup>1</sup> Estimates not given because there were no sample cases with the age/grade combination.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey Program (NHES), 2001.

Heuristically, the raking adjustment causes these variations in the mean cell factors because it is attempting to meet the marginal constraints without perturbing the associations in the original table. If the raking dimensions are based on independent variables (i.e., all the interactions are zero), the raking will converge very quickly. If the dimensions are highly correlated, then more iterations are generally required. With highly correlated dimensions, there is also the possibility that the associations in the unadjusted estimates may not be consistent with control totals and the raking process will never converge.

For example, suppose the unadjusted survey estimates fell on the diagonal with 3,400 children who are age 5 and in kindergarten, 3,600 children who are age 6 and in 1st grade, and 3,500 children who are age 7 and in 2nd grade. Assuming the same control totals as given above, the raked estimates never converge.<sup>17</sup>

Even when the raking does converge, it is important to realize that the associations that are being preserved are based on a sample and are subject to sampling variability, as well as other sources of error. The other sources of error may not be the same for the survey and the source of the control totals. For example, it was noted above that the cross-product ratio of the subtable of children aged 5 and 7 and in kindergarten or 1st grade has the value of 192. This cross-product ratio is computed from the sample cases in the four cells corresponding to a subtable of the full sample. If the sample size in the subtable is small, then the estimated cross-product ratio may not be very stable (even though generally these ratios are stable with moderate cell sizes).

When the sample sizes in subtables of the raking dimensions are small, then it is possible that the raking procedure that tries to preserve the associations based on small samples may have some undesirable features. This situation can arise in many settings, but it is most common when the dimensions are highly correlated, such as with age and grade. One remedy is to combine the dimensions that are highly correlated into one dimension and collapse the cells as needed to retain a large enough sample size in every collapsed cell. Of course, this option is not always possible for the reasons stated earlier.

### **Response and Coverage Issues**

Earlier it was noted that the poststratified estimator assumed complete unit response, and the population cell weighting estimator was based on the responding units. More accurately, the poststratified estimator assumes complete unit response and coverage, while the population cell weighting estimator is based on the responding, covered units. It is assumed that the control totals are based on a source with 100 percent coverage. The same distinction applies with raking, and the raked estimator given by (KA-3) corresponds to the population cell weighting estimator in this regard.

When the data are based on incomplete data (due to either unit nonresponse or noncoverage), it is necessary to use a model to evaluate the statistical properties of the estimates. Kalton and Maligalig

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<sup>17</sup> Ireland and Kullback (1968) show that raking will always converge in this situation if there are no cells with zero counts.

(1991) show that the population cell weighting estimator is unbiased under the response model that assumes all units within a cell have the same probability of being observed (including only response and coverage propensities). Moreover, they show that if the probability of being observed within a cell is the product of the row and column probabilities, then the population raking estimator is unbiased.

Since most survey estimates are subject to both nonresponse and undercoverage, the implication is that the raked estimates will be biased unless there are no interactions of the auxiliary variables used to create the raking dimensions with the unit response and coverage rates. In the examples above, this would mean that probability of being observed may differ by age and grade levels, but the overall probability of being observed must be the product of the age and grade factors to insure unbiasedness under the model.

The practical implications of these results are somewhat limited. First, it is difficult to ascertain whether unit response rates are products of the row and column effects in most situations. Coverage rates may be estimated in some cases, but the coverage estimates for individual cells are often poorly estimated because of small sample sizes. Second, the data are not expected to conform to the model completely. Often, the bias remaining after adjusting for the row and column effects is smaller than if no adjustments were made. This statement corresponds to the common observation that higher order interactions are generally smaller than lower order effects, but there are exceptions. Third, Little and Wu (1991) show that raking generally works well, even if the model that justifies raking does not hold.

Consequently, it is a reasonable and good practice to use raking in these situations, absent reliable data that indicates the model of multiplicative factors for the levels of the dimensions is invalid. If raking is used and the model is inappropriate, then the bias of the raked estimates still will be smaller than bias of the unadjusted estimates in most cases.

**ATTACHMENT KB**

**MEMORANDUM DOCUMENTING PRELIMINARY INVESTIGATION OF WEIGHTS**



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**TO:** Chris Chapman April 17, 2002  
**FROM:** Mike Brick, Mary Hagedorn, Jill Montaquila **MEMO:** MISC-3.0  
**SUBJECT:** NHES:2001 Weighting—An examination of alternatives for raking the ECPP and ASPA weights

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This memorandum addresses issues concerning the methodology used to compute weights for the Early Childhood Program Participation (ECPP) and Before- and After-School Programs and Activities (ASPAs) surveys of the 2001 National Household Education Surveys Program. NCEES questioned the number of 5-year-olds in the weighted NHES:2001 estimates compared with Current Population Survey (CPS) estimates. In the NHES:2001, the estimate of the total number of 5-year-olds was 3,522,000 compared to 4,037,000 in the CPS. In light of this discrepancy, we reviewed the weighting steps and evaluated alternative approaches for raking the ECPP and ASPA weights. The review of the weighting steps did not indicate any problems in the implementation of the methodology. The remainder of this memorandum will focus on the raking alternatives.

Section 1 gives an overview of the raking alternatives considered in this evaluation. In section 2, estimates based on weights computed using each of these alternatives are compared to external sources. Summary statistics for the weights from each raking alternative are given in section 3. Finally, section 4 contains recommendations for the ECPP-NHES:2001 and ASPA-NHES:2001 data files and considerations for the development of weighting methodology for future NHES surveys.

## **1. Overview of raking alternatives**

The dimensions originally used in raking the ECPP and ASPA weights were race/ethnicity by household income, Census region by urbanicity, and home tenure by age/grade of the child. For the last dimension, single year of age was used only for infants (ages 0-2). Unenrolled children ages 3 through 6 were grouped in one category, and enrolled children in this age range were classified into grade categories. Thus, although the NHES and CPS estimates match for unenrolled children ages 3-6, and for kindergartners, for example, the estimates of total number of 5 year olds do not match.

For this evaluation, two alternative sets of raking dimensions were considered. In both cases, the first two dimensions (race/ethnicity by household income, and Census region by urbanicity) remained the same. In Alternative 1, the home tenure by age/grade dimension was replaced with two dimensions: single year of age (alone), and home tenure by grade. In Alternative 2, the home tenure by age/grade dimension was replaced with a single dimension: single year of age.

## 2. Comparison to estimates from external sources

Tables 1 and 2 give estimates of the total number of children by age and by grade, respectively, for selected ages and grades (chosen because of their proximity to kindergarten). Due to the forced matching by age, Alternatives 1 and 2 both alleviate the shortfall of 5-year-olds that is present under the original raking approach. However, as seen in table 2, Alternative 2 results in a substantially higher estimate of the total number of kindergartners than the other approaches.

**Table 1. Estimates of total number of children by age (in thousands) CPS:1999 and NHES:2001**

Age	October 1999 CPS	NHES:2001		
		Original (age/grade—single dimension)	Alternative 1 (age and grade— separate dimensions)	Alternative 2 (age only)
4 .....	4,021	3,976	4,028	4,028
5 .....	4,037	3,525	4,044	4,044
6 .....	4,060	4,062	4,067	4,067
7 .....	4,083	3,817	4,090	4,090

SOURCE: U.S. Department of Education, Bureau of the Census, Current Population Survey (CPS), 1999; and U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys Program (NHES), 2001.

**Table 2. Estimates of total number of children by grade (in thousands) CPS:1999 and NHES:2001**

Grade	October 1999 CPS	NHES:2001		
		Original (age/grade—single dimension)	Alternative 1 (age and grade— separate dimensions)	Alternative 2 (age only)
Nursery school/ preschool .....	4,578	4,586	4,586	5,104
Kindergarten .....	3,825	3,831	3,831	4,417
1 <sup>st</sup> grade .....	4,326	4,333	4,333	4,269
2 <sup>nd</sup> grade .....	3,927	3,934	3,934	4,093

SOURCE: U.S. Department of Education, Bureau of the Census, Current Population Survey (CPS), 1999; and U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys Program (NHES), 2001.

In order to examine the discrepancy in the estimates of the total number of kindergartners, we sought estimates from other sources. The Common Core of Data (CCD) Survey estimated that in Fall 1998, 3,442,584 children were enrolled in public kindergarten. The October 1999 CPS estimates of public and private kindergarten enrollment were 3.167 million and 658 thousand, respectively. The Early Childhood Longitudinal Survey-Kindergarten Cohort (ECLS-K) estimated the total number of children enrolled in kindergarten in Fall 1998 to be 3.866 million. Based on these figures, we suspect that the total number of kindergartners is between 3.8 and 4.1 million.

**Table 3. Mean weight for each of the raking alternative, by ALLGRADE and AGE2000: NHES:2001**

ALLGRADE	AGE2000	n	Mean nonresponse adjusted weight <sup>1</sup>	Mean Raked Weight		
				Original (age/grade—single dimension)	Alternative 1 (age and grade—separate dimensions)	Alternative 2 (age only)
0.....	0	1,070	2,987	3,615	3,615	3,615
0.....	1	1,258	2,874	3,102	3,102	3,102
0.....	2	1,271	2,997	3,092	3,092	3,092
0.....	3	774	2,688	3,085	3,121	2,886
0.....	4	470	2,571	3,011	2,981	2,635
0.....	5	64	2,716	2,922	2,755	2,751
0.....	6	2	1,613	2,148	752	1,450
1.....	5	8	4,487	4,361	11,721	4,527
<b>1.....</b>	<b>6</b>	<b>554</b>	<b>5,158</b>	<b>5,321</b>	<b>6,196</b>	<b>5,114</b>
1.....	7	235	5,275	5,473	3,367	5,702
1.....	8	9	6,911	6,805	1,697	6,262
1.....	9	1	3,262	3,359	484	3,214
2.....	6	6	6,224	5,810	14,035	5,797
<b>2.....</b>	<b>7</b>	<b>484</b>	<b>4,980</b>	<b>4,946</b>	<b>6,352</b>	<b>5,363</b>
2.....	8	266	5,495	5,372	2,827	5,210
2.....	9	15	5,020	5,095	1,551	5,131
3.....	7	13	5,972	6,097	16,077	6,478
<b>3.....</b>	<b>8</b>	<b>476</b>	<b>5,305</b>	<b>5,478</b>	<b>6,376</b>	<b>5,124</b>
3.....	9	260	5,677	5,897	4,031	5,587
3.....	10	23	4,286	5,172	1,954	5,038
4.....	8	15	5,257	5,089	10,278	5,052
<b>4.....</b>	<b>9</b>	<b>545</b>	<b>4,972</b>	<b>4,774</b>	<b>5,691</b>	<b>4,938</b>
4.....	10	299	4,955	4,731	3,045	4,586
4.....	11	20	4,701	5,075	1,917	5,089
4.....	12	3	2,898	2,706	526	2,459
4.....	15	1	4,893	5,632	560	5,719
5.....	9	14	3,359	3,134	6,859	3,296
<b>5.....</b>	<b>10</b>	<b>572</b>	<b>4,837</b>	<b>4,488</b>	<b>5,268</b>	<b>4,421</b>
5.....	11	297	5,286	4,934	3,420	4,976
5.....	12	20	3,512	3,856	1,485	3,839
5.....	13	1	1,408	1,089	230	1,062
6.....	10	18	2,734	2,487	5,087	2,454
<b>6.....</b>	<b>11</b>	<b>948</b>	<b>2,771</b>	<b>2,552</b>	<b>3,072</b>	<b>2,566</b>
6.....	12	548	2,785	2,647	1,780	2,605
6.....	13	38	2,307	2,601	1,065	2,834
6.....	14	3	2,223	3,105	738	2,133

See notes at end of table.

**Table 3. Mean weight for each of the raking alternative, by ALLGRADE and AGE2000  
NHES:2001—Continued**

ALLGRADE	AGE2000	n	Mean nonresponse adjusted weight*	Mean Raked Weight		
				Original (age/grade—single dimension)	Alternative 1 (age and grade— separate dimensions)	Alternative 2 (age only)
7.....	11	14	2,554	2,353	5,169	2,467
<b>7.....</b>	<b>12</b>	<b>1,009</b>	<b>2,537</b>	<b>2,379</b>	<b>2,820</b>	<b>2,349</b>
7.....	13	529	2,582	2,418	1,685	2,515
7.....	14	66	2,389	2,445	1,027	1,730
7.....	15	4	2,037	1,671	846	1,471
8.....	11	1	1,481	2,511	9,688	2,372
8.....	12	15	1,825	1,856	3,663	1,710
<b>8.....</b>	<b>13</b>	<b>924</b>	<b>2,564</b>	<b>2,569</b>	<b>3,013</b>	<b>2,464</b>
<b>8.....</b>	<b>14</b>	<b>497</b>	<b>2,735</b>	<b>2,768</b>	<b>1,914</b>	<b>1,812</b>
<b>8.....</b>	<b>15</b>	<b>56</b>	<b>2,870</b>	<b>3,244</b>	<b>2,897</b>	<b>2,760</b>
K.....	3	4	3,726	3,268	4,276	3,874
K.....	4	30	4,304	3,848	4,970	4,297
<b>K.....</b>	<b>5</b>	<b>539</b>	<b>5,488</b>	<b>4,813</b>	<b>5,773</b>	<b>5,630</b>
K.....	6	194	5,960	5,414	2,774	6,022
K.....	7	5	13,299	11,568	3,008	13,913
<b>N.....</b>	<b>3</b>	<b>585</b>	<b>2,710</b>	<b>2,490</b>	<b>2,541</b>	<b>2,866</b>
<b>N.....</b>	<b>4</b>	<b>992</b>	<b>2,690</b>	<b>2,465</b>	<b>2,498</b>	<b>2,682</b>
N.....	5	277	2,794	2,559	2,391	2,877
N.....	6	6	4,830	4,195	1,727	4,561
U.....	8	1	2,528	3,979	5,570	4,837
U.....	9	2	2,617	2,920	3,688	3,191
U.....	12	1	5,553	4,685	5,343	4,733

<sup>1</sup> Normalized so that the weighted total of the nonresponse adjusted weights is equal to the weighted total of the raked weights.

NOTE: Rows highlighted using bold font are the modal grades for each age (ages 3 and older).

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys Program (NHES), 2001.

### 3. Summary statistics for each alternative

Table 3 gives the mean weight obtained using each of the raking alternatives. Because no differential sampling or weighting was done by age within a given grade, it is expected that the mean weights would be relatively uniform for all ages within a given grade. This is the case under the original approach and Alternative 2, but is not the case with Alternative 1.

### 4. Recommendations

As a result of the findings of this evaluation, we recommend using the set of weights calculated using Alternative 1 (with single year of age and home tenure by grade as separate dimensions) on the ECPP and ASPA data files. This approach forces NHES totals by age or by grade (separately) to match totals obtained from the CPS. Although the lack of uniformity of the mean weights by age, within each grade category, is disconcerting, we believe the desire to match weighted totals by age and by grade

outweighs this concern. We have examined the expected effect of the variation in weights on the precision of the survey estimates, and estimate a root mean design effect (for “overall” estimates—i.e., for the entire ECPP and ASPA populations as a whole) due to unequal weighting of 1.30 under Alternative 1, compared to 1.25 under the original raking approach. We have also examined the effect on the root mean design effect of estimates by grade and found nothing alarming.

We recommend continued investigation of this and continued evaluation of these alternative methodologies, as we prepare for weighting for the NHES:2003 surveys. We propose to examine estimates from other data sources, including the Private School Survey and the American Community Survey, in an attempt to ascertain the “correct” level of the estimated total number of kindergartners.

**ATTACHMENT KC**

**TELEPHONE COVERAGE BY AGE AND GRADE**

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Table KC-1 gives estimates from the October 1999 CPS of the percentage of children residing in telephone households. The telephone coverage rates generally increase as age or grade increases. However, there is an interesting pattern in the coverage rates for age/grade combinations. For a given grade, telephone coverage tends to be highest for the modal age, and decreasing in either direction away from the modal age.

**Table KC-1. Percentage of children residing in telephone households, by age and grade: CPS:1999**

Grade	Age															Overall	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15
Overall .....	93	92	92	94	93	93	93	93	94	94	94	95	94	96	95	95	94
Nursery school .....	†	†	†	94	94	94	83	†	†	†	†	†	†	†	†	†	94
Kindergarten .....	†	†	†	84	90	93	92	100	†	†	†	†	†	†	†	†	93
Grade 1.....	†	†	†	†	†	92	94	93	77	90	†	†	†	†	†	†	93
Grade 2.....	†	†	†	†	†	100	94	93	93	77	100	†	†	†	†	†	93
Grade 3.....	†	†	†	†	†	†	83	97	95	94	80	88	†	†	†	†	94
Grade 4.....	†	†	†	†	†	†	†	66	93	95	92	80	81	†	†	†	94
Grade 5.....	†	†	†	†	†	†	†	†	78	94	95	93	87	91	†	†	95
Grade 6.....	†	†	†	†	†	†	†	†	†	86	96	96	92	87	69	†	95
Grade 7.....	†	†	†	†	†	†	†	†	†	†	100	90	96	95	87	91	95
Grade 8.....	†	†	†	†	†	†	†	†	†	†	†	91	94	96	95	86	95

† Not applicable.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

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## **APPENDIX L**

### **ASPA Reinterview Questionnaire**

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**ASPA REINTERVIEW**

(11/2000)

INTRO. INTRO. Hello, my name is (INTERVIEWER). A few weeks ago, someone from our staff conducted an interview with you about (CHILD) for the U.S. Department of Education. We are reasking some selected questions from the interview as a measure of survey quality. These questions should only take a few minutes.

**School Characteristics [Path= S, H (HOMSCFLG=1)]**

YUT2

*If PATH = S or (PATH=H and HOMSCFLG=1), go to RSD9. Else, go to PTINTRO.*

RSD9. The first few questions are about (CHILD)'s school. At what time does (CHILD)'s school usually start?

**SSTRTHR2** HOUR.....  
REFUSED .....-7  
DON'T KNOW .....-8

**SSTRTMN2** MINUTE .....  
REFUSED .....-7  
DON'T KNOW .....-8

**SSTRAMP2** AM..... 1  
PM..... 2  
REFUSED .....-7  
DON'T KNOW .....-8

SD10. At what time does (his/her) school usually let out?

**SENDHR2** HOUR.....  
REFUSED .....-7  
DON'T KNOW .....-8

**SENDMN2** MINUTE .....  
REFUSED .....-7  
DON'T KNOW .....-8

**SENDAMP2** AM..... 1  
PM..... 2  
REFUSED .....-7  
DON'T KNOW .....-8

SD11. How long does it usually take for (CHILD) to get from home to school?

**SSCHOMM2** MINUTES .....  
REFUSED .....-7  
DON'T KNOW .....-8

Relative Care

*If SF9 = 1 (child has relative care at least once each week), go to next box. Else, go to first box after RSF26.*

*If SF4 = 2 or 3 (care provided in other home), ask RSF6. Else, go to box before RSF15.*

RSF6. When we spoke with you last time, you told us that (CHILD) is cared for by (his/her) (RELATIVE) for about (# HOURS) hours each week during out-of-school time. How long does it usually take to go from your home to (CHILD)'s (RELATIVE)'s home?

- RCHOMM2** MINUTES .....   
 REFUSED ..... -7  
 DON'T KNOW ..... -8  
 NOW SAYS NO RELATIVE CARE ARRANGEMENT ..... 99 (GO TO FIRST BOX AFTER RSF26)

SF7. How long does it usually take to go from (CHILD)'s school to (his/her) (RELATIVE)'s home?

- RCSCMM2** MINUTES .....   
 REFUSED ..... -7  
 DON'T KNOW ..... -8

*If SF8 = 2 or 3 (after-school care), ask RSF15. Else, go to box before RSF26.*

RSF15. (When we spoke with you last time, you told us that (CHILD) is cared for by (his/her) (RELATIVE) for about (# HOURS) hours each week during out-of-school time.) How many of the hours that (CHILD) is cared for by (his/her) (RELATIVE), if any, occur after 6:00 p.m. each week? [DISPLAY TOTAL HOURS]

- RCAFT62** HOURS.....   
 REFUSED ..... -7  
 DON'T KNOW ..... -8  
 NOW SAYS NO RELATIVE CARE ARRANGEMENT ..... 99 (GO TO FIRST BOX AFTER RSF26)

SF24. Now I'd like to ask about (CHILD)'s activities during the time (he/she) spends with (his/her) (RELATIVE). During those after-school hours, what does (CHILD) spend most of (his/her) time doing? You may name up to three things. [CODE UP TO THREE ACTIVITIES.]

- RCAEDUC2** HOMEWORK/SCHOOL-RELATED/ EDUCATIONAL ..... 1  
**RCACOMP2** COMPUTERS..... 2  
**RCAREAD2** READING/WRITING (NON-SCHOOL-RELATED) ..... 3  
**RCAART2** ARTS (PERFORM OR STUDY MUSIC, CRAFTS, DRAMA, ETC.) .. 4  
**RCACHOR2** CHORES/WORK..... 5  
**RCAOUTP2** OUTDOOR PLAY/ACTIVITIES/SPORTS ..... 6  
**RCAINPL2** INDOOR PLAY ..... 7  
**RCAPHON2** TELEPHONE..... 8  
**RCAEAT2** EATING/SNACKS ..... 9  
**RCATV2** TELEVISION/VIDEOS/VIDEO GAMES/LISTENING TO MUSIC .... 10  
**RCATALK2** TALKING TO PARENT/CARE PROVIDER ..... 11  
**RCAOTHE2** OTHER ..... 91  
**RCAOTHO2** SPECIFY \_\_\_\_\_  
 REFUSED ..... -7  
 DON'T KNOW ..... -8



*If SF4 = 1 (care is in child's home), ask RSF26a, b, c, and e.  
Else, ask RSF26a-e.*

RSF26. (When we spoke with you last time, you told us that (CHILD) is cared for by (his/her) (RELATIVE) for about (# HOURS) hours each week during out-of-school time.) How would you rate the following aspects of this arrangement on a scale from excellent to poor? How about...[ENTER 99 IF NOW SAYS NO RELATIVE CARE ARRANGEMENT]

Excellent Good Fair Poor R DK NA

**RCQUAL2** a. The quality of (CHILD)'s activities? Would you say  
excellent, good, fair, or poor? ..... 1 2 3 4 -7 -8 99

*If RSF26a = 99, skip RSF26b-e, and go to next box. Else, ask RSF26b.*

**RCAFFOR2** b. The affordability of the arrangement? ..... 1 2 3 4 -7 -8  
**RCRELIB2** c. The reliability of the arrangement? ..... 1 2 3 4 -7 -8  
**RCTRANS2** d. Transportation of (CHILD) to and from the arrangement?.... 1 2 3 4 -7 -8  
**RCSAFTY2** e. (CHILD)'s safety and well-being in this arrangement? ..... 1 2 3 4 -7 -8

**NONRELATIVE CARE**

*If SG8 = 1 (child has nonrelative care at least once each week), go to next box. Else, go to box before RSH3.*

*If SG3 = 2 or 3 (care provided in other home), ask RSG5.  
Else, go to box before RSG14.*

RSG5. When we spoke with you last time, you told us that (CHILD) is cared for by a person who is not a relative for (# HOURS) hours each week during out-of-school time. How long does it usually take to go from your home to that person's home?

**NCHOMM2** MINUTES .....   
 REFUSED ..... -7  
 DON'T KNOW ..... -8  
 NOW SAYS NO NONRELATIVE CARE ARRANGEMENT ..... 99 (GO TO BOX BEFORE RSH3)

SG6. How long does it usually take to go from (CHILD)'s school to that person's home?

**NCSCMM2** MINUTES .....   
 REFUSED ..... -7  
 DON'T KNOW ..... -8

*If SG7 = 2 or 3 (after-school care), ask RSG14. Else, go to RSG18A.*

RSG14. (When we spoke with you last time, you told us that (CHILD) is cared for by a person who is not a relative for (# HOURS) hours each week during out-of-school time.) How many of the hours that (CHILD) is cared for by that person, if any, occur after 6:00 pm. each week? [DISPLAY TOTAL HOURS]

- NCAFT62**
- HOURS..... □□
  - REFUSED .....-7
  - DON'T KNOW .....-8
  - NOW SAYS NO NONRELATIVE CARE ARRANGEMENT ..... 99 (GO TO BOX BEFORE RSH3)

RSG18A. (When we spoke with you last time, you told us that (CHILD) is cared for by a person who is not a relative for (# HOURS) hours each week during out-of-school time.) Is that person age 18 or older?

- NCAGE2**
- YES ..... 1 (GO TO BOX BEFORE SG23)
  - NO ..... 2 (GO TO SG18AOV)
  - REFUSED .....-7 (GO TO BOX BEFORE SG23)
  - DON'T KNOW .....-8 (GO TO BOX BEFORE SG23)
  - NOW SAYS NO NONRELATIVE CARE ARRANGEMENT ..... 99 (GO TO BOX BEFORE RSH3)

SG18AOV. How old is that person?

- NCAGEYY2**
- YEARS ..... □□
  - REFUSED .....-7
  - DON'T KNOW .....-8

*If SG7 = 2 or 3, (after-school care), ask SG23. Else, go to RSG25.*

SG23. Now I'd like to ask about (CHILD)'s activities during the time (he/she) spends with your care provider. During those after-school hours, what does (CHILD) spend most of (his/her) time doing? You may name up to three things. [CODE UP TO THREE ACTIVITIES.]

- NCAEDUC2** HOMEWORK/SCHOOL-RELATED/ EDUCATIONAL..... 1
- NCACOMP2** COMPUTERS..... 2
- NCAREAD2** READING/WRITING (NON-SCHOOL-RELATED) ..... 3
- NCAART2** ARTS (PERFORM OR STUDY MUSIC, CRAFTS, DRAMA, ETC.) .. 4
- NCACHOR2** CHORES/WORK..... 5
- NCAOUTP2** OUTDOOR PLAY/ACTIVITIES/SPORTS ..... 6
- NCAINPL2** INDOOR PLAY ..... 7
- NCAPHON2** TELEPHONE..... 8
- NCAEAT2** EATING/SNACKS ..... 9
- NCATV2** TELEVISION/VIDEOS/VIDEO GAMES/LISTENING TO MUSIC .... 10
- NCATALK2** TALKING TO PARENT/CARE PROVIDER ..... 11
- NCAOTHE2** OTHER ..... 91
- NCAOTH2** SPECIFY \_\_\_\_\_
- REFUSED .....-7
- DON'T KNOW .....-8

If SG3 = 1, ask a, b, c, and e. Else, ask a-e.

RSG25. How would you rate the following aspects of this arrangement that you have for (CHILD) with this care provider? How about...[ENTER 99 IF NOW SAYS NO NONRELATIVE CARE ARRANGEMENT]

Excellent Good Fair Poor R DK NA

**NCQUAL2** a. The quality of (CHILD)'s activities? Would you say  
 excellent, good, fair, or poor? ..... 1 2 3 4 -7 -8 99

If RSG25a = 99, skip RSG25b-e, and go to next box.  
Else, ask RSG25b.

**NCAFFOR2** b. The affordability of the arrangement? ..... 1 2 3 4 -7 -8  
**NCRELIA2** c. The reliability of the arrangement? ..... 1 2 3 4 -7 -8  
**NCTRANS2** d. Transportation of (CHILD) to and from the arrangement?.... 1 2 3 4 -7 -8  
**NCSAFTY2** e. (CHILD)'s safety and well-being in this arrangement? ..... 1 2 3 4 -7 -8

*Center-based Programs*

If SH9 = 1 (child attends center-based program at least  
once each week), ask RSH3. Else, go to SIINTRO.

RSH3. When we spoke with you last time, you said that (CHILD) spends (# HOURS) hours per week (before) (and) (after) school in a center-based program. Is (CHILD) signed up to attend the program on particular days and times?

**CPSIGNU2** YES ..... 1  
 NO ..... 2  
 NOW SAYS NO CENTER-BASED ARRANGEMENT ..... 99 (GO TO SIINTRO)  
 REFUSED ..... -7  
 DON'T KNOW ..... -8

If SH5 = 1, (program is at child's school) go to box before  
RSH15. Else, ask SH6.

SH6. How long does it usually take to go from your home to that program?

**CPHOMM2** MINUTES ..... □□  
 REFUSED ..... -7  
 DON'T KNOW ..... -8

SH7. How long does it usually take to go from (CHILD)'s school to that program?

**CPSCMM2** MINUTES ..... □□  
 REFUSED ..... -7  
 DON'T KNOW ..... -8

If SH8 = 2 or 3 (after-school program), ask RSH15. Else,  
go to SH20.

SH15. How many of the hours that (CHILD) is in the program, if any, occur after 6:00 p.m. each week?  
[DISPLAY TOTAL HOURS]

**CPAFT62** HOURS.....□□  
REFUSED .....-7  
DON'T KNOW .....-8

SH20. How many children are usually in (CHILD)'s group, at the same time, at that program, counting (CHILD)? [PROBE: IF R ANSWERS "IT VARIES," ASK ABOUT MAJORITY OF TIME CHILD IS AT PROGRAM.]

**CPKIDS2** NUMBER.....□□  
REFUSED .....-7  
DON'T KNOW .....-8

SH21. How many adults usually are in (CHILD)'s group, at the same time, at that program?  
[PROBE: IF R ANSWERS "IT VARIES," ASK ABOUT MAJORITY OF TIME CHILD IS AT PROGRAM.]

**CPADLTS2** NUMBER.....□□  
REFUSED .....-7  
DON'T KNOW .....-8

SH22. Are the children in (CHILD)'s group within the program about the same age as (him/her), mostly older, or mostly younger?

**CPCHAGE2** ABOUT THE SAME AGE.....1  
MOSTLY OLDER .....2  
MOSTLY YOUNGER.....3  
SOME OLDER, SOME YOUNGER .....4  
REFUSED .....-7  
DON'T KNOW .....-8

*If SH8 = 1 or 3, (before-school program), ask SH24. Else, go to box before SH25.*

SH24. Now I'd like to ask about (CHILD)'s activities during the time (he/she) spends at this program. During those before-school hours, what does (CHILD) spend most of (his/her) time doing? You may name up to three things. [CODE UP TO THREE ACTIVITIES.]

**CPBEDUC2** HOMEWORK/SCHOOL-RELATED/ EDUCATIONAL ..... 1  
**CPBCOMP2** COMPUTERS..... 2  
**CPBREAD2** READING/WRITING (NON-SCHOOL-RELATED) ..... 3  
**CPBART2** ARTS (PERFORM OR STUDY MUSIC, CRAFTS, DRAMA, ETC.) .. 4  
**CPBCHOR2** CHORES/WORK..... 5  
**CPBOUPT2** OUTDOOR PLAY/ACTIVITIES/SPORTS ..... 6  
**CPBINPL2** INDOOR PLAY ..... 7  
**CPBPHON2** TELEPHONE..... 8  
**CPBEAT2** EATING/SNACKS ..... 9  
**CPBTV2** TELEVISION/VIDEOS/VIDEO GAMES/LISTENING TO MUSIC .... 10  
**CPBTALK2** TALKING TO PARENT/CARE PROVIDER ..... 11  
**CPBOTHE2** OTHER ..... 91  
**CPBOTHO2** SPECIFY \_\_\_\_\_  
REFUSED .....-7  
DON'T KNOW .....-8

If SH8 = 2 or 3, (after-school program), ask SH25. Else, go to SH26.

SH25. (Now I'd like to ask about (CHILD)'s activities during the time (he/she) spends at this program.) During those after-school hours, what does (CHILD) spend most of (his/her) time doing? You may name up to three things. [CODE UP TO THREE ACTIVITIES.]

<b>CPAEDUC2</b>	HOMEWORK/SCHOOL-RELATED/ EDUCATIONAL .....	1
<b>CPACOMP2</b>	COMPUTERS.....	2
<b>CPAREAD2</b>	READING/WRITING (NON-SCHOOL-RELATED) .....	3
<b>CPAART2</b>	ARTS (PERFORM OR STUDY MUSIC, CRAFTS, DRAMA, ETC.) ..	4
<b>CPACHOR2</b>	CHORES/WORK.....	5
<b>CPAOUTP2</b>	OUTDOOR PLAY/ACTIVITIES/SPORTS .....	6
<b>CPAINPL2</b>	INDOOR PLAY .....	7
<b>CPAPHON2</b>	TELEPHONE.....	8
<b>CPAEAT2</b>	EATING/SNACKS .....	9
<b>CPATV2</b>	TELEVISION/VIDEOS/VIDEO GAMES/LISTENING TO MUSIC ....	10
<b>CPATALK2</b>	TALKING TO PARENT/CARE PROVIDER .....	11
<b>CPAOTHE2</b>	OTHER .....	91
<b>CPAOTHO2</b>	SPECIFY _____	
	REFUSED .....	-7
	DON'T KNOW .....	-8

SH26. Does the program set aside time for physical activities like sports or active games?

	YES .....	1
<b>CPPHYS2</b>	NO.....	2
	REFUSED .....	-7
	DON'T KNOW .....	-8

SH27. Does the program set aside time for (CHILD) to do homework?

	YES .....	1
<b>CPHOMWK2</b>	NO.....	2
	REFUSED .....	-7
	DON'T KNOW .....	-8

If SH4 = 1, (program is in child's home), ask SH34a, b, c, and e. Else, ask SH34a-e.

SH34. How would you rate the following aspects of (CHILD)'s program? How about...

Excellent Good Fair Poor R DK

<b>CPQUAL2</b>	a. The quality of (CHILD)'s activities? Would you say excellent, good, fair, or poor? .....	1	2	3	4	-7	-8
<b>CPAFFOR2</b>	b. The affordability of the arrangement?.....	1	2	3	4	-7	-8
<b>CPRELIA2</b>	c. The reliability of the arrangement? .....	1	2	3	4	-7	-8
<b>CPTRANS2</b>	d. Transportation of (CHILD) to and from the arrangement?....	1	2	3	4	-7	-8
<b>CPSAFTY2</b>	e. (CHILD)'s safety and well-being in this arrangement? .....	1	2	3	4	-7	-8

**Before- and After-School Activities**

SIINTRO. Now let's talk about any activities that (CHILD) might do on weekdays outside of school hours that are not part of a before- or after-school program. These might include activities such as organized sports, music lessons, scouts, or religious education.

RSI1. (Not counting the program we have already talked about,) Is (CHILD) participating in any activities on weekdays before or after school on a regular basis?

- ASNOW2**
- YES ..... 1 (GO TO SI2)
  - NO..... 2 (GO TO NEXT BOX)
  - REFUSED .....-7 (GO TO NEXT BOX)
  - DON'T KNOW .....-8 (GO TO NEXT BOX)

*If SI1 = 1, go to box before RSI13. Else, go to first box after RSI14.*

SI2. Since the beginning of the school year, has (CHILD) participated in any of the following kinds of before- or after-school activities? How about... [IF YES: Were those activities provided by (CHILD)'s school?]

	YES	NO	R	DK	YES	NO	R	DK		
<b>ASARTS2</b>	a. Arts, like music, dance, or painting? .....	1	2	-7	-8	1	2	-7	-8	<b>ASSCART2</b>
<b>ASSPORT2</b>	b. Sports?.....	1	2	-7	-8	1	2	-7	-8	<b>ASSCSPO2</b>
<b>ASCLUB2</b>	c. Clubs, like yearbook, debate, or a book club?.....	1	2	-7	-8	1	2	-7	-8	<b>ASSCCLU2</b>
<b>ASACAD2</b>	d. Other academic activities, like tutoring, or math lab? .	1	2	-7	-8	1	2	-7	-8	<b>ASSCACA2</b>
<b>ASVOLUN2</b>	e. Volunteer work or community service?.....	1	2	-7	-8	1	2	-7	-8	<b>ASSCVOL2</b>

*If SI2f = 1 and SD1 = 2 (child is in a private school), ask SI2f\_followup (on whether child's school provided the activity). Else, go to SI2g.*

<b>ASRELI2</b>	f. Religious activities or instruction?.....	1	2	-7	-8	1	2	-7	-8	<b>ASSCREL2</b>
<b>ASSCOUT2</b>	g. Scouts? .....	1	2	-7	-8					
<b>ASOTHER2</b>	i. Any other activities?.....	1	2	-7	-8	1	2	-7	-8	<b>ASSCOTH2</b>
<b>ASOTHEO2</b>	(specify)_____									

SI3. Does (CHILD) currently participate in activities or lessons before or after school on a regularly scheduled basis at least once each week?

- ASWEEK2**
- YES ..... 1 (GO TO SI8)
  - NO..... 2 (GO TO BOX BEFORE RSI14)
  - REFUSED .....-7 (GO TO BOX BEFORE RSI14)
  - DON'T KNOW .....-8 (GO TO BOX BEFORE RSI14)

SI8. Does (CHILD)'s participation in these activities help to cover the hours when you need adult supervision for (him/her)?

- ASCOVER2**
- YES ..... 1
  - NO..... 2
  - REFUSED .....-7
  - DON'T KNOW .....-8

SI2A. Does (CHILD) participate in those activities or lessons before school, after school, or both?

- ASBFAFT2** BEFORE SCHOOL ..... 1
- AFTER SCHOOL..... 2
- BOTH ..... 3
- REFUSED .....-7
- DON'T KNOW .....-8

SI9. How many days each week does (CHILD) currently participate in activities or lessons (before) (or) (after) school?

- ASDAYS2** DAYS .....
- REFUSED .....-7
- DON'T KNOW .....-8

*If SI2A = 1 or 3, (before-school activities), ask SI10. Else, go to box before SI10A.*

SI10. How many hours each week does (CHILD) currently participate in activities or lessons before school?

- ABSHRS2** HOURS.....
- REFUSED .....-7
- DON'T KNOW .....-8

*If SI2A = 2 or 3, (after-school activities), ask SI10A. Else, go to box before SI11.*

SI10A. How many hours each week does (CHILD) currently participate in activities or lessons after school?

- ASHRS2** HOURS.....
- REFUSED .....-7
- DON'T KNOW .....-8

*If SI9 or SI10 or SI10A = -7 or -8, or SI9 = 1, go to box before SI12. Else, ask SI11.*

SI11. On the days that (CHILD) takes part in activities or lessons, that would be about (HOURS) per day on average. Is that correct?

- ASAVGHR2** YES ..... 1 (GO TO BOX BEFORE SI12)
- NO..... 2 (CORRECTION SCREEN)
- REFUSED .....-7 (GO TO BOX BEFORE SI12)
- DON'T KNOW .....-8 (GO TO BOX BEFORE SI12)

*If SI2A = 2 or 3, (after-school activities), ask SI12. Else, go to box before RSI14.*

SI12. How many of those hours, if any, occur after 6:00 p.m. each week? [DISPLAY TOTAL HOURS]

- ASAFT62** HOURS.....
- REFUSED .....-7
- DON'T KNOW .....-8

*If RSI1 = 2, -7, -8 and SI1 = 1, ask RSI13. Else, go to box before RSI14.*

RSI13. Since the last time we spoke with you, on (DATE), have any of (CHILD)'s activities or lessons ended or been discontinued?

- ACTEND2**
- YES ..... 1
  - NO..... 2
  - REFUSED .....-7
  - DON'T KNOW .....-8

*If RSI1 = 1 and SI1 = 2, -7, -8, ask RSI14. Else, go to first box after RSI14.*

RSI14. And since (DATE), has (CHILD) started any new activities or lessons?

- ACTNEW2**
- YES ..... 1
  - NO..... 2
  - REFUSED .....-7
  - DON'T KNOW .....-8

**Self Care**

*If SJ3 = 1, (child is in self-care at least once each week), go to next box. Else, go to box before SK5.*

*If SJ2 = 2 or 3, (self-care after-school), ask RSJ14. Else, go to RSJ17.*

RSJ14. Last time we spoke, you said that (CHILD) is responsible for (himself/herself) on a regular basis during some after-school hours. Where does (CHILD) usually spend that time after school?  
[CODE ALL THAT APPLY.]

- SCAHOMI2** OWN HOME/INSIDE ..... 1
- SCAHOMO2** OWN HOME/OUTSIDE..... 2
- SCARELA2** A RELATIVE'S HOME ..... 3
- SCAFRND2** A FRIEND'S HOME ..... 4
- SCANEIG2** A NEIGHBOR'S HOME..... 5
- SCAPUBL2** A PUBLIC PLACE, FOR EXAMPLE, A LIBRARY OR MALL..... 6
- SCACENT2** A COMMUNITY OR RECREATIONAL CENTER ..... 7
- SCAOUT2** OUTDOORS ..... 8
- SCASCH2** A SCHOOL ..... 9
- SCAPLOT2** OTHER ..... 91
- SCAPLOS2** SPECIFY \_\_\_\_\_
- REFUSED .....-7
- DON'T KNOW .....-8
- SCANONE2** NOW SAYS NO SELF-CARE ARRANGEMENT..... 99 (GO TO BOX BEFORE SK5)



SJ15. During those after-school hours, what does (CHILD) spend most of (his/her) time doing? You may name up to three things. [CODE UP TO THREE ACTIVITIES.]

<b>SCAEDUC2</b>	HOMEWORK/SCHOOL-RELATED/ EDUCATIONAL.....	1
<b>SCACOMP2</b>	COMPUTERS.....	2
<b>SCAREAD2</b>	READING/WRITING (NON-SCHOOL-RELATED) .....	3
<b>SCAART2</b>	ARTS (PERFORM OR STUDY MUSIC, CRAFTS, DRAMA, ETC.) ..	4
<b>SCACHOR2</b>	CHORES/WORK.....	5
<b>SCAOUTP2</b>	OUTDOOR PLAY/ACTIVITIES/SPORTS .....	6
<b>SCAINPL2</b>	INDOOR PLAY .....	7
<b>SCAPHON2</b>	TELEPHONE.....	8
<b>SCAEAT2</b>	EATING/SNACKS .....	9
<b>SCATV2</b>	TELEVISION/VIDEOS/VIDEO GAMES/LISTENING TO MUSIC ....	10
<b>SCATALK2</b>	TALKING TO PARENT/CARE PROVIDER .....	11
<b>SCAOTH2</b>	OTHER .....	91
<b>SCAOTH02</b>	SPECIFY _____	
	REFUSED .....	-7
	DON'T KNOW .....	-8

RSJ8. How many of the hours that (CHILD) is responsible for (himself/herself) after school, if any, occur after 6:00 p.m. each week? [DISPLAY TOTAL HOURS]

	HOURS.....	<input type="checkbox"/> <input type="checkbox"/>
<b>SCAFT62</b>	REFUSED .....	-7
	DON'T KNOW .....	-8

RSJ17. (Last time we spoke, you said that child is responsible for (himself/herself) on a regular basis during some out-of-school hours.) Can (CHILD) reach you (or) (his/her) (parents) (mother/stepmother/foster mother) (or) (father/stepfather/foster father) (or another adult in the household) whenever (he/she) might need to during out-of-school hours?

	YES .....	1
<b>SCREACH2</b>	NO.....	2
	REFUSED .....	-7
	DON'T KNOW .....	-8

Parental Care

*If SF1, SG1, SH1, SI8 (reinterview response), SJ1 = 2, -7, -8 (no type of nonparental supervision before or after school) or all of SF8, SG7, SH8, SJ2 not = 2 or 3 (no after-school arrangement), then go to SK5. Else, go to box before SK7.*

SK5. Where does (CHILD) usually spend (his/her) time during after-school hours?  
 [CODE ALL THAT APPLY.]

<b>PAAHMIN2</b>	OWN HOME/INSIDE .....	1
<b>PAAHMOU2</b>	OWN HOME/OUTSIDE.....	2
<b>PAARELA2</b>	A RELATIVE'S HOME .....	3
<b>PAAFRND2</b>	A FRIEND'S HOME .....	4
<b>PAANEIG2</b>	A NEIGHBOR'S HOME.....	5
<b>PAAPUBL2</b>	A PUBLIC PLACE, FOR EXAMPLE, A LIBRARY OR MALL.....	6
<b>PAACENT2</b>	A COMMUNITY OR RECREATIONAL CENTER .....	7
<b>PAAOUT2</b>	OUTDOORS .....	8
<b>PAASCH2</b>	A SCHOOL .....	9
<b>PAAPLOT2</b>	OTHER .....	91
<b>PAAPLOS2</b>	SPECIFY _____	
	REFUSED .....	-7
	DON'T KNOW .....	-8

SK6. During these after-school hours, what does (CHILD) spend most of (his/her) time doing? You may name up to three things. [CODE UP TO THREE ACTIVITIES.]

<b>PAAEDUC2</b>	HOMEWORK/SCHOOL-RELATED/ EDUCATIONAL.....	1
<b>PAACOMP2</b>	COMPUTERS.....	2
<b>PAAREAD2</b>	READING/WRITING (NON-SCHOOL-RELATED) .....	3
<b>PAAART2</b>	ARTS (PERFORM OR STUDY MUSIC, CRAFTS, DRAMA, ETC.) ..	4
<b>PAACHOR2</b>	CHORES/WORK.....	5
<b>PAAOUTP2</b>	OUTDOOR PLAY/ACTIVITIES/SPORTS .....	6
<b>PAAINPL2</b>	INDOOR PLAY .....	7
<b>PAAPHON2</b>	TELEPHONE.....	8
<b>PAAEAT2</b>	EATING/SNACKS .....	9
<b>PAATV2</b>	TELEVISION/VIDEOS/VIDEO GAMES/LISTENING TO MUSIC ....	10
<b>PAAATALK2</b>	TALKING TO PARENT/CARE PROVIDER .....	11
<b>PAAACTI2</b>	BEFORE- OR AFTER-SCHOOL ACTIVITIES .....	12
<b>PAAOTHE2</b>	OTHER .....	91
<b>PAAOTH2</b>	SPECIFY _____	
	REFUSED .....	-7
	DON'T KNOW .....	-8

*If SF1, SG1, SH1, SI8 (reinterview response), SJ1 = 2,-7,-8 (no nonparental care arrangements), ask SK7. Else, go to box before SM0.*

SK7. Some parents prefer to stay home to care for their children before and after school. Others choose to have care arrangements by someone other than a parent. If you could find high-quality, affordable before- or after-school care by a relative, nonrelative, or in a program, would you choose to place (CHILD) in one of these kinds of arrangements?

<b>PACHOOS2</b>	YES .....	1
	NO.....	2
	REFUSED .....	-7
	DON'T KNOW .....	-8

**Perceptions of Quality and Factors in Parental Choice**

*If SK7 = 2, -7, -8 (would not want nonparental care arrangement), ask SM0. Else, go to RSM1.*

SM0. Many parents choose to care for their children themselves during before- and after-school hours. What were your main reasons for choosing to have a parent care for (CHILD) during before- and after-school hours?  
[CODE ALL THAT APPLY.]

- PPNOWOR2** PARENT DOES NOT WORK/NO NEED FOR CARE..... 1
- PPDAYCA2** PARENT IS DAY CARE PROVIDER IN THE HOME..... 2
- PPWORKH2** PARENT WORKS OR STUDIES AT HOME ..... 3
- PPSPECL2** CHILD HAS SPECIAL NEEDS ..... 4
- PPDEPEN2** PARENTS NEED TO CARE FOR OTHER DEPENDENTS AS WELL 5
- PPBARR2** COST/AVAILABILITY/TRANSPORTATION ..... 6
- PPHMWRK2** TO HELP WITH CHILD’S EDUCATION/HOMEWORK..... 7
  
- PPCAREE2** PARENT VIEWS STAYING HOME AS CAREER..... 8
  
- PPBEST2** PARENTAL CARE IS BEST FOR CHILD/DEVELOPMENT..... 9
- PPRESPO2** PARENTS SHOULD BE RESPONSIBLE FOR CARE ..... 10
- PPRELIG2** RELIGIOUS REASONS ..... 11
  
- PPOTHER2** OTHER ..... 91
- PPOTHEO2** SPECIFY \_\_\_\_\_
- REFUSED ..... -7
- DON’T KNOW ..... -8

*If only SM0\_6 = 1 (cost/availability/transportation), ask RSM1. Else, go to PTINTRO.*

RSM1. There are a number of kinds of arrangements parents make for their children’s out-of-school time. If you had your choice of any kind of arrangement for (CHILD) during after-school hours, not including care by a parent or guardian, what arrangement would you prefer most?

- CHILD RESPONSIBLE FOR HIMSELF/HERSELF ..... 1
- CHILD TAKEN CARE OF BY OLDER BROTHER OR SISTER ..... 2
- CARE BY A RELATIVE (NOT BROTHER OR SISTER) ..... 3
- PPPREFE2** CARE BY A NONRELATIVE IN A PRIVATE HOME ..... 4
- PARTICIPATION IN A CENTER-BASED PROGRAM ..... 5
- INFORMAL ADULT SUPERVISED ACTIVITIES..... 6
- PPPREFO2** OTHER ..... 91
- SPECIFY \_\_\_\_\_
- REFUSED ..... -7
- DON’T KNOW ..... -8

*If SH1 = 2, -7, -8, then ask SM2. Else, go to box before SM3.*

SM2. Are you aware of any before- or after-school programs in your community?

- PPAWARE2**
- YES ..... 1
  - NO..... 2
  - REFUSED .....-7
  - DON'T KNOW .....-8

*If RSM1 = 5, then go to SM3. Else, go to box before SM4.*

SM3. What (is/was) your biggest obstacle to enrolling (CHILD) in a before- or after-school program?

- PPOBSTC2**
- COST ..... 1
  - LOCATION/TRANSPORTATION ..... 2
  - CHILD'S WISHES ..... 3
  - AVAILABILITY ..... 4
  - POOR QUALITY OF AVAILABLE PROGRAMS ..... 5
  - NO OBSTACLES..... 6
  - OTHER ..... 91
- PPOBSOS2**
- SPECIFY \_\_\_\_\_
  - REFUSED .....-7
  - DON'T KNOW .....-8

*If SF1, SG1, SH1, SI8 (reinterview response), or SJ1 = 1 (child currently participates in at least one arrangement or self-care), ask SM4. Else, go to SM6.*

SM4. How much difficulty did you have finding the type of out-of-school care you wanted for (CHILD)? Would you say...

- PPDIFCL2**
- A lot, ..... 1
  - Some, ..... 2
  - A little, ..... 3
  - No difficulty, or ..... 4
  - Have you not found the out-of school care you wanted? .. 5
  - REFUSED .....-7
  - DON'T KNOW .....-8

SM5. When you made your arrangement(s) for (CHILD)'s out-of-school time, did you feel that you had more than one option that you were willing to consider?

- PPOPTIO2**
- YES ..... 1
  - NO..... 2
  - REFUSED .....-7
  - DON'T KNOW .....-8

SM6. Do you feel there are good choices for before-school care where you live?

- PPBCHOI2**
- YES ..... 1
  - NO..... 2
  - HAVE NOT TRIED TO FIND CARE..... 3
  - REFUSED .....-7
  - DON'T KNOW .....-8

SM7. Do you feel there are good choices for after-school care where you live?

- PPACHOI2**
- YES ..... 1
  - NO..... 2
  - HAVE NOT TRIED TO FIND CARE..... 3
  - REFUSED .....-7
  - DON'T KNOW .....-8

SM8. I'm going to read some things that people look for in selecting before- or after-school arrangements for their children. For each one, please tell me if you think it is very important, somewhat important, or not too important in a before- or after-school arrangement for (CHILD). How about...

[PROBE: Would that be very important, somewhat important, or not too important?]

[RANDOM START]		VI	SI	NI	R	DK
<b>PPHWHL2</b>	a. Time for homework or schoolwork .....	1	2	3	-7	-8
<b>PPENRCH2</b>	b. Enrichment education (e.g., special drama, science, or computer activities).....	1	2	3	-7	-8
<b>PPSPORT2</b>	c. Time for sports or physical activities. ....	1	2	3	-7	-8
<b>PPRELIA2</b>	d. A reliable arrangement.....	1	2	3	-7	-8
<b>PPCONV2</b>	e. A convenient location .....	1	2	3	-7	-8
<b>PPCOST2</b>	f. A reasonable cost .....	1	2	3	-7	-8
<b>PPKIDS2</b>	g. A small number of children in the same group.....	1	2	3	-7	-8
<b>PPTRANS2</b>	h. Transportation to the arrangement .....	1	2	3	-7	-8
<b>PPENGL2</b>	i. A care provider or teacher who speaks English with your child. ....	1	2	3	-7	-8

*If PA6 = 2 or 91 (does not speak English mostly or equally with another language at home), ask SM8j. Else, go to SM8k.*

<b>PPLANG2</b>	j. A care provider who speaks (CHILD)'s native language .....	1	2	3	-7	-8
<b>PPKNBEF2</b>	k. Knowing the care provider <u>before</u> making the arrangement.....	1	2	3	-7	-8

PTINTRO. Now I have a few questions about (CHILD)'s health.

PT5A. Does (child) have...

- HDAUTIS2** a. Autism? ..... 1 2 -7 -8
- HDADD2** b. Attention deficit disorder, ADD, or ADHD? ..... 1 2 -7 -8

Mother Items

*If HHMOM = 1,2, or 3 (mother or female guardian), and PU7 = 1 or PU8 = 1 (working or on leave/vacation), go to RPUINTRO. Else, go to box before PV15.*

RPUINTRO. These last questions are about (you/(and) (CHILD)'s (mother/stepmother/foster mother) (father/stepfather/foster father)). (Let's start with (you/(CHILD)'s mother)).

PU16. Have (CHILD)'s (child/before- and after-school) care needs influenced [your/(his/her)'s mother's/stepmother's/foster mother's] choice of a job or work schedule in any way?

- MOMCHOI2** YES ..... 1
- NO ..... 2
- REFUSED ..... -7
- DON'T KNOW ..... -8

PU17. How easy is it for (you/(CHILD)'s mother/stepmother/foster mother) to leave work if (CHILD/one of your children/one of her children) gets sick or needs (you/her) unexpectedly? Would you say...

- MOMLVEA2** [VERY] Easy, ..... 1
- Somewhat easy, ..... 2
- Not very easy, or ..... 3
- Difficult? ..... 4
- REFUSED ..... -7
- DON'T KNOW ..... -8

PU18. Does (your/(CHILD)'s mother's/stepmother's/foster mother's) employer have a program that allows employees to put part of their pay -- before taxes -- into an account that can be used to pay for child care costs?

- MOMACCT2** YES ..... 1 (GO TO PU19)
- NO ..... 2 (GO TO BOX BEFORE PV15)
- SELF-EMPLOYED ..... 3 (GO TO BOX BEFORE PV15)
- REFUSED ..... -7 (GO TO BOX BEFORE PV15)
- DON'T KNOW ..... -8 (GO TO BOX BEFORE PV15)

PU19. (Do you/Does she) participate in this program to cover any child care costs?

MOMACUS2 YES ..... 1  
NO..... 2  
REFUSED .....-7  
DON'T KNOW .....-8

**Father Items**

*If HHDAD = 1, 2, or 3 (father or male guardian), and PV6 = 1 or PV7 = 1 (working or on leave/vacation), ask PV15.  
Else, go to Close.*

PV15. Have (CHILD)'s (child/before- and after-school) care needs influenced [your/(his/her)'s father's/stepfather's/foster father's] choice of a job or work schedule in any way?

DADCHOI2 YES ..... 1  
NO..... 2  
REFUSED .....-7  
DON'T KNOW .....-8

PV16. How easy is it for (you/(CHILD)'s father/stepfather/foster father) to leave work if (CHILD/one of your children/one of his children) gets sick or needs (you/him) unexpectedly? Would you say...

DADLVEA2 [VERY] Easy, ..... 1  
Somewhat easy, ..... 2  
Not very easy, or ..... 3  
Difficult? ..... 4  
REFUSED .....-7  
DON'T KNOW .....-8

PV17. Does (your/(CHILD)'s father's/stepfather's/foster father's) employer have a program that allows employees to put part of their pay -- before taxes -- into an account that can be used to pay for child care costs?

DADACCT2 YES ..... 1 (GO TO PV18)  
NO..... 2 (GO TO CLOSE)  
REFUSED .....-7 (GO TO CLOSE)  
DON'T KNOW .....-8 (GO TO CLOSE)

PV18. (Do you/Does he) participate in this program to cover any child care costs?

DADACUS2 YES ..... 1  
NO..... 2  
REFUSED .....-7  
DON'T KNOW .....-8

CLOSE. Those are all the questions I have about (CHILD). Thank you again for your participation.

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