IEEE-USA

SALARY & BENEFITS SURVEY

2015 EDITION

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ACKNOWLEDGMENTS

IEEE-USA's Salary & Benefits Survey, 2015 Edition, is the 28th in a series of studies about U.S. IEEE members' compensation. IEEE-USA coordinated the project. Industry Insights, Inc. prepared the summary report. Raven Analytics in Seattle, Wash., developed the regression models described in Section 4 (and available through the Salary Service).

EXECUTIVE SUMMARY

IEEE-USA has conducted compensation surveys of U.S. IEEE members since 1972. Major findings from the 2015 edition of this project are summarized below:

- A move in 2001 to collect data solely via the Internet continues to return substantially large numbers of responses. This year, the report contains data from a total of 10,215 IEEE member participants, including 9,044 employed full time in their primary areas of technical competence (PATC)—the most relevant group from both employer and employee standpoints.
- The typical respondent is a male in his mid-to-late forties, with an advanced degree, and about 22 years of professional experience. He is at the fifth or sixth of nine possible levels of professional responsibility, supervising a handful of other people, both professionals and support staff.
- Considering only those working full time in their PATC, the total median pre-tax income in the calendar year of 2014 from all sources was $133,000, up from $129,000 in 2013. After excluding overtime pay, profit sharing, and other supplemental earnings, median pre-tax income from all primary sources (salary, commissions, bonuses and net self-employment) was $130,000, up from $124,700 in 2013.
- The general PATC of Communications Technology continues to yield the highest median earnings, while this year, Energy and Power Engineering remains at the bottom.
- Following a broader societal trend, the gap between those at entry level, and those at the highest levels of responsibility, continues to be wide. Those working at Level 9 (greater than GS-15) earn nearly three times more than those at entry levels, in median primary income.
- Median income varies by employment sector, as well. Those working in private industry (defense) earned top primary incomes in calendar year 2014, while those working in educational institutions earned the least, on average.
- A job in management still results in the highest median primary income, with an advantage in salary of just under $35,000 for those in general management, compared to the median for all respondents. Technical managers, and those in marketing and sales, also do relatively well, compared to the whole. Lowest median wages belong to the job functions of education, teaching and training; operations, construction and maintenance; manufacturing and production; and engineering support.
- Women's salaries continue to trail men's, even considering experience levels. Overall, the difference in median primary income between the genders, among those working full time in their PATC, is $13,635, down nearly $3,000, compared to last year's gap.
- The salary gap between Caucasians and African-Americans fell in 2014. Overall, Whites earned $15,482 more than African-Americans. This gap is $2,000 smaller than in the previous year's report.
- Those employed full time continue to receive a broad array of health and insurance benefits, with more than nine in ten offered employer-sponsored health insurance.

10,215 U.S. IEEE MEMBER PARTICIPANTS

TYPICAL **RESPONDENT**

- MALE
- MID-FORTIES
- HAS ADVANCED DEGREE
- HAS ABOUT 20 YEARS OF PROFESSIONAL EXPERIENCE
- AT FIFTH OR SIXTH OF NINE POSSIBLE LEVELS OF PROFESSIONAL RESPONSIBILITY
- SUPERVISES A HANDFUL OF OTHER PEOPLE

PRIMARY AREAS OF **TECHNICAL COMPETENCE**

COMMUNICATIONS TECHNOLOGY CONTINUES TO YIELD THE HIGHEST MEDIAN EARNINGS

ENERGY AND POWER ENGINEERING REMAINS AT THE BOTTOM

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1. INTRODUCTION

1.1 THE INSTITUTE AND IEEE-USA

IEEE-USA advances the public good, and promotes the careers and public policy interests of nearly 200,000 U.S. IEEE members working as engineering, computing and technology professionals. With more than 400,000 members in over 160 countries, IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. The IEEE's constitution defines its purpose as "scientific and educational... [and] professional, directed toward the advancement of the standing of the members of the professions it serves; means to this end include, but are not limited to, the conduct and publication of surveys and reports on matters of professional concern to the members..." Pursuant to these purposes, IEEE-USA has conducted, analyzed and distributed a salary and benefit survey of U.S. IEEE members since 1972.

1.2 THE SURVEY

The 2015 IEEE-USA Salary & Benefits Survey is the 28th compensation study IEEE-USA has published. The aim of the project is to provide timely information on current and long-term trends related to the income, salary and benefits of U.S. IEEE members. This information is critical for accurate understanding of compensation practices in this profession, including how those practices impact individual engineers. As has been the case since 2001, we collected data for the 2015 Survey exclusively via the Internet, controlling access to the survey site by passwords and routing, incorporated to separate consultants from nonconsultants.

A total of 12,199 members provided a response for the 2015 survey. A small number of these respondents fell into categories that are not included in this report. 1,056 indicated they were not employed; 380 indicated they were self-employed; and greater than 50% received income from fee-based consulting (this group was not included in the report). Lastly, 187 cases were identified as extreme outliers, leaving a total of 10,215 respondents for this year's results. Most of the profile information is based on these respondents.

Proportions for this subset are subject to a maximum sampling error of ±0.9 percentage points, at the 95% confidence level.

EXHIBIT 1-1

THE SURVEY DATA BASE

Sampling Frame:

105,454 We invited U.S. IEEE members to complete the salary survey in the spring of 2015. (The sample consisted of U.S. IEEE Associate Members, Members, Senior Members and Fellows, not including those with Life Status—who consent to email communications from the IEEE.)

Survey Data:

12,199 Final number of responses (rate = 11.8%). We collected all data through the use of an online survey, with routing for consultant and non-consultant respondents.

187 Extreme high or low values (omitted from compensation and profile portions of report)

Categories of Respondents:

10,215 Full time, non-consultant workers; of these:

9,044 Employed in their PATC; much of the data in this report focuses on this group

1,171 Employed outside their PATC

361 Part-time workers

1,056 Not employed

- 25 Full time students
- 472 Retired, not employed
- 442 Unemployed, involuntary
- 117 Unemployed, voluntary

380 Self-employed, and greater than 50% of income from fee-based consulting (not included in report)

Of the usable cases, 10,215(96.6%) were employed full time, and 361 (3.4%) were employed part time. 9,044 (88.1% of those who responded to this question) are engineers employed full time in their primary area of technical competence (PATC). Most of the compensation data reported focuses on this group.

3.9% of respondents are retired and not employed, 0.9% are unemployed voluntarily, 3.6% are unemployed involuntarily, and slightly more than 0.2% are full time students.

Comparison of the survey respondents to the population of all higher-grade U.S. IEEE members on key variables shows a reasonably close correlation. (See Section 7.)

Starting with the 2012 Report, consultants were omitted from all the current analysis, and should be considered when comparing to results from 2011, and earlier. However, given the small number of consultant cases, and their negligible effect on overall results, comparability is likely of little concern.

Exhibit 1-2 recaps median income for survey years 2013 to 2015 from primary sources (salary, commissions, bonuses and net self-employment income), and from all sources (adding overtime pay, profit sharing, supplemental earnings from other work, retirement and Social Security benefits, and other earned income). 2013 median income from primary sources for those employed full time in their PATC rose $1,589, to $124,260 (or +1.3%). On an inflation-adjusted basis, however, this rise represents an increase of $1,613 real dollars. This years' data shows improvement compared to previous years' trends of failing to get ahead of inflation. See Section 6 for a full discussion of time series data.

This survey reports typical salary outcomes for groups of people. In addition to differences in income between these groups, the report also notes major differences in earnings within each group, reflecting such factors as the circumstances and policies of particular employers; and the skill, performance and negotiating ability of particular engineers. Detailed data on pay ranges in Section 3 provides a way to account for such variations.

EXHIBIT 1-2

All Respondents (Current Data ExcludesConsultants):

INCOME PROFILE BY EMPLOYMENT STATUS, 2013-2015

	2013 Survey			2014 Survey			2015 Survey		
	Median 2012 Income			*Median 2013 Income*			*Median 2014 Income*		
	Number of Cases	*Primary Sources*	*All Sources*	*Number of Cases*	*Primary Sources*	*All Sources*	*Number of Cases*	*Primary Sources*	*All Sources*
ALL RESPONDENTS	11,071	$122,671	$127,500	12,624	$124,260	$129,000	9,537	$129,997	$133,000
FULL-TIME WORKERS	10,593	124,000	128,394	12,356	124,260	129,000	9,166	$130,000	$133,500
In PATC	9,559	124,000	128,500	11,049	124,700	129,000	8,185	$130,000	$134,000
Not in PATC	1,034	121,700	125,414	1,117	123,000	128,000	956	$125,000	$129,290
Employed	10,622	123,500	128,000	11,891	123,600	128,000	8,702	$130,000	$132,600
Retired and Employed	88	125,000	166,613	96	128,257	175,813	76	$130,953	$181,050
PART-TIME WORKERS	268	60,000	94,000	268	60,000	87,000	282	$87,500	$108,500
Employed	146	75,063	80,528	118	54,350	63,000	122	$100,390	$107,688
Retired and Employed	60	54,750	120,450	90	50,000	114,200	59	$78,427	$118,000

NOTE: A minimum of 25 cases is required for all of the statistics in this report. Groups may have enough respondents to seem to meet this test, but they will still fail to pass it, if too many of their members have not responded to the particular item. The "All Sources" income class includes all primary sources (salary, self-employment income, and commissions or bonuses, as noted in the text), plus any supplemental earned income, and other income directly related to employment, such as profit-sharing, pension benefits and Social Security.

1.3 THE ANALYSES

SECTION 2 The ***Membership Profile***, reports on the characteristics of the respondents to the survey: how long they have been with their present employers, their levels of experience, how many people they supervise, etc. These data are presented for all respondents employed full time or part time in the workforce. Members who are, retired and not working, or who are unemployed (voluntarily and involuntary) are excluded. Self-employed members are also excluded throughout the current results, as we identified a majority of them as consultants.

SECTION 3 ***Income Statistics***, presents the bulk of the earnings information we collected, divided into three parts. In Section 3.1, variations in the magnitude and sources of total income earned in 2014 are examined for full time and part-time respondents. In Section 3.2, income variations are assessed by characteristics of the respondents: their PATC; degree level; levels of professional responsibility; length of service, both overall and with current employers; employer size, sector and lines of business; job functions; location, including regions, states and major metropolitan areas; gender; and ethnicity. Section 3.3 provides similar tabulations at still more detailed levels, with data on combinations of such variables as sector, degree and experience level.

In both Sections 3.2 and 3.3, statistics deal only with income from primary sources for those working full time in their PATC; these data are for people employed in appropriate jobs. Income data include 10th, 25th, 50th (median), 75th and 90th percentiles. Such measures are the preferred statistics for income analysis, as they are unaffected by extreme values (see Section 7.1, for more information). Statistics are not computed, if the number of cases is less than 25; instead, results are replaced with a dash ("-").

SECTION 4 ***Regression Models for Salary Benchmarking***, describes the development of mathematical models for predicting salary based on a large number of survey variables. The models themselves are available through the IEEE-USA Salary Calculator. For more information, see: **https://salaryservice.ieeeusa.org**

SECTION 5 ***Benefits, Retirement, Self-Employment and Satisfaction with Work***, summarizes data on the benefits and leave that respondents who were working, full time members reported. The section also includes data on issues relating to older EEs, and information on the subjective sense of satisfaction that U.S. IEEE members have with several aspects of their work.

SECTION 6 ***IEEE-USA Salary Time Series Data, 1994-2015***, documents trends in engineering pay over time, using the Consumer Price Index to examine compensation trends in constant dollars. We also review other membership trends.

SECTION 7 ***Methodological Notes***, reviews the survey's sample and response. Data are provided comparing the respondent database to U.S. IEEE's membership by region, grade and age. An Appendix with a reproduction of the survey's Web-based questionnaire follows.

2. MEMBERSHIP PROFILE

2.1 MEMBERS IN THE WORKFORCE

The vast majority (91.3%) of 2014 Salary Survey respondents are currently working, and 8.7% were not employed (status as of 1 January 2015). Of those currently working, most (96.7%) are working full time, and 3.3% work part time. Of the 6.8% not employed, 41.9% are unemployed involuntarily (and assumed to be looking for jobs).

Note: Those who indicated half or more of their personal earned income in the calendar year came from fee-based consulting were not included in this analysis, but reported separately, as consultants.

Gender, Ethnicity and Citizenship. Results for these measures are similar to those in the recent past. Most of these respondents (92.2%) are men, and 77.3% describe themselves as non-Hispanic whites. Since these surveys began in 1972, IEEE's U.S. members have become somewhat more diverse, but the change is slow. Asians and Pacific Islanders are the largest minority group (12.1% of members in the workforce). Hispanics, non-Hispanic African Americans, and American Indians/Alaskan Natives account for 3.5%, 1.8%, and 0.5%, respectively. Another 1.9% classify themselves as "other."

About three in four members in the workforce (75.7%) are U.S. citizens by birth. Another 13.9% are naturalized citizens, while 6.4% are permanent resident aliens; 2.4% are H-1B visa holders; and 1.6% are holders of some other type of visa.

Age and Experience. The mean age of members in the workforce is 47.4 and each has accumulated nearly 22 years of professional and/or managerial experience in electrical, electronics and computer engineering, or related technical fields (not including undergraduate or graduate school experience), on average.

The percent of members in the workforce who have worked for only one full time employer in the electrical, electronics, computer engineering, or related technical fields in the past 10 years is 45.4%. On average, respondents to the survey have worked for two full time employers.

Tenure with the current employer declined from a mean of 10.3 years in 2001 to 8.7 years in 2008. While that figure has been on the rise since 2008, respondents to the current survey have 10.2 years with their current employer, down from 10.9 in 2013. Fifteen percent are still in their first two years on the job, while 16.3% have been in their positions for 20 years, or more.

EXHIBIT 2-1
Members in the Workforce:
AGE

Mean:	47.4
Under 25	1.2%
25-29	5.9%
30-34	9.6%
35-39	9.8%
40-44	9.4%
45-49	13.5%
50-54	18.9%
55-59	17.1%
60-64	11.1%
65-69	2.6%
70 and up	0.9%
Number of cases: 10,718	

EXHIBIT 2-2
Members in the Workforce:
YEARS OF EXPERIENCE IN THE PROFESSION

Mean:	21.6
0 - 9 years	20.1%
10 - 19 years	20.5%
20 - 29 years	27.8%
30+ years	31.6%
Number of cases:	10,718

EXHIBIT 2-3

Members in the Workforce:

NUMBER OF DIFFERENT FULL TIME EMPLOYERS IN THE PAST TEN YEARS

Mean:	2.0
None	3.1%
1	45.4%
2	26.4%
3	14.7%
4	5.7%
5	2.6%
6	0.8%
7	0.4%
8	0.2%
9	0.0%
10 or more	0.7%
Number of cases:	10,536

EXHIBIT 2-4

Members in the Workforce:

YEARS WITH CURRENT EMPLOYER

Mean:	10.2
Less than 2	15.0%
2	8.6%
3 - 4	14.0%
5 - 6	9.2%
7 - 9	12.3%
10 - 14	14.2%
15 - 19	10.5%
20 - 24	5.2%
25 - 29	5.1%
30 - 34	3.8%
35 - 39	1.6%
40 - 44	0.5%
45 or more	0.1%
Number of cases:	10,548

EXHIBIT 2-5

Members in the Workforce:

SUPERVISORY RESPONSIBILITIES

	Total	Non-Tecnical	Technical
Mean:	2.1%	1.4%	2.0%
None	40.1%	75.%	43.0%
1-4	24.6%	16.9%	26.2%
5-19	25.0%	5.2%	22.4%
20-49	6.2%	1.3%	5.1%
50-499	3.8%	1.0%	3.1%
500 or more	0.3%	0.1%	0.2%
Number of cases:	10,550		

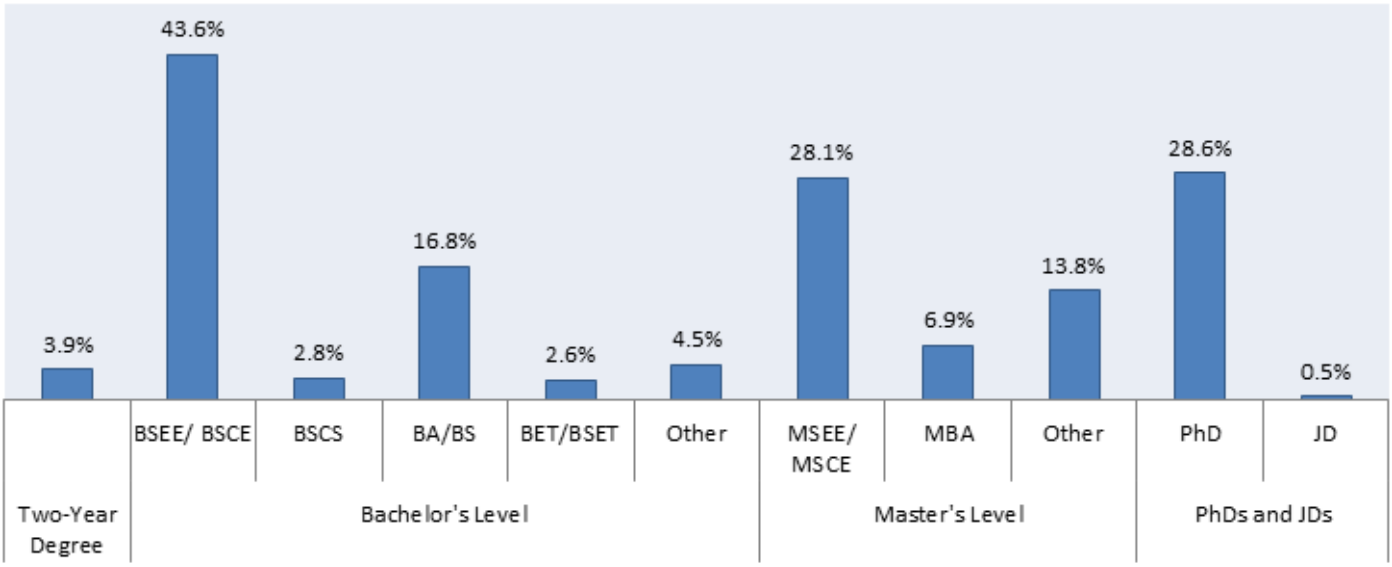
Length of the Work Week. The typical (median) member in the workforce reported working 45.0 hours per week in 2014, down from 47.4 in 2013. In this survey, 25% reported working 50 hours per week, or more.

Supervisory Responsibilities. The majority (59.9%) of workforce members supervised, directly or indirectly, at least one technical and/or non-technical employee in the primary position held on 1 January 2015. Typically, they supervised from one to four other employees.

EXHIBIT 2-6

Members in the Workforce:

DEGREES HELD



Number of cases: 10,571

NOTE: Within levels, we ranked degrees as they appear in the chart, left to right. For example, if a member had both an MSEE and an MBA, the MBA was counted as the higher degree. Distinctions within broad degree levels, e.g., among different kinds of Master's degrees, are somewhat arbitrary; the important differences are between the Bachelor's, Master's, and Ph.D. levels.

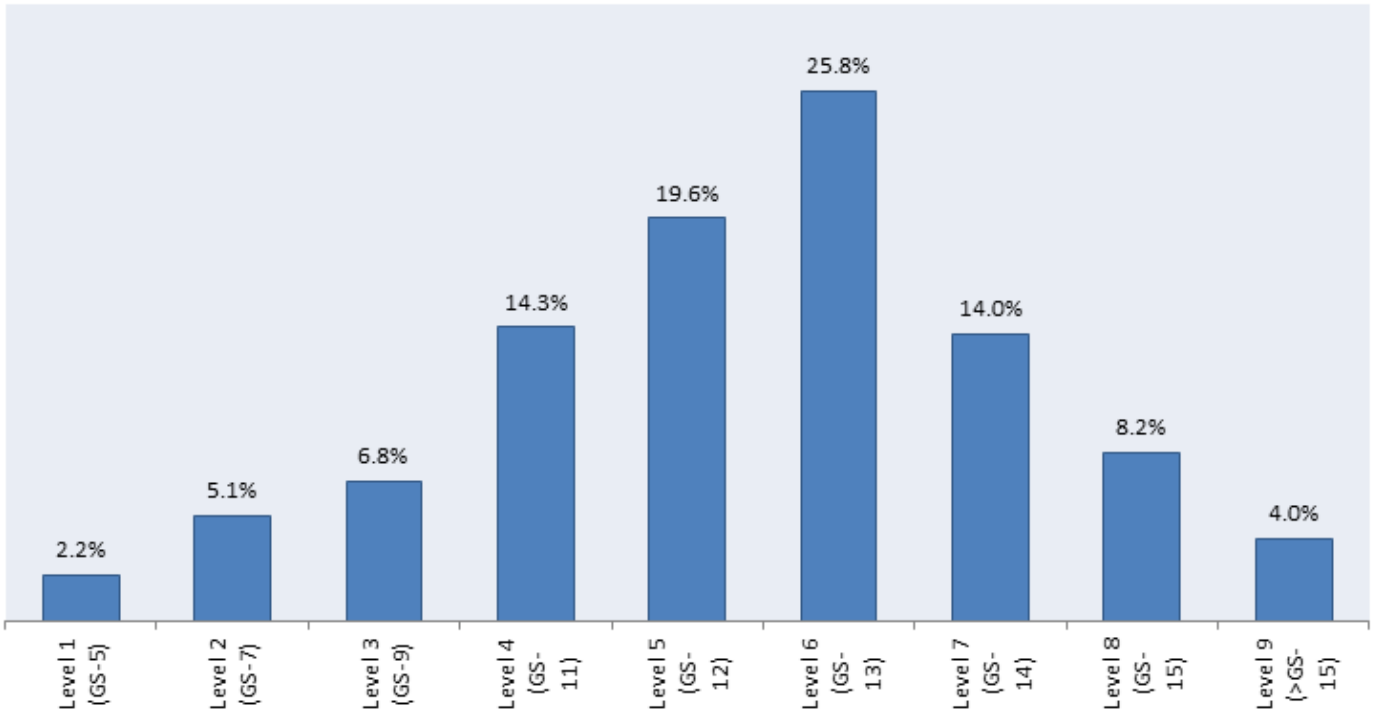
Education and Certification. As the chart in Exhibit 2-6 shows, more than one-quarter of the survey respondents (28.6%) hold a Ph.D., or equivalent; and only 0.5% respondents achieved a Law Degree (JD). Nearly 50% (48.8%) have a Master's degree; an MSEE or MSCE for 28.1%; an MBA for 6.9%; and other Master's degrees for 13.8%. Nearly 40% reported a BSEE or BSCE degree.

Although professional registration is a prerequisite for practice as an engineer in most countries in the world, registration has not been essential for most EEs in the United States. Many engineering employment sectors, including some of direct interest to U.S. IEEE members (such as consulting and power engineering), do place more importance on these credentials. Currently, 17.9% of U.S. IEEE members in the workforce are registered professional engineers (P.E.s).

EXHIBIT 2-7

Employed Members in the Workforce:

LEVEL OF PROFESSIONAL ENGINEERING RESPONSIBILITY



Number of cases: 9,070 (excludes 1,001 not employed as engineers)

Levels of Professional Responsibility. We asked respondents to indicate their levels of professional engineering responsibility, using detailed definitions provided with the questionnaire. These data resemble those from surveys dating back to the 1990s: 73.7% of these engineers are in Levels 4 through 7, equivalent to the tenure-track academic ranks of assistant, associate, full and distinguished professors; or the GS-11 through GS-14 grades in government. Since 2001, the proportion working at the highest levels (i.e., Levels 8 and 9, equivalent to GS-15, or higher) has dropped more than five points. The 2015 data remains somewhat steady at 12.2%.

Specialty. In its compensation studies, IEEE measures the specialties of its members by asking them to choose a "primary area of technical competence" (PATC). Nine broad areas of competence were listed in the survey form, with 41 more detailed subcategories within these types, plus an "other" field, for areas not otherwise listed. The 2015 results show Computers as the most common field (21.9%) followed closely by Energy and Power Engineering at 20.4%).

Exhibit 2-8 shows that many members (8.1%) are competent in the non-Internet software development category within Computers.

Circuits and Devices are the next most frequently mentioned PATC (15.1%), followed by Systems and Control (9.6%), Communications Technology (8.3%), and Signals and Applications (6.3%). The proportion reporting a specialty of Engineering and Human Environment has dropped nearly five points since 2001, to 2.0%. Nearly nine out of every 10 (88.1%) in the workforce report they are employed in their primary area of technical competence, a figure that has been stable for the past five years. We examine compensation variation extensively for this group, with respect to PATC, in Section 3.

Job Functions. Exhibit 2-9 shows that design and development engineering and technical management are the most frequently named primary job functions, at 23.2% and 18.0%, respectively. The other highly indicated job functions include computer programming/systems software engineering (9.7%) and systems engineering (8.2%).

EXHIBIT 2-9

Members in the Workforce:

PRIMARY JOB FUNCTION

Administration/personnel services	<0.5%
Basic research	6.2%
Computer programming, systems software engineering	9.7%
Consulting	7.2%
Design and development engineering	23.2%
Education, teaching, training	6.1%
Engineering support	6.5%
Management, general	4.2%
Management, technical	18.0%
Manufacturing and production	0.8%
Marketing, sales	2.3%
Operations, construction and maintenance	1.7%
Quality control, reliability, etc.	1.6%
Systems engineering	8.2%
Other job functions	4.1%

Number of cases: 10,562

EXHIBIT 2-8

Members in the Workforce:

PRIMARY AREA OF TECHNICAL COMPETENCE (PATC)

Circuits and Devices	**15.1%**
Circuits and Systems	5.7%
Components, Packaging and Manufacturing Technology	1.3%
Electronic Devices	2.8%
Lasers and Electro-Optics	1.1%
Solid-State Circuits	3.3%
Communications Technology	**8.3%**
Broadcast Technology	0.5%
Communications	5.8%
Consumer Electronics	0.9%
Vehicular Technology	<0.5%
Computers	**21.9%**
Hardware	3.6%
Non-Internet Software Development	8.1%
Non-Internet Systems Analysis/Integration	2.1%
Non-Internet Software Applications, including Database Administration	1.3%
Internet/Web Development/Applications	3.0%
Other	3.3%
Electromagnetics and Radiation	**5.7%**
Antennas and Propagation	1.6%
Electromagnetic Compatibility	0.8%
Magnetics	0.5%
Microwave Theory and Techniques	1.4%
Nuclear and Plasma Sciences	0.9%
Energy and Power Engineering	**20.6%**
Engineering and Human Environment	**2.0%**
Education	<0.5%
Engineering Management	1.3%
Professional Communication	<0.5%
Reliability	<0.5%
Social Implications of Technology	<0.5%
Industrial Applications	**4.1%**
Dielectrics and Electrical Insulation	<0.5%
Industry Applications	1.8%
Instrumentation and Measurement	1.0%
Power Electronics	0.8%
Signals and Applications	**6.3%**
Aerospace and Electronic Systems	1.5%
Geoscience and Remote Sensing	0.7%
Oceanic Engineering	<0.5%
Signal Processing	3.2%
Ultrasonics, Ferroelectrics and Frequency Control	<0.5%
Systems and Control	**9.6%**
Control Systems	4.0%
Engineering in Medicine and Biology	1.5%
Industrial Electronics	0.9%
Information Theory	<0.5%
Robotics and Automation	1.7%
Systems, Man and Cybernetics	0.7%
Other	**6.3%**

Number of cases: 10,575

Employer Characteristics. Exhibits 2-10, 2-11 and 2-12 summarize data about employers of members in the workforce.

Members tend to work for large organizations: 27.9 % are employed by organizations with more than 10,000 employees in the United States, and another 37.3% work for organizations with 501 to 10,000 employees—the survey found similar results going back through to 2009.

Private, non-defense companies employ more than half (53.5%) of members in the workforce. When defense-related firms are added in, the private industry share rises to nearly two-thirds of the members in the workforce (64.1%). Other sectors employing significant fractions of U.S. IEEE members include utilities (12.3%), educational institutions (10.4%), and the federal government (3.2% defense; 2.9% non-defense).

Members are employed in a variety of lines of business, with no more than 15% in any single category.

As shown in Exhibit 2-13, job functions vary markedly by lines of business, with some associations predictable—e.g., educators with educational institutions—and others, perhaps less so.

For more information about working electrical engineers, including additional data on variations by geographic regions, see the income data in Section 3.

EXHIBIT 2-10
Members in the Workforce:
SIZE OF EMPLOYER

More than 10,000 employees	27.9%
501 to 10,000 employees	37.3%
51 to 500 employees	18.9%
11 to 50 employees	8.4%
1 to 10 employees	6.3%
Don't know	1.1%
Number of cases: 10,577	

NOTE: U.S. employment at all locations

EXHIBIT 2-11
Members in the Workforce:
SECTOR

Private Industry: Defense	10.6%
Private Industry: Other than Defense or Utilities	53.5%
Utilities	12.3%
Federal Government: Defense	3.2%
Federal Government: Other than Defense	2.9%
State or Local Government	1.3%
Educational Institution	10.4%
Nonprofit Institution: Except Education	2.5%
Other Sector	3.3%
Number of cases: 10,659	

EXHIBIT 2-12
Members in the Workforce:
LINES OF BUSINESS

Aerospace	7.4%
Automotive	1.6%
Communications	8.8%
Computers	9.5%
Consulting	5.5%
Defense (except Aerospace)	7.5%
Education	8.3%
Electrical/Electronic Manufacturing	14.9%
Electrical/Electronic Services	3.8%
Medical	4.9%
Metals	<0.5%
Petroleum/Chemical	2.4%
Transportation	1.2%
Utilities	11.5%
Other Lines of Business	12.1%
Number of cases: 10,658	

EXHIBIT 2-13

Members in the Workforce:

JOB FUNCTION BY LINES OF BUSINESS

	Total	Aerospace	Automotive	Communications	Computers	Consulting	Defense (except Aerospace)	Education	Electrical/Electronic Manufacturing	Electrical/Electronic Services	Medical	Metals	Petroleum/Chemical	Transportation	Utilities	Other
Number of cases:	10,562	784	170	929	1,005	580	792	876	1,582	403	515	34	255	133	1,218	1,277
Administration/personnel services	<0.5%	<0.5%	<0.5%	0.1%	0.1%	0.2%	<0.5%	2.2%	0.1%	0.2%	0.2%	<0.5%	<0.5%	<0.5%	0.2%	0.4%
Basic research	6.2%	4.5%	1.8%	4.1%	6.9%	0.7%	11.0%	20.0%	3.1%	3.2%	13.4%	5.9%	3.5%	3.0%	1.0%	7.0%
Computer programming, systems software engineering	9.7%	12.0%	14.1%	9.5%	29.3%	3.6%	11.0%	2.5%	5.2%	6.5%	11.1%	5.9%	5.5%	7.5%	1.4%	14.2%
Consulting	7.2%	3.2%	2.4%	4.3%	3.3%	60.3%	3.2%	1.0%	2.3%	7.7%	3.3%	8.8%	8.2%	10.5%	8.2%	4.2%
Design and development engineering	23.2%	27.7%	32.9%	31.3%	23.6%	9.8%	25.4%	2.1%	36.7%	32.3%	28.5%	17.6%	21.6%	20.3%	15.5%	18.2%
Education, teaching, training	6.1%	0.6%	1.8%	1.1%	2.1%	0.2%	0.1%	64.3%	0.6%	1.7%	1.2%	<0.5%	<0.5%	<0.5%	0.5%	0.6%
Engineering support	6.5%	5.6%	5.3%	3.8%	2.3%	2.6%	4.7%	0.5%	7.0%	11.9%	2.3%	14.7%	18.8%	6.8%	17.1%	5.6%
Management, general	4.2%	3.4%	2.4%	3.0%	2.6%	5.0%	4.3%	2.1%	4.6%	3.5%	4.1%	8.8%	4.3%	7.5%	7.1%	4.7%
Management, technical	18.0%	18.2%	22.4%	20.0%	17.0%	11.2%	19.9%	2.2%	20.3%	16.4%	19.0%	14.7%	18.4%	18.8%	23.6%	21.5%
Manufacturing and production	0.8%	0.6%	1.2%	0.6%	0.1%	<0.5%	<0.5%	<0.5%	2.6%	0.5%	1.6%	2.9%	1.6%	<0.5%	0.2%	1.3%
Marketing, sales	2.3%	0.9%	1.2%	2.3%	1.6%	0.3%	0.4%	0.1%	7.2%	3.7%	0.8%	5.9%	2.0%	1.5%	1.4%	2.3%
Operations, construction and maintenance	1.7%	0.8%	0.6%	1.6%	0.4%	0.5%	0.3%	0.3%	0.3%	1.2%	0.8%	5.9%	3.1%	3.0%	7.6%	1.8%
Quality control, reliability, etc.	1.6%	2.2%	2.4%	1.8%	1.5%	0.5%	0.9%	<0.5%	2.1%	1.2%	3.1%	2.9%	2.0%	1.5%	1.3%	1.7%
Systems engineering	8.2%	17.5%	8.2%	12.4%	5.8%	3.4%	15.3%	1.1%	4.9%	6.2%	6.4%	<0.5%	9.0%	18.8%	10.1%	6.6%
Other job functions	4.1%	2.8%	3.5%	4.1%	3.6%	1.6%	3.7%	1.7%	2.9%	3.7%	4.3%	5.9%	2.0%	0.8%	4.8%	9.9%

2.2 Academics

Because the nature of academic employment differs substantially from employment in industry, or other types of organizations, we added questions to the survey in 2005 to better profile this small but important segment of U.S. IEEE members. One in ten respondents (10.1%) indicated that an academic (degree-granting) institution was their primary employer, as of 1 January 2015. Of this group, 51.4% are on a nine- or 10-month contract; 34.5%, on an 11- or 12-month contract; and 14.0%, on some other arrangement.

The largest portions of this group (31.2%) are full professors. About one in five (21.4%) are associate professors, and another 12.5% are assistant professors. Another 12.0% of respondents have a non-teaching research appointment. More than two out of every five respondents (45.4%) are tenured, with an additional 11.0% on a tenure track. The large majority (77.5%) work at public or private institutions that grant doctoral degrees.

2.3 Those not in the Workforce, or Involuntarily Unemployed

This year's report indicates similar unemployment statistics as last year. This year, there are only 25 full time students, compared to 472 retired, and 117 voluntarily unemployed.

Involuntary Unemployed Engineers. The members surveyed for this report include the 442 (4.1%) who indicated they are unemployed involuntarily, presumably searching for work. This proportion is down 1.0 points from the last survey.

3. INCOME STATISTICS

3.1 Sources and Amounts of 2014 Income

As in prior surveys, earned income was measured for the year preceding the survey's date of record—so, the 2015 survey reports income earned in calendar year 2014. Thirteen categories of income are measured, grouped broadly into income from primary sources (salary, commissions, bonuses and net self-employment income) and secondary sources (overtime pay, profit sharing, supplemental earnings from other work, retirement and Social Security benefits, and other earned income).

Exhibit 3-1 shows how 2014 earned income distributes by category for each group of responding U.S. IEEE members. For full time workers who are employed, salary plus net self-employment income constitutes the bulk of their earnings (over 89.7%, on average); while those who have retired from a prior career, and are still working full time, receive 69.7% of their total earnings from salary/self-employment income, (with 23.0% coming from retirement benefits, plus Social Security).

Compared with thirteen years ago (the 2001 survey), full time workers now depend significantly more on salary plus net self-employment income (82.7% versus 89.7%), and earn less from commissions and bonuses (8.3% versus 6.1%), and from profit sharing/other (5.2% versus 1.8%).

EXHIBIT 3-1

All Respondents:

SOURCES OF 2014 TOTAL EARNED INCOME BY EMPLOYMENT STATUS

		Percentage of 2014 Total Earned Income from...				
		Primary Sources		Secondary Sources		
	Number of Cases	*Salary + Self Employment*	*Commissions + Bonuses*	*Overtime + Supplemental*	*Retirement + Social Security*	*Profit Sharing + Other*
ALL RESPONDENTS (Excluding Consultants)	9,537	89.1%	6.1%	1.3%	1.6%	1.8%
FULL-TIME WORKERS	9,166	89.7%	6.2%	1.3%	1.1%	1.7%
In PATC	8,185	89.8%	6.2%	1.3%	1.1%	1.7%
Not in PATC	956	89.2%	6.6%	1.2%	1.3%	1.7%
Employed by a company	8,702	90.1%	6.4%	1.2%	0.8%	1.6%
Retired and employed	76	69.7%	4.1%	1.2%	23.0%	1.9%
Self-employed, and less than 50% of personal income in 2014 came from fee-based consulting	74	81.4%	6.0%	5.7%	2.4%	4.5%
PART-TIME WORKERS	282	69.8%	2.3%	4.2%	18.2%	5.6%
Employed by a company	122	86.4%	4.1%	2.5%	4.1%	2.9%
Retired and employed	59	46.1%	1.0%	3.6%	41.4%	7.8%
Self-employed, and less than 50% of personal income in 2014 came from fee-based consulting	38	50.4%	1.8%	7.3%	36.5%	6.8%

Where sufficient responses were received (n ≥ 25), five compensation statistics are presented:

- Lowest decile (10% earn less)
- Lower quartile (25% earn less)
- Median (50% earn less)
- Upper quartile (75% earn less)
- Highest decile (90% earn less)

Exhibit 3-2 shows that within a given group of members, the variance in earned income is large, influenced as it is by a host of factors: personal characteristics, such as education, certification, specialty and experience; position characteristics, such as level of responsibility and supervision requirements; employer characteristics, such as organization size and sector; and location. Considering members working full time in their primary areas of technical competence (PATCs), we see typical (median) 2014 total earned income of $134,000; while 10% earned less than $78,860 (lowest decile), and 10% earned more than $225,000 (highest decile). The interquartile range—the difference between the upper and lower quartiles—of engineers employed full time in their PATCs is nearly $71,000.

EXHIBIT 3-2

All Respondents:

2014 TOTAL EARNED INCOME FROM ALL SOURCES BY EMPLOYMENT STATUS

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
ALL RESPONDENTS (EXCLUDING CONSULTANTS)	9,536	$77,500	$100,242	$133,000	$174,000	$225,402
FULL-TIME WORKERS	9,165	$78,860	$101,298	$133,500	$174,000	$225,157
In PATC	8,184	$80,000	$102,814	$134,000	$173,702	$225,000
Not in PATC	956	$70,000	$92,940	$129,290	$176,336	$235,300
Employed	8,702	$78,330	$101,000	$132,600	$171,493	$223,000
Retired and Employed	76	$92,382	$134,000	$181,050	$219,000	$267,000
Self-employed, and less than 50% of personal income in 2011 came from fee-based consulting	73	$63,760	$88,308	$125,000	$185,000	$248,800
PART-TIME WORKERS	282	$40,396	$65,000	$108,500	$164,634	$227,100
Employed by a company	122	$41,733	$75,000	$107,688	$151,625	$223,800
Retired and Employed	59	$48,000	$78,427	$118,000	$180,500	$232,000
Self-employed, and less than 50% of personal income in 2014 came from fee-based consulting	38	$31,917	$40,000	$67,750	$143,125	$260,597

Speculating about the Value of Stock Options. Nearly one in six (15.2%) reported receiving stock options in 2014 from their employers. The value of these options can only be estimated; their final worth cannot be known until they are exercised, and the stock is sold. For those who received them, the median estimated present value of options was $15,000, an increase of $3,000 over the 2013 survey (and $7,000 over the 2012 survey) estimates.

Medians are the preferred measure for most analyses of income, because they are not affected by extreme cases. The statistics for options represent a case in point. If one computes arithmetic averages, instead of medians, the estimate of "typical" value for 2014 options shoots up to nearly $92,500, because a few members estimated that the present value of their awards was much higher than most others. Twenty-five percent of respondents getting these incentives reported estimated present option values of $45,000, or more.

3.2 Primary Income in 2014, for Those Working Full Time in Their Primary Area of Technical Competence

The rest of Section 3 is devoted to a detailed look at the largest group of people in the study, the 8,185 members who were working full time in their PATCs as of 1 January 2015, and did not indicate half or more of their personal earned income in calendar year 2014 came from fee-based consulting. These respondents account for about nine in ten (88.1%) of the full time workers responding to the survey. Respondents not provided compensation data are obviously not included in these analyses.

Moreover, as appropriately placed people, they are a useful benchmarking population, from both employer and employee perspectives. In examining these full time, non-consultant specialists, the income figures in this section of the report reflect only compensation from primary sources—salary, commissions or bonuses, and net pre-tax income from self-employment. Additional income from secondary sources is excluded (such as overtime work, second jobs, profit-sharing plans, and Social Security and retirement benefits). This approach provides a consistent way to compare basic pay for different employment situations.

Primary Areas of Technical Competence. Exhibit 3-3 provides statistics on income from primary sources for 10 broad areas of technical competence, as well as subgroups within these broad areas. As in the prior year, median 2014 primary compensation is highest for those in the broad Communications Technology specialty ($150,000); however, the lowest broad category is for those in Energy and Power Engineering ($116,175).

Specific subspecialties that are particularly lucrative (based on median primary income), include Information Theory, Consumer Electronics, Solid-State Electronics, Communications, Communications Technology, Lasers and Electro-Optics, and Engineering Management, (all at $150,000, or more, per year). The only subspecialties with median annual compensation in 2014 less than $100,000 were Education and Social Implications of Technology.

EXHIBIT 3-3

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY PRIMARY AREA OF TECHNICAL COMPETENCE

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
CIRCUITS AND DEVICES	1,252	$85,000	$108,789	$143,008	$179,603	$230,000
Circuits and Systems	476	$80,000	$98,425	$130,000	$168,000	$216,300
Components, Packaging and Manufacturing Technology	110	$86,400	$113,258	$149,500	$190,750	$239,520
Electronic Devices	218	$74,792	$104,000	$137,196	$170,500	$244,100
Lasers and Electro-Optics	98	$95,900	$119,979	$150,000	$171,750	$220,231
Solid-State Circuits	289	$100,000	$131,364	$160,000	$196,348	$247,600
Other	55	$95,600	$110,000	$143,471	$191,000	$258,200
COMMUNICATIONS TECHNOLOGY	659	$88,000	$115,000	$150,000	$190,000	$236,865
Broadcast Technology	36	$57,248	$87,500	$135,283	$173,375	$287,700
Communications	468	$90,450	$117,000	$151,203	$190,000	$234,300
Consumer Electronics	68	$88,620	$122,389	$161,250	$212,813	$266,850
Vehicular Technology	25	$58,400	$94,894	$126,500	$163,713	$188,800
Other	64	$82,250	$106,075	$145,000	$186,000	$232,878
COMPUTERS	1,772	$79,860	$101,077	$132,279	$169,725	$224,990
Hardware	262	$79,160	$99,756	$135,000	$183,853	$254,546
Non-Internet Software Development	675	$80,000	$103,185	$130,000	$166,000	$209,000
Non-Internet Systems Analysis/Integration	180	$82,128	$104,250	$135,400	$183,960	$232,000
Non-Internet Software Applications Including Database Admin.	110	$68,200	$91,335	$130,060	$157,725	$209,911
Internet/Web Development/Applications	245	$74,920	$100,000	$135,000	$167,700	$239,932
Other	287	$80,000	$105,000	$135,000	$183,085	$236,200

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
ELECTROMAGNETICS AND RADIATION	457	$78,437	$104,500	$130,368	$163,538	$200,000
Antennas and Propagation	121	$93,200	$111,491	$134,810	$173,000	$202,600
Electromagnetic Compatibility	69	$70,000	$94,474	$120,000	$143,070	$180,000
Magnetics	19	-	-	-	-	-
Microwave Theory and Techniques	113	$75,800	$99,100	$122,925	$149,121	$196,500
Nuclear and Plasma Sciences	66	$79,551	$110,000	$134,000	$162,057	$183,609
Other	69	$86,800	$115,000	$145,000	$166,000	$228,500
ENERGY AND POWER ENGINEERING	1,772	$73,226	$92,500	$116,175	$147,700	$185,000
ENGINEERING AND HUMAN ENVIRONMENT	169	$82,430	$105,000	$140,000	$175,312	$213,000
Education	16	-	-	-	-	-
Engineering Management	109	$94,000	$119,000	$150,000	$186,000	$240,000
Professional Communication	7	-	-	-	-	-
Reliability	18	-	-	-	-	-
Social Implications of Technology	6	-	-	-	-	-
Other	17	-	-	-	-	-
INDUSTRIAL APPLICATIONS	340	$77,100	$95,759	$120,000	$150,000	$189,800
Dielectrics and Electrical Insulation	12	-	-	-	-	-
Industry Applications	152	$76,679	$100,220	$125,000	$150,000	$186,550
Instrumentation and Measurement	84	$77,000	$91,675	$120,000	$157,250	$211,650
Power Electronics	62	$76,532	$91,500	$114,500	$138,250	$186,350
Other	40	$78,050	$96,880	$113,500	$142,000	$179,800
SIGNALS AND APPLICATIONS	507	$82,300	$108,452	$141,062	$170,300	$214,124
Aerospace and Electronic Systems	130	$76,219	$111,500	$145,000	$178,494	$219,150
Geoscience and Remote Sensing	54	$92,332	$100,938	$145,000	$169,325	$221,500
Oceanic Engineering	10	-	-	-	-	-
Signal Processing	250	$80,250	$106,506	$140,000	$170,054	$214,000
Ultrasonics, Ferroelectrics and Frequency Control	28	$80,474	$109,750	$138,550	$170,968	$224,700
Other	36	$80,242	$116,589	$145,271	$165,769	$208,230
SYSTEMS AND CONTROL	764	$72,000	$92,065	$119,572	$159,685	$205,000
Control Systems	308	$72,000	$90,015	$115,650	$153,750	$197,026
Engineering in Medicine and Biology	122	$60,100	$100,000	$126,950	$180,176	$249,700
Industrial Electronics	73	$72,400	$84,909	$108,622	$129,500	$195,000
Information Theory	6	-	-	-	-	-
Robotics and Automation	137	$67,842	$84,800	$110,000	$137,250	$171,000
Systems, Man and Cybernetics	60	$88,200	$113,550	$147,707	$186,125	$235,593
Other	70	$77,223	$95,739	$130,000	$170,014	$194,500
OTHER	487	$77,409	$100,300	$132,000	$177,592	$225,200

EXHIBIT 3-4

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY LEVEL OF PROFESSIONAL RESPONSIBILITY

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Level 1 (GS-5, Entry Level)	136	$50,850	$59,000	$66,236	$76,750	$91,230
Level 2 (GS-7)	348	$60,450	$70,000	$80,000	$95,000	$120,000
Level 3 (GS-9/Instructor)	452	$61,000	$73,448	$88,150	$108,000	$138,000
Level 4 (GS-11/Asst. Professor)	1,061	$75,000	$88,000	$107,000	$130,000	$156,800
Level 5 (GS-12/Assoc. Professor)	1,409	$87,000	$100,983	$124,000	$150,000	$178,000
Level 6 (GS-13/Full Professor)	1,896	$99,175	$116,465	$140,393	$170,327	$211,035
Level 7 (GS-14/ Distinguished Professor/Academic Department Head)	1,007	$105,874	$126,839	$160,000	$200,000	$244,200
Level 8 (GS-15/ Academic Department Head/Dean)	570	$124,000	$144,000	$170,424	$218,000	$284,820
Level 9 (>GS-15/Dean)	259	$120,000	$159,000	$195,000	$270,000	$360,000
Not Employed as Engineer	587	$72,987	$97,355	$136,500	$180,000	$250,000

Professional Engineering Responsibility. Primary income reported for nine levels of professional engineering responsibility are shown in Exhibit 3-4. The effect of position responsibility is a powerful one, with a range of $129,000 separating the median income of those working at entry level (Level 1), from those working at the highest level (Level 9).

Overall Experience and Years with the Current Employer. Exhibits 3-5 and 3-6 provide information on the effects of experience. The data in Exhibit 3-5 are for overall years of professional and managerial experience in electrical, electronics and computer engineering, or related technical fields, not counting time in school. As in the past, results conform roughly to the classic maturity curves of engineering compensation, in which values rise regularly from entry level to roughly the 15-19 years level, but flatten thereafter. However, this year, we do observe slight fluctuations above 35 years.

EXHIBIT 3-5

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY YEARS OF PROFESSIONAL/MANAGERIAL EXPERIENCE

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Less than 2	206	$43,000	$60,000	$75,000	$101,950	$138,215
2	176	$55,000	$65,000	$73,000	$90,635	$108,600
3 - 4	319	$62,918	$71,100	$80,000	$100,000	$125,600
5 - 6	375	$66,000	$80,000	$92,500	$115,000	$144,400
7 - 9	532	$71,000	$85,000	$99,734	$123,000	$150,000
10 - 14	776	$80,000	$95,000	$115,013	$142,000	$174,073
15 - 19	906	$90,000	$107,875	$134,075	$166,375	$213,825
20 - 24	1,033	$97,000	$116,750	$144,900	$180,000	$232,300
25 - 29	1,274	$96,788	$118,000	$144,579	$180,125	$237,000
30 - 34	1,310	$97,000	$120,000	$150,000	$187,503	$235,900
35 - 39	804	$96,858	$119,892	$148,000	$185,000	$235,000
40 - 44	326	$90,947	$113,300	$140,000	$186,298	$229,574
45 or more	60	$91,300	$108,500	$135,000	$157,656	$194,947

NOTE: Undergraduate or graduate school is not counted as experience.

EXHIBIT 3-6

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY YEARS WITH CURRENT EMPLOYER

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Less than 2	1,162	$63,000	$83,000	$112,000	$150,000	$189,400
2	680	$66,047	$82,500	$115,650	$150,000	$200,000
3 - 4	1,145	$72,000	$91,327	$120,000	$157,913	$203,400
5 - 6	748	$77,960	$94,613	$120,798	$165,000	$215,200
7 - 9	1,005	$84,060	$99,473	$127,000	$163,220	$205,435
10 - 14	1,180	$91,000	$110,170	$139,713	$171,498	$225,000
15 - 19	861	$95,000	$116,555	$142,000	$178,000	$227,636
20 - 24	439	$98,000	$118,993	$148,000	$187,000	$245,453
25 - 29	421	$102,000	$120,948	$146,000	$182,125	$227,423
30 - 34	305	$103,000	$120,849	$145,308	$184,750	$225,000
35 - 39	128	$107,910	$121,193	$139,750	$172,750	$220,100
40 - 44	42	$104,600	$115,750	$136,500	$171,373	$210,500
45 or more	20	$66,500	$96,250	$118,299	$173,659	$213,500

The tailing off of rates for the most experienced members is a common characteristic of technical pay. It is related to a propensity for many of the best paid people to either rise into general management, leave engineering altogether, or take early retirement. In any event, some of the most highly paid persons are removed from the groups of very experienced engineers. Time with the current employer, shown in Exhibit 3-6, follows a similar, though less obvious pattern.

Effects of the Size of Employing Organizations. Differences in primary income for various sizes of employers among non-consultants are shown in Exhibit 3-7. The largest firms tend to pay best for the bulk of earners—$11,000 per year more than the overall median. The data show that mid-size firms (51-500 employees) offer the least favorable median incomes.

EXHIBIT 3-7

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY SIZE OF EMPLOYER

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
1 to 10 employees	411	$65,200	$93,000	$134,000	$180,000	$250,000
11 to 50 employees	684	$70,000	$91,585	$125,000	$160,000	$210,000
51 to 500 employees	1,566	$74,131	$94,538	$121,628	$155,000	$203,414
501 to 10,000 employees	3,117	$78,648	$99,205	$128,000	$164,000	$209,507
More than 10,000 employees	2,320	$89,910	$112,933	$141,000	$178,103	$225,000

NOTE: Based on total number of U.S. employees at all locations

EXHIBIT 3-8

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY SECTOR

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Private Industry: Defense	846	$87,000	$113,504	$143,500	$177,054	$212,000
Private Industry: Other than Defense or Utilities	4,412	$84,000	$105,000	$137,500	$177,000	$226,000
Utilities	1,054	$73,600	$90,635	$114,050	$141,644	$180,500
Federal Government: Defense	254	$85,026	$104,875	$125,000	$156,308	$180,000
Federal Government: Other than Defense	235	$74,919	$100,000	$126,500	$155,000	$179,000
State or Local Government	98	$66,800	$82,000	$101,011	$130,000	$155,500
Educational Institution	836	$60,000	$81,625	$106,400	$144,750	$191,090
Nonprofit Institution, Except Education	201	$86,080	$107,000	$133,000	$171,048	$208,800
Other	239	$75,500	$100,000	$132,000	$175,600	$238,000

EXHIBIT 3-9

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY LINES OF BUSINESS

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Aerospace	602	$85,650	$111,947	$140,200	$169,200	$203,700
Automotive	130	$71,147	$90,450	$115,000	$148,500	$190,000
Communications	743	$94,730	$120,000	$152,000	$190,000	$238,200
Computers	785	$87,164	$115,000	$149,619	$190,850	$250,000
Consulting	411	$72,000	$96,000	$125,000	$160,000	$207,400
Defense (except Aerospace)	590	$88,000	$110,000	$138,075	$167,553	$208,450
Education	663	$60,567	$83,000	$108,000	$143,000	$195,000
Electrical/Electronic Manufacturing	1,234	$80,000	$101,299	$132,000	$170,000	$220,000
Electrical/Electronic Services	332	$67,580	$87,375	$118,750	$159,000	$205,700
Medical	413	$75,000	$100,000	$130,500	$172,750	$225,000
Metals	22	-	-	-	-	-
Petroleum/Chemical	193	$82,480	$114,250	$140,000	$178,796	$229,400
Transportation	97	$70,800	$86,770	$111,000	$142,576	$184,200
Utilities	1,005	$74,988	$91,689	$113,378	$141,763	$176,700
Other	958	$81,000	$100,000	$130,000	$166,000	$212,100

Employer Sector and Line of Business. Exhibits 3-8 and 3-9 show income variations for some basic characteristics of employers. Exhibit 3-8 provides data on several types of private and public organizations. Similar to last year, those working in private industry (defense or otherwise), nonprofit institutions (other than education), and the federal government (other than defense), earned the top 2014 primary incomes. As has been true in recent surveys, those working in state or local government, or educational institutions, typically earn the least.

The most lucrative lines of business are currently Communications, Computers, Aerospace and Petroleum/Chemical. Those working in Automotive, Education and Transportation typically earn the least.

Primary Job Functions. Compensation fluctuations among the various job functions of U.S. IEEE members working in their PATCs are listed in Exhibit 3-10. As usual, members whose roles emphasize management lead all others in compensation: general management earned a median of $165,000 in income from primary sources, while technical management earned a median of $157,100. Lowest median wages belong to the job functions of education, teaching and training; operations, construction and maintenance; manufacturing and production; and engineering support, etc.—all at, or below, $115,000.

EXHIBIT 3-10

Those Working Full Time in Their PATCs:

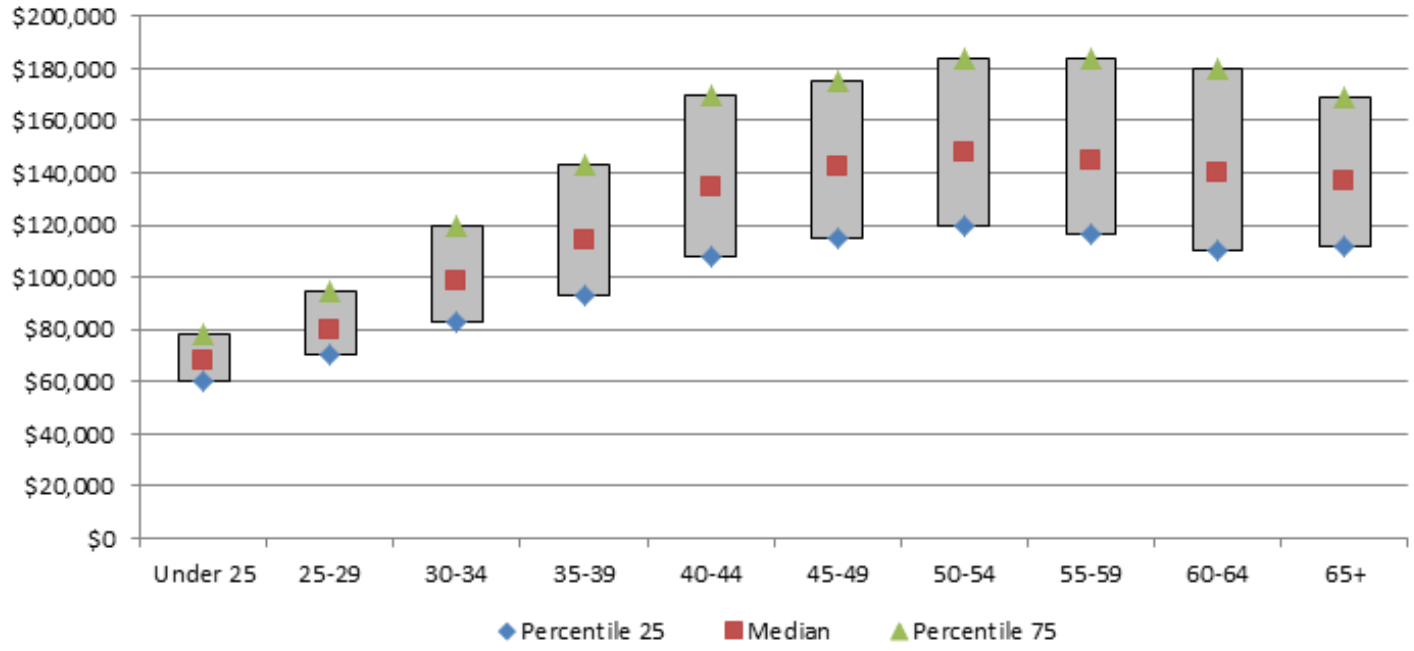
2014 PRIMARY INCOME BY PRIMARY JOB FUNCTION

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Administration/Personnel Services	16	-	-	-	-	-
Basic Research	521	$58,400	$90,524	$123,000	$159,850	$207,500
Computer Programming, Systems Software Engineering	819	$75,000	$93,876	$120,500	$153,300	$188,600
Consulting	519	$75,000	$98,000	$130,000	$167,000	$211,500
Design and Development Engineering	2,007	$78,000	$100,000	$128,000	$163,000	$204,918
Education, Teaching, Training	483	$68,000	$87,000	$105,000	$135,000	$176,160
Engineering Support	526	$70,000	$86,650	$107,750	$136,278	$170,000
Management, General	295	$100,000	$125,000	$165,000	$230,000	$300,000
Management, Technical	1,499	$103,000	$128,000	$157,100	$195,000	$250,000
Manufacturing and Production	71	$70,600	$92,500	$112,000	$144,357	$200,400
Marketing, Sales	174	$91,500	$109,125	$140,000	$168,594	$205,000
Operations, Construction and Maintenance	135	$68,700	$86,500	$106,591	$130,000	$160,000
Quality Control, Reliability, etc.	133	$68,800	$91,025	$117,080	$140,000	$185,220
Systems Engineering	691	$80,000	$102,500	$128,000	$162,000	$200,000
Other	283	$75,220	$101,300	$139,000	$180,500	$234,800

EXHIBIT 3-11

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY AGE



Age, Education, Gender and Ethnicity. Primary income quartiles and medians by age for those working full time in their PATCs are shown in the bar chart (Exhibit 3-11). These data are similar to those for years of professional and managerial experience (Exhibit 3-5), with noteworthy growth in early years leading to the start of a plateau in middle age.

2014 primary income statistics by the highest degree held by U.S. IEEE members working in their PATCs are reported in Exhibit 3-12. Those with Ph.Ds. reported median primary incomes of $140,000 a year. This median represents an increase of $4,000 from the previous years' survey reports. Those holding an MSEE or MSCE report a median of $138,000, nearly the same as the median earned by those holding a Ph.D., as their highest degree. BSEE or BSCE degree holders' median incomes ($127,686) were slightly below the other two categories.

Constituting only 7.8% of all members working full time in their PATCs, women continue to trail men in primary income—even when experience is a factor. .

Exhibit 3-14 shows that median 2014 primary income is highest among white, non-Hispanic respondents, followed most closely by Asian/Pacific Islanders. In contrast, the relatively small number of Hispanics and non-Hispanic African Americans report median incomes roughly $9,000 and $15,000, respectively, below the overall median. The median gap for Hispanics represents a 40% decrease in the gap from the 2014 survey ($15,000).

EXHIBIT 3-12

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY HIGHEST DEGREE EARNED

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Ph.D.	2,368	$84,000	$109,000	$140,000	$179,571	$230,200
JD	27	$98,811	$130,000	$178,000	$280,000	$512,000
MBA	549	$90,000	$112,683	$140,000	$176,400	$221,000
MSEE or MSCE	2,273	$86,321	$108,317	$138,000	$174,456	$220,088
Other Master's	1,085	$81,340	$102,865	$135,000	$170,000	$213,000
BSEE or BSCE	3,602	$78,000	$99,000	$127,686	$161,105	$208,000
BSCS	238	$77,881	$99,750	$133,500	$168,100	$215,290
BET or BSET	214	$71,050	$89,575	$109,700	$142,663	$185,000
B.A.	1,360	$68,515	$90,000	$124,145	$165,000	$205,000
Other Bachelor's	334	$74,000	$100,000	$133,338	$173,125	$224,500
No Degree	85	$84,374	$100,000	$124,900	$172,500	$241,373
Two-Year Degree	306	$67,000	$86,017	$108,991	$144,141	$188,000

EXHIBIT 3-13

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY GENDER AND EXPERIENCE

	Number of Cases		Lower Quartile		Median		Upper Quartile	
	Men	Women	Men	Women	Men	Women	Men	Women
TOTAL	7581	596	$100,000	$89,412	$131,000	$117,365	$169,000	$149,925
Less than 2	173	33	$63,000	$48,977	$78,000	$61,870	$105,900	$81,215
2	159	17	$64,900	-	$72,400	-	$88,540	-
3 - 4	286	33	$71,191	$70,050	$80,705	$76,720	$100,800	$88,691
5 - 6	336	39	$80,000	$77,100	$92,500	$92,922	$115,626	$112,772
7 - 9	489	43	$85,000	$85,243	$99,466	$100,500	$123,813	$122,000
10 - 14	693	83	$95,000	$96,000	$115,000	$116,000	$143,150	$139,000
15 - 19	823	83	$109,898	$98,970	$135,000	$123,600	$170,000	$157,000
20 - 24	963	69	$118,500	$101,600	$145,000	$128,159	$180,500	$167,500
25 - 29	1,183	88	$118,993	$103,595	$146,069	$133,500	$181,600	$166,075
30 - 34	1,243	64	$120,000	$117,797	$150,000	$147,110	$186,000	$194,250
35 - 39	777	27	$119,795	$122,000	$148,000	$148,000	$186,450	$160,000
40 - 44	315	10	$113,000	-	$140,000	-	$185,966	-
45 or more	58	2	$109,500	-	$135,500	-	$159,250	-

NOTE: Results are suppressed where n<25.

EXHIBIT 3-14

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY ETHNIC BACKGROUND

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
African American (not Hispanic origin)	145	$66,000	$86,700	$115,000	$137,500	$173,200
American Indian or Alaskan Native	39	$68,500	$84,000	$128,000	$160,000	$230,000
Asian or Pacific Islander	981	$75,000	$98,685	$130,000	$167,000	$212,800
Hispanic	275	$71,594	$93,000	$121,000	$156,773	$196,200
White (not Hispanic origin)	6,353	$79,154	$100,000	$130,482	$167,639	$216,111
Other	153	$78,000	$104,500	$135,000	$174,000	$215,071
Prefer Not to Answer	311	$74,040	$100,000	$132,300	$168,000	$214,336

Regional Variations in Primary Income. Exhibits 3-15a and 3-15b report variations in primary income ranges by regions—in terms of IEEE's six U.S. regions, and in terms of the nine divisions defined by the Census Bureau. In terms of IEEE regions, those in Region 6 (West) fare substantially better than those in Region 4 (Central), or Region 3 (Southeast), with gaps of more than $24,000 in median primary income. Census divisions tell a similar story, with those in the Pacific (AK, HI, WA, OR, CA) states faring more than $33,000 per year better than those in the East South Central (KY, TN, MS, AL), East North Central (WI, IL, MI, IN, OH), or West North Central (ND, SD, NE, KS, MN, IA, MO) states. However, it is also the case that costs of living in the West are significantly higher than elsewhere.

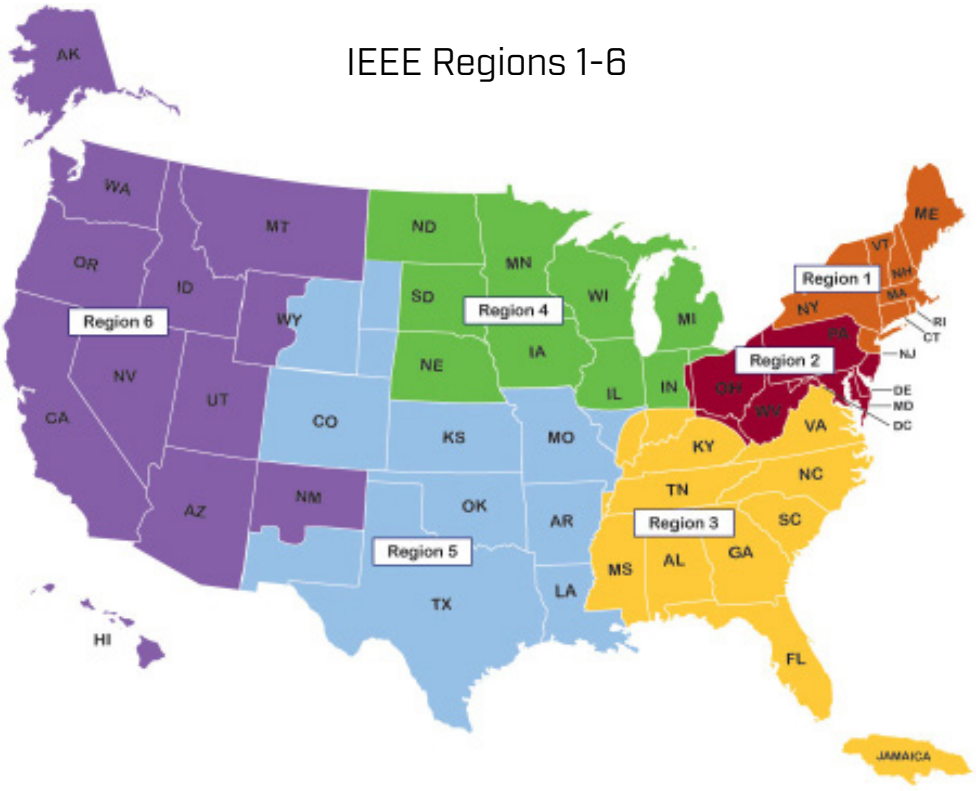


EXHIBIT 3-15A

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY IEEE REGION

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
1 - Northeast	1,310	$80,000	$104,490	$135,000	$143,896	$213,900
2 - East	1,195	$77,843	$100,000	$131,225	$141,558	$210,400
3 - Southeast	1,075	$76,300	$95,000	$120,000	$130,626	$190,820
4 - Central	1,083	$71,000	$90,500	$113,200	$124,370	$185,000
5 - Southwest	1,340	$75,040	$98,166	$129,890	$138,996	$213,178
6 - West	2,182	$86,079	$110,000	$144,000	$156,822	$239,230

EXHIBIT 3-15B

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY U.S. CENSUS DIVISION

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
New England	673	$79,500	$104,883	$136,250	$143,828	$215,624
Middle Atlantic	987	$78,000	$100,000	$130,000	$139,004	$201,200
East North Central	963	$71,000	$90,000	$112,500	$124,390	$185,000
West North Central	530	$71,000	$90,000	$112,797	$122,409	$181,893
South Atlantic	1,391	$80,000	$100,050	$132,000	$141,761	$208,900
East South Central	262	$72,860	$93,750	$117,000	$125,122	$180,350
West South Central	780	$75,040	$100,000	$132,000	$141,263	$215,462
Mountain	719	$77,500	$98,800	$126,000	$136,263	$206,000
Pacific	1,797	$89,000	$115,000	$150,000	$163,380	$250,000

Exhibit 3-16 shows primary income for those working full time in their PATCs by state (where at least 25 responses were received). The top states for 2014 median income are California, Virginia, Washington, D.C., Massachussets, Maryland, New Jersey and Texas ($135,000, or more, each). The bottom states are Arkansas, Kansas, North Dakota, Nebraska, Indiana and Ohio (less than $110,000).

Because of the high levels of participation (11,049 members working full time in their PATCs), statistics on primary compensation can be meaningfully calculated for 63 U.S. metropolitan areas (Exhibit 3-17). Using median primary income as the measure, the best-paying U.S. cities include San Jose (CA), Ventura (CA), Lowell, (MA), San Diego (CA), Washington (D.C.), and Los Angeles (CA)—all reporting medians of more than $150,000. Cities where compensation is lowest include Columbus (OH), Kansas City (MO), Indianapolis (IN), Madison (WI), Grand Rapids (MI), Orlando (FL), Norfolk (VA) and Nashville (TN)—all at $110,000 or less.

Exhibit 3-18 examines primary compensation for portions of states outside of reported metropolitan areas (where $n \geq 25$). **Note:** These geographic analyses must be interpreted cautiously. Differences in engineering pay from one area to the next may be caused by variations in the industrial makeup of each region. If the locals tend to be specialists in communications technology, and you are in power engineering, then reports about the pay of other IEEE members in the area may be misleading.

EXHIBIT 3-16

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY STATE

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
Total	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Alabama	88	$70,630	$99,252	$126,518	$130,518	$180,734
Alaska	41	$83,681	$101,063	$120,000	$132,926	$215,200
Arizona	134	$74,500	$103,000	$130,000	$140,747	$218,250
Arkansas	28	$56,340	$76,250	$97,907	$119,202	$229,400
California	1,287	$93,600	$125,000	$159,000	$172,658	$260,000
Colorado	328	$80,900	$98,850	$130,000	$140,349	$214,035
Connecticut	90	$67,100	$92,838	$124,250	$133,275	$211,800
Delaware	18	-	-	-	-	-
District of Columbia	64	$87,400	$108,050	$141,076	$153,811	$220,000
Florida	241	$80,800	$98,685	$121,000	$136,858	$204,000
Georgia	188	$73,850	$95,000	$118,250	$133,318	$198,524
Hawaii	16	-	-	-	-	-
Idaho	63	$83,760	$95,000	$116,000	$130,534	$201,200
Illinois	275	$79,200	$95,700	$121,700	$139,320	$197,600
Indiana	111	$70,200	$84,559	$108,649	$118,925	$195,200
Iowa	54	$66,500	$88,500	$116,950	$124,779	$187,784
Kansas	54	$68,000	$82,426	$99,300	$120,859	$194,500
Kentucky	43	$67,000	$94,500	$117,765	$128,271	$224,000
Louisiana	54	$72,600	$85,875	$113,000	$123,685	$190,500
Maine	23	-	-	-	-	-
Maryland	293	$85,536	$110,330	$140,000	$143,723	$200,000
Massachusetts	451	$84,200	$112,000	$141,000	$149,165	$219,980
Michigan	166	$69,550	$87,581	$112,000	$117,894	$182,900
Minnessota	210	$75,100	$96,000	$120,000	$127,424	$184,440
Mississippi	29	$72,800	$91,500	$120,000	$124,579	$190,692
Missouri	126	$72,000	$91,000	$114,923	$126,279	$181,800
Montana	27	$59,974	$83,614	$115,000	$124,447	$251,600
Nebraska	41	$67,720	$80,394	$103,126	$106,147	$139,700
Nevada	24	-	-	-	-	-
New Hampshire	64	$66,500	$102,000	$128,736	$136,622	$191,550
New Jersey	258	$93,880	$113,422	$139,933	$148,982	$218,200
New Mexico	70	$85,700	$104,000	$122,237	$125,527	$175,270
New York	404	$76,251	$98,000	$130,000	$139,039	$201,500
North Carollina	204	$79,900	$100,909	$126,316	$132,835	$193,500
North Dakota	31	$67,400	$84,000	$100,000	$106,122	$163,800

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Ohio	220	$69,550	$86,693	$108,900	$116,614	$169,908
Oklahoma	38	$67,700	$90,000	$119,750	$132,502	$216,636
Oregon	147	$77,807	$106,000	$132,000	$148,467	$240,000
Pennsylvania	325	$73,060	$95,000	$122,000	$131,038	$181,710
Rhode Island	19	-	-	-	-	-
South Carolina	55	$70,600	$93,560	$119,800	$129,948	$215,400
South Dakota	14	-	-	-	-	-
Tennessee	102	$73,900	$91,875	$110,000	$119,293	$165,065
Texas	660	$80,000	$104,926	$135,000	$144,142	$217,000
Utah	67	$73,302	$98,601	$115,000	$134,177	$222,000
Vermont	26	$62,765	$73,850	$116,700	$137,846	$303,700
Virginia	315	$85,000	$107,341	$147,000	$156,566	$240,000
Washington	306	$80,122	$98,434	$125,210	$137,831	$205,808
West Virginia	13	-	-	-	-	-
Wisconsin	191	$70,030	$89,700	$110,200	$120,672	$179,785
Wyoming	6	-	-	-	-	-

NOTE: Results are suppressed where n<25.

EXHIBIT 3-17

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY METROPOLITAN AREA

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
All Respondents	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Albany-Schenectady-Troy, NY	55	$84,600	$105,000	$128,000	$164,700	$190,400
Albuquerque, NM	51	$86,286	$104,500	$123,000	$146,150	$169,240
Atlanta, GA	163	$73,971	$97,000	$120,000	$155,700	$200,000
Austin-San Marcos, TX	166	$80,896	$112,529	$150,000	$177,250	$225,824
Baltimore, MD	165	$92,600	$120,000	$142,000	$169,862	$200,400
Boise City, ID	38	$85,910	$99,875	$125,600	$177,250	$232,500
Boston, MA-NH	330	$85,025	$112,000	$142,000	$171,450	$219,990
Boulder-Longmont, CO	82	$79,853	$98,725	$133,200	$187,199	$227,728
Charlotte-Gastonia-Rock Hill, NC-SC	27	$89,220	$109,000	$130,000	$159,500	$202,000
Chicago, IL	220	$82,063	$96,000	$123,350	$159,500	$200,900
Cincinnati, OH-KY-IN	32	$73,835	$89,890	$129,500	$171,500	$264,010
Cleveland-Lorain-Elyria, OH	51	$68,940	$86,000	$113,000	$133,000	$176,810
Colorado Springs, CO	48	$91,800	$118,218	$132,500	$164,750	$210,500
Columbus, OH	36	$71,353	$80,000	$98,195	$128,622	$163,703
Dallas, TX	181	$88,100	$110,350	$140,000	$175,000	$219,285
Dayton-Springfield, OH	52	$68,150	$90,163	$112,500	$138,808	$162,200
Denver, CO	143	$72,000	$97,690	$125,000	$166,000	$209,840
Detroit, MI	89	$71,000	$91,024	$113,740	$137,300	$186,500
Fort Collins-Loveland, CO	42	$90,600	$102,375	$145,090	$169,045	$222,481
Fort Worth-Arlington, TX	42	$62,810	$97,354	$123,612	$146,669	$202,600
Grand Rapids-Muskegon-Holland, MI	25	$61,916	$75,500	$105,000	$128,750	$148,230
Hartford, CT	37	$70,600	$98,000	$123,000	$165,521	$213,000
Houston, TX	183	$80,043	$100,000	$132,000	$180,000	$220,000
Huntsville, AL	44	$76,897	$99,700	$137,500	$161,500	$180,250
Indianapolis, IN	44	$70,026	$80,200	$102,822	$127,500	$185,750
Kansas City, MO-KS	49	$63,000	$77,000	$98,600	$140,500	$167,746
Knoxville, TN	43	$73,600	$94,000	$123,000	$144,892	$216,791
Lawrence, MA-NH	33	$79,000	$109,500	$139,000	$204,060	$253,749
Los Angeles-Long Beach, CA	193	$84,600	$109,500	$152,033	$191,250	$244,807
Lowell, MA-NH	40	$90,574	$140,750	$156,620	$191,750	$250,443
Madison, WI	43	$56,400	$81,000	$105,000	$157,620	$205,600
Melbourne-Titusville-Palm Bay, FL	29	$84,000	$100,150	$133,000	$176,050	$200,000
Middlesex-Somerset-Hunterdon, NJ	52	$76,200	$100,159	$136,000	$167,250	$217,240
Milwaukee-Waukesha, WI	94	$72,150	$99,867	$118,500	$143,125	$188,250
Minneapolis-St. Paul, MN-WI	160	$80,100	$100,625	$126,000	$152,811	$188,800
Monmouth-Ocean, NJ	43	$93,400	$129,676	$147,000	$190,000	$240,400

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Nashua, NH	28	$103,155	$125,000	$143,575	$173,525	$212,300
Nashville, TN	27	$86,600	$92,000	$110,000	$132,232	$149,250
Nassau-Suffolk, NY	52	$67,638	$105,005	$132,150	$162,500	$214,600
New York, NY	137	$78,080	$106,678	$140,000	$178,000	$230,000
Newark, NJ	67	$100,000	$117,000	$135,000	$166,000	$191,000
Norfolk-Virginia Beach-Newport News, VA-NC	29	$58,500	$93,140	$110,000	$142,803	$170,000
Oakland, CA	90	$87,910	$110,000	$150,000	$212,000	$279,400
Orange County, CA	86	$82,850	$117,500	$150,000	$180,563	$226,055
Orlando, FL	53	$76,031	$94,500	$108,234	$137,190	$170,420
Philadelphia, PA-NJ	139	$88,000	$104,999	$131,000	$160,000	$195,000
Phoenix-Mesa, AZ	99	$78,000	$110,500	$140,000	$180,000	$225,000
Pittsburgh, PA	128	$69,000	$93,375	$119,750	$150,000	$196,308
Portland-Vancouver, OR-WA	163	$80,288	$106,000	$134,719	$166,607	$241,825
Raleigh-Durham-Chapel Hill, NC	135	$80,811	$101,598	$128,159	$162,000	$196,365
Rochester, NY	47	$69,200	$96,512	$126,533	$144,000	$201,000
Sacramento, CA	41	$85,800	$115,000	$142,000	$172,500	$226,800
St. Louis, MO-IL	72	$75,917	$98,050	$123,500	$159,801	$189,400
Salt Lake City-Ogden, UT	37	$66,409	$96,510	$115,000	$164,617	$203,206
San Diego, CA	180	$99,894	$115,000	$155,000	$199,500	$225,000
San Francisco, CA	81	$94,720	$122,500	$150,000	$200,000	$273,000
San Jose, CA	490	$118,000	$142,375	$173,500	$225,000	$288,800
Seattle-Bellevue-Everett, WA	190	$87,154	$109,750	$136,650	$177,500	$209,771
Tampa-St. Petersburg-Clearwater, FL	51	$72,391	$100,000	$128,000	$160,000	$203,200
Trenton, NJ	30	$97,457	$113,575	$139,000	$203,250	$260,141
Tucson, AZ	28	$70,800	$78,500	$113,500	$153,750	$221,100
Ventura, CA	27	$84,800	$115,100	$167,500	$184,900	$250,000
Washington, D.C.-MD-VA-WV	386	$90,576	$118,000	$154,000	$185,250	$241,500

NOTE: Results are suppressed where n<25.

EXHIBIT 3-18

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY NON-METROPOLITAN AREA

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
All Respondents	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Alabama	21	-	-	-	-	-
Alaska	19	-	-	-	-	-
Arizona	35	$70,200	$80,000	$115,000	$147,000	$215,400
Arkansas	28	$56,340	$76,250	$97,907	$155,605	$229,400
California	106	$78,132	$96,118	$132,446	$165,000	$204,200
Colorado	13	-	-	-	-	-
Connecticut	53	$57,400	$87,068	$125,500	$164,913	$219,000
Delaware	2	-	-	-	-	-
Florida	108	$81,850	$95,250	$125,303	$167,250	$247,840
Georgia	25	$70,950	$79,650	$98,503	$124,700	$162,300
Hawaii	16	-	-	-	-	-
Idaho	25	$78,885	$94,000	$115,026	$134,000	$158,714
Illinois	49	$70,000	$92,750	$112,000	$143,400	$192,691
Indiana	56	$68,241	$84,852	$105,389	$129,325	$183,200
Iowa	54	$66,500	$88,500	$116,950	$145,443	$187,784
Kansas	29	$67,000	$83,417	$100,000	$166,500	$210,000
Kentucky	20	-	-	-	-	-
Louisiana	54	$72,600	$85,875	$113,000	$149,250	$190,500
Maine	23	-	-	-	-	-
Maryland	19	-	-	-	-	-
Massachusetts	50	$75,530	$89,846	$121,941	$146,790	$164,820
Michigan	52	$63,800	$85,331	$111,250	$153,275	$187,600
Minnesota	50	$68,065	$78,782	$99,550	$132,700	$153,850
Mississippi	29	$72,800	$91,500	$120,000	$145,105	$190,692
Missouri	36	$72,347	$88,776	$109,000	$137,254	$186,800
Montana	27	$59,974	$83,614	$115,000	$135,000	$251,600
Nebraska	41	$67,720	$80,394	$103,126	$117,500	$139,700
Nevada	24	-	-	-	-	-
New Hampshire	34	$61,000	$87,575	$119,000	$160,625	$191,550
New Jersey	11	-	-	-	-	-
New Mexico	19	-	-	-	-	-
New York	94	$74,000	$92,196	$118,887	$155,081	$190,000
North Carolina	44	$74,300	$90,250	$111,028	$146,468	$173,661
North Dakota	31	$67,400	$84,000	$100,000	$123,000	$163,800
Ohio	53	$67,672	$89,550	$105,000	$127,758	$189,000

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Oklahoma	38	$67,700	$90,000	$119,750	$170,675	$216,636
Oregon	24	-	-	-	-	-
Pennsylvania	68	$52,672	$80,250	$105,500	$141,038	$174,100
Rhode Island	19	-	-	-	-	-
South Carolina	53	$69,400	$92,541	$118,840	$144,582	$215,600
South Dakota	14	-	-	-	-	-
Tennessee	59	$73,000	$90,000	$103,000	$132,232	$158,489
Texas	65	$63,800	$83,750	$118,000	$138,800	$175,422
Utah	30	$77,775	$99,000	$119,568	$160,000	$236,171
Vermont	26	$62,765	$73,850	$116,700	$150,000	$303,700
Virginia	48	$70,450	$80,850	$100,000	$133,875	$154,110
Washington	76	$75,000	$91,520	$116,500	$149,500	$189,290
West Virginia	12	-	-	-	-	-
Wisconsin	54	$69,372	$88,368	$101,500	$114,125	$138,000
Wyoming	6	-	-	-	-	-

NOTE: State incomes above are calculated without major metropolitan areas listed in Exhibit 3-17. Results are suppressed where n<25.

3.3 Detailed Income Tabulations

The tabulations in this section report income data for combinations of variables in the survey. Exhibit 3-19 reports income for those with different levels of professional engineering responsibility, for each of the major types of employers.

Exhibit 3-20 provides details by experience, lines of business and highest degree. Exhibit 3-21 is similar, except that instead of sorting U.S. IEEE members by lines of business, they are sorted by their technical specialties.

EXHIBIT 3-19

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY SECTOR AND LEVEL OF RESPONSIBILITY

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
Levels 1, 2 & 3	936	$58,000	$68,873	$81,049	$100,000	$125,300
Level 4	1,061	$75,000	$88,000	$107,000	$130,000	$156,800
Level 5	1,409	$87,000	$100,983	$124,000	$150,000	$178,000
Level 6	1,896	$99,175	$116,465	$140,393	$170,327	$211,035
Level 7	1,007	$105,874	$126,839	$160,000	$200,000	$244,200
Levels 8 & 9	829	$122,500	$147,000	$180,000	$232,380	$304,000
PRIVATE INDUSTRY: DEFENSE	846	$87,000	$113,504	$143,500	$177,054	$212,000
Levels 1, 2 & 3	73	$66,005	$82,500	$89,845	$98,200	$121,600
Level 4	104	$83,739	$114,553	$117,030	$133,875	$152,366
Level 5	156	$89,380	$132,000	$133,141	$155,000	$172,000
Level 6	237	$110,000	$150,000	$154,432	$177,108	$200,460
Level 7	110	$117,700	$170,800	$178,452	$195,711	$237,000
Levels 8 & 9	105	$144,600	$195,025	$217,072	$234,500	$330,200
PRIVATE INDUSTRY: OTHER THAN DEFENSE OR UTILITIES	4,412	$84,000	$105,000	$137,500	$177,000	$226,000
Levels 1, 2 & 3	477	$62,160	$87,000	$92,592	$106,750	$136,065
Level 4	599	$78,185	$114,500	$119,765	$140,000	$168,000
Level 5	793	$95,000	$133,000	$137,919	$158,700	$187,000
Level 6	1,041	$100,010	$147,000	$158,311	$182,000	$225,000
Level 7	547	$105,295	$169,575	$178,374	$215,000	$260,000
Levels 8 & 9	394	$123,500	$195,500	$214,941	$255,000	$348,000
UTILITIES	1,054	$73,600	$90,635	$114,050	$141,644	$180,500
Levels 1, 2 & 3	219	$61,000	$78,000	$83,864	$92,200	$112,000
Level 4	125	$78,155	$99,170	$103,199	$115,850	$129,926
Level 5	134	$85,135	$110,875	$117,187	$132,424	$153,649
Level 6	213	$99,310	$127,000	$135,190	$147,823	$171,666
Level 7	121	$103,200	$133,000	$145,846	$164,750	$205,800
Levels 8 & 9	86	$106,800	$152,000	$181,873	$211,137	$292,390
FEDERAL GOVERNMENT: DEFENSE	254	$85,026	$104,875	$125,000	$156,308	$180,000
Levels 1, 2 & 3	11	-	-	-	-	-
Level 4	15	-	-	-	-	-
Level 5	31	$76,500	$98,000	$102,154	$115,000	$139,994

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Level 6	67	$88,256	$115,300	$123,063	$133,000	$168,780
Level 7	52	$114,851	$130,184	$138,597	$146,025	$171,250
Levels 8 & 9	63	$134,416	$159,163	$165,438	$170,000	$206,400
FEDERAL GOVERNMENT: OTHER THAN DEFENSE	235	$74,919	$100,000	$126,500	$155,000	$179,000
Levels 1, 2 & 3	15	-	-	-	-	-
Level 4	15	-	-	-	-	-
Level 5	33	$72,913	$104,460	$107,713	$127,000	$141,441
Level 6	54	$92,961	$112,844	$121,053	$145,500	$161,859
Level 7	36	$108,200	$133,100	$131,799	$138,875	$149,850
Levels 8 & 9	55	$141,942	$157,500	$170,795	$179,000	$215,100
STATE OR LOCAL GOVERNMENT	98	$66,800	$82,000	$101,011	$130,000	$155,500
Levels 1, 2 & 3	14	-	-	-	-	-
Level 4	7	-	-	-	-	-
Level 5	13	-	-	-	-	-
Level 6	18	-	-	-	-	-
Level 7	15	-	-	-	-	-
Levels 8 & 9	11	-	-	-	-	-
EDUCATIONAL INSTITUTION	836	$60,000	$81,625	$106,400	$144,750	$191,090
Levels 1, 2 & 3	79	$32,000	$58,000	$61,277	$71,000	$92,000
Level 4	141	$52,600	$87,000	$88,304	$103,148	$123,800
Level 5	190	$75,000	$104,500	$110,482	$130,000	$150,000
Level 6	170	$90,100	$130,000	$137,159	$163,383	$194,800
Level 7	81	$94,600	$180,000	$180,447	$225,930	$274,400
Levels 8 & 9	62	$96,500	$163,500	$179,867	$232,945	$272,555
NONPROFITS INSTITUTION++	201	$86,080	$107,000	$133,000	$171,048	$208,800
Levels 1, 2 & 3	14	-	-	-	-	-
Level 4	29	$80,500	$109,000	$125,879	$132,800	$180,500
Level 5	32	$86,000	$113,200	$113,786	$126,500	$151,660
Level 6	56	$113,610	$143,531	$149,819	$168,445	$196,200
Level 7	16	-	-	-	-	-
Levels 8 & 9	26	$126,500	$196,410	$212,251	$223,250	$311,000
OTHER	239	$75,500	$100,000	$132,000	$175,600	$238,000
Levels 1, 2 & 3	33	$58,200	$87,500	$94,757	$118,750	$138,600
Level 4	24	-	-	-	-	-
Level 5	26	$87,380	$123,000	$130,305	$146,625	$205,900
Level 6	37	$82,224	$142,000	$150,418	$180,000	$217,280
Level 7	28	$113,850	$171,650	$173,149	$200,125	$247,750
Levels 8 & 9	26	$123,550	$195,500	$234,096	$289,500	$437,000

NOTE: Results are suppressed where n<25.

EXHIBIT 3-20

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY LINES OF BUSINESS, HIGHEST DEGREE AND EXPERIENCE

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
ALL RESPONDENTS	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	2,804	$70,451	$90,000	$117,550	$150,000	$197,000
Experience 0-9 years	613	$59,012	$77,900	$82,968	$92,000	$109,600
Experience 10-19 years	527	$80,408	$110,000	$119,131	$133,000	$167,400
Experience 20-29 years	723	$91,891	$132,100	$142,861	$166,000	$211,200
Experience 30+ years	906	$92,410	$140,000	$153,354	$176,878	$226,480
MSEE/MSCE/MS/MA	2,324	$85,000	$104,926	$135,000	$169,000	$211,400
Experience 0-9 years	356	$70,880	$90,250	$94,881	$104,949	$125,000
Experience 10-19 years	434	$87,000	$125,000	$132,587	$155,000	$187,500
Experience 20-29 years	692	$101,500	$146,777	$159,516	$176,975	$225,000
Experience 30+ years	819	$100,000	$150,000	$161,004	$186,790	$230,000
MBA	504	$90,000	$112,000	$140,000	$177,750	$222,000
Experience 0-9 years	44	$60,650	$91,145	$102,195	$127,250	$157,000
Experience 10-19 years	82	$86,800	$118,800	$130,855	$154,022	$183,500
Experience 20-29 years	171	$105,200	$148,000	$165,928	$190,000	$226,000
Experience 30+ years	206	$95,473	$148,823	$169,197	$186,250	$253,300
Ph.D.	2,368	$84,000	$109,000	$140,000	$179,571	$230,200
Experience 0-9 years	599	$60,000	$108,200	$110,330	$131,800	$163,000
Experience 10-19 years	609	$89,000	$140,000	$151,929	$173,150	$220,345
Experience 20-29 years	675	$100,000	$159,000	$175,170	$203,446	$266,869
Experience 30+ years	471	$100,000	$163,000	$172,762	$202,000	$245,362
AEROSPACE	602	$85,650	$111,947	$140,200	$169,200	$203,700
BSEE/BSCE/BSCS/BET/BSET/BA/BS	156	$74,686	$98,125	$123,634	$151,500	$199,300
Experience 0-9 years	31	$60,930	$66,625	$75,600	$81,500	$97,680
Experience 10-19 years	32	$90,650	$99,000	$112,503	$134,750	$148,960
Experience 20-29 years	31	$110,220	$121,000	$150,000	$199,000	$222,158
Experience 30+ years	62	$107,600	$116,130	$137,000	$168,286	$205,127
MSEE/MSCE/MS/MA	244	$92,206	$112,000	$140,300	$167,865	$200,400
Experience 0-9 years	29	$73,460	$76,900	$93,420	$102,535	$105,447
Experience 10-19 years	49	$85,000	$100,000	$126,000	$147,500	$170,500
Experience 20-29 years	72	$118,000	$133,962	$157,032	$179,500	$209,600
Experience 30+ years	90	$111,718	$126,395	$145,500	$187,000	$213,750
MBA	30	$87,179	$121,816	$146,000	$165,250	$223,500

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Ph.D.	168	$103,900	$126,123	$152,366	$182,375	$225,000
Experience 0-9 years	31	$65,800	$92,922	$111,000	$129,000	$141,170
Experience 10-19 years	36	$109,700	$123,875	$149,309	$170,464	$203,200
Experience 20-29 years	54	$120,000	$143,299	$158,416	$187,941	$239,750
Experience 30+ years	44	$137,000	$155,753	$173,500	$202,164	$264,195
AUTOMOTIVE	130	$71,147	$90,450	$115,000	$148,500	$190,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	47	$66,200	$75,100	$94,900	$124,000	$151,261
MSEE/MSCE/MS/MA	48	$76,800	$89,225	$116,870	$151,877	$191,000
MBA	9	-	-	-	-	-
Ph.D.	25	$87,320	$102,500	$133,600	$168,150	$217,900
COMMUNICATIONS	743	$94,730	$120,000	$152,000	$190,000	$238,200
BSEE/BSCE/BSCS/BET/BSET/BA/BS	189	$78,000	$100,000	$131,390	$169,750	$236,000
Experience 0-9 years	21	-	-	-	-	-
Experience 10-19 years	37	$79,892	$97,750	$118,500	$146,864	$179,360
Experience 20-29 years	66	$74,250	$104,000	$136,040	$176,250	$218,900
Experience 30+ years	61	$88,704	$116,200	$140,000	$191,727	$272,000
MSEE/MSCE/MS/MA	250	$101,000	$129,919	$154,887	$191,217	$226,000
Experience 0-9 years	19	-	-	-	-	-
Experience 10-19 years	46	$102,084	$126,000	$145,500	$170,750	$226,500
Experience 20-29 years	85	$110,400	$135,000	$165,500	$190,500	$257,468
Experience 30+ years	98	$115,000	$141,249	$167,425	$201,571	$226,200
MBA	49	$104,000	$122,500	$154,000	$200,000	$331,000
Ph.D.	233	$107,400	$135,050	$163,150	$200,000	$250,000
Experience 0-9 years	54	$91,000	$105,445	$122,389	$153,625	$175,484
Experience 10-19 years	74	$114,500	$138,000	$170,000	$208,500	$265,000
Experience 20-29 years	63	$144,700	$159,000	$184,000	$218,400	$280,000
Experience 30+ years	41	$133,820	$143,250	$169,000	$206,586	$238,000
COMPUTERS	785	$87,164	$115,000	$149,619	$190,850	$250,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	205	$73,880	$106,458	$138,900	$180,000	$226,200
Experience 0-9 years	33	$55,800	$68,526	$88,526	$109,708	$151,000
Experience 10-19 years	32	$85,126	$99,625	$128,247	$147,546	$212,600
Experience 20-29 years	69	$91,818	$128,736	$160,000	$196,000	$251,600
Experience 30+ years	71	$101,200	$123,000	$160,000	$195,000	$253,600
MSEE/MSCE/MS/MA	266	$88,410	$113,125	$145,934	$183,114	$245,000

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Experience 0-9 years	31	$60,548	$80,000	$89,000	$120,000	$135,440
Experience 10-19 years	53	$88,880	$109,250	$133,000	$165,865	$196,411
Experience 20-29 years	81	$107,174	$132,060	$158,000	$202,500	$253,380
Experience 30+ years	101	$101,635	$124,000	$154,233	$206,000	$260,000
MBA	43	$94,600	$126,058	$157,000	$194,000	$328,600
Ph.D.	254	$95,000	$123,500	$156,823	$210,357	$270,750
Experience 0-9 years	76	$72,000	$100,000	$132,000	$164,500	$210,446
Experience 10-19 years	76	$100,000	$125,750	$160,000	$200,000	$290,057
Experience 20-29 years	68	$103,980	$140,750	$178,704	$250,000	$321,000
Experience 30+ years	32	$120,000	$146,500	$194,500	$233,304	$286,808
CONSULTING	411	$72,000	$96,000	$125,000	$160,000	$207,400
BSEE/BSCE/BSCS/BET/BSET/BA/BS	234	$70,000	$87,375	$119,750	$148,500	$195,650
Experience 0-9 years	55	$62,030	$68,830	$79,000	$93,000	$106,500
Experience 10-19 years	41	$72,600	$87,764	$113,000	$134,000	$195,400
Experience 20-29 years	65	$96,500	$112,592	$130,000	$161,250	$224,320
Experience 30+ years	71	$87,323	$118,710	$135,000	$177,000	$250,000
MSEE/MSCE/MS/MA	94	$75,000	$99,750	$129,764	$160,000	$184,000
Experience 0-9 years	12	-	-	-	-	-
Experience 10-19 years	13	-	-	-	-	-
Experience 20-29 years	22	-	-	-	-	-
Experience 30+ years	47	$64,000	$109,000	$134,000	$159,827	$190,010
MBA	33	$103,275	$127,000	$150,000	$217,530	$359,000
Ph.D.	33	$72,800	$105,543	$145,000	$164,800	$284,800
DEFENSE (EXCEPT AEROSPACE)	590	$88,000	$110,000	$138,075	$167,553	$208,450
BSEE/BSCE/BSCS/BET/BSET/BA/BS	114	$75,554	$90,756	$120,250	$158,012	$209,727
Experience 0-9 years	21	-	-	-	-	-
Experience 10-19 years	25	$80,112	$89,250	$106,158	$131,829	$182,800
Experience 20-29 years	26	$102,300	$124,250	$147,270	$180,213	$223,209
Experience 30+ years	42	$104,125	$116,447	$136,000	$177,647	$261,635
MSEE/MSCE/MS/MA	244	$90,250	$110,000	$138,300	$165,000	$208,500
Experience 0-9 years	35	$76,400	$82,500	$94,300	$106,000	$117,234
Experience 10-19 years	47	$86,512	$103,000	$115,300	$135,800	$156,680
Experience 20-29 years	61	$108,400	$129,500	$147,000	$163,654	$192,205
Experience 30+ years	98	$108,430	$134,389	$159,582	$188,925	$233,700
MBA	16	-	-	-	-	-
Ph.D.	208	$104,450	$122,250	$147,000	$170,000	$211,081
Experience 0-9 years	48	$85,530	$100,500	$114,000	$125,450	$147,000
Experience 10-19 years	57	$109,200	$121,036	$143,062	$168,130	$232,000

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
Experience 20-29 years	60	$125,000	$137,131	$161,200	$183,142	$227,264
Experience 30+ years	43	$129,400	$150,000	$171,500	$205,000	$224,060
EDUCATION	663	$60,567	$83,000	$108,000	$143,000	$195,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	30	$43,280	$56,633	$82,155	$101,359	$131,300
MSEE/MSCE/MS/MA	58	$54,939	$70,863	$96,178	$122,750	$148,200
MBA	6	-	-	-	-	-
Ph.D.	566	$64,775	$87,000	$111,991	$150,000	$204,300
Experience 0-9 years	123	$43,430	$63,000	$82,000	$92,604	$117,650
Experience 10-19 years	132	$65,900	$87,000	$110,000	$131,500	$157,700
Experience 20-29 years	172	$80,000	$100,500	$124,618	$165,000	$227,000
Experience 30+ years	134	$87,500	$102,221	$139,500	$190,000	$255,000
ELECTRICAL/ELECTRONIC ENGINEERING	1,234	$80,000	$101,299	$132,000	$170,000	$220,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	450	$71,100	$90,900	$120,000	$150,000	$190,000
Experience 0-9 years	79	$60,000	$67,013	$75,000	$85,115	$101,300
Experience 10-19 years	78	$75,000	$90,995	$102,596	$133,550	$177,664
Experience 20-29 years	128	$87,675	$103,625	$125,228	$147,000	$204,532
Experience 30+ years	162	$95,150	$116,000	$141,225	$177,318	$216,200
MSEE/MSCE/MS/MA	336	$85,070	$101,550	$130,000	$169,381	$216,250
Experience 0-9 years	59	$72,499	$80,409	$92,500	$104,000	$115,177
Experience 10-19 years	54	$82,380	$96,125	$122,256	$153,321	$198,725
Experience 20-29 years	104	$100,000	$116,250	$146,525	$184,375	$241,500
Experience 30+ years	112	$98,915	$120,000	$149,500	$189,000	$230,000
MBA	72	$90,150	$107,000	$152,000	$182,753	$226,063
Ph.D.	356	$100,000	$120,000	$150,000	$191,250	$250,000
Experience 0-9 years	101	$84,400	$100,000	$118,000	$137,196	$167,000
Experience 10-19 years	103	$108,400	$128,384	$155,300	$186,345	$228,600
Experience 20-29 years	93	$119,400	$140,500	$178,000	$231,250	$297,800
Experience 30+ years	57	$108,128	$132,000	$171,000	$215,500	$250,000
ELECTRICAL/ELECTRONIC SERVICES	332	$67,580	$87,375	$118,750	$159,000	$205,700
BSEE/BSCE/BSCS/BET/BSET/BA/BS	143	$61,820	$74,000	$104,543	$145,000	$201,440
Experience 0-9 years	44	$55,250	$60,704	$68,518	$79,496	$87,750
Experience 10-19 years	24	-	-	-	-	-
Experience 20-29 years	35	$88,520	$111,500	$140,000	$171,600	$235,200
Experience 30+ years	38	$95,760	$104,886	$124,500	$165,500	$230,686
MSEE/MSCE/MS/MA	93	$76,200	$90,500	$118,000	$163,138	$198,000
Experience 0-9 years	23	-	-	-	-	-
Experience 10-19 years	25	$93,200	$99,907	$122,000	$175,000	$204,369
Experience 20-29 years	22	-	-	-	-	-
Experience 30+ years	23	-	-	-	-	-

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
MBA	19	-	-	-	-	-
Ph.D.	63	$90,200	$120,000	$145,000	$190,000	$252,000
Experience 0-9 years	26	$68,500	$105,250	$125,500	$143,125	$169,200
Experience 10-19 years	9	-	-	-	-	-
Experience 20-29 years	15	-	-	-	-	-
Experience 30+ years	13	-	-	-	-	-
MEDICAL	413	$75,000	$100,000	$130,500	$172,750	$225,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	103	$71,400	$94,194	$119,500	$160,000	$212,030
Experience 0-9 years	17	-	-	-	-	-
Experience 10-19 years	19	-	-	-	-	-
Experience 20-29 years	31	$90,775	$105,000	$131,000	$160,050	$216,000
Experience 30+ years	36	$84,700	$117,500	$156,944	$190,943	$264,300
MSEE/MSCE/MS/MA	125	$86,206	$110,000	$133,026	$172,500	$247,000
Experience 0-9 years	12	-	-	-	-	-
Experience 10-19 years	27	$83,700	$110,000	$125,000	$152,950	$183,400
Experience 20-29 years	35	$100,920	$120,000	$140,000	$192,000	$260,000
Experience 30+ years	50	$93,200	$120,101	$152,000	$200,850	$258,363
MBA	16	-	-	-	-	-
Ph.D.	161	$60,999	$100,500	$132,000	$180,000	$228,680
Experience 0-9 years	43	$40,800	$51,000	$87,000	$118,000	$154,900
Experience 10-19 years	43	$88,312	$103,000	$131,917	$155,000	$212,000
Experience 20-29 years	45	$116,000	$127,500	$164,049	$202,500	$320,400
Experience 30+ years	29	$90,823	$132,500	$185,000	$222,500	$245,000
METALS	22	-	-	-	-	-
BSEE/BSCE/BSCS/BET/BSET/BA/BS	14	-	-	-	-	-
MSEE/MSCE/MS/MA	2	-	-	-	-	-
MBA	2	-	-	-	-	-
Ph.D.	3	-	-	-	-	-
PETROLEUM/ CHEMICAL	193	$82,480	$114,250	$140,000	$178,796	$229,400
BSEE/BSCE/BSCS/BET/BSET/BA/BS	109	$78,000	$103,750	$139,000	$173,550	$230,000
Experience 0-9 years	30	$63,200	$76,156	$83,886	$118,125	$141,582
Experience 10-19 years	20	-	-	-	-	-
Experience 20-29 years	23	-	-	-	-	-
Experience 30+ years	35	$131,200	$143,606	$172,000	$226,000	$270,840
MSEE/MSCE/MS/MA	44	$96,930	$112,256	$142,833	$178,569	$230,250
MBA	17	-	-	-	-	-
Ph.D.	18	-	-	-	-	-

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
TRANSPORTATION	97	$70,800	$86,770	$111,000	$142,576	$184,200
BSEE/BSCE/BSCS/BET/BSET/BA/BS	52	$60,600	$85,183	$104,950	$134,250	$155,135
MSEE/MSCE/MS/MA	22	-	-	-	-	-
MBA	9	-	-	-	-	-
Ph.D.	10	-	-	-	-	-
UTILITIES	1,005	$74,988	$91,689	$113,378	$141,763	$176,700
BSEE/BSCE/BSCS/BET/BSET/BA/BS	596	$71,275	$88,501	$107,171	$134,000	$168,000
Experience 0-9 years	196	$62,058	$70,025	$81,765	$95,000	$109,300
Experience 10-19 years	110	$87,411	$100,625	$110,500	$123,500	$153,520
Experience 20-29 years	121	$95,000	$105,000	$126,000	$150,550	$184,636
Experience 30+ years	150	$94,393	$111,400	$132,000	$159,775	$197,568
MSEE/MSCE/MS/MA	214	$76,117	$93,639	$118,780	$149,250	$172,996
Experience 0-9 years	61	$72,000	$76,000	$88,780	$100,559	$114,600
Experience 10-19 years	32	$92,300	$100,350	$115,500	$129,065	$156,100
Experience 20-29 years	67	$91,872	$117,778	$138,953	$165,000	$197,222
Experience 30+ years	48	$90,980	$116,950	$139,750	$167,250	$194,100
MBA	123	$85,440	$106,000	$129,000	$160,000	$200,000
Ph.D.	49	$80,000	$100,000	$116,590	$153,064	$241,013
OTHER	958	$81,000	$100,000	$130,000	$166,000	$212,100
BSEE/BSCE/BSCS/BET/BSET/BA/BS	361	$71,120	$91,500	$118,200	$158,353	$209,897
Experience 0-9 years	55	$62,120	$68,000	$78,100	$87,300	$97,110
Experience 10-19 years	71	$70,533	$90,000	$110,000	$143,353	$207,303
Experience 20-29 years	95	$91,600	$100,000	$125,000	$159,205	$199,500
Experience 30+ years	136	$85,116	$105,250	$140,100	$177,728	$233,600
MSEE/MSCE/MS/MA	280	$88,150	$105,000	$133,200	$168,670	$211,250
Experience 0-9 years	36	$64,700	$80,793	$92,500	$115,700	$143,496
Experience 10-19 years	56	$81,863	$105,006	$125,375	$164,000	$199,684
Experience 20-29 years	95	$99,800	$117,300	$141,000	$177,360	$225,200
Experience 30+ years	93	$97,654	$113,225	$150,000	$181,000	$248,404
MBA	59	$86,000	$112,000	$137,000	$168,000	$201,000
Ph.D.	220	$89,100	$110,000	$138,550	$178,000	$228,852
Experience 0-9 years	51	$46,005	$87,000	$100,000	$125,000	$168,200
Experience 10-19 years	51	$102,480	$119,000	$135,000	$150,000	$179,400
Experience 20-29 years	68	$99,050	$126,750	$155,750	$187,720	$265,350
Experience 30+ years	50	$101,000	$135,625	$167,500	$200,500	$316,300

EXHIBIT 3-21

Those Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY PRIMARY AREA OF TECHNICAL COMPETENCE, HIGHEST DEGREE AND EXPERIENCE

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
ALL RESPONDENTS	8,185	$78,000	$100,000	$130,000	$167,000	$215,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS						
Experience 0-9 Years	613	$59,012	$77,900	$82,968	$92,000	$109,600
Experience 10-19 Years	527	$80,408	$110,000	$119,131	$133,000	$167,400
Experience 20-29 Years	723	$91,891	$132,100	$142,861	$166,000	$211,200
Experience 30+ Years	906	$92,410	$140,000	$153,354	$176,878	$226,480
MSEE/MSCE/MS/MA						
Experience 0-9 Years	356	$70,880	$90,250	$94,881	$104,949	$125,000
Experience 10-19 Years	434	$87,000	$125,000	$132,587	$155,000	$187,500
Experience 20-29 Years	692	$101,500	$146,777	$159,516	$176,975	$225,000
Experience 30+ Years	819	$100,000	$150,000	$161,004	$186,790	$230,000
MBA						
Experience 0-9 Years	44	$60,650	$91,145	$102,195	$127,250	$157,000
Experience 10-19 Years	82	$86,800	$118,800	$130,855	$154,022	$183,500
Experience 20-29 Years	171	$105,200	$148,000	$165,928	$190,000	$226,000
Experience 30+ Years	206	$95,473	$148,823	$169,197	$186,250	$253,300
Ph.D.						
Experience 0-9 Years	599	$60,000	$108,200	$110,330	$131,800	$163,000
Experience 10-19 Years	609	$89,000	$140,000	$151,929	$173,150	$220,345
Experience 20-29 Years	675	$100,000	$159,000	$175,170	$203,446	$266,869
Experience 30+ Years	471	$100,000	$163,000	$172,762	$202,000	$245,362
CIRCUITS AND DEVICES	1,252	$85,000	$108,789	$143,008	$179,603	$230,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	320	$74,892	$95,105	$127,000	$160,767	$204,800
Experience 0-9 Years	46	$60,700	$67,050	$73,597	$86,550	$94,104
Experience 10-19 Years	72	$90,000	$97,500	$114,600	$142,515	$180,260
Experience 20-29 Years	89	$92,000	$108,150	$140,000	$175,500	$240,000
Experience 30+ Years	111	$95,730	$117,600	$145,000	$175,000	$228,513
MSEE/MSCE/MS/MA	379	$85,500	$110,000	$141,000	$175,000	$225,000
Experience 0-9 Years	63	$72,200	$79,500	$92,000	$108,800	$124,550
Experience 10-19 Years	81	$90,008	$118,000	$143,100	$166,500	$202,200
Experience 20-29 Years	116	$104,700	$125,003	$150,000	$189,718	$259,300
Experience 30+ Years	115	$107,869	$123,000	$150,000	$186,000	$237,800
MBA	39	$92,000	$115,000	$159,000	$187,543	$213,309
Ph.D.	494	$92,661	$120,000	$152,000	$194,950	$250,000
Experience 0-9 Years	133	$63,800	$93,314	$120,000	$142,500	$170,400
Experience 10-19 Years	137	$107,500	$132,500	$155,600	$200,000	$237,160
Experience 20-29 Years	134	$114,125	$142,750	$168,750	$226,159	$285,304
Experience 30+ Years	87	$106,582	$142,000	$172,000	$220,000	$263,430

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
COMMUNICATIONS TECHNOLOGY	659	$88,000	$115,000	$150,000	$190,000	$236,865
BSEE/BSCE/BSCS/BET/BSET/BA/BS	175	$74,600	$94,000	$124,000	$174,000	$222,600
Experience 0-9 Years	24	-	-	-	-	-
Experience 10-19 Years	32	$76,990	$93,500	$117,250	$164,278	$233,400
Experience 20-29 Years	54	$87,500	$104,000	$136,040	$176,250	$216,560
Experience 30+ Years	62	$88,600	$100,225	$138,108	$187,625	$246,280
MSEE/MSCE/MS/MA	215	$100,581	$130,000	$157,000	$193,110	$235,200
Experience 0-9 Years	14	-	-	-	-	-
Experience 10-19 Years	39	$100,000	$122,000	$144,000	$170,000	$225,000
Experience 20-29 Years	75	$106,400	$135,000	$157,100	$190,000	$235,200
Experience 30+ Years	86	$102,000	$139,497	$172,386	$212,105	$273,600
MBA	50	$100,500	$129,750	$157,500	$202,000	$324,000
Ph.D.	200	$95,000	$120,000	$156,650	$191,750	$242,676
Experience 0-9 Years	43	$87,840	$100,000	$115,000	$132,000	$165,000
Experience 10-19 Years	60	$75,100	$120,000	$155,558	$191,750	$249,300
Experience 20-29 Years	59	$131,000	$153,000	$183,000	$210,000	$267,000
Experience 30+ Years	35	$115,600	$140,000	$160,040	$195,000	$221,122
COMPUTERS	1,772	$79,860	$101,077	$132,279	$169,725	$224,990
BSEE/BSCE/BSCS/BET/BSET/BA/BS	510	$69,146	$91,392	$124,250	$160,000	$207,900
Experience 0-9 Years	83	$55,200	$65,330	$74,800	$87,000	$101,911
Experience 10-19 Years	97	$76,823	$92,500	$114,000	$135,200	$185,600
Experience 20-29 Years	151	$91,164	$110,300	$137,000	$177,500	$224,231
Experience 30+ Years	179	$82,837	$115,000	$139,000	$175,510	$225,000
MSEE/MSCE/MS/MA	616	$86,340	$105,618	$135,500	$168,544	$220,000
Experience 0-9 Years	62	$73,440	$82,000	$91,000	$112,100	$135,000
Experience 10-19 Years	116	$87,800	$101,563	$125,000	$155,750	$191,605
Experience 20-29 Years	197	$99,250	$120,178	$147,000	$174,239	$237,000
Experience 30+ Years	239	$95,000	$112,000	$146,500	$187,674	$236,000
MBA	97	$85,800	$111,000	$137,190	$169,000	$284,600
Ph.D.	496	$82,000	$106,000	$140,000	$184,750	$244,229
Experience 0-9 Years	111	$65,000	$85,000	$117,125	$150,000	$195,800
Experience 10-19 Years	124	$97,500	$114,625	$142,650	$169,855	$218,000
Experience 20-29 Years	155	$83,600	$110,000	$143,000	$207,000	$278,200
Experience 30+ Years	105	$92,400	$120,000	$165,000	$200,000	$250,000
ELECTROMAGNETICS AND RADIATION	457	$78,437	$104,500	$130,368	$163,538	$200,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	90	$69,550	$92,438	$122,000	$161,500	$199,000
MSEE/MSCE/MS/MA	109	$86,500	$103,610	$131,600	$162,397	$192,691
Experience 0-9 Years	21	-	-	-	-	-
Experience 10-19 Years	20	-	-	-	-	-
Experience 20-29 Years	32	$100,300	$112,500	$133,000	$163,919	$191,550
Experience 30+ Years	35	$94,909	$132,754	$157,000	$182,492	$282,200

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
MBA	16	-	-	-	-	-
Ph.D.	233	$87,000	$110,000	$134,000	$167,925	$207,800
Experience 0-9 Years	50	$55,000	$77,575	$104,800	$124,250	$134,900
Experience 10-19 Years	62	$86,800	$110,000	$128,192	$151,928	$196,084
Experience 20-29 Years	68	$107,391	$126,250	$159,850	$184,616	$221,300
Experience 30+ Years	52	$103,000	$130,875	$158,500	$200,000	$224,010
ENERGY AND POWER ENGINEERING	1,772	$73,226	$92,500	$116,175	$147,700	$185,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	1,017	$69,519	$87,688	$111,576	$140,140	$183,000
Experience 0-9 Years	310	$60,000	$67,833	$78,672	$94,146	$110,000
Experience 10-19 Years	181	$85,000	$98,907	$110,000	$129,820	$154,800
Experience 20-29 Years	224	$95,500	$109,831	$130,500	$155,000	$187,634
Experience 30+ Years	280	$98,600	$114,840	$137,282	$178,675	$227,440
MSEE/MSCE/MS/MA	387	$80,000	$95,000	$120,000	$152,836	$183,361
Experience 0-9 Years	101	$70,797	$76,117	$90,000	$103,875	$119,600
Experience 10-19 Years	73	$87,572	$100,000	$115,026	$135,500	$157,000
Experience 20-29 Years	97	$94,272	$120,000	$139,740	$166,000	$200,000
Experience 30+ Years	108	$96,870	$115,000	$140,750	$173,919	$195,000
MBA	170	$90,810	$107,875	$131,953	$160,000	$196,800
Ph.D.	157	$79,080	$100,000	$125,200	$155,564	$220,760
Experience 0-9 Years	62	$63,800	$83,500	$100,000	$116,148	$146,790
Experience 10-19 Years	26	$48,500	$104,100	$140,000	$156,250	$306,859
Experience 20-29 Years	38	$101,900	$130,000	$150,000	$180,250	$311,200
Experience 30+ Years	29	$98,000	$115,500	$148,000	$172,775	$223,800
ENGINGEERING AND HUMAN ENVIRONMENT	169	$82,430	$105,000	$140,000	$175,312	$213,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	51	$80,200	$101,000	$135,000	$176,862	$216,400
MSEE/MSCE/MS/MA	52	$95,007	$117,750	$146,550	$180,000	$211,200
MBA	27	$95,800	$119,000	$144,000	$175,623	$216,440
Ph.D.	38	$71,520	$91,500	$119,386	$170,925	$240,500
INDUSTRIAL APPLICATIONS	340	$77,100	$95,759	$120,000	$150,000	$189,800
BSEE/BSCE/BSCS/BET/BSET/BA/BS	182	$74,000	$93,236	$116,750	$142,500	$178,000
Experience 0-9 Years	33	$58,760	$67,872	$80,108	$96,558	$119,254
Experience 10-19 Years	33	$80,356	$89,992	$99,600	$128,000	$143,044
Experience 20-29 Years	49	$80,000	$99,939	$122,938	$156,500	$204,147
Experience 30+ Years	67	$101,600	$110,500	$136,000	$160,000	$191,113
MSEE/MSCE/MS/MA	74	$77,539	$96,428	$115,000	$141,625	$179,546
Experience 0-9 Years	13	-	-	-	-	-
Experience 10-19 Years	11	-	-	-	-	-
Experience 20-29 Years	16	-	-	-	-	-
Experience 30+ Years	34	$96,000	$105,276	$131,750	$162,031	$200,000
MBA	24	-	-	-	-	-
Ph.D.	50	$86,765	$106,400	$131,528	$171,250	$214,800

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
SIGNALS AND APPLICATIONS	507	$82,300	$108,452	$141,062	$170,300	$214,124
BSEE/BSCE/BSCS/BET/BSET/BA/BS	59	$58,726	$81,500	$138,656	$175,700	$221,000
MSEE/MSCE/MS/MA	167	$88,814	$113,500	$142,000	$171,500	$212,000
Experience 0-9 Years	34	$72,500	$83,250	$99,500	$111,125	$127,792
Experience 10-19 Years	21	-	-	-	-	-
Experience 20-29 Years	54	$117,078	$137,750	$160,000	$171,075	$213,060
Experience 30+ Years	57	$112,000	$134,500	$167,009	$206,041	$238,000
MBA	7	-	-	-	-	-
Ph.D.	272	$85,300	$108,250	$142,281	$170,000	$218,450
Experience 0-9 Years	68	$60,000	$84,250	$108,500	$135,095	$169,068
Experience 10-19 Years	78	$88,702	$111,665	$144,500	$170,000	$215,156
Experience 20-29 Years	72	$98,600	$126,275	$150,000	$183,142	$242,300
Experience 30+ Years	54	$100,803	$135,750	$162,075	$180,000	$235,936
SYSTEMS AND CONTROL	764	$72,000	$92,065	$119,572	$159,685	$205,000
BSEE/BSCE/BSCS/BET/BSET/BA/BS	259	$70,995	$85,000	$105,700	$137,000	$183,000
Experience 0-9 Years	61	$58,260	$69,500	$77,900	$88,000	$109,572
Experience 10-19 Years	50	$72,300	$88,641	$100,603	$135,200	$164,975
Experience 20-29 Years	69	$90,000	$102,000	$124,000	$147,000	$184,517
Experience 30+ Years	75	$84,000	$99,000	$120,000	$159,067	$249,400
MSEE/MSCE/MS/MA	195	$81,725	$99,000	$123,000	$162,000	$196,400
Experience 0-9 Years	24	-	-	-	-	-
Experience 10-19 Years	41	$85,000	$96,000	$113,740	$146,355	$169,600
Experience 20-29 Years	53	$98,400	$109,800	$137,500	$158,913	$224,000
Experience 30+ Years	74	$91,500	$113,675	$145,500	$180,000	$206,700
MBA	32	$79,150	$102,500	$155,500	$191,250	$234,489
Ph.D.	266	$69,400	$95,000	$125,500	$167,750	$219,930
Experience 0-9 Years	67	$41,600	$65,000	$90,000	$115,000	$130,100
Experience 10-19 Years	72	$72,300	$105,500	$122,950	$150,000	$186,100
Experience 20-29 Years	77	$92,186	$130,000	$164,000	$201,150	$284,600
Experience 30+ Years	48	$90,241	$110,000	$154,500	$200,750	$240,500
OTHER	487	$77,409	$100,300	$132,000	$177,592	$225,200
BSEE/BSCE/BSCS/BET/BSET/BA/BS	141	$73,240	$98,500	$127,000	$164,500	$212,040
Experience 0-9 Years	11	-	-	-	-	-
Experience 10-19 Years	31	$65,730	$89,500	$102,000	$135,000	$207,400
Experience 20-29 Years	34	$61,500	$89,900	$120,500	$145,250	$192,105
Experience 30+ Years	63	$99,000	$121,773	$141,750	$183,940	$232,200
MSEE/MSCE/MS/MA	130	$77,553	$102,750	$134,500	$168,250	$219,130
Experience 0-9 Years	20	-	-	-	-	-
Experience 10-19 Years	21	-	-	-	-	-
Experience 20-29 Years	34	$89,800	$105,750	$135,500	$165,250	$200,000
Experience 30+ Years	52	$106,200	$126,000	$157,600	$196,275	$252,533

	Number of Cases	Lowest Decile	Lower Quartile	Median	Upper Quartile	Highest Decile
MBA	40	$96,940	$120,224	$142,450	$200,000	$247,600
Ph.D.	160	$75,448	$100,000	$132,000	$184,500	$245,408
Experience 0-9 Years	37	$42,800	$62,500	$96,000	$114,500	$141,000
Experience 10-19 Years	31	$84,600	$110,000	$138,000	$165,000	$214,800
Experience 20-29 Years	47	$83,200	$120,000	$148,480	$185,000	$237,120
Experience 30+ Years	45	$88,600	$125,250	$181,372	$239,000	$311,500

3.4 Academics

In the 2005 survey, questions were first added that explored in more depth the small portion of U.S. IEEE members who characterize their primary employer as an academic (degree-granting) institution. Exhibits 3-22 through 3-26 break out 2014 results (2014 primary income) for academics working full time in their PATCs, by the nature of the academic contract, academic rank, tenure status, and the type of institution (highest degree granted, and public versus private).

EXHIBIT 3-22

Academics Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY ACADEMIC CONTRACT

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	824	$60,000	$82,323	$109,000	$145,161	$196,500
11- or 12-month contract	273	$45,000	$65,000	$98,850	147055	$193,877
9- or 10-month contract	455	$70,800	$89,100	$110,000	144000	$190,280
Other	81	$62,080	$80,500	$100,145	145350	$229,008

EXHIBIT 3-23

Academics Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY ACADEMIC RANK

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	824	$60,000	$82,323	$109,000	$145,161	$196,500
Full Professor	273	$95,000	$113,500	$149,000	191,850	$250,000
Associate Professor	180	$78,013	$91,100	$105,000	130,000	$151,900
Assistant Professor	110	$61,100	$72,038	$88,000	109,250	$124,800
Visiting/Adjunct Professor/Instructor/Lecturer	36	$45,000	$50,313	$72,500	82,925	$112,586
Non-Teaching Research Appointment	99	$35,189	$50,000	$70,000	102,228	$158,000
Other Faculty Position	30	$50,684	$78,000	$102,073	135,561	$213,400
Other Non-Faculty Position	73	$46,554	$67,500	$100,000	133,500	$177,558

EXHIBIT 3-24

Academics Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY TENURE STATUS

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	824	$60,000	$82,323	$109,000	$145,161	$196,500
Tenured	395	$88,791	$102,000	$130,000	168,700	$232,102
On Tenure Track	97	$63,086	$74,194	$90,000	110,000	$130,000
Not on Tenure Track	141	$44,200	$60,000	$80,000	112,250	$157,800
Not Applicable	177	$46,600	$66,250	$92,000	125,602	$168,125

EXHIBIT 3-25

Academics Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY INSTITUTION (HIGHEST DEGREE GRANTED)

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	824	$60,000	$82,323	$109,000	$145,161	$196,500
Ph.D., or comparable						
Public	443	$65,000	$87,000	$118,900	154,000	$204,600
Private	193	$53,365	$88,303	$120,000	153,880	$217,700
Master's	94	$63,204	$81,500	$95,000	108,500	$130,000
Bachelor's	50	$57,270	$69,500	$80,000	100,000	$122,250
Other						

EXHIBIT 3-26

Academics Working Full Time in Their PATCs:

2014 PRIMARY INCOME BY INSTITUTION (AUSPICES)

	Number of Cases	*Lowest Decile*	*Lower Quartile*	*Median*	*Upper Quartile*	*Highest Decile*
TOTAL	824	$60,000	$82,323	$109,000	$145,161	$196,500
Public	531	$62,934	$83,351	$110,000	150,000	$197,800
Private	272	$55,000	$80,000	$105,000	143,750	$192,700

4. REGRESSION MODELS FOR SALARY BENCHMARKING

4.1 MATHEMATICAL SALARY MODELS

The tables and charts provided in Section 3 of this report describe broad compensation trends for IEEE's U.S. members, but more detailed information is usually needed to assess the situations of individuals. In response to this need, IEEE-USA has, for a number of years, produced mathematical salary models using regression analysis. Use of these models to benchmark individual compensation is available to IEEE's U.S. members through the IEEE-USA Salary Calculator, the chief component of the IEEE-USA Salary Service, Member Version. Employers and others may also access the models through use of the Individual Compensation Analyzer in the IEEE-USA Salary Service, Subscriber Version. For more information, see http://salary.ieee.org.

These models allow users to calculate results from the survey for thousands of possible employment situations. Two alternative approaches are provided, for estimates with or without consideration of levels of professional responsibility. Results include both base salary estimates and income from primary sources (bonuses, commissions and net self-employment income). The approach also supports the generation of range data such as low and high deciles.

How These Models Were Generated. Since 1991, IEEE-USA's salary studies have included the use of regression models to derive estimates of salaries that draw on many predictive variables at once. The advantage of such an approach is obvious when one considers the limitations of the more familiar tabular presentations of data. For example, earlier sections of this report use tables to provide information on the effects of factors—including areas of competence, sector, degree level, and other determinants of engineering compensation.

The tabular methods have the drawback of rapidly exhausting large data bases. As added variables are considered, the number of cases available for computing salary statistics diminishes, and it is not feasible to generate conventional tables that allow for all of the factors discussed in the illustration above (and even if such tables could be generated, it would take a report the size of a telephone book to reprint them).

The regression approach solves this problem. Instead of producing a multitude of tables for various combinations of factors (many of which cannot be estimated in any event, due to the problem described above), the survey data are utilized to construct predictive equations that allow for many simultaneous influences on salaries. The original technical approach IEEE-USA used was linear. In 1993, a log transform of the response variable was substituted, to provide a better fit to the curvilinear distribution of salary statistics. A consequence of the logarithmic methods is that the predictive equations become multiplicative, instead of additive, as is the case with linear regressions.

The value computed by the regression model is the mean income from primary sources. Another new feature of the model, introduced in 1999, is the ability to generate deciles, as well as means, providing information on salary ranges. Range data help users to put an employment situation in context, allowing for such factors as differences in the performances of individuals.

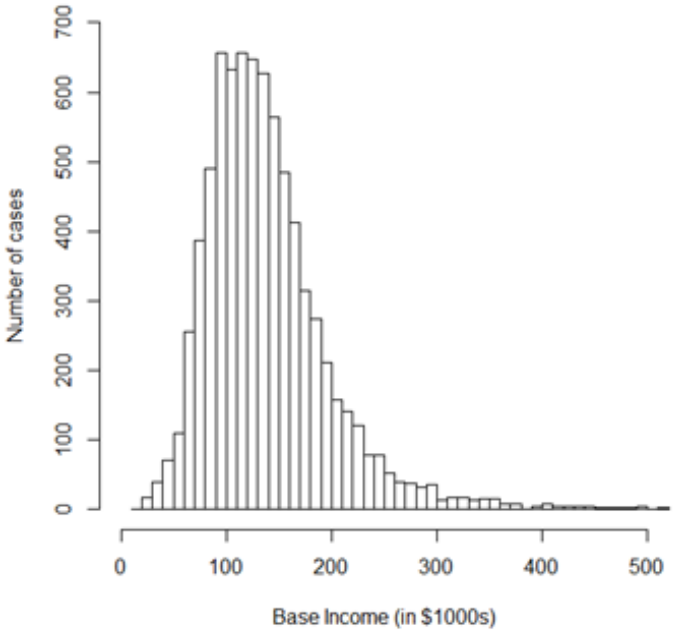
4.2 THE 2015 REGRESSION MODELS

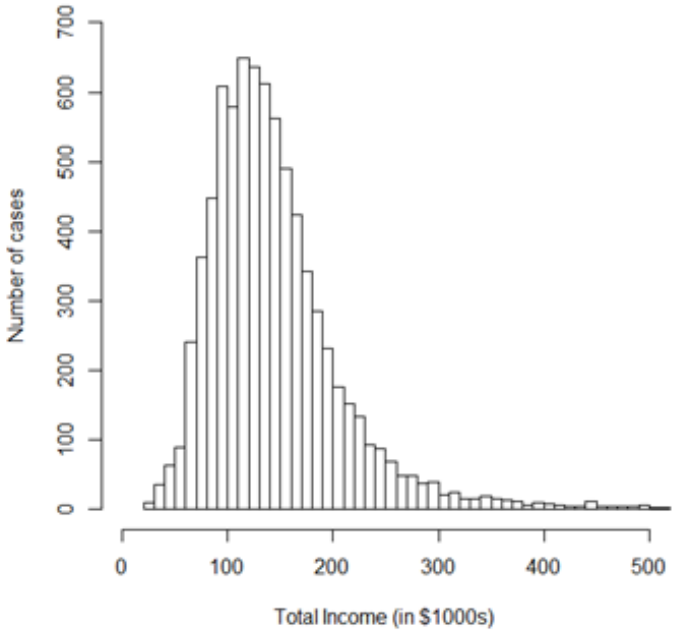
Data. 7,781 survey response cases were used in the statistical models. These cases were obtained after removing cases with invalid data, removing cases where the primary occupation was consulting, filtering for cases in which the respondent was employed full-time in PATC. The charts below show the distribution of the untransformed dependent variables, base income and income from other sources, for the cases in the modeling data.

EXHIBIT 4-1

Those Working Full-Time in Their PATC:

BASE INCOME AND TOTAL INCOME





Modeling. Two models were created: a base income model and an "other income" model. The predictions from the two models were added to obtain a prediction of total income. To achieve a more homogeneous dataset, which would improve the model's predictions, the data for the base model was restricted to base incomes between $40,000 and $300,000. The data for the other income model was restricted to other incomes between $1,000 and $500,000.

The dependent variables were the natural logs of base salary and other income Other income comprised signing bonus, performance, end-of year and other bonuses, commissions, and net income from self-employment.

For the categorical predictor variables, the reference level was chosen by determining the level with the median base income within the category. For example, for the variable "Line of Business", Design and Development Engineering had the median income, so it became the level to which all other lines of business were compared.

The coefficients of the predictor variables were estimated using ordinary least squares. Adjustment factors were obtained by taking the natural exponent of the coefficients. The models were developed on a random 80% sample of the modeling data, and validated on the remaining 20%. The validation showed no significant shifts in most coefficients, therefore the full data was used to obtain the coefficients and model fits.

Decile factors. Although the models strictly predict the mean rather than the median, examination of the observed and predicted values showed that the median was within 2% of the mean. Therefore, the mean prediction was taken to be the 50th percentile, and the decile factors were calculated around this value.

Decile factors were computed by first taking the predictions for all cases from a model. These predictions were transformed to dollars by taking the exponent, and then ordered by value. The deciles of the resulting data were computed by taking the value at each succeeding 10% of the data. The decile factors were obtained by dividing each decile by the median.

4.3 ACCURACY OF THE MODELS

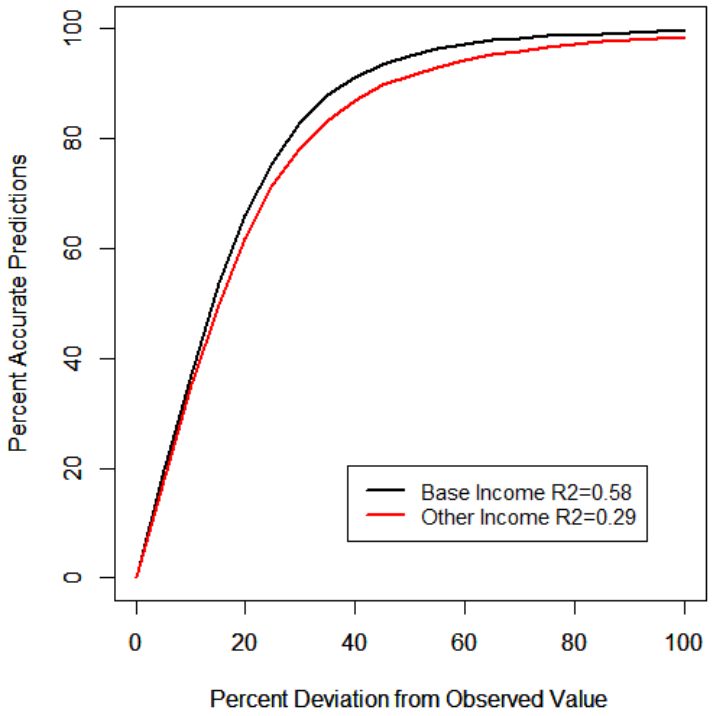
Goodness of fit was obtained by looking at the proportion of variance explained by the model, commonly known as R2. The base income model's R2 was 0.58 and the other income model's R2 was 0.29. R2 is a customary measure of how well the models fit the data, and is mathematically equivalent to the proportion of total variance in a dependent variable (in this case, income from primary sources) that can be attributed to changes in the values of one or more predictors (here, the continuous and indicator or adjustment variables). In informal terms, R2 measures the ability of the predictors to account for changes in compensation. For this year's base income model, the R2 of 0.58 means that as much as 58% of all variance in the income of IEEE's U.S. members can be associated with the specific predictors used here.

What accounts for the remaining unexplained variance? In general, remaining differences in pay can be ascribed to two sources. One is error, including measurement error. The other consists of all those factors not explicitly considered in the models. There are many possible factors, including such critical matters as the performance of individual engineers; the financial health and compensation policies of particular employers; negotiating skill; and sheer luck, both good and bad. These are some of the reasons why such large ranges of income exist between high and low deciles for otherwise matched individuals in the tabulations in Section 3.

A related measure of accuracy was determined by calculating the difference between predicted income from the model, and observed income from the surveys. This measure is shown in the graphs below. One data point is roughly at 20% deviations and 60% observations; what this means is that model predictions for about 60% of the cases (about 4,700) were within 20% of the actual salary value. The deviations in the predictions are caused by the same two reasons discussed above—measurement error, and factors not considered in the model

EXHIBIT 4-2

REGRESSION MODEL VALIDATION — PERCENT DEVIATION FROM OBSERVED VALUE



5. BENEFITS, RETIREMENT, SELF-EMPLOYMENT, AND SATISFACTION WITH WORK

5.1 Benefits Offered

Exhibits 5-1, 5-2 and 5-3 provide information on the benefits offered to U.S. IEEE members who work full time. Benefits are examined in three broad categories: pension and retirement benefits; health and insurance benefits; and miscellaneous benefits.

Pension and Retirement. In the 2001 survey, more than half of full time workers (55%) were offered "defined benefit" (pension) retirement plans, in which an employee is promised a certain amount, if they meet the terms of the plan (which may include a minimum number of years of service). In step with the broader societal trend, that proportion has dropped to 32.3%, as of 2015.

Even while pensions are disappearing, the proportion offered 401(k), 403(b), or 457 salary reduction plans—so-called "defined contribution" plans—has remained essentially flat since 2001, at 89.6% in the current survey.

Profit sharing plans are now offered by 22.5% of employers, down from roughly 38% more than ten years ago. Offers of stock options have diminished even more, from 49% in 2001, to 24.3% in 2015. Offerings of employee stock ownership plans (ESOPs) are similarly reduced, from 40% then, to 23% now. Other retirement benefits affect relatively small proportions of members working full time.

Health and Insurance. As has been the case in recent surveys, virtually all full time workers are offered extensive health benefits. More than nine in ten are offered basic health insurance, major medical and dental insurance, both for themselves and their dependents. Almost ninety percent offered prescription drug coverage, and 89.7% coverage for eyeglasses, lenses and exams.

Nine in ten full time workers are offered life insurance and/or disability insurance coverage. Health/insurance benefits less frequently offered include long-term care insurance (58.8%), well-baby care (48.5%), elder care referral services (26.9%), and day-care service or subsidy (25.4%).

Of the 94% reporting that their current employer offers employer-sponsored health insurance, PPO plans were the most popular (74.6%). Other common offered plans include High Deductible/HSA plans (50.1%) and HMO plans (40.8%). See Exhibit 5-3.

Miscellaneous Benefits. In results similar to those seen in the past, 80.9% of full time workers are offered flexible working hours, and 55.2% are offered professional association membership fees. The proportion offered paid attendance at professional conferences, however, has dropped approximately ten points in ten years, to 68.3%. The proportion offered paid maternity or paternity leave has increased in the last year (from 54.7% to 57.4%), and offers of unpaid leave also increased (from 73.4% to 76.2%). See Exhibit 5-4.

EXHIBIT 5-1

Full time Workers:

PENSION AND RETIREMENT BENEFITS

	Employer Offers and Contributes	*Employer Offers but Does Not Contribute*	*Employer Does Not Offer*
Defined Benefit Pension Plan	28.8%	3.5%	67.7%
Profit Sharing Plan	19.3%	3.2%	77.6%
Stock Options	18.0%	6.3%	75.8%
401(k), 403(b), or 457 Salary Reduction Plan	78.9%	10.7%	10.4%
Other Defined Contribution Pension Plan	6.4%	2.3%	91.3%
SEP (Simplified Employee Pension Plan)	3.1%	1.2%	95.8%
ESOP (Employee Stock Ownership Plan)	15.0%	8.0%	77.0%
TIAA/CREF	7.7%	1.9%	90.4%
IRA (Individual Retirement Account)	6.4%	8.0%	35.7%
Cash Balance Plan	4.3%	2.2%	93.5%

EXHIBIT 5-2

Full time Workers:

HEALTH AND INSURANCE BENEFITS

	Employer Offers and Contributes	*Employer Offers but Does Not Contribute*	*Employer Does Not Offer*
Basic Health Insurance	91.5%	3.6%	4.9%
Basic Health Insurance for Dependents	84.5%	9.9%	5.6%
Major Medical Insurance	84.8%	5.2%	10.0%
Major Medical for Dependents	79.5%	10.1%	10.4%
Dental Insurance	84.0%	10.1%	5.9%
Dental for Dependents	78.1%	15.3%	6.5%
Eyeglasses, Lenses, Exams	73.5%	16.2%	10.3%
Life Insurance Coverage	78.6%	12.6%	8.8%
Disability Insurance	71.2%	17.2%	11.6%
Well-Baby Care	34.0%	14.5%	51.5%
Long-Term Care Insurance	31.9%	26.9%	41.2%
Prescription/Drug Coverage	79.9%	8.7%	11.4%
Day Care (Service or Subsidy)	9.1%	16.3%	74.6%
Elder Care Referral Services	10.1%	16.8%	73.1%

EXHIBIT 5-3

EMPLOYEE-SPONSORED HEALTH PLANS

	Yes	*No*	
Does your current employer (or you as a self-employed engineer) offer employee-sponsored health insurance?	93.9%	6.1%	

	PPO	HMO	High Deductible/ HSA Plan	Other
If "yes," percentage offering:	74.6%	40.8%	50.1%	1.8%

EXHIBIT 5-4

Full time Workers:

MISCELLANEOUS BENEFITS

	Employer Offers	*Employer Does Not Offer*
Professional Association Membership Fees	55.2%	44.8%
Paid Attendance at Professional Conferences	68.3%	31.7%
Paid Maternity or Paternity Leave	57.4%	42.6%
Unpaid Personal Leave	76.2%	23.8%
Flexible Working Hours	80.9%	19.1%

5.2 Leave

Exhibit 5-5 summarizes the numbers of days off that full time working respondents were eligible to receive on 1 January 2015. The median figures resemble those in recent surveys. Exhibit 5-6 shows how the different types of leave were distributed: about three-fifths (61.3%) are entitled to at least 20 days of vacation and holidays combined, including 28.2% who get 30 or more days.

EXHIBIT 5-5
Full time Workers:
PAID DAYS OFF

	Lower Quartile	*Median*	*Upper Quartile*
Vacation days	0	15	20
Holidays	6	9	10
PTO (sick days)	0	4	15

EXHIBIT 5-6
Full time Workers:
DISTRIBUTION OF PAID LEAVE

	Vacation	*Holidays*	*PTO*	*Vacation + Holidays*
30 or more days	4.9%	0.9%	5.7%	28.2%
26-29	2.7%	0.0%	1.7%	12.0%
25	6.4%	0.0%	3.0%	7.2%
21-24	5.2%	0.1%	3.1%	9.9%
20	15.5%	0.2%	5.0%	4.0%
16-19	3.2%	0.4%	2.1%	4.1%
15	18.0%	0.8%	5.3%	1.7%
11 - 14	4.3%	19.6%	3.7%	4.2%
10	7.4%	25.6%	4.8%	5.7%
Less than 10	32.4%	52.4%	65.6%	23.0%

5.3 Older Engineers and Retirement

After remaining remarkably stable throughout most of the 1980s, the average age of IEEE's U.S. members increased rapidly during the 1990s (see Exhibits 5-7 and 5-8). The 2001 survey, the first to be conducted solely via the Internet, saw a drop of nearly six years in respondents' average age; 2015 results were up signficantly (47.4) compared to the 2014 survey (45.6).

EXHIBIT 5-7
All Respondents:
MEAN AGE, 1972-2015

1972	42.2
1975	41.9
1977	42.6
1979	43.1
1981	42.7
1983	40.6
1985	40.0
1987	40.9
1989	40.6
1991	44.0
1993	45.1
1995	48.0
1997	47.6
1999	52.6
2001	46.9
2005	44.8
2006	45.3
2007	45.6
2008	44.6
2009	45.8
2010	45.7
2011	47.0
2012	45.4
2013	46.0
2014	45.6
2015	47.4

EXHIBIT 5-8
Full time Workers:
AGE DISTRIBUTIONS, 1991-2015

	1991	1993	1995	1997	1999	2001	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
65+	11%	13%	17%	16%	4%	2%	1%	2%	3%	1%	1%	1%	2%	2%	2%	2%	3%
60-64	7%	6%	7%	6%	7%	5%	5%	5%	5%	6%	8%	7%	8%	8%	8%	6%	10%
50-59	15%	16%	18%	19%	25%	24%	23%	23%	24%	25%	29%	29%	30%	30%	32%	32%	36%
40-49	23%	24%	24%	24%	29%	36%	38%	35%	35%	34%	32%	30%	30%	28%	27%	28%	24%
30-39	29%	28%	27%	26%	29%	29%	26%	26%	24%	23%	21%	22%	21%	22%	21%	22%	20%
<30	16%	14%	8%	9%	6%	4%	6%	8%	10%	10%	9%	10%	10%	10%	10%	10%	7%

Exhibit 5-9 lists median incomes from primary sources for respondents in the workforce from 1991 to the present. These data are broken out by eleven age categories. The earnings are lower than those reported in Exhibit 3-11, because these data include all of the engineers in the workforce, not just those working full time in their areas of competence.

Exhibit 5-10 presents changes in base salaries for full time workers (non-consultants). These figures come from an item in each survey that asks respondents to report their base salaries for the current year, the previous year, and the year before that. These data are direct measures of changes over time in an individual engineer's pay, and reflect the effects of annual salary increases for added experience, as well as changes in the value of engineering skills.

Exhibit 5-11 compares—by age group—median primary income, income from all sources and total household income for 2014. Overall, 81.3% of 2014 total household income was from personal primary income. The proportion of total household income represented by primary income drops from 97.7% in the 20-24 age bracket, to 76.2% among those 65-69. Those members still in the workforce at age 70 or above contribute only 68.6% of total household income from primary sources.

About seven percent (7.2%) of all non-consultant respondents indicated they have been offered incentives to retire early. Most of them were given the offers in years prior to 2014.

More than eight in ten (79.4%) indicated they are fully vested in at least one retirement plan, down from 82% in last year's report. However, 29.2% are vested in two or more (Exhibit 5-12). Nearly 83% of those answering indicated they are 100% vested in the retirement program of their current primary employer (Exhibit 5-13), while less than 1.0% are not vested at all (0.8%).

EXHIBIT 5-9

Members in the Workforce:

MEDIAN PRIMARY INCOME BY AGE, 1991-2015

	Survey year														
	1995	1997	1999	2001	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
20-24	35,676	38,000	-	-	52,000	52,300	54,000	58,900	60,000	61,000	61,650	63,000	65,000	110,000	68,400
25-29	44,000	46,700	55,000	68,000	67,400	67,000	69,630	72,300	71,500	72,850	74,000	76,000	78,000	129,000	79,583
30-34	56,400	60,000	68,000	80,000	85,050	88,580	90,000	92,550	94,680	90,890	91,259	95,000	95,412	140,000	98,500
35-39	65,000	69,000	77,000	89,650	99,000	100,000	103,000	106,190	110,000	108,500	110,000	112,000	115,000	141,735	114,092
40-44	69,200	75,000	84,000	96,000	106,810	108,950	112,220	119,000	120,160	118,500	124,000	126,000	130,000	140,000	134,810
45-49	77,240	78,000	86,080	98,915	110,000	113,000	118,000	121,000	125,310	123,860	130,000	134,000	138,000	135,000	142,000
50-54	80,000	82,000	89,300	97,500	108,060	111,280	117,000	121,000	128,460	125,000	132,377	136,082	141,760	130,750	148,000
55-59	79,900	85,000	90,000	101,000	109,440	110,000	115,000	118,500	125,000	123,470	129,500	131,100	139,025	108,000	145,000
60-64	82,000	80,000	88,000	100,000	106,020	111,290	116,940	117,000	122,750	118,000	125,000	127,232	133,264	90,000	140,000
65-69	78,000	56,000	67,500	91,857	99,000	104,000	101,200	112,000	118,000	110,000	124,872	125,000	128,000	114,000	139,500
70+	75,900	6,000	12,275	100,000	58,610	50,000	71,000	81,750	85,000	90,000	107,500	106,000	111,900	190,000	127,000

NOTE: Results are suppressed where n<25.

EXHIBIT 5-10

Full time Workers:

PERCENTAGE AND ABSOLUTE CHANGE IN MEDIAN BASE SALARIES BY AGE, 2008-2015

	2006-2008 (2008 Survey)		2007-2009 (2009 Survey)		2008-2010 (2010 Survey)		2009-2011 (2011 Survey)		2010-2012 (2012 Survey)		2011-2013 (2013 Survey)		2012-2014 (2014 Survey)		2013-2015 (2015 Survey)	
Change:	*%*	*$*	*%*	*$*	*%*	*$*	*%*	*$*	*%*	*$*	*%*	*$*	*%*	*$*	*%*	*$*
20-24	26%	$12,320	16%	$8,820	13%	$7,250	10%	$5,000	13%	$8,033	20%	$11,650	9%	$9,000	13%	$9,340
25-29	24%	$14,000	18%	$11,000	15%	$9,650	7%	$5,000	14%	$9,539	14%	$9,775	7%	$8,000	15%	$10,350
30-34	20%	$15,250	16%	$13,000	13%	$10,000	6%	$5,000	11%	$9,000	11%	$9,020	6%	$7,000	11%	$10,000
35-39	15%	$13,000	10%	$10,000	9%	$8,500	4%	$4,500	8%	$8,411	8%	$9,000	5%	$6,172	9%	$9,500
40-44	12%	$12,000	10%	$10,710	8%	$8,320	3%	$4,000	7%	$7,449	7%	$8,000	5%	$6,000	7%	$8,089
45-49	13%	$13,400	9%	$10,000	6%	$7,200	3%	$3,500	6%	$6,480	6%	$7,000	4%	$5,000	6%	$7,300
50-54	12%	$12,000	6%	$7,000	4%	$5,000	3%	$3,564	5%	$5,928	5%	$6,000	4%	$5,000	5%	$7,000
55-59	10%	$10,570	7%	$8,000	4%	$5,000	3%	$3,000	5%	$5,432	5%	$5,810	5%	$7,000	5%	$6,000
60-64	13%	$13,780	9%	$10,000	4%	$5,000	2%	$2,800	4%	$5,000	4%	$5,000	5%	$2,093	5%	$5,713
65-69	12%	$13,000	4%	$5,320	3%	$3,500	2%	$3,000	4%	$5,000	4%	$5,000	3%	$10,000	4%	$5,000
70+	-	-	-	-	10%	$10,000	3%	$3,750	4%	$3,126	4%	$4,000	1%	$15,000	-	-

NOTE: Results are suppressed where n<25.

EXHIBIT 5-11

Members in the Workforce:

2014 MEDIAN PRIMARY INCOME, INCOME FROM ALL SOURCES, AND TOTAL HOUSEHOLD INCOME BY AGE

	Primary Income	*Income from All Sources*	*Total Household Income*
Total	$130,000	$135,000	$160,000
20 - 24	$68,400	$68,722	$70,000
25 - 29	$79,583	$81,100	$87,000
30 - 34	$98,500	$100,000	$117,000
35 - 39	$114,092	$117,000	$140,000
40 - 44	$134,810	$137,000	$170,000
45 - 49	$142,000	$146,520	$173,062
50 - 54	$148,000	$153,150	$185,000
55 - 59	$145,000	$150,000	$180,000
60 - 64	$140,000	$150,000	$175,000
65 - 69	$139,500	$158,000	$183,000
70+	$127,000	$172,000	$185,000

NOTE: Primary Income and Income from All Sources earned by individual respondent; Total Household Income includes other breadwinners (if any). Results are suppressed where n<25.

*Total Household Income was calculated with a smaller sample size, which leads to abnormalities in medians for certain cases.

EXHIBIT 5-12

All Respondents:

NUMBER OF RETIREMENT PLANS IN WHICH FULLY VESTED

4 or more	1.1%
3	7.0%
2	21.1%
1	50.2%
None	20.6%

Number of cases: 8,742

EXHIBIT 5-13

All Respondents:

PERCENT VESTED, CURRENT EMPLOYER'S RETIREMENT PROGRAM

100%	82.7%
76%-99%	1.3%
51%-75%	1.2%
26%-50%	1.6%
1%-25%	12.4%
0%	0.8%

Number of cases: 5,371

5.4 Self-Employment

Individuals who indicated they were self-employed and earning more than half of their personal income from fee-based consulting were excluded in this year's survey results.

5.5 Satisfaction with Work

A series of questions asked since 1997 measures members' general sense of satisfaction with their work, using a common satisfaction scale (very satisfied /satisfied /neutral /dissatisfied /very dissatisfied). By scoring these scale points from +2 to -2, the mean rating provides useful shorthand for satisfaction levels.

Exhibit 5-14 shows that, after peaking in the 2001 survey, satisfaction levels took a big step backwards in 2005, and are beginning to regain some ground. Still, on every dimension, favorable responses continue to outweigh unfavorable responses. Members are most satisfied with the technical challenges of their jobs (+1.02), and overall (+.93). They are least satisfied with advancement opportunities (+.35). About one quarter rate themselves either dissatisfied, or very dissatisfied, in this area. A slightly smaller proportion (about one in five) is dissatisfied with current compensation. The trend on this measure was modestly favorable from 2005 up to 2009, with a similar dip in the 2013 report, which appears to be on the rebound now.

EXHIBIT 5-14

All Respondents:

SATISFACTION WITH ASPECTS OF WORK, 2001-2015

	Mean Satisfaction Ratings														
	2001	*2005*	*2007*	*2008*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*Very Satisfied +2*	*Satisfied +1*	*Neutral 0*	*Dis-satisfied -1*	*Very Dis-satisfied - 2*
Overall satisfaction with your job	1.04	0.87	0.86	0.84	0.84	0.83	0.83	0.83	0.95	0.93	26.2%	52.1%	12.9%	6.3%	2.4%
Satisfaction with ...															
The technical challenges of your job	1.03	0.93	0.92	0.91	0.87	0.89	0.88	0.88	1.00	1.02	33.6%	44.8%	13.6%	6.0%	1.9%
Employer's support for your technical vitality	0.63	0.43	0.46	0.45	0.4	0.45	0.44	0.44	0.62	0.55	22.3%	36.2%	21.6%	12.6%	6.6%
Your current compensation	0.65	0.35	0.42	0.43	0.41	0.46	0.42	0.42	0.58	0.52	17.4%	40.3%	23.7%	13.7%	4.8%
Advancement opportunities	0.5	0.24	0.27	0.27	0.22	0.25	0.21	0.21	0.53	0.35	14.6%	34.0%	28.0%	14.7%	7.2%

6. IEEE-USA SALARY TIME SERIES DATA, 1994-2014

6.1 Constant Dollar Data: Adjusting for Inflation

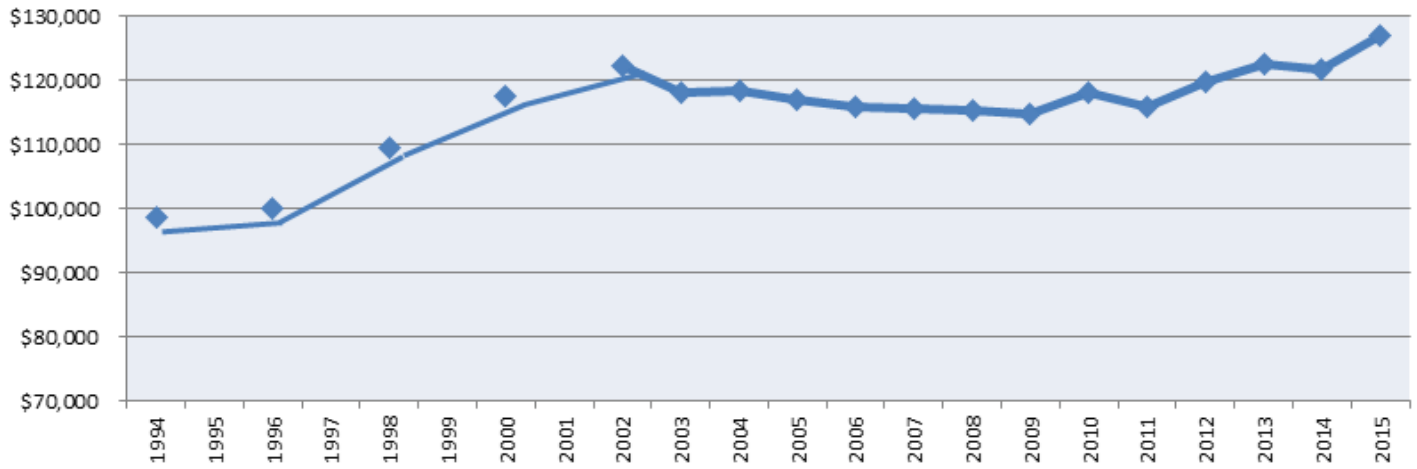
Responding members employed full time in their PATC saw a significant increase in median primary income from 2013 to 2014: from $124,260 to $130,000, or +4.6%. However, a more meaningful measure of economic progress looks at changes in real (inflation-adjusted) dollars, which these surveys have examined (using median income), since 1994.

Using the Consumer Price Index for All Urban Consumers as the deflator, we see that real primary income rose steadily from $98,550 in 1994, to $122,315 in 2002. 2003 saw a big step backwards, to $118,008. Since 2011, real primary income has been on the rise ($115,789 in 2011 to $126,953 in 2014). The results in 2014; however, showed a significant increase in real primary income, compared to 2013.

EXHIBIT 6-1

Those Working Full Time in Their PATCs (Current Data Excludes Consultants):

MEDIAN PRIMARY INCOME IN CONSTANT 2012 DOLLARS, 1994-2015



Survey Conducted	*Surveyed Period*	*Nominal ncome*	*Real Income*
1995	1994	$67,000	$98,551
	1995		
1997	1996	72,000	100,033
	1997		
1999	1998	82,000	109,595
	1999		
2001	2000	93,100	117,582
	2001		
2003	2002	101,000	122,315
2004	2003	99,500	118,008
2005	2004	103,000	118,422
2006	2005	104,700	117,043
2007	2006	108,000	115,860
2008	2007	110,610	115,754
2009	2008	116,000	115,253
2010	2009	113,500	114,810
2011	2010	118,000	118,000
2012	2011	119,950	115,789
2013	2012	124,000	119,738
2014	2013	124,260	122,466
2015	2014	130,000	126,953

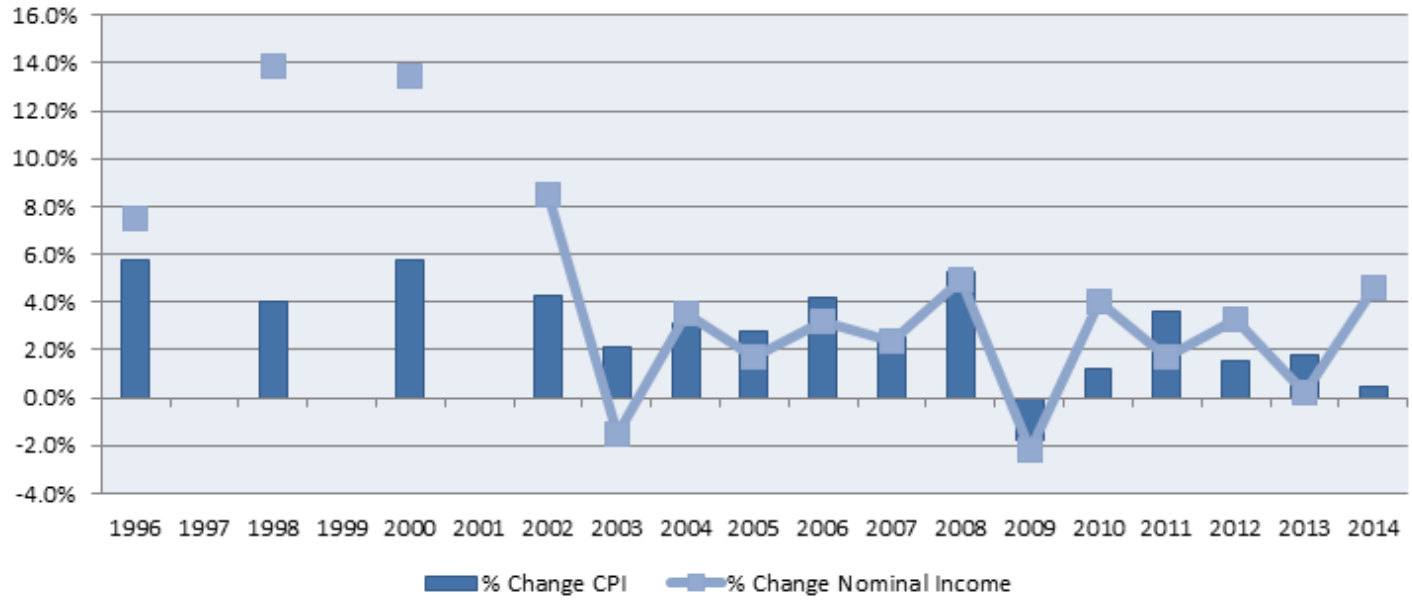
NOTE: Real Income is expressed in current dollars, based on an average June-July 2012 CPI of 229.3 (Consumer Price Index, All Urban Consumers; 1982-1984 = 100).

Exhibit 6-2 presents related data. The bars show period-to-period changes in the CPI. The line shows changes in median nominal primary income reported by engineers working full time in their PATCs. Combined, the chart shows that median income outpaced inflation handily in the 1990s and early 2000s, but that 2003 begins a stretch where inflation appears to have the upper hand. However, once again in 2013, median income showed real growth.

EXHIBIT 6-2

Those Working Full Time in Their PATCs (Current Data Excludes Consultants):

CHANGES IN MEDIAN NOMINAL PRIMARY INCOME AND THE CPI, 1996-2014



Survey Conducted	*Surveyed Period*	*CPI*	*% Change Nominal Income*	*% Change CPI*	*% Change Real Income*
1995	1994	148.2			
	1995	152.5			
1997	1996	156.9	+7.5%	+5.8%	+1.5%
	1997	160.4			
1999	1998	163.1	+13.9%	+4.0%	+9.5%
	1999	166.5			
2001	2000	172.6	+13.5%	+5.8%	+7.3%
	2001	177.8			
2003	2002	180.0	+8.5%	+4.3%	+4.0%
2004	2003	183.8	-1.5%	+2.1%	-3.5%
2005	2004	189.6	+3.5%	+3.1%	+0.4%
2006	2005	195.0	+1.7%	+2.8%	-1.2%
2007	2006	203.2	+3.2%	+4.2%	-1.0%
2008	2007	208.3	+2.4%	+2.5%	-0.1%
2009	2008	219.4	+4.9%	+5.3%	-0.4%
2010	2009	215.5	-2.2%	-1.8%	-0.4%
2011	2010	218.0	+4.0%	+1.2%	+2.8%
2012	2011	225.8	+1.7%	+3.6%	-1.9%
2013	2012	229.3	+3.3%	+1.5%	+3.4%
2014	2013	233.6	+0.2%	+1.8%	+2.2%
2015	2014	234.8	+4.6%	+0.5%	3.7%

NOTE: Percentage change calculated from measure to measure, not year to year, in years with no survey. CPI for year calculated as average for June-July (Consumer Price Index, All Urban Consumers; 1982-1984 = 100).

6.2 Trends in the Membership Profile

Selected respondent characteristics of U.S. IEEE members are compared for all surveys conducted since 1972, in Exhibit 6-3. Average age was up in the 2015 survey—the highest reported since 1999. Years of experience was also higher in the 2015 survey, while years with current employer dropped slightly. Involuntary unemployment dropped significantly, to a level not seen since 2008. The proportion holding a Bachelor's as their highest degree has stabilized at around one third, well below the 50% levels seen in the 1970s and 1980s. The proportion holding Master's or Doctoral degrees has plateaued, at just under two-thirds.

After modest gains in the 1970s and 1980s, the proportion of female EEs remains at approximately 8%. The profession continues to slowly grow more diverse, racially and ethnically; however—77.6% of 2015 respondents are white, non-Hispanics—fifteen points lower than in the inaugural 1972 survey.

EXHIBIT 6-3

All Respondents (Current Data Excludes Consultants):

COMPARISONS OF SELECTED MEASURES, 1972-2015

Survey Conducted	Mean Years of Experience	Unemployed Involuntarily	Mean Age	Mean Years with Current Employer	Highest Degree: Bachelor's	Highest Degree: Master's or Ph.D.	Male	White
1972	17.6	-	42.2	6.5	50%	-	99%	95%
1975	17.8	1.7%	41.9	10.6	50%	-	99%	96%
1977	17.3	0.8%	42.6	10.9	50%	-	99%	95%
1979	17.7	0.4%	43.1	11.9	51%	-	99%	94%
1981	17.7	0.5%	42.7	11.2	51%	-	98%	94%
1983	17.0	0.1%	40.6	9.9	48%	-	-	-
1985	15.9	0.4%	40.0	9.5	50%	-	96%	93%
1987	16.1	0.7%	40.9	9.9	45%	-	96%	92%
1989	15.4	0.9%	40.6	9.3	46%	50%	95%	90%
1991	18.4	1.5%	44.0	9.9	48%	46%	95%	90%
1993	19.0	2.7%	45.1	10.4	45%	51%	95%	89%
1995	21.3	2.3%	48.0	11.2	37%	54%	96%	90%
1997	20.9	1.2%	47.6	10.4	40%	55%	94%	87%
1999	24.9	1.3%	52.6	11.9	40%	58%	97%	90%
2001	21.2	0.6%	46.9	14.2	34%	65%	95%	87%
2003	-	4.0%	-	-	-	-	-	-
2004	-	3.4%	-	-	-	-	-	-
2005	19.4	2.1%	44.8	9.2	33%	66%	95%	83%
2006	19.7	1.7%	45.3	9.0	34%	65%	95%	82%
2007	20.0	1.2%	45.6	9.1	35%	65%	94%	83%
2008	19.1	1.3%	44.6	8.7	36%	64%	94%	82%
2009	20.2	1.7%	45.8	9.5	36%	62%	94%	83%
2010	20.2	3.8%	46.1	9.5	36%	62%	93%	79%
2011	19.8	3.6%	45.6	9.5	36%	64%	93%	80%
2012	19.8	3.0%	45.4	9.3	35%	63%	93%	78%
2013	20.3	2.9%	46.0	9.6	39%	61%	93%	77%
2014	20.3	3.2%	45.6	10.9	35%	60%	92%	76%
2015	21.6	1.3%	47.4	10.3	35%	66%	92%	77%

NOTE: Indicates item not reported

7. METHODOLOGICAL NOTES

7.1 Sampling and Response

Invitations to the Web-based 2015 *Salary & Benefits Survey* were emailed in April 2015 to 105,454 U.S. IEEE members. To create the sample, all records of higher-grade members—Associate Members, Members, Senior Members, and Fellows—who consent to receive email communications from IEEE—were drawn from the member database. As noted in Exhibit 1-1, 11.6% of those invited responded, a total of 12,199 returns.

Exhibit 7-1 compares the responding sample with the invited sample, with respect to the joint distribution of Membership Grade and Region (as recorded in IEEE Member Data). In terms of these two variables, the responding sample is a reasonably close match with the invited sample (membership as a whole). Associate Members are slightly under-represented, while Senior Members are slightly over-represented. IEEE's six Regions are more or less proportionately represented.

Focusing on Exhibit 7-2, survey results tend (as in prior surveys) to over-represent younger members, while under-representing older members. This result is not surprising, given the proportion of that group that is at or near retirement, and perhaps has little interest in current compensation data. Those members for whom no age data is on file with IEEE were quite unresponsive.

EXHIBIT 7-1

All Invited Higher-Grade U.S. IEEE Members and All Survey Respondents:

IEEE REGION BY MEMBERSHIP GRADE (IEEE MEMBER DATA)

	Associate Member		Member		Senior Member		Fellow		TOTAL	
	Members	*Survey Cases*	*Members*	*Survey Cases*	*Members*	*Survey Cases*	*Members*	*Survey Cases*	*Members*	*Survey Cases*
1 – Northeast	0.6%	0.1%	13.5%	12.8%	1.9%	2.6%	0.4%	0.2%	16.4%	15.8%
2 – East	0.5%	0.2%	12.4%	11.8%	1.8%	2.1%	0.3%	0.2%	15.0%	14.4%
3 – Southeast	0.4%	0.2%	11.4%	10.6%	1.9%	2.4%	0.2%	0.2%	13.9%	13.4%
4 – Central	0.3%	0.1%	9.3%	10.3%	1.3%	2.3%	0.2%	0.2%	11.1%	12.9%
5 – Southwest	0.4%	0.2%	12.3%	13.2%	1.9%	2.8%	0.2%	0.4%	14.8%	16.5%
6 – West	0.7%	0.3%	24.1%	21.7%	3.4%	4.5%	0.6%	0.5%	28.8%	27.0%
TOTAL	2.9%	1.2%	83.0%	80.4%	12.2%	16.8%	1.9%	1.6%	100.0%	100.0%

NOTE: Results are based only on invited, U.S., higher-grade members. Student, Life and Affiliate grades were not invited.

EXHIBIT 7-2

All Invited Higher-Grade U.S. IEEE Members and All Survey Respondents:

AGE (IEEE MEMBER DATA)

	Members	*Survey Cases*
20-29	2.7%	6.8%
30-39	11.5%	19.4%
40-49	17.7%	23.1%
50-59	31.9%	35.3%
60+	21.0%	13.1%
Blank	15.2%	2.4%

NOTE: Results are based only on invited U.S. higher-grade members. Student, Life and Affiliate grades were not invited.

Statistical precision. With 10,215 usable, non-consultant cases in the 2015 data set, full sample estimates of proportions are subject to a maximum sampling error of ±1.1 of a percentage point, at the 95% confidence level. Most of the profile information is based on the 10,215 non-consultant respondents currently employed full time or part time. Proportions for this subset are also subject to a margin of error of ±1.1. 187 responses, with extreme high or low values for the key measure of total personal income, were omitted from the data set.

Compensation results (for the 9,044 non-consultant respondents working full time in their Primary Areas of Technical Competence) are reported in terms of percentiles, rather than proportions or means. Sampling error is not readily quantified for such statistics, calculated from non-normal distributions.

As in any survey, results are somewhat less precise when the database is carved up into subgroups, such as the combinations of specialties and experience reported in Section 3. Results based on rather small numbers of cases may still be of interest to U.S. IEEE members, and are provided in this report, along with suitable cautions for care in their use. The minimal reportable group is fixed at 25 cases, a threshold selected as a common and reasonable lower limit for large-sample statistical procedures.

The descriptive statistics reported include percentages; measures of central tendency, such as means and medians; and measures of dispersion, such as ranges and percentiles. Percentages in most tabulations are rounded to the ones place, in recognition of the larger-magnitude effects of the sampling error. Means—arithmetic averages—appear only occasionally, as they are not a preferred measure for analysis of income. They tend to be biased high, because of the undue influence of very large values at the top of a distribution.

Medians and other percentiles are points that divide a ranked distribution into equal-sized groups. The median divides a distribution in half; quartiles divide it into quarters; deciles divide it into tenths; percentiles divide it into hundredths. The median is also the second quartile, the fifth decile, and the 50th percentile. Interpolated values are used, if necessary. For example, if the number of cases in a distribution is even, the median is the value half-way between the two cases in the middle. People tend to report values, such as income, in round numbers—why many percentiles in this report are multiples of $1,000.

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