

IMPACT OF WEIGHTING ON THE 1993 NATIONAL SURVEY OF COLLEGE GRADUATES

Lloyd Hicks and Caroline Riker

This report shows the effect of the ratio adjustment weighting procedure on estimates of major NSCG sampling cells. The ratio adjustment procedure in the 1993 NSCG was used to inflate the weights of interviewed and out-of-scope persons to account for unit nonresponse and undercoverage. The NSCG estimates were controlled to the 1993 NSCG universe counts that were derived from the 1990 census.

The ratio adjustment cells were defined as supersets of the NSCG sampling cells. The 863 sampling cells were combined to form 144 ratio adjustment cells. The cells were defined by education (highest degree), occupation, sex, and NSF group which includes race, ethnicity, disability status, US citizenship status, and place of birth. The original ratio adjustment cells were collapsed even further to 125 cells because some cells were insufficiently represented (had less than 30 interviewed sample respondents) or their adjustment factor was too large (greater than 2.0).

Table 1 shows the NSCG estimates before the ratio adjustment for the 125 collapsed ratio adjustment cells. Table 2 shows the same NSCG estimates after the ratio adjustment; Table 3, which gives the ratio adjustment factors for each cell, compares the two sets of estimates; and Table 4 shows the number of completed interviews in each cell.

The nonresponse adjustment and ratio adjustment were combined into a single step because they used the same cells for the adjustment. For a rough idea of how much of the adjustment was a result of nonresponse, see the inverses of the response rates for NSF groups in Table 5. For example, for the combined NSF Groups 3, 5, and 6 cells in Table 3, the ratio adjustment factors ranged from 1.1413 to 1.4080. For the four cells with over 70% of the population the factors ranged from 1.1947 to 1.2988. The inverse response rate for the entire group was 1.2245. Thus, it appears that most of the weighting adjustment was to account for nonresponse.

Table 1: 1993 NSCG Estimates Before the Ratio Adjustment

				Education											
				Bachelor's or Professional					Master's					Doctorate	
				Occupation Group					Occupation Group					Occupation Group	
				1	2	3	4	5	1	2	3	4	5	1-4	5
NSF Group	1	Sex	M	4,629	6,479	1,895	24,483	472,645	2,807	3,099	2,086	6,929	146,075	5,027	28,034
			F	1,264	2,061	1,486		375,708			2,368		119,888		8,825
	2	Sex	M	2,486	2,797	1,713	11,039	148,246	2,461		1,911	2,639	38,824	8,988	
			F		1,859		1,817	148,850				2,639	40,932		
	356	Sex	M	92,681	151,141	38,239	579,071	7,155,542	46,714	60,017	37,892	176,531	2,106,043	112,579	395,926
			F	37,255	78,417	38,168	54,906	6,730,075	15,748	24,530	53,116	15,788	2,098,574	33,378	135,914
	4	Sex	M	2,401	6,156	1,857	12,651	300,609	1,500	1,990	3,025	4,218	88,150	2,383	12,575
			F	1,844	6,195	2,356	3,891	446,150		1,374			179,061		9,757
	7	Sex	M	5,366	11,393	1,855	56,304	438,558	3,392	7,289	2,006	35,205	139,071	18,817	52,031
			F	4,189	6,490	1,870	6,221	430,780	2,333	3,055	2,811	3,001	123,991	3,831	16,622
	8	Sex	M	3,436	6,449	1,538	22,647	341,872	2,983	8,766	1,880	20,023	128,231	15,948	45,444
			F	2,134	2,976	1,387	2,833	318,985	1,411	2,508	1,774	1,530	87,205	3,630	13,732

Occupation Group is defined as follows:

- 1 = Physical and Life Scientists
- 2 = Mathematicians and Computer Scientists
- 3 = Social Scientists and Psychologists
- 4 = Engineers
- 5 = Nonscientists and Nonengineers

NSF Group is defined as follows:

- 1 = US born disabled
- 2 = US born nondisabled Hispanic
- 3 = US born nondisabled White
- 4 = US born nondisabled Black
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Table 2: 1993 NSCG Estimates After the Ratio Adjustment

				Education											
				Bachelor's or Professional					Master's					Doctorate	
				Occupation Group					Occupation Group					Occupation Group	
1	2	3	4	5	1	2	3	4	5	1-4	5				
NSF Group	1	Sex	M	6,011	8,435	2,744	30,487	633,304	3,040	4,148	2,750	8,677	185,957	6,669	35,808
				1,600	2,728	2,285		496,489			3,190		151,437		11,967
	2	Sex	M	3,577	3,816	2,607	13,881	208,762	2,960	2,503	3,478	50,588	12,597		
				2,372	2,268		208,587	52,723							
	356	Sex	M	117,728	191,653	51,773	710,520	9,293,372	56,163	72,058	48,915	208,824	2,551,334	128,491	475,157
				48,721	100,056	53,741	70,611	8,472,313	19,603	30,178	67,549	19,045	2,507,205	38,737	161,621
	4	Sex	M	3,883	8,436	3,409	18,588	454,530	2,346	2,516	4,367	5,591	125,366	3,029	18,242
				3,293	8,961	3,645	5,768	652,882		1,837			235,894		13,969
	7	Sex	M	7,226	14,958	2,605	70,803	600,749	4,479	8,562	2,777	43,024	183,183	22,329	65,946
				5,404	8,564	2,539	8,323	586,090	2,642	3,953	3,716	3,594	154,881	4,604	20,985
	8	Sex	M	5,974	10,460	2,641	32,634	514,308	5,151	12,783	2,927	27,766	204,526	22,423	67,615
				3,731	4,371	2,431	3,939	503,318	2,526	3,714	2,466	2,430	132,687	4,704	20,695

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Table 3: 1993 NSCG Ratio Adjustment Factors

				Education											
				Bachelor's or Professional					Master's					Doctorate	
				Occupation Group					Occupation Group					Occupation Group	
1	2	3	4	5	1	2	3	4	5	1-4	5				
NSF Group	1	Sex	M	1.2986	1.3018	1.4480	1.2452	1.3399	1.0831	1.3385	1.3181	1.2523	1.2730	1.3266	1.2773
				1.2659	1.3238	1.5376		1.3215			1.3471		1.2632		1.3561
	2	Sex	M	1.4389	1.3642	1.5220	1.2574	1.4082	1.2028		1.3098	1.3180	1.3030	1.4015	
				1.2756	1.2480		1.4013	1.2881							
	356	Sex	M	1.2703	1.2680	1.3540	1.2270	1.2988	1.2023	1.2006	1.2909	1.1829	1.2114	1.1413	1.2001
				1.3078	1.2760	1.4080	1.2861	1.2589	1.2448	1.2303	1.2717	1.2063	1.1947	1.1606	1.1891
	4	Sex	M	1.6174	1.3704	1.8362	1.4693	1.5120	1.5640	1.2641	1.4435	1.3256	1.4222	1.2712	1.4507
				1.7858	1.4466	1.5473	1.4823	1.4634		1.3371		1.3174	1.4317		
	7	Sex	M	1.3467	1.3129	1.4041	1.2575	1.3698	1.3204	1.1746	1.3848	1.2221	1.3172	1.1866	1.2674
				1.2902	1.3196	1.3580	1.3378	1.3605	1.1324	1.2940	1.3221	1.1975	1.2491	1.2018	1.2624
	8	Sex	M	1.7387	1.6220	1.7173	1.4410	1.6334	1.7264	1.4582	1.5571	1.3867	1.5950	1.4060	1.4879
				1.7482	1.4688	1.7523	1.3904	1.5779	1.7907	1.4807	1.3900	1.5879	1.5216	1.2957	1.5071

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Table 4: 1993 NSCG Number of Completed Interviews

				Education											
				Bachelor's or Professional					Master's					Doctorate	
				Occupation Group					Occupation Group					Occupation Group	
1	2	3	4	5	1	2	3	4	5	1-4	5				
NSF Group	1	S	M	98	133	36	492	3,925	57	66	44	139	1,384	72	277
		F	F	26	42	31		2,945			53		1,167		48
	2	S	M	55	57	34	233	1,976	52	44	56	587	100		
		F	F		41		37	1,971				642			
	356	S	M	1,613	2,520	654	9,682	25,984	902	1,022	665	2,988	8,167	822	2,563
		F	F	708	1,323	646	982	22,416	353	492	924	323	8,314	301	867
	4	S	M	50	130	42	266	2,742	31	43	64	93	917	36	70
		F	F	40	129	51	82	4,041		30			1,926		60
	7	S	M	118	247	39	1,184	4,551	76	160	41	764	1,456	418	759
		F	F	88	143	35	129	3,831	50	69	64	70	1,330	86	287
	8	S	M	59	124	26	424	2,561	62	180	34	431	1,261	326	661
		F	F	43	57	22	57	2,307	32	53	37	34	840	77	235

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Table 5. Inverse of Weighted Response Rate by NSF Group Variable

NSF Group	Completed Interviews	Inverse Response Rate %
1. US Born Disabled	11,035	1.2678
2. US Born Nondisabled Hispanic	5,885	1.3414
3. US Born Nondisabled White and Other Races 5. US Born Nondisabled Asian and Pacific Islander 6. US Born Nondisabled Native American	95,231	1.2245
4. US Born Nondisabled Black	10,843	1.4109
7. Foreign Born US Citizen	15,995	1.3058
8. Foreign Born Non-US Citizen	9,943	1.5410
Total	148,932	1.2536