

2017

WOMEN IN HIGHER EDUCATION IT

By Dr. Wayne A. Brown, CHECS

Foreword by Michael G. Cato

VP for Computing & Information Services and CIO

Vassar College

Prepared exclusively for attendees of

Women Advance IT

**WOMEN ADVANCING THE FUTURE OF
INFORMATION TECHNOLOGY IN HIGHER
EDUCATION**



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IN HIGHER EDUCATION*



2017 Study of Higher Education Chief Information Officer Roles and Effectiveness

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ACKNOWLEDGEMENTS

I became a chief information officer (CIO) in the mid-1990s while serving in the United States Air Force, and I was immediately fascinated with the position, its potential, the people in it, and its interaction with the rest of the organization. In the ensuing years as I moved into the higher education sector, my deep passion for the field never waned. This year, as I enter retirement, the position continues to hold my interest. I'm excited to be able to devote more time to CIO studies and the other CHECS research. As always, I hope CHECS supporters will find the results interesting and useful.

Thank you to the 2017 survey participants in CHECS' research: CIOs, Technology Leaders (TL), members of the Institution Management Team (IMT), and Chief Information Security Officers (CISO). Ongoing participation and interest demonstrate this work is critical. The CIO and IMT surveys are in their thirteenth year, TL its ninth and CISO in its fourth year.

Through my independent work and later through the Center for Higher Education Chief Information Officer Studies, Inc. (CHECS) I've had the honor of observing and reporting on the higher education technology profession as it has matured. I know how busy technology executives and other leaders are, and I appreciate everyone taking the time to participate in the research.

I could not continue this work or the other CHECS initiatives without the CHECS sponsors and subscribers and their generous support. The sponsors and subscribers are committed to this research and to the higher education technology professions. If you see one of the CHECS sponsors or subscribers, please be sure to thank them for their help with this work.

I also want to thank the CHECS' advisory board. I have continued to challenge them with

'In 2017, we will offer our first professional development course and we began a 'color commentary' series on some of the CHECS research topics.'

new responsibilities and volunteer opportunities and they never disappoint. The work required to operate a private nonprofit organization is another layer of work on top of the research, writing and presentations. The advisory board has helped shoulder some of the operations work and I am forever grateful to them. The all-volunteer board has devoted countless hours to expand and realize CHECS' mission: *Contributing to the education and development of the CIO in higher education.* Our esteemed board of CIOs, CISOs, TLs,

Presidents, and sponsor representatives have selflessly shared their thoughts and experiences to benefit the higher education technology leadership field.

In 2017, we will offer our first professional development course and we began a “color commentary” series on some of the CHECS research topics. In 2016, we introduced a subscription model and in 2014, we launched our first Chief Information Security Officer (CISO) study. We have continued to offer a successful Webinar series (checs.webex.com), bringing study results and respected guest panelists together for lively, informative discussions. Our Webinars have been highly popular with registrations filling almost to capacity. These initiatives are due in part to our distinguished advisory board and our sponsors. Look for more CHECS initiatives soon.

As you may know, CHECS is a nonprofit organization. Funds raised through report sales, subscriptions, and resume services help CHECS in support of its mission. To that end, we have endowed perpetual academic scholarships at four institutions, benefiting technology students at different levels of education. Through CHECS, to date, almost \$90,000 has been donated to these scholarships. The scholarships were created to recognize influential technology or education leaders who have left a lasting mark on CHECS’ studies. Through these scholarships, CHECS is helping future technology leaders who may, someday, take over the CIO-reins within higher education. The scholarships are:

- *The Dr. Trudy Abramson Scholarship*, Nova Southeastern University, Fort Lauderdale, Florida—\$1,000 annual scholarship to a doctoral candidate
- *The Dr. Polley Ann McClure Scholarship*, University of Texas, Austin—\$1,000 annual scholarship benefiting an undergraduate woman and/or minority
- *The Dr. Detlev H. Smaltz Scholarship*, Florida State University, Tallahassee, Florida—\$1,000 annual scholarship to a graduate student
- *The Stephen Pribyl Scholarship Fund*, Excelsior College, Albany, New York—need-based annual scholarship for women and/or minorities

We also want to thank Dr. Herb Smaltz; our chief information officer and institution management team surveys are based on his 1999 doctoral healthcare research. We are ever grateful to Dr. Smaltz. The research, the scholarships, the webinars—these are all efforts in line with CHECS’ mission. Our mission could not be achieved without your continued support. Thank you again.

Best regards,

Wayne A. Brown, Ph.D.
WBrown@CHECS.org

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FOREWORD

Now in its 13th year, the CHECS report continues to speak to the community of leaders charged with navigating an ever-changing world. The array of technologies, the pace of change, and the interplay of the associated risks and rewards all seem to dwarf what we experienced even a few years ago. To meet this challenge, our profession must change as well. The constituents we serve are increasingly facing new challenges and seeking new opportunities, many of which have IT considerations. It's no longer adequate to simply store information; supporting data driven decision-making is rapidly becoming the new table-stakes. Yet, IT organizations are no longer the information gatekeepers as service providers abound and are appealing to business units directly. The ability to build and sustain productive partnerships is increasingly crucial to success.

We're also experiencing a significant changing of the guard. For years, CHECS has noted the increasing percentage of CIOs approaching retirement, a fact attested to by the increasing number of retirement announcements. Yet, many institutions and organizations are wrestling with identifying, developing, and recruiting for the skills required of IT leaders to be successful in this new era.

I've consistently found the CHECS CIO report among the best resources to help inform my thinking and strategies around recruiting and developing leaders. With a wealth of information about the field, the changing demographics of our community, and highlighting important areas where attention and effort are needed, the report can provide the foundation for important analysis. The dramatic underrepresentation of women and people of color in the CIO ranks is one important example.

Almost 10 years ago, the late Robyn Render, then VP for Information Resources and CIO of the University of North Carolina system, mused that this is an amazing time to work in IT, especially in higher education, and that the next few years would present an array of radically new opportunities... and challenges. It's been stunning to experience just how correct she was... this is an amazing time to lead IT in higher education. Robyn was the first CIO who was a woman of color I'd ever met, and interacting with her had a profound impact on me. At the time, I was a young IT manager, yet, she graciously agreed to serve as one of my mentors. Her insights, ideas, and feedback expanded my sense of possibility, and inspired me to seriously consider the field.

In the 2016 CHECS foreword, Marty Ringle pointed out that the increasing rate of retirements provides a unique opportunity to alter the demographics of the CIO ranks.

He offered an appeal to consider what we're doing to bring about these changes. As one of that new generation of IT leaders (well at least I think so until students call me "sir"), I look to my experience with Robyn as one example of the type of contribution I can make. As you review the data and insights in this report, I invite you to consider how you, too, can contribute to the evolution of our field.

Michael G. Cato

Vice President for Computing & Information Services and Chief Information Officer
Vassar College

Past CHECS CIO Study

Through its founder and chief executive officer, Dr. Wayne A. Brown, CHECS has examined higher education CIOs since 2003 (Brown, 2004, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016). This study has tracked the higher education CIO progression, and monitored its roles and effectiveness for more than a dozen years. The CIO position has matured into a position that is now found in most organizations.

One of the most exclusive and useful aspect about CHECS' research on the CIO and TL is it is longitudinal existence. Gathering data for 13 years has resulted in *knowledge* about the position versus anecdotes and small samples. This distinction is made because anecdotes and small samples do not reveal an accurate overview of the career field; instead they offer small, singular glimpses which may or may not reflect the career field as a whole.

Some of the data CHECS has gathered in the last 13 years about the CIO and TL has remained steady year after year while other information is in flux. Indeed, another element of CHECS' research is it has always been conducted by a CIO practitioner. As a CIO for almost 20 years for both public and private higher education institutions, I know the position well. I know the challenges, the preconceptions and misconceptions CIOs face across the board within their institutions from executive teams and the many departments and people IT serves, to the technology team itself. This in-depth understanding fuels the passion and enthusiasm for perpetual CIO studies, which continue to shed light on the growth and maturation of this important higher education leader.

About the Survey

This year's research began in January 2017 with an invitation to participate sent to more than 2,600 higher education CIOs in the United States and other countries. Survey participants responded through an online survey tool or by a paper survey. Three hundred and thirty-six CIOs responded to the invitation. Institution management team (IMT) members were also contacted and invited to respond. Fifty-three IMT members responded to that subsequent survey. IMT respondents are the other vice presidents and presidents at the institution. This second survey is a supplement to the first survey and provides a non-IT institutional perspective. The purpose of collecting this data is to provide another essential point of view regarding the higher education CIO. The CIO and IMT surveys are based on Dr. Herb Smaltz' 1999 doctoral healthcare CIO research.

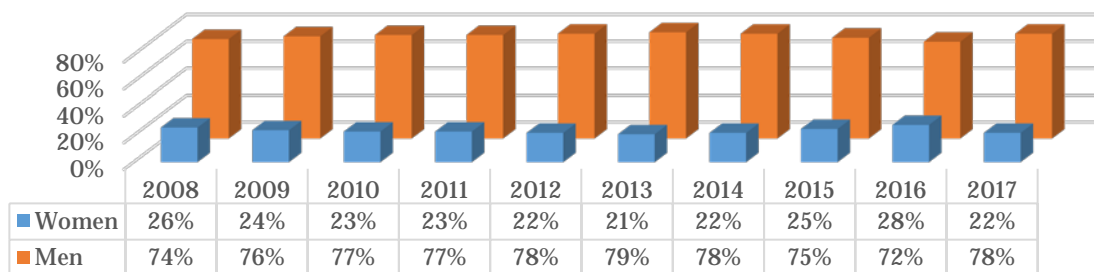
CHECS also conducted a technology leader (TL) survey at the same time in the spring of 2017. The TL was defined as those working in higher education technology who were not CIOs, but who were in the next organizational layer down from the CIO position. In 2017, 142 TLs responded to the CHECS survey. Information collected in the TL survey was also used in the CIO report. The TL survey results were also published separately in CHECS' *2017 Technology Leadership Study: Future Chief Information Officers*.

The CHECS' research is unique in that the three groups (CIOs, IMTs, and TLs) provide information which is compared with one another. The responses offer a great deal of data about the higher education CIO roles, effectiveness, attributes, and background. The information collected also created a history for the higher education CIO—a history which may help establish a career path for others who aspire to become the department leader in the future. Indeed, as knowledge increases, more is learned about the TL group who will, most likely, succeed current CIOs. Moreover, these studies not only document the past, they project the future for higher education's technology executives.

THE FEMALE CHIEF INFORMATION OFFICER

There has been a consistent lack of diversity in the CHECS higher education CIOs and TLs research. While the percentage of female CIOs reached its highest level in 2016, it declined to one of its lowest levels in 2017 (chart below). There are probably a variety of reasons the percentage of female higher education technology executives is not representative of the general or higher education population. These reasons may include low female representation in technology degree programs, under representation of women in the IT department, smaller percentage of women expressing an interest in becoming a CIO and earlier retirements by female CIOs. In addition, female representation is just over a third of the total TLs.

CHART 57. CIO BY GENDER FROM 2008 TO 2017

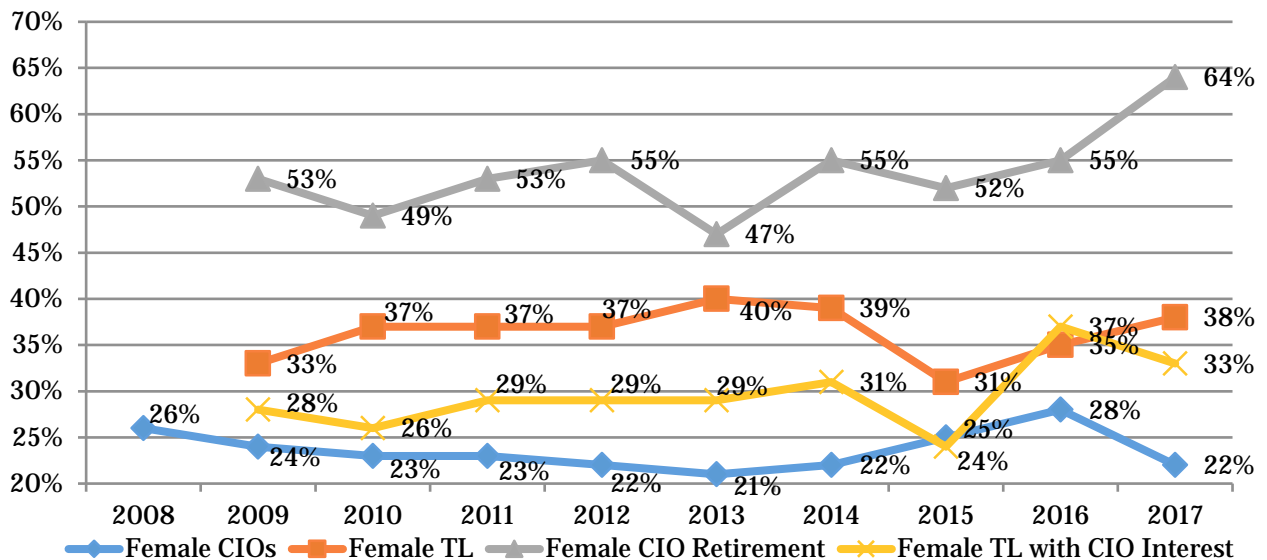


The percentage of female CIOs had been on a decline between 2008 and 2013. The chart below depicts four trends that may provide some insight into the future of the percentage of female CIOs in higher education. The trends are:

- The percentage of female TLs
- The percentage of female CIOs
- The percentage of female CIOs planning to retire in the next decade
- The percentage of female TLs interested in becoming a CIO

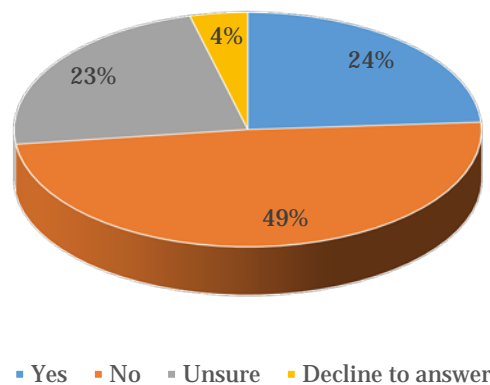
In 2017, the percentage of women who were CIOs declined to its second lowest level in this research. In addition, the percentage of female CIOs predicting retirement in the next ten years reached its highest level. The percentage of female TLs remained above 35 percent and the percentage of female TLs who were interested in becoming a CIO remained above 30 percent.

CHART 58. FEMALE CIOs AND Tls



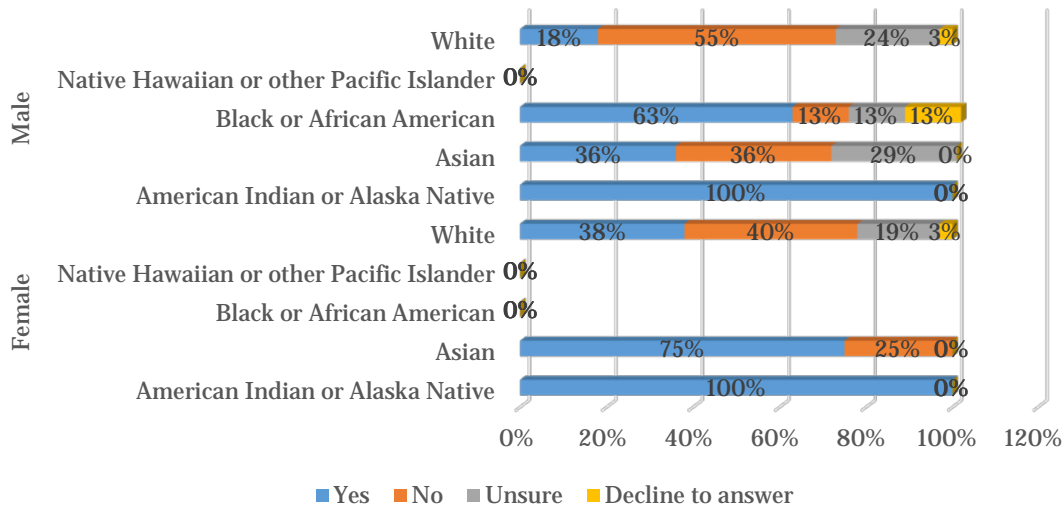
The CIOs were asked whether they thought discrimination contributed to less gender diversity. The results are depicted in the chart below. There were 49 percent of all CIOs who answered no.

CHART 59. CIO DISCRIMINATION OPINION



The chart below breaks down the CIO responses to the discrimination question by gender and race. There were only 18 percent of the White male CIOs who indicated yes to the question while 63 percent of the Black or African American male CIOs answered yes. There were almost 40 percent of the White female CIOs who answered yes. A point to consider in the evaluation of this information is that the percentage of minority CIOs is small and may skew the results.

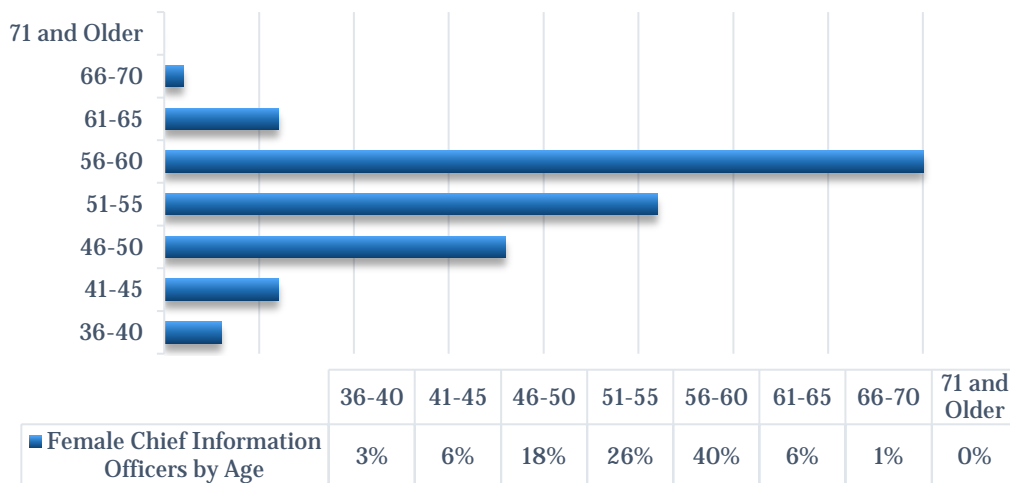
CHART 60. CIO DISCRIMINATION OPINION GENDER AND RACE COMPARISON



The Female CIO: Age

The age distribution of female CIOs in 2017 is presented in the chart below. There were 73 percent of the respondents who were 51 years or older. The peak for the group, 40 percent, was between 51 and 60 years old.

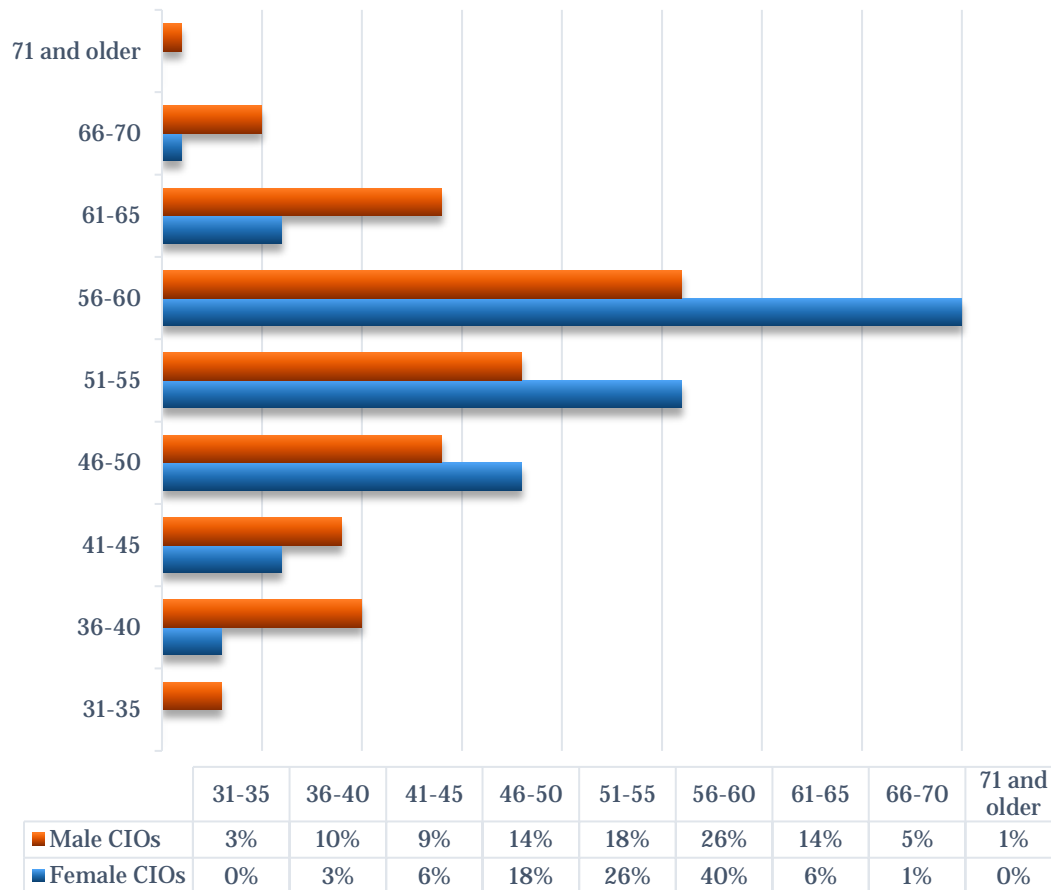
CHART 61. FEMALE CIOs BY AGE



Among male CIOs, their age peak, 26 percent, was in the same age group as the women’s peak, the 56-to-60-year-old group (chart below). However, the male CIOs had higher percentages at both ends of the bell curve. For instance, there were more men from 31 to

45 years old and from 61 to over 71 years old. There were 20 percent of the male CIOs who were 61 years old or older versus seven percent of the female CIOs. This observation supports the earlier retirement plans of the female CIOs.

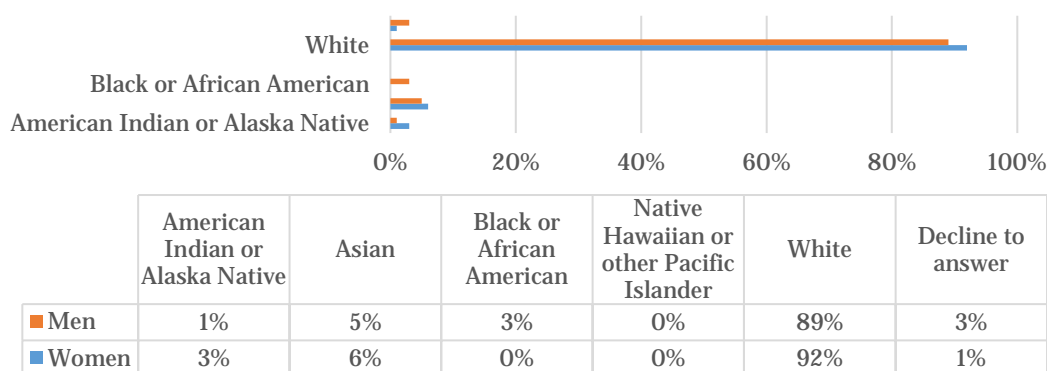
CHART 62. GENDER COMPARISON BY AGE



The Female CIO: Race

The chart below shows the CIO race broken down by gender. The percentage of CIOs who were minorities was nine percent regardless of gender. There were three percent of the male CIOs who declined to answer this question versus one percent of the female CIOs.

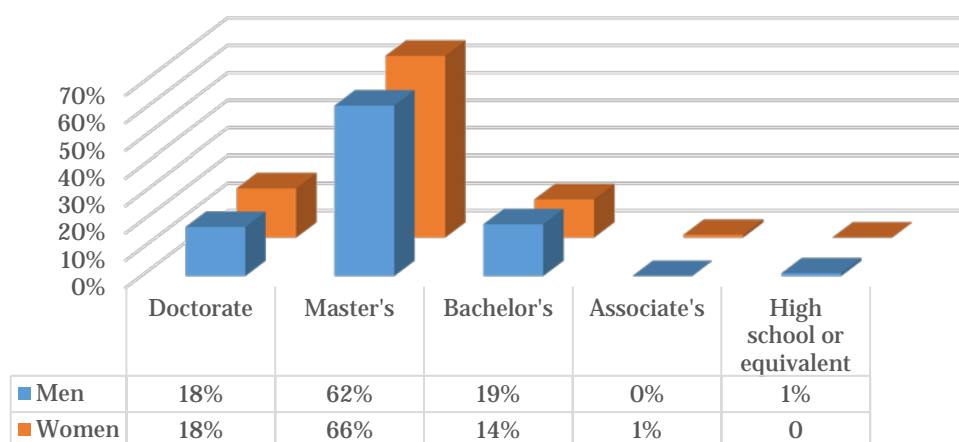
CHART 63. RACE AND GENDER



The Female CIO: Education

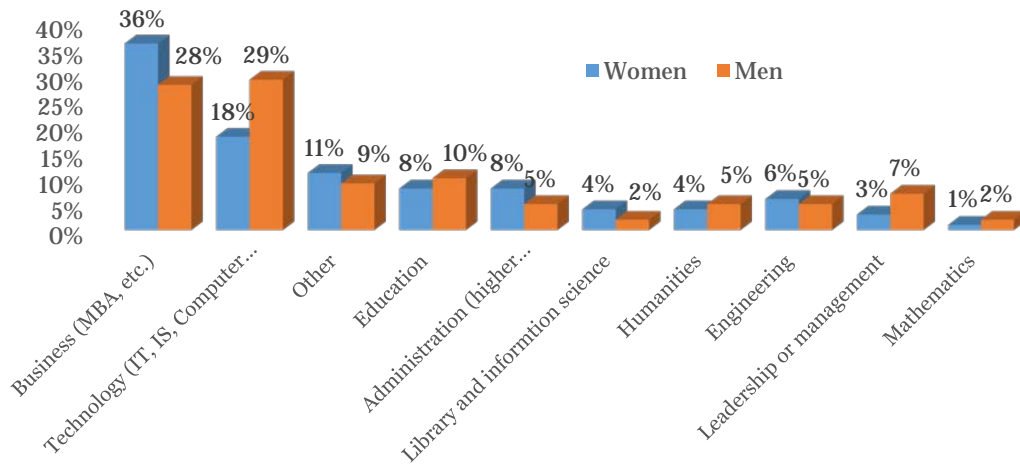
There were minor differences between female and male CIOs for their degree level (chart below). Eighty four percent of female CIOs had an advanced degree compared to 80 percent of the male CIOs. This gender difference in degree level was a trend in previous years of this research and supported in observations on higher education in general.

CHART 64. DEGREE BY GENDER



CHECS also collected data on CIOs' degree major (chart below). There were 29 percent of the male CIOs with a technology major versus 18 percent of the female CIOs. The single largest percentage for female CIOs, 36 percent, was the business degree where male CIOs accounted for 28 percent of the total.

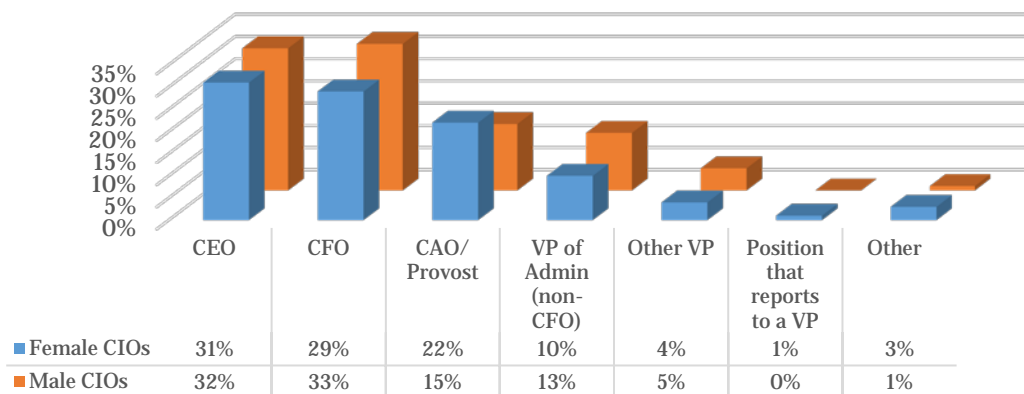
CHART 65. DEGREE MAJOR BY GENDER



The Female CIO: Reporting Structure

The reporting structure for CIOs by gender is depicted in the chart below. The percentage of CIOs reporting to the president or CEO was 32 percent for male CIOs and 31 percent for female CIOs. While more male CIOs (33 percent) reported to the CFO, more female CIOs (22 percent) reported to the chief academic officer (CAO).

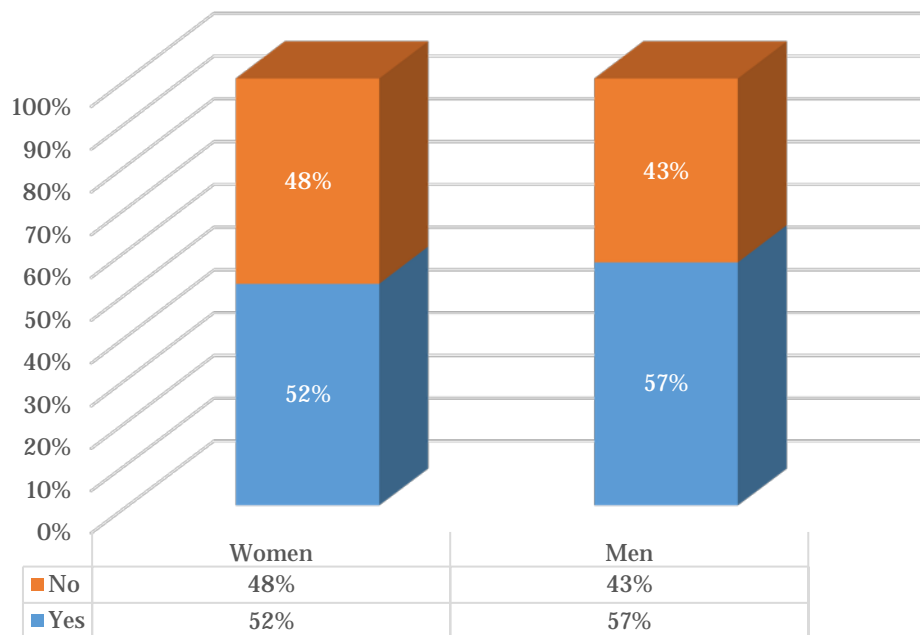
CHART 66. REPORTING STRUCTURE BY GENDER



The Female CIO: Institution Management Team Membership

There were five percent more of the male CIOs who served on the IMT (chart below).

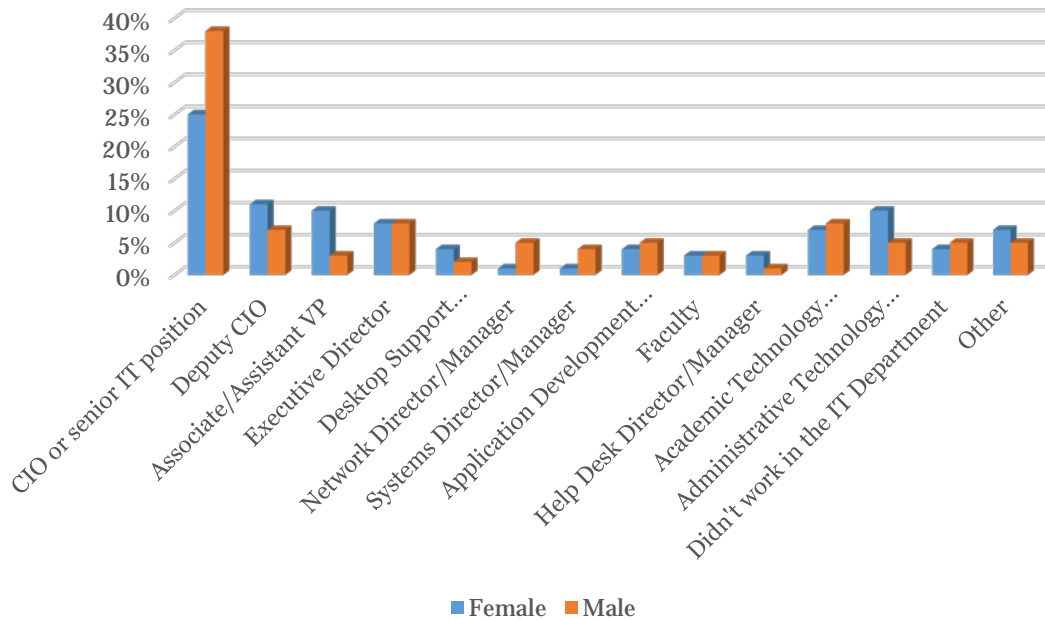
CHART 67. IMT MEMBERSHIP BY GENDER



The Female CIO: Career Path

The chart below depicts the last title held by female and male CIOs. The largest difference was for the CIO title, where almost 40 percent of the male respondents had been CIOs in their last position versus 25 percent of the female respondents. This result indicates more of the female CIOs were new to the CIO role. Eleven percent of the female CIOs were deputy CIOs in their last position compared to seven percent of the male CIOs.

CHART 68. LAST TITLE HELD PRIOR TO CIO BY GENDER

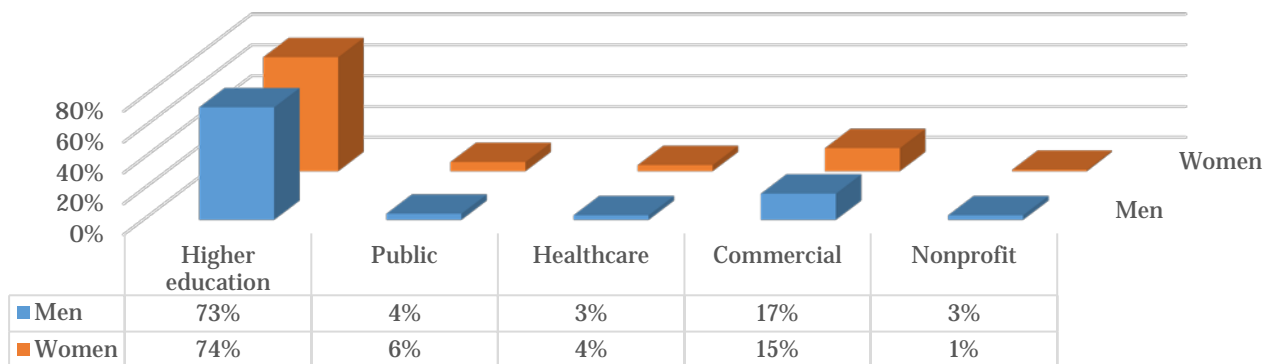


CHECS also examined the CIO’s last position by sector; sectors were defined into five broad categories.

- *Higher Education*
- *Public* (local, state, or federal government)
- *Healthcare*
- *Commercial* (for-profit outside of higher education)
- *Nonprofit Outside of Higher Education.*

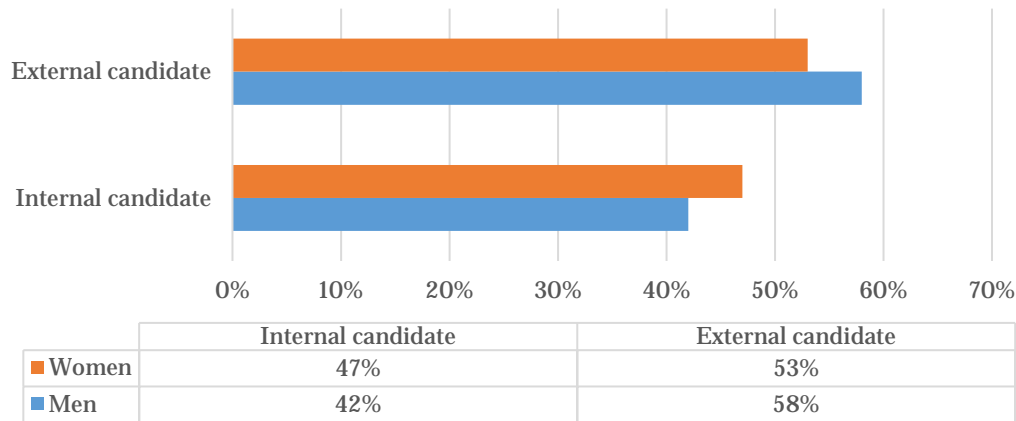
The percentage of women who worked in *Higher Education* in their last sector was similar to the result for the male CIOs (chart below).

CHART 69. LAST SECTOR BY GENDER



There were more male CIOs than female CIOs who were external candidates for their current position (chart below).

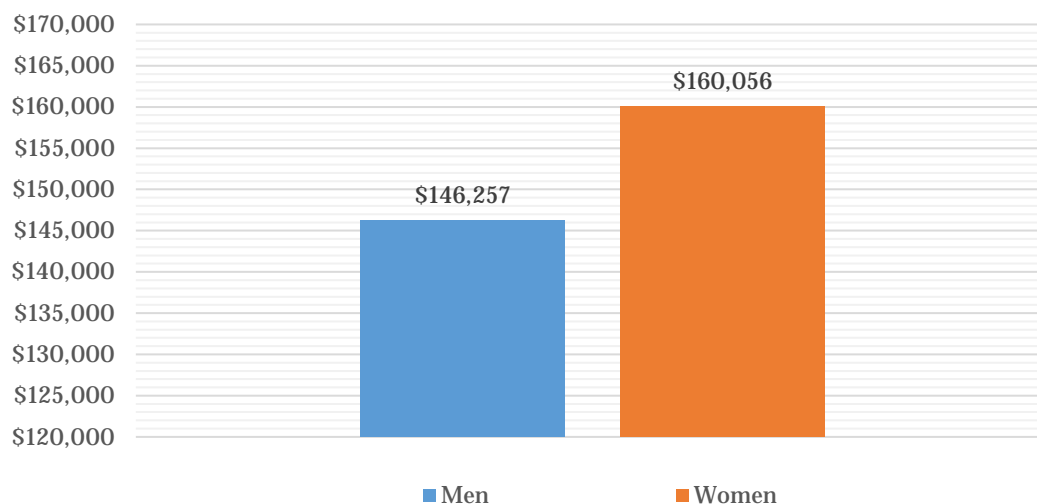
CHART 70. INTERNAL AND EXTERNAL CANDIDATES BY GENDER



The Female CIO: Salary

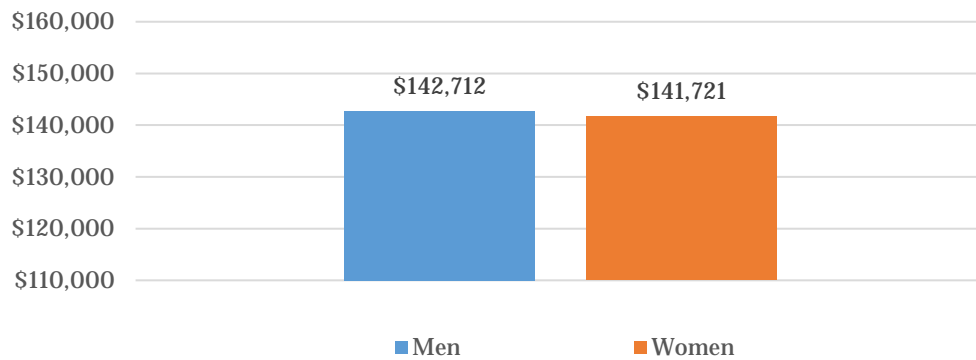
The gender difference for CIO salaries in 2017 is shown in the chart below. The average female CIO salary was just over \$160,000 versus \$146,257 for male CIOs. 2017 was not the first year that female CIOs earned more than male CIOs.

CHART 71. 2017 CIO SALARY BY GENDER



In 2016, for the first time since 2012, male CIOs earned more on average than female CIOs. The male CIO average salary was almost \$1,000 more per year.

CHART 72. 2016 CIO SALARY BY GENDER



In 2014 and 2015, female CIOs earned approximately \$11,000 more per year than male CIOs. The results for those years are shown in the next two charts.

CHART 73. 2015 CIO SALARY BY GENDER

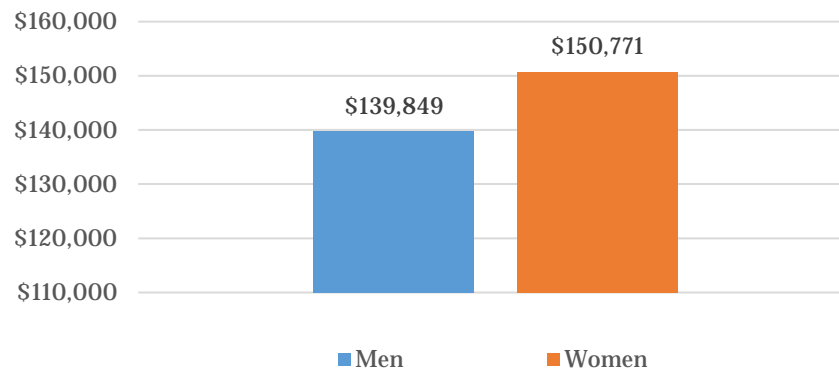
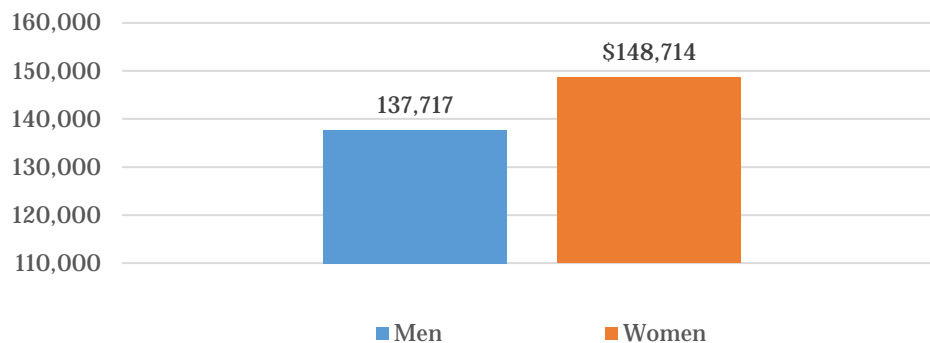
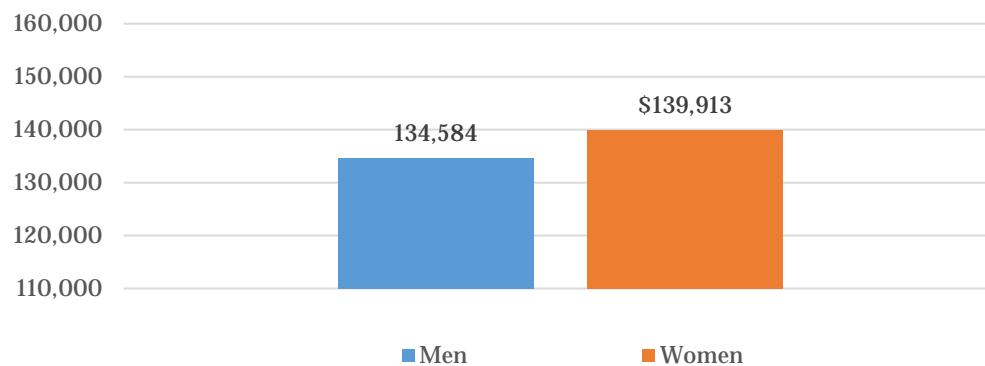


CHART 74. 2014 CIO SALARY BY GENDER



In 2013, CHECS found women were paid more than men; however, the salary gap was not as great as 2014 and 2015 with men earning \$5,500 less than women (chart below).

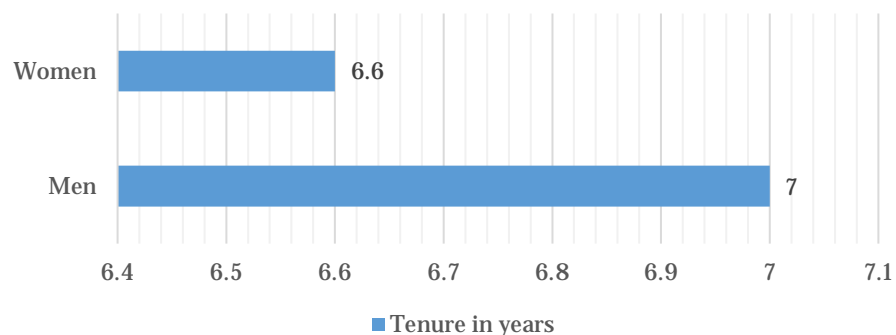
CHART 75. 2013 CIO SALARY BY GENDER



The Female CIO: Tenure

As in 2015 and 2016, the average tenure for male CIOs was seven years. The female CIO tenure was six years and six months (chart below).

CHART 76. TENURE BY GENDER



The Female CIO: Retirement Plans

In this research, the percentage of female CIOs predicting their retirement in the next ten years has been higher than their male counterparts. In 2017, 64 percent of female CIOs indicated they were going to retire during the next decade versus 50 percent of the male CIOs (chart below). Given this result combined with other factors, the percentage of female CIOs might continue to decline.

CHART 77. RETIREMENT PLANS BY GENDER

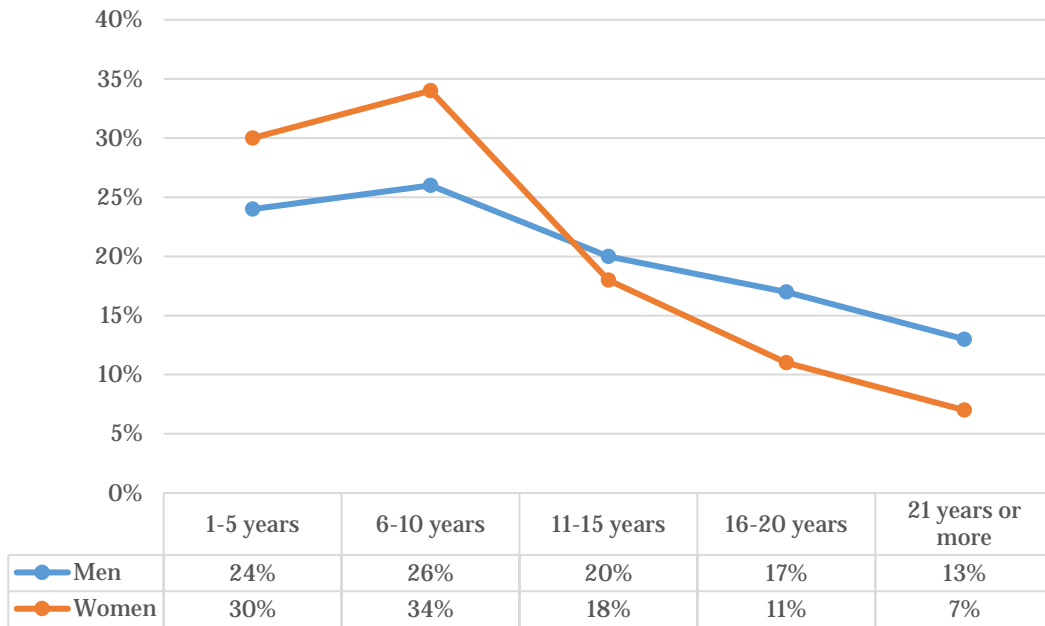


TABLE 7. HIGHER EDUCATION CIO STUDY RESULTS (2003 TO 2017)

	2003	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Attributes have an impact on effectiveness?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NM	Yes	Yes	Yes
CEO reporting has an impact on effectiveness (IMT)?	No	No	No	No	No	No	No	No	No	NM	No	No	No
Percentage reporting to CEO	34	41	39	39	34	35	33	35	32	34	34	36	31
IMT Interaction/membership has an impact on effectiveness (IMT)?	No	Yes	Yes	No	No	No	Yes	No	No	NM	No	No	No
Percentage who were members of the IMT	59	66	53	58	56	55	54	57	55	56	57	60	55
Percentage with CIO title	32	12	39	38	42	42	47	47	50	51	54	61	63
Percentage of respondents reporting within one level of CEO	96	97	93	97	97	98	96	97	97	97	97	97	97
Time in position	5 years 3 mo.	6 years 5 mo.	7 years 5 mo.	6 years 7 mo.	6 years 10 mo.	6 years 8 mo.	7 years 4 mo.	7 years 5 mo.	7 years 6 mo.	6 years 6 mo.	5 years 9 mo.	6 years 8 mo.	6 years 9 mo.
Average time in higher-education IT	NM	NM	15.70 years	13.45 years	14.75 years	13.83 years	13.66 years	13.86 years	15.06 years	14.39 years	17.09 years	17.47 years	17.71 Years
Percentage with advanced degree	82	68	75	76	77	79	76	76	79	81	78	82	81
Percentage retiring in next 10 years	NM	NM	NM	47	45	47	48	50	49	47	48	53	53
Gender percentage	NM	NM	NM	26 female 74 male	24 female 76 male	23 female 77 male	23 female 77 male	22 female 78 male	21 female 79 male	22 female 78 male	25 female 75 male	28 female 72 male	22 female 78 male
Minority percentage	NM	NM	NM	NM	NM	7	6	7	7	9	5	8	9

NM - Not measured

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ABOUT CHECS

CHECS was founded in 2009 by Dr. Wayne A. Brown to enable continued studies focusing on higher education CIOs' attributes, education, experience and effectiveness. The research is unique from other CIO studies in that it is a two-part survey involving the CIO as well as other members of the institution management team. The annual study invites participation from the CIO (or senior technology person) at every two- and four-year higher education institution in the United States and other international institutions. Survey responses are analyzed in aggregate and statistical data is extracted and synthesized into an annual report. The CIO study has been conducted since 2003.

In 2009, CHECS launched a second study focusing on those individuals in the next organizational layer down from the CIO. This survey is administered to higher education technology leaders and CIOs are asked some of the same questions to create the *Higher Education Technology Leadership Study: The Chief Information Officers of the Future*.

CHECS also conducts a chief information security officer (CISO) study that began in 2014. Like the other two reports, the CISO research is based on multiple perspectives, gathered through one survey completed by higher education CISOs and a similar survey completed by CIOs.

CHECS is a nonprofit (501c3) organization dedicated to the education and development of the higher education chief information officer. The organization and studies are funded through report sales, subscriptions, and sponsor donations.

In 2010, CHECS began funding a scholarship endowment to benefit higher education technology management doctoral students at Nova Southeastern University. CHECS funds a second scholarship endowment at University of Texas, Austin, to benefit undergraduate students seeking a higher education technology management degree. In 2014, CHECS began funding a third scholarship at Florida State University to benefit students in the Management Information Systems programs. The fourth CHECS scholarship is at Excelsior College in Albany, New York and it is a need-based scholarship for women and minorities.

CHECS' reports published in prior years may be [ordered online](#). Credit cards are securely processed through PayPal. You do not need to have a PayPal account to use its payment processing system. Once an order is placed, a password-protected PDF will be e-mailed to the e-mail address you provide. Site licenses are also available. The license authorizes

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In 2016, CHECS launched a subscription, which gives an entire institution access to all CHECS research, presentations, webinars, and other services. For more information, visit CHECS online (www.CHECS.org).

CHECS gratefully acknowledges Dr. Detlev H. Smaltz. CHECS' CIO survey was based on one created by Dr. Smaltz; the survey was modified and used with his permission.

ABOUT WAYNE BROWN

Wayne A. Brown, Ph.D., is the Chief Executive Officer and Founder of CHECS. He worked as a chief information officer since the mid-1990s and worked in higher education at colleges in San Francisco, Kansas, and New York for nearly two decades. In 2017, he was named Excelsior College's Vice President for Information Technology Emeritus. Prior to his academic career, he was in the U.S. Air Force for more than 20 years, serving in the Medical Service Corps, Education and Training, and Security Forces.

Dr. Brown began researching the higher education chief information officer roles and effectiveness as a doctoral dissertation and continued the surveys almost every year since 2003. Dr. Brown's work has been widely published in higher education and technology publications, such as Chronicle for Higher Education, Information Week, CIO, Inside Higher Ed, Public CIO, EDUCAUSE Quarterly, League of Innovation in the Community College, Gartner, EDUCAUSE Review, CIO, and Campus Technology, and he has presented research findings at technology conferences throughout the United States.