STARTING SALARIES 1998

ACS Department of Career Services

CHEMISTS AND CHEMICAL ENGINEERING NEW GRADUATES

Summary: **The Class of 1998 Shines! – Relatively Speaking**

New Chemists: The Class of 1998 Shines! – Relatively Speaking

A report in C&EN[1] last year stated that the signs in evidence are that the job market is cooling for the 1999 chemistry graduates. Not so with the Class of 1998[2]! Last year's graduates did much toward improving the lot of new chemistry graduates. After nearly a decade of stagnant salaries and relatively poor employment pictures, a brighter job market shone on last year's chemistry graduates. The newly minted chemistry Ph.D.s led the way with both improved employment statuses and starting salaries.

The employment status of Ph.D.s who graduated between July 1997 and the end of June 1998 improved dramatically from their counterparts of the previous year. The proportion of new Ph.D.s who found full-time permanent employment rose significantly while the proportions of new Ph.D.s who were unemployed or in postdoc positions dropped sharply.

Employment Status of Chemists of the Classes of 1997/1998

As of the 2nd week of October

	BS 97/98	MS 97/98	PHD 97/98
Fulltime, perm	33.2/35.7	45.9/49.3	35.3/44.4
Fulltime, temp	11.5/9.9	8.3/6.6	5.0/3.5
Parttime, perm	0.9/0.6	0.5/0.9	0.3/0.5
Parttime, temp	3.1/2.6	3.5/1.3	1.6/1.3
Postdoc/grad	43.2/42.9	34.8/34.5	51.2/45.3
Not Employed			
Seeking	5.6/5.7	4.5/5.1	4.5/2.5
Not seeking	2.6/2.6	1.4/2.3	2.1/2.4
Unemployment*	5.7/5.8	4.6/5.2	4.7/2.6

* Not seeking dropped from calculation

Source: New Graduate Surveys

Starting Salaries: Inexperienced Chemists by degree and in $1000s

Class	BS	MS	PHD
1990	23.0	30.0	44.0
1991	23.0	32.0	46.0
1992	24.0	31.5	47.5
1993	24.0	34.0	50.4
1994	24.0	30.8	48.0
1995	25.0	36.0	50.0
1996	25.0	34.1	45.0
1997*	28.0	37.4	54.0
1998*	29.5	38.5	59.7

*As of the 2nd week of October

Source: New Graduate Surveys

New chemistry graduates at all levels showed marked improvement in their ability to find full-time and permanent employment. A bit of tarnish on the bright fall employment picture is that both the new BA/BS and MS grads showed some rise in their unemployment rates.

The starting salaries for new graduates soared. For the new Ph.D.s, the 10 percent increase in starting salaries reflected an increased demand for their skills in industry. Fully ¾ of the inexperienced Ph.D.s went to work full-time in the manufacturing sector. Their median starting salary rose to $60,500 and dominated the overall salary figures for the Ph.D.s. The only group of new Ph.D.s who did not improve their lot were those that entered the academic community sans postdoc, only maintaining an annual median of $35,000.

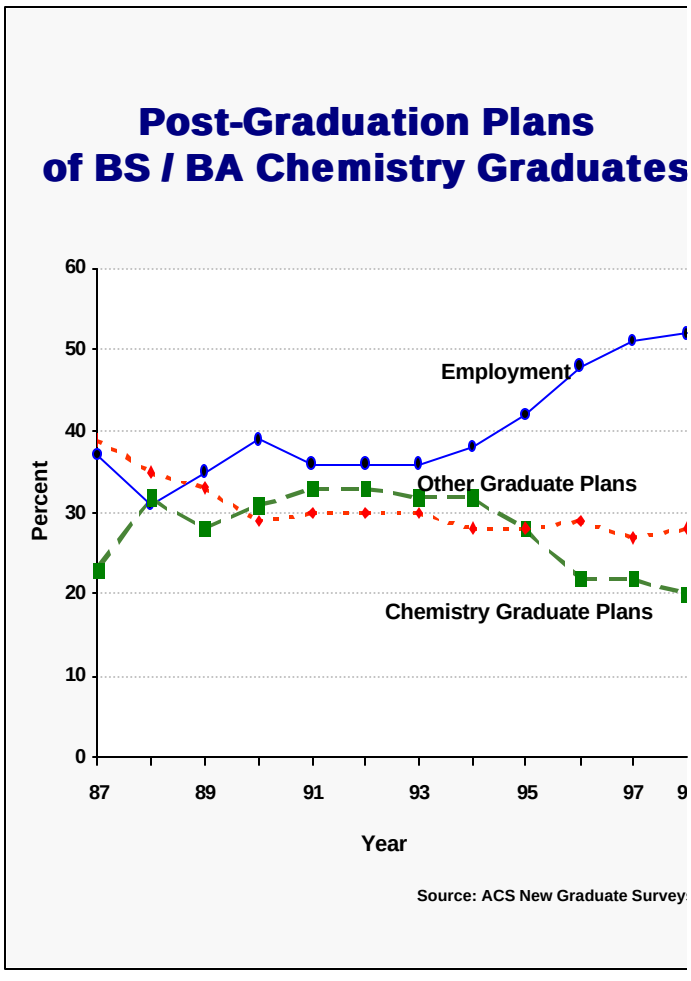
The new inexperienced masters' chemists improved median starting salaries started with a strong basic salary growth in business and industry. About ¾ of the MS chemists also went to work in business and industry where the starting salary rose from $38,400 in 1997 to $40,000 in 1998.

The rise in new bachelors' starting salaries reflects rises across all employment sectors. The 10 percent who became secondary school teachers showed marked improvement in their starting salaries, from $25,700 in 1997 to $27,300 in 1998. For the vast majority (65 percent) who went to work in business or industry, the median starting salaries rose from $30,000 in 1997 to $30,400. If the new inexperienced bachelor's job was in manufacturing, the median starting salary was $31,000.

Graduates that began work in business and industry showed starting salaries that were strongly influenced by the employer's size. Small employers with fewer than 50 employees tended to offer substantially lower median starting salaries than very large firms. For instance, the median salary for a BS chemist starting with an employer with fewer than 50 employees was $26,000, while for an employers with more than 25,000 employees the starting salary was $35,000. The differential for the other degrees was $35,000 to $43,500 for the MS and $58,250 to $65,000 for the Ph.D.

In general the size and type of industry in the region affect the regional starting salaries. Last year's inexperienced graduates fared best in the Middle Atlantic Region. There the median BS starting salary was $30,600; MS starting salary was $43, 500; and the Ph.D. starting salary was $62,500. The Middle Atlantic Region also hired the most new graduates.

BS/BA certification to ACS from ACS-approved programs continued to reward



those who complete the requirements for the programs. The impact of certification was reflected in a differential between starting salaries of $2,000.

Once again, about half of all new bachelors' graduates went directly into the job market with no immediate plans for graduate studies. The proportion of chemistry graduates who opted to go on with chemistry graduate studies continued declining.

[i1] Brennan, M. 1999, "Cooling demand for B.S.. chemistry grads?" *C&EN* , February 22. P.7.

[2] See articles: M. Heylin. 1999, " More Jobs, Better Pay for 1997-98 Chemistry Graduates, " *C&EN*, March 2. And D. Kiefer.1999, "The Class of '98 graduated into a relatively favorable job market," *Today's Chemist at Work*, April.

New Chemical Engineers: Still Making the Top Dollars

The significant increase in demand for chemical professionals over the past two years was reflected in the prospects for new chemical engineering graduates in the fall of 1998. While overall employment in chemical manufacturing was declining, new graduates with chemical engineering degrees continued prosper in both employment status and starting salaries.

Full-time, permanent employment continued to be high across all degrees. This is reflective of the demand for chemical engineers at all degree levels. Traditionally, chemical engineers have had higher fall unemployment than chemists and this trend continued also.

Fewer chemical engineering graduates continued on for more advanced training in 1998, except at the Ph.D. level. The slightly higher rate of Ph.D.s continuing on in postdocs likely reflects those who hope to gain academic positions.

Employment Status of Chemical Engineers of the Classes of 1997/1998

As of the 2nd week of October

	BS	MS	PHD
	97/98	97/98	97/98
Full-time, perm	70.8/71.6	61.2/61.6	70.7/69.7
Full-time, temp	5.3/4.1	4.4/1.4	3.2/2.3
Part-time, perm	0.3/0.3	0.5/0.0	0.5/0.0
Part-time, temp	1.9/1.7	0.5/1.4	0.0/0.8
Postdoc/grad	13.9/12.7	27.9/27.4	22.3/23.5
Not Employed			
Seeking	7.5/8.1	5.5/5.5	3.2/3.0
Not seeking	0.3/1.2	0.0/2.7	0.0/0.8
Unemployment*	7.5/8.1	5.5/5.6	3.2/3.0

* Not seeking dropped from calculation

Source: New Graduate Surveys
ACS Department of Career Services

Starting Salaries:
Inexperienced Chemical Engineers by degree and in $1000s

Class	BS	MS	PHD
1990	35.2	37.2	50.0
1991	37.5	40.2	52.0
1992	40.0	41.5	54.0
1993	40.5	42.2	52.7
1994	na	na	na
1995	40.0	44.2	59.2
1996	41.5	45.0	57.0
1997*	42.0	47.0	60.0
1998*	45.0	49.8	65.0

*As of the 2nd week of October

Source: New Graduate Surveys
ACS Department of Career Services

Salaries for new chemical engineers increased at a rate far above the inflation rate: the B.S. graduate median starting salary increased by more than 7 percent to $45,000; the M.S. increased by 6 percent to $49,800; and the Ph.D. increased by 8.0 percent to $65,000. Salary-wise, the chemical engineers have shown remarkable increases in starting salaries during the 1990s. This occurred even when employment in other areas of chemical manufacturing were experiencing upheavals of downsizings, mergers and restructuring.

The majority of new inexperienced chemical engineers were employed in business (87 percent) by large companies (77 percent at

companies with 500 or more employees) that are chemical and allied manufacturers.

STARTING SALARIES OF CHEMISTS & CHEMICAL ENGINEERS

1998

Analysis of the
American Chemical Society's
Survey of Graduates in
Chemistry and Chemical Engineering

American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036

Available from the ACS Office of Society Services

ACKNOWLEDGMENTS

Each year, at the direction of its Council Committee on Economic and Professional Affairs, the American Chemical Society (ACS) surveys recent chemistry and chemical engineering graduates to determine trends in starting salaries and employment status. This report presents detailed results of the 1998 new graduate study. Summaries of the survey findings were published in the March 2, 1999 issue of *Chemical & Engineering News* and the May, 1999 issue of *Today's Chemist at Work*.

Mary Jordan and Kemie Smith conducted this year's survey. Mary Jordan analyzed the data and wrote the summary on the following pages. Kemie Smith formatted and edited the tables. Special thanks go to the more than 5000 graduates who took the time to respond to this year's survey.

Jean A. Parr, Head
Department of Career Services

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SUMMARY OF FINDINGS

The employment outlook in 1998 showed a significant improvement in the lot of new chemistry graduates. After nearly a decade of stagnant salaries and relatively poor employment pictures, a brighter job market shone on last year's graduates. Full-time, permanent employment increased for all degrees, as did salaries. Newly minted Ph.D.s led the way, with both improved employment status and increases in starting salaries. Chemical engineers continued their bright salary picture with increases in median salaries, but their full-time employment status showed little improvement and a slight decline in full-time permanent employment for Ph.D.s.

SALARIES FOR THE CLASS OF 1998

Chemistry and chemical engineering graduates experienced meaningful increases in median starting salaries between 1997 and 1998. For the second year in a row, the news was particularly good for the chemistry graduates. Overall starting salaries for new chemical professionals across degrees outpaced inflation[1]. This news must be tempered with the fact that mean (average) starting salaries in chemistry did not show as high an increase as the median starting salaries, meaning that while there were more higher salaries, there was also a persistent cadre of relatively low salaries.[2]

Overall, 1998 new chemistry graduates saw great increases in overall starting salaries from 1997. The mean salary for inexperienced (those with less than 12 months experience) B.S. chemists was $29,500 this year, an increase of 3.2 percent over the $28,511 in 1997. The median starting salary was also increased from $28,000 in 1997 to $29,500 this year, an increase of 5.4 percent. The two-year increase in the median starting salaries for bachelor's chemists was a resounding 15 percent – from $25,000 to $29,500. The mean starting salary for M.S. chemists increased by the smallest amount of all degrees at 1.7 percent this year from $37,560 in 1997 to $38,183 in 1998. However, the M.S. median salary rose by 2.7 percent from $37,500 to 38,500 in 1998.

The news on starting salaries for inexperienced Ph.D. chemists was good for the second year in a row. The mean starting salaries for Ph.D. chemists rose by 8.1 percent to $55,224, up from $51,067 in 1997. The median salary for inexperienced Ph.Ds rose to $59,300, a substantial 9.2 percent increase over the $54,000 median in1997.

Chemical engineers continued to earn higher starting salaries than those of chemists and their increases generally outstripped chemists by a considerable amount Inexperienced chemical engineers at all degree levels showed significant increases between 1997 and 1998 in both their means and medians. The mean starting salary for B.S. chemical engineers was $43,388 in 1998 up 6.8 percent from $40,634 in 1997. The salary in current dollars outstripped an inflation adjustment by 5.3 percent during that period. The mean starting salary for inexperienced M.S. chemical engineers was $49,223, increasing by 8.9 percent from $45,246 in 1997, and the mean starting salary for Ph.D chemical engineers was $63,737, up by 8.8 percent from $58,593 in 1997.

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[1] The Consumer Price Index rose 1.5 percent from October 1997 to October 1998. It is used as an approximation for inflation.

[2] Generally means of salaries are higher than medians because of the influence of very high salaries. In instances where salaries are somewhat close to the median at the high end and the persistence of relatively low salaries, the mean can be lower than the median. This occurs more often with chemical engineering new graduates than with chemistry new graduates.

The median salaries for chemical engineers also rose at a rapid pace. The inexperienced bachelor's chemical engineers' median starting salary increased by 7 percent to $45,000 from $42,000 the prior year. Inexperienced masters increased by 6 percent ($47,000 to $49,000) and the doctorates increased by 8 percent ($60,000 to $65,000).

Table 1 shows average starting salaries paid to inexperienced chemistry graduates for 1997, and gives additional information concerning the change among salaries within each group. Table 2 presents corresponding information for chemical engineers.

Table 1. 1998 SALARIES FOR INEXPERIENCED CHEMISTRY GRADUATES

$29,422 (up from $28,511) for the B.S.,	up	3.2%,	or in constant dollars	up	1.7%
$38,183 (up from $37,560) for the M.S.,	up	1.7%,	or in constant dollars	up	0.2%
$55,224 (up from $51,067) for the Ph.D,	up	8.1%,	or in constant dollars	up	7.6%

Table 2. 1998 SALARIES FOR INEXPERIENCED CHEMICAL ENGINEERING GRADUATES

$43,388 (up from $40,634) for the B.S.,	up	6.8%,	or in constant dollars	up	5.3%
$49,223 (up from $45,246) for the M.S.,	up	8.9%,	or in constant dollars	up	7.4%
$63,737 (up from $58,593) for the Ph.D.,	up	8.8%,	or in constant dollars	up	7.3%

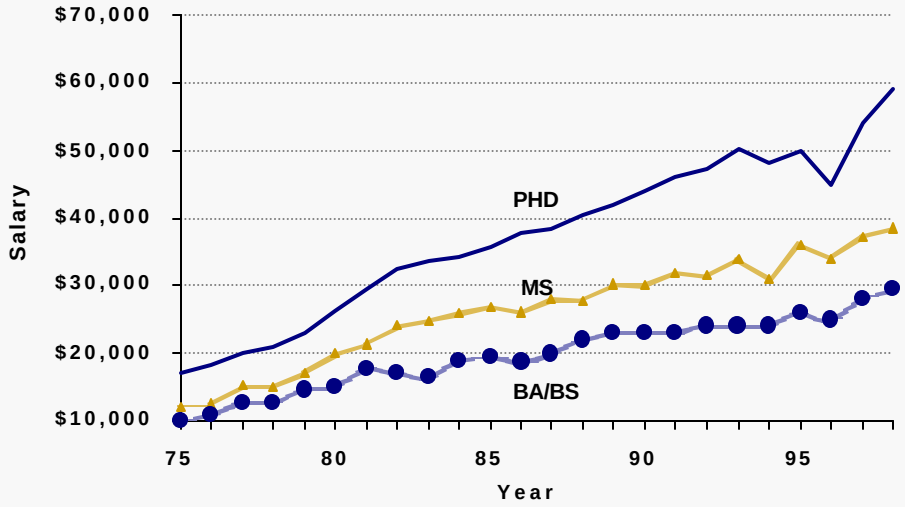
Mean salaries represent the average starting salary and are subject to distortion; usually due to some very high individual salaries. They are, however, used in statistical analysis. The median salary is used as the descriptive statistic. The median is the salary representing the midpoint of the salary range for new graduates, where half of the salaries are above the median salary and half of the salaries are below.

Overall median starting salaries for new graduates are a summary measure. Thus, any trends must be seen in the light of generalization of figures where factors affecting the responding population affect the overall median salaries. Some of these factors are; regional differences in pay structures, characteristics of the new graduates, the type of employer, the size of employer, the work function performed, and the type of industry that hires a large proportion of new graduates.

The rest of this report discusses salaries of inexperienced chemists and chemical engineers in terms of their medians. Inexperienced chemists or chemical engineers are those who have gone to work with less that twelve months prior technical experience – the starting professional. The trends in median starting salaries from 1975 to the present for inexperienced chemists and chemical engineers are shown in Figures 1 and 2 and Table 3.

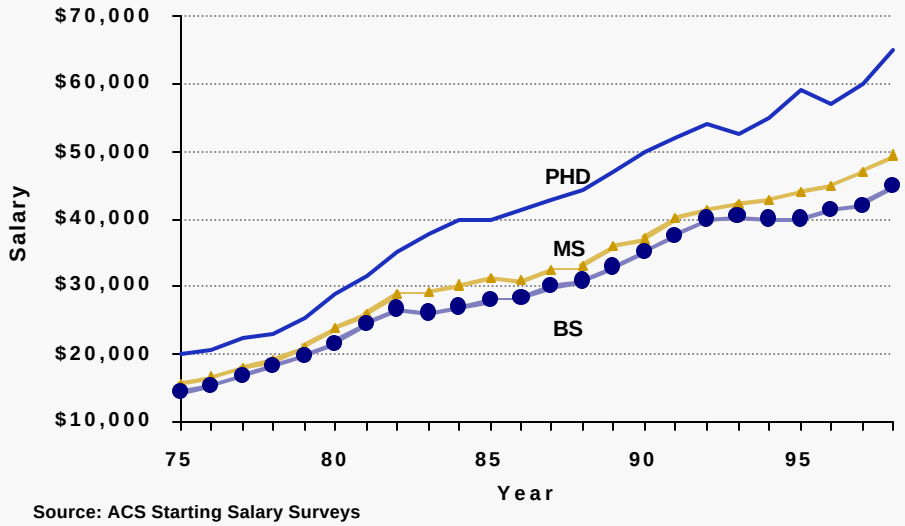
Figure 1 shows that after several stumbling years in the mid-1990s for all three degrees and a decade of stagnant or no growth for bachelor's chemists, all degrees have shown strong rebounds beginning in 1997. On the other hand, salaries for chemical engineers fluctuated some at the doctorate level in the mid-1990s, but overall, chemical engineers have posted consistent starting salary increases since 1975.

Median Starting Salaries of Inexperienced Chemists (in current dollars, 1975-98)



Source: ACS Starting Salary Surveys

Median Starting Salaries of Inexperienced Chemical Engineers (in current dollars, 1975-98)



Source: ACS Starting Salary Surveys
Note: 1994 figures extrapolated

Table 3
Median Starting Salaries for Inexperienced Graduates, 1975-1998
(by Degree and in 1000s of Current Dollars)

Year	Chemists			Chemical Engineers		
	B.S.	M.S.	PH.D	B.S.	M.S.	PH.D
1975	10.0	12.0	17.0	14.4	15.6	20.0
76	10.8	12.4	18.3	15.4	16.6	20.7
77	12.6	15.2	20.0	16.8	18.0	22.5
78	12.7	15.0	21.0	18.2	19.2	23.1
79	14.5	17.0	23.0	19.8	21.0	25.4
1980	15.0	20.0	26.4	21.6	23.9	28.8
81	17.7	21.3	29.5	24.5	26.0	31.5
82	17.0	24.1	32.4	26.7	29.0	35.0
83	16.5	24.9	33.6	26.1	29.3	38.0
84	18.8	26.0	34.2	27.0	30.3	40.0
1985	19.5	27.0	35.9	28.0	31.4	40.0
86	18.6	26.1	38.0	28.4	31.0	41.5
87	20.0	28.0	38.4	30.0	32.5	43.0
88	21.9	27.7	40.5	31.0	33.0	44.4
89	23.0	30.3	42.0	33.0	36.0	47.0
1990	23.0	30.0	44.0	35.2	37.2	50.0
91	23.0	32.0	46.0	37.5	40.2	52.0
92	24.0	31.5	47.5	40.0	41.5	54.0
93	24.0	34.0	50.4	40.5	42.2	52.7
94	24.0	30.8	48.0	na	na	na
1995	25.0	36.0	50.0	40.0	44.2	59.2
96	25.0	34.1	45.0	41.5	45.0	57.0
97	28.0	37.5	54.0	42.0	47.0	60.0
98	29.5	38.5	59.3	45.0	49.8	65.0

Overall, chemists with bachelor's degrees show the least increase in starting salaries since 1975. Even the vast improvement in starting salaries shown the past two years year, do not keep pace with the increases shown for M.S. and Ph.D. chemists. From 1989 until 1997 the new bachelor's chemists were losing ground against inflation. Conversely, chemical engineers with bachelor's degrees generally showed larger annual increases and relatively constant increases in starting salaries.

Chemists and chemical engineers with doctorates displayed a similar pattern of increasing starting salaries: they continued to show greater proportional increases than chemists and chemical engineers with other degrees. Chemical engineers started higher in 1975 and have continually increased at greater rates than chemists.

Tables 4 and 5 show the range of starting salaries for inexperienced new graduates in chemistry and chemical engineering. By comparing these tables, an interesting phenomenon becomes apparent -– while chemical engineers consistently have higher median and mean starting salaries, chemists' starting salaries show a wider range around the central measures. This is reflected by the larger standard deviations for chemists. This phenomenon also holds true for experienced chemists: chemists tend to have salaries that are more diverse, higher and lower, than chemical engineers throughout their careers.

Table 4. RANGES OF STARTING SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED:

CHEMISTRY GRADUATES
by Degree: 1997 and 1998

DEGREE LEVEL Salaries	Bachelor's		Master's		Doctorate	
	1997	1998	1997	1998	1997	1998
90th Percentile	$38,000	38,500	46,000	48,800	66,000	69,700
75th Percentile	32,525	34,000	42,900	45,000	60,000	64,500
50th Percentile	28,000	29,500	37,500	38,500	54,000	59,280
25th Percentile	23,700	24,500	33,000	32,000	38,500	45,500
10th Percentile	20,000	20,800	27,100	26,800	33,000	35,000
Mean	28,511	29,422	37,560	38,183	51,067	55,224
Count	868	832	97	111	185	205
Standard Deviation	7,142	7,409	8,259	8,290	13,297	12,722

Table 5. RANGES OF STARTING SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED:

CHEMICAL ENGINEERING GRADUATES
by Degree: 1997 and 1998

DEGREE LEVEL Salaries	Bachelor's		Master's		Doctorate	
	1997	1998	1997	1998	1997	1998
90th Percentile	46,500	49,416	55,000	62,200	65,500	71,940
75th Percentile	45,000	47,500	49,500	53,063	63,000	69,300
50th Percentile	42,000	45,000	47,000	49,750	60,000	65,000
25th Percentile	37,500	40,000	40,000	43,500	55,970	60,300
10th Percentile	31,000	35,000	36,000	38,950	50,000	55,000
Mean	40,634	43,388	45,246	49,223	58,593	63,737
Count	743	416	49	26	81	52
Standard Deviation	6,711	6,164	7,672	8,044	8,486	8,170

SALARY FACTORS

As stated previously, salaries vary by the type and *characteristics of the employer* as well as the characteristics of the graduates. For instance, median starting salaries are typically higher in private industry and lower in educational institutions. The median salary for new chemistry Ph.D.'s was $60,000 for those employed full-time in industry, i.e., the private sector, and $35,000 for those employed in colleges or universities. For inexperienced B.A./B.S. and M.S. chemists with new jobs in industry, the median salaries were $30,365 and $40,000, respectively. New bachelor's chemists who became secondary school teachers had a median starting salary of $27,100. Nearly two-thirds and three-quarters of new bachelor's and master's chemists, respectively, who went to work found jobs in industry.

More than 85 percent of chemical engineers are employed in private industry. Thus, their overall figures are closely aligned with the industrial salaries. In 1998, the new inexperienced chemical engineering doctorate received a starting salary of $65,000 in industry, while the B.S. and M.S. industrial chemical engineers had medians of $45,000 and $51,000, respectively.

In industry, larger employers generally pay more than smaller ones. In fact, one of the strongest predictors of starting salaries in industry is the *size of the company*. Bachelor's chemists employed in larger firms (25,000 or more employees) started at about $9,000 more than those employed in small firms (less than 50 employees). New bachelor's chemists were as apt to be employed in firms with fewer than 500 employees as in larger firms. Less than 20 percent of new bachelor's chemists were employed in firms with 25,000 or more employees while almost half are employed in firms with less than 500 employees. New M.S. chemists in industry were apt to work at all size firms, but the employer-size factor affects them also, with M.S. chemists starting at $35,000 at small firms and $45,000 at large firms. Ph.D.s tended to work at larger firms where their starting salaries were $65,000, while the median for smaller companies ranged around the mid-50s.

For chemical engineers, the higher the degree, the more apt they were to work in larger firms. Very few chemical engineers with master's and doctorates found employment with firms with fewer than 500 employees. Bachelor's chemical engineers were newly employed in firms of all sizes, but the majority were working in larger firms. As with chemists the pay differed according to the size of the company. The bachelor's chemical engineers' salaries differed by about $8,000 between smaller firms and larger firms (less than 50 employees and more than 25,000 employees).

Regional differences in pay tend to be tied to the type and size of employers in the region. Salaries for new bachelor's chemistry graduates were highest in the Pacific, Middle Atlantic, and New England regions ($30,000 to $30,600), and lowest in the Mountain and East South Central regions ($25,000). Salaries for new B.S. chemical engineers were highest for those employed in the East and West North Central regions ($46,200 and $47,000) and lowest in the New England region ($38,000). Proportionally, bachelor's chemical engineers were employed nation-wide, with a slight edge to the eastern regions. Both for those with new master's and doctorates in chemistry, the employment distribution and higher starting salaries were generally found in the eastern regions of the U.S.(See page 16 for a list of the states included in each geographic region.) On the other hand, both rates of employment and starting salaries continued to rise in the Pacific region.

Generally speaking, bachelor's chemists receive higher starting salaries if they received departmental *certification from an ACS-approved program*. This year, the overall increase in pay for those who had completed certification fell to about $1,600, from $3,000 last year. The overall median starting salary for inexperienced bachelor's chemists who were not certified was $28,350; for those who did certify, it remained $30,000 for the second year in a row. Graduates who had participated in internships also received higher starting salaries, even more so if they received

certification. Most graduates who participated in co-op programs also showed higher salaries if they received certification. For those B.S. graduates who also studied abroad as part of their program, the starting salaries showed a small increase. However, students who received higher starting salaries tended to have more than one extracurricular experience in their background. This occurrence tends to support the idea that these experiences are indicators for other measures such as self-starting, faculty-student interactions, etc. Except for those very top “A” and “A-“ students, grades do not appear to make much difference in the median starting salary of a bachelor's chemist. The correlation between grades and starting salaries is much stronger among those with a bachelor’s in chemical engineering.

For bachelor chemical engineers, salaries correlate closely with the grades they receive. The higher a B.S. chemical engineer’s grade point average, both in the major and overall, the higher the starting salary. For example, a chemical engineer with a ‘C’ average in his or her major started at a $40,000 salary and with an ‘A’ average, it was $47,000.

Bachelor's and master's graduates in chemistry and who were on graduate assistantships or fellowships typically received about $15,500. Stipends for academic postdoctoral fellowships rose to about $25,000. On the other hand, chemistry postdoctoral fellows earned a median salary of $40,000 in industry and $39,000 in government.

Chemical engineering graduates received a median stipend of $16,400 at the bachelor’s and master’s level and $28,500 at the academic postdoctoral level. Chemical engineering postdoctoral fellows in industry and government started at $40,500 and $45,000 respectively.

EMPLOYMENT OF BACHELOR'S CHEMISTS AS TECHNICIANS

The starting job title for a chemist makes a difference. About 30 percent of the bachelor's chemistry graduates who were employed full-time in industry responded that they were employed as technicians. Those employed as technicians earned significantly lower salaries than those employed in other positions. The median salary of bachelor's chemistry graduates employed in industry as technicians was $28,000 whereas the median salary of those employed as scientists or in management was $32,000. For the chemical engineering graduate with a bachelor’s degree, the difference was far less significant between those employed as technicians and those employed as engineers, with technicians starting at $45,000 and engineers starting at $45,900.

POSTGRADUATION EMPLOYMENT STATUS

Overall employment status improved greatly for the Class of 1998. Across the board, new graduates were far more apt to find themselves in full-time, permanent employment than most any time during the past decade. In addition, after a very high postdoc rate for doctoral chemists in 1997 (51.1 percent), only 45 percent of 1998 doctoral grads accepted postdoc positions. The proportion of new chemistry graduates heading for grad school fell in 1998. Temporary placements were also lower for all chemistry degrees, as were part-time statuses.

Table 6
POSTGRADUATION STATUS OF CHEMISTRY AND EMPLOYMENT STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES: October 12, 1998

Major and Employment Status	Bachelor's	Master's	Doctorate
CHEMISTRY			
Full-time employed:			
Permanent	35.7%	49.3%	44.4%
Temporary	9.9%	6.6%	3.5%
Part-time employed			
Permanent	0.6%	0.9%	0.5%
Temporary	2.6%	1.3%	1.3%
Graduate student, postdoc	42.9%	34.5%	45.3%
Unemployed and seeking employment	5.7%	5.1%	2.5%
Unemployed and not seeking employment	2.6%	2.3%	2.4%
Total*	100.0	100.0	100.0
Unemployment as of 10/12	*5.87%*	*5.2%*	*2.6%*
Number of responses	3511	531	790
CHEMICAL ENGINEERING			
Full-time employed:			
Permanent	71.4%	61.6%	69.7%
Temporary	4.1%	1.4%	2.3%
Part-time employed			
Permanent	0.3%	0.0%	0.0%
Temporary	1.7%	1.4%	0.8%
Graduate student, postdoc	13.0%	27.4%	23.5%
Unemployed and seeking employment	8.0%	5.5%	3.0%
Unemployed and not seeking employment	1.4%	2.7%	0.8%
Total*	100.0	100.0	100.0
Unemployment as of 10/12	*8.0%*	*5.6%*	*3.0%*
Number of responses	870	73	132

***Any deviation from 100 is due to rounding.

POSTDOCTORAL FELLOWSHIPS

The proportion of new Ph.D.s who accept postdoctoral fellowships can sometimes be used as a rough indicator of demand. Because some of the new doctoral graduates who accept postdoctoral fellowships would have preferred full-time employment had it been available, an increase in the proportion accepting postdoctoral fellowships can indicate insufficient full-time employment. On the other hand, a decrease can indicate an improved market. This year, the proportion of Ph.D. chemists accepting postdoctoral fellowships decreased precipitously to more than 45 percent

(Table 6). This decrease may indicate that the booming market may still be loosening for new Ph.D.s in chemistry. The relatively strong numbers of chemists who seek postdoc positions likely speaks to the growing interest in industry, especially the pharmaceutical area and biochemistry, for chemists with postdoctoral experience

Some professional chemistry positions require postdoctoral experience, such as academic tenure-track teaching and research positions in graduate degree-granting departments and, less often, industrial research. However, not all postdocs are there for the experience needed to gain them . Almost half (47 percent) of the chemistry Ph.D. grads who were in postdoc positions in October of 1998 said they were only there because they could not find permanent positions.

Very few chemical engineering students go on to graduate school and even fewer take postdoc positions.

PLANS FOR ADVANCED STUDY

Traditionally, between 60 percent and 65 percent of bachelor's chemistry graduates planned some graduate study in the fall. That dynamic began to change in the mid-1990s when the new chemistry graduates began going into the job market in greater proportion and greater number with no immediate plans for further study.

A summary of the plans of 1998 graduates appears in Tables 7 and 8. Table 7 shows the fall plans for 1998 bachelor's chemists and chemical engineers. The proportion of new chemistry bachelor's who planned to continue full-time studies in the fall continued to decline in 1998, with only 43 percent planning to study full-time and 5 percent planning to study part-time in the fall. The vast majority of bachelor's in chemical engineering, also shown in Tables 7 & 8, opted for employment and had no plans for any graduate study: less than 13 percent of them planned to study full-time and only 6 percent planned to study part-time in the fall of 1998.

For those who had plans for study in the fall, bachelor's chemists were most apt to continue in chemistry or a health-related professional program. New bachelor's in chemical engineering mainly continued in some engineering field, most often chemical or biochemical engineering.

Figure 4 shows the dynamic shift that has occurred for B.S. chemists since the mid-1990s: the proportion of new graduates opting for any graduate plans continued to decline, while the proportion opting to enter directly into the workforce continued to grow.

Table 7

PLANS FOR FURTHER STUDY OF BACHELOR'S CHEMISTRY & CHEMICAL ENGINEERING GRADUATES: FALL 1998

Plans	Chemistry	Chemical Engineering
Total further studies	48.2%	18.8%
Full-time	43.0%	12.7%
Part-time	5.2%	6.1%
No plans for further studies	51.8%	81.2%
Total*	100.0	100.0
Number of responses	3500	865

***Any deviation from 100 is due to rounding**

Table 8

FIELDS OF STUDY OF BACHELOR'S CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES WHO PLAN FURTHER STUDIES: FALL 1998

Plans	Chemistry	Chemical Engineering
FULL-TIME STUDY		
Chemistry or biochemistry	42.8%	1.8%
Chemical or biochemical engineering	1.4%	59.1%
Other engineering	1.0%	13.6%
Physical science	3.3%	1.8%
Life science	6.1%	0.0%
Medicine, dentistry, or pharmacy	36.0%	9.1%
Business or management	0.9%	5.5%
Education	2.1%	0.0%
Law	1.8%	5.5%
All others	3.6%	3.6%
Total	100.0	100.0
Number of responses	1,501	110
PART-TIME STUDY		
Chemistry or biochemistry	26.6%	5.8%
Chemical or biochemical engineering	6.6 %	32.7%
Other engineering	3.3%	13.5%
Physical science	11.6%	0.0%
Life science	11.6%	0.0%
Medicine, dentistry, or pharmacy	9.9%	0.0%
Business or management	9.4%	25.0%
Education	14.4%	0.0%
Law	0.6%	0.0%
All others	9.4%	9.1%
Total*	100.0	100.0
Number of responses	181	14

***Any deviation from 100 is due to rounding**

THE CHANGING FALL PLANS OF BACHELOR'S CHEMISTS

Traditionally, roughly one-third of new bachelor's chemistry graduates planned to pursue chemistry graduate study, one-third planned graduate study in another field, and one-third had plans for immediate employment (see figure 3). In 1998, the new graduates showed even more propensity to enter the workforce and not continue with graduate education. Those who did have plans for continued study in programs other than chemistry remained the about same proportion of the graduates as in 1997. Those who planned to continue their chemistry studies declined further, dropping to 20 percent for the first time.

This dynamic of post-graduation plans likely has several external contributing factors. Three of these factors in the 1990s were: 1.) a rapidly improving market and demand for bachelor's chemists; 2.) an significantly increased time-to-degree for graduate degrees; and 3.) a disadvantaged market for Ph.D.s that kept graduate programs filled with delayed graduations and postdoc positions.

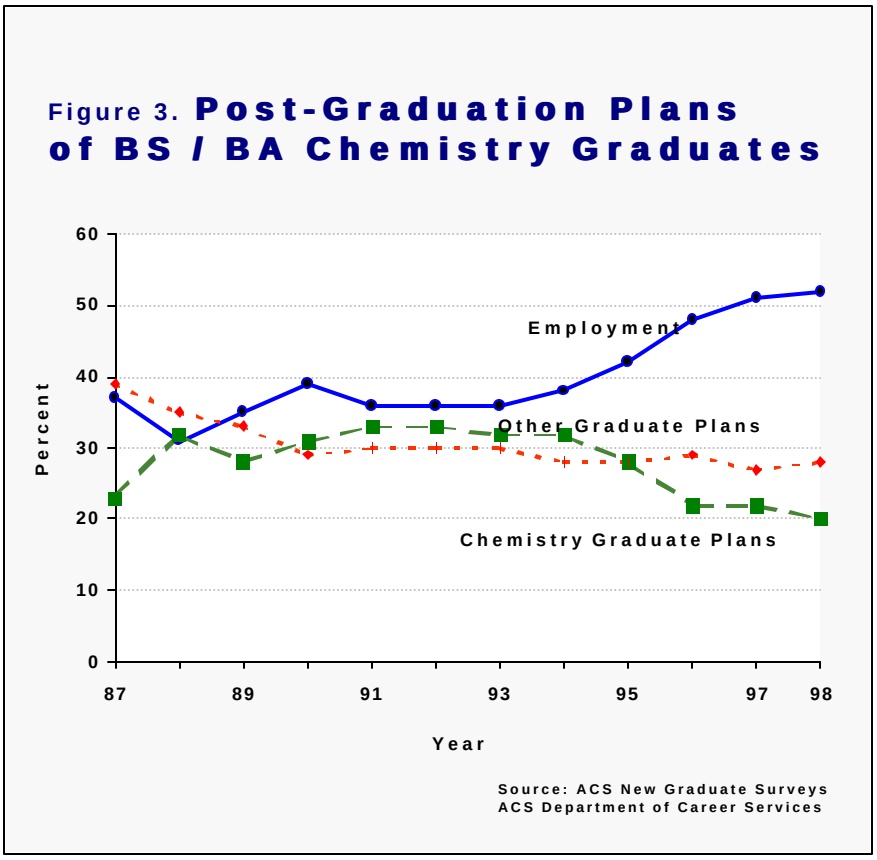
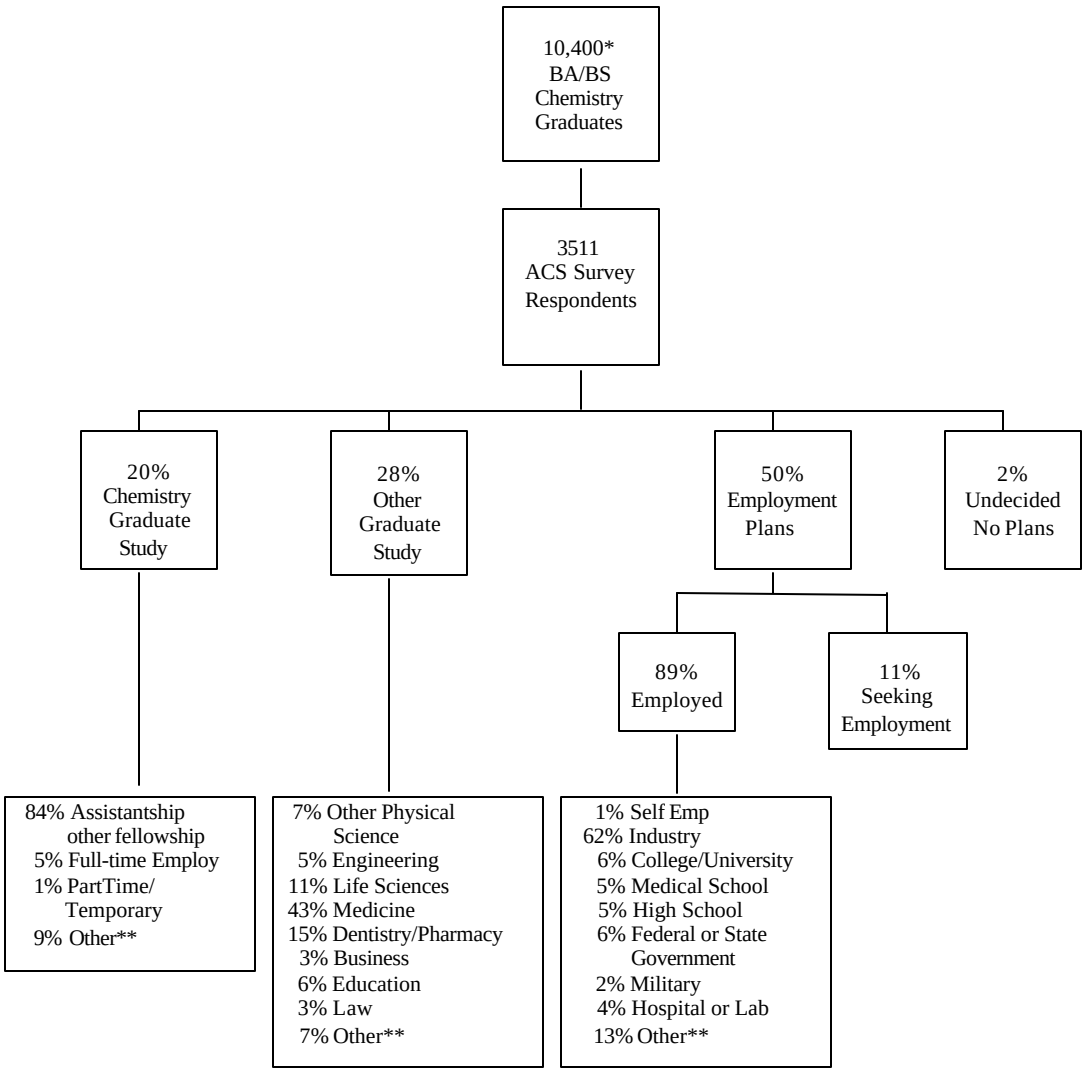


Figure 4 shows the more detailed plans of 1998 chemistry bachelor's. Of those bachelor's chemistry graduates who planned further studies in another discipline in 1998 the choice of field of study has not changed appreciably in the last decade, with studies in the health-related professions topping the list. Of those chemistry graduates who chose immediate employment, the majority chose industrial employment. The proportion who went to directly to work in industry declined slightly between 1997 and 1998, as did those who went directly into teaching. Considerably more went into the "other" category. Within the graduate plans for those continuing, most choices remained relatively stable with slight increases in those continuing in education and the health professions.

Figure 4

Postgraduation Plans of 1998 Bachelor's Chemistry Graduates



* Estimated
**Note: Totals may not add to 100% due to rounding error.

BACHELOR'S GRADUATES CERTIFIED TO ACS FROM APPROVED PROGRAMS

Graduates completing certification to ACS from approved programs are more likely than other graduates to plan further studies, especially further studies in chemistry. Forty-seven percent of the 1998 B.S. graduates certified from approved programs planned full-time studies compared with 40 percent of non-certified graduates. Of the bachelor's chemistry graduates who plan full-time studies, 65 percent of those completing certification plan to study chemistry or biochemistry, compared with only 25 percent of non-certified graduates. Conversely, 50 percent of the non-certified who are planning advanced studies, plan to study health-related professions, like medicine, compared with only about 20 percent of those who were certified.

Certified graduates were also less likely than those non-certified to be unemployed, or working in temporary or part-time jobs. Among those employed, certified graduates are more likely to be employed in industry (71 percent vs. 63 percent). The unemployment rate for bachelor's graduates of approved programs was 5.0 percent this year, compared to 6.2 percent for other graduates.

DEMOGRAPHIC COMPOSITION OF NEW GRADUATES

Sex

Women are increasingly represented at all degree levels of chemistry. The proportion of new women chemists in 1998 was 49 percent of the bachelor's, 51 percent of the master's, and 34 percent of the doctorates. This represents a marked increase in the past 25 years, when in 1972 the percentages were 19, 22, and 10 for the bachelor's, master's and doctorates respectively. The proportion of degrees granted to women in chemical engineering are also increasing, but more slowly than for women in chemistry. In 1998 the proportions of women in chemical engineering were 35 percent of the bachelor's, 27 percent of the master's and 18 percent of the doctorates.

Race and Ethnicity

Minorities, particularly Asians, are an increasing proportion of new graduates in chemistry and chemical engineering. The proportion of new bachelor's chemistry graduates who are African-American or Hispanic has increased fairly slowly since 1973, when ACS first collected such information. In 1973, African-Americans were 2.3 percent and Hispanics were 0.7 percent of bachelor's chemistry graduates. This year, African-Americans increased from 4.7 percent in 1997 to 4.8 percent in 1998. Hispanics composed 3.6 percent of the Class of 1997 bachelor's graduates and increased to 4.8 percent in 1998. Native Americans continue to comprise less than one percent of new graduates in chemistry at all degree levels.

The proportion of new chemistry graduates who were Asian increased precipitously since 1973. In that year, Asians were 3 percent of bachelor's, 9 percent of master's, and 9 percent of Ph.D. graduates. This year, Asians were 15 percent of bachelor's, 26 percent of master's, and 29 percent of Ph.D. graduates.

Citizenship

In chemistry and chemical engineering, the proportion of graduates who are U.S. citizens has decreased and the proportion of graduates with temporary visas has increased for more than a decade, especially among master's and doctoral graduates. This dynamic appears to have leveled off over the past several years. The changes in citizenship are similar between the two fields, with the proportions of graduates with temporary visas increasing significantly with graduate degrees. In 1998, about 94 percent of bachelor's chemists and chemical engineers were U.S.

citizens and only about 1 percent were in the U.S. on temporary visas. Among master's chemistry graduates, the proportion of graduates who have temporary visas increased from 5 percent of the chemistry graduates in 1983 to 25 percent in 1997 and declined to 24 percent in 1998. Similarly, among graduates with doctoral degrees, the proportion of graduates who have temporary visas increased from 8 percent of the chemistry graduates in 1983 to 21 percent in 1996 and declined to 19 percent in 1997, but rose again to 21 percent in 1998. For chemical engineers, the proportions are similar, but higher, with 23 percent of master's and 24 percent of Ph.D.s holding temporary visas at graduation.

Among new chemistry Ph.D.s, those with temporary visas were more likely to have postdoctoral appointments and were more likely to be unemployed than those with U.S. citizenship. Sixty-one percent of new Ph.D.s with temporary visas were postdoctoral fellows opposed to about 41 percent of those with U. S. citizenship. On the other hand, for the first time in the decade, the fall unemployment record for both groups was similar. Normally, those new Ph.D.s holding temporary visas have had higher fall unemployment records. This change in typical fall status is likely a result of the very good job market for chemists in 1998.

SCOPE AND METHOD

OBJECTIVES

The 1998 Starting Salary Survey is the 48th in the series of annual surveys on the employment and future plans of new graduates in chemistry and chemical engineering conducted by the American Chemical Society. Summaries of the results of these surveys appear annually in *Chemical & Engineering News*. This year, a summary of the results was published on March 9, 1998. Also, an article on the Class of 1998 was published in the May issue of *Today's Chemist at Work*.

The primary objective of the survey is to gather data on the starting salaries and occupational status of new chemists and chemical engineers who graduated during the 1997-98 academic year. The survey covers bachelor's, master's, and doctoral degree recipients. In addition, since 1973, the survey provides information on graduates' sex, citizenship, and ethnicity.

METHOD OF COLLECTION AND TIMING OF SURVEY

Chemistry departments approved by ACS and chemical engineering departments approved by the American Institute of Chemical Engineers and the Engineer's Council for Professional Development provided names and addresses of students who graduated between July, 1997 and June, 1998. During the second week of October 1998, questionnaires were mailed to those graduates whose names had been provided and who had U.S. addresses.

EXTENT OF COVERAGE

Survey questionnaires were mailed by first class mail on October 15, 1998 to 14,763 graduates. Approximately 1 week after the initial mailing, a postcard reminder was sent, then a second questionnaire and cover letter were sent to non-respondents a month later. A third full mailing to non-respondent Ph.Ds was sent in early December. By the cutoff date of January 8, 1999, ACS had received 5,907 usable responses.

DEFINITIONS

The term "inexperienced" as used in the tables refers to those who have 12 months or less of prior professional work experience. The term "chemist" refers to one who received a degree in chemistry. Salary tables are based on full-time employment. Postdoctoral salaries are analyzed separately. Salaries are reported in U.S. dollars.

"Certified" bachelor's degree-holders are those bachelor's certified by their department or program to ACS. The certified graduate "has pursued and successfully completed a curriculum as proscribed in the guidelines for ACS-approved programs and that ...has received the bachelor's degree." (ACS Committee on Professional Training, 1998).

For this study, race and ethnicity categories are combined to become mutually-exclusive. Hispanics may include all racial categories, but racial categories do not include Hispanics.

The Technical Notes present methods for estimating sampling error and also explain certain discrepancies among some of the tables.

GEOGRAPHIC REGIONS

PACIFIC

Alaska
California
Hawaii
Oregon
Washington

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

TECHNICAL NOTES

DISCREPANCIES AMONG TABLES

Because not all individuals responded to all of the survey items, some pairs of tables contain totals that should be identical but are not. For example, one table may group Ph.D.s by sex and another by employer. The totals will differ unless the number who did not indicate their sex is the same as the number who did not indicate their employer.

ESTIMATES OF MEDIAN SALARIES

Median salaries displayed within the cells of the salary tables are sample medians and are therefore subject to sampling error. This error could be quite large, especially when the number of respondents in the corresponding cell is small. Therefore, *median salaries in cells with fewer than 15 respondents should not be used to estimate their corresponding population medians.*

COMPARING SALARIES

Often questions arise concerning women's salaries as compared with men's, or chemists' salaries as compared with chemical engineers'. These and similar comparisons require caution.

Statistical tests should be performed to determine whether observed differences in salaries of various sample groups could be mere chance occurrences resulting from peculiarities of the samples. Whether a difference in salaries is "statistically significant" depends not only on the magnitude of the difference but also on the sample sizes and the magnitudes of the sample standard deviations.

Discussion of statistical tests of significance may be found in *Introductory Statistics for Business and Economics*, by Thomas H. Wonnacott and Ronald J. Wonnacott, NY: Wiley, 1990, and in other similar texts.

ESTIMATING SAMPLING ERROR FOR PERCENTS

Percents in this report are derived from the sample. If the entire population had received and returned questionnaires, most estimates would be somewhat different. How much different? Although this question does not have an exact answer, the table below does provide some guidance. To use the table, find the column headed by the percent (p) derived from the sample, and find the row appropriate for the sample size (n). (Approximations for p and n may be used.) Note the number in that column and that row of the table.

This number from the body of the table measures the precision with which the sample percent estimates the percent of the entire population. Specifically, if this procedure is applied repeatedly, about 95 times out of 100, the population percent will differ from the sample percent by no more than the amount shown in the table.

Approximate Sampling Errors for Percents

n	p=10% or 90%	p=20% or 80%	p=30% or 70%	p=40% or 60%	p=50%
50	8.3%	11.1%	12.7%	13.6%	13.9%
100	5.9	7.8	9.0	9.6	9.8
200	4.2	5.5	6.4	6.8	6.9
500	2.6	3.5	4.0	4.3	4.4
1000	1.9	2.5	2.8	3.0	3.1
2000	1.3	1.8	2.0	2.1	2.2
5000	0.8	1.1	1.3	1.4	1.4
10000	0.6	0.8	0.9	1.0	1.0

In Table B-1a of the full report for example, 1725 respondents classified as chemists indicated their highest degree as the bachelor's degree and their gender as female. The percent of this group who are employed full-time and permanent is 39.0 percent (p=39.0). A "95 percent confidence interval" for this percent may be approximated by taking n and p to be about 1000 and 40 percent. The above table shows an approximate sampling error of 3.0 percent. Hence, the 95 percent confidence interval is 36 percent to 42 percent. If estimates were made at this "level of confidence" from 100 similar samples, about 95 of the confidence intervals calculated from these samples would contain the true population percent.

List of Tables: Class of 1998 Starting Salaries

Table A-1

SALARIES of CHEMISTS employed FULL-TIME
by DEGREE and EXPERIENCE
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
WORK EXPERIENCE	Less than 12 months	Median	29,500	38,500	59,280
		Mean	29,422	38,183	55,224
		Std Dev	7,409	8,290	12,722
		Count	832	111	205
	12-36 months	Median	30,350	40,000	60,000
		Mean	31,456	39,173	56,542
		Std Dev	7,842	7,570	14,657
		Count	272	71	53
	More than 36 months	Median	35,000	40,000	58,600
		Mean	35,086	41,998	54,374
		Std Dev	9,319	10,342	12,759
		Count	107	78	80
TOTAL	Median		30,000	39,800	59,650
	Mean		30,380	39,598	55,229
	Std Dev		7,870	8,895	13,028
	Count		1211	260	338

Table A-2

SALARIES of CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EXPERIENCE
1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
WORK EXPERIENCE	Less than 12 months	Median	45,000	49,750	65,000
		Mean	43,388	49,223	63,737
		Std Dev	6,164	8,044	8,170
		Count	416	26	52
	12-36 months	Median	45,360	52,075	67,500
		Mean	45,182	51,634	67,289
		Std Dev	4,900	4,835	7,235
		Count	156	8	19
	More than 36 months	Median	45,000	52,000	68,500
		Mean	44,515	54,096	67,531
		Std Dev	6,456	12,147	12,714
		Count	38	11	16
TOTAL	Median		45,000	50,900	66,000
	Mean		43,917	50,843	65,211
	Std Dev		5,929	8,850	9,056
	Count		610	45	87

Table A-3

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
in PRIVATE INDUSTRY by SEX and DEGREE
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
SEX	Female	Median	30,000	40,000	58,175
		Mean	30,461	37,612	57,688
		Std Dev	7,210	6,263	8,074
		Count	292	47	48
	Male	Median	32,000	44,250	61,200
		Mean	32,189	42,464	61,215
		Std Dev	7,436	7,918	8,381
		Count	241	36	107
TOTAL	Median		30,365	40,000	60,000
	Mean		31,242	39,716	60,123
	Std Dev		7,357	7,390	8,421
	Count		533	83	155

Table A-4

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed
FULL-TIME
in PRIVATE INDUSTRY by SEX and DEGREE
1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
SEX	Female	Median	46,000	47,950	64,200
		Mean	44,441	48,144	63,620
		Std Dev	5,383	7,159	5,597
		Count	138	8	10
	Male	Median	45,000	51,500	66,200
		Mean	44,005	51,439	66,181
		Std Dev	5,509	8,466	4,401
		Count	225	14	34
TOTAL	Median		45,000	50,950	65,020
	Mean		44,171	50,241	65,599
	Std Dev		5,458	8,005	4,754
	Count		363	22	44

Table A-5

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and EMPLOYER
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
EMPLOYER TYPE	Self Employed	Median	28,000	---	---
		Mean	28,000	---	---
		Std Dev	---	---	---
		Count	1	0	0
	Industry	Median	30,365	40,000	60,000
		Mean	31,232	39,716	60,123
		Std Dev	7,356	7,390	8,421
		Count	535	83	155
	College or univ	Median	25,000	40,000	35,000
		Mean	26,341	38,698	35,868
		Std Dev	5,617	11,506	7,847
		Count	41	7	33
	Medical school	Median	22,250	24,500	24,000
		Mean	22,766	25,230	24,000
		Std Dev	3,688	2,807	---
		Count	30	5	1
	Ele/sec school	Median	27,100	30,000	41,000
		Mean	27,088	31,960	41,000
		Std Dev	4,624	5,743	1,414
		Count	65	7	2
	Federal govmt	Median	32,400	32,800	55,000
		Mean	31,476	33,267	52,202
		Std Dev	9,174	1,553	11,693
		Count	11	3	5
	Military	Median	28,000	33,500	---
		Mean	26,686	33,500	---
		Std Dev	4,282	---	---
		Count	21	1	0
	State or local govmt	Median	25,500	34,400	35,000
		Mean	27,996	34,400	44,233
		Std Dev	8,316	2,263	22,611
		Count	28	2	3
	Hospital or lab	Median	23,000	---	---
		Mean	22,819	---	---
		Std Dev	5,606	---	---
		Count	32	0	0
	Other	Median	25,500	30,000	57,732
		Mean	25,850	30,000	53,077
		Std Dev	6,607	7,071	11,457
		Count	62	2	6
TOTAL	Median		29,500	38,250	59,280
	Mean		29,400	37,994	55,224
	Std Dev		7,378	8,083	12,722
	Count		826	110	205

Table A-6

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and EMPLOYER - MEN only
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
EMPLOYER TYPE	Self Employed	Median	28,000	---	---
		Mean	28,000	---	---
		Std Dev	---	---	---
		Count	1	0	0
	Industry	Median	32,000	44,250	61,200
		Mean	32,189	42,464	61,215
		Std Dev	7,436	7,918	8,381
		Count	241	36	107
	College or univ	Median	29,500	45,000	36,000
		Mean	28,965	43,868	36,624
		Std Dev	5,563	11,247	8,619
		Count	14	4	25
	Medical school	Median	22,250	24,250	---
		Mean	23,818	24,250	---
		Std Dev	4,978	354	---
		Count	10	2	0
	Ele/sec school	Median	27,050	30,000	40,000
		Mean	27,563	30,505	40,000
		Std Dev	3,708	4,442	---
		Count	18	5	1
	Federal govmt	Median	33,150	33,900	40,000
		Mean	31,787	33,900	45,000
		Std Dev	9,746	1,556	8,660
		Count	6	2	3
	Military	Median	28,000	33,500	---
		Mean	26,827	33,500	---
		Std Dev	4,585	---	---
		Count	15	1	0
	State or local govmt	Median	24,796	32,800	52,500
		Mean	29,818	32,800	52,500
		Std Dev	12,032	---	24,749
		Count	11	1	2
	Hospital or lab	Median	21,400	---	---
		Mean	21,150	---	---
		Std Dev	6,531	---	---
		Count	8	0	0
	Other	Median	25,750	---	36,000
		Mean	26,073	---	36,000
		Std Dev	5,061	---	---
		Count	22	0	1
TOTAL	Median		30,000	40,000	60,000
	Mean		30,605	39,986	55,983
	Std Dev		7,586	8,999	13,002
	Count		346	51	139

Table A-7

SALARIES of INEXPERIENCED CHEMISTS employed FULL-
by DEGREE and EMPLOYER - WOMEN
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
EMPLOYER TYPE	Industry	Median	30.000	40.000	58.175
		Mean	30.461	37.612	57.688
		Std Dev	7,210	6,263	8,074
		Count	292	47	48
	College or univ	Median	24,500	28,875	34,590
		Mean	24.980	31.805	33.504
		Std Dev	5.238	9.091	4.285
		Count	27	3	8
	Medical school	Median	22.000	25.000	24.000
		Mean	22.240	25.883	24.000
		Std Dev	2,854	3,754	---
		Count	20	3	1
	Ele/sec school	Median	27.324	35.600	42.000
		Mean	26,907	35,600	42,000
		Std Dev	4.954	9.051	---
		Count	47	2	1
	Federal govmt	Median	32,400	32,000	63,004
		Mean	31.103	32.000	63.004
		Std Dev	9,557	---	2,823
		Count	5	1	2
	Military	Median	27.000	---	---
		Mean	26,333	---	---
		Std Dev	3.777	---	---
		Count	6	0	0
	State or local govmt	Median	26,000	36,000	27,700
		Mean	26.818	36.000	27.700
		Std Dev	4.740	---	---
		Count	17	1	1
	Hospit al or lab	Median	23.500	---	---
		Mean	23.375	---	---
		Std Dev	5,300	---	---
		Count	24	0	0
	Other	Median	25,500	30,000	59,800
		Mean	25.727	30.000	56.493
		Std Dev	7.379	7.071	8.751
		Count	40	2	5
TOTAL	Median		28.500	36.000	57.000
	Mean		28.531	36.272	53.625
	Std Dev		7,108	6,817	12,051
	Count		478	59	66

Table A-8

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and TYPE OF INDUSTRY
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
EMPLOYER	Nonmanufacturing	Median	25,740	31,500	55,000
		Mean	28,267	32,083	55,400
		Std Dev	11,066	6,391	6,832
		Count	58	6	5
	Aerospace	Median	37,500	38,500	67,000
		Mean	34,840	38,500	67,000
		Std Dev	8,077	---	---
		Count	6	1	1
	Agricultural chemicals	Median	25,000	46,500	58,000
		Mean	27,500	46,500	57,579
		Std Dev	8,273	---	6,072
		Count	11	1	7
	Basic chemicals	Median	28,000	39,000	58,350
		Mean	29,116	39,000	58,683
		Std Dev	4,157	5,657	3,661
		Count	9	2	3
	Electronics	Median	32,000	39,000	60,000
		Mean	32,634	39,643	58,247
		Std Dev	7,126	6,485	10,995
		Count	44	7	15
	Petroleum	Median	27,500	---	59,500
		Mean	28,489	---	54,600
		Std Dev	6,963	---	17,667
		Count	16	0	3
	Pharmaceuticals	Median	32,000	43,000	61,600
		Mean	32,522	42,594	62,375
		Std Dev	5,857	6,032	8,106
		Count	170	41	54
	Plastics	Median	30,800	30,415	64,300
		Mean	31,468	33,972	64,143
		Std Dev	4,450	10,703	4,051
		Count	19	3	14
	Specialty chemicals	Median	31,050	34,400	63,000
		Mean	31,444	36,280	61,853
		Std Dev	5,578	7,266	5,313
		Count	48	5	19
	Other manuf	Median	30,000	35,000	57,990
		Mean	30,964	37,282	56,382
		Std Dev	7,648	8,283	8,840
		Count	154	17	34
TOTAL	Median		30,365	40,000	60,000
	Mean		31,232	39,716	60,123
	Std Dev		7,356	7,390	8,421
	Count		535	83	155

Table A-9

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME in INDUSTRY by DEGREE and EMPLOYER SIZE 1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
EMPLOYER SIZE	Less than 50	Median	26,000	35,000	58,250
		Mean	26,619	35,188	55,493
		Std Dev	6,058	2,975	11,306
		Count	86	8	18
	50 to 499	Median	29,000	33,750	55,500
		Mean	28,760	34,800	54,434
		Std Dev	6,135	7,512	9,310
		Count	168	20	32
	500 to 2,499	Median	30,000	41,500	58,000
		Mean	30,509	40,881	60,065
		Std Dev	5,316	6,523	7,063
		Count	74	18	21
	2,500 to 9,999	Median	35,000	41,500	62,500
		Mean	35,868	42,967	62,571
		Std Dev	8,670	7,704	8,316
		Count	69	12	17
	10,000 to 24,999	Median	34,500	47,000	62,000
		Mean	34,485	44,880	62,441
		Std Dev	6,636	3,267	5,560
		Count	34	5	19
	25,000 or more	Median	35,000	43,500	65,000
		Mean	35,370	41,900	64,124
		Std Dev	6,575	6,870	4,597
		Count	100	19	47
TOTAL	Median		30,100	40,000	60,000
	Mean		31,192	39,628	60,169
	Std Dev		7,367	7,391	8,429
	Count		531	82	154

Table A-10

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and WORK FUNCTION
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
1ST WORK FUNCTION	Teaching	Median	27,050	31,000	36,500
		Mean	27,152	34,372	38,671
		Std Dev	4,410	7,700	8,039
		Count	70	10	30
	Management	Median	28,000	---	59,280
		Mean	29,300	---	55,556
		Std Dev	9,181	---	8,718
		Count	46	0	5
	Research	Median	30,000	42,000	61,000
		Mean	30,294	40,232	59,379
		Std Dev	6,714	8,547	11,394
		Count	220	50	104
	Dev & design	Median	34,250	40,000	59,000
		Mean	33,860	38,744	57,620
		Std Dev	6,205	5,822	9,401
		Count	66	18	43
	Production	Median	29,000	35,000	60,500
		Mean	28,469	34,910	57,325
		Std Dev	6,117	8,391	13,020
		Count	260	19	12
	Professional svcs	Median	28,050	33,500	54,000
		Mean	30,179	37,417	52,600
		Std Dev	9,332	11,935	10,807
		Count	66	6	5
	Other	Median	27,500	37,500	42,000
		Mean	28,536	37,225	48,600
		Std Dev	10,102	6,711	11,014
		Count	101	8	5
TOTAL	Median		29,500	38,500	59,290
	Mean		29,462	38,183	55,318
	Std Dev		7,392	8,290	12,682
	Count		829	111	204

Table A-11

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and GEOGRAPHIC REGION
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
REGION	Pacific	Median	30,000	40,000	58,250
		Mean	29,173	38,254	58,014
		Std Dev	7,393	6,399	11,169
		Count	114	10	22
	Mountain	Median	26,000	41,000	60,000
		Mean	27,355	39,467	56,073
		Std Dev	11,376	7,185	11,621
		Count	37	6	7
	West North Central	Median	28,000	33,000	56,750
		Mean	28,779	34,667	52,617
		Std Dev	7,036	11,244	14,635
		Count	63	9	15
	West South Central	Median	27,000	33,000	59,000
		Mean	28,422	33,667	54,515
		Std Dev	10,121	6,802	13,169
		Count	33	6	20
	East North Central	Median	30,000	37,500	58,500
		Mean	29,493	36,825	52,010
		Std Dev	6,177	7,022	13,054
		Count	158	23	39
	East South Central	Median	25,000	30,000	40,000
		Mean	25,935	31,667	42,500
		Std Dev	6,305	7,638	8,813
		Count	33	3	4
	Middle Atlantic	Median	30,585	43,500	62,500
		Mean	30,706	41,912	61,772
		Std Dev	7,045	10,145	9,154
		Count	169	22	44
	South Atlantic	Median	27,750	34,000	52,000
		Mean	28,824	34,523	50,581
		Std Dev	7,550	6,715	12,388
		Count	132	15	28
	New England	Median	30,000	45,750	59,300
		Mean	31,619	44,079	56,596
		Std Dev	7,357	4,352	14,526
		Count	56	14	23
TOTAL	Median		29,500	38,750	59,400
	Mean		29,395	38,262	55,360
	Std Dev		7,482	8,381	12,753
	Count		795	108	202

Table A-12

SALARIES of INEXPERIENCED B.S. CHEMISTS employed FULL-TIME
by EMPLOYER and CERTIFICATION
1998 ACS Starting Salary Survey

			CERTIFIED TO ACS		
			No	Yes	TOTAL
EMPLOYER TYPE	Self Employed	Median	28,000	---	28,000
		Mean	28,000	---	28,000
		Std Dev	---	---	---
		Count	1	0	1
	Industry	Median	30,000	32,000	30,365
		Mean	30,941	31,635	31,232
		Std Dev	7,937	6,458	7,356
		Count	311	224	535
	College or univ	Median	25,000	30,000	25,000
		Mean	24,982	30,046	26,341
		Std Dev	4,984	5,790	5,617
		Count	30	11	41
	Medical school	Median	22,000	24,000	22,250
		Mean	22,297	23,859	22,766
		Std Dev	3,382	4,334	3,688
		Count	21	9	30
	Ele/sec school	Median	27,324	26,279	27,100
		Mean	27,323	26,051	27,088
		Std Dev	4,457	5,388	4,624
		Count	53	12	65
	Federal govmt	Median	33,325	32,400	32,400
		Mean	32,018	31,166	31,476
		Std Dev	9,299	9,834	9,174
		Count	4	7	11
	Military	Median	29,000	26,000	28,000
		Mean	27,309	26,000	26,686
		Std Dev	5,270	2,981	4,282
		Count	11	10	21
	State or local govmt	Median	26,240	23,500	25,500
		Mean	28,122	27,771	27,996
		Std Dev	7,259	10,386	8,316
		Count	18	10	28
	Hospital or lab	Median	23,000	23,500	23,000
		Mean	23,079	22,038	22,819
		Std Dev	6,098	4,012	5,606
		Count	24	8	32
	Other	Median	25,500	26,673	25,500
		Mean	25,617	26,195	25,850
		Std Dev	7,153	5,832	6,607
		Count	37	25	62
TOTAL	Median		28,350	30,000	29,500
	Mean		28,928	30,162	29,400
	Std Dev		7,643	6,871	7,378
	Count		510	316	826

Table A-13

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and DEGREE SPECIALTY
1998 ACS Starting Salary Survey

			DEGREE		
			BS/BA	MS	PHD
FIELD OF DEGREE	Analytical chem	Median	---	36,750	57,500
		Mean	---	38,069	53,437
		Std Dev	---	8,445	13,199
		Count	0	26	53
	Biochemistry	Median	28,000	35,000	53,000
		Mean	27,937	36,571	51,500
		Std Dev	7,124	9,981	12,483
		Count	158	7	10
	Environm chem	Median	27,900	40,000	42,000
		Mean	30,140	38,667	42,000
		Std Dev	5,955	2,309	---
		Count	15	3	1
	General chem	Median	30,000	37,000	60,000
		Mean	29,759	37,987	60,000
		Std Dev	7,534	9,588	---
		Count	639	15	1
	Inorganic chem	Median	---	35,000	57,240
		Mean	---	34,720	53,935
		Std Dev	---	6,881	12,429
		Count	0	7	32
	Med/Pharm chem	Median	---	---	55,000
		Mean	---	---	55,000
		Std Dev	---	---	---
		Count	0	0	1
	Organic chem	Median	---	42,000	60,000
		Mean	---	40,045	57,488
		Std Dev	---	8,097	12,822
		Count	0	32	65
	Physical chem	Median	---	34,250	61,000
		Mean	---	37,790	56,116
		Std Dev	---	9,830	14,402
		Count	0	10	19
	Polymer chem	Median	---	41,000	60,000
		Mean	---	40,625	56,321
		Std Dev	---	4,385	12,250
		Count	0	4	12
	Other chem	Median	---	35,000	53,000
		Mean	---	36,267	52,071
		Std Dev	---	4,244	10,192
		Count	0	3	7
	Mat sci & eng	Median	29,000	39,750	62,000
		Mean	32,350	39,750	62,000
		Std Dev	8,252	8,839	7,071
		Count	4	2	2
	Chemical Education	Median	28,920	28,523	58,500
		Mean	29,249	28,523	58,500
		Std Dev	4,268	---	---
		Count	16	1	1
	Other	Median	---	25,000	65,000
		Mean	---	25,000	65,000
		Std Dev	---	---	---
		Count	0	1	1
TOTAL	Median		29,500	38,500	59,280
	Mean		29,422	38,183	55,224
	Std Dev		7,409	8,290	12,722
	Count		832	111	205

Table A-14

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EMPLOYER
1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
EMPLOYER TYPE	Self Employed	Median	---	---	24,000
		Mean	---	---	24,000
		Std Dev	---	---	---
		Count	0	0	1
	Industry	Median	45,000	50,950	65,020
		Mean	44,148	50,241	65,599
		Std Dev	5,502	8,005	4,754
		Count	365	22	44
	College or univ	Median	42,100	---	52,500
		Mean	40,010	---	52,250
		Std Dev	10,578	---	2,500
		Count	10	0	4
	Federal govmt	Median	40,000	---	---
		Mean	40,149	---	---
		Std Dev	5,080	---	---
		Count	12	0	0
	Military	Median	37,600	---	---
		Mean	36,900	---	---
		Std Dev	7,671	---	---
		Count	6	0	0
	State or local govmt	Median	32,000	---	---
		Mean	33,720	---	---
		Std Dev	4,647	---	---
		Count	5	0	0
	Other	Median	35,000	44,000	60,000
		Mean	36,382	43,625	65,000
		Std Dev	8,165	6,421	8,660
		Count	17	4	3
TOTAL	Median		45,000	49,750	65,000
	Mean		43,384	49,223	63,737
	Std Dev		6,171	8,044	8,170
	Count		415	26	52

Table A-15

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EMPLOYER - MEN only
1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
EMPLOYER TYPE	Self Employed	Median	---	---	24,000
		Mean	---	---	24,000
		Std Dev	---	---	---
		Count	0	0	1
	Industry	Median	45,000	51,500	66,200
		Mean	44,005	51,439	66,181
		Std Dev	5,509	8,466	4,401
		Count	225	14	34
	College or univ	Median	40,200	---	52,500
		Mean	38,443	---	52,250
		Std Dev	12,444	---	2,500
		Count	7	0	4
	Federal govmt	Median	42,000	---	---
		Mean	41,704	---	---
		Std Dev	3,008	---	---
		Count	8	0	0
	Military	Median	35,600	---	---
		Mean	35,600	---	---
		Std Dev	10,748	---	---
		Count	2	0	0
	State or local govmt	Median	32,000	---	---
		Mean	34,250	---	---
		Std Dev	5,188	---	---
		Count	4	0	0
	Other	Median	34,000	44,000	60,000
		Mean	35,050	43,625	65,000
		Std Dev	9,822	6,421	8,660
		Count	10	4	3
TOTAL	Median		44,100	49,750	65,000
	Mean		43,213	49,702	63,765
	Std Dev		6,349	8,559	8,727
	Count		256	18	42

Table A-16

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME by DEGREE and EMPLOYER - WOMEN only 1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
EMPLOYER TYPE	Industry	Median	46,000	47,950	64,200
		Mean	44,441	48,144	63,620
		Std Dev	5,383	7,159	5,597
		Count	138	8	10
	College or univ	Median	45,000	---	---
		Mean	43,667	---	---
		Std Dev	3,215	---	---
		Count	3	0	0
	Federal govmt	Median	36,075	---	---
		Mean	37,038	---	---
		Std Dev	7,360	---	---
		Count	4	0	0
	Military	Median	38,050	---	---
		Mean	37,550	---	---
		Std Dev	7,607	---	---
		Count	4	0	0
	State or local govmt	Median	31,600	---	---
		Mean	31,600	---	---
		Std Dev	---	---	---
		Count	1	0	0
	Other	Median	39,000	---	---
		Mean	38,286	---	---
		Std Dev	5,090	---	---
		Count	7	0	0
TOTAL	Median		45,000	47,950	64,200
	Mean		43,706	48,144	63,620
	Std Dev		5,795	7,159	5,597
	Count		157	8	10

Table A-17

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and TYPE OF INDUSTRY
1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
EMPLOYER	Nonmanufacturing	Median	42,000	55,000	65,000
		Mean	41,636	56,118	65,000
		Std Dev	4,894	8,380	---
		Count	31	3	1
	Aerospace	Median	43,550	42,000	---
		Mean	44,225	42,000	---
		Std Dev	1,793	---	---
		Count	4	1	0
	Agricultural chemicals	Median	48,000	---	---
		Mean	47,133	---	---
		Std Dev	3,192	---	---
		Count	6	0	0
	Basic chemicals	Median	47,500	61,000	63,520
		Mean	45,989	61,000	63,520
		Std Dev	4,228	---	2,150
		Count	25	1	2
	Electronics	Median	43,500	46,888	67,200
		Mean	43,241	47,778	65,313
		Std Dev	5,041	3,221	7,308
		Count	32	5	8
	Petroleum	Median	47,100	52,000	69,850
		Mean	47,369	52,000	69,688
		Std Dev	5,511	1,414	1,713
		Count	47	2	8
	Pharmaceuticals	Median	45,500	52,625	64,500
		Mean	43,979	54,188	64,000
		Std Dev	5,835	11,382	3,347
		Count	36	4	6
	Plastics	Median	46,500	44,000	66,000
		Mean	43,855	44,000	66,467
		Std Dev	5,312	---	3,204
		Count	27	1	6
	Specialty chemicals	Median	45,950	53,400	69,650
		Mean	44,578	53,400	69,650
		Std Dev	4,005	---	3,041
		Count	44	1	2
	Other manuf	Median	45,000	45,450	64,000
		Mean	43,142	44,225	62,927
		Std Dev	6,005	8,029	4,261
		Count	113	4	11
TOTAL	Median		45,000	50,950	65,020
	Mean		44,148	50,241	65,599
	Std Dev		5,502	8,005	4,754
	Count		365	22	44

Table A-18

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY by DEGREE and EMPLOYER SIZE 1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
EMPLOYER SIZE	Less than 50	Median	38,960	46,888	---
		Mean	38,356	46,888	---
		Std Dev	3,544	---	---
		Count	20	1	0
	50 to 499	Median	40,000	45,000	60,500
		Mean	39,772	47,179	62,250
		Std Dev	7,045	9,335	7,762
		Count	66	7	4
	500 to 2,499	Median	42,500	53,000	64,000
		Mean	42,806	53,000	64,033
		Std Dev	4,890	11,314	5,473
		Count	47	2	6
	2,500 to 9,999	Median	45,000	55,000	67,000
		Mean	44,205	55,000	66,925
		Std Dev	4,649	---	2,844
		Count	47	1	4
	10,000 to 24,999	Median	46,750	61,250	64,000
		Mean	46,404	61,250	65,120
		Std Dev	3,061	11,667	4,090
		Count	58	2	5
	25,000 or more	Median	47,000	51,500	67,000
		Mean	46,898	50,581	66,394
		Std Dev	3,586	3,702	4,408
		Count	124	8	25
TOTAL	Median		45,000	51,000	65,020
	Mean		44,167	50,728	65,599
	Std Dev		5,502	7,861	4,754
	Count		362	21	44

Table A-19

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and WORK FUNCTION
1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
1ST WORK FUNCTION	Teaching	Median	44,100	---	52,500
		Mean	44,100	---	52,250
		Std Dev	0	---	2,500
		Count	2	0	4
	Management	Median	43,000	---	---
		Mean	42,452	---	---
		Std Dev	6,515	---	---
		Count	39	0	0
	Research	Median	44,500	42,000	65,000
		Mean	42,902	46,678	64,842
		Std Dev	5,573	13,451	3,898
		Count	36	5	19
	Dev & design	Median	46,000	52,000	65,400
		Mean	44,280	49,230	66,215
		Std Dev	5,833	7,183	5,361
		Count	115	5	23
	Production	Median	45,600	48,750	64,000
		Mean	44,286	47,613	61,467
		Std Dev	6,180	4,271	5,278
		Count	126	8	3
	Professional svcs	Median	43,100	48,353	67,000
		Mean	41,847	47,784	67,000
		Std Dev	5,700	2,548	---
		Count	58	3	1
	Other	Median	42,000	55,000	49,500
		Mean	41,542	55,200	49,500
		Std Dev	7,249	8,786	36,062
		Count	40	5	2
TOTAL	Median		45,000	49,750	65,000
	Mean		43,388	49,223	63,737
	Std Dev		6,164	8,044	8,170
	Count		416	26	52

Table A-20

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME by DEGREE and GEOGRAPHIC REGION 1998 ACS Starting Salary Survey

			DEGREE		
			BS	MS	PHD
REGION	Pacific	Median	44,700	45,000	64,500
		Mean	44,204	45,000	60,650
		Std Dev	7,826	3,000	14,399
		Count	55	3	10
	Mountain	Median	40,000	52,500	---
		Mean	40,364	52,500	---
		Std Dev	5,316	---	---
		Count	11	1	0
	West North Central	Median	44,000	---	64,200
		Mean	41,784	---	62,886
		Std Dev	7,256	---	6,021
		Count	55	0	7
	West South Central	Median	47,000	49,500	68,500
		Mean	45,983	47,239	66,400
		Std Dev	4,617	6,302	6,476
		Count	85	9	12
	East North Central	Median	45,000	53,250	67,000
		Mean	43,524	53,250	66,880
		Std Dev	5,244	---	2,339
		Count	63	1	5
	East South Central	Median	46,200	---	62,000
		Mean	43,823	---	62,000
		Std Dev	4,809	---	---
		Count	21	0	1
	Middle Atlantic	Median	45,000	48,444	64,500
		Mean	42,852	50,148	63,105
		Std Dev	6,569	8,094	5,549
		Count	51	6	8
	South Atlantic	Median	44,100	51,000	64,500
		Mean	42,424	48,700	63,767
		Std Dev	5,540	10,257	5,190
		Count	48	5	6
	New England	Median	38,000	69,500	65,500
		Mean	38,464	69,500	65,500
		Std Dev	3,854	---	13,435
		Count	18	1	2
TOTAL	Median		45,000	49,750	65,000
	Mean		43,386	49,223	63,889
	Std Dev		6,198	8,044	8,177
	Count		407	26	51

Table A-21

STIPENDS/FELLOWSHIPS/SUPPORT of GRAD STUDENTS/POSTDOCS
CHEMISTS and CHEMICAL ENGINEERS by DEGREE and EMPLOYER SECTOR
1998 ACS Starting Salary Survey

			DEGREE					
			BS/BA Chem	MS Chem	PHD Chem	BS Chem eng	MS Chem eng	PHD Chem eng
EMPLOYER SECTOR	Academic	Median	15,500	15,150	25,000	16,400	16,500	28,700
		Mean	15,931	15,825	25,707	16,362	16,725	28,295
		Std Dev	3,268	3,054	4,647	3,266	1,954	3,139
		Count	646	128	270	63	12	19
	Business/Industry	Median	24,000	29,250	40,000	47,000	75,000	58,320
		Mean	24,841	31,125	39,841	43,166	75,000	55,440
		Std Dev	9,057	18,140	6,093	11,410	---	22,141
		Count	27	4	22	10	1	3
	Govmt	Median	28,000	30,000	39,000	---	---	45,000
		Mean	28,585	30,000	39,683	---	---	44,286
		Std Dev	6,657	---	8,244	---	---	4,386
		Count	13	1	47	0	0	7
	Other	Median	21,000	15,500	25,000	---	---	45,000
		Mean	22,668	15,500	26,958	---	---	45,000
		Std Dev	8,711	707	4,731	---	---	---
		Count	20	2	12	0	0	1
TOTAL	Median		15,800	15,500	26,000	17,000	17,000	30,000
	Mean		16,696	16,379	28,507	20,034	21,208	35,297
	Std Dev		4,721	4,939	7,709	10,563	16,270	11,864
	Count		706	135	351	73	13	30