Appendix: Sampling Variability

Estimates based on sample data differ from the figures that would have been obtained had all, rather than a sample, of the records been used. These differences are termed sampling variability. The standard error is a measure of the sampling variability; that is, the variation that occurs by chance because a sample is used. The standard error is used to describe confidence intervals. The confidence interval represents the extent to which the sample results can be relied upon to describe the results that would have occurred if the entire population (universe) had been used for data compilation rather than the sample.

In about 68 percent of all probability samples with the same selection criteria, the universe value will be included in the interval from one standard error below to one standard error above the sample estimate. Similarly, about 95 percent of all possible samples will give estimates within two standard errors, and about 99 percent will give estimates within two and one-half standard errors.

Tables A-1 and A-2 provide approximations of standard errors of estimates shown in this report. Table A-1 presents approximation of standard errors for the estimated number of recipients from the 1 percent and the 10 percent sample files. Table A-2 represents approximation of standard errors for the estimated percentage of persons from the 1 percent and 10 percent files. Linear interpolation may be used to obtain values not specifically shown.

Size of estimate (inflated)			Standard error		
	1 perc	ent file			
500			250		
1,000			300		
2,500			500		
5,000			800		
7,500			900		
10,000			1,100		
25,000			1,700		
50,000			2,400		
75,000			3,000		
100,000 250,000			3,400 5,400		
500,000			7,800		
750.000			9,600		
1,000,000			11,100		
5,000,000			25,800		
10,000,000			36,900		
25,000,000			57,700		
50,000,000			76,100		
75,000,000			82,900		
	10 per	cent file			
100			30		
500			70		
1,000			100		
5,000			225		
10,000			300		
50,000			700		
100,000			1,000		
500,000			2,200		
1,000,000 2,000,000			3,200 4,300		
3,000,000			4,300 5,300		
5,000,000			6,500		
10,000,000			8,500		
20,000,000			9,300		

Table A-1.Approximations of standard errors of estimatednumber of persons

Table A-2. Approximations of standard errors of estimated percentage of persons from 1 percent and 10 percent files

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	Estimated percentage						
Size of base							
(inflated)	2 or 98	5 or 95	10 or 90	25 or 75	50		
	1 percent file						
1,000	4.7	7.3	10.1	14.5	16.8		
10,000	1.5	2.3	3.2	4.6	5.3		
50,000	0.7	1.0	1.4	2.1	2.4		
100,000	0.5	0.7	1.0	1.5	1.7		
500,000	0.2	0.3	0.4	0.7	0.8		
1,000,000	0.1	0.2	0.3	0.5	0.5		
5,000,000	0.1	0.1	0.1	0.2	0.2		
10,000,000	а	0.1	0.1	0.2	0.2		
50,000,000	а	а	а	0.1	0.1		
100,000,000	а	а	а	а	а		
	10 percent file						
500	1.9	3.0	4.1	5.9	6.8		
1,000	1.3	2.1	2.9	4.1	4.8		
2,500	0.8	1.3	1.8	2.6	3.0		
10.000	0.4	0.6	0.9	1.3	1.5		
50.000	0.2	0.3	0.4	0.6	0.7		
100,000	0.1	0.2	0.3	0.4	0.5		
500,000	а	0.1	0.1	0.2	0.2		
1,000,000	a	0.1	0.1	0.1	0.2		
5,000,000	а	а	а	а	0.1		
10,000,000	а	а	а	а	а		
50,000,000	а	а	а	а	а		

a. Less than 0.05 percent.