



**ACS**  
Chemistry for Life™



## ChemCensus: 2015

---

Steve and Clint Marchant  
*Data Based Insights, Inc. on behalf of the  
ACS Department of Research and Product Development*

November 2015

American Chemical Society

# **American Chemical Society ChemCensus 2015**

© 2015 American Chemical Society  
1115 Sixteenth Street, NW  
Washington, DC 20036  
800.227.5558

Available from the Department of Research and Product Development

## ACKNOWLEDGEMENTS

The survey was conducted and managed by Gareth Edwards, Senior Research Associate in the ACS's Department of Research and Product Development. Andrew Bell of Intelliscan, Inc. directed the data collection. Steve and Clint Marchant of Data Based Insights, Inc. (an affiliate of Intelliscan) analyzed the results of the survey and prepared this report.

Gareth Edwards  
Senior Research Associate  
Department of Research and Product Development

## CONTENTS

Acknowledgements	ii
Summary and Comments	1
All ACS Chemists	3
Demographics	4
Education	10
Salary	18
Industrial ACS Chemists	30
Demographics	31
Education	33
Salary	38
Academic ACS Chemists	44
Demographics	46
Education	48
Salary	52
Gender and Salary	58

## CHEMCENSUS 2015 SUMMARY

The American Chemical Society's 2015 ChemCensus Report presents an analysis of demographics, employment and salary of domestic ACS members in the workforce as of March 2015. These census surveys have been conducted every fifth year since 1985, with the 2015 census being the seventh study in the series. The ChemCensus survey runs in conjunction with the comprehensive annual salary surveys ACS conducts on a random sample of about 25% of the membership.

The ChemCensus report focuses on ACS chemists in all employment situations. Members employed as chemical engineers or work in non-chemistry job functions are excluded from the analysis.

The 2015 ChemCensus describes the ACS membership as 68.8% male and 31.2% female, of which 90.8% are employed full-time and make a median annual salary of \$97,000. Nearly two-thirds, 66.3% have earned a doctorate degree and earn a median annual salary of \$105,000.

Comparing the 2015 ACS membership with the census results of 2005, shows a number of membership developments over the past ten years:

- Female chemists continue to become a larger part of the ACS membership, from 25.0% in 2005 to 31.4% in 2015. The trend of female chemists representing a larger proportion of the ACS membership will continue. Among working chemists age 20-29, 51.6% are female. However, females are still somewhat underrepresented among the younger generation of the ACS when compared with the demographics of the students enrolled at institutions of higher education. Public university enrollment skews 56.4% female. Private and other categories of higher education skew even more heavily female than do public universities.
- The ACS membership is an aging population. The mean age of ACS workforce chemists has increased from 47.1 in 2005 to 48.1 in 2015. Going back to 1985, the mean age of ACS workforce chemists was 43.4 and those aged 20-29 were 12.4% of the membership. Now, chemists age 20-29 are only 5.3% of the membership. This membership decline in the proportional size of chemists age 20-29 appears to have stabilized since 2005 (5.1% age 20-29). However, the demographic trends suggest that in ten or more years there may be an experience deficit as older chemists retire and there are potentially fewer chemists to replace them.
- ACS membership continues to grow more diverse. In 2005, 84.2% of ACS members identified as White. In 2015, 80.8% of the membership identifies as White. Hispanic, Black and Other or Multiracial groups have increased in proportional size.

- Attaining a doctorate degree has increasingly become a goal of ACS membership. The proportion of ACS members with a doctorate degree has increased from 61.0% in 2005 to 66.3% in 2015.
- The increasing rate of doctorate degree holders in the chemistry workforce appears to be fueled by the growth of employment opportunities in the academic sector. Since 2005, the proportion of chemists employed in the academic sector increased from 28.7% of the ACS chemistry workforce in 2005 to 40.4% in 2015. Members employed in the academic sector have since 1985 been doctorate degree holders at a rate consistently around 85%.
- An ACS Workforce Chemist's 2015 median annual salary of \$97,000 has lost 2.8% in value since 2005's median salary of \$101,300 in constant dollars for March 2015. The decline in salary value from 2005 can partially be attributed to the increasing proportional size of the academic employment sector, which is the lowest paying employment sector. In the industrial sector, the largest of the employment sectors, salaries 2015 vs. 2005 have improved 2.6% in constant dollar value.
- Median annual salaries between male (\$105,000) and female (\$80,900) ACS workforce chemists continue to be higher for males. There are some demographic reasons that account for the disparity of overall median salary. Three of the most impactful drivers of salary, education, age (and experience) and industry of employment skew in statistical favor toward male ACS workforce chemists. Male chemists hold an advantage in education (73.0% hold a doctorate degree vs. 62.4%). Male chemists are older and thus likely have more experience (78.2% age 40 or higher vs. 62.4%). A higher proportion of male ACS workforce chemists are employed in the top paying industry sector (55.7% vs. 43.7%).
- While these differences in education, age, experience and employment sector explain the salary difference between male and female chemists on an overall basis, they do not explain the lower salaries of female ACS workforce chemists of equivalent education and experience levels to male ACS workforce chemists within their employment sector.

---

# ALL ACS CHEMISTS

- Demographics
- Education
- Employment
- Salary
- Module: Professional Development

## DEFINITIONS

**All respondents** refer to all persons who received and completed the 2015 ChemCensus.

**Workforce** refers to respondents who were either employed full-time, part time, as a post doctorate or fellowship, or are unemployed by actively seeking employment (excludes not working and not seeking, and fully retired).

**Chemist** refers to those who indicated that their work specialty is chemistry (excludes chemical engineers and non-chemistry work specialties).

The ChemCensus focuses on ACS workforce chemists.

## METHODOLOGY

The survey was sent out March of 2015. It was mailed to 72,977 qualified ACS members. Recipients were instructed to complete the survey online or to mail back the enclosed questionnaire. There were a maximum of two mailings and eight emails sent to each recipient.



## ALL RESPONDENT DEMOGRAPHICS

The demographic trends from previous census surveys in 2010, 2005 and beyond for the most part continue in their trajectory into the 2015 ChemCensus. Compared with the previous census, respondents are older (and by extension more experienced), more educated and have stronger female representation.

**Table 1: All Respondent Demographics**

(% of All Respondents)

	1985	1990	1995	2000	2005	2010	2015
All Respondents n=	42.6k	39.3k	50.3k	47.8k	35.4k	40.5k	23.8k
<b>Gender</b>							
Male	85.4	82.0	78.6	75.7	75.0	71.5	68.6
Female	14.6	18.0	21.4	24.3	25.0	28.5	31.4
<b>Degree</b>							
Bachelor's	25.8	24.6	23.5	22.0	19.8	17.5	16.8
Master's	19.2	18.8	18.5	18.6	18.2	17.7	16.3
Doctorate	54.4	56.2	57.0	58.1	61.0	63.5	66.3
Other	0.7	0.4	1.0	1.3	1.0	1.3	0.6
<b>Age</b>							
20-29	12.3	10.8	9.2	6.9	5.0	3.5	5.4
30-39	29.6	31.9	30.7	27.0	21.4	20.7	20.2
40-49	26.0	27.9	27.9	30.0	28.4	26.4	22.9
50-59	21.0	19.9	23.1	26.2	28.3	30.2	30.5
60-70+	11.0	9.4	9.1	9.9	16.9	19.3	21.0
<b>Race/Ethnicity</b>							
Hispanic	0.9	1.4	2.2	2.7	2.7	3.3	4.0
American Indian	0.1	0.3	0.2	0.2	0.2	0.2	0.2
Asian	5.7	6.2	10.1	10.5	10.4	12.7	10.1
Black	1.1	1.1	1.4	1.8	1.7	2.2	2.3
White	91.3	90.4	84.7	83.9	84.2	78.5	80.8
Other or Multiracial	0.8	0.6	1.3	1.0	0.8	3.1	2.5
<b>Citizenship</b>							
US Native	87.7	87.5	82.4	79.8	80.4	76.0	78.7
US Naturalized	8.0	7.4	8.6	10.3	10.2	13.1	12.7
US Perm. Resident	3.7	3.9	6.9	6.6	6.1	8.0	6.3
Other Visa	0.6	1.2	2.1	3.2	3.3	3.0	2.3

Note: A long dash within a cell indicates summary data are unavailable.

Females comprise 31.4% of all respondents in the 2015 ChemCensus. Since 1985, the male to female ratio among respondents of the ChemCensus has moved closer to reflecting gender demographics of the general population of the US.

Respondents whose highest degree is a doctorate are 66.3% of the respondent base and outnumber those whose highest degree is a bachelor's by a ratio of 3.9 to 1. In 2005 this ratio was 3.1 to 1 and in 1985 it was 2.1 to 1.

Over half, 51.5% of the respondents in 2015 are 50 years of age or older. Up through the 1995 ChemCensus, the portion of the responding membership 50 and older hovered around 30%.

White respondents are 80.8% of all respondents. While those who identify as White comprise the super majority of all respondents as they have in previous census surveys, those identifying as Hispanic, Asian and Black have doubled their presence in the

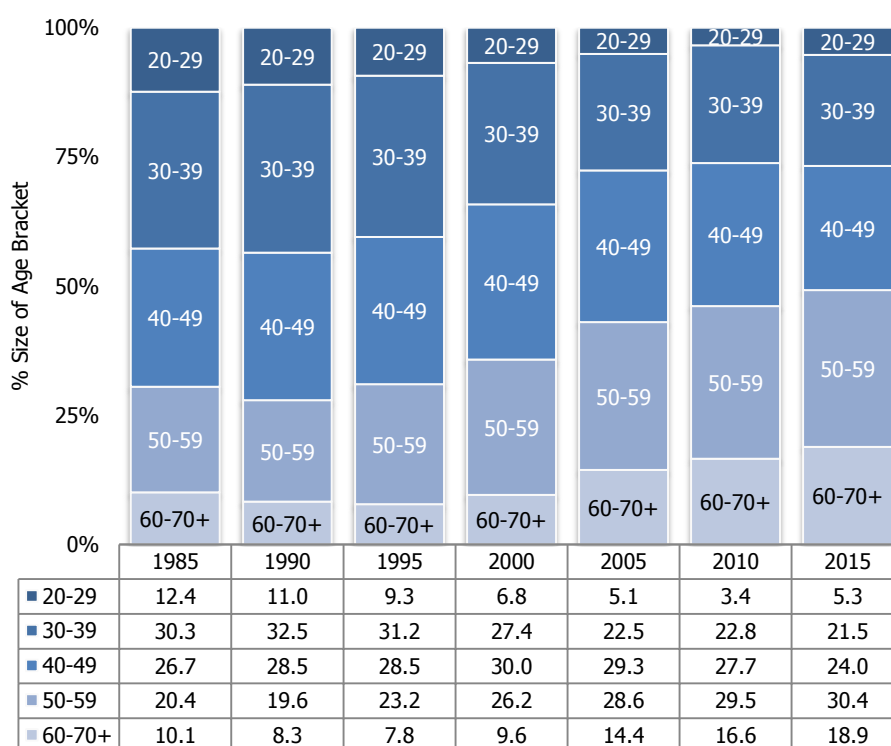
ChemCensus. Asians form the second largest race or ethnic identity group, representing 10.1% of all respondents.

In 2015, 78.7% of all respondents are US Native. The increased presence of Asian chemists among all respondents, of who only a small proportion is US Native, drive the change in the citizenship profile.

## ACS WORKFORCE CHEMIST AGE PROFILE

**Figure 1** visualizes the age data of all ACS workforce chemists. Those under the age of 40 only compose 25.8% of ACS workforce chemists in 2015. In 1990, 43.5% were under the age of 40. Since the 1990 ChemCensus, the proportion of new chemists entering the workforce has declined at a steady rate. In ten or more years as aging ACS workforce chemists retire, there may be an experience deficit as there are a larger proportion of chemists approaching retirement age than there may be entering the most experienced age brackets.

**Figure 1: ACS Chemist Age Profile (ACS Workforce Chemists Only)**



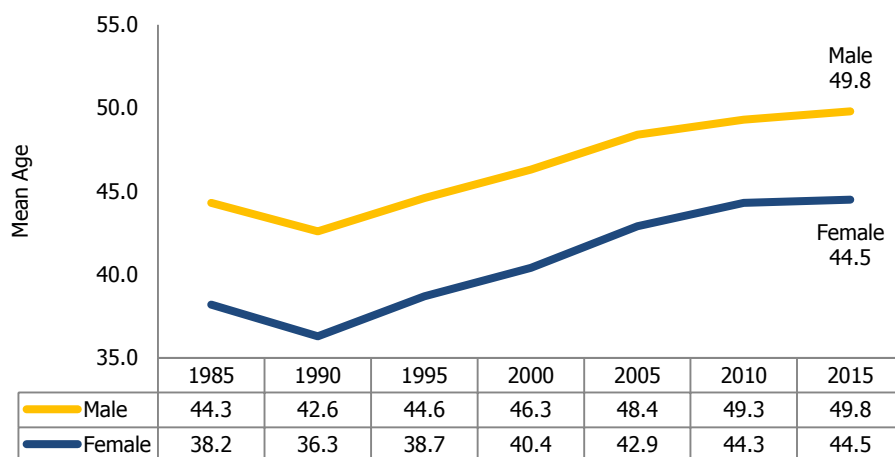
The mean age of an ACS workforce chemist is 48.1 (**Table 2**). Since the 1990 census mean of 41.3, the mean age of an ACS workforce chemist has increased each census. However, the mean age from 2010 to 2015 only increased by 0.2 years. A proportional uptick in chemists aged 20-29 helps offset the increasing proportion of chemists aged 60-70.

**Table 2: Mean Age** (All ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.9k	31.0k	29.3k	18.8k
<b>ACS Workforce Chemist</b>	<b>43.4</b>	<b>41.3</b>	<b>43.3</b>	<b>44.8</b>	<b>47.1</b>	<b>47.9</b>	<b>48.1</b>
<b>Gender</b>							
Male	44.3	42.6	44.6	46.3	48.4	49.3	49.8
Female	38.2	36.3	38.7	40.4	42.9	44.3	44.5
<b>Degree</b>							
Bachelor's	40.5	37.5	39.3	40.9	43.5	45.1	45.0
Master's	43.1	41.2	43.2	44.6	47.5	48.3	49.2
Doctorate	44.8	42.9	44.9	46.2	48.1	48.4	48.5
<b>Race / Ethnicity</b>							
Hispanic	40.2	38.5	39.9	41.9	44.0	44.8	45.1
American Indian	40.0	40.1	42.0	44.2	48.6	49.1	50.6
Asian	42.7	39.7	41.2	42.5	44.2	45.2	47.0
Black	42.9	39.2	41.6	42.5	45.7	46.4	46.4
White	43.5	41.6	43.7	45.1	47.4	48.5	48.4
Multiracial / Other	41.3	38.8	41.2	44.5	46.1	48.1	47.0
<b>Citizenship</b>							
U.S. Native	43.1	41.3	43.4	45.1	47.4	48.4	48.2
U.S. Naturalized	48.7	45.9	48.4	48.5	50.4	50.9	51.7
Permanent Resident	40.8	39.1	39.5	41.0	42.0	42.9	44.3
Other Visa Status	34.2	32.6	33.2	35.1	36.2	36.6	35.7

Note: A long dash within a cell indicates summary data are unavailable.

Since 1990, the average age of male and female chemists has converged moderately. Male ACS workforce chemists were on average 6.3 years older than female ACS workforce chemists were in 1990 and in 2015, they are an average of 5.3 years older.

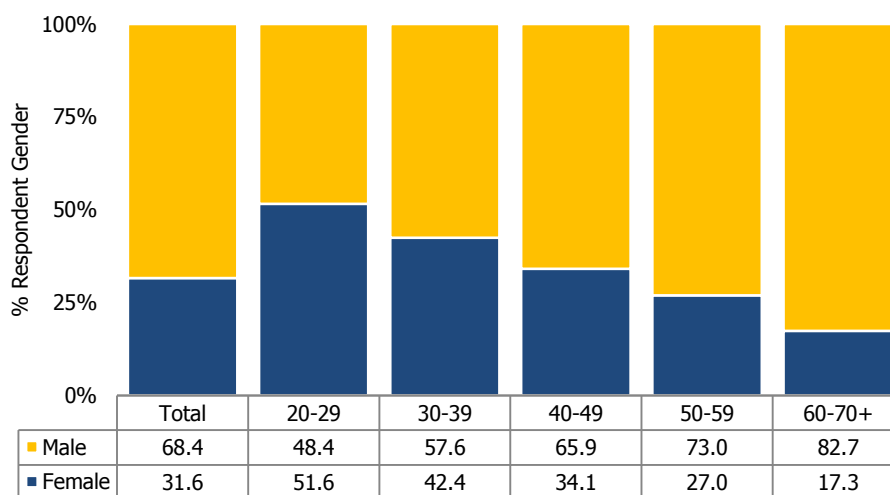
**Figure 2: Mean Age by Gender** (All ACS Workforce Chemists)

## 2015 GENDER BY AGE GROUP

Among ACS workforce chemists aged 20-29 years old, 48.4% are male and 51.6% are female—a ratio that roughly reflects the general population in the US. However, according to a 2012 Forbes magazine study, the demographics of those pursuing higher education are 43.6% male / 56.4% female at public universities. The demographics skew heavier female at private and other university categories.

While the male-female ratio is nearly even among chemists age 20-29, compared with the current demographics of university students females are somewhat underrepresented as a population among chemists who have recently graduated.

**Figure 3: Gender by Age Group** (% of All ACS Workforce Chemists)

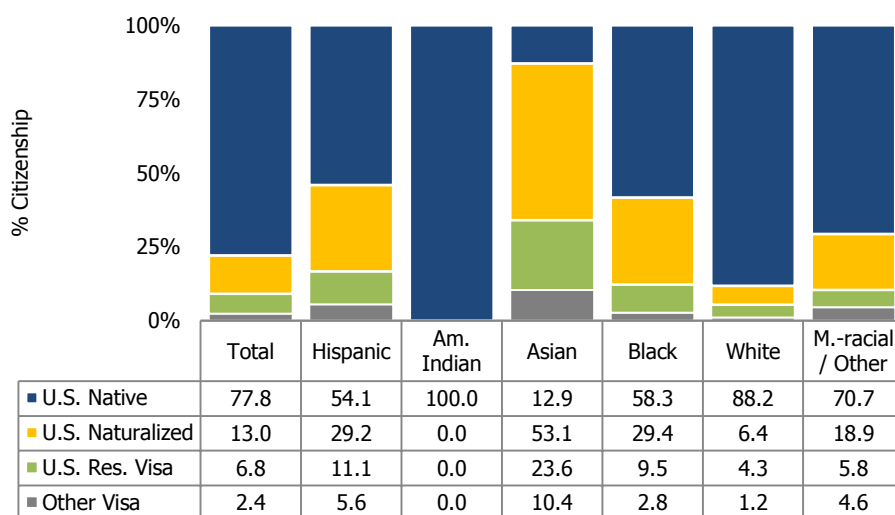


## 2015 CITIZENSHIP DETAIL

US Natives are 77.8% of the 2015 chemistry workforce. The racial or ethnic identities that are predominantly US Native born are American Indian (100%), White (88.2%) and Multiracial (70.7%). More than half who identify as Black (58.3%) or Hispanic (54.1%) are US Native. Only 12.9% of chemists identifying as Asian are US Native, though 53.1% are US Naturalized citizens.

**Figure 4: 2015 Citizenship by Race / Ethnicity**

(% of All ACS Workforce Chemists)



## EDUCATION

The steady decline in chemists whose top degree is a bachelor's reflects the demand for advanced degrees for careers in the chemistry field. In 1985, 56.3% of ACS workforce chemists had earned a doctorate degree. In 2015, 69.6% of chemists have earned a doctorate. The academic sector has increasingly become an employment destination and a doctorate degree for employment in the academic sector is of greater necessity than it is for employment in the private sector.

**Table 3: Highest Degree Earned** (% of All ACS Workforce Chemists)

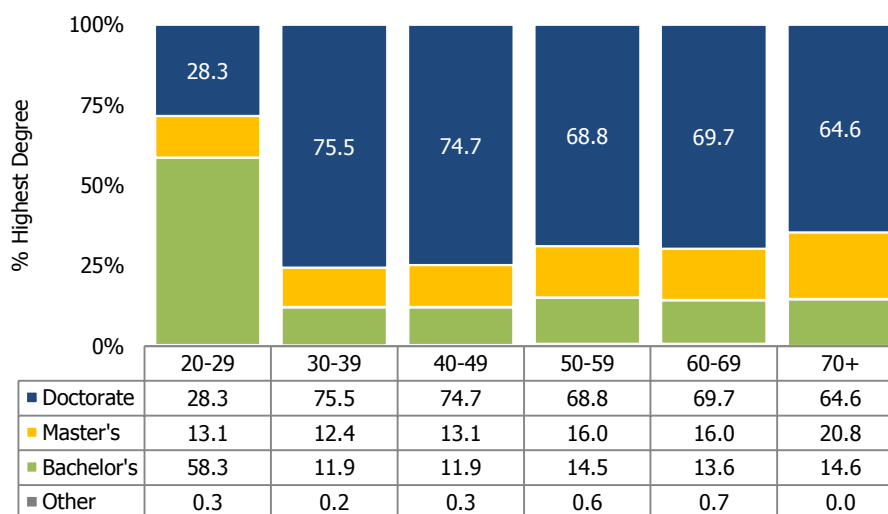
	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.9k	31.0k	29.3k	18.8k
<b>Degree</b>							
Bachelor's	25.2	24.3	23.5	21.9	19.7	16.8	15.5
Master's	17.8	17.2	16.8	17.2	16.9	15.1	14.4
Doctorate	56.3	58.2	58.9	59.9	62.5	67.5	69.6
Other	0.7	0.4	0.8	1.0	0.9	0.6	0.5

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 DEGREE BY AGE GROUP

Chemists between the age of 30-39 (75.5% earned a doctorate) and 40-49 (74.7% earned a doctorate) reflect an increasing demand of a doctorate degree for employment. Though the majority of chemists of the previous generation, now in the second half of their careers, have earned a doctorate, the demand for a doctorate to maintain their careers appears to have been moderately less pronounced than it is in 2015.

**Figure 5: 2015 Highest Degree by Age Group** (% of All ACS Workforce Chemists)



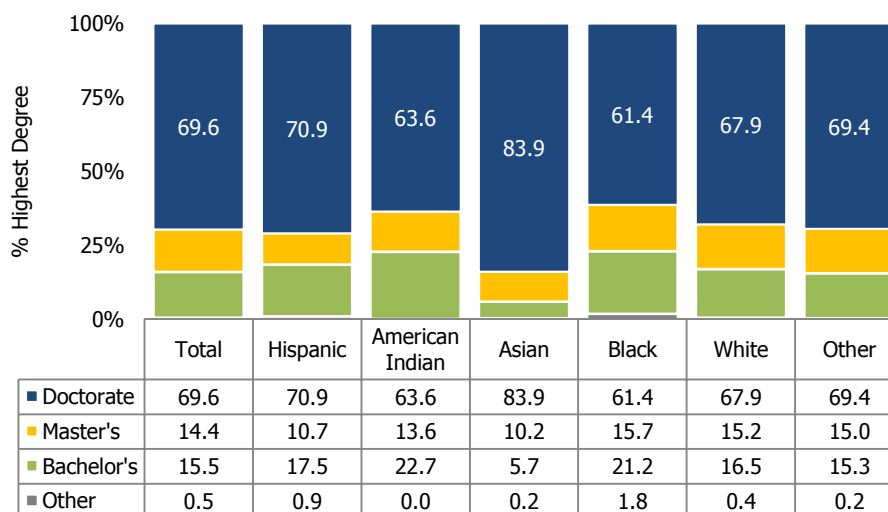
## DEGREE BY RACE / ETHNICITY

There is some variation in the likelihood that a doctorate is the highest degree earned by an ACS workforce chemist based on racial and ethnic identity. The proportion of ACS workforce chemists whose highest degree earned is a doctorate degree is roughly similar for those who identify as Hispanic (70.9%), White (67.9%) and Other / Multiracial (69.4%).

Two identity groups vary from ACS workforce chemists overall when it comes to the proportion of degree holders within that group. Among chemists identifying as Asian, 83.9% have earned a doctorate degree. The proportion of ACS workforce chemists who identify as black that have earned a doctorate degree is 61.4%.

**Figure 6: 2015 Highest Degree Earned by Race / Ethnicity**

(% of All ACS Workforce Chemists)



## FIELD OF HIGHEST DEGREE

Chemists who pursued and graduated with their highest degree in General Chemistry has consistently declined from a high of 17.7% in 1985 to a low of 10.2% for the 2015 census. This likely reflects two things. First, there is more demand for chemists to earn a doctorate degree. Second, increased demand for specialization as knowledge pools within

each field grows deeper over time. This specialized knowledge has not shifted into sub disciplines of classic chemistry, but rather there is some movement toward non-classic fields of chemistry.

This is not to say there is a decline in classic chemistry fields. Over the course of seven ChemCensus surveys, the proportion of chemists with their highest degree in a field of classic chemistry has been stable from 60.2% in 1985 to 58.7% in 2015. Further, the classic field of Organic Chemistry remains the largest field of highest degree at 24.7%. In fact, all the fields under classic chemistry have a larger highest degree share than any of the non-classic or related chemistry fields.

Among the non-classic other chemistry fields, Biotechnology, Polymer Chemistry, Environmental Chemistry, Chemical Education, Agriculture / Food Chemistry and other Chemistry Sciences totaled 15.2% in 1985 and has gradually increased to 20.1% in 2015.

**Table 4: Field of Highest Degree**

(% of All ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.9k	31.0k	29.3k	18.8k
<b>Chemistry: General</b>	<b>17.7</b>	<b>16.3</b>	<b>15.4</b>	<b>13.2</b>	<b>12.2</b>	<b>10.8</b>	<b>10.2</b>
<b>Chemistry: Classic</b>	<b>60.2</b>	<b>60.5</b>	<b>59.2</b>	<b>59.2</b>	<b>60.6</b>	<b>58.0</b>	<b>58.7</b>
Analytic Chemistry	11.0	11.9	12.2	11.6	12.5	11.8	12.0
Inorganic Chemistry	7.9	8.7	8.5	8.9	9.8	9.2	10.8
Organic Chemistry	28.3	27.4	26.7	27.4	26.7	26.7	24.7
Physical Chemistry	12.3	12.5	11.8	11.3	11.6	10.3	11.2
Theoretical Chemistry	0.7	--	--	--	--	--	--
<b>Chemistry: Other</b>	<b>15.2</b>	<b>15.5</b>	<b>16.2</b>	<b>18.6</b>	<b>18.2</b>	<b>20.1</b>	<b>20.1</b>
Ag/Food Chemistry	1.2	1.1	1.2	1.2	1.0	1.0	1.1
Biochemistry	8.8	8.6	8.2	8.6	8.4	7.9	9.4
Chemical Education	--	--	--	1.7	1.7	1.2	2.0
Environmental Chem.	1.1	1.5	1.8	2.4	2.2	1.8	2.7
Polymer Chemistry	2.2	2.4	2.9	3.2	3.2	3.5	3.3
Other Chemistry	1.9	1.9	2.1	1.5	1.7	4.7	1.6
<b>Chemistry: Related</b>	<b>2.0</b>	<b>3.1</b>	<b>3.6</b>	<b>4.3</b>	<b>4.1</b>	<b>4.4</b>	<b>5.1</b>
Biotechnology	--	0.4	0.4	0.6	0.5	0.5	0.6
Clinical Chemistry	--	0.2	0.2	0.3	0.2	0.1	0.1
Materials Science	--	0.6	0.8	1.0	1.1	1.4	1.8
Medical/Clinical Chem.	1.1	--	--	--	--	--	--
Med/Pharma Chem.	--	1.9	2.2	2.4	2.3	2.4	2.6
Pharmaceutical Chem.	0.9	--	--	--	--	--	--
<b>Non-Chemistry</b>	<b>4.8</b>	<b>4.8</b>	<b>5.6</b>	<b>4.7</b>	<b>4.9</b>	<b>5.9</b>	<b>5.6</b>
Business Admin.	--	0.9	1.0	0.9	1.0	1.2	0.8
Computer Science	--	--	0.0	0.0	0.0	0.1	0.1
Law	--	--	0.1	0.1	0.1	0.1	0.2
Other Non-Chemistry	4.8	3.9	4.5	3.7	3.8	4.5	4.5

Note: A long dash within a cell indicates summary data are unavailable.

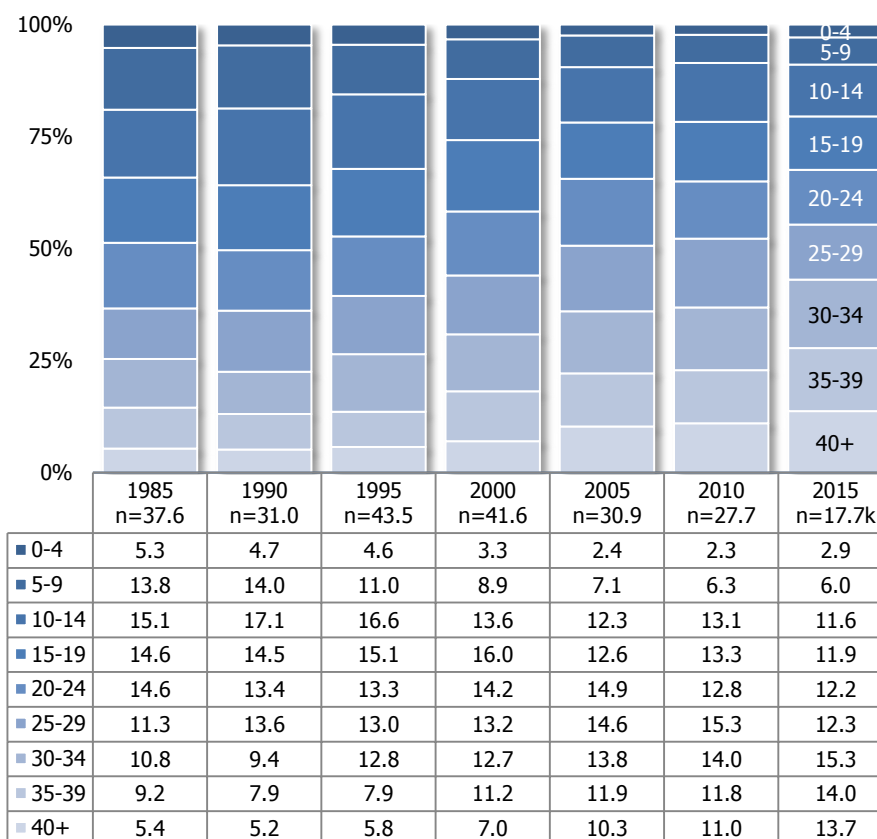


## WORKFORCE EXPERIENCE

The ChemCensus measures experience as the number years since an ACS workforce chemist had earned a bachelor's degree. Over the past thirty years, ACS workforce chemists have grown increasingly more experienced. In 2015, a majority of ACS workforce chemists, 55.4% have 25 or more years of experience. Going back ten years to 2005, the proportion of ACS workforce chemists with 25 or more years of experience was 50.6%. Of the census periods between 1985 and 2015, the least experienced group of ACS workforce chemists was in 1990 where 36.2% of ACS workforce chemists had 25 years or more of experience.

ACS membership follows the overall employment trend of experienced workers extending their careers beyond the traditional retirement age of 65.

**Figure 7: Experience—Years Since Attaining a Bachelor's Degree**  
(% of All ACS Workforce Chemists)



## EMPLOYMENT STATUS

The employment status figures in Table 5 consider ACS workforce chemists who are employed full-time, part-time, in a post-doctoral program or are unemployed while seeking employment. Excluded from the calculation are ACS members who are retired or not actively seeking employment. The full-time employment rate for ACS workforce chemists in 2015 is 90.7%, which is in line with each census going back to 1995. The proportion of part-time and unemployed in 2015 (7.0%) is more than double that of 1985 (3.1%) and 1990 (2.7%).

**Table 5: Employment Status**  
(% of All ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.9k	31.0k	29.3k	18.8k
<b>Status (%)</b>							
Full-Time	94.9	95.0	91.0	92.9	90.8	88.1	90.7
Part-Time	1.5	1.5	2.7	3.0	4.1	3.9	3.9
Post-Doctoral	2.0	2.3	3.7	2.1	2.0	4.2	2.2
Seeking Employment	1.6	1.2	2.5	2.0	3.1	3.8	3.1

Note: A long dash within a cell indicates summary data are unavailable.

## EMPLOYER TYPE

Among ACS workforce chemists, 51.9% were employed in the Industry sector, 40.4% in the Academic sector, 6.5% employed in Government and 1.2% are Self-Employed in 2015.

**Table 6: Employer Type**  
(% of All ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.9k	31.0k	29.3k	18.8k
<b>Employer</b>							
Academic	22.9	24.2	26.4	26.3	28.7	32.5	40.4
Government	9.7	8.9	11.2	6.9	7.4	7.4	6.5
Industry	66.5	63.8	60.9	64.8	62.1	53.0	51.9
Self-Employed	0.9	3.1	1.4	2.0	1.8	7.0	1.2

Note: A long dash within a cell indicates summary data are unavailable.

The employment sectors where ACS workforce chemists find employment has undergone a fair amount of change over the past ten years. As recently as 2000, almost 2-of-3 chemists (64.8%) were employed in the industry sector. Since then employment has begun to shift away from the industry sector to where in 2015 the industry sector accounts for

slightly more than half, 51.9% of the employment for ACS workforce chemists.

Employment opportunities in the academic sector have grown to where 40.4% of the ACS workforce chemists in 2015 find employment. This increase in academic employment opportunity appears to partially account for the increased demand among ACS workforce chemists to attain a doctorate degree to compete for employment.

## 2015 EMPLOYMENT TYPE DEMOGRAPHICS

Table 7 shows what sector ACS workforce chemists in 2015 are employed by their demographic category.

Male ACS workforce chemists tend to gravitate toward employment in the industry sector, where 55.7% of male ACS workforce chemists find employment. Female ACS workforce chemists find greater employment opportunity the Academic sector where 48.1% are employed vs. the industry sector where 43.7% are employed.

**Table 7: 2015 Employment Type Demographics**

(% of All ACS Workforce Chemists by Employer Type)

	Academic	Government	Industry	Self-Employed
Respondents n=	7.1k	1.1k	9.2k	0.2k
<b>All Chemists</b>	40.4%	6.5%	51.9%	1.2%
<b>Gender</b>				
Male	36.8	6.2	55.7	1.3
Female	48.1	7.2	43.7	1.0
<b>Degree</b>				
Bachelor's	10.2	7.6	81.0	1.2
Master's	27.6	6.5	64.7	1.3
Doctorate	49.7	6.3	42.8	1.2
<b>Race/Ethnicity</b>				
Hispanic	49.5	7.4	41.9	1.2
American Indian	27.3	4.5	68.2	0.0
Asian	37.6	5.5	56.2	0.7
Black	45.3	7.8	46.6	0.3
White	40.3	6.5	51.9	1.3
Other or Multiracial	38.3	7.1	53.2	1.5

Note: A long dash within a cell indicates summary data are unavailable.

sector: American Indian (68.2%), Asian (56.2%), White (51.9%) and Other/Multiracial (53.2%) chemists work in the industry sector.

In 2015, the vast majority (81.0%) of ACS workforce chemists whose highest degree is a bachelor's find employment in the industry sector. Chemists with higher degrees find increasing employment opportunity in the academic sector where 27.6% of workforce chemists with a master's degree and 49.7% of those with a doctorate find employment.

Race and ethnicity appears to have some bearing on where an ACS workforce chemist finds employment opportunity in 2015. Fewer than half of chemists who identify as Black (46.6%) or Hispanic (41.9%) find employment in the industry sector. By contrast, the majority of ACS workforce chemists of all other race or ethnic groups find employment in the industry

## WORK SPECIALTY

About half, 48.4% of the 2015 chemistry workforce work in four specialties: Analytical Chemistry (16.2%), Chemical Education (11.1%), Organic Chemistry (10.7%) and Medicinal / Pharmaceutical Chemistry (10.4%).

- Among bachelor's degree ACS workforce chemists, 48.3% work in these four specialties with the Analytical Chemistry (29.9%) as the most cited
- 57.4% of master's degree ACS workforce chemists work within these four specialties with Analytical Chemistry (20.8%) and Chemical Education (19.3%) as the most cited
- Among the 46.4% of doctorate degree ACS workforce chemists that work in these four specialties, each of the four was cited at a similar frequency

**Table 8: 2015 Work Specialty**  
(% of All ACS Workforce Chemists by Degree)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	18.8k	2.9k	2.7k	13.0k
Analytical chemistry	16.2	29.9	20.8	12.2
Chemical education	11.1	4.3	19.3	10.9
Organic chemistry	10.7	7.0	7.2	12.2
Medicinal/pharmaceutical chemistry	10.4	7.1	10.1	11.1
Materials science	6.8	5.5	4.6	7.6
Polymer chemistry	6.7	8.5	7.3	6.1
Biochemistry	6.1	2.6	2.1	7.8
Environmental chemistry	6.0	10.5	8.8	4.5
Physical chemistry	5.5	1.6	1.1	7.2
Biotechnology	4.4	3.2	3.4	4.9
Inorganic chemistry	4.4	3.1	1.4	5.3
Other chemical science	3.5	4.9	4.4	2.9
General chemistry	3.3	5.8	5.2	2.3
Agricultural/food chemistry	3.1	4.9	3.6	2.6
Nanochemistry	1.3	0.5	0.2	1.7
Clinical chemistry	0.6	0.6	0.6	0.6

Note: A long dash within a cell indicates summary data are unavailable.

## WORK FUNCTION

Among the fifteen listed work functions, half of the ACS workforce chemists indicate either R&D Applied Research (38.6%) or Analytical Services (13.8%). A higher degree appears to present greater opportunity for employment in the R&D Applied Research function:

- Bachelor's degree: 23.4%
- Master's degree: 30.8%
- Doctorate degree: 43.9%

**Table 9: 2015 Work Function**  
(% of All ACS Workforce Chemists by Degree)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	18.8k	2.9k	2.7k	13.0k
R&D: Applied Research	36.8	23.4	30.8	43.9
Analytical Services	13.8	24.9	17.7	8.3
R&D: Management	10.6	4.1	5.6	14.7
R&D: Basic Research	9.6	5.8	6.8	12.0
Production, Quality Control	6.0	13.0	8.0	2.6
Marketing, Sales	4.5	6.5	6.7	3.2
General Management (non-R&D)	4.5	6.7	5.1	3.5
Consulting	3.4	2.6	4.2	3.4
Health and Safety/Regulatory Affairs	3.3	4.6	5.1	2.2
Forensic Analysis	1.3	2.1	2.3	0.7
Teaching or Training	1.1	0.7	1.8	1.1
Chemistry Information Services	1.1	1.1	1.7	0.9
Patents, Licensing, Trademarks	0.7	0.2	0.4	0.9
Computer Programming, Analysis, Design	0.4	0.4	0.2	0.4
Other	2.9	3.7	3.5	2.3

Note: A long dash within a cell indicates summary data are unavailable.

## SALARY

The salary tables examine the median annual salary for all ACS workforce chemists who were employed full-time. Salary data for ACS workforce chemists employed part-time or in a post-doc program and unemployed, were excluded.

**Table 10: Median Full-Time Salary in Current Dollars**  
(Amount in Thousands for All Full-Time ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	35.9k	32.6k	40.2k	39.0k	28.2k	26.9k	17.1k
<b>All Chemists</b>	\$40.0	\$49.7	\$59.8	\$70.0	\$82.9	\$89.0	\$97.0
<b>Gender</b>							
Male	41.4	51.7	62.0	74.2	88.0	95.0	105.0
Female	30.0	39.0	47.0	56.0	68.0	73.0	80.9
<b>Degree</b>							
Bachelor's	32.3	38.9	45.3	53.1	63.0	69.8	77.0
Master's	36.0	45.0	53.5	62.0	73.9	80.0	87.0
Doctorate	44.3	55.0	66.0	79.0	92.8	98.0	105.0
<b>Employment Type</b>							
Academia	33.0	43.0	50.0	56.6	64.0	68.0	76.0
Government	40.0	47.0	59.0	70.0	84.8	94.2	109.0
Industry	42.0	51.5	62.1	74.5	90.0	100.0	112.8
Self-Employed	45.0	52.0	66.6	78.0	90.0	84.0	100.0
<b>Race/Ethnicity</b>							
Hispanic	36.9	43.5	50.0	60.0	74.0	80.0	85.0
American Indian	34.7	48.0	54.0	60.0	69.6	69.5	103.8
Asian	40.0	49.8	58.8	71.0	86.2	91.0	101.5
Black	36.0	42.0	51.0	56.0	71.0	73.0	83.0
White	40.0	50.0	60.0	70.0	82.9	89.2	97.0
Other or Multiracial	36.9	48.0	55.2	66.5	82.0	87.2	95.0
<b>Age</b>							
20-29	26.5	32.0	34.4	42.0	47.7	47.0	52.0
30-39	36.0	45.0	52.0	60.8	70.5	73.8	78.0
40-49	44.0	55.0	65.0	74.6	86.5	90.0	97.0
50-59	49.0	59.0	70.7	81.0	92.1	100.0	115.0
60-70+	49.1	61.5	72.0	82.0	95.0	103.0	115.0

Note: A long dash within a cell indicates summary data are unavailable.

Table 10 presents the median salary data in current dollars during the ChemCensus from 1985 to 2015. Salaries are shaped by multiple factors such as age, experience, education and employment sector. Gender and race / ethnicity also appear to be factors. However, when one interprets these salary data take care to consider all the major factors in play, rather than viewing the data from the perspective of a single factor.

The median full-time salary of ACS workforce chemists in 2015 is \$97,000. In current dollar figures, it is a 9.0% increase over the \$89,000 median full-time salary in 2010. Going back to 1985, the trend is the median salary increases about \$9,500 each ChemCensus.

When comparing salaries converted to 2015 constant dollar amounts (Table 11), ACS workforce chemist salaries peaked in value at \$101,300 during the 2005 ChemCensus. The 2015 median of \$97,000 is a 4.2% loss in dollar value.

While economic trends outside the survey have some influence in the loss of chemists' salary value since 2005, shifts within the ACS demographics from 1985-2005 and 2010-2015 may also factor in. From 1985 to 2005 the chemistry workforce aged (see Figure 1 and Table 2). Age correlates with experience and an increase in salary. The workforce in 2010 and 2015 did not age nearly as much in comparison, so age / experience does not drive an increase in median salary during the more recent census periods.

A second consideration in the loss of salary value among ACS workforce chemists overall since 2005 is the shift in where ACS workforce chemists find employment (Table 6). In 2005, 62.1% of ACS workforce chemists found employment in the industry sector, which of the four employment sectors has the highest median salary. In 2015 only 51.9% of ACS workforce chemists found employment in the industry sector. Many ACS workforce chemist jobs shifted to the academic sector, where the median annual salary is the lowest of the four sectors.

A third consideration that may partially explain why the median salary value for all ACS workforce chemists in 2015 is lower than it was in 2005 is the increased representation of female chemists. Female chemists earn a lower median salary than male chemists and comprise a larger percentage of the workforce in 31.6% in 2015 vs. 25.2% in 2005.

**Table 11: Median Salary in March 2015 Constant Dollars and Percent Change**

(Constant Dollar Amount in Thousands for All Full-Time ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015	vs. 85	vs. 95	vs. 05
Respondents n=	35.9k	32.6k	40.2k	39.0k	28.2k	26.9k	17.1k			
<b>All Chemists</b>	88.8	91.2	93.3	96.5	101.3	96.6	97.0	9.3%	4.0%	-4.2%
<b>Gender</b>										
Male	91.9	94.9	96.7	102.3	107.5	103.1	105.0	14.3%	8.6%	-2.3%
Female	66.6	71.6	73.3	77.2	83.1	79.2	80.9	21.5%	10.4%	-2.6%
<b>Degree</b>										
Bachelor's	71.7	71.4	70.6	73.2	77.0	75.7	77.0	7.4%	9.0%	0.1%
Master's	79.9	82.6	83.4	85.5	90.3	86.8	87.0	8.9%	4.3%	-3.6%
Doctorate	98.3	100.9	102.9	109.0	113.4	106.3	105.0	6.8%	2.0%	-7.4%
<b>Employment Type</b>										
Academia	73.2	78.9	78.0	78.1	78.2	73.8	76.0	3.8%	-2.5%	-2.8%
Government	88.8	86.2	92.0	96.5	103.6	102.2	109.0	22.8%	18.5%	5.2%
Industry	93.2	94.5	96.8	102.8	109.9	108.5	112.8	21.0%	16.5%	2.6%
Self-Employed	99.9	95.4	103.9	107.6	109.9	91.1	100.0	0.1%	-3.7%	-9.0%
<b>Race/Ethnicity</b>										
Hispanic	81.9	79.8	78.0	82.8	90.4	86.8	85.0	3.8%	9.0%	-6.0%
American Indian	77.0	88.1	84.2	82.8	85.0	75.4	103.8	34.8%	23.3%	22.1%
Asian	88.8	91.4	91.7	97.9	105.3	98.7	101.5	14.3%	10.7%	-3.6%
Black	79.9	77.1	79.5	77.2	86.7	79.2	83.0	3.9%	4.4%	-4.3%
White	88.8	91.7	93.6	96.5	101.3	96.8	97.0	9.3%	3.7%	-4.2%
Other or Multiracial	81.9	88.1	86.1	91.7	100.2	94.6	95.0	16.0%	10.4%	-5.2%
<b>Age</b>										
20-29	58.8	58.7	53.6	57.9	58.3	51.0	52.0	-11.6%	-3.1%	-10.8%
30-39	79.9	82.6	81.1	83.9	86.1	80.1	78.0	-2.4%	-3.8%	-9.4%
40-49	97.6	100.9	101.4	102.9	105.7	97.6	97.0	-0.7%	-4.3%	-8.2%
50-59	108.7	108.2	110.3	111.7	112.5	108.5	115.0	5.8%	4.3%	2.2%
60-70+	109.0	112.8	112.3	113.1	116.0	111.7	115.0	5.5%	2.4%	-0.9%

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY EXPERIENCE

Full-time ACS workforce chemists with 2-4 years of experience earn a median salary of \$47,700 in 2015. ACS workforce chemists right in the middle of their career lifetime, those with 20-24 years of experience, earn almost double the salary at \$95,000. The group with the highest salary are chemists with 35-39 years of experience, earning \$120,000.

**Table 12: 2015 Median Salary by Years of Experience in Current Dollars**

(Amount in Thousands for All Full-Time ACS Workforce Chemists by Years of Experience)

	2-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40+ Years
<b>All Chemists</b>	\$47.7	\$62.0	\$75.2	\$86.0	\$95.0	\$104.7	\$116.5	\$120.0	\$119.0
<b>Gender</b>									
Male	49.5	65.0	80.0	90.0	100.0	110.0	121.9	125.0	123.0
Female	46.2	59.7	71.4	80.0	86.0	92.0	97.8	97.2	98.7
<b>Degree</b>									
Bachelor's	46.3	58.7	71.0	78.4	92.2	93.0	96.9	98.0	93.0
Master's	60.0	60.3	72.0	84.8	86.5	97.0	98.0	96.0	105.0
Doctorate	--	70.0	78.0	89.3	100.0	110.0	125.0	132.7	127.2
<b>Employment Type</b>									
Academia	31.6	51.1	60.5	69.5	75.0	80.0	85.0	92.3	98.0
Government	50.6	66.6	90.0	100.0	108.2	109.1	120.0	125.0	131.8
Industry	50.0	68.0	90.0	103.0	112.8	126.3	132.9	134.2	133.0
Self-Employed	--	--	--	--	--	104.0	85.0	120.0	110.0
<b>Race/Ethnicity</b>									
Hispanic	45.0	60.9	75.0	82.5	89.3	97.4	100.0	112.5	96.7
American Indian	--	--	--	--	--	--	--	--	--
Asian	52.0	65.0	80.0	87.3	95.1	114.4	120.0	129.0	130.0
Black	--	62.0	70.0	80.0	80.0	88.5	110.0	117.0	109.0
White	47.5	61.5	75.0	86.0	96.0	103.5	116.1	120.0	119.0
Other or Multiracial	--	68.0	81.5	94.0	80.8	104.0	125.1	139.3	110.0

Note: A long dash within a cell indicates summary data are unavailable.



## SALARY BY RACE AND ETHNICITY

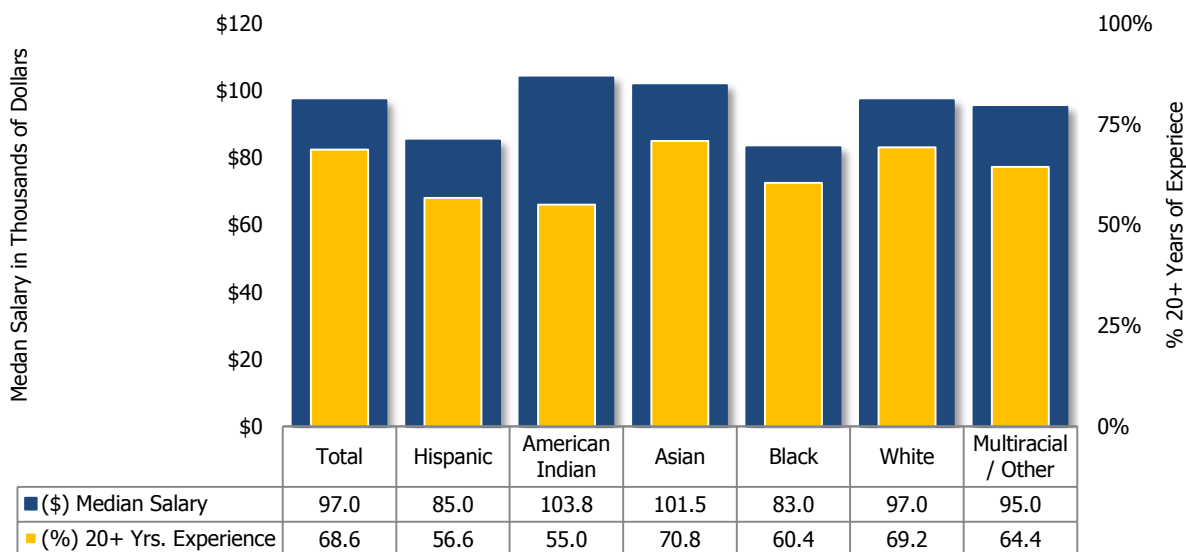
Figure 8 examines the 2015 median full-time salary of ACS workforce chemists by race or ethnicity in juxtaposition with the percent of that group who have 20 or more years of experience. Experience strongly correlates with salary and it follows that the overall experience of chemists within the various race or ethnic groups should correspond with the differing median salaries of these groups. For the most part, the experience level of each race or ethnic group does correspond with the differing median salaries of each group.

The two ACS workforce chemist groups with the lowest median salary are those identifying as Black at \$83,000 and Hispanic at \$85,000. Black and Hispanic ACS workforce chemists tend to have fewer years of experience than ACS workforce chemists overall: 56.6% of Hispanic chemists and 60.4% of Black chemists have 20+ years of experience. Among all ACS workforce chemists, 68.6% have 20+ years of experience.

As a corollary, the two groups with the most experience also have among the highest median salaries. 70.8% of Asian chemists have 20+ years of experience and earn a median salary of \$101,500. White chemists are the second most experienced group with 69.2% having 20+ years of experience, earning a median salary of \$97,000.

**Figure 8: 2015 Median Salary by Race / Ethnicity**

(All Full-Time ACS Workforce Chemists)



## 2015 REGIONAL SALARY

ACS workforce chemists in the coastal regions, Pacific, New England, Middle Atlantic and South Atlantic earn a higher salary than ACS workforce chemists in the middle of the country. By degree, the median salary for those chemists whose highest degree is a

bachelor's ranged from \$84,000 in the Pacific to \$67,200 in the East South Central. Master's salaries ranged from \$93,300 in New England to \$75,000 in West North Central. Among chemists with a doctorate, median salary ranged from \$118,000 in both the Pacific and New England to \$90,000 in West North Central and East South Central.

**Table 13: 2015 Median Salary in Current Dollars by Region**

(Amount in Thousands for All Full-Time ACS Workforce Chemists)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	17.1k	2.7k	2.5k	11.8k
<b>All Chemists</b>	\$97.0	\$77.0	\$87.0	\$105.0
<b>Region</b>				
Pacific	107.0	84.0	90.0	118.0
Mountain	90.3	77.0	79.0	100.0
West North Central	85.0	73.9	75.0	90.0
West South Central	92.0	83.3	76.1	99.0
East North Central	92.5	75.4	86.8	100.0
East South Central	86.0	67.2	86.5	90.0
Middle Atlantic	100.0	78.5	89.5	108.2
South Atlantic	96.0	71.8	86.0	103.0
New England	108.0	75.6	93.3	118.0

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY EMPLOYMENT SECTOR

ACS workforce chemists employed within the industry sector earn the highest median salary of \$112,800, followed by government employees at \$109,000, self-employed

chemists at \$100,000 and chemists working in academia at \$76,000.

**Table 14: 2015 Median Salary in Current Dollars by Employment**

(Amount in Thousands for All Full-Time ACS Workforce Chemists)

	All Full-Time ACS Members	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	17.1k	2.7k	2.5k	11.8k
<b>All Chemists</b>	\$97.0	\$77.0	\$87.0	\$105.0
<b>Industry</b>				
Academia	76.0	45.0	60.0	79.3
Government	109.0	75.3	90.6	120.0
Industry	112.8	80.7	97.9	130.0
Self-Employed	100.0	81.5	84.5	120.0

Note: A long dash within a cell indicates summary data are unavailable.

An ACS workforce chemist with a bachelor's degree salary ranges from a median of \$81,500 for the self-employed to \$45,000 in academia.

Doctorate salary ranges from a median of \$130,000 for chemists working in the industry sector and \$79,300 among those employed in the academia sector.

## SALARY BY WORK SPECIALTY

Median salary for the top compensated work specialty, Medicinal / Pharmaceutical Chemistry (\$121,900), is almost double the bottom compensated work specialty, Chemical Education (\$65,000).

ACS workforce chemists whose highest degree is a bachelor's earn the highest median salaries in Polymer Chemistry (\$91,700) and Medicinal / Pharmaceutical Chemistry (\$86,200). Among master's degree ACS workforce chemists, those who specialize in Physical Chemistry (\$120,000) and Polymer Chemistry (\$108,000) earn the highest median salaries. Doctorate ACS workforce chemists receive the highest median salaries in the work specialties of Medicinal / Pharmaceutical Chemistry (\$136,000) and Clinical Chemistry (\$129,200).

**Table 15: 2015 Median Salary by Work Specialty**

(Amount in Thousands for All Full-Time Chemists)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	17.1k	2.7k	2.5k	11.8k
<b>All Chemists</b>	<b>97.0</b>	<b>77.0</b>	<b>87.0</b>	<b>105.0</b>
Medicinal / Pharmaceutical Chemistry	121.9	86.2	96.0	136.0
Biotechnology	118.0	83.5	103.4	125.0
Polymer Chemistry	116.7	91.7	108.0	127.0
Clinical Chemistry	115.0	--	--	129.2
Materials Science	112.9	82.5	105.0	118.5
Agricultural/Food Chemistry	107.0	69.0	93.7	123.0
Physical Chemistry	99.2	82.5	120.0	99.2
Organic Chemistry	98.7	86.0	95.0	100.4
Analytical Chemistry	95.0	75.0	93.0	107.6
Inorganic Chemistry	95.0	78.0	81.8	97.3
Environmental Chemistry	93.1	79.4	86.6	102.5
Biochemistry	90.0	62.6	79.4	91.3
Nanochemistry	89.5	--	--	90.0
General Chemistry	75.5	74.9	70.0	85.0
Chemical Education	65.0	48.0	60.0	69.0

Note: A long dash within a cell indicates summary data are unavailable.

## SALARY BY WORK FUNCTION

The top salary earners among the 2015 full-time chemistry workforce report their job function as R&D: Management (\$158,700) and Patents, Licensing, Trademarks (\$157,000).

**Table 16: 2015 Median Salary by Work Function**

(Amount in Thousands for All Full-Time ACS Workforce Chemists)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	17.1k	2.7k	2.5k	11.8k
<b>All</b>	<b>97.0</b>	<b>77.0</b>	<b>87.0</b>	<b>105.0</b>
R&D: Management	158.7	120.0	125.7	165.0
Patents, Licensing, Trademarks	157.0	--	--	159.0
General Management (non-R&D)	124.3	101.0	126.3	136.8
Consulting	120.0	100.1	107.5	129.0
Marketing / Sales	115.0	104.0	116.0	125.0
R&D: Applied Research	115.0	80.4	95.2	124.0
R&D: Basic Research	114.0	70.3	95.3	130.0
Health and Safety / Regulatory Affairs	107.4	87.3	100.0	125.8
Computer Programming, Analysis, Design	104.0	--	--	--
Chemistry Information Services	99.0	86.0	88.6	114.0
Analytical Services	87.0	68.0	87.8	110.0
Production, Quality Control	84.0	70.0	84.0	122.7
Forensic Analysis	83.5	73.3	82.0	96.4
Teaching or Training	77.3	--	76.0	77.8
Other	102.4	89.7	93.0	120.0

Note: A long dash within a cell indicates summary data are unavailable.

## BONUSES

For the 2015 ChemCensus, 47.3% of full-time ACS workforce chemists report that they were eligible to receive a bonus in 2014. Of those eligible, 92.5% received a bonus with a median amount of \$10,000. In addition, 13.6% of ACS workforce chemists had received stock in 2014.

Bonus eligibility varies substantially by employment sector. Bonuses are fairly common in the industry sector with 76.5% eligible to receive a bonus with a median value of \$12,000. Bonus eligibility is less common among those employed by government (38.7% eligible) and among the Self-Employed (32.6%). ACS workforce chemists employed in academia have the lowest eligibility to receive a bonus at 9.5% eligible.

Differences in bonus eligibility by an ACS workforce chemist's gender or degree are partly driven by the chemist's employment sector. For instance, 40.2% of female ACS workforce chemists were eligible for a bonus, which is a lower rate than the 50.6% among male ACS workforce chemists. However, female chemists more likely than male chemists to work in the academic sector (Table 7) where bonus eligibility is far less customary.

**Table 17: Chemist Bonuses**

(All Full-Time ACS Workforce Chemists)

	% Eligible for Bonus in 2014	% Eligible Who Received a Bonus	Median Bonus Received in \$Thousands	% Who Received Stock in 2014
Respondents n=	16.8k	9.7k	9.0k	16.6k
<b>All Chemists</b>	47.3%	92.5%	\$10,000	13.6%
<b>Gender</b>				
Male	50.6%	92.2%	\$12,000	15.4%
Female	40.2%	93.1%	\$7,000	9.8%
<b>Degree</b>				
Bachelor's	62.8%	93.6%	\$6,000	12.2%
Master's	54.5%	93.7%	\$8,964	12.1%
Doctorate	42.5%	91.7%	\$14,000	14.3%
<b>Employment Type</b>				
Academia	9.5%	78.9%	\$2,500	1.1%
Government	38.7%	83.3%	\$1,944	0.8%
Industry	76.5%	94.3%	\$12,000	24.5%
Self-Employed	32.6%	81.7%	\$15,000	6.8%
<b>Age</b>				
20-29	45.5%	93.4%	\$2,500	9.7%
30-39	43.2%	93.2%	\$6,200	12.0%
40-49	47.4%	92.1%	\$11,095	14.9%
50-59	51.8%	93.1%	\$15,000	15.8%
60-70+	44.9%	91.2%	\$14,000	11.4%

Note: A long dash within a cell indicates summary data are unavailable.

## CONSULTING

One-in-eight (12.5%) ACS workforce chemists report doing consulting work in 2014, at a median hourly rate of \$125. Of the 12.5% who did consulting work, 19.2% report that consulting was their primary occupation. Among those who do consulting, 39.1% spent 10 hours or more each month doing consulting work—60.9% did less than 10 hours of consultation per month.

Highest degree earned and the chemist's age and experience correlate with greater opportunity for consulting work. 14.3% of chemists with a doctorate did consulting work in 2014 vs. 6.3% of those with a bachelor's. Chemists age 60-70+ were more likely to consult (17.9%) than chemists age 20-29 (3.5%).

**Table 18: Chemist Consulting**

(All ACS Workforce Chemists)

	% Who Did Any Consulting in 2014	% of Which, Consulting Was Primary Occupation	% Who Consult >= 10hrs / Month	Median Consulting \$ / Hour
Respondents n=	17.9k	2.2k	2.2k	2.2k
<b>All Chemists</b>	12.5%	19.2%	39.1%	\$125
<b>Gender</b>				
Male	13.8%	19.4%	40.3%	\$150
Female	9.3%	18.4%	35.0%	\$100
<b>Degree</b>				
Bachelor's	6.3%	42.5%	55.6%	\$90
Master's	9.6%	32.2%	52.3%	\$100
Doctorate	14.3%	15.3%	35.7%	\$145
<b>Employment Type</b>				
Academia	18.0%	2.5%	25.3%	\$100
Government	3.8%	11.4%	33.3%	\$100
Industry	7.3%	34.1%	51.7%	\$150
Self-Employed	74.1%	88.4%	93.6%	\$150
<b>Age</b>				
20-29	3.5%	18.2%	39.4%	\$45
30-39	8.0%	12.9%	28.1%	\$100
40-49	11.5%	10.5%	30.8%	\$100
50-59	14.4%	23.0%	43.0%	\$150
60-70+	17.9%	24.5%	45.9%	\$150

Note: A long dash within a cell indicates summary data are unavailable.

## TOTAL PROFESSIONAL INCOME

Median total professional income for a full-time chemist is \$102,000, which is about \$5,000 above the median salary. ACS workforce chemists whose top degree is a bachelor's earn a median of \$80,000 in professional income, while those with a doctorate earn 37.5% more with \$110,000 in median professional income.

**Table 19: Chemist's Median Total Income in Current Dollars**

(Amount in Thousands for All Full-Time ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	--	32.6k	40.2k	39.0k	28.2k	26.9k	17.1k
<b>All Chemists</b>	--	51.0	61.0	71.2	86.0	99.0	102.0
<b>Gender</b>							
Male	--	54.0	65.0	76.0	92.0	105.0	110.7
Female	--	39.5	48.0	56.1	70.0	80.0	84.0
<b>Degree</b>							
Bachelor's	--	40.0	47.0	54.0	65.0	75.3	80.0
Master's	--	46.0	55.0	63.0	75.3	87.0	91.0
Doctorate	--	57.4	69.5	80.5	97.4	109.0	110.0
<b>Employment Type</b>							
Academia	--	47.0	54.1	60.5	69.4	79.0	81.4
Government	--	47.9	60.0	68.5	83.2	96.9	107.9
Industry	--	52.5	64.0	75.0	94.0	110.0	120.0
Self-Employed	--	57.0	75.0	86.0	100.0	101.1	120.0
<b>Race/Ethnicity</b>							
Hispanic	--	45.0	53.0	61.9	78.0	87.0	89.0
American Indian	--	51.0	55.0	59.0	78.0	80.0	107.0
Asian	--	50.0	60.0	70.5	89.0	100.9	107.0
Black	--	43.0	54.6	59.0	73.0	82.0	89.0
White	--	51.0	62.0	72.0	86.5	99.9	102.0
Other or Multiracial	--	48.0	57.1	68.0	81.7	97.0	101.0
<b>Age</b>							
20-29	--	32.0	34.2	41.0	46.5	48.6	50.0
30-39	--	45.0	53.0	60.0	72.0	79.5	79.0
40-49	--	57.0	67.0	76.0	90.2	100.0	102.0
50-59	--	62.0	75.0	85.0	98.0	111.9	121.4
60-70+	--	65.0	76.7	86.9	100.5	116.0	125.0

Note: A long dash within a cell indicates summary data are unavailable.

## RESOURCES

To remain current in their field of chemistry, the majority of ACS workforce chemists use three methods on a weekly basis: 57.5% used Web-based Publications, 54.4% used C&EN (print or online), and 52.1% made use of Journal Publications / Academic Papers. On at least a monthly basis (once a week and once a month combined), 59.7% made use of Other Professional Magazines and 52.1% used Blogs / Newsletters.

Two methods with a high rate of ACS workforce chemists responding with “Has No Access” are Continuing Education / Technical Training from Employers at 20.5% and Management and/or Leadership Training at 26.7%.

**Table 20: Resources Used to Remain Current**

(% of All ACS Workforce Chemists 2015)

Method	Once a Week	Once a Month	Once Quarterly	Once a Year	Every 2+ Years	Does Not Use	Has No Access
Book Publications	17.1	23.2	22.1	16.8	6.9	8.6	5.2
Web-based Publications	57.5	23.6	9.4	2.6	1.0	3.8	2.0
Journal Publications / Academic Papers	52.1	26.0	10.9	3.5	1.3	3.0	3.1
C&EN (print or online)	54.4	32.0	7.2	1.9	0.5	3.4	0.6
Other Professional Magazines	24.5	35.2	16.1	6.5	2.1	9.3	6.3
Blogs, Newsletters, etc.	27.3	24.8	16.1	7.1	2.6	18.6	3.5
Meetings / Conferences	2.5	4.5	20.3	45.0	18.5	4.3	4.8
Continuing Education / Technical Training from Your Employer	2.1	5.9	14.1	27.1	16.8	13.5	20.5
Self-directed Continuing Education / Technical training	9.9	12.8	16.9	22.9	13.2	14.5	9.7
Management and / or Leadership Training	1.6	3.3	8.2	22.7	20.4	17.0	26.7
Note: A long dash within a cell indicates summary data are unavailable.							

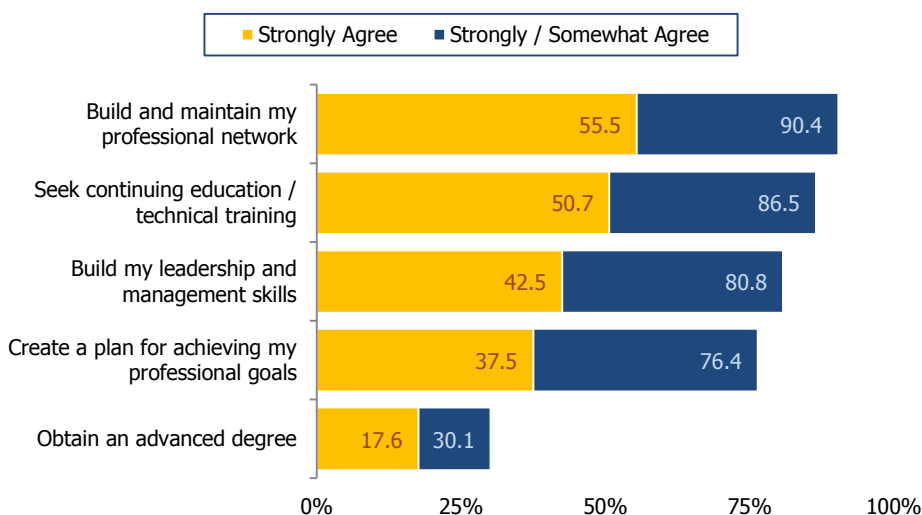


## CAREER MANAGEMENT

When thinking about career development actions chemists may take to enhance their career, 55.5% of all ACS workforce chemists “strongly agree” that it is important to “build and maintain my professional network.” Of the five development actions, it had the strongest agreement. The action with the least agreement (17.6%) was “obtain an advanced degree.”

**Figure 9: Importance of Career Development Actions**

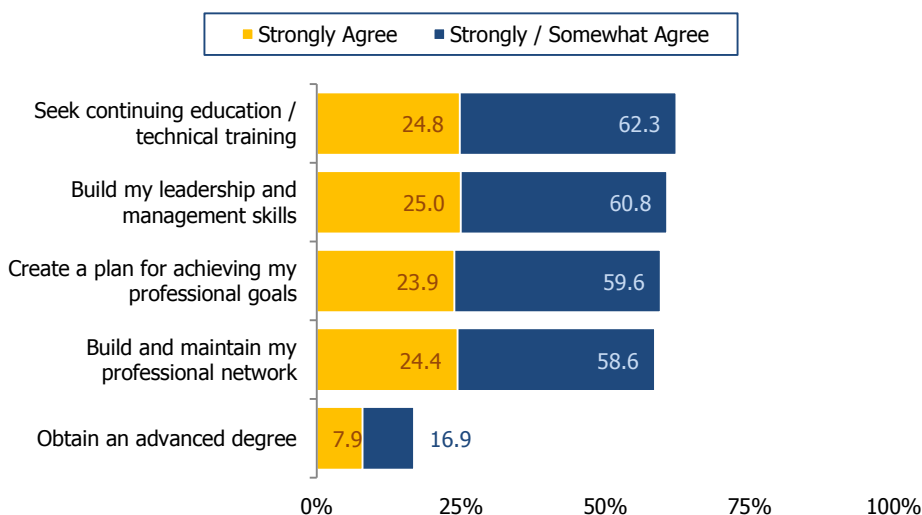
(% of All 2015 Workforce Chemists Who Agree It Is Important To...)



In Figure 10, when asked about employer support of these career development actions, 25% or fewer “strongly agree” that their employer encouraged them with any of these.

**Figure 10: Employer Support of Career Development**

(% of All 2015 Workforce Chemists Who Agree Their Employer Encouraged Them To...)



---

# INDUSTRIAL ACS WORKFORCE CHEMISTS

- Demographics
- Employment
- Salary

## INDUSTRIAL CHEMIST DEMOGRAPHICS

Compared with the average of all workforce chemists, the demographic composition of industrial ACS workforce chemists is similar with some modest differences. Industrial chemists like the chemist workforce in general skew male, but more so at 73.5% vs. 68.4%. The majority of industrial ACS workforce chemists (57.6%) hold a doctorate

degree, which is a lower rate than the all chemist workforce (69.6%).

**Table 21: Industrial Chemist Demographics**

(% of Industrial ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	24.7k	21.4k	26.4k	26.7k	18.8k	15.5k	9.2k
<b>Gender</b>							
Male	85.8	82.0	79.5	76.4	77.0	75.0	73.5
Female	14.2	18.0	20.5	23.6	23.0	25.0	26.5
<b>Degree</b>							
Bachelor's	32.4	31.2	30.5	29.0	26.2	23.0	24.0
Master's	20.1	19.2	19.0	19.3	18.9	18.5	17.9
Doctorate	46.8	49.2	49.7	50.6	53.9	57.8	57.6
Other	0.7	0.4	0.8	1.1	1.1	0.7	0.5
<b>Age</b>							
20-29	14.7	12.9	9.6	8.2	6.0	3.9	6.4
30-39	32.7	36.3	34.3	29.2	23.0	21.9	18.9
40-49	24.2	27.7	31.0	32.8	31.9	29.7	23.1
50-59	19.3	16.5	19.8	23.6	28.8	31.6	33.4
60-70+	9.1	6.6	5.4	6.1	10.2	12.9	18.2
<b>Race/Ethnicity</b>							
Hispanic	0.8	1.4	2.0	2.5	2.4	2.9	3.1
American Indian	0.1	0.3	0.2	0.1	0.1	0.2	0.2
Asian	5.9	6.0	9.8	11.5	11.9	14.6	11.4
Black	1.0	1.1	1.3	1.8	1.6	1.8	1.9
White	91.3	90.5	85.4	83.2	83.2	77.5	81.0
Other or Multiracial	0.8	0.6	1.3	1.0	0.7	3.0	2.4
<b>Citizenship</b>							
US Native	87.6	88.2	83.4	79.1	79.1	74.2	78.1
US Naturalized	8.2	7.1	8.5	10.8	11.2	15.2	14.5
US Perm. Resident	3.8	3.9	6.9	7.5	7.3	8.7	6.0
Other Visa	0.4	0.8	1.2	2.7	2.5	1.9	1.4

Note: A long dash within a cell indicates summary data are unavailable.

Female presence among ACS workforce chemists has gradually improved from 14.2% in 1985 to 26.5% in 2015.

The ratio of chemists whose highest degree is a bachelor's, a master's and a doctorate has remained somewhat stable from the 2010 and 2015 census surveys. The presence of chemists who held a doctorate degree had been growing from 1995 to 2010.

The age profile of industrial ACS workforce chemists reflects similarly to the demographics of the ACS membership. Roughly 1-in-4, 25.3% of industrial chemists are between the ages of 20-39 years.

For the first time since 1985, the percent of industrial ACS workforce chemists who are US Naturalized citizens did not increase from the previous ChemCensus. Among industrial ACS workforce chemists in 2015, 14.5% are US Naturalized vs. 15.2% in 2010. The small

difference should be interpreted as flat or no real change, rather than as a decline.

The 2015 mean age of the industrial ACS chemist is 48.3, which is comparable to the mean age of 48.1 of the overall chemistry workforce.

**Table 22: Mean Age** (Industrial ACS Workforce Chemists)

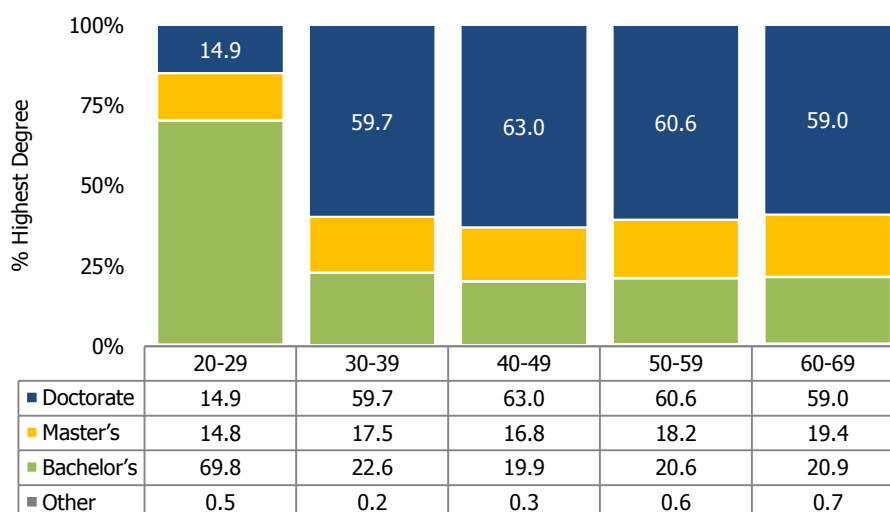
	1985	1990	1995	2000	2005	2010	2015
Respondents n=	24.7k	21.4k	26.4k	26.7k	18.8k	15.5k	9.2k
<b>Industrial Chemists</b>	42.4	39.9	42.2	43.4	46.0	47.3	48.3
<b>Gender</b>							
Male	43.5	41.3	43.4	44.9	47.4	48.7	50.1
Female	35.8	34.3	37.2	38.7	41.1	43.1	43.4
<b>Degree</b>							
Bachelor's	40.3	37.1	39.3	40.4	43.0	45.1	45.1
Master's	42.4	40.2	42.4	43.6	46.3	47.2	48.9
Doctorate	43.8	41.6	43.8	45.0	47.3	48.2	49.5
<b>Race / Ethnicity</b>							
Hispanic	39.0	38.0	38.7	40.7	43.0	44.0	45.5
American Indian	37.0	36.9	40.3	43.2	44.6	48.9	48.9
Asian	42.2	39.1	41.3	42.2	44.3	45.7	48.6
Black	40.0	37.2	40.0	40.8	44.1	44.5	45.5
White	42.5	40.2	42.4	43.6	46.2	47.8	48.5
Multiracial / Other	39.8	38.1	41.0	42.9	46.0	47.3	47.0
<b>Citizenship</b>							
U.S. Native	42.0	39.8	42.0	43.5	46.2	47.6	48.2
U.S. Naturalized	47.9	44.4	47.1	47.0	49.3	49.9	51.6
Permanent Resident	40.6	38.6	39.4	40.6	41.8	42.7	45.0
Other Visa Status	36.2	33.1	33.4	35.4	35.9	37.4	37.8

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 DEGREE BY AGE GROUP

Among ACS workforce chemists, it was shown that chemists between the ages of 30 to 49 were more likely than other chemists to have a doctorate degree (Figure 5, Page 10). Excluding chemists aged 20-29, among industrial chemists there does not appear to be the same increased emphasis of attaining a doctorate degree among those aged 30 to 49 years. Among the four age brackets age 30 and older, the proportion of doctorate degrees is similar at 59.7% for those age 30-39, 63.0% for those age 40-49, 60.6% for those age 50-59 and 59.0% for those age 60-69.

**Figure 11: 2015 Highest Degree by Age Group**  
(% of Industrial ACS Workforce Chemists)



## FIELD OF HIGHEST DEGREE

The proportion of industrial ACS workforce chemists whose highest degree is in General Chemistry has declined over the ChemCensus surveys. The highest degree as General Chemistry was as high as 21.8% in 1985 to where it is in the 2015 Census at 14.9%.

General chemistry as the field of highest degree is somewhat more prevalent among

industrial ACS workforce chemists than ACS workforce chemists overall at 10.2%. In part this is due to a higher representation of chemists whose highest degree is a bachelor's degree among industrial ACS workforce chemists in relation to ACS workforce chemists overall.

Over a shorter ten year view, the fields in which industrial chemists earned their highest degree did not change substantially from 2005 to 2015.

**Table 23: Field of Highest Degree**

(% of Industrial ACS Workforce Chemists)

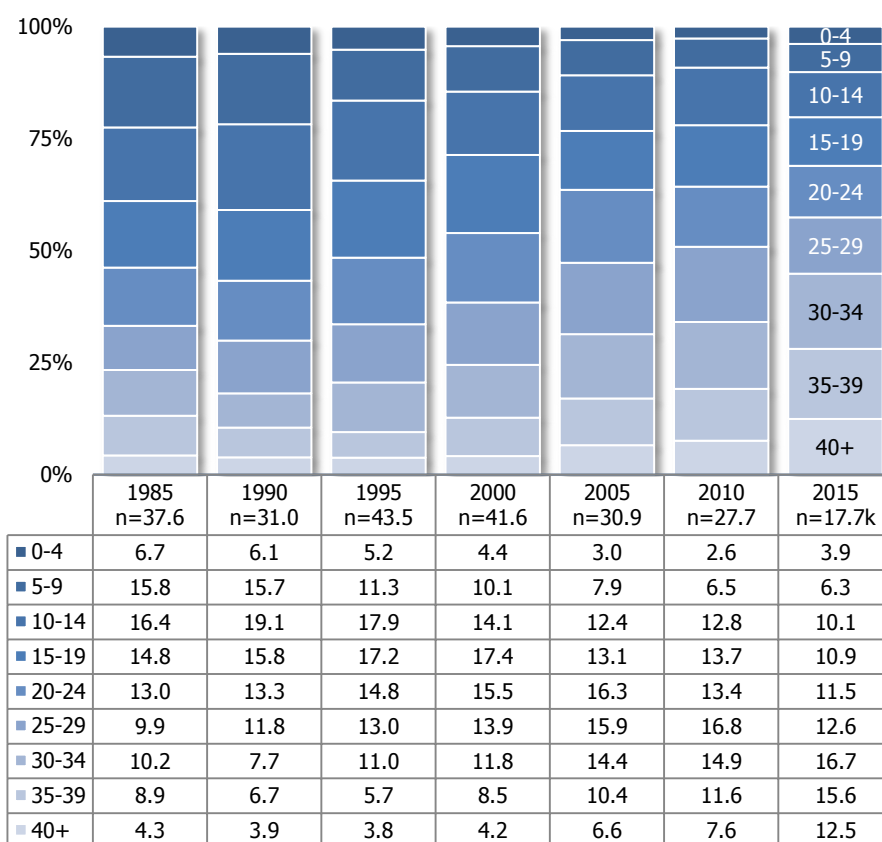
	1985	1990	1995	2000	2005	2010	2015
Respondents n=	24.7k	21.4k	26.4k	26.7k	18.8k	15.5k	9.2k
<b>Chemistry: General</b>	<b>21.8</b>	<b>20.2</b>	<b>19.1</b>	<b>17.2</b>	<b>15.9</b>	<b>14.4</b>	<b>14.9</b>
<b>Chemistry: Classic</b>	<b>59.2</b>	<b>58.8</b>	<b>57.4</b>	<b>57.8</b>	<b>59.7</b>	<b>57.4</b>	<b>56.8</b>
Analytic Chemistry	11.9	12.9	13.6	13.0	13.6	13.1	13.6
Inorganic Chemistry	6.4	7.0	6.6	7.1	8.0	7.2	8.4
Organic Chemistry	30.6	29.4	28.8	29.6	29.8	30.5	28.1
Physical Chemistry	10.0	9.5	8.4	8.1	8.3	6.6	6.7
Theoretical Chemistry	0.3	--	--	--	--	--	--
<b>Chemistry: Other</b>	<b>12.3</b>	<b>13.2</b>	<b>14.3</b>	<b>15.8</b>	<b>15.2</b>	<b>17.4</b>	<b>17.4</b>
Ag/Food Chemistry	1.0	0.9	1.1	1.1	0.9	1.0	1.3
Biochemistry	5.9	6.4	6.4	6.7	6.5	6.3	7.3
Chemical Education	--	--	--	0.6	0.6	0.4	0.7
Environmental Chem.	0.9	1.3	1.6	1.9	1.8	1.3	1.9
Polymer Chemistry	2.9	3.1	3.4	4.1	4.0	4.7	4.7
Other Chemistry	1.6	1.5	1.8	1.4	1.4	3.7	1.5
<b>Chemistry: Related</b>	<b>1.9</b>	<b>3.0</b>	<b>3.7</b>	<b>4.4</b>	<b>4.4</b>	<b>4.4</b>	<b>5.1</b>
Biotechnology	--	0.5	0.5	0.6	0.6	0.5	0.8
Clinical Chemistry	--	0.2	0.2	0.3	0.2	0.1	0.2
Materials Science	--	0.7	0.9	1.1	1.2	1.4	1.8
Medical/Clinical Chem.	0.9	--	--	--	--	--	--
Med/Pharma Chem.	--	1.6	2.1	2.4	2.4	2.4	2.3
Pharmaceutical Chem.	1.0	--	--	--	--	--	--
<b>Non-Chemistry</b>	<b>4.7</b>	<b>4.7</b>	<b>5.5</b>	<b>4.9</b>	<b>4.9</b>	<b>6.1</b>	<b>5.7</b>
Business Admin.	--	1.2	1.4	1.3	1.3	1.7	1.4
Computer Science	--	--	0.0	0.0	0.0	0.1	0.1
Law	--	--	0.1	0.1	0.1	0.1	0.2
Other Non-Chemistry	4.7	3.5	4.0	3.5	3.5	4.2	4.0

Note: A long dash within a cell indicates summary data are unavailable.

## INDUSTRIAL ACS WORKFORCE CHEMIST EXPERIENCE

The ChemCensus measures experience as the number years since a chemist had earned their bachelor's degree. Industrial ACS workforce chemists as a whole have been working longer and have gained more experience with each ChemCensus survey. In 2015, 57.3% of industrial ACS workforce chemists have 25 years or more experience. Ten years ago, 47.3% had 25 years or more experience in the field.

**Figure 12: Experience—Years Since Attaining a Bachelor's Degree**  
(% of Industrial ACS Workforce Chemists)



## 2015 SPECIALTY AND FUNCTION

Over half, 58.2% of industrial ACS workforce chemists work within four chemistry specialties: Analytical Chemistry (22.2%), Medicinal / Pharmaceutical Chemistry (14.4%), Organic Chemistry (10.8%) and Organic Chemistry (10.8%). Analytical chemistry is the top work specialty among bachelor's (32.7%) and master's (26.9%) industrial ACS workforce chemists. Doctorate degree industrial ACS workforce chemists' top two work specialties are Medicinal / Pharmaceutical Chemistry at 17.3% and Analytical Chemistry at 16.4%.

**Table 24: 2015 Work Specialty**

(% of Industrial ACS Workforce Chemists by Degree)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	9.2k	2.2k	1.6k	5.2k
Analytical Chemistry	22.2	32.7	26.9	16.4
Medicinal/Pharmaceutical Chemistry	14.4	7.6	14.4	17.3
Organic Chemistry	10.8	7.6	9.2	12.6
Polymer Chemistry	10.8	10.0	10.9	11.1
Materials Science	8.3	6.0	6.6	9.8
Biotechnology	6.0	3.2	4.5	7.8
Environmental Chemistry	4.9	8.4	7.1	2.8
Agricultural/Food Chemistry	4.6	5.4	5.1	4.0
Inorganic Chemistry	3.2	3.2	1.7	3.7
General Chemistry	3.0	5.5	3.4	1.9
Biochemistry	2.7	2.2	2.0	3.1
Physical Chemistry	2.7	1.3	1.3	3.7
Clinical Chemistry	0.8	0.5	0.6	1.0
Nanochemistry	0.8	0.5	0.2	1.0
Chemical Education	0.6	0.7	1.1	0.4
Other Chemical Science	4.1	5.2	4.9	3.4

Note: A long dash within a cell indicates summary data are unavailable.



The most prevalent work function among industrial ACS workforce chemists is R&D: Applied Research at 39.5%, particularly among doctorate industrial chemists where 47.1% are employed in that function.

**Table 25: 2015 Work Function**

(% of Industrial ACS Workforce Chemists by Degree)

	Industrial FT Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	9.2k	2.2k	1.6k	5.2k
R&D: Applied Research	39.5	25.7	33.7	47.1
Analytical Services	13.7	24.0	17.5	8.2
R&D: Management	11.4	4.6	6.1	16.1
R&D: Basic Research	8.3	6.0	6.8	9.8
Production, Quality Control	6.8	14.0	8.6	3.0
Marketing, Sales,	5.2	7.0	7.4	3.7
General Management (Non-R&D)	4.3	6.3	4.9	3.3
Health and Safety/Regulatory Affairs	2.7	3.8	4.6	1.7
Consulting	2.6	2.3	3.5	2.4
Chemistry Information Services	1.1	1.2	1.7	0.9
Patents, Licensing, Trademarks	0.6	0.2	0.3	0.9
Forensic Analysis	0.4	0.8	0.6	0.2
Teaching or Training	0.4	0.4	0.7	0.3
Computer Programming, Analysis, Design	0.4	0.4	0.2	0.4
Other	2.5	3.4	3.4	1.9

Note: A long dash within a cell indicates summary data are unavailable.

## SALARY

Median annual salary data is for industrial ACS workforce chemists who indicate they were employed full-time. The dollar amounts are in the current dollars for each ChemCensus.

**Table 26: Industrial Chemist Median Salary in Current Dollars**  
(Amount in Thousands for Industrial Full-Time ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	24.0k	20.9k	25.2k	25.5k	17.6k	15.0k	8.8k
<b>Industrial Chemists</b>	42.0	51.5	62.1	74.5	90.0	100.0	112.8
<b>Gender</b>							
Male	44.0	54.0	65.1	78.1	94.3	104.0	120.0
Female	31.5	40.3	50.0	60.0	76.4	85.0	95.0
<b>Degree</b>							
Bachelor's	33.0	39.3	47.0	54.0	65.0	72.0	80.7
Master's	38.4	46.8	57.0	65.1	80.0	86.3	97.9
Doctorate	49.8	60.0	72.2	86.0	103.0	114.0	130.0
<b>Race/Ethnicity</b>							
Hispanic	38.3	45.0	53.0	64.5	81.9	91.0	100.0
American Indian	32.8	45.0	54.0	59.8	80.0	88.0	103.8
Asian	41.0	51.0	61.0	74.7	91.0	99.6	118.0
Black	36.0	43.2	54.0	60.0	80.0	81.0	99.0
White	42.0	52.0	63.0	75.0	90.2	100.0	113.3
Other or Multiracial	40.0	49.4	60.0	70.8	88.0	98.0	105.0
<b>Age</b>							
20-29	27.3	33.0	36.0	43.0	50.0	50.0	54.8
30-39	39.0	47.4	56.0	66.5	80.0	84.0	91.9
40-49	49.5	60.0	70.0	80.0	95.0	103.0	115.6
50-59	52.0	65.0	78.1	90.0	101.0	111.0	130.0
60-70+	50.2	65.0	77.9	87.0	101.5	114.8	129.0

Note: A long dash within a cell indicates summary data are unavailable.

Salaries are shaped by multiple factors such as age and experience, education and employment sector. Gender and race / ethnicity also appear to be factors. However, when one interprets these salary data take care to consider all the major factors in play, rather than viewing the data from the perspective of a single factor.

The 2015 median annual salary for industrial ACS workforce chemists employed full-time is \$112,800. Industrial chemists earned \$15,800 more than ACS workforce chemists overall, which is a median of \$97,000 annually.

Median salary for the ACS chemistry workforce ranges from \$80,700 for those who have earned a bachelor's as their highest degree to \$130,000 for those who have earned a doctorate.

Male industrial ACS workforce chemists earn a median of

\$120,000 in annual salary, while female chemists earn \$95,000. Some of the difference in median salary may be attributed to male industrial ACS workforce chemists skew older and more experienced than females.

The table below adjusts median salaries of full-time industrial ACS workforce chemists to constant dollar amounts for March 2015. Through the lens of the constant dollar adjustment, salaries have increased in value five out of six times for the ACS workforce employed in the industrial sector throughout the history of the ChemCensus.

Over the long term, industrial ACS workforce chemist salaries have increased in constant dollar value by 21.0% from \$93,200 in 1985 to \$112,800 in 2015. Over the past ten years, salary has increased in constant dollar value by 2.6%.

Where salary value has declined among industrial ACS workforce chemists is among the younger and with less work experience. Since 2005, the constant dollar value of an industrial ACS workforce chemists' salary age 20-29 declined -10.3% from \$61,100 to the current value of \$54,800. On the other hand, older and more experienced industrial ACS workforce chemists saw the value of their salaries rise since 2005 by 5.4% for those age 50-59 and 4.0% for those 60-70+ years of age.

**Table 27: Median Salary in March 2015 Constant Dollars and Percent Change**  
(Constant Dollar Amount in Thousands for Full-Time Industrial ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015	vs. 85	vs. 95	vs. 05
Respondents n=	24.0k	20.9k	25.2k	25.5k	17.6k	15.0k	8.8k			
<b>Industrial Chemists</b>	93.2	94.5	96.8	102.8	109.9	108.5	112.8	21.0%	16.5%	2.6%
<b>Gender</b>										
Male	97.6	99.1	101.5	107.7	115.2	112.8	120.0	22.9%	18.2%	4.2%
Female	69.9	73.9	78.0	82.8	93.3	92.2	95.0	35.9%	21.8%	1.8%
<b>Degree</b>										
Bachelor's	73.2	72.1	73.3	74.5	79.4	78.1	80.7	10.2%	10.1%	1.6%
Master's	85.2	85.9	88.9	89.8	97.7	93.6	97.9	14.9%	10.1%	0.2%
Doctorate	110.5	110.1	112.6	118.6	125.8	123.7	130.0	17.6%	15.5%	3.3%
<b>Race/Ethnicity</b>										
Hispanic	85.0	82.6	82.7	89.0	100.0	98.7	100.0	17.7%	21.0%	0.0%
American Indian	72.8	82.6	84.2	82.5	97.7	95.5	103.8	42.6%	23.3%	6.2%
Asian	91.0	93.6	95.1	103.0	111.2	108.1	118.0	29.7%	24.0%	6.2%
Black	79.9	79.3	84.2	82.8	97.7	87.9	99.0	23.9%	17.6%	1.3%
White	93.2	95.4	98.3	103.4	110.2	108.5	113.3	21.6%	15.3%	2.8%
Other or Multiracial	88.8	90.6	93.6	97.6	107.5	106.3	105.0	18.3%	12.2%	-2.3%
<b>Age</b>										
20-29	60.6	60.5	56.1	59.3	61.1	54.2	54.8	-9.5%	-2.4%	-10.3%
30-39	86.5	87.0	87.3	91.7	97.7	91.1	91.9	6.2%	5.2%	-6.0%
40-49	109.8	110.1	109.2	110.3	116.0	111.7	115.6	5.2%	5.9%	-0.4%
50-59	115.4	119.3	121.8	124.1	123.4	120.4	130.0	12.7%	6.7%	5.4%
60-70+	111.4	119.3	121.5	120.0	124.0	124.6	129.0	15.8%	6.2%	4.0%

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY EXPERIENCE

As one would expect, full-time salary for industrial ACS workforce chemists correlates strongly with experience. Full-time industrial ACS workforce chemists with 20-24 years experience earn \$95,000, which is almost double the salary of those with 2-4 years of experience who earn \$48,000.

Male chemists in the industry sector consistently earn more than female chemists with the same experience and education level. A male chemist at the mid-point of their career with 20-24 years of experience earns a median salary of \$104,300, while a female chemist at the same career point earn \$95,000.

**Table 28: 2015 Median Industrial Chemist Salary by Years of Experience in Current Dollars**

(Amount in Thousands for Full-Time Industrial ACS Workforce Chemists by Years of Experience)

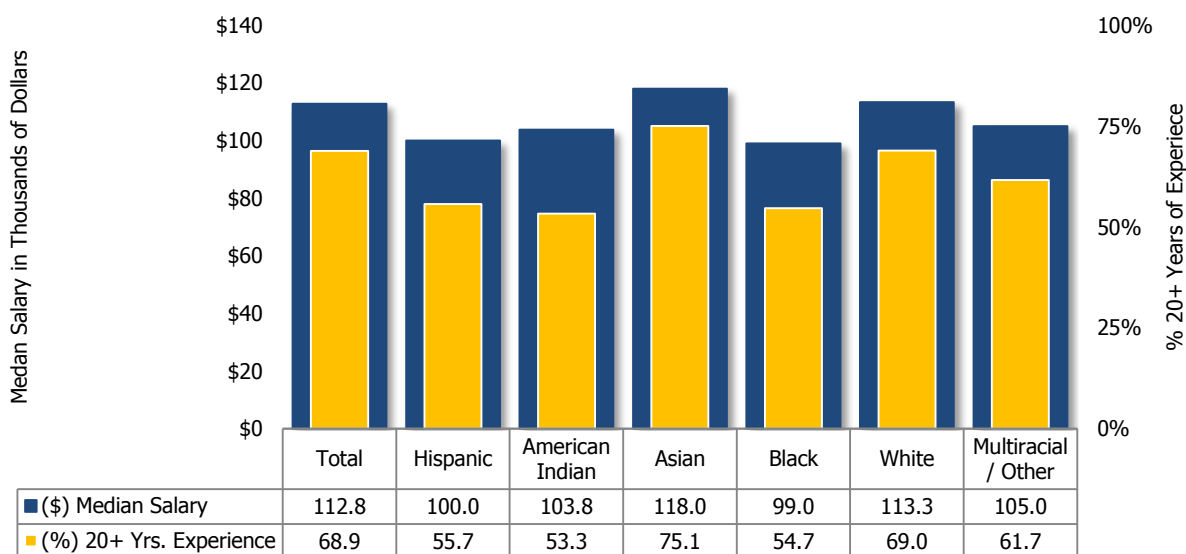
	2-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40+ Years
<b>Industrial Chemists</b>	<b>50.0</b>	<b>68.0</b>	<b>90.0</b>	<b>103.0</b>	<b>112.8</b>	<b>126.3</b>	<b>132.9</b>	<b>134.2</b>	<b>133.0</b>
<b>Bachelor's</b>	<b>48.0</b>	<b>60.0</b>	<b>72.5</b>	<b>81.1</b>	<b>95.0</b>	<b>97.0</b>	<b>103.3</b>	<b>105.0</b>	<b>96.0</b>
Male	51.5	63.6	76.4	85.5	104.3	104.4	121.7	114.4	127.9
Female	47.7	59.3	71.6	78.7	95.0	104.1	101.8	106.3	101.7
<b>Master's</b>	<b>61.2</b>	<b>65.0</b>	<b>77.5</b>	<b>90.0</b>	<b>95.0</b>	<b>110.0</b>	<b>110.0</b>	<b>112.0</b>	<b>120.0</b>
Male	--	71.8	81.8	94.8	102.3	121.2	121.7	115.5	127.4
Female	--	66.7	75.9	91.5	95.2	102.6	97.8	117.0	113.0
<b>Doctorate</b>	<b>--</b>	<b>90.8</b>	<b>100.0</b>	<b>115.0</b>	<b>128.0</b>	<b>140.0</b>	<b>148.0</b>	<b>150.0</b>	<b>148.2</b>
Male	--	89.8	105.2	119.9	136.1	149.2	156.4	163.5	159.2
Female	--	88.6	94.9	115.0	127.7	139.9	148.8	165.4	143.8
<b>Race/Ethnicity</b>									
Hispanic	--	65.0	85.0	98.8	103.0	118.5	133.0	138.2	--
American Indian	--	--	--	--	--	--	--	--	--
Asian	--	77.0	88.5	100.4	115.0	128.5	127.0	142.0	141.5
Black	--	--	82.1	86.9	98.0	--	123.5	128.8	--
White	49.0	68.0	90.6	104.5	115.0	127.0	134.0	133.5	131.6
Other or Multiracial	--	68.1	93.0	102.0	100.0	118.0	131.5	115.0	136.5

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY RACE/ETHNICITY

Race and ethnicity do not appear to have a strong influence on median salaries among industrial ACS workforce chemists. The race or ethnicities with the highest median salaries, Asian (\$118,000) and White (\$113,000) are also the most experienced—75.1% of Asian industrial ACS workforce chemists and 69.0% of White chemists have 20+ years of experience.

**Figure 13: 2015 Median Salary by Race / Ethnicity**  
(Industrial Full-Time ACS Chemists)



## 2015 REGIONAL SALARY

By degree, the median salary for full-time industrial ACS workforce chemists whose highest degree is a bachelor's ranged from \$96,000 in the West South Central to \$79,200 in the West North Central. Master's salaries ranged from \$104,000 in the Pacific to

\$89,400 in West North Central.

Among industrial ACS workforce chemists with a doctorate, median salary ranged from

\$140,000 in the Pacific to

\$117,000 in the Mountain region.

**Table 29: 2015 Median Salary in Current Dollars by Region**

(Amount in Thousands for All Full-Time Chemists)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	8.8k	2.1k	1.6k	5.0k
<b>Industrial Chemists</b>	\$112.8	\$80.7	\$97.9	\$130.0
<b>Region</b>				
Pacific	122.4	85.0	104.0	140.0
Mountain	101.6	80.0	93.6	117.0
West North Central	102.2	79.2	89.4	123.7
West South Central	120.0	96.0	103.0	136.9
East North Central	106.0	79.5	96.0	125.0
East South Central	103.0	77.5	96.0	124.5
Middle Atlantic	117.0	81.0	97.5	134.5
South Atlantic	111.0	79.9	97.0	126.3
New England	120.0	82.5	100.0	136.7

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY EMPLOYER SIZE

Employer size correlates with the salaries earned by full-time industrial ACS workforce chemists. Those employed by smaller companies earn roughly the same amount

(\$100,000) up until the company size reaches 2,500 employees.

Once employer size breaks 2,500 employees, the median salary for industrial ACS workforce chemists begin to rise to \$125,000 for those chemists working at the largest employers with at least 25,000 employees.

**Table 30: 2015 Median Salary in Current Dollars by Employer Size**

(Amount in Thousands for Full-Time Industrial Chemists)

	Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	8.8k	2.1k	1.6k	5.0k
<b>Industrial Chemists</b>	\$112.8	\$80.7	\$97.9	\$130.0
<b>Employer Size</b>				
Fewer than 50	100.0	70.0	90.5	116.0
50 to 99	99.9	71.0	85.0	118.0
100 to 499	103.0	77.3	90.0	125.0
500 to 2,499	101.0	70.8	94.2	119.0
2,500 to 9,999	112.8	83.0	94.4	130.0
10,000 to 24,999	115.0	82.0	100.0	133.0
25,000 or more	126.0	95.4	107.0	139.4

Note: A long dash within a cell indicates summary data are unavailable.

The effect of employer size on salary starting at 2,500 employees holds among those who have earned a bachelor's degree and a doctorate.

## 2015 SALARY BY WORK SPECIALTY

The top compensated work specialty among industrial ACS workforce chemists is Medicinal / Pharmaceutical Chemistry at \$129,900. Analytical Chemistry and Environmental Chemistry with a median salaries of \$98,000 are the two lowest compensated work specialties in the industry sector.

Industrial ACS workforce chemists whose highest degree is a bachelor's earn the highest median salary in Chemical Education (\$106,500). Among those with a master's degree, specializing in Physical Chemistry (\$122,000) earns the top salary. Doctorate chemists specialized in Medicinal / Pharmaceutical Chemistry earn \$150,000 as the top compensated work specialty.

**Table 31: 2015 Median Salary by Work Specialty**

(Amount in Thousands for Full-Time Industrial ACS Workforce Chemists)

	Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	8.8k	2.1k	1.6k	5.0k
<b>Industrial Chemists</b>	<b>\$112.8</b>	<b>\$80.7</b>	<b>\$97.9</b>	<b>\$130.0</b>
Medicinal/Pharmaceutical Chemistry	129.9	87.0	96.4	150.0
Physical Chemistry	128.8	85.0	122.0	134.0
Clinical Chemistry	125.4	--	--	136.3
Biotechnology	124.0	86.0	108.0	136.0
Polymer Chemistry	120.0	92.0	108.5	130.0
Inorganic Chemistry	119.0	82.0	86.5	129.5
Materials Science	118.2	86.1	106.0	127.1
Organic Chemistry	116.3	87.0	98.0	128.0
Biochemistry	115.1	74.0	99.0	134.0
Nanochemistry	114.0	--	--	120.5
Agricultural/Food Chemistry	107.5	70.0	92.5	133.5
Chemical Education	106.5	113.0	108.5	107.5
General Chemistry	99.0	77.0	92.0	130.0
Analytical Chemistry	98.0	77.0	93.8	120.0
Environmental Chemistry	98.0	80.0	100.0	125.0
Other Chemical Science	110.0	83.2	108.8	130.4

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY WORK FUNCTION

As was the case with ACS workforce chemists overall, the two work functions that garner the highest median salaries among industrial ACS workforce chemists are Patents, Licensing and Trademarks at \$162,000 and R&D: Management at \$160,000.

**Table 32: 2015 Median Salary by Work Function**

(Amount in Thousands for Full-Time Industrial ACS Workforce Chemists)

	Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	8.8k	2.1k	1.6k	5.0k
<b>Industrial Chemists</b>	<b>\$112.8</b>	<b>\$80.7</b>	<b>\$97.9</b>	<b>\$130.0</b>
Patents, Licensing, Trademarks	162.0	--	--	162.8
R&D: Management	160.0	120.0	125.2	169.0
General Management (Non-R&D)	128.0	104.0	130.0	150.0
Consulting	120.0	105.5	112.0	130.0
Health And Safety/Regulatory Affairs	116.1	87.7	115.4	142.0
Marketing, Sales,	115.0	104.9	116.0	125.0
R&D: Applied Research	114.8	80.8	95.0	125.0
R&D: Basic Research	110.0	72.0	96.3	130.0
Computer Programming, Analysis, Design	105.0	--	--	107.8
Chemistry Information Services	100.0	89.5	91.8	115.0
Teaching or Training	90.5	--	--	--
Analytical Services	88.0	70.0	88.1	115.0
Forensic Analysis	83.8	--	--	--
Production, Quality Control	83.8	69.9	84.0	122.7
Other	102.0	90.0	101.0	121.9

Note: A long dash within a cell indicates summary data are unavailable.



---

# ACADEMIC ACS WORKFORCE CHEMISTS

- Demographics
- Employment
- Salary

## ACADEMIC ACS CHEMIST DEMOGRAPHICS

Academic ACS workforce chemists tend to be white males who have earned a doctorate degree. While this is the same description of the typical chemist in the overall ACS chemistry workforce, academic ACS workforce chemist demographics somewhat differ in a few distinct areas.

**Table 33: Academic ACS Chemist Demographics**

(% of Academic ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	8.5k	8.1k	11.5k	10.8k	8.7k	9.5k	7.1k
<b>Gender</b>							
Male	83.7	81.8	77.0	74.0	71.1	68.0	62.4
Female	16.3	18.2	23.0	26.0	28.9	32.0	37.6
<b>Degree</b>							
Bachelor's	3.6	3.6	6.6	4.3	4.9	3.6	3.9
Master's	10.8	10.2	11.1	11.4	11.5	8.3	9.8
Doctorate	85.0	85.8	81.9	83.5	82.9	87.8	86.0
Other	0.5	0.4	0.5	0.8	0.7	0.3	0.4
<b>Age</b>							
20-29	7.1	7.1	9.6	4.4	3.9	2.4	4.1
30-39	25.9	25.8	27.2	26.8	24.5	25.9	25.7
40-49	33.3	29.8	23.0	23.6	25.0	27.1	26.2
50-59	22.1	26.4	28.8	29.4	26.1	24.7	25.9
60-70+	11.7	10.9	11.3	15.9	20.6	19.6	18.1
<b>Race/Ethnicity</b>							
Hispanic	0.7	1.3	2.5	3.0	3.2	3.8	4.7
American Indian	0.1	0.2	0.2	0.1	0.2	0.1	0.1
Asian	5.2	5.9	10.6	9.5	9.0	12.4	9.8
Black	1.2	1.1	1.4	1.7	2.0	2.5	2.4
White	92.0	91.1	84.2	84.8	85.0	78.4	80.8
Other or Multiracial	0.8	0.5	1.2	0.8	0.7	2.8	2.2
<b>Citizenship</b>							
US Native	86.8	85.8	79.7	78.7	79.5	73.1	76.9
US Naturalized	7.1	6.6	7.3	8.6	7.8	10.4	11.0
US Perm. Resident	4.5	4.7	8.6	6.9	6.3	10.3	8.1
Other Visa	1.5	2.9	4.4	5.8	6.4	6.2	4.0

Note: A long dash within a cell indicates summary data are unavailable.

Female representation is higher in the academic sector than among the overall chemistry workforce. Among ACS workforce chemists in the academic sector, 37.6% of academic ACS workforce chemists are female vs. 31.4% among the overall chemistry workforce.

Academic ACS workforce chemists have always been the employment sector with the highest rate of PhD chemists. In 2015, 86.0% of academic ACS workforce chemists have earned a doctorate degree vs. 66.3% among the overall chemistry workforce.

The academic employment sector is the sector that has seen the most growth over the past several census periods. The growth of the sector is largely what has driven the rising rate of doctorate chemists in the overall chemistry workforce.

Where the age of the overall chemistry workforce has consistently increased each ChemCensus, the age demographics for academic ACS

workforce chemists appears to have stabilized. From 2000 to 2015, about 30% of academic ACS workforce chemists are between 20 and 39 years of age—29.8% in 2015.

The mean age of academic ACS workforce chemists in 2015 is 47.3 years. Mean age among academic ACS workforce chemists has declined since 2005, particularly among those with a doctorate degree (48.4 years in 2005 to 47.4 years in 2015), which are the large majority of academic ACS workforce chemists.

**Table 34: Mean Age** (Academic Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	8.5k	8.1k	11.5k	10.8k	8.7k	9.5k	7.1k
<b>Academic Chemists</b>	45.4	44.2	44.9	46.9	48.1	48.0	47.3
<b>Gender</b>							
Male	45.8	45.1	46.1	48.3	49.3	49.1	48.7
Female	42.8	40.4	40.8	43.2	44.9	45.7	45.0
<b>Degree</b>							
Bachelor's	37.9	36.8	33.2	39.8	41.0	41.4	40.1
Master's	45.1	44.4	44.4	46.7	48.8	50.1	49.4
Doctorate	45.7	44.5	45.9	47.3	48.4	48.0	47.4
<b>Race / Ethnicity</b>							
Hispanic	43.4	39.9	41.2	43.4	44.8	45.3	44.9
American Indian	--	--	44.6	--	52.2	--	--
Asian	42.8	40.2	39.9	42.1	42.3	43.1	44.0
Black	46.9	42.2	44.5	45.3	46.9	48.5	46.5
White	45.5	44.5	45.7	47.5	48.7	48.9	47.9
Multiracial / Other	42.9	43.1	41.3	46.7	45.1	47.9	46.6
<b>Citizenship</b>							
U.S. Native	45.3	44.5	45.6	47.8	49.0	49.0	47.8
U.S. Naturalized	50.9	49.4	50.9	51.6	52.4	52.5	51.4
Permanent Resident	41.1	40.1	40.1	41.8	42.5	43.0	43.7
Other Visa Status	32.8	32.2	33.0	34.8	36.3	36.2	34.6

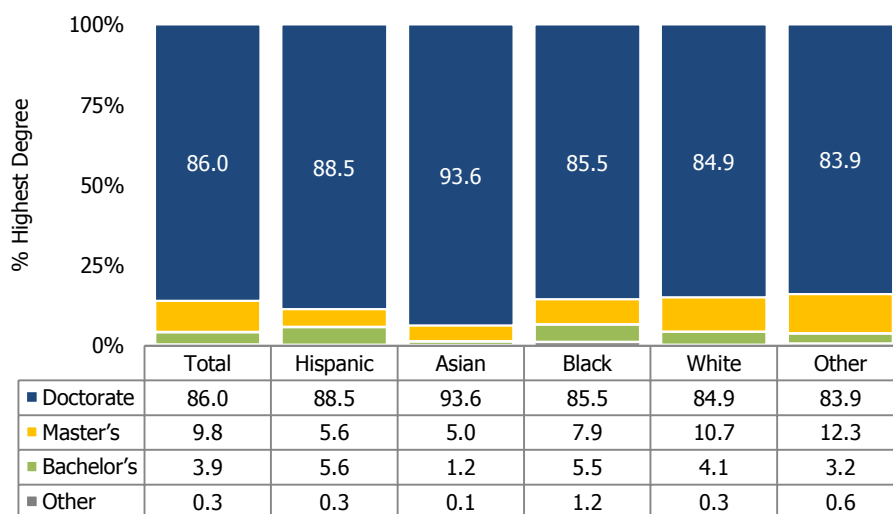
Note: A long dash within a cell indicates summary data are unavailable.

## DEGREE BY RACE / ETHNICITY

Among academic ACS workforce chemists, 86.0% have earned a doctorate degree. Academic ACS workforce chemists who identify as Asian are the most likely to hold a doctorate degree at a rate of 93.6%. The other race and ethnicity demographics are within 2 to 3 percentage points from the average among academic ACS workforce chemists.

**Figure 14: 2015 Highest Degree Earned by Race / Ethnicity**

(% of Academic ACS Workforce Chemists)



## FIELD OF HIGHEST DEGREE

From 1985 to 2015, the field of highest degree has not changed substantially. Only 4.0% of academic ACS workforce chemists in 2015 had earned their highest degree in the field of general chemistry, about half the rate among ACS workforce chemists overall (10.2%). Academic ACS workforce chemists historically have had a substantially lower rate of general chemistry degree holders than ACS workforce chemists overall.

In the 2015 ChemCensus, 63.0% of academic ACS workforce chemists have their highest degree in a field of classic chemistry. Since 1985, a classic chemistry field has been the highest degree for between 63.0% and 68.4% of academic ACS.

**Table 35: Field of Highest Degree**

(% of Academic ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	8.5k	8.1k	11.5k	10.8k	8.7k	9.5k	7.7k
<b>Chemistry: General</b>	<b>5.5</b>	<b>4.9</b>	<b>6.6</b>	<b>3.4</b>	<b>4.0</b>	<b>3.1</b>	<b>4.0</b>
<b>Chemistry: Classic</b>	<b>66.6</b>	<b>68.4</b>	<b>66.6</b>	<b>65.0</b>	<b>65.6</b>	<b>63.0</b>	<b>63.0</b>
Analytic Chemistry	7.9	8.5	8.7	7.7	9.6	8.9	9.6
Inorganic Chemistry	12.8	13.8	13.5	13.8	14.4	13.7	14.4
Organic Chemistry	26.7	26.6	25.9	25.5	23.7	23.9	22.6
Physical Chemistry	17.6	19.5	18.5	18.0	17.9	16.5	16.4
Theoretical Chemistry	1.6	--	--	--	--	--	--
<b>Chemistry: Other</b>	<b>20.9</b>	<b>19.0</b>	<b>18.5</b>	<b>23.6</b>	<b>22.9</b>	<b>23.5</b>	<b>23.1</b>
Ag/Food Chemistry	1.4	1.1	1.1	1.2	0.9	0.8	0.7
Biochemistry	15.4	13.7	11.8	12.7	12.0	10.7	12.1
Chemical Education	--	--	--	4.5	4.3	2.6	4.0
Environmental Chem.	0.8	1.2	1.6	2.2	2.0	1.9	2.9
Polymer Chemistry	1.0	0.9	1.8	1.6	1.9	2.1	1.9
Other Chemistry	2.3	2.1	2.2	1.4	1.8	5.4	1.5
<b>Chemistry: Related</b>	<b>2.3</b>	<b>3.3</b>	<b>3.3</b>	<b>3.9</b>	<b>3.7</b>	<b>4.3</b>	<b>5.1</b>
Biotechnology	--	0.1	0.2	0.3	0.3	0.4	0.4
Clinical Chemistry	--	0.1	0.1	0.2	0.2	0.1	0.1
Materials Science	--	0.4	0.7	0.8	1.0	1.3	1.7
Medical/Clinical Chem.	1.5	--	--	--	--	--	--
Med/Pharma Chem.	--	2.7	2.3	2.6	2.2	2.5	2.9
Pharmaceutical Chem.	0.8	--	--	--	--	--	--
<b>Non-Chemistry</b>	<b>4.6</b>	<b>4.1</b>	<b>5.1</b>	<b>3.9</b>	<b>3.8</b>	<b>4.5</b>	<b>4.4</b>
Business Admin.	--	0.1	0.1	0.1	0.2	0.1	0.1
Computer Science	--	--	0.0	0.0	0.0	0.1	0.1
Law	--	--	0.0	0.0	0.0	0.0	0.0
Other Non-Chemistry	4.6	4.0	5.0	3.8	3.6	4.3	4.2

Note: A long dash within a cell indicates summary data are unavailable.

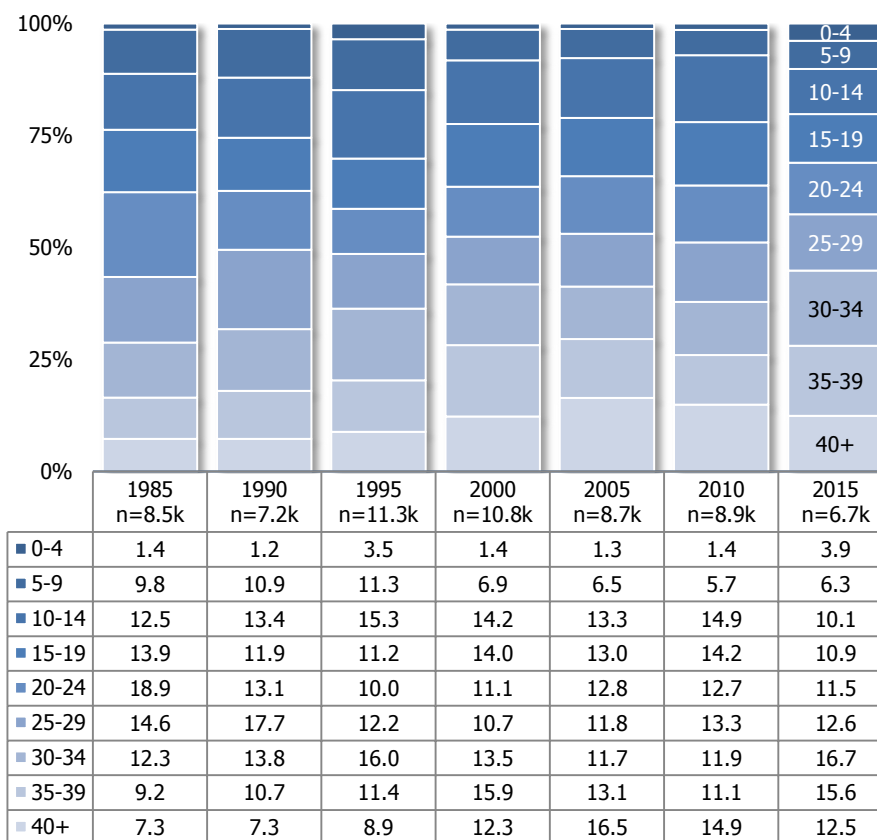
## WORKFORCE EXPERIENCE

The demographics of academic ACS workforce chemists tends to have less pronounced statistical movement than ACS workforce overall. Experience here is measured as the number years since an ACS workforce chemist had earned their bachelor's degree.

Academic ACS workforce chemists have grown more experienced since 1985, from 50.4% with 25 years of more of experience in to 57.4% in 2015. However, the increased level of experience is not to the same degree as found among ACS workforce chemists overall.

**Figure 15: Experience—Years Since Attaining a Bachelor's Degree**

(% of Academic ACS Workforce Chemists)



## 2015 WORK SPECIALTY

Almost half, 49.2% of academic ACS workforce chemists work in three specialties: Chemical Education (26.5%), Organic Chemistry (11.7%) and Biochemistry (11.0%).

**Table 36: 2015 Work Specialty**

(% of Academic ACS Workforce Chemists by Degree)

	Academic FT Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	7.1k	0.3k	0.7k	6.1k
Chemical Education	26.5	36.2	65.7	21.5
Organic Chemistry	11.7	5.4	3.0	13.1
Biochemistry	11.0	6.9	2.3	12.2
Physical Chemistry	8.8	3.3	0.4	10.0
Analytical Chemistry	7.9	12.3	4.9	8.0
Inorganic Chemistry	6.4	4.3	0.7	7.2
Medicinal/Pharmaceutical Chemistry	5.4	6.2	2.0	5.7
Materials Science	4.7	3.3	0.9	5.2
Environmental Chemistry	4.3	3.6	4.2	4.4
General Chemistry	3.8	8.0	10.4	2.9
Polymer Chemistry	2.3	1.1	0.9	2.5
Biotechnology	2.2	2.5	1.0	2.3
Nanochemistry	2.0	0.7	0.1	2.3
Agricultural/Food Chemistry	0.8	1.8	0.6	0.8
Clinical Chemistry	0.3	1.1	0.1	0.3
Other Chemical Science	1.9	3.3	2.7	1.8

## ACADEMIC RANK

Since 1990, the percent of academic ACS workforce chemists who were full professors had declined from 58.3% to a low of 44.8% in 2010. In 2015, 46.0% of academic ACS workforce chemists have full professor status at their institution, which breaks the trend of decline in full professor status in the academic sector.

**Table 37: Academic Rank**

(% of Academic ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	6.0k	5.6k	6.9k	6.8k	5.2k	6.2k	4.6k
<b>Academic Rank</b>							
Full Professor	58.5	58.3	57.0	54.3	52.1	44.8	46.0
Associate Professor	24.5	21.4	21.6	22.4	25.7	28.6	29.0
Assistant Professor	17.0	20.3	21.4	23.3	22.2	26.6	25.0

## SALARY

The median salary figures for academic ACS workforce chemists employed full-time during each ChemCensus period are in the current dollar amounts for March of that year.

Academic ACS workforce chemists earned a median salary of \$76,000 in 2015, which is an \$8,000 increase over the median salary during 2010. They earned \$21,000 less than ACS workforce chemists overall, who earned a median of \$97,000 in 2015.

Salaries for academic ACS workforce chemists range from a median of \$45,000 for those whose highest degree is a bachelor's to \$79,300 for those with a doctorate. The demographics table show that those whose highest degree is a doctorate are the large majority, 86.0% of academic ACS workforce chemists. This accounts for why the median salary of all academic ACS workforce chemists is similar to the median salary of academic ACS workforce chemists with a doctorate degree.

Academic ACS workforce chemists aged 20-29 earn a median of \$45,000 and those in the latter part of their career, those aged 60-70, earn \$94,000.

**Table 38: Academic Chemist Median Salary in Current Dollars**  
(Amount in Thousands for Full-Time Academic ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	7.6k	7.3k	9.5k	9.5k	7.6k	8.1k	6.4k
<b>Academic Chemists</b>	33.0	43.0	50.0	56.6	64.0	68.0	76.0
<b>Gender</b>							
Male	35.0	45.0	52.5	60.1	68.5	72.2	80.0
Female	26.0	34.5	39.1	47.0	54.4	60.0	69.0
<b>Degree</b>							
Bachelor's	20.0	27.5	27.9	36.0	42.1	40.0	45.0
Master's	27.0	34.5	40.0	45.6	52.0	53.0	60.0
Doctorate	35.0	45.0	52.1	60.0	67.0	71.0	79.3
<b>Race/Ethnicity</b>							
Hispanic	32.4	40.0	42.2	49.1	60.0	66.2	72.4
American Indian	--	--	--	--	61.5	--	--
Asian	30.0	42.0	45.0	55.8	62.0	65.0	78.8
Black	32.0	38.5	45.2	48.6	58.5	60.5	71.3
White	33.0	43.0	50.0	57.0	64.3	69.5	76.0
Other or Multiracial	30.0	42.5	43.8	53.0	58.8	67.0	80.0
<b>Age</b>							
20-29	20.0	27.0	25.0	35.5	40.0	32.0	45.0
30-39	26.0	34.0	38.8	45.0	51.7	58.3	63.0
40-49	34.0	43.1	49.0	54.0	61.5	66.8	75.2
50-59	40.0	50.4	59.2	65.0	70.0	75.1	85.0
60-70+	42.0	55.0	66.0	75.1	84.0	90.0	94.0
Note: A long dash within a cell indicates summary data are unavailable.							



The table below converts the median salary values of the 1985 to 2010 ChemCensus into constant dollars for March 2015. The value of the 2015 academic ACS chemist median salary of \$76,000 holds fairly well against the previous census periods. Compared with the 2005 census, the 2015 median salary is -2.8% off the 2005 constant dollar salary value of \$78,200. One factor which may be affecting salary value for 2010 and 2015 is the decline in full professor status in comparison to 1985 to 2005.

Going back to 1985, the 2015 median salary has increased in value by 3.8% over the 1985 constant dollar salary of \$73,200.

Median salary of bachelor's degree holders in the ACS academic chemistry workforce has declined in value by -12.5% in comparison to 2005. However, bachelor's degree holders are only 3.9% of ACS academic chemists, so interpret this degree of change from 2005 with some caution.

The median salary for academic ACS workforce chemists age 60-70 in 2015 has -8.4% less constant dollar value than in 2005 and -8.7% less value than in 1995.

**Table 39: Median Salary in March 2015 Constant Dollars and Percent Change**

(Constant Dollar Amount in Thousands for Full-Time Academic Chemists)

	1985	1990	1995	2000	2005	2010	2015	vs. 85	vs. 95	vs. 05
Respondents n=	7.6k	7.3k	9.5k	9.5k	7.6k	8.1k	6.4k			
<b>Academic Chemists</b>	73.2	78.9	78.0	78.1	78.2	73.8	76.0	3.8%	-2.5%	-2.8%
<b>Gender</b>										
Male	77.7	82.6	81.9	82.9	83.7	78.3	80.0	3.0%	-2.3%	-4.4%
Female	57.7	63.3	61.0	64.8	66.5	65.1	69.0	19.6%	13.2%	3.8%
<b>Degree</b>										
Bachelor's	44.4	50.5	43.5	49.7	51.4	43.4	45.0	1.4%	3.4%	-12.5%
Master's	59.9	63.3	62.4	62.9	63.5	57.5	60.0	0.1%	-3.8%	-5.5%
Doctorate	77.7	82.6	81.3	82.8	81.8	77.0	79.3	2.1%	-2.4%	-3.1%
<b>Race/Ethnicity</b>										
Hispanic	71.9	73.4	65.8	67.7	73.3	71.8	72.4	0.7%	10.0%	-1.2%
American Indian	--	--	--	--	75.1	--	--	--	--	--
Asian	66.6	77.1	70.2	77.0	75.7	70.5	78.8	18.4%	12.3%	4.0%
Black	71.0	70.6	70.5	67.0	71.5	65.6	71.3	0.4%	1.1%	-0.2%
White	73.2	78.9	78.0	78.6	78.5	75.4	76.0	3.8%	-2.5%	-3.2%
Other or Multiracial	66.6	78.0	68.3	73.1	71.8	72.7	80.0	20.2%	17.1%	11.4%
<b>Age</b>										
20-29	44.4	49.5	39.0	49.0	48.9	34.7	45.0	1.4%	15.4%	-7.9%
30-39	57.7	62.4	60.5	62.1	63.2	63.3	63.0	9.2%	4.1%	-0.2%
40-49	75.5	79.1	76.4	74.5	75.1	72.5	75.2	-0.3%	-1.6%	0.1%
50-59	88.8	92.5	92.3	89.6	85.5	81.5	85.0	-4.2%	-7.9%	-0.6%
60-70+	93.2	100.9	102.9	103.6	102.6	97.6	94.0	0.9%	-8.7%	-8.4%

Note: A long dash within a cell indicates summary data are unavailable.

## 2015 SALARY BY EXPERIENCE

A full-time academic ACS workforce chemist with just 2-4 years of experience earns a median salary of \$31,600 and those with 40+ years of experience earn \$98,000.

Focusing on academic ACS workforce chemists with a doctorate degree, males earn more than females at each experience bracket. The salary difference is most pronounced at 35-39 years of experience, where females earn 76.8% of their male counterparts, and at 40+ years of experience where females earn 86.7% of their male counterparts.

**Table 40: 2015 Median Academic Chemist Salary by Years of Experience in Current Dollars**

(Amount in Thousands for Full-Time Academic Chemists by Years of Experience)

	2-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40+ Years
<b>Industrial Chemists</b>	31.6	51.1	60.5	69.5	75.0	80.0	85.0	92.3	98.0
<b>Bachelor's</b>	31.0	40.5	--	53.5	--	51.7	55.7	50.0	--
Male	29.0	--	--	--	--	--	--	59.0	--
Female	32.0	--	--	--	--	--	56.0	--	--
<b>Master's</b>	--	48.0	51.0	60.0	60.0	55.6	64.0	70.0	68.7
Male	--	47.0	52.0	60.7	67.4	55.0	65.0	64.8	69.5
Female	--	50.5	50.7	60.0	58.5	58.0	63.5	72.0	65.0
<b>Doctorate</b>	--	53.5	62.0	70.3	76.0	83.4	90.0	99.4	102.0
Male	--	55.0	63.0	72.0	79.0	85.0	92.5	105.0	106.1
Female	--	51.0	60.0	68.0	74.4	80.7	84.5	80.6	92.0
<b>Race/Ethnicity</b>									
Hispanic	--	57.3	65.0	65.3	74.2	85.0	78.0	93.0	90.2
American Indian	--	--	--	--	--	--	--	--	--
Asian	--	54.1	60.0	65.9	80.0	88.5	95.0	92.2	100.3
Black	--	--	54.0	68.5	65.8	79.2	--	85.0	76.8
White	32.5	50.0	60.5	70.0	75.0	78.0	84.2	91.6	99.0
Other or Multiracial	--	--	60.0	68.0	60.3	100.0	95.0	156.0	--
Note: A long dash within a cell indicates summary data are unavailable.									

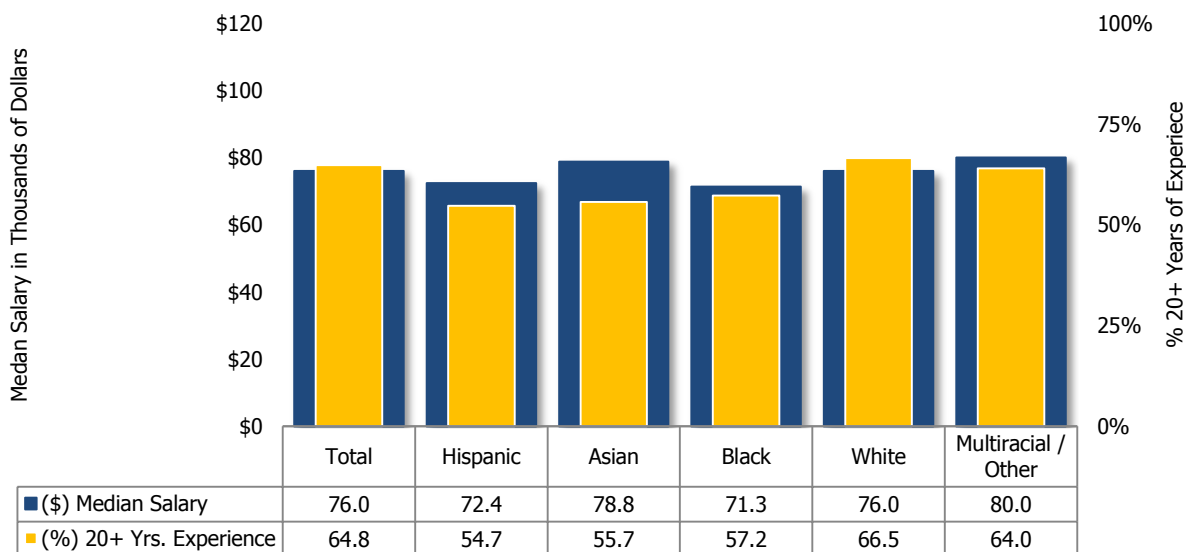
## 2015 SALARY BY RACE/ETHNICITY

When examining salary by race and ethnicity among ACS workforce chemists overall, the median salary of the race and ethnic groups correlated to the years of experience, the percent of those within that ethnic group who had 20+ years of experience. The race and ethnic groups with the most experience had the highest median salaries. Among academic chemists the correlation of salary and experience by race and ethnic group does not appear to be as strong.

In 2015, chemists who identify as Asian earn a median of \$78,800, which is above the median of all academic ACS workforce chemists (\$76,000). However, 55.7% of academic ACS workforce chemists who identify as Asian have 20+ years of experience, which is below the median of 64.8% for all academic ACS workforce chemists. This suggests that in addition to experience, there is another factor driving the salary of academic ACS workforce chemists.

**Figure 16: 2015 Median Salary by Race / Ethnicity**

(Academic Full-Time Chemists)



## 2015 REGIONAL SALARY

Median salary for academic ACS workforce chemists varies by \$14,900 across the nine regions. Academic ACS workforce chemists in the Pacific region earn the highest a median salary of \$86,000, which is followed by those in New England with a median of \$81,000. At the other end, academic ACS workforce chemists in the West South Central region earn the lowest median salary at \$71,100.

**Table 41: 2015 Median Salary in Current Dollars by Region**

(Amount in Thousands for Academic Full-Time ACS Workforce Chemists)

	All Full-Time Chemists	Bachelor's Degree	Master's Degree	Doctorate Degree
Respondents n=	6.4k	0.2k	0.6k	5.5k
<b>Industrial Chemists</b>	\$76.0	\$45.0	\$60.0	\$79.3
<b>Region</b>				
Pacific	86.0	75.0	73.3	90.0
Mountain	75.0	37.5	55.0	80.1
West North Central	71.4	51.0	50.9	73.0
West South Central	71.1	43.4	51.6	75.0
East North Central	74.5	39.0	60.0	77.5
East South Central	--	34.2	52.2	73.1
Middle Atlantic	79.0	50.2	63.0	81.0
South Atlantic	74.0	43.0	55.0	77.1
New England	81.0	48.5	65.0	86.0
Note: A long dash within a cell indicates summary data are unavailable.				

## SALARY BY INSTITUTION, CONTRACT, RANK

Annual salary in the academic employment sector varies by the highest degree offered by the institution, and the length of contract, either 9-10 months or 11-12 months in length.

At institutions where bachelor's degrees are the highest awarded degree, academic full-time ACS workforce chemists with a 9-10 month contract earned a median salary of \$68,000 and those under 11-12 month contracts earned \$75,000, about 10.2% more. Among Full Professors, the difference between the two contract types is 21.9%, where the median 9-10 month contract is \$80,200 and the median 11-12 month contract is \$97,800.

**Table 42: Median Salary in Current Dollars by Institution, Contract, Rank**

(Amount in Thousands for Full-Time Academic Chemists with an Academic Rank of Full Professor, Associate Professor or Assistant Professor)

<i>Institution Type</i>	<b>BS Granting</b>		<b>MS Granting</b>		<b>PhD Granting</b>	
<i>Contract</i>	9-10 Months	11-12 Months	9-10 Months	11-12 Months	9-10 Months	11-12 Months
<b>2010</b>	<b>\$60.0</b>	<b>\$60.0</b>	<b>\$65.0</b>	<b>\$96.8</b>	<b>\$85.5</b>	<b>\$106.0</b>
Full Professor	75.2	78.3	81.0	109.4	110.0	133.5
Associate Professor	60.0	57.4	64.9	--	77.1	90.0
Assistant Professor	51.0	52.0	53.0	--	67.5	67.1
<b>2015</b>	<b>\$68.0</b>	<b>\$75.0</b>	<b>\$75.0</b>	<b>\$102.0</b>	<b>\$100.0</b>	<b>\$125.0</b>
Full Professor	80.2	97.8	88.0	113.3	130.0	157.1
Associate Professor	65.5	73.6	72.1	--	88.0	100.0
Assistant Professor	56.5	62.0	61.3	63.5	80.0	77.3
Note: A long dash within a cell indicates summary data are unavailable.						

---

# GENDER AND SALARY

- Education
- Employment
- Salary

## DEMOGRAPHICS

We know the demographic composition of male and female chemists are different. These differences in composition are large drivers of the salary differences between male and female ACS workforce chemists. Taken as a whole, in 2015 female chemists are less likely

**Table 43: Education by Gender**

(% of ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.2k	31.0k	29.3k	18.8k
<b>Male</b>							
Bachelor's	23.0	21.5	20.6	19.1	17.5	14.8	14.1
Master's	16.5	15.7	15.1	15.3	14.8	13.0	12.5
Doctorate	59.8	62.5	63.6	64.6	66.8	71.6	73.0
Other	0.6	0.4	0.7	1.1	0.9	0.6	0.4
<b>Female</b>							
Bachelor's	37.4	36.5	34.2	30.6	26.1	22.1	18.5
Master's	25.2	24.0	22.9	23.2	22.9	20.6	18.6
Doctorate	36.5	39.1	42.1	45.0	49.9	56.7	62.4
Other	0.9	0.4	0.9	1.1	1.1	0.6	0.5

Note: A long dash within a cell indicates summary data are unavailable.

**Table 44: Age by Gender**

(% of ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	37.9k	34.2k	44.1k	41.2k	31.0k	29.3k	18.8k
<b>Male</b>							
Age 20-29	9.6	8.1	6.8	4.6	3.3	2.0	3.7
30-39	29.7	31.0	28.7	24.4	19.9	20.0	18.1
40-49	27.7	29.9	29.7	30.4	29.1	27.1	23.1
50-59	22.1	21.7	25.8	29.3	31.2	31.3	32.4
60-70+	10.9	9.3	9.0	11.2	16.5	19.6	22.7
<b>Female</b>							
Age 20-29	28.1	24.2	18.4	13.6	10.8	7.2	8.7
30-39	33.9	39.4	40.6	36.9	30.7	29.9	29.0
40-49	21.6	22.3	24.1	28.5	30.4	29.3	26.0
50-59	10.9	10.4	13.9	16.5	21.0	24.8	26.0
60-70+	5.4	3.7	3.0	4.4	7.2	8.8	10.4

Note: A long dash within a cell indicates summary data are unavailable.

to have a doctorate degree and have fewer years of experience than male chemists. It partially explains why the median salary of a male ACS chemist is \$105,000 and a female ACS chemist is \$80,900 (see Table 10). However, the demographics of ACS workforce chemists continue to change.

In 1985, the percent of ACS workforce chemists with a doctorate degree was 59.8% among males and 36.5% among females, a difference of 23.3-percentage points. Since 1985, the education gap has narrowed. In 2015, 73.0% of male ACS workforce chemists and 62.4% of female ACS workforce chemists have earned a doctorate degree. The difference between the two genders has shrunk to a 10.6-percentage point gap.

Male ACS workforce chemists tend to be older than female ACS workforce chemists, which translates into male chemists generally having more experience than female chemists. In 2015, 78.2% of male chemists are at least age 40 or older, while 62.4% of female chemists are age 40 or older. Since 1985, the age profile of male and female ACS workforce chemists has

grown more similar to one another.

## SALARY DIFFERENCES

The table below compares the median annual salary of male and female ACS full-time chemists of similar education, experience and sector of employment.

After drilling down in order to facilitate more congruent comparisons, the median salary amounts between male and female ACS workforce chemists appear to be closer than the overall salary for each gender, but salaries still skew in favor of male chemists. In the table below, there are five blocks with eight age brackets. This makes forty comparisons between similarly educated and experienced male and female chemists within the same employment sectors. Of those head-to-head comparisons, male chemists had a median salary that is at least 5% higher than female chemists in 22 comparisons. Female chemists earned only earned more than male chemists in 3 comparisons. The remaining 15 comparisons were within 5% of each other.

While reported amounts may leave room for error, the breakdown does suggest male ACS workforce chemists are more likely to earn a higher salary than female ACS workforce chemists of similar education and experience within the same employment sector.

**Table 45: Salary by Employment Sector, Experience, Degree and Gender**  
(Median Amount in Thousands for Full-Time ACS Workforce Chemists)

<i>Highest Degree:</i>	<b>Bachelor's</b>		<b>Master's</b>		<b>Doctorate</b>	
<i>Gender:</i>	Male	Female	Male	Female	Male	Female
<b>Academic</b>	<b>\$46.1</b>	<b>\$45.0</b>	<b>\$60.0</b>	<b>\$59.0</b>	<b>\$83.0</b>	<b>\$72.0</b>
5-9 years of experience	--	--	47.0	50.5	55.0	51.0
10-14 years	--	--	52.0	50.7	63.0	60.0
15-19 years	--	--	60.7	60.0	72.0	68.0
20-24 years	--	--	67.4	58.5	79.0	74.4
25-29 years	--	--	55.0	58.0	85.0	80.7
30-34 years	--	56.0	65.0	63.5	92.5	84.5
35-39 years	59.0	--	64.8	72.0	105.0	80.6
40 or more	--	--	69.5	65.0	106.1	92.0
<b>Industrial</b>	<b>\$87.0</b>	<b>\$70.0</b>	<b>\$103.2</b>	<b>\$88.0</b>	<b>\$134.7</b>	<b>\$116.9</b>
5-9 years of experience	60.1	59.0	69.1	64.1	90.0	90.6
10-14 years	74.6	70.0	81.1	74.3	104.0	93.4
15-19 years	81.5	78.4	94.0	88.0	116.0	114.0
20-24 years	96.6	92.0	95.6	94.7	130.0	123.1
25-29 years	97.0	99.0	117.0	97.0	142.5	134.0
30-34 years	105.0	97.8	116.7	99.8	148.8	143.5
35-39 years	105.8	97.5	112.0	113.0	150.0	154.8
40 or more	97.5	93.2	120.0	110.0	149.0	127.1

Note: A long dash within a cell indicates summary data are unavailable.



## WORK SPECIALTY AND GENDER

The table below shows the median salary for each work specialty, the percent of ACS workforce chemists in that specialty, and the percent of that specialty that are male and female. The table reveals that those specialties with the highest percentage of female representation are the specialties with the lowest median salary.

Of the sixteen work specialties, Chemical Education is the first ranked in female representation at 49.9% and the 16<sup>th</sup> ranked in annual median salary at \$65,000. This is followed by General Chemistry (2<sup>nd</sup> in female representation at 41.8% and 15<sup>th</sup> in salary at \$75,500) and Biochemistry (3<sup>rd</sup> in female representation at 39.6% and 13<sup>th</sup> in salary at \$90,000).

The work specialties with the highest median salaries tend to have lower female representation: Medicinal / Pharmaceutical Chemistry (1<sup>st</sup> in salary at \$121,900 and 12<sup>th</sup> in female representation at 24.0%); Biotechnology (2<sup>nd</sup> in salary at \$118,000 and 9<sup>th</sup> in female representation at 30.1%); and, Polymer Chemistry (3<sup>rd</sup> in salary at \$116,700 and 16<sup>th</sup> in female representation at 21.6%).

**Table 46: Gender and Work Specialty**

(% of ACS Workforce Chemists)

	Median Full-Time Salary	% In The Specialty	% of Specialty Male	% of Specialty Female
Respondents n=	18.8k	18.8k	12.4k	5.7k
ACS Workforce Chemists	\$97.0	100.0%	68.1%	31.9%
Medicinal/pharmaceutical chemistry	121.9	10.4	76.0	24.0
Biotechnology	118.0	4.4	69.9	30.1
Polymer chemistry	116.7	6.7	78.4	21.6
Clinical chemistry	115.0	0.6	74.3	25.7
Materials science	112.9	6.8	74.7	25.3
Agricultural/food chemistry	107.0	3.1	68.1	31.9
Other chemical science	104.5	3.5	61.0	39.0
Physical chemistry	99.2	5.5	76.4	23.6
Organic chemistry	98.7	10.7	77.4	22.6
Analytical chemistry	95.0	16.2	64.6	35.4
Inorganic chemistry	95.0	4.4	77.3	22.7
Environmental chemistry	93.1	6.0	65.7	34.3
Biochemistry	90.0	6.1	60.4	39.6
Nanochemistry	89.5	1.3	69.6	30.4
General chemistry	75.5	3.3	58.2	41.8
Chemical education	65.0	11.1	51.0	49.0

Note: A long dash within a cell indicates summary data are unavailable.

## WORK FUNCTION AND GENDER

The table below of non-academic ACS workforce chemists shows the median salary for each work function, the percent in that specialty, and the percent of males and females within that specialty. The work functions with the higher salaries tend to have lower female representation.

Excluding the smaller work functions with around 200 chemists or less (i.e., those with less than 2% of chemists in the function), there is a correlation between the median full-time salary and the percent of those employed in that function who are female. Analytical Services has the highest median salary at \$158,700 and the lowest female representation at 17.1%.

**Table 47: Gender and Work Function**

(% of Non-Academic ACS Workforce Chemists)

	Median Full-Time Salary	% In The Function	% of Specialty Male	% of Specialty Female
Respondents n=	10.8k	10.8k	7.8k	3.0k
ACS Workforce Chemists	\$97.0	100.0%	72.4%	27.6%
Analytical Services	158.7	10.6	82.9	17.1
Chemistry Information Services	157.0	0.7	61.6	38.4
Computer Programming, Analysis, Design	124.3	4.5	73.9	26.1
Consulting	120.0	3.4	73.7	26.3
Forensic Analysis	115.0	4.5	80.0	20.0
General Management (Non-R&D)	115.0	36.8	75.9	24.1
Health And Safety/Regulatory Affairs	114.0	9.6	74.5	25.5
Marketing, Sales,	107.4	3.3	58.2	41.8
Patents, Licensing, Trademarks	104.0	0.4	76.2	23.8
Production, Quality Control	102.4	2.9	63.8	36.2
R&D: Applied Research	99.0	1.1	58.5	41.5
R&D: Basic Research	87.0	13.8	64.2	35.8
R&D: Management	84.0	6.0	65.1	34.9
Teaching Or Training	83.5	1.3	49.3	50.7
Other	77.3	1.1	50.0	50.0

Note: A long dash within a cell indicates summary data are unavailable.

## ACADEMIC RANK AND GENDER

The rate of full professor status is different for male and female academic ACS workforce chemists.

For male academic ACS workforce chemists in 2015, 50.4% have full professor status. The proportion of male chemists with full professor status is somewhat lower than it was ten years ago in 2005 where 57.5% were full professors. The difference in full professor status among male chemists is even larger prior to 2005.

The majority of female academic ACS workforce chemists are either an associate professor (31.8%) or an assistant professor (31.5%) at their institution of employment. Slightly more than a third, 36.8% of female academic ACS workforce chemists have been granted full professor status. Full professor status for female chemists is slightly higher in 2015 compared with in any previous census, which has ranged from 30.4% to 34.3% full professor status.

**Table 48: Academic Rank by Gender**  
(% of Academic ACS Workforce Chemists)

	1985	1990	1995	2000	2005	2010	2015
Respondents n=	6.0k	5.6k	6.9k	6.8k	5.2k	6.2k	4.6k
<b>Male</b>							
Full Professor	61.3	62.4	61.5	60.0	57.5	49.3	50.4
Associate Professor	23.3	20.1	20.5	20.9	23.4	27.3	27.6
Assistant Professor	15.4	17.4	18.0	19.2	19.2	23.4	22.0
<b>Female</b>							
Full Professor	33.4	30.4	31.7	31.9	34.3	32.7	36.8
Associate Professor	35.2	29.9	28.1	28.7	33.6	32.3	31.8
Assistant Professor	31.4	39.7	40.3	39.4	32.1	35.0	31.5