

## RESEARCH NOTE: Some Corrections and Suggestions for Working with the National Faculty Survey Databases

Richard J. Bentley, Robert T. Blackburn, and Jeffery P. Bieber

.....

Our ability to understand the faculty work environment has been greatly enhanced by the availability of largescale national surveys of the professoriate since the 1950s. This technical note identifies ways to improve data comparability among the national faculty surveys. It begins by identifying the national surveys and some of their attributes. The study then estimates faculty sizes and calculates weights for faculty in selected disciplines and institution types. The weights are designed specifically for four surveys conducted in 1969, 1975, 1980, and 1988.

.....

Scholarly reports on U.S. faculty have a long and distinguished history. In this century, Shyrock's 1939 study on the University of Pennsylvania faculty remains a classic. So does Wilson's (1942) *The Academic Man*. Wilson includes a broader faculty database, although it is essentially limited to research university professors. In 1955, Lazarsfeld and Theilens (1958) conducted the first "social-scientific" national faculty survey across a wide array of institutional types, albeit only of social scientists. Parsons and Platt (1958) surveyed faculty from a wide assortment of specialties, but only in a small number of institutions. The last twenty years, however, have yielded a barrage of national surveys of faculty beginning in 1969 with more than 60,000 faculty from more than 300 institutions.

This article provides counsel to those who rely on these more recent surveys as accurate estimates of faculty perceptions, beliefs, and behaviors. It should aid those who formulate their research hypotheses or make policy recommendations

Richard J. Bentley and Robert T. Blackburn, University of Michigan. Jeffery P. Bieber, College of William and Mary. Address correspondence to: Richard Bentley, University of Michigan, 2117 SEB, Ann Arbor, MI 48109.

regarding the future of U.S. higher education on the basis of these national surveys.

Although the national surveys have contributed considerably to our understanding of faculty, these databases contain sampling errors that can distort comparisons over time. For example, to confirm whether or not the proportion of women faculty has risen over the past two decades, one has to control for institutional type because proportionally fewer females work at research universities (Astin, 1978). While some recent national surveys proportionally stratified their samples by Carnegie type, earlier surveys have had to rely on poststratification weights to account for sampling frame biases because they oversampled research university faculty.

What confounds the matter even more is that reports disagree on how many faculty there are at different points in time, either full-time or part-time.<sup>1</sup> For example, in 1981 the National Center for Educational Statistics (1989) says there were 462,000 full-time faculty. The American Council on Education (1987) says 470,000. Bowen and Schuster (1986) say 537,000. For 1987, NCES says there were 466,000 in one publication (1989) and 491,000 in another (OERI, 1990).

This article provides ways of improving comparability across the surveys for faculty in selected disciplines. It begins with an identification of the surveys and some of their attributes. It then provides estimates of faculty sizes and calculations for estimating weights. The weights are designed for four survey years: 1969, 1975, 1980, and 1988.

## THE NATIONAL SURVEYS

Table 1 chronologically lists the national surveys by sponsor, sample size, response rate, and number of institutions involved. Explanatory notes are also provided. As indicated in Table 1, the sample populations vary considerably in size. For example, Parson and Platt sampled the smallest number of faculty ( $N = 420$ ), while the American Council of Education surveyed the entire population of faculty ( $N = 108,722$ ) at the 301 institutions included in their survey (Bayer, 1970, pp. 5-6).

The national surveys differ widely in questionnaire design and study objectives.<sup>2</sup> For example, the questionnaires range from 4 pages in length (with 30 questions) for the American Council on Education survey in 1972 to 18 pages (with 87 questions) by Ladd and Lipset (1975). Even with such variation, several questions are repeated across survey years, thereby enabling comparisons over time<sup>3</sup> (also see Drew and Tronvig, 1988).

Reliability data for the national survey questions are rare. However, the University of Michigan study found that test-retest reliabilities were good (average around .70) for the behavior variables, such as number of publications,

TABLE 1. National Faculty Surveys

Year	Sponsor	Total Surveys	Total Usable Surveys	Usable Surveys Returned	% Response Rate	Number of Institutions
1955	Lazarsfeld & Theilens <sup>1</sup>			2,451		165
1959	Berelson <sup>2</sup>	4,440		1,821	41.0%	92
1968	Parsons & Platt <sup>3</sup>			420		8
1969	Carnegie/ACE <sup>4</sup>	100,290		60,028	59.9	303 <sup>5</sup>
1971	Stanford University	17,000		9,237	54.3	259
1972	ACE	108,722		53,131	48.9	301
1975	Ladd and Lipset <sup>6</sup>	7,798	7,253	3,536	45.3	111
1975	Carnegie Council	52,876	47,753	25,262	47.8	340 <sup>7</sup>
1977	Ladd & Lipset	8,697		4,383	50.4	160
1980	UCLA	31,302 <sup>8</sup>	29,599	9,948	31.8	98
1984	Carnegie Foundation <sup>9</sup>	9,968		5,057 <sup>10</sup>	50.7	310
1985	ACLS <sup>11</sup>	5,385		3,835	71.2	
1986	CIC <sup>12</sup>	9,204		4,271	46.4	142
1988	University of Michigan <sup>13</sup>	8,000		3,972	49.7	236 <sup>14</sup>
1988	OERI	11,013		8,383	76.1	449 <sup>15</sup>
1989	Carnegie Foundation <sup>16</sup>	9,996		5,450	54.5	306
1989	UCLA	93,800 <sup>17</sup>		51,605	55.0	432

## Technical Notes

<sup>1</sup> Lazarsfeld and Theilens (1958) conducted personal interviews for social science faculty only. Large public four-year universities were oversampled.

<sup>2</sup> Berelson (1960) surveyed only faculty at graduate institutions. Productivity measures include total books and articles during last five years.

<sup>3</sup> See Parsons and Platt (1968).

<sup>4</sup> Cosponsored by the Carnegie Commission on the Future of Higher Education and the American Council on Education (Bayer, 1970; Trow, 1975).

<sup>5</sup> Roizen, Fulton, and Trow (1978:8) report 307 institutions in 1969.

<sup>6</sup> According to a telephone conversation with Martin Trow, the Ladd and Lipset data were pilot data run for the 1975 Carnegie survey.

<sup>7</sup> Initially 514 institutions selected (Roizen, Fulton, and Trow, 1978).

<sup>8</sup> See discussion on response rate in Higher Education Research Institute technical report (n.d.).

<sup>9</sup> See technical report (Carnegie, 1984).

<sup>10</sup> Only N = 4,999 on tape analyzed by authors.

<sup>11</sup> The American Council of Learned Societies selected society members from seven disciplines, including classics, history, linguistics, English and American literature, philosophy, political science, and sociology (Morton and Price, 1986).

<sup>12</sup> Council of Independent Colleges survey primarily of liberal arts II institutions.

<sup>13</sup> Includes faculty from eight disciplines: English, history, psychology, sociology, political science, biology, chemistry, and mathematics (Blackburn and Lawrence, 1989).

<sup>14</sup> Initially 250 institutions selected.

<sup>15</sup> Initially 480 institutions selected (OERI, 1990).

<sup>16</sup> See technical report (Carnegie 1989b).

<sup>17</sup> Estimate based on 55% response rate.

but lower for perceptual and attitudinal items (Blackburn and Mackie, 1990). High reliabilities of behavior variables have also been reported by Allison and Stewart (1974), Blackburn, Boberg, O'Connell, and Pellino (1980), and Clark and Centra (1985).

## NUMBERS OF FACULTY AND SAMPLE WEIGHTS

The first task in deriving multipliers to correct for survey samples is to

determine accurate estimates of the number of full-time faculty. How these estimates were reached is explained and a table of the results is shown. Then a figure displays data by Carnegie type and control for three points in time. Tables with corrected weights are given for selected institutional types and disciplines for four survey years.

### The Number of Faculty

The faculty population was defined as all full, associate, or assistant professors with teaching appointments in eight liberal arts disciplines, representing the natural sciences (biology, chemistry, mathematics), social sciences (political science, psychology, sociology), and humanities (English, history). The eight disciplines were the same as those selected by the 1988 University of Michigan survey. The Michigan survey chose these eight disciplines because they represented disciplines common to most colleges and universities and where faculty *N*'s were expected to be highest.

The population included faculty from five of the largest Carnegie-type institutions: research I (Res-I) and research II (Res-II) universities, doctoral-granting I (Doc-I) and doctoral-granting II (Doc-II) universities, and comprehensive-I colleges and universities (Comp-I). Faculty were excluded from comprehensive-II (Comp-II), liberal arts, and two-year institutions where publication activity is less common (Bieber, 1990).

In order to estimate the number of faculty at different points in time, data were drawn from three volumes of the *American Universities and College* directories (1968, 1983, 1987). Unlike other national faculty data, such as the federal Higher Education General Information Surveys (HEGIS), the directories provide detailed data broken down at the institutional level by discipline and academic rank. The three selected directories corresponded closest to the 1969, 1980, and 1988 survey years. Because the directory had ceased publication between 1972 and 1983, the 1975 faculty estimate had to be interpolated from the 1969 and 1983 data.

### Sampling Technique

To estimate mean department size, we randomly sampled institutions by Carnegie type and control from lists published by Carnegie (1973, 1976, and 1987). Eight separate samples were drawn in order to identify mean faculty department sizes by public and private control for four Carnegie categories (Res-I, Res-II, Doc-I and Doc-II combined, and Comp-I). This procedure yielded 64 cells.

As a check, we compared the estimated mean faculty department sizes with

similar samples drawn from the same data sources in a separate, independent study (Bieber, 1990).<sup>4</sup> Findings were comparable, with the exception of public Comp-I institutions in 1980. Further examination found that this overestimation was due to an excess sampling of larger institutions in 1980. To correct for this error, we pooled the comprehensive-I public samples from the two studies.<sup>5</sup> Faculty estimates for the three disciplines fell within the 90% confidence interval that Bieber had determined for the same three disciplines. Since the differences of the means for these three disciplines were found to be tolerable, it is reasonable to assume that the means of the other five disciplines are also reliable. Furthermore, for those three disciplines the confidence level is well above the 90% level.

### Changes in Faculty by Carnegie Type

Table 2 shows estimates of average faculty size by Carnegie type. As indicated by the data, public institutions are considerably larger than private institutions in each of the Carnegie categories. Over time, Res-II publics show the largest fluctuations, increasing from an average of 144 faculty to 237 between 1968 and 1983, while dropping back down to 196 by 1987.

Figure 1 shows that Comp-I public institutions are the largest and fastest growing employer of faculty. They have more than a third of all faculty in the target population. Between 1967 and 1985, the estimated populations of Comp-I faculty within the eight selected disciplines nearly doubled—rising from 15,833 to 29,355 (see also Table 2). The number of faculty at the other institution types remained generally constant at each point in time. There are, however, fewer faculty in public research and doctoral institutions in 1988 than there were in 1980.

### Weight Tables

Tables 3 through 6 show the estimates for total number of faculty in years corresponding with the 1969, 1975, 1980, and 1988 national surveys. The actual survey *N*'s and the weights that reconcile these differences are also presented.

Faculty at Comp-I institutions were most underrepresented in both the 1969 Carnegie and the 1980 UCLA HERI surveys (see Tables 3 and 5). As a result, the weights are as high as 4.56 (Comp-I public mathematicians) in 1969 and 3.52 in 1980 (Comp-I private biologists). These higher weights reflect a sampling framework bias that oversampled selective research institutions (Bayer, 1970; Roizen, Fulton, and Trow, 1978). Also, because the 1980 HERI

TABLE 2. Estimated Number of Faculty by Carnegie Type and Control

Carnegie Type and Control	1966-67						1980-81						1984-85					
	Faculty by Inst. Type			Faculty by Inst. Type			Faculty by Inst. Type			Faculty by Inst. Type			Faculty by Inst. Type			Faculty by Inst. Type		
	Sample N	Mean Inst. Size	# of Inst. *	Est. Total	Sample N	Mean Inst. Size	# of Inst. **	Est. Total	Sample N	Mean Inst. Size	# of Inst. **	Est. Total	Sample N	Mean Inst. Size	# of Inst. **	Est. Total		
Research-I Public	14	251	30	7,530	9	262	29	7,598	10	258	29	7,482	10	258	29	7,482		
Research-I Private	10	149	22	3,278	10	181	22	3,982	11	178	22	3,916	11	178	22	3,916		
Research-II Public	10	144	27	3,888	12	237	33	7,821	11	196	33	6,468	11	196	33	6,468		
Research-II Private	10	110	13	1,430	11	109	14	1,526	8	105	14	1,470	8	105	14	1,470		
Doctoral (I & II) Public	21	104	51	5,304	18	164	57	9,348	17	148	63	9,324	17	148	63	9,324		
Doctoral (I & II) Private	19	79	30	2,370	15	105	29	3,045	16	100	47	4,700	16	100	47	4,700		
Comprehensive-I Public	32	71	223	15,833	31	99	250	24,750	27	103	285	29,355	27	103	285	29,355		
Comprehensive-I Private	19	47	98	4,606	16	52	131	6,812	13	57	142	8,094	13	57	142	8,094		
All Institutions		90	494	44,239		104	565	64,882		112	635	70,809		112	635	70,809		

Sources: Mean institutional sizes estimated based on samples drawn from the *American Universities and Colleges directories* (1968, 1983, and 1987). Samples identify full-time full, associate, and assistant professors in eight disciplines.

\* Carnegie (1973).

\*\* Carnegie (1976).

\*\*\* Carnegie (1987), except for Res-I and Res-II, which are based on Carnegie (1976). A definition change in 1987 would have hampered comparability over time.

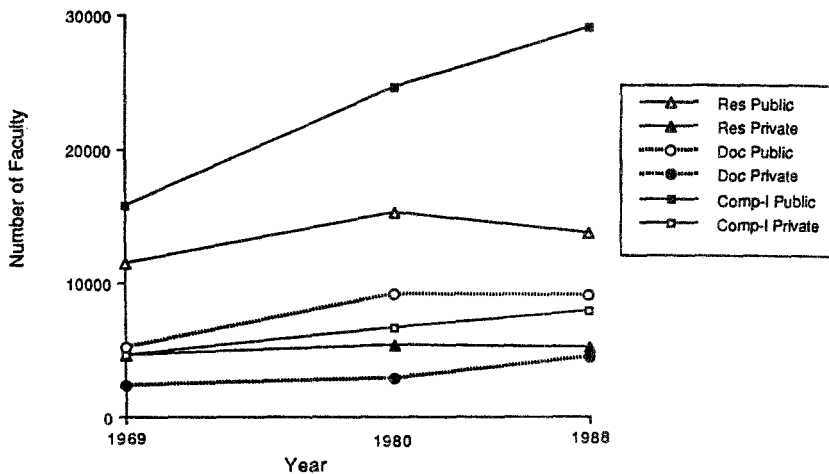


FIG. 1. Changes in faculty by Carnegie type and control.

study replicated the 1969 sampling framework (HERI, n.d.), it too had a lower proportional representation of Comp-I faculty.

By contrast, the 1975 Carnegie and 1988 University of Michigan samples more accurately reflected the faculty population estimates. As a result, the weights were less extreme (see Tables 4 and 6). For example, all the 1975 and 1988 weights were less than 2, with the exception of public Res-II mathematicians in 1988, which had a weight of 3.55. The more accurate representation of the 1975 survey makes sense since Trow, who also worked on the 1969 Carnegie survey, expanded the 1975 sampling framework to include faculty that had been undersampled in 1969 and 1972. Trow added faculty at less selective four-year colleges and historically black institutions (Roizen, Fulton, and Trow, 1978). Meanwhile, the 1988 weights were less extreme because the University of Michigan study sampled faculty in proportion to their numbers in Carnegie types (Blackburn and Lawrence, 1989).

## CONCLUSION

Our ability to understand the faculty work environment has been greatly enhanced by the availability of largescale national surveys of the professoriate. Since the mid-1950s, organizations have sponsored at least 17 national surveys that examine a variety of faculty behaviors and attitudes. Moreover, interest in faculty appears to be waxing as the number of surveys has increased in recent years (4 since 1987).

Although many surveys have intentionally replicated questions from earlier surveys, the wide fluctuation of weights presented in this paper illustrates the

TABLE 3. 1969 Carnegie Weights

Carnegie		Estimated		1969 Carnegie			Weighted	
Type	Discipline	1969 Faculty		Subsample		Weight	1969 Subsample	
		N	%	N	%		N	%
Res-I Public	bio	600	1.4%	31	1.0%	1.39	43	1.4%
	chem	990	2.2%	119	3.8%	0.60	71	2.2%
	Eng	1560	3.5%	194	6.1%	0.58	112	3.5%
	hist	810	1.8%	127	4.0%	0.46	58	1.8%
	math	1470	3.3%	201	6.3%	0.52	105	3.3%
	polsci	600	1.4%	83	2.6%	0.52	43	1.4%
	soc	450	1.0%	78	2.5%	0.41	32	1.0%
	psych	1050	2.4%	166	5.2%	0.45	75	2.4%
Res-I Private	bio	374	0.8%	45	1.4%	0.59	27	0.8%
	chem	506	1.1%	62	2.0%	0.58	36	1.1%
	Eng	550	1.2%	54	1.7%	0.73	39	1.2%
	hist	462	1.0%	67	2.1%	0.49	33	1.0%
	math	550	1.2%	75	2.4%	0.52	39	1.2%
	polsci	308	0.7%	43	1.4%	0.51	22	0.7%
	soc	220	0.5%	37	1.2%	0.43	16	0.5%
	psych	308	0.7%	50	1.6%	0.44	22	0.7%
Res-II Public	bio	405	0.9%	12	0.4%	2.42	29	0.9%
	chem	594	1.3%	70	2.2%	0.61	43	1.3%
	Eng	810	1.8%	84	2.7%	0.69	58	1.8%
	hist	459	1.0%	43	1.4%	0.76	33	1.0%
	math	621	1.4%	77	2.4%	0.58	44	1.4%
	polsci	351	0.8%	39	1.2%	0.64	25	0.8%
	soc	270	0.6%	25	0.8%	0.77	19	0.6%
	psych	378	0.9%	40	1.3%	0.68	27	0.9%
Res-II Private	bio	208	0.5%	12	0.4%	1.24	15	0.5%
	chem	195	0.4%	11	0.3%	1.27	14	0.4%
	Eng	273	0.6%	16	0.5%	1.22	20	0.6%
	hist	169	0.4%	12	0.4%	1.01	12	0.4%
	math	195	0.4%	11	0.3%	1.27	14	0.4%
	polsci	117	0.3%	9	0.3%	0.93	8	0.3%
	soc	104	0.2%	8	0.3%	0.93	7	0.2%
	psych	169	0.4%	10	0.3%	1.21	12	0.4%
Doc-I &	bio	663	1.5%	54	1.7%	0.88	47	1.5%
	chem	612	1.4%	93	2.9%	0.47	44	1.4%
Doc-II Public	Eng	1224	2.8%	103	3.3%	0.85	88	2.8%
	hist	714	1.6%	76	2.4%	0.67	51	1.6%
	math	765	1.7%	82	2.6%	0.67	55	1.7%
	polsci	408	0.9%	55	1.7%	0.53	29	0.9%
	soc	306	0.7%	45	1.4%	0.49	22	0.7%
	psych	612	1.4%	74	2.3%	0.59	44	1.4%

(Continued)



TABLE 3. (Continued)

Carnegie Type	Discipline	Estimated 1969 Faculty		1969 Carnegie Subsample		Weight	Weighted 1969 Subsample	
		N	%	N	%		N	%
Doc-I &	bio	270	0.6%	31	1.0%	0.62	19	0.6%
	chem	300	0.7%	28	0.9%	0.77	21	0.7%
Doc-II Private	Eng	450	1.0%	36	1.1%	0.89	32	1.0%
	hist	360	0.8%	28	0.9%	0.92	26	0.8%
	math	330	0.7%	38	1.2%	0.62	24	0.7%
	polsci	210	0.5%	22	0.7%	0.68	15	0.5%
	soc	150	0.3%	14	0.4%	0.77	11	0.3%
	psych	300	0.7%	38	1.2%	0.56	21	0.7%
Comp-I Public	bio	2230	5.0%	48	1.5%	3.32	160	5.0%
	chem	1561	3.5%	46	1.5%	2.43	112	3.5%
	Eng	3568	8.1%	62	2.0%	4.12	255	8.1%
	hist	2007	4.5%	42	1.3%	3.42	144	4.5%
	math	2230	5.0%	35	1.1%	4.56	160	5.0%
	polsci	1338	3.0%	22	0.7%	4.35	96	3.0%
	soc	1115	2.5%	20	0.6%	3.99	80	2.5%
Comp-I Private	psych	1784	4.0%	40	1.3%	3.19	128	4.0%
	bio	588	1.3%	11	0.3%	3.83	42	1.3%
	chem	588	1.3%	16	0.5%	2.63	42	1.3%
	Eng	1078	2.4%	27	0.9%	2.86	77	2.4%
	hist	686	1.6%	19	0.6%	2.58	49	1.6%
	math	588	1.3%	18	0.6%	2.34	42	1.3%
	polsci	294	0.7%	10	0.3%	2.10	21	0.7%
	soc	294	0.7%	5	0.2%	4.21	21	0.7%
psych	490	1.1%	17	0.5%	2.06	35	1.1%	
Grand Total		44239	100%	3166	100%		3166	100%

Sources: Estimated faculty based on 1966-67 data reported in the *American Universities and Colleges* directory (1968).

extent to which unweighted samples can distort data comparisons over time. To adjust for such distortions resulting from differences in sampling populations, response rates, and poststratification weighting methods, we created weights to reflect systematically changes in the number of the faculty by discipline, Carnegie institution type, and institutional control. The weights were based on data drawn from the consistent outside data source corresponding in time with four of the national surveys.

Comparability of data over time may be especially susceptible to fluctuations in the composition of faculty by disciplinary or institutional type since studies have found that faculty behaviors differ significantly by disciplines (Biglan,

TABLE 4. 1975 Carnegie Weights

Carnegie Type	Discipline	Estimated 1975 Faculty		1975 Carnegie Subsample		Weight	Weighted 1975 Subsample	
		N	%	N	%		N	%
Res-I Public	bio	679	1.2%	27	0.8%	1.53	41	1.2%
	chem	924	1.6%	72	2.0%	0.78	56	1.6%
	Eng	1392	2.4%	105	3.0%	0.80	85	2.4%
	hist	882	1.5%	80	2.3%	0.67	54	1.5%
	math	1355	2.3%	101	2.9%	0.81	82	2.3%
	polsci	630	1.1%	57	1.6%	0.67	38	1.1%
	soc	567	1.0%	38	1.1%	0.91	34	1.0%
	psych	1032	1.8%	74	2.1%	0.85	63	1.8%
Res-I Private	bio	437	0.8%	38	1.1%	0.70	27	0.8%
	chem	481	0.8%	59	1.7%	0.49	29	0.8%
	Eng	625	1.1%	63	1.8%	0.60	38	1.1%
	hist	512	0.9%	58	1.6%	0.54	31	0.9%
	math	588	1.0%	80	2.3%	0.45	36	1.0%
	polsci	358	0.6%	55	1.6%	0.40	22	0.6%
	soc	270	0.5%	41	1.2%	0.40	16	0.5%
	psych	408	0.7%	46	1.3%	0.54	25	0.7%
Res-II Public	bio	702	1.2%	23	0.7%	1.85	43	1.2%
	chem	801	1.4%	36	1.0%	1.35	49	1.4%
	Eng	1310	2.3%	71	2.0%	1.12	79	2.3%
	hist	787	1.4%	46	1.3%	1.04	48	1.4%
	math	1041	1.8%	52	1.5%	1.22	63	1.8%
	polsci	561	1.0%	32	0.9%	1.06	34	1.0%
	soc	518	0.9%	34	1.0%	0.92	31	0.9%
	psych	782	1.3%	28	0.8%	1.69	47	1.3%
Res-II Private	bio	192	0.3%	35	1.0%	0.33	12	0.3%
	chem	194	0.3%	45	1.3%	0.26	12	0.3%
	Eng	254	0.4%	41	1.2%	0.38	15	0.4%
	hist	198	0.3%	39	1.1%	0.31	12	0.3%
	math	218	0.4%	46	1.3%	0.29	13	0.4%
	polsci	150	0.3%	30	0.9%	0.30	9	0.3%
	soc	112	0.2%	17	0.5%	0.40	7	0.2%
	psych	214	0.4%	27	0.8%	0.48	13	0.4%
Doc-I & Doc-II Public	bio	1001	1.7%	40	1.1%	1.52	61	1.7%
	chem	814	1.4%	62	1.8%	0.80	49	1.4%
	Eng	1628	2.8%	99	2.8%	1.00	99	2.8%
	hist	928	1.6%	58	1.6%	0.97	56	1.6%
	math	1180	2.0%	63	1.8%	1.14	72	2.0%
	polsci	683	1.2%	49	1.4%	0.85	41	1.2%
	soc	602	1.0%	32	0.9%	1.14	37	1.0%
	psych	1041	1.8%	43	1.2%	1.47	63	1.8%

(Continued)

TABLE 4. (Continued)

Carnegie		Estimated		1975 Carnegie		Weight	Weighted	
Type	Discipline	1975 Faculty		Subsample			1975 Subsample	
		N	%	N	%		N	%
Doc-I &	bio	311	0.5%	18	0.5%	1.05	19	0.5%
	chem	340	0.6%	35	1.0%	0.59	21	0.6%
Doc-II	Eng	518	0.9%	45	1.3%	0.70	31	0.9%
Private	hist	331	0.6%	31	0.9%	0.65	20	0.6%
	math	402	0.7%	29	0.8%	0.84	24	0.7%
	polsci	269	0.5%	22	0.6%	0.74	16	0.5%
	soc	211	0.4%	18	0.5%	0.71	13	0.4%
	psych	340	0.6%	32	0.9%	0.64	21	0.6%
Comp-I Public	bio	3070	5.3%	112	3.2%	1.66	186	5.3%
	chem	2035	3.5%	102	2.9%	1.21	124	3.5%
	Eng	4713	8.1%	208	5.9%	1.38	286	8.1%
	hist	2677	4.6%	130	3.7%	1.25	163	4.6%
	math	3070	5.3%	136	3.9%	1.37	186	5.3%
	polsci	1643	2.8%	60	1.7%	1.66	100	2.8%
	soc	1678	2.9%	82	2.3%	1.24	102	2.9%
psych	2855	4.9%	109	3.1%	1.59	173	4.9%	
Comp-I Private	bio	861	1.5%	47	1.3%	1.11	52	1.5%
	chem	786	1.4%	38	1.1%	1.26	48	1.4%
	Eng	1441	2.5%	61	1.7%	1.43	87	2.5%
	hist	842	1.5%	41	1.2%	1.25	51	1.5%
	math	935	1.6%	49	1.4%	1.16	57	1.6%
	polsci	468	0.8%	25	0.7%	1.14	28	0.8%
	soc	468	0.8%	21	0.6%	1.35	28	0.8%
psych	730	1.3%	30	0.9%	1.48	44	1.3%	
Grand								
	Total	58042	100%	3523	100%		3523	100%

Sources: Estimated faculty based on interpolation of 1966-67 and 1982-83 data reported in *American Universities and Colleges* directory (1968, 1983).

1973; Wanner, Lewis, and Gregorio, 1981) and institutional type (Long, 1978; Long and McGinnis, 1981). To adjust for such changes, the weights targeted a specific population of faculty representing eight liberal arts disciplines at larger four-year institutions. Excluded were faculty from other disciplines, such as professional fields (e.g., business, engineering) and smaller institutions (e.g., Comp-II and liberal arts colleges).<sup>6</sup> However, researchers interested in expanding the weights to include other disciplines or types of four-year institutions could do so because the *American Universities and Colleges* directories include such data.

TABLE 5. 1980 UCLA Weights

Carnegie Type	Discipline	Estimated 1980 Faculty		1980 UCLA Subsample		Weight	Weighted 1980 Subsample	
		N	%	N	%		N	%
Res-I Public	bio	754	1.2%	14	0.9%	1.24	17	1.2%
	chem	899	1.4%	39	2.6%	0.53	21	1.4%
	Eng	1305	2.0%	31	2.1%	0.97	30	2.0%
	hist	957	1.5%	32	2.1%	0.69	22	1.5%
	math	1305	2.0%	46	3.1%	0.65	30	2.0%
	polsci	667	1.0%	22	1.5%	0.70	15	1.0%
	soc	667	1.0%	23	1.5%	0.67	15	1.0%
	psych	1044	1.6%	29	1.9%	0.83	24	1.6%
Res-I Private	bio	484	0.7%	20	1.3%	0.56	11	0.7%
	chem	462	0.7%	15	1.0%	0.71	11	0.7%
	Eng	682	1.1%	22	1.5%	0.71	16	1.1%
	hist	550	0.8%	23	1.5%	0.55	13	0.8%
	math	616	0.9%	27	1.8%	0.52	14	0.9%
	polsci	396	0.6%	25	1.7%	0.36	9	0.6%
	soc	308	0.5%	22	1.5%	0.32	7	0.5%
	psych	484	0.7%	19	1.3%	0.59	11	0.7%
Res-II Public	bio	858	1.3%	10	0.7%	1.97	20	1.3%
	chem	858	1.3%	24	1.6%	0.82	20	1.3%
	Eng	1551	2.4%	31	2.1%	1.15	36	2.4%
	hist	957	1.5%	25	1.7%	0.88	22	1.5%
	math	1254	1.9%	31	2.1%	0.93	29	1.9%
	polsci	660	1.0%	19	1.3%	0.80	15	1.0%
	soc	660	1.0%	22	1.5%	0.69	15	1.0%
	psych	1023	1.6%	35	2.3%	0.67	24	1.6%
Res-II Private	bio	168	0.3%	6	0.4%	0.64	4	0.3%
	chem	182	0.3%	12	0.8%	0.35	4	0.3%
	Eng	224	0.3%	10	0.7%	0.52	5	0.3%
	hist	210	0.3%	9	0.6%	0.54	5	0.3%
	math	224	0.3%	9	0.6%	0.57	5	0.3%
	polsci	168	0.3%	4	0.3%	0.97	4	0.3%
	soc	112	0.2%	6	0.4%	0.43	3	0.2%
	psych	238	0.4%	11	0.7%	0.50	5	0.4%
Doc-I &	bio	1197	1.8%	54	3.6%	0.51	28	1.8%
	chem	912	1.4%	55	3.7%	0.38	21	1.4%
Doc-II Public	Eng	1824	2.8%	55	3.7%	0.76	42	2.8%
	hist	1026	1.6%	39	2.6%	0.61	24	1.6%
	math	1425	2.2%	57	3.8%	0.58	33	2.2%
	polsci	855	1.3%	33	2.2%	0.60	20	1.3%
	soc	798	1.2%	36	2.4%	0.51	18	1.2%
	psych	1311	2.0%	47	3.1%	0.64	30	2.0%

(Continued)

TABLE 5. (Continued)

Carnegie Type	Discipline	Estimated 1969 Faculty		1980 UCLA Subsample		Weight	Weighted 1980 Subsample	
		N	%	N	%		N	%
Doc-I &	bio	348	0.5%	14	0.9%	0.57	8	0.5%
	chem	377	0.6%	14	0.9%	0.62	9	0.6%
Doc-II	Eng	580	0.9%	14	0.9%	0.95	13	0.9%
Private	hist	319	0.5%	16	1.1%	0.46	7	0.5%
	math	464	0.7%	18	1.2%	0.59	11	0.7%
	polsci	319	0.5%	3	0.2%	2.45	7	0.5%
	soc	261	0.4%	7	0.5%	0.86	6	0.4%
	psych	377	0.6%	9	0.6%	0.96	9	0.6%
Comp-I Public	bio	3500	5.4%	28	1.9%	2.88	81	5.4%
	chem	2250	3.5%	17	1.1%	3.05	52	3.5%
	Eng	5250	8.1%	46	3.1%	2.63	121	8.1%
	hist	3000	4.6%	50	3.3%	1.38	69	4.6%
	math	3500	5.4%	38	2.5%	2.12	81	5.4%
	polsci	1750	2.7%	18	1.2%	2.24	40	2.7%
	soc	2000	3.1%	24	1.6%	1.92	46	3.1%
psych	3500	5.4%	44	2.9%	1.83	81	5.4%	
Comp-I Private	bio	917	1.4%	6	0.4%	3.52	21	1.4%
	chem	786	1.2%	11	0.7%	1.64	18	1.2%
	Eng	1441	2.2%	20	1.3%	1.66	33	2.2%
	hist	786	1.2%	6	0.4%	3.01	18	1.2%
	math	1048	1.6%	16	1.1%	1.51	24	1.6%
	polsci	524	0.8%	10	0.7%	1.21	12	0.8%
	soc	524	0.8%	8	0.5%	1.51	12	0.8%
psych	786	1.2%	7	0.5%	2.58	18	1.2%	
Grand Total		64882	100%	1493	100%		1493	100%

Sources: Estimated faculty based on 1981-82 data reported in the *American Universities and Colleges* directory (1983).

TABLE 6. 1988 University of Michigan Weight

Carnegie Type	Discipline	Estimated 1988 Faculty		1988 Michigan Subsample		Weight	Weighted 1988 Subsample	
		N	%	N	%		N	%
Res-I Public	bio	638	0.9%	56	2.3%	0.38	21	0.9%
	chem	870	1.2%	48	2.0%	0.61	29	1.2%
	Eng	1566	2.2%	64	2.7%	0.82	53	2.2%
	hist	928	1.3%	59	2.5%	0.53	31	1.3%
	math	1218	1.7%	46	1.9%	0.89	41	1.7%
	polsci	725	1.0%	49	2.1%	0.50	24	1.0%
	soc	580	0.8%	53	2.2%	0.37	20	9.8%
	psych	957	1.4%	63	2.6%	0.51	32	1.4%
Res-I Private	bio	572	0.8%	25	1.0%	0.77	19	0.8%
	chem	484	0.7%	24	1.0%	0.68	16	0.7%
	Eng	550	0.8%	21	0.9%	0.88	19	0.8%
	hist	528	0.7%	17	0.7%	1.05	18	0.7%
	math	572	0.8%	14	0.6%	1.38	19	0.8%
	polsci	418	0.6%	15	0.6%	0.94	14	0.6%
	soc	286	0.4%	9	0.4%	1.07	10	0.4%
	psych	506	0.7%	16	0.7%	1.06	17	0.7%
Res-II Public	bio	726	1.0%	23	1.0%	1.06	24	1.0%
	chem	792	1.1%	22	0.9%	1.21	27	1.1%
	Eng	1287	1.8%	32	1.3%	1.35	43	1.8%
	hist	726	1.0%	23	1.0%	1.06	24	1.0%
	math	1056	1.5%	10	0.4%	3.55	36	1.5%
	polsci	594	0.8%	20	0.8%	1.00	20	0.8%
	soc	528	0.7%	27	1.1%	0.66	18	0.7%
	psych	759	1.1%	32	1.3%	0.80	26	1.1%
Res-II Private	bio	168	0.2%	10	0.4%	0.57	6	0.2%
	chem	168	0.2%	8	0.3%	0.71	6	0.2%
	Eng	266	0.4%	10	0.4%	0.90	9	0.4%
	hist	210	0.3%	4	0.2%	1.77	7	0.3%
	math	210	0.3%	4	0.2%	1.77	7	0.3%
	polsci	140	0.2%	7	0.3%	0.67	5	0.2%
	soc	98	0.1%	5	0.2%	0.66	3	0.1%
	psych	210	0.3%	4	0.2%	1.77	7	0.3%
Doc-I & Doc-II Public	bio	1197	1.7%	45	1.9%	0.90	40	1.7%
	chem	945	1.3%	48	2.0%	0.66	32	1.3%
	Eng	1764	2.5%	76	3.2%	0.78	59	2.5%
	hist	1134	1.6%	54	2.3%	0.71	38	1.6%
	math	1512	2.1%	70	2.9%	0.73	51	2.1%
	polsci	756	1.1%	35	1.5%	0.73	25	1.1%
	soc	819	1.2%	32	1.3%	0.86	28	1.2%
	psych	1197	1.7%	60	2.5%	0.67	40	1.7%

(Continued)

TABLE 6. (Continued)

Carnegie Type	Discipline	Estimated 1988 Faculty		198 Michigan Subsample		Weight	Weighted 1988 Subsample	
		N	%	N	%		N	%
Doc-I &	bio	611	0.9%	21	0.9%	0.98	21	0.9%
	chem	517	0.7%	16	0.7%	1.09	17	0.7%
Doc-II	Eng	846	1.2%	39	1.6%	0.73	28	1.2%
Private	hist	517	0.7%	30	1.3%	0.58	17	0.7%
	math	799	1.1%	18	0.8%	1.49	27	1.1%
	polsci	470	0.7%	17	0.7%	0.93	16	0.7%
	soc	329	0.5%	18	0.8%	0.62	11	0.5%
	psych	611	0.9%	28	1.2%	0.73	21	0.9%
Comp-I Public	bio	4275	6.0%	112	4.7%	1.28	144	6.0%
	chem	2565	3.6%	80	3.4%	1.08	86	3.6%
	Eng	5985	8.5%	139	5.8%	1.45	201	8.5%
	hist	3420	4.8%	82	3.4%	1.40	115	4.8%
	math	4845	6.8%	102	4.3%	1.60	163	6.8%
	polsci	2280	3.2%	59	2.5%	1.30	77	3.2%
	soc	2280	3.2%	59	2.5%	1.30	77	3.2%
Comp-I Private	psych	3705	5.2%	106	4.4%	1.18	125	5.2%
	bio	852	1.2%	22	0.9%	1.30	29	1.2%
	chem	710	1.0%	21	0.9%	1.14	24	1.0%
	Eng	1704	2.4%	56	2.3%	1.02	57	2.4%
	hist	994	1.4%	22	0.9%	1.52	33	1.4%
	math	1420	2.0%	37	1.6%	1.29	48	2.0%
	polsci	710	1.0%	21	0.9%	1.14	24	1.0%
	soc	710	1.0%	15	0.6%	1.59	24	1.0%
psych	994	1.4%	23	1.0%	1.45	33	1.4%	
Grand Total		70809	100%	2383	100%		2383	100%

Sources: Estimated faculty based on 1985-86 data reported in the *American Universities and Colleges* directory (1987).

## NOTES

1. That they do not agree is not surprising since there is not an accepted common definition for full-time faculty (e.g., 100%, greater than 50%, a dean or president with a faculty title but doing no faculty work, etc.).
2. The national surveys measure a variety of faculty attitudes regarding specific concerns, such as "red-baiting during the 1950s (Lazarsfeld and Theilens, 1958), faculty unionization (Ladd and Lipset, 1975, 1977), minority access (Astin, 1982), and the quality of teaching (Carnegie, 1989a).
3. Studies that have relied on data from two or more of the national surveys include Astin (1984); Bentley and Blackburn (in press); Blackburn, Lawrence, Bieber, and Yoon (1988); and Carnegie (1989a).

4. Bieber's sample included three (biology, English, psychology) of the eight disciplines. Also Bieber's base year was 1970–71 as compared to 1966–67 for this study.
5. Smaller public Comp-I institutions were less likely to be included in the random sample because these institutions were more likely to have incomplete faculty data and thereby be excluded.
6. Most of the national surveys identify faculty from 60 to 80 disciplines/fields. However, the categories change somewhat from survey to survey.

## REFERENCES

- Allison, Paul D., and Stewart, John A. (1974). Productivity differences among scientists: Evidence for accumulative advantage. *American Sociological Review* 39: 596–606.
- American Council on Education (1987). *Fact Book*. Washington, DC: American Council on Education.
- American Universities and Colleges* (1968). 10th edition. Washington, DC: American Council on Education.
- American Universities and Colleges* (1983). Washington, DC: American Council on Education.
- American Universities and Colleges* (1987). Washington, DC: American Council on Education.
- Astin, Alexander W. (1982). *Minorities in American Higher Education*. San Francisco, CA: Jossey-Bass.
- Astin, Helen S. (1978). Factors affecting women's scholarly productivity. In H. S. Astin and W. Z. Hirsch (eds.), *Essays in Honor of Rosemary Park* (pp. 133–157). New York: Praeger.
- Bayer, Alan E. (1970). *College and University Faculty: A Statistical Description* (vol. 5, no. 5). Washington, DC: American Council on Education.
- Bentley, Richard J., and Blackburn, Robert T. (in press). Changes in academic research performance over time: A study of institutional accumulative advantage. *Research in Higher Education*.
- Berelson, Bernard (1960). *Graduate Education in the United States*. New York: McGraw-Hill.
- Bieber, Jeffrey P. (1990). Faculty research productivity 1972–1988: Development of constant units of measurement. Doctoral dissertation, University of Michigan.
- Biglan, Anthony (1973). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology* 57(3): 195–203.
- Blackburn, Robert T., Boberg, Alice, O'Connell, Coleman, and Pellino, Glenn R. (1980). *Project for Faculty Development Program Evaluation*. Ann Arbor, MI: Center for the Study of Higher Education, University of Michigan.
- Blackburn, Robert T., and Lawrence, Janet H. (1989). *Faculty at Work: Final Report of the National Survey*. Ann Arbor, MI: National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan.
- Blackburn, Robert T., and Christopher, Mackie (1990). Faculty attitude and behavior reliabilities on the University of Michigan 1988 national faculty survey. Unpublished manuscript.
- Blackburn, Robert T., Lawrence, Janet H., Bieber, Jeffrey P., and Yoon, Kwang (1988). Changes in the faculty work environment 1968–1984. Paper presented at the annual meeting of the American Education Research Association, New Orleans, LA.



- Bowen, Howard R., and Schuster, Jack H. (1986). *American Professors: A National Resource Imperiled*. New York: Oxford Press.
- Carnegie Commission on Higher Education (1973). *A Classification of Institutions of Higher Education*.
- Carnegie Council on Policy Studies in Higher Education (1976). *A Classification of Institutions of Higher Education* (revised edition).
- Carnegie Foundation for the Advancement of Teaching (1984). *Technical Report: 1984 Carnegie Foundation National Surveys of Higher Education*. Princeton, NJ: Opinion Research Corporation.
- Carnegie Foundation for the Advancement of Teaching (1987, July 8). Carnegie foundation's classifications of more than 3,300 institutions of higher education. *Chronicle of Higher Education*, pp. 22–26, 28–30.
- Carnegie Foundation for the Advancement of Teaching (1989a). *A Technical Report: The Condition of the Professoriate*. Princeton, NJ: Princeton University Press.
- Carnegie Foundation for the Advancement of Teaching (1989b). *Survey Among College and University Faculty*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.
- Clark, Mary J., and Centra, John A. (1985). Influences on the career accomplishments of Ph.D.'s *Research in Higher Education* 23(3): 256–269.
- Drew, David E., and Tronvig, Jill A. (1988). *Assessing the Quality of National Data About Academic Scientists*. Claremont, CA.: Claremont Graduate School.
- Higher Education Research Institute (n.d.). Technical report to 1980 national survey (exact title unknown). Los Angeles, CA.: Higher Education Research Institute, University of California, Los Angeles.
- Ladd, Everett C., and Lipset, Seymour M. (1975). *Technical Report: 1975 Survey of the American Professoriate*. Storrs, CT: University of Connecticut.
- Ladd, Everett C., and Lipset, Seymour M. (1977). *Technical Report: 1977 Survey of the American Professoriate*. Storrs, CT: University of Connecticut.
- Lazarsfeld, Paul F., and Theilens, Wagner (1958). *The Academic Mind: Social Scientists in a Time of Crisis*. Glencoe, IL: Free Press.
- Long, John S. (December 1978). Productivity and academic position in the scientific career. *American Sociological Review* 43: 889–908.
- Long, John S., and McGinnis, Robert (August 1981). Organizational context and scientific productivity. *American Sociological Review* 46: 422–442.
- Morton, Herbert S., and Price, Anne J. (1986). The ACLS survey of scholars: Views on publications, computers, libraries. *Scholarly Communication* 5: 1–16. Washington, DC: American Council of Learned Societies.
- National Center for Educational Statistics (1989). *NCES-2000*. Washington, DC: Department of Education.
- Office of Educational Research and Improvement (1990). *Survey Report: 1988 National Survey of Postsecondary Faculty*. NCES 90–365 Washington, DC: U.S. Department of Education.
- Parsons, Talcott, and Platt, Gerald M. (1968). *The American Academic Profession: A Pilot Study*. Cambridge, MA: Harvard University Press.
- Roizen, Judith, Fulton, Oliver, and Trow, Martin A. (1978). *Technical Report: 1975 Carnegie Council National Surveys of Higher Education*. Berkeley, CA: Center for Studies in Higher Education, University of California, Berkeley.
- Shyrock, R. H. (1959). *The University of Pennsylvania Faculty: A Study of American Higher Education*. Philadelphia, PA: University of Pennsylvania Press.
- Trow, Martin A. (1975). Technical report on the 1969 Carnegie Commission survey of

- faculty and student opinion. In Martin A. Trow (ed.), *Teachers and Students*. Berkeley, CA: The Carnegie Foundation for the Advancement of Teaching.
- Wanner, Richard A., Lewis, Lionel S., and Gregorio, David I. (October 1981). Research productivity in academia: A comparative study of the sciences, social sciences, and humanities. *Sociology of Education* 54: 238–253.
- Wilson, Logan (1942). *The Academic Man*. New York: Oxford University Press.

Received August 21, 1990