 Higher Education
 IT Salary Report, 2016
Contents

Introduction 3
Key Findings 4
Background and Context 5
Multiple Regression Modeling 7
CIO Salaries 9
Manager Salaries 11
Staff Salaries 13
Describing Effects across Managerial Levels 16
Conclusion 23
Recommendations 24
Methodology 25
Acknowledgments 25

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Introduction

In ECAR’s report *The Higher Education IT Workforce Landscape, 2016*, we briefly explored the topic of higher education IT salaries. In that report, we found that sex-based inequality is not a significant issue for CIO and managerial positions but persists in some staff-level IT job areas. We also conducted bivariate analyses to help identify factors that may be associated with salary levels, finding that such factors may vary considerably across managerial levels.

In this report, we use multiple regression modeling to expand on the previous analyses and offer a deeper exploration into the factors that shape the salaries of CIOs, managers, and nonmanagerial staff (referred to as “staff” from this point forward) in higher education IT departments. Employing multiple regression analyses allows us to consider the effect of several factors simultaneously. The results of our analyses reflect the current manner in which IT salaries are determined and are not intended to be used either as a normative statement about what salaries should be or as a formula for determining salaries for current or future employees.
Key Findings

- **The factor that has the strongest effect on salaries is type of institution.** This is true across managerial levels. Even after controlling for all other factors in the model, we found that doctoral institutions pay significantly higher salaries.

- **Additional factors that affect higher education IT salaries differ based on the levels of managerial responsibility attached to positions.** CIOs are unique in that their salaries are primarily determined by experience, institution type, and cabinet membership. Managers’ salaries are determined by a wider range of factors that includes generation, education level, executive leadership roles, the number of direct reports, and institution type. Sex, generation, and institution type are the primary factors that affect staff salaries.

- **The more responsibility CIOs and managers have, the higher their annual salaries.** While responsibility is a difficult construct to capture, we see a significant salary difference for cabinet membership (for CIOs) or being a member of IT executive leadership (for managers). For managers, we also see a significant effect for the number of direct reports.

- **Salary inequality based on one’s sex is not a statistically significant issue for managers or CIOs in higher education IT.** However, the wage gap is significant among IT staff in favor of men.

- **Minority representation in our sample is not great enough to permit a salary analysis more fine-grained than white versus nonwhite.** These coarse categories did not yield significant differences in salary at any managerial level.

- **The impact of education level on salary depends on managerial level.** While an advanced degree appears to be a prerequisite for a CIO position, the level of degree held does not affect CIO salary level. Similarly, education level does not significantly predict staff salaries. Degree level matters for managers, however, with PhDs earning the most, followed by those with master’s degrees, followed by those holding bachelor’s degrees.

- **Fidelity to higher education is generally rewarded.** The number of years one has worked in higher education is positively related to salary—most strongly for CIOs but also for managers.

- **While our models demonstrate the strong significance of several factors, these models should not be used to predict or determine actual individual salaries.** These models explain less than half of the variability in salaries. Our estimates of the effects of certain factors on average salaries are reliable. However, predictions of individual salaries from any of these models will carry high levels of uncertainty.
Background and Context

In 2015, central IT spent more than half its total budget (53%) on employee compensation. Despite this significant investment in the workforce, little is known about the factors that determine who gets paid how much. Every few years, the EDUCAUSE Center for Analysis and Research (ECAR) assesses the state of the higher education IT workforce across managerial levels (CIOs, managers, and staff). We examine a range of topics germane to the workforce, including demographics, career paths within the IT workforce, factors that affect salary, professional development activities, and factors that impact employee retention.

In The Higher Education IT Workforce Landscape, 2016, ECAR provided preliminary analyses of the factors that may impact the salaries of CIOs, managers, and staff. These preliminary analyses were mostly bivariate in nature, comparing salary to one factor at a time. In this report, we take a multivariate approach that includes 10 possible factors, to provide a more comprehensive understanding of how these factors work together simultaneously to predict salaries. The first half of this report presents three multiple regression models based on managerial level. The second half of the report presents the same results by discussing the effect of each factor (institution type, experience, sex, etc.) across managerial levels.

These results are derived from 1,188 IT professional responses across three managerial levels (see figure 1) to an ECAR survey of the IT workforce conducted in 2015. Because the results of any voluntary set of respondents may not be representative of the general higher education population, we report only highly significant findings that we believe are meaningful to generalize to the higher education IT workforce. For additional caveats about the research methodology, see the Methodology section at the end of this report.

Figure 1. Managerial level of respondents to the workforce survey
The overall median salary for respondents to our IT workforce survey is $87,000 (see figure 2). When the salary data are disaggregated by managerial level (CIOs, managers, and staff), we observe substantial differences in median salary levels that follow a predictable pattern. Staff have the lowest median salary ($65,000), while CIOs have the highest ($137,000). Figure 2 also shows that variability of salaries within a managerial level increases with median salary. To address differences in variability, we analyze data from each level independently. This also allows us to investigate whether different factors affect the salaries of staff, managers, and CIOs.

Figure 2. Higher education IT salaries, by managerial level
Multiple Regression Modeling

In ECAR’s report *The Higher Education IT Workforce Landscape, 2016*, bivariate analyses were used to disaggregate salary statistics by several factors, one at a time. This bivariate approach is limited because one factor can mask the effects of other factors. In this report, we take a more in-depth modeling approach to the same data using multiple regression modeling.

The purpose of multiple regression modeling is to adjust for several factors simultaneously; this can yield results that seem to contradict the results of bivariate analyses, which look at factors one at a time. For example, in our sample of respondents, older CIOs’ salaries were significantly higher than those for younger CIOs, as measured by generation. (For the 2015 workforce data, ECAR has adopted the Pew Research Center’s generational categories for our analysis of salaries. This factor serves as a proxy for age, which is typically correlated with years of experience and leadership responsibilities.) In the multiple regression approach, we consider the effects of generation, experience, and other factors simultaneously. In this model, the data show that experience is a stronger predictor of average salary than generation. Furthermore, once we have accounted for experience, there is no significant difference by generation. In other words, among Baby Boomer CIOs, Generation X CIOs, and Millennial CIOs with the same years of experience, we do not see significant differences in average salaries, because years of experience explains salary better than age.

Ten factors, in the areas of individual demographics, individual career path, characteristics of the current position, and characteristics of the current institution, were tested for their association with salary (see table 1). The general approach to selecting appropriate multiple regression models is to fit a full model that contains all the factors available in the data that have a theoretical possibility of being related to salary. Based on the results of the full model, we use statistical testing to simplify the model by removing factors that do not have a significant association with salary. The simplified or “reduced” model then gives better estimates of the relationship between the remaining factors and salary. The estimates contained in this report are estimates from reduced models, which were determined separately for each of the different managerial levels: CIO, IT manager, and staff. Table 1 shows the overall results of the models.
### Table 1. Factors tested in salary models

<table>
<thead>
<tr>
<th>Category</th>
<th>Factor</th>
<th>Values</th>
<th>CIO</th>
<th>Manager</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual demographics</strong></td>
<td>Sex</td>
<td>Female</td>
<td>☒</td>
<td>☒</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Generation</td>
<td>Boomers</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gen Xers</td>
<td>☒</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Millennials</td>
<td>☒</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Ethnicity</td>
<td>White</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nonwhite</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual career path</strong></td>
<td>Education level</td>
<td>No four-year degree</td>
<td>☒</td>
<td>✔</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Master’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PhD or other terminal degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Years in current position</td>
<td>0–44 years</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td>Years at current institution</td>
<td>0–48 years</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Years in higher education</td>
<td>0–48 years</td>
<td>✔</td>
<td></td>
<td>☒</td>
</tr>
<tr>
<td><strong>Characteristics of the current position</strong></td>
<td>Cabinet membership (CIO); position in IT executive leadership (manager)</td>
<td>Yes</td>
<td>✔</td>
<td>✔</td>
<td>Not tested*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of direct reports in current position</td>
<td>0–95 individuals</td>
<td>☒</td>
<td>✔</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Characteristics of the current institution</strong></td>
<td>Institution type</td>
<td>AA</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BA private</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BA public</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MA private</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MA public</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DR private</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DR public</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

✓ indicates the factor has a significant association with salary.
X indicates no significant association was found.
* Too few staff in executive leadership positions.
**CIO Salaries**

Only three of the factors we considered have a significant association with CIO salary: type of institution, cabinet membership, and experience (number of years in higher education). That is, controlling for all of the other factors included in the model, such as sex, ethnicity, and education level, only these three factors are significant predictors of salary.

The effects of these factors are as expected: CIO salaries increase with institutional complexity, cabinet membership, and years of experience. Table 2 contains estimated average salaries for CIOs with 10 years of experience.

### Table 2. Estimated average salaries for CIOs with 10 years of experience

<table>
<thead>
<tr>
<th>Institution Type</th>
<th>Non–Cabinet Member</th>
<th>Cabinet Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>$84,025</td>
<td>$111,637</td>
</tr>
<tr>
<td>BA</td>
<td>$101,088</td>
<td>$128,700</td>
</tr>
<tr>
<td>MA</td>
<td>$115,878</td>
<td>$143,491</td>
</tr>
<tr>
<td>DR</td>
<td>$158,587</td>
<td>$186,199</td>
</tr>
</tbody>
</table>

NOTE: Add $910 for each additional year of experience.

Institutional type has the strongest effect, with a large gap between doctoral institutions and other types of institutions (see figure 3). No significant differences between salaries at public and private institutions were detected. Cabinet membership adds an average of $27,612. On average, CIOs earn an additional $910 per year of experience in higher education. There is no significant interaction among these three factors; for example, the average effect of years of experience on CIO salary is the same at every institution type and regardless of cabinet membership.
While institution type, cabinet membership, and experience are significantly related to CIO salaries, note that this model explains a little more than one-third (36%) of the variability in salaries. That is, nearly two-thirds of the variability in CIO salaries is not accounted for by years of experience, cabinet membership, and institution type. Estimated average salaries from this model carry an uncertainty of about ±$29,000. Individual salaries will vary more than the estimated average.

The uncertainty in predictions resulting from this model suggests that there are factors beyond those captured in this survey that affect CIO salaries. While some of those factors may be random, unmeasurable, and/or unknowable, we can speculate about the ones that might improve our ability to predict CIO salaries. For example, we know that political and critical-thinking skills, building and collaborative skills, business skills, and other individual skills are deemed important. Understanding the variations in CIOs’ possession of these skills might improve our modeling of how CIO salaries are determined.
Manager Salaries

The collection of factors related to managers’ salaries is more complex than for CIOs’ salaries. Five factors proved to be significant predictors: generation, education level, institution type, executive leadership responsibilities, and number of direct reports (see table 1). These five factors did not exhibit any significant interactions. For example, the average generation effects are the same across institution types, education level, and other factors.

Table 3 provides estimated average salaries for a manager who is not in executive leadership, is not at a private doctoral institution, and has five direct reports. These estimates can be adjusted to allow for a manager at a private doctoral institution, for a manager who is a member of executive leadership, for a manager with more or fewer than five direct reports, or for any combination of these.

Table 3. Estimated average salaries for IT managers who are not in executive leadership, are not at a private doctoral institution, and have five direct reports

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Millennials</th>
<th>Gen Xers</th>
<th>Boomers</th>
</tr>
</thead>
<tbody>
<tr>
<td>No four-year degree</td>
<td>$45,430</td>
<td>$63,801</td>
<td>$74,474</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>$63,058</td>
<td>$81,430</td>
<td>$92,103</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>$67,139</td>
<td>$85,511</td>
<td>$96,184</td>
</tr>
<tr>
<td>PhD or other terminal degree</td>
<td>$77,622</td>
<td>$95,994</td>
<td>$106,667</td>
</tr>
</tbody>
</table>

NOTE: For those in executive leadership, add $22,176. For those at private doctoral institutions, add $29,450. For each additional direct report, add $715. These effects are additive, so for a manager who is in executive leadership with seven reports at a private doctoral institution, add $53,056 (= $22,176 + $29,450 + (2 * $715)).

The most significant effects are the type of institution and whether the manager is a member of executive IT leadership. Managers who work at private doctoral institutions earn significantly higher salaries than managers at other types of institutions: on average $29,450 more (see figure 4). Managers in non-CIO executive leadership positions earn an additional $22,176 on average compared with those who do not hold such a position. Examples of a non-CIO executive leadership role might include the chief information security officer (as compared with a director or manager of information security), the chief data officer, or the associate CIO and similar positions.⁷
Generation, education level, and number of direct reports all have an expected pattern of association with managers’ salaries: Older managers with higher degrees and more direct reports all tend to earn more. Each additional direct report is associated with a $715 increase in managerial salary. The effects of the significant factors are additive, with no significant interactions. For example, the average $715 effect for each additional direct report holds for any type of institution, any generation, and so forth.

As with the CIO salary model, much of the variation in managers’ salaries is still not explained by these factors. Almost two-fifths (39%) of the variability in managers’ salaries is explained by the five factors in the reduced model, resulting in more precise estimates of average salaries than for CIOs: about ±$17,000. Individual salaries will vary more than estimated averages.
Staff Salaries

Three of the factors in our model predict staff salaries significantly: sex, generation, and institution type (see table 1). Consistent with the other models, older staff and staff who work at doctoral institutions have significantly higher average salary levels relative to Millennials and staff who work at other institutions, respectively. However, of the three managerial levels, staff is the only one where significant differences between average salaries for men and women persist even after we account for other factors. Table 4 contains estimated average salaries for IT staff. Sex, generation, and institution type do not interact significantly in how they affect average salaries. The estimated generation differences are the same at all institution types, and the estimated institution type differences are the same across generations.

Table 4. Estimated average salaries for IT staff

<table>
<thead>
<tr>
<th>Generation</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BA</td>
<td>AA/MA/DR Public</td>
</tr>
<tr>
<td>Millennials</td>
<td>$42,240</td>
<td>$52,024</td>
</tr>
<tr>
<td>Gen Xers</td>
<td>$54,781</td>
<td>$64,565</td>
</tr>
<tr>
<td>Boomers</td>
<td>$61,663</td>
<td>$71,447</td>
</tr>
</tbody>
</table>

Across all managerial levels, we find that institution type has the strongest effect on salary. Somewhat surprising in these data is the finding that bachelor’s institutions, both public and private, are at the low end of the spectrum, with staff at associate’s institutions earning salaries comparable to staff at master’s and public doctoral institutions. The model shows an average difference of $26,730 between staff at a bachelor’s institution and staff at a private doctoral institution (see figure 5).
Figure 5. Relative size of effects of significant factors on average IT staff salaries

Women earn an average of $6,540 less than men among higher education IT staff. As we observed in *The Higher Education IT Workforce Landscape, 2016*, this pay gap is more pronounced in certain sectors of higher education IT (i.e., job families). The IT sectors with the least parity between male and female workers are academic computing/instructional technology; networks and systems; and data, analytics, and business intelligence.

The staff salary model explains roughly one-quarter (23%) of the variability in staff salaries. Staff salaries also have the lowest variability of the three managerial levels. Thus, estimated average staff salaries from this model carry an uncertainty of only about ±$11,000. Again, individual salaries will vary more.

The factors that significantly impact average staff salary (generation, sex, and institution type) are either impossible or difficult to change. Working toward and earning an advanced degree may not increase a staff member’s salary significantly, but it can lead to a substantial increase in one’s earning potential by putting managerial opportunities or other career options within reach.

One might also consider moving to a different type of institution, but those opportunities may be extraordinarily limited by geography and the density of institutions of higher education in one’s location.
As we discussed in the landscape report, participating in professional development programs to expand or improve existing skill sets and seizing opportunities, if available, to increase levels of organizational responsibility and leadership are both approaches that may lead to higher salaries for IT staff. As Timothy Chester, VP for IT at the University of Georgia, noted, “At the University of Georgia, we see professional development opportunities as the most important thing we provide our employees, beyond salary and benefits. We have a standing commitment to spend no less than 3% of our base budget annually on these opportunities. This commitment to our employees’ training and professional development, we believe, has been critical to our retention and promotion efforts.”
Describing Effects across Managerial Levels

The preceding section analyzes the salaries of CIOs, managers, and staff members, identifying influential factors and discussing their effects in estimating average salaries within each managerial level. This section discusses the same results from the above models but considers each factor across managerial levels.

Sex

The historical gap between women’s and men’s salaries is well documented. Although significant gains have been made in the last several decades, in 2014 women working full time in the United States typically earned only $0.79 for every $1.00 paid to men for the same work. Similar but inconsistent disparities persist in higher education IT, where men who occupy positions as webmasters, client support specialists, help desk specialists, senior programmer analysts, and heads of user service outearn women by up to 11%. At the staff level, however, the difference is significantly in favor of men. Across job families in 2015, male staff members expected to earn $6,540 more on average than women.

On the other hand, our 2015 survey data do not show significant sex-based differences in salary for CIOs or managers. This is a rare milestone, but it does not conclusively prove parity for men and women in these positions. It only shows the absence of convincing evidence of sex-based differences. Significant differences can be hard to detect with small samples or gaps in representation from certain subpopulations. Men still outnumber women as CIOs and managers by about 3 to 1 and 2 to 1, respectively, and women are underrepresented in the higher education IT workforce compared to the overall U.S. labor force. As Mark Askren, vice chancellor for information technology and CIO, University of Nebraska–Lincoln, noted, “It’s very encouraging to see the salary data reflect sex parity. However, confidence that we’re providing equal pay for equal work will increase when salary parity is sustained while the number of women in IT leadership roles significantly increases.”

The 2015 ECAR survey did not provide enough data to reliably model staff salaries in different sectors. However, in bivariate analyses, female staff earn significantly less than men in three of the higher education IT job sectors ECAR identified: academic computing/instructional technology; networks and systems; and data, analytics, and business intelligence.
**Ethnicity**

Despite de jure efforts to reduce socioeconomic inequalities between ethnic groups in the United States, de facto structural differences persist. To tease out the manner in which this is manifest in higher education IT salaries, we used respondents’ self-identified ethnicity to compare across groups and managerial levels. Because of the small sample size, we have pooled self-identified ethnic minorities into the category of nonwhite for comparison.

The lack of ethnic diversity in the higher education IT workforce (only 15% of the survey respondents were from nonwhite ethnic groups) precludes us from effectively using ethnicity as a factor in explaining salary beyond the very coarse white/nonwhite dichotomy. Figure 6 shows the breakdown of ethnicity for the higher education IT workforce. The relatively small sample sizes from nonwhite ethnic groups also make detection of significant differences less likely. As with any factors that were not determined to be significant, this does not imply salary parity across ethnic groups. It could be simply a lack of evidence in the study. The lack of diversity in our study’s sample may underscore concerns about lack of diversity in the IT community—a concern reflected in EDUCAUSE’s commitment to a more diverse and inclusive community.

![Figure 6. Breakdown of ethnicity, overall and by managerial level](image)

While no single IT organization can be expected to diversify the whole IT workforce, the aggregated efforts across institutions to grow a workforce that resembles the community in which it is embedded can improve levels of minority
representation in higher education IT. Bernadette Williams, IT manager, University of North Carolina at Charlotte, suggests that IT organizations should be “actively recruiting and hiring from a diverse candidate pool.”

**Generation and Experience**

For the 2015 workforce data, ECAR adopted the Pew Research Center’s generational categories for our analysis of salary data. Generation serves as a proxy for age but is also strongly related to years of experience (in current position, at current institution, and in higher education).

The predictable pattern of older staff with more experience earning significantly more than younger ones holds across managerial levels. For CIOs, years of experience in higher education emerged as the best predictor for earnings, while at the manager and staff levels, generation adequately captures the experience effect (see figure 7). This does not imply that staff and managers should simply wait to get older to improve their salaries, because other factors do impact salaries. The significance of experience rather than generation in the CIO model may suggest that the specific skill sets required to become a CIO transcend experience as measured by age.

![Figure 7. Relative comparison of the experience effect for CIOs and the generation effects for IT managers and staff](image)
Unpacking the results of one’s work experiences is not easy, though it seems that the salary bump that is often associated with moving into a new position could be a significant factor. This suggests that there may be some truth to the conventional wisdom that to optimize salary, one should be willing to change jobs frequently. That said, as we observed in the initial multiple regression models, fidelity to higher education is rewarded presumably because of the experience one acquires.

Furthermore, the relationship between experience and age (as measured by generation) appears to be complex. In general, we expect these two factors to be correlated with one another positively; that is, being older is an indication of more work experience. However, because these variables measure different constructs, they predict salary differently for different managerial levels. For CIOs, generation is not a significant predictor of salary, while years in higher education is; for managers and staff, generation—but not years in higher education—predicts salary levels. Although further analysis may be warranted to understand the relationship between these factors, it may be that the relationship between age and experience is not linear. For CIOs, who as a group are older, experience begins to trump age; for managers and staff, who as a group are younger, not enough experience has been acquired to render it a significant factor in affecting salary.

**Education Level**

Sixty percent of CIOs have at least a master’s degree, and another 15% have earned a PhD. While a graduate degree is commonplace among CIOs, there are no statistically significant degree-related salary differences for CIOs. That is, even though an advanced degree may be a prerequisite for CIO candidacy, the level of degree is less important than other factors in our model (institution type and experience). This finding is somewhat surprising, given that we typically expect education level to be positively correlated with larger salaries, and it lends further evidence to a previous ECAR finding that the higher education CIO position is unique. For Patty Patina, CIO, Becker College, the lack of variation in salary across education levels for CIOs is promising because it indicates that CIOs “may be leading the way for meritocracy-based employment practices.”

The relationship between education level and salary is statistically significant for managers: The more advanced the degree, the greater the salary. A small percentage (8%) of managers hold PhDs; this group outearns managers who hold a master’s degree by $10,483. Managers who hold a bachelor’s degree are predicted to earn $4,081 less than those with a master’s. A staff member who holds a master’s degree does not have much of an advantage over those with only a bachelor’s, but it might be an important building block to advancing into a management or leadership position.
Institution Type

The type of institution at which one works can have a significant impact on one's salary level. This could be related to institutional complexity, funding streams, and economies of scale that are typical in different types of institutions. For example, community colleges tend to be smaller, offer fewer (and usually only two-year) degrees, have smaller endowments, and have fewer research dollars; conversely, doctoral institutions tend to be larger, offer a wide range of degrees, have large endowments, and bring in considerable research dollars. An international study has largely confirmed that institutional complexity (measured by an institution's number of students, number of staff, and research income) is highly and significantly correlated to the total IT spend. In the case of the United States, 90% of the variation in college and university total IT spend is explained by institutional complexity.\(^{13}\)

For this study, we employed a typology that simplifies the basic Carnegie classification and combines with the public/private distinction. In general, doctoral institutions offer their IT workforce higher salaries, but the grouping of institution types fell out differently for each managerial level (see figure 8).

![Figure 8. Relative size of institution-type effects for salaries, by managerial level](image-url)
Higher Education IT Sector

ECAR workforce survey respondents had the opportunity to select their specific job from over 100 options grouped into 12 discrete higher education IT sectors (see figure 9). Data from the College and University Professional Association for Human Resources (CUPA-HR) confirm a general pattern we observe here: Executive leadership is at—and administrative positions are near—the top of the salary range, and help desk and client support and design, media, and web positions are at the lower end. The survey data did not have sufficient representation from all the sectors in figure 9 to include all of them in the salary models. For managers only, we were able to differentiate between those in executive leadership positions and those who are not. A manager in an executive leadership position earns, on average, $22,176 more than managers in nonexecutive positions.

Figure 9. Median salaries, by higher education IT sector
Direct Reports

If great power begets great responsibility, great responsibility is accompanied by a higher salary. We asked managers and CIOs how many individuals reported directly to them within their higher education IT organization. Among managers, the number of direct reports correlates positively and significantly with salary. This suggests that the more direct reports you have, the more money you earn. Holding all other factors constant, each direct report is associated with an average increase of $715. This relationship was not significant for CIOs after adjusting for other factors, perhaps due to the complex nature of reporting lines. The number of direct reports a CIO has may not adequately capture the size of the IT organization at the institution. Cabinet membership for CIOs, and executive positions for managers, also result in higher average salaries.
Conclusion

When it comes to higher education IT salaries, no single formula best explains how employees at different managerial levels are compensated. The salaries for different types of positions are affected by different factors. For CIOs, cabinet membership, higher education experience, and the type of institution at which one works are the most important factors. For managers, the key factors are generation, education level, institution type, executive leadership duties, and the number of direct reports. Staff salaries are shaped by the sex and generation of the employee and the type of institution at which one is employed. Although the details of our analysis describe the factors that contribute to higher education IT salaries presently, they are meant neither to serve as a normative roadmap for how to determine salaries nor to predict how salaries will be determined in the future. Instead, it is important that we understand that different factors shape the salaries of different managerial levels differently.
Recommendations

While the models presented here serve to describe averages rather than individual experiences, certain recommendations can still be made. Some are based on data, others on insights beyond the data.

- IT leaders should review the salary distributions of their employees along the factors covered in this report, with an eye toward preserving or promoting equitable compensation packages for women and minorities.

- Partner with your human resources office to recruit a diverse pool of qualified applicants for IT positions. Use existing resources to help strive for diversity and inclusion in the workforce. See CUPA-HR’s diversity, equity, and inclusion program.

- IT managers who aspire to increase their salary level should consider 1) earning a graduate degree, 2) pursuing IT executive leadership opportunities, and/or 3) searching for other manager positions at private doctoral institutions.

- IT staff who hope to advance their careers and increase their salary base should consider one or more of the following options: 1) pursue a staff or manager position in a private doctoral institution, 2) participate in professional development programs to expand or improve existing skill sets, and 3) consider seizing opportunities (if available) to increase levels of organizational responsibility and leadership.

- IT staff should understand the market value of their role both within their own institution and at similar institutions. This can help manage salary expectations and facilitate career planning.

- Remain in the higher education IT sector if possible. Institutions appear to reward IT staff for the number of years they remain employed in higher education. However, leaving one’s current institution may be necessary to advance beyond the IT managerial level or to optimize one’s salary.
Methodology

Survey invitations were sent to 30,161 IT professionals in the EDUCAUSE database. A total of 1,188 respondents provided data that could be used for analysis, resulting in a response rate of 4%. Respondents were from all 50 U.S. states except Wyoming and from 31 countries, and they represented 692 institutions of higher education, which is 15% of all institutions of higher education in the United States. Non-U.S. respondents made up 9% of the sample, but were not used in this analysis. Data collection took place in November and December of 2015.

There are several caveats regarding the results presented here and how readers should approach them. First, because of the nature of the data (e.g., survey, self-reported, low response rate), the results of our analysis are not meant to reflect an individual’s experience. To put it another way, our aggregated results help us understand the contours of the proverbial forest, not the individual trees. Second, these data represent higher education IT salaries at only a single moment in time and should be treated as such. They say nothing about trends, where salaries have been, or where they might be headed. Third, these data reflect an empirical moment of what higher education IT salaries are and how other factors are currently related to salary. Our findings should not be taken as a normative statement about what salaries should be or as a formula for determining salaries for current or future employees.

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Notes


2. EDUCAUSE Core Data Service Almanac, all nonspecialized U.S. institutions.

3. The latest research can be found on the ECAR IT Workforce Research Hub.


5. For 2015, the year in which our workforce data were collected, generations are categorized by the following: Millennials (18–34), Gen Xers (35–50), and Baby Boomers (51–69). See The Generations Defined, Pew Research Center, May 8, 2015.


7. See full list of non-CIO executive leadership positions in the IT Workforce Survey, 2015.


10. Between 2010 and 2015, the percentage of women CIOs increased from 23% to 27%, and the percentage of women managers and staff decreased from 38% to 30% and 43% to 40%, respectively. “Current Faces of the Higher Ed IT Workforce: Striving for a Representative Workforce through Diversity, Inclusion, and Equity,” ECAR infographic (Louisville, CO: ECAR, 2016). Available at https://library.educause.edu/resources/2016/3/~/media/92fdd46ea074ea79d8772a6c75e28c.ashx.

11. This discrepancy is substantial, as women make up 47% of the U.S. workforce but only 33% of the higher education IT workforce. See U.S. Department of Labor, “Latest Annual Data: Women of Working Age.”

