How Much Is an Industrial Physicist Worth?

You now have some basis for knowing how well you are doing in industry—depending on education, experience, gender and geographic location—compared to physicists in other sectors. The American Institute of Physics has conducted a salary survey of members of its ten societies. While the data are heavily skewed to physicists

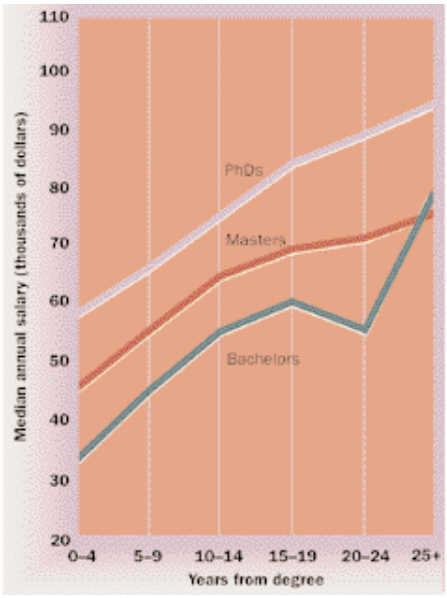

Figure 1. Median annual salaries in industry by degree level and years from degree, 1994.

with PhDs, the survey makes it clear that salary differences are linked primarily to degree level and years of experience. As shown in figure 1, individuals with doctorates do best, followed by those with master's degrees and those with bachelor's degrees. Also, although the three degree levels track fairly consistently for the first 15 years of experience, there is a noticeable gap thereafter, with individuals holding master's or bachelor's degrees doing less well than those with doctorates.

Doctorates

The industrial sector employs more than one-fifth of the members holding doctorates, and their median annual salary is $75,000. By comparison the median annual salary for PhD members is $77,000 for those employed by hospitals and medical services and $60,000 for all those holding full-time jobs. PhD members employed at four-year colleges earn the lowest median annual salary, $45,000.

The industrial salary distribution for PhDs stays fairly narrow in the early career years and gets dramatically wider after 15 years from degree (figure 2), when individuals move into higher-paying administrative positions. Over the course of their careers, PhD members in industry almost always have higher annual median salaries than their counterparts in federally funded research and development centers (FFR&DC), government organizations and universities (annual salary bases of both 9–10 months and11–12 months) (figure 3).

The survey found salary variations by both employment sector and geographic region among PhD members, as shown in table 1. The Pacific and east south central regions have the highest median annual

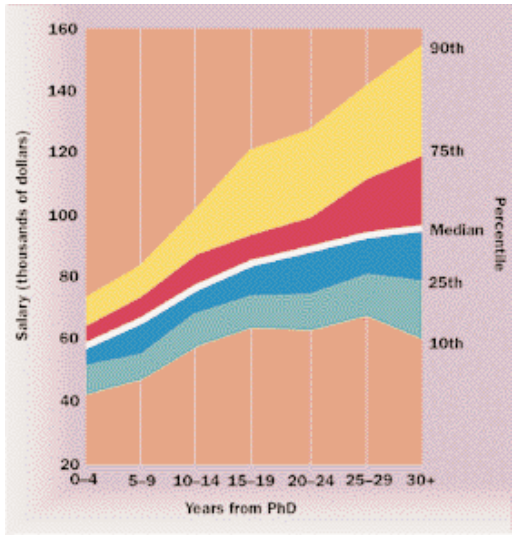

Figure 2. Salary structure in industry by years from PhD, 1994.

salary ($80,000) among PhD members working in industry. The survey also found that members living in New Jersey earn the highest median annual salary among all states ($72,000), and that the majority of PhD respondents in New Jersey (57 percent) work in industry.

According to the survey, the salary structure for PhDs working in industry is similar regardless of work activity (figure 4). The

	Academe		Industry		Other	
Geographic Region	Median Annual Salary ($'000)	Proportion in Region (%)	Median Annual Salary ($'000)	Proportion in Region (%)	Median Annual Salary ($'000)	Proportion in Region (%)
New England	54.0	59	77.5	24	70.0	17
Middle Atlantic	55.0	56	77.5	31	75.5	13
South Atlantic	50.0	42	71.0	15	72.0	43
East north central	52.0	66	68.0	14	67.0	20
East south central	48.0	56	80.0	7	62.0	37
West north central	48.0	77	72.0	15	60.0	8
West south central	50.0	57	75.0	29	75.0	14
Mountain	48.0	39	70.0	12	70.0	49
Pacific	55.0	41	80.0	26	70.0	33

Table 1. Median annual salaries of PhD physicists by selected employment sector and geographic region, 1994.

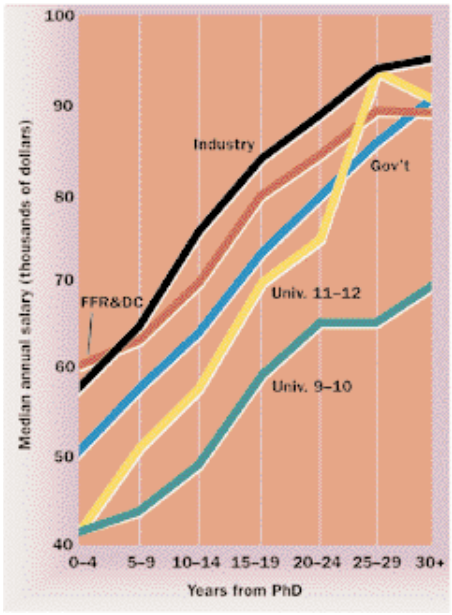

Figure 3. Median annual salaries by type of employer and years from PhD

exceptions are those working as administrators, who most often move into high-paying positions late in their careers. Of the PhD members employed in industry (47%), more report holding jobs in short-range research than in long-range research or administration.

Long-range research includes basic research and long-range applied research, while short-range research includes short-range applied research, development, design and engineering.

Master's and Bachelor's

Almost one-quarter of members working full-time report bachelor's or master's degrees as their highest degree levels. They are employed primarily by industry, secondary schools and government. This group of respondents is relatively small and may not be representative of all physics bachelor's and master's degree recipients.

More than one-third of the survey respondents with master's degrees work in industry, almost one-quarter work in secondary schools and one-fifth work in government (table 2). The salaries of those employed in industry are clustered in a fairly narrow range in the early career years, but broaden in later years, because of career advancements into high-paying administrative positions.

Women's salaries

The AIP survey results also reveal that women account for only a small proportion of full-time employed members, making up 9% of PhD recipients, 16% of master's degree recipients and 12% of bachelor's degree recipients. Furthermore, average salaries for women are 12–15% lower than average salaries for men, when differences in years of experience are controlled statistically. In the nonacademic work sectors, women holding doctoral degrees earn less than their male counterparts.

Cost of living

Inflation can easily neutralize salary increases. In 1994 the median annual salary increase for PhD respondents over a two-year period was 5%, but that increase was outstripped by a nationwide inflation increase of 5.6% over the same period. Inflation, however, varies by location, as does the cost of living. Therefore, when looking at the salaries of physicists, it also is useful to look at the cost of living in the communities where they live and work.

A cost-of-living survey conducted by the American Chamber of Commerce Researchers Association earlier this year happened to include 17 cities that have substantial numbers of members. The survey collected data intended to "provide a useful and reasonably accurate measure of living cost differences among urban areas." It measured the relative price levels for a standardized combination of goods and services. The result is an index on which the national cost-of-living average is 100; areas with indices above 100 have a relatively high cost of living, and those with indices below 100 have a relatively low one.

The indices for the 17 cities are as follows: Albuquerque 105.0, Atlanta 94.6,

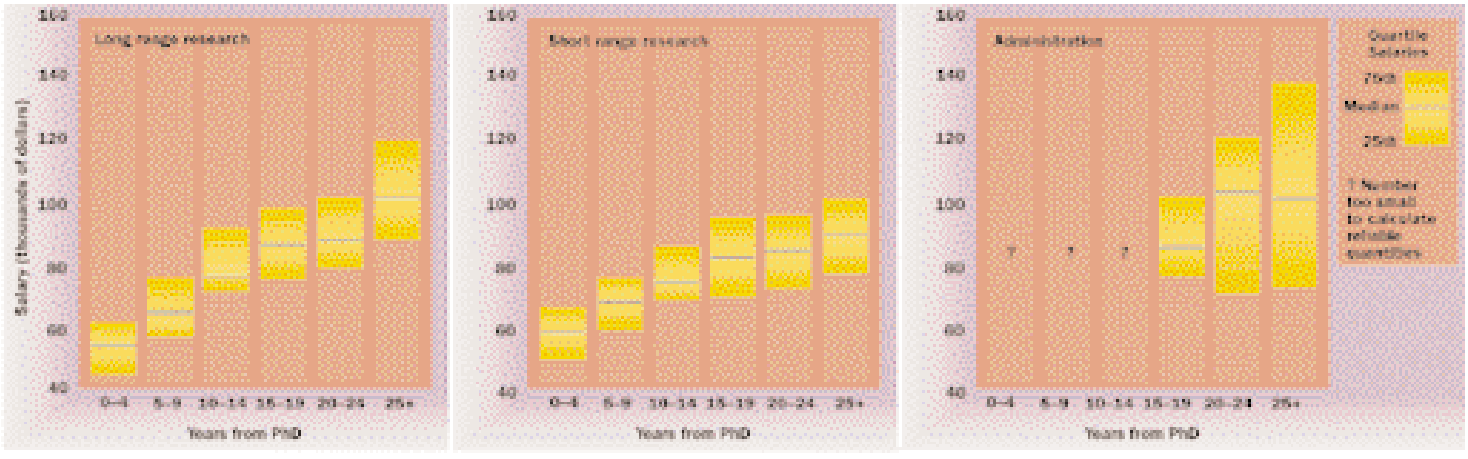

Figure 4. Salaries of PhD physicists working in industry by principal work activity and years from PhD, 1994.

Employment Sector	Median Annual Salary ($'000)
Industry	60.0
Government	54.9
FFR&DC	64.0
Nonprofit	58.9
Hospital	71.0
Junior college	41.1
Secondary school teacher	41.0

Table 2. Salaries of physicists with master's degrees by selected employment sector.

Austin 100.9, Baltimore 105.7, Boston 135.5, Cleveland 105.5, Columbus 102.8, Dallas 102.2, Denver 106.6, Houston 96.6, Knoxville 95.3, Los Angeles 123.8, Philadelphia 129.1, Phoenix 102.0, San Diego 127.2, St. Louis 97.9 and Tucson 102.5.

Applying these indices to the salary levels reported by the AIP survey shows that physicists working in Boston, Philadelphia, San Diego and Los Angeles have high costs of living but also have some of the highest salaries (as reflected in table 1, which gives PhD salaries). In contrast, physicists working in Atlanta and Knoxville have the lowest costs of living and relatively lower salaries, although industrial physicists with PhDs in Knoxville and other parts of the east south central region are among the highest paid physicists (table 1).

Differentials in salary levels and cost-of-living indices suggest that industrial physicists, especially those considering a job switch, should give careful attention not only to what they earn but also where they live.

Requests for copies of the full report should be sent to Raymond Y. Chu, American Institute of Physics, Education and Employment Statistics Division, One Physics Ellipse, College Park, MD 20740-3843. A two-page summary of the report is available free of charge. The full report costs $15 for a single copy; for multiple copies, the cost is $10 each. Please make checks payable to the American Institute of Physics.