## **Appendix A: Sampling Variability**

A small number of tables in sections 5 and 6 present Old-Age, Survivors, and Disability Insurance (OASDI) current-pay benefit and award data based on 1 percent and 10 percent sample files drawn from the Social Security Administration's administrative records. In addition, Tables 4.B1–4.B14 on the taxable earnings of OASDI workers are based on 1 percent administrative record samples.

Because of sampling variability, estimates based on sample data differ from the figures that would have been obtained had all, rather than specified samples, of the records been used. The standard error is a measure of the sampling variability. About 68 percent of all possible probability samples selected with the same specifications will give estimates within one standard error of the figure obtained from a compilation of all records. Similarly, approximately 90 percent will give estimates within 1.645 standard errors, about 95 percent will give estimates within two standard errors, and about 99 percent will give estimates within two standard errors and about 99 percent will give estimates within two and one-half standard errors. The standard error of an estimate depends on the design elements such as the method of sampling, sample size, and the estimation process.

Because of the large number of data cells tabulated from the sample files, it is not practical to calculate the standard error for every possible cell. However, standard errors for a large number of cells were estimated. These estimates were used to fit regression curves to provide estimates of approximate standard errors associated with tabulated counts and proportions.

The tables showing the sampling variability provide a general order of magnitude for similar estimates from the various sample files. Table A-1 presents approximate standard errors for the estimated number of persons from the 1 percent and the 10 percent files. The reliability of an estimated percentage depends on both the size of the percentage and on the size of the total on which the percentage is based. Data in Table A-2 provide approximations of the standard errors of the estimated percentage of persons in the 1 percent and 10 percent files. The standard errors are expressed in percentage points and the bases shown are in terms of inflated data.

CONTACT: Cherice N. Jefferies (410) 965-5520 or supplement@ssa.gov.

Table A-1.

Approximations of standard errors of estimated number of persons

Size of estimate (inflated)	Standard error					
1 percent file						
500 1,000 2,500 5,000 7,500 10,000 25,000 50,000 75,000 100,000 250,000 500,000 1,000,000 5,000,000 1,000,000 5,000,000 5,000,000 50,000,000 50,000,000	250 300 500 800 900 1,100 1,700 2,400 3,000 3,400 5,400 7,800 9,600 11,100 25,800 36,900 57,700 76,100					
75,000,000	82,900					
·	percent file					
100 500 1,000 5,000 10,000 50,000 100,000 500,000 1,000,000 2,000,000 3,000,000 5,000,000 10,000,000 20,000,000	30 70 100 225 300 700 1,000 2,200 3,200 4,300 5,300 6,500 8,500 9,300					

Table A-2.
Approximations of standard errors of estimated percentage of persons

1,000								
1,000	Size of base							
1,000	(inflated)	2 or 98	5 or 95	10 or 90	25 or 75	50		
10,000		1 percent file						
50,000         0.7         1.0         1.4         2.1         2.1           100,000         0.5         0.7         1.0         1.5         3.0           500,000         0.2         0.3         0.4         0.7         0.7         0.0           1,000,000         0.1         0.2         0.3         0.5         0.5         0.5         0.0         0.0         0.1         0.1         0.2         0.0	1,000	4.7	7.3	10.1	14.5	16.8		
100,000	10,000	1.5	2.3	3.2	4.6	5.3		
500,000         0.2         0.3         0.4         0.7         0.7           1,000,000         0.1         0.2         0.3         0.5         0.5           5,000,000         0.1         0.1         0.1         0.2         0.0           10,000,000         a         a         a         a         0.1         0.1           100,000,000         a         a         a         a         a         a           10 percent file           500         1.9         3.0         4.1         5.9         6           1,000         1.3         2.1         2.9         4.1         4           2,500         0.8         1.3         1.8         2.6         3           10,000         0.4         0.6         0.9         1.3         6	50,000	0.7	1.0	1.4	2.1	2.4		
1,000,000 0.1 0.2 0.3 0.5 0 0 0 0 0.1 0.1 0.1 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100,000	0.5	0.7	1.0	1.5	1.7		
5,000,000       0.1       0.1       0.1       0.2       0         10,000,000       a       0.1       0.1       0.2       0         50,000,000       a       a       a       a       0.1       0         100,000,000       a<	500,000	0.2	0.3	0.4	0.7	0.8		
10,000,000 a 0.1 0.1 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1,000,000	0.1	0.2	0.3	0.5	0.5		
50,000,000 a a a a 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.2 0.2 0.1 0.2 0.2 0.1 0.2 0.2 0.1 0.2 0.2 0.1 0.2 0.1 0.2 0.2 0.1 0.1 0.2 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	5,000,000		0.1	0.1	0.2	0.2		
100,000,000 a a a a a a a a a a a a a a a	10,000,000	а	0.1	0.1	0.2	0.2		
10 percent file           500         1.9         3.0         4.1         5.9         6           1,000         1.3         2.1         2.9         4.1         4           2,500         0.8         1.3         1.8         2.6         3           10,000         0.4         0.6         0.9         1.3         3	50,000,000		-	_	0.1	0.1		
500 1.9 3.0 4.1 5.9 6 1,000 1.3 2.1 2.9 4.1 2,500 0.8 1.3 1.8 2.6 3 10,000 0.4 0.6 0.9 1.3	100,000,000	а	а	а	а	а		
1,000     1.3     2.1     2.9     4.1     4.2       2,500     0.8     1.3     1.8     2.6     3.3       10,000     0.4     0.6     0.9     1.3		10 percent file						
2,500     0.8     1.3     1.8     2.6       10,000     0.4     0.6     0.9     1.3	500	1.9	3.0	4.1	5.9	6.8		
10,000 0.4 0.6 0.9 1.3	1,000	1.3	2.1	2.9	4.1	4.8		
,	2,500	8.0	1.3	1.8	2.6	3.0		
E0 000 03 04 06 (	10,000	0.4	0.6	0.9	1.3	1.5		
50,000 0.2 0.3 0.4 0.6	50,000	0.2	0.3	0.4	0.6	0.7		
100,000 0.1 0.2 0.3 0.4	100,000	0.1	0.2	0.3	0.4	0.5		
500,000 a 0.1 0.1 0.2 0	500,000	а	0.1	0.1	0.2	0.2		
1,000,000 a 0.1 0.1 0.1	1,000,000	а	0.1	0.1	0.1	0.2		
-,,	5,000,000	-	-	_	-	0.1		
10,000,000 a a a a	10,000,000	а	а	а	а	а		
50,000,000 a a a a	50,000,000	а	а	а	а	а		

a. Less than 0.05 percent.