The NCWIT Scorecard Contains Indicator and Trend Data for Girls’ and Women’s Participation in Computing.

The NCWIT Scorecard (www.ncwit.org/scorecard) is a compendium of the best available indicator data on girls’ and women’s status in computing over time. NCWIT publishes the NCWIT Scorecard so that all of these data are in one easy-to-find, easy-to-use place.

HOW TO NAVIGATE AND USE THE NCWIT SCORECARD

The NCWIT Scorecard exists online as a series of Excel workbooks that contain more than 35 data sheets — providing longitudinal data, when available, to show trends over time:

- Each workbook covers a different part of the computing ecosystem: Secondary Education, Post-Secondary Education, and the Workforce. An additional section provides some statistics on the field of computing overall.

- The first tab of each workbook has a table of contents listing all the data contained therein.

- On subsequent tabs, you will find the data, as well as some sample charts and captions you can use.

The Excel format not only enables you to create your own charts and infographics, but it also enables NCWIT to update the spreadsheets as soon as new data are published and to rectify errors as we find them. So, check back regularly for refreshed data: each tab lists an “Update” date for when the data was last refreshed.

CAVEATS TO NOTE ABOUT THIS REPORT

These data are not comprehensive indicators for how the diversity of the computing ecosystem is/is not progressing, but do show trends in the computing sector and the level of girls’ and women’s participation in computing in the U.S. over time.
Because the data come from different sources, use different methodologies, and are collected in their original form for myriad reasons, taken together, they do not always tell a clear story of women’s status in the computing ecosystem, nor do they provide explanations for why the current state of affairs exists. (See the NCWIT Facts reports — www.ncwit.org/thefacts and www.ncwit.org/thefactsgirls — for a summary of the key barriers to women’s full participation in technology.)

The NCWIT Scorecard is a living document; therefore, as new data become available, the online NCWIT Scorecard Excel files will be updated.

INTEGRATE THE NCWIT SCORECARD STATISTICS TO MAKE A CASE FOR DIVERSITY

Data can be powerful levers for making the case for diversity and inclusion efforts in your organization. NCWIT encourages you to use these data freely:

// You can use our simple charts and captions, or make your own.

// Include data in your presentations, reports, and proposals to make a stronger case.


If you know of relevant data we have not included, please email: datarequest@ncwit.org, and we will add them. If you see mistakes, let us know that too.

FOLLOWING ARE HIGHLIGHTS FROM EACH MAIN SECTION OF THE NCWIT ONLINE SCORECARD.
Women Should Pursue Computing Because It is a High-Growth, High-Status, High-Pay, and High-Creativity Sector, with Applicability to Many Other Fields.

The computing field is appealing for many reasons: steady job growth, high pay, creativity, and applicability to many other areas of interest. Computing professions are some of the fastest-growing and highest-paid STEM fields. Job growth in computing is expected to continue, which is good news for women — and men — who are considering the field. Compared to all U.S. occupations, which are projected to grow 7 percent by 2026, computing-related occupations are projected to grow by 19 percent. And according to several sources, computer science has the smallest difference in median earnings between men and women.


Even recent graduates in computer science have a higher median salary than the STEM average:

- **Women**: $79,223 (Average: $59,678)
- **Men**: $82,159 (Average: $71,841)

Include data in your presentations, reports, and proposals to make a stronger case for diversity:

ncwit.org/scorecard

Source: NCWIT Scorecard, Job Growth-Career Stability
More Girls are Taking Rigorous Computer Science in High School, but Access is Unequal Across the U.S.

In large part due to the CS Principles exam, more girls are taking CS Advanced Placement (AP) exams than ever before (fig. 1). College Board research indicates that students taking an AP exam in a given subject area are more likely to take college coursework in that area than students who did not take the AP exam. The potential for future parity is even higher, as research shows a correlation between high school students who excel at math and seniors who intend to major in CS. Since boys and girls in high school tend to have similar math course-taking patterns and outcomes, this bodes well for women earning future computing degrees. Although the availability of computer science classes in high school is on an upward trend, most high schools do not yet offer rigorous computer science. Those schools with a majority of students from racial/ethnic minority groups, or students eligible for free/reduced lunch, are least likely to offer computer science courses, which reduces those students’ chances of pursuing computing in college or beyond because of lack of exposure.

There is a significant gender gap between the percentages of incoming freshmen intending to major in computer science. Over the last decade, the intent to major in CS has increased substantially among men and women; however, a persistent gender gap still remains (2009: 0.3 percent of women, 1.9 percent of men; 2016: 1.4 percent of women, 6.6 percent of men).

For supporting statistics, explore the Excel workbook called: The Status of Computing in Secondary Education
More Women are Earning Associates, Bachelor’s, Master’s and Doctoral Computing Degrees, But at All Levels, a Persistent Gender Gap Remains. Women Degree Earners are More Racially Diverse than Men Degree Earners.

Overall, women’s proportional representation in STEM disciplines at the bachelor’s level has risen since the 1970s; yet some ground has been lost since the early 2000’s in both computer and information sciences (CIS) and mathematics. In CIS, women’s proportion of bachelor’s degrees has remained nearly unchanged since about 2008, hovering just below 20 percent. However, percentages do not tell the whole story: the number of women earning CIS bachelor’s degrees has increased steadily since 2010, reaching 12,561 in 2018. This is close to the 2004 historic peak of 13,094 (fig. 2).

The trendlines for men and women earning computing bachelor’s degrees show a similar pattern; however, the number of men completing bachelor’s degrees in 2018 (52,821) has far exceeded men’s historic high of 25,887 in 1987. While more men are earning computing degrees, the rate of growth of women earning bachelor’s degrees in CIS has outpaced that of men since 2010, when the numbers of women earning bachelor’s degrees in CIS started increasing (150 percent growth vs. 117 percent growth in men’s bachelor’s computing degrees). Meanwhile, the percentage of associate degrees earned by women in computing has decreased over time (from 44 percent in 1999 to a steady 20 percent since 2014). This is largely because more men are earning CIS associate degrees.
The percentage of master’s and doctoral degrees in computing earned by women has fluctuated over time, but has been increasing recently and nearly met near historic highs (CIS Masters: 34 percent women in 2001 and 30 percent women in 2017; CIS PhD: 23 percent women in 2002 and 22 percent in 2017). While the number of women receiving CIS master’s degrees has increased dramatically over the past decade (from 4,012 in 2007 to 13,375 in 2017), the proportion of those degrees earned by women of color has not substantially increased. Among PhDs in CIS, the number of women has increased since 2007 (327) and hit an historic high in 2017 (416). At all degree levels, the women earning CIS degrees are more racially and ethnically diverse when compared to men (fig. 4).

Native American and Pacific Islanders of both genders are underrepresented at all degree levels, and account for few CIS PhD graduates. These numbers have not improved despite a general trend of increased racial diversity among CIS PhD graduates in recent years. Notably, two-thirds of the CIS Master’s degrees earned by men, and nearly three-quarters of those earned by women, were by non-U.S. residents, both up from prior years. The NCWIT Scorecard data sheets show non-resident numbers in order to clarify the domestic racial/ethnic disparities in CIS.

While these descriptions of degrees completed by various historically underrepresented groups (e.g., women, students of color) is helpful to some, another way to look at the data is by cohort (i.e., bachelor’s degrees earned by women in computing compared to all bachelor’s degrees earned by women in a given year). Future versions of the NCWIT Scorecard Excel files will contain the data necessary to look at gender or racial/ethnic cohorts by year.

For supporting statistics, explore the Excel workbook called: The Status of Women in Computing in Post-Secondary Education.
One-Quarter of Computing Professionals are Women, with No Clear Trends for the Participation of Women of Different Races and Ethnicities. Evidence Suggests Women are Grouped in Certain Sub-fields.

From 2003 to 2017, women comprised more than half of the overall professional workforce. The percentage of female employment in computing and mathematical occupations has consistently hovered at about 25 percent since 2007 (fig. 3).
The number of individuals in computing occupations has increased substantially over the years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>863,000</td>
<td>2,618,000</td>
</tr>
<tr>
<td>2017</td>
<td>1,226,000</td>
<td>3,578,000</td>
</tr>
</tbody>
</table>

Source: NCWIT Scorecard, Computing Workforce

There is no consistent trend for women of color in computing occupations. Despite increases from 2008–2010, the percentage of all women in computing and mathematical occupations who are Hispanic/Latina has been declining (from a high of 6.9 percent in 2015 to 5.4 percent in 2017). The percentage of all women in computing and mathematical occupations who are Asian or Pacific Islander has decreased as well (from a high of 20.7 percent in 2015 to 19.7 percent in 2017). The percentage of women in computing and mathematical occupations who are African American/Black is at an historic high (12.9 percent), after shifting year-to-year.

There are many computing sub-fields that show occupational segregation by gender, with women often being clustered in execution rather than core, creative technical roles. Operations Research Analysts historically have had the highest percentage of women (52 percent in 2017). Computer hardware engineers have consistently had the smallest proportion of women (17 percent in 2017). Women’s representation among operations research analysts, computer programmers, computer software engineers, and computer hardware engineers dipped in 2017 after rising or holding steady for several years. Trends within these sub-fields are important to track to ensure that a diverse range of women are able to contribute meaningfully to all aspects of the innovation process.

Women exit technology fields more than other science and engineering fields. Research suggests that when women leave the tech workforce, they tend to leave the private sector for the public sector. Exploring “stall rates” may shed some light on attrition as well. Across science, technology, and engineering careers, about one-third of Hispanic/Latina women, Asian women, and White women say they feel stalled at work. Nearly half of African American women in these careers say they feel stalled.

Dig deeper into the statistics behind By the Numbers by going to the data files in the NCWIT Scorecard.
ncwit.org/scorecard
Female Faculty in Computing Lower than Academia Average.

The percentage of women computing faculty has increased substantially at all ranks since 1998, though the proportion of female assistant professors has dropped in recent years. The full professor level has the lowest proportion of women computer science faculty. Even allowing for academic hiring and promotion practices that result in slow changes in the population of full professors, computing lags behind the rest of academia, where women comprised between 33 percent of full professors in 2016–17, compared to 15 percent in computer science.

Women’s Patent Rates Have Increased. Patents by Mixed Gender Teams are Most Widely Cited.

While it is easier to assess how many women are in the field, it is more difficult to measure women’s ability to meaningfully participate in innovation. We are developing more comprehensive measures, but we currently use patent rates as one indicator, and these show some improvement. In 1980, U.S. women’s patents accounted for 1.9 percent of all patents. Three decades later, they comprised 7.8 percent of all patents.

In the United States, solo male inventor or male-only inventor teams account for the vast majority of technology patents, but mixed-gender teams have produced the most widely cited technology patents in all subareas. However, women inventors were cited less than men for their technology patents in all subareas.

For supporting statistics, explore the Excel workbook called: Computing Workforce
Other NCWIT Resources Can Help You Contextualize These Statistics.

TO LEARN MORE ABOUT...

...why women are historically underrepresented in computing, go to the AAUW report, Why so Few?

www.aauw.org/research/why-so-few

...the importance of diversity in computing, read, What is the Impact of Gender Diversity on Technology Business Performance?

www.ncwit.org/businesscase

...how to make academic departments and classrooms more inclusive, go to the NCWIT Student Retention Packet

www.ncwit.org/BPC-RetainStudents

...how to make corporate cultures more inclusive, go to Chapters 5 and 6 of the Women in IT: The Facts report

www.ncwit.org/thefacts

Download pre-made charts and captions, or the Excel statistics to make your own infographics:

ncwit.org/scorecard