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DSSD A.C.E. REVISION II MEMORANDUM SERIES #PP-17

MEMORANDUM FOR Donna Kostanich  
Chair, A.C.E. Revision II Planning Group

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Subject: A.C.E. Revision II- Specifications for the Age Imputation of P-sample Persons with Missing or Invalid Age

This memorandum specifies the imputation of age for Accuracy and Coverage Evaluation (A.C.E.) P-sample persons. For the original A.C.E., P sample persons with missing age were assigned to age categories as assigned by the A.C.E. post stratification plan. The A.C.E. Revision II P-sample post-stratification divided the original A.C.E. post-stratification group of 0-17 years old into groups of 0-9 and 10-17 years old. Those persons with missing age who had been assigned to the 0-17 group were reassigned to either the 0-9 or the 10-17 group. Other persons with unresolved age remained in the age group they had been originally assigned to. To achieve the reassignment, a new value of age was imputed for each person. The new age imputation assumed that the distribution of missing age was uniform within the specific age groupings.

## 1. Files and Variables

The input file is the A.C.E. P-sample person estimation file (ESTIMATION\$DISK:[PSAMPLE]PDSEUS.DAT). On this file, the variable AGE gives the exact age of each person and the variable AGE2 gives the age category that each person is assigned. AGE2 assigns people to one of four age categories: 0-17, 18-29, 30-49, and 50+. Exact ages are imputed for persons with missing age (AGE='999') and persons with invalid age. Persons with invalid age are defined to be those whose AGE exceeds 115. Everyone in the P-sample with missing or invalid age was assigned to one of the four age categories by the A.C.E. missing data operation.

## 2. Imputation of Age

The A.C.E. Revision II imputation was done within age category, as each person record was assigned an age category, whether or not the exact age was missing. It proceeded by creating a new age variable for every person record on the P-sample person estimation file. This new age variable was created by utilizing a uniform (0,1) random number generator with a randomly chosen seed (52713). The random number generator produces the same series of random numbers each time the program creating the new age variable is run.

For each person record with age category 0-17 the new age variable, NEWAGE, was calculated as follows:

$NEWAGE = 0 + (17 * RANUNI(52713))$ , where  $ranuni(52713)$  is the value of the uniform (0,1) random number generator with seed 52713. The value of  $ranuni(52713)$  should be different for each person record.

For each person record with age category 18-29 the new age variable, NEWAGE, was calculated as follows:

$NEWAGE = 18 + (11 * RANUNI(52713))$

For each person record with age category 30-49 the new age variable, NEWAGE, was calculated as follows:

$NEWAGE = 30 + (19 * RANUNI(52713))$

For each person record with age category 50+ the new age variable, NEWAGE, was calculated as follows:

$NEWAGE = 50 + (65 * RANUNI(52713))$

All values of NEWAGE are rounded to the nearest integer. For persons with missing or invalid age, the imputed age is given by the rounded value of NEWAGE.

Appendix A gives the frequency of each age before imputation. Consequently, it gives the frequency of missing ages (AGE='999') and it gives the frequencies at ages declared to be invalid (over 115).

Appendix B gives the frequencies of the imputed ages of those with missing or invalid age.

For any questions regarding this document please contact John Jones at 301-763-9260.

cc. A.C.E. Revision II Missing Data Subgroup  
Dawn Haines

**APPENDIX A: Frequencies of Unimputed Ages**

age	Cumulative		Cumulative	
	Frequency	Percent	Frequency	Percent
0	10078	1.40	10078	1.40
1	10674	1.48	20752	2.88
2	10113	1.40	30865	4.28
3	10276	1.42	41141	5.70
4	10260	1.42	51401	7.12
5	10417	1.44	61818	8.57
6	10560	1.46	72378	10.03
7	10734	1.49	83112	11.52
8	10823	1.50	93935	13.02
9	11071	1.53	105006	14.55
10	11049	1.53	116055	16.08
11	10884	1.51	126939	17.59
12	10675	1.48	137614	19.07
13	10404	1.44	148018	20.51
14	10534	1.46	158552	21.97
15	10354	1.43	168906	23.40
16	10338	1.43	179244	24.84
17	10300	1.43	189544	26.26
18	10223	1.42	199767	27.68
19	10379	1.44	210146	29.12
20	10888	1.51	221034	30.63
21	10113	1.40	231147	32.03
22	10107	1.40	241254	33.43
23	9664	1.34	250918	34.77
24	9637	1.34	260555	36.10
25	10329	1.43	270884	37.53
26	9282	1.29	280166	38.82
27	9688	1.34	289854	40.16
28	10428	1.44	300282	41.61
29	10541	1.46	310823	43.07
30	11930	1.65	322753	44.72
31	9949	1.38	332702	46.10
32	10180	1.41	342882	47.51
33	10016	1.39	352898	48.90
34	10239	1.42	363137	50.31
35	12317	1.71	375454	52.02
36	11093	1.54	386547	53.56
37	10935	1.52	397482	55.07
38	11258	1.56	408740	56.63
39	10993	1.52	419733	58.16

age	Cumulative		Cumulative	
	Frequency	Percent	Frequency	Percent
40	12920	1.79	432653	59.95
41	10583	1.47	443236	61.41
42	11262	1.56	454498	62.97
43	10681	1.48	465179	64.45
44	10217	1.42	475396	65.87
45	11945	1.66	487341	67.52
46	9662	1.34	497003	68.86
47	9542	1.32	506545	70.18
48	9354	1.30	515899	71.48
49	8845	1.23	524744	72.71
50	10416	1.44	535160	74.15
51	8586	1.19	543746	75.34
52	8766	1.21	552512	76.55
53	8318	1.15	560830	77.71
54	6625	0.92	567455	78.62
55	7398	1.03	574853	79.65
56	6667	0.92	581520	80.57
57	6715	0.93	588235	81.50
58	5979	0.83	594214	82.33
59	5500	0.76	599714	83.09
60	6326	0.88	606040	83.97
61	5192	0.72	611232	84.69
62	5357	0.74	616589	85.43
63	4877	0.68	621466	86.11
64	4838	0.67	626304	86.78
65	5366	0.74	631670	87.52
66	4440	0.62	636110	88.14
67	4499	0.62	640609	88.76
68	4585	0.64	645194	89.39
69	4332	0.60	649526	90.00
70	4857	0.67	654383	90.67
71	3954	0.55	658337	91.22
72	4102	0.57	662439	91.78
73	3950	0.55	666389	92.33
74	3855	0.53	670244	92.87
75	3892	0.54	674136	93.41
76	3398	0.47	677534	93.88
77	3223	0.45	680757	94.32
78	3132	0.43	683889	94.76
79	2831	0.39	686720	95.15
80	2696	0.37	689416	95.52
81	2143	0.30	691559	95.82

age	Cumulative		Cumulative	
	Frequency	Percent	Frequency	Percent
82	1981	0.27	693540	96.09
83	1729	0.24	695269	96.33
84	1603	0.22	696872	96.56
85	1390	0.19	698262	96.75
86	1132	0.16	699394	96.90
87	956	0.13	700350	97.04
88	787	0.11	701137	97.15
89	671	0.09	701808	97.24
90	589	0.08	702397	97.32
91	421	0.06	702818	97.38
92	290	0.04	703108	97.42
93	289	0.04	703397	97.46
94	169	0.02	703566	97.48
95	157	0.02	703723	97.50
96	93	0.01	703816	97.52
97	69	0.01	703885	97.53
98	42	0.01	703927	97.53
99	45	0.01	703972	97.54
100	33	0.00	704005	97.54
101	9	0.00	704014	97.54
102	2	0.00	704016	97.55
103	5	0.00	704021	97.55
104	1	0.00	704022	97.55
105	1	0.00	704023	97.55
106	2	0.00	704025	97.55
107	1	0.00	704026	97.55
110	1	0.00	704027	97.55
111	5	0.00	704032	97.55
113	1	0.00	704033	97.55
114	1	0.00	704034	97.55
115	1	0.00	704035	97.55
117	2	0.00	704037	97.55
119	1	0.00	704038	97.55
125	1	0.00	704039	97.55
152	1	0.00	704040	97.55
200	1	0.00	704041	97.55
999	17693	2.45	721734	100.00

## APPENDIX B: Frequencies of Imputed Ages

		Cumulative	Cumulative	
Newage	Frequency	Percent	Frequency	Percent
0	107	0.60	107	0.60
1	229	1.29	336	1.90
2	226	1.28	562	3.18
3	244	1.38	806	4.55
4	241	1.36	1047	5.92
5	225	1.27	1272	7.19
6	235	1.33	1507	8.51
7	216	1.22	1723	9.74
8	238	1.34	1961	11.08
9	209	1.18	2170	12.26
10	226	1.28	2396	13.54
11	212	1.20	2608	14.74
12	210	1.19	2818	15.92
13	233	1.32	3051	17.24
14	241	1.36	3292	18.60
15	228	1.29	3520	19.89
16	243	1.37	3763	21.26
17	159	0.90	3922	22.16
18	151	0.85	4073	23.01
19	349	1.97	4422	24.98
20	293	1.66	4715	26.64
21	321	1.81	5036	28.45
22	307	1.73	5343	30.19
23	295	1.67	5638	31.85
24	298	1.68	5936	33.54
25	336	1.90	6272	35.44
26	328	1.85	6600	37.29
27	285	1.61	6885	38.90
28	322	1.82	7207	40.72
29	154	0.87	7361	41.59
30	147	0.83	7508	42.42
31	288	1.63	7796	44.05
32	307	1.73	8103	45.78
33	306	1.73	8409	47.51
34	324	1.83	8733	49.34
35	312	1.76	9045	51.10
36	327	1.85	9372	52.95
37	307	1.73	9679	54.69
38	290	1.64	9969	56.33
39	283	1.60	10252	57.92

Cumulative Cumulative  
Newage Frequency Percent Frequency Percent

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40	303	1.71	10555	59.64
41	282	1.59	10837	61.23
42	286	1.62	11123	62.85
43	282	1.59	11405	64.44
44	275	1.55	11680	65.99
45	318	1.80	11998	67.79
46	316	1.79	12314	69.57
47	320	1.81	12634	71.38
48	299	1.69	12933	73.07
49	159	0.90	13092	73.97
50	36	0.20	13128	74.17
51	65	0.37	13193	74.54
52	77	0.44	13270	74.98
53	80	0.45	13350	75.43
54	56	0.32	13406	75.74
55	82	0.46	13488	76.21
56	75	0.42	13563	76.63
57	73	0.41	13636	77.04
58	76	0.43	13712	77.47
59	74	0.42	13786	77.89
60	72	0.41	13858	78.30
61	74	0.42	13932	78.72
62	70	0.40	14002	79.11
63	65	0.37	14067	79.48
64	72	0.41	14139	79.89
65	76	0.43	14215	80.32
66	78	0.44	14293	80.76
67	68	0.38	14361	81.14
68	90	0.51	14451	81.65
69	57	0.32	14508	81.97
70	77	0.44	14585	82.41
71	73	0.41	14658	82.82
72	74	0.42	14732	83.24
73	69	0.39	14801	83.63
74	60	0.34	14861	83.97
75	70	0.40	14931	84.36
76	78	0.44	15009	84.80
77	72	0.41	15081	85.21
78	79	0.45	15160	85.65
79	80	0.45	15240	86.11
80	52	0.29	15292	86.40
81	77	0.44	15369	86.84

Cumulative Cumulative  
Newage Frequency Percent Frequency Percent

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82	66	0.37	15435	87.21
83	74	0.42	15509	87.63
84	57	0.32	15566	87.95
85	64	0.36	15630	88.31
86	69	0.39	15699	88.70
87	62	0.35	15761	89.05
88	59	0.33	15820	89.38
89	67	0.38	15887	89.76
90	53	0.30	15940	90.06
91	89	0.50	16029	90.56
92	71	0.40	16100	90.97
93	65	0.37	16165	91.33
94	69	0.39	16234	91.72
95	82	0.46	16316	92.19
96	69	0.39	16385	92.58
97	67	0.38	16452	92.95
98	86	0.49	16538	93.44
99	85	0.48	16623	93.92
100	82	0.46	16705	94.38
101	67	0.38	16772	94.76
102	62	0.35	16834	95.11
103	78	0.44	16912	95.55
104	63	0.36	16975	95.91
105	73	0.41	17048	96.32
106	73	0.41	17121	96.73
107	53	0.30	17174	97.03
108	77	0.44	17251	97.47
109	74	0.42	17325	97.89
110	83	0.47	17408	98.36
111	65	0.37	17473	98.72
112	66	0.37	17539	99.10
113	68	0.38	17607	99.48
114	72	0.41	17679	99.89
115	20	0.11	17699	100.00