

UNIVERSITY
OF
CALIFORNIA

Office of Ethics,
Compliance & Audit
Services

Annual Report on Internal Audit Activities 2017-18



Office of Ethics, Compliance & Audit Services

Annual Report on Internal Audit Activities, 2017-18

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I. EXECUTIVE SUMMARY

Introduction

This report highlights the outcomes of Internal Audit activities in fiscal year (FY) 2017-18 (July 1, 2017 – June 30, 2018), which demonstrate our efforts to assist management to identify and address significant risks and drive efficiencies while providing ongoing assurance to the Regents and other stakeholders. Several programmatic developments and improvements are also featured, as is statistical information on utilization of Internal Audit's resources and other performance metrics.

Key accomplishments for FY 2017-18 include:

- Systemwide audits to assess compliance with policy requirements related to Fair Wage/Fair Work and outside professional activities and identify cybersecurity vulnerabilities (Page 4)
- Efforts to coordinate with risk partners to facilitate improved identification, assessment and management of key institutional risks (Page 11)
- Completion of an external quality assessment review that concluded that our UC Internal Audit program is in conformance with professional standards (Page 13)
- Improvements to data analytics capabilities that allow our auditors to conduct their work more efficiently and effectively (Page 13)
- Delivery of training and leadership programs to foster continued development of our internal audit staff (Page 13)

FY 2017-18 Statistical Highlights

During FY 2017-18, the UC Internal Audit Program:

- Completed 95% of the Regents-approved Internal Audit plan (goal 70%)
- Completed audit, advisory services and investigation projects resulting in 449 reports
- Produced 1,079 recommendations for improvements to governance, risk management, and control processes, with corresponding agreed-upon Management Corrective Actions (MCAs)
- Validated that 1,047 MCAs were completed by management
- Operated at an 86% efficiency level (goal 85%)

Summary of MCA balances and past due status:

Summary of MCA Balances and Past Due Status	
Beginning MCAs (open at start of FY 2017-18)	568
Ending MCAs (open at end of FY 2017-18)	600
Past Due MCAs	
High-risk past due MCAs	34
Medium/low risk past due MCAs as of June 30, 2018	145

Summary and Conclusions

We identified no financial control issues that we believed to represent material deficiencies in internal controls for the University system as a whole. Additionally, we identified no circumstances in which we believe that management's decisions resulted in the acceptance of unreasonable levels of risk.

Further, based on our FY 2017-18 work, we can assert the following as being generally true, with no reportable exceptions:

1. Management of the University is cognizant of their responsibility for internal controls and takes seriously the need for controls and accountability.
2. There is respect for the Internal Audit Program's objectives, a high level of cooperation is received, and there is no interference with either the accomplishment of its tasks and/or its responsibilities to report to the Regents.
3. Management actively participates in the identification of risks and works collaboratively with internal auditors to address issues raised during audits, advisory services, and investigations.
4. Management is comfortable seeking out Internal Audit for advice and consultation on matters with internal control implications.
5. Matters of importance are reported to the Regents.
6. Although we did not identify any material control deficiencies, there are opportunities for the University to implement more effective controls in a number of areas.

II. INTERNAL AUDIT PROGRAM – RESULTS & ANALYSIS

A. Systemwide Audit Results

Systemwide audits are conducted for the purpose of reviewing an existing or potential issue across the University system to identify and address common risk areas. Typically these audits are performed at the request of the systemwide audit office, the Regents and/or the President, have a common scope and approach and are usually conducted by the local Internal Audit departments at each University location. Overall results are typically summarized in a systemwide audit report. Corrective action and associated follow-up is performed at locations and at the systemwide level. The following is an overview of systemwide audits performed.

Fair Wage/Fair Work – In support of President Napolitano’s UC Fair Wage/Fair Work (FW/FW) Plan, which requires minimum wage levels for UC employees and service contract employees, Internal Audit conducted its second annual systemwide audit to assess UC’s suppliers’ compliance with plan requirements. The purpose of this audit was to review contracts executed in the last year to ensure that applicable contracts contain the required FW/FW provision, determine whether procurement units are reviewing and monitoring supplier compliance with the annual audit certification requirement, and validate that suppliers complied with the annual audit requirements.

We found that the campuses and medical centers’ monitoring activities to ensure suppliers comply with plan requirements require improvement. Although there has been some progress in establishing processes for identifying and tracking FW/FW contracts and monitoring supplier annual audit certifications, several locations still do not have effective processes or their processes have not been effective in driving improved compliance rates. Despite the efforts of local procurement units at most locations to remind suppliers of the annual audit requirement and request the required audit certification, suppliers’ compliance with the annual FW/FW supplier audit requirement remains low. Additionally, a number of locations have identified instances in which the supplier did not meet the audit requirements as they did not always provide the required audit certifications, or they were not completed in a timely manner.

Outside Professional Activities – We conducted a systemwide review to assess the adequacy of internal controls over Outside Professional Activities (OPA) requests, approvals and reports, as well as to assess compliance with policy requirements. In July 2016, Regental policy was updated to include new approval and reporting requirements and new limits on compensated outside professional activities. While we observed general adherence to OPA policy, we found controls should be strengthened to ensure all OPA requests are reviewed timely and approval is documented. Improvements are needed to ensure that data in the system used to track OPA are accurate and updated timely as we noted instances in which the annual uncompensated report contained activities that were determined to be part of an individual’s job performance and therefore non-reportable. Additionally, we noted that additional communication is necessary to ensure questions or requests for clarification are addressed to ensure compliance, including guidelines on how to record royalty income.

Cybersecurity Incident Response Review – The Cybersecurity Audit Team (CAT) performed an advisory service to broadly assess incident response programs across the University of California. The primary objectives of this review were to identify key process elements, determine the presence of key roles at each location and their degree of awareness of incident response, determine the effectiveness of the cybersecurity incident prioritization process, and identify any challenges. The scope included each UC campus and health system location, as well as the UC Office of the President (UCOP), as both a location and in its role of systemwide oversight. The advisory service provided recommendations to locations and systemwide leadership on

opportunities for improvement in the incident response process to reduce cyber-risk and better prepare UC for future potential cybersecurity incidents.

Vulnerability Assessment and Penetration Test Audit – The Cybersecurity Audit Team (CAT) performed vulnerability assessments and penetration test audits across six health locations. The objective of the reviews was to identify vulnerabilities and perform penetration tests on a sample of high-risk systems at each of the in-scope locations in order to provide assurance that vulnerabilities were being managed appropriately to reduce cyber-risk. Based on the testing results, the CAT worked closely with the locations to develop management corrective action plans that address the specific vulnerabilities identified in the audit, as well as make improvements to the overall vulnerability management programs in order to reduce the likelihood of these types of cyber-risks reoccurring at each location.

Executive Compensation Reporting – Periodic reviews of executive compensation reporting have been routine for the last ten years. This year, relatively minor exceptions were noted and were corrected at the local level. No issues were identified that required action from a systemwide perspective.

B. Significant and Recurrent Internal Control Issues

From the body of audit work performed during the year, including investigations, the following are the most significant and recurrent internal control issues. Many of these are the subject of specific management corrective actions in the environment where the issues were identified, others are the subject of broader systemwide initiatives, while still others are endemic and require continual attention by management.

Cybersecurity - IT Security and Information Privacy

Issue: High profile cybersecurity incidents within UC and other organizations bring a persistent and heightened sense of awareness and focus on cybersecurity risk and the importance of effective IT security controls. Internal Audit continues to place significant emphasis on evaluating IT security programs and controls in its annual audit plan. As in prior years, we continue to identify control weaknesses related to IT security and protection of sensitive and restricted information, including the omission of IT security risk assessments and security plans, inadequate system access controls, unauthorized access to internal networks and systems, weak password management, unsupported systems and protocols, unpatched vulnerabilities and insufficient oversight and monitoring of third-party services, including cloud services. It is an ongoing challenge to ensure all end users are aware of IT security risks and appropriate mitigation measures. The decentralized nature of IT infrastructure and IT organizations, as well as increased utilization of third-party IT service providers, continues to be a challenge in ensuring appropriate controls are in place across all environments within the organization.

The increasing sophistication and volume of cyber threats that the University faces intensifies the need to have a robust incident response plan to address known and suspected information security incidents and events. The Regents and UC leadership, including the Chief Information Officers (CIO) and the Chief Information Security Officers (CISO), have identified improving incident response as a priority.

Management's Response: Efforts are underway at the system level to address IT security risks, including updating the annual cybersecurity awareness training for all faculty and staff across the system, performing comprehensive cybersecurity risk assessments, systemwide vulnerability assessments and penetration testing, formalized cybersecurity incident escalation procedures, and enhanced monitoring of network activity.

At the local level, management is working to implement corrective action and new controls to address identified deficiencies. These include enhancing the vulnerability management program, centralization of the IT security function, third-party security assessments, enhanced access monitoring controls and implementation of multi-factor authentication.

Internal Audit's Involvement: Internal Audit continues to support IT security efforts across the system. We have led multiple projects in support of the President's cybersecurity initiative, including a Cybersecurity Incident Response Process Advisory Service and the systemwide vulnerability assessment and penetration testing activities which will continue into FY2018-19. We coordinated the annual deployment of mandatory cybersecurity awareness training for faculty and staff and facilitated the annual technical IT security training for IT and information security practitioners across the UC system. We continue to work closely with other groups, such as Compliance, Risk Services, General Counsel, and Information Security to advance, refine and improve initiatives and processes related to cybersecurity, such as threat detection and identification, new policy development, and incident response and escalation.

Internal Audit has expanded the centralized systemwide Cybersecurity Audit Team to enhance its auditing capabilities in this increasingly significant risk area. The Cybersecurity Audit Team is being deployed to the campuses to deliver specialized cybersecurity audits and advisory services and provides independent assurance and advice on systemwide cybersecurity initiatives.

Large-Scale System Implementations

Issue: After a successful initial deployment of UCPATH at the Office of the President, UC Merced, UC Riverside and ASUCLA, we will be working with management on planned deployments at six additional locations in the next fiscal year: UCLA, Santa Barbara, UC Davis, UC Berkeley, UC Irvine and ANR. These additional locations introduce even greater technical complexity to the project, particularly with the addition of three locations with health sciences environments. It will become increasingly important to ensure that effective project management, risk management, and change management practices are put in place to ensure implementation objectives are met. At the campus level, we continue to observe the effects of the UCPATH Project and other enterprise IT system implementations on the internal control environment as resources are stretched and diverted from other operational priorities. Like UCPATH, many of these system implementations have been initiated to replace outdated existing enterprise systems due to the risks associated with their continued maintenance. While they are very much needed, these large-scale system replacement efforts present significant risks in all aspects of the project, from data conversion and configuration to governance and organizational change management. It is therefore critical that these risks be continuously monitored and managed.

A recent audit from the California State Auditor identified opportunities for improvement related to IT project development best practices and governance and oversight of significant IT projects, including monitoring of project risk, budget, and schedule.

Management's Response: Management has instituted governance structures over key system implementation projects to help ensure the success of these projects. These structures help to ensure that issues and risks are escalated and resolved in a timely manner, leadership is kept apprised of project status, and the right individuals are involved in key decisions when necessary. Some campuses have integrated into their audit plans readiness assessments that include organizational change management, training, and system and data integration components. Further, in a phased rollout such as UCPATH, management identifies lessons learned from early deployments and accordingly modifies its approach in subsequent efforts. Additionally, in response to the recent State Audit, management has put in place new guidelines for IT project development and cost reporting for significant IT implementation projects to ensure stakeholders have the necessary information for effective oversight.

Internal Audit's Involvement: Internal Audit continues to partner with management to help ensure that best practices are followed, significant risks are appropriately mitigated, effective controls are in place, and appropriate measures have been taken to ensure operational readiness for deployment. Internal Audit served in an advisory role to help ensure the successful implementation of UCPATH at UCOP, UC Merced, UC Riverside and ASUCLA, and is currently performing multi-phased readiness assessments for the subsequent deployments. Internal Audit has been assisting management in addressing key issues associated with the UCPATH project, including risk assessment and monitoring, governance, operational readiness, future state process design, and information security. Internal Audit staff serve on various oversight committees for UCPATH, including the systemwide UCPATH Steering Committee, to provide real-time insight as implementation decisions are being made. Ultimately, Internal Audit will assess the effectiveness of this new system to more efficiently process transactions and thereby enable support staff to focus on more value-added services. In addition to UCPATH, many of our campuses continue to implement other key IT systems, including electronic medical records systems at our health science campuses and new student information systems.

Staff Turnover and Succession Planning

Issue: During FY 2017-18, a number of campuses experienced turnover in senior leadership, resulting in a significant portion of the leadership team being comprised of individuals in interim roles. Such significant changes have the potential to impact the organization by creating uncertainty about organizational goals and objectives and generating uneasiness among key stakeholders. Additionally, the effectiveness of internal control, oversight, and coordination of campus activities often suffers when turnover occurs in key positions, particularly when inadequate succession planning and transition of responsibilities occurs. For example, Internal Audit has identified turnover of key staff as a contributing factor to ineffective management of carryforward balances.

At the staff level, a growing number of experienced personnel are leaving the university, taking with them years of valuable institutional knowledge. Constrained budgets limit the ability to replace these positions with sufficiently experienced staff or the time to fully onboard replacements.

Management's Response: Management is prioritizing the recruitment of key positions to help ensure continuity of key strategic priorities and maintain control and oversight of high risk areas. Many UC locations have developed resources to help facilitate succession planning efforts at the departmental level, including the development of business continuity plans that are subsequently monitored and updated. Additionally, position control processes have been implemented at several locations to add more structure and discipline to changes in staff, temporary, and contract positions.

Internal Audit's Involvement: Internal Audit has assisted in ensuring adequate internal controls are in place by partnering with management to document existing controls and providing input on future state process design as organizational changes are being planned. Internal Audit can also assist in training staff on internal control responsibilities when they transition to new roles. Periodically our internal audit departments perform audits to assess the effectiveness of succession planning efforts.

Internal Audit frequently performs transition reviews for changes in senior leadership positions to assess the financial health and effectiveness of controls over the office and identify potential issues that should be brought to the attention of the incoming executive.

Regulatory Compliance

Issue: Our locations continue to identify challenges associated with the increase in regulatory compliance issues, with research compliance being the most prevalent risk area cited due to the breadth of compliance issues in areas such as international research, conflict of interest, laboratory safety, export controls, and research involving human subjects. As research compliance requirements become increasingly complex and burdensome, management is challenged to maintain compliance with limited resources. Operationalizing compliance measures with these new regulations can be challenging in a decentralized University environment. Similarly, due to the complexity of clinical research there are inherent risks pertaining to clinical research billing that could result in inaccurate billing and, consequently, potential violations with government payer regulations/contracts. If researchers are unaware of requirements or standards, clinical research billing may not be performed compliantly. Continuous improvement is needed to provide reasonable assurance that billing for clinical research activity is accurate, timely, and conducted in accordance with policy.

Management's Response: Management's efforts to manage these compliance risks include enhanced escalation processes, sanctions for non-compliance, centralized reporting, and improvements in training, communication programs, and monitoring and oversight mechanisms. Management has addressed risks related to clinical research billing by meeting regularly to evaluate emerging issues, explore strategies for improving compliance, and address workflow and system challenges. As part of this effort, one campus is

initiating a pilot program to evaluate a change in processes for capturing research-related clinical charges that would allow for proactive review, which is intended to prevent instances of incorrect billing and thereby reduce the effort required for post-billing review and corrections.

Internal Audit's Involvement: Internal Audit meets frequently with Research leadership to identify and discuss current research compliance risks and evaluate current processes, including through work groups, and also reviews related professional literature. Several campuses have recently conducted advisory and audit projects focused on research compliance and clinical research billing, with additional projects planned for the coming fiscal year.

Decentralization and Inconsistency in Internal Control

Issue: Due to the decentralized nature of campus departments and activities, inconsistency exists in processes and control activities, leading to increased risk and, in many cases, inefficiency. Often these decentralized activities are manual in nature and lack formalized programs and assigned roles and responsibilities to ensure internal controls are designed and functioning as intended. For example, at one campus, controls over payment processing continue to be insufficient at its health clinics due to inconsistent processes and controls. Additionally, departments often lack adequate written procedures to facilitate consistency in controls and may lack adequate separation of duties, contributing to potential risk of fraud. Sustaining controls to preserve and optimize operational and financial objectives can be particularly challenging during significant changes, such as transitions to shared services centers and large scale system implementations.

Management's Response: To mitigate these risks, campuses are streamlining and centralizing key administrative functions, implementing automated systems and controls where possible, or performing campus-level monitoring of key business activities, including annual risk assessments. Where activities remain decentralized, formalized policies and procedures and background checks help ensure processes and controls are effective. At one campus, management is exploring leveraging existing resources in multiple departments to resolve separation of duties, cash handling, allocation, and payment collection issues.

Internal Audit's Involvement: Internal Audit has planned projects at the departmental level that focus on basic internal controls. Additionally, Internal Audit often assists in an advisory capacity with organizational and operational changes that serve, in part, to streamline the control environment. To facilitate increased awareness of the importance of internal controls, Internal Audit frequently provides training on internal control basics and reducing fraud risk, for example, through presentations to staff in various financial, sponsored award, and other groups.

Financial Management

Issue: Fiscal responsibility and management remains an area of high risk for our campuses. Internal audits of departments and the research enterprise continue to identify issues related to inadequate management of financial deficits. Additionally, we have observed issues related to management's ability to forecast and monitor the financial implications of business decisions. For example, business units sometimes make strategic and operational decisions without a full understanding of their financial position. Another concern noted relates to the effectiveness of closeout procedures for sponsored research awards to provide adequate management of funds after sponsor requirements are met.

Management's Response: At several locations, we have observed campus leadership implement coordinated strategies to eliminate deficits. These strategies include new campus-wide financial reporting and monitoring processes, base budget reductions, budget model revisions, changes to central programs, enhanced training efforts, and improved enforcement of policy requirements.

Internal Audit's Involvement: Internal Audit has several planned local projects focused on budget and deficit management in FY 2018-19. These reviews will evaluate campus roles and responsibilities for monitoring financial activity versus approved budgets, with an emphasis on accountability and process controls as well as the efficiency and effectiveness of operations, to determine whether any process gaps need to be addressed. Many location Internal Audit departments have partnered with management to develop and implement continuous monitoring of key financial metrics through the use of data analytics. Internal Audit departments are also reviewing the costing model and fund allocations for sponsored research awards to determine whether cost recovery is adequate to avoid financial deficits.

Insufficient Authorization and Documentation of Expenditures

Issue: Recent internal audits have identified issues related to insufficient approval and documentation supporting certain categories of expenditures. Generally, responsibility for timely approval of these expenditures is the responsibility of the departments. Inadequate documentation of expenditures increases the risk of inappropriate or fraudulent transactions. - For example, at one location Internal Audit found that invoices from time and material subcontracts lacked adequate supporting detail, which poses a risk of unallowable and excessive costs.

Management's Response: Management has primarily addressed this risk through additional training and communication programs and increased oversight and controls over expenditure processing.

Internal Audit's Involvement: Internal Audit includes a review of controls over expenditures as part of the departmental audits we perform on a regular basis. Detailed project risk assessments help to identify known problem areas that may warrant targeted and/or increased level of review. Many of our internal audit departments also provide training on basic controls to management, which addresses appropriate authorization and documentation of expenditures.

Safety

Issue: The safety of students, faculty, staff, and visitors on campus continues to be a high priority for the organization. Given the decentralized nature of our organization, it is often primarily incumbent on each department and laboratory to ensure that safety-related policies and regulations are followed, which can result in inconsistent levels of control and compliance. Our audit activity has noted some issues related to laboratory safety, including campus culture, timely completion of laboratory safety self-assessments, completion of required training, and timely corrective action on laboratory safety issues. As it relates to campus safety, one of our campus internal audit departments observed that there were insufficient resources in campus risk and safety functions, and another noted that organizational change appeared to impact the capability and direction of site security operations.

Management's Response: Management has addressed the risks related to laboratory safety by implementing laboratory safety training programs and mechanisms to continuously track key safety-related metrics. In cases of resource concerns, management has restructured governance over campus risk and safety functions to ensure adequate resources are dedicated to address this risk.

Internal Audit's Involvement: Several location Internal Audit departments have either recently completed or have planned for FY 2018-19 projects to address campus and laboratory safety, including incident response reporting, security services, and hazardous materials handling. These reviews will help ensure that controls and monitoring of safety issues are effective and any deficiencies are addressed in a timely manner.

C. Internal Audit's Participation in University Initiatives

Internal Audit continues to partner with management to support key initiatives and priorities, both at the local and systemwide level. This section highlights some of the key areas in which Internal Audit has provided support.

Cybersecurity Audit Team - The Office of Ethics, Compliance, and Audit Services (ECAS) established a systemwide Cybersecurity Audit Team (CAT) as part of the systemwide internal audit function. As a result, requests for internal audit's consultation and participation in University cybersecurity initiatives has increased. For FY 2017-18, the CAT provided assistance in reviewing the new Systemwide Incident Response Standard, which is intended as a template for locations to use in support of their local incident response plans. In addition, the CAT provided assistance in reviewing several systemwide purchasing contracts for the appropriate inclusion of cybersecurity language and control parameters. Most recently, the CAT provided a summary of the results of cybersecurity audit activities performed to date to the UC Board of Regents.

The CAT is actively involved in campus and laboratory risk assessments and continues to work with campuses to deliver specialized cybersecurity audit and advisory services and serves to provide independent assurance and advice on systemwide cybersecurity initiatives and programs, including:

- Assisting campuses with subject matter expertise to support their local audit plans,
- Performing systemwide audit and advisory service projects focused on areas of cyber-risk across some or all campus locations, and
- Performing audit and advisory service projects in support of systemwide cybersecurity initiatives

External Audit Support – Internal Audit continued to serve as the external coordinator for several high profile audits conducted by governmental agencies such as the California State Auditor, the National Science Foundation, and the National Institutes of Health. The external audit coordinator serves as the central point of contact for the auditors of the external agency, facilitates information requests, informs management of potential audit issues as they arise, and coordinates management responses to audit reports. Internal Audit has also assisted management in performing documentation reviews and control testing in advance of external audit fieldwork to help management anticipate and respond to potential issues that may arise during the external audit. External audit coordination has provided a benefit to the University by driving audit efficiency and ensuring appropriate information is provided to agencies in a responsive and timely manner.

Internal Audit developed and distributed guidelines on communication protocols that employees should follow during fieldwork for an audit conducted by the California State Auditor. In FY 2017-18, the systemwide audit office trained all UC internal audit staff on these guidelines and developed procedures to ensure all new UC auditors receive this training.

During FY 2017-18, Internal Audit advised management in their efforts to implement outstanding recommendations from past California State audits on Clery Act Compliance, Sexual Harassment Cases, Contracted Employees and Contracting Practices, UCOP Administrative Expenditures and Budget, Enrollment and Executive Compensation.

Coordinating Risk Efforts – One of our major ongoing collaborative efforts has been to use risk intelligence concepts to identify, analyze, and escalate internal and external risks and opportunities in collaboration with risk partners. At both the systemwide and local levels, Internal Audit has been working with Compliance and Risk Services to identify synergies and coordinate risk assessment and mitigation efforts. In FY 2017-18 the third annual Risk Partners Joint Planning Meeting was held, including representatives from Internal Audit, Compliance, and Risk Services. The primary objectives of this annual meeting are to ensure that roles and responsibilities for risk assessment and monitoring are well defined and effectively communicated to our

stakeholders, and to collect and share information as we prioritize our respective activities in a collaborative manner. Our overall goal is to integrate risk and compliance governance into management planning and decision making, as well as communicate timely and accurate risk information to the appropriate individuals, including the Regents. These meetings also increase understanding of the risk intelligence programs at various locations, address topics of common concern, and promote and model collaboration amongst risk partners. During our recent meeting, several campuses shared best practices related to their local risk intelligence efforts, and group discussion topics addressed the areas of privacy, healthcare affiliations and partnerships, sexual prevention and response, and IT security.

Additionally, at the systemwide level, Internal Audit, Compliance, and Risk Services have collaborated to develop a common risk assessment framework and taxonomy, which is currently being vetted by our campus counterparts. This framework will help achieve consistency in the risk assessment approach across the system, enabling a roll-up capability to better understand risks from a systemwide perspective. With the adoption of risk intelligence across the system, which among other objectives calls for a common view of risk and a common risk lexicon, UC will benefit from the common framework by further aligning its systemwide approach to managing risk.

Audit Internship Programs – A number of our campus locations have implemented student internship programs. These programs provide our interns, who are mostly UC undergraduate and graduate students, with practical skills development, related training, and work experience in a professional setting. Additionally, some of our audit departments that have experienced staffing and funding issues have used this program to augment their existing audit resources.

Systemwide Committees – Internal Audit personnel actively participate on various committees that support management initiatives throughout the University system, including committees that address ethics and risk, IT governance, privacy, data analytics, HIPAA compliance, and new systems development projects. Several noteworthy systemwide committees in which internal audit personnel are actively involved include the following:

- Lawrence Berkeley National Laboratory's Contract Assurance Council
- Laboratory Management Council
- Ethics and Audit Committee of the Los Alamos National Security and Lawrence Livermore National Security LLCs
- UCPATH Steering Committee
- Clery Act Compliance Committee
- Independent Review Committee for Outside Professional Activities
- State Audit Implementation Task Force
- Cyber-Risk Governance Committee
- University of California Home Loan Program Corporation Audit Committee

D. Improvements in Internal Audit Methodology, Processes and Expertise

Like many other University departments, Internal Audit operates in an environment of continuous change. To meet the challenges of new regulatory requirements, emerging risks and changes to the University environment, Internal Audit must continue to adapt and improve our methodologies, use of technology, communication strategies and subject matter expertise. This section outlines some of the significant improvements we have made in these areas.

Data Analytics and Continuous Monitoring – Our UC audit departments have increasingly integrated the use of Computer Assisted Auditing Tools (CAATs) to perform data analytics and data mining into Internal Audit projects, investigations, the annual risk assessment, and ad hoc special projects. These tools allow auditors to perform analysis on entire data populations in order to identify anomalies and discrepancies for further investigation, rather than relying on traditional transactional sampling methods. At some locations, Internal Audit has worked with management to proactively address control issues and transactional outliers by establishing continuous monitoring practices and processes and embed them into their daily work. By doing so, management is able to improve their ability to proactively identify and address emerging risks.

To facilitate further development in this area, our auditors with specialization in data analytics meet periodically to share information on applications and techniques. Discussions have focused on accessing data in systems common to multiple campuses, such as UCPath. Our campus internal audit departments have produced a number of monitoring and risk identification tools, such as financial compliance dashboards and risk and control reports that are shared among campuses.

External Quality Assessment Review – Internal Audit performs regular quality assessment reviews (QARs) of the UC location internal audit departments to ensure that their practices are in compliance with the University of California Systemwide Audit Manual, the Institute of Internal Auditors' (IIA) International Standards for the Professional Practice of Internal Auditing (IIA Standards), and the IIA's Code of Ethics. Accordingly, we have developed an Internal Audit quality assurance and improvement program (QAIP) that includes both ongoing and periodic reviews designed to provide reasonable assurance to the various stakeholders that the internal audit activity is effective and delivers value to our stakeholders.

The IIA Standards require that internal audit organizations conduct an external assessment at least once every five years by an independent assessor or assessment team from outside the organization that is qualified in the practice of internal auditing as well as the quality assessment process. In FY 2017-18, Internal Audit engaged an independent review team consisting of internal audit professionals with extensive higher education and healthcare experience to perform an independent validation of its QAR self-assessment of the UC internal Audit program.

The primary objective of the validation was to verify the assertions made in the UC QAR report concerning Audit Services' conformity with the IIA Standards and Code of Ethics. The independent validation team concluded that UC Internal Audit Services "Generally Conforms" to the *Standards* and Code of Ethics, which is the top rating and means that an internal audit activity has a charter, policies, and processes that are judged to be in conformance with the *Standards*. The review identified a number of strengths as well as opportunities for enhancing the IA function, and accordingly, Internal Audit has initiated strategic initiatives aimed to further strengthen operations.

Continuing Education - Providing opportunities for training and professional development is a key priority to ensure that our systemwide staff has appropriate and sufficient knowledge to address and tackle the ever increasing and evolving risks facing our institution and the higher education industry. In these sessions, we frequently leverage industry subject matter experts, including systemwide staff and members of our professional organizations. The following are highlights of systemwide training offered during FY 2017-18:

- Health Sciences Auditor Training: UC sponsored a day-long training class focusing on the Epic electronic health record application, which was attended by 30 UC internal auditors from six campuses. The training class, provided by the consulting firm Navigant, was designed to increase UC auditors' understanding of the Epic application and provide audit tools and techniques in key revenue cycle areas. Auditors learned about application security access roles, system logic, and reporting, which greatly improved the group's understanding of the system's infrastructure. Information was provided to enable users to set up their own reports, interpret the data, and identify common concerns. Auditors also gained insight into revenue cycle workflow and key reports used to evaluate topics such as effectiveness in capturing charges and billing for health services provided. This knowledge can be directly applied to internal audits of any hospital or ambulatory unit within the enterprise.

Attendees were also provided with an auditor "toolkit" reference manual as a takeaway that will serve as a resource for future audits. The training class greatly expanded the attendees' understanding of the Epic system and provided valuable insight into audit tools and techniques that can be applied to a variety of health audit topics.

- Webinar Program – Our ongoing training program also includes a monthly webinar program in which campuses present information on a number of audit and related topics and best practices. Each month a different UC location audit department presents a session that either addresses emerging risk areas or relates to topics on our UC audit plan. In FY 2017-18, our webinar topics have included cloud computing, business continuity planning, data and risk assessment, student financial support services, electronic medical records, UCPath, and conflict of interest. This program has been well received by internal audit staff and is a valuable component of our internal training program.
- Systemwide Cybersecurity Training: ECAS hosted a 6-day in-depth cybersecurity training course for information security professionals across the system provided by the SANS Institute, an industry leader provider of cybersecurity training. The course, Security 505: Securing Windows and PowerShell Automation, was held at UCLA and attended by 92 UC staff. Topics included hardening Windows operating systems, and automating processes to monitor and enforce those settings effectively and efficiently across each domain. In addition, PowerShell scripting was also taught for use in operational duties as defenders of University assets.

Staff and Leadership Development – We continued to implement several initiatives to communicate and foster positive morale among our audit staff and help develop them into future leaders. These initiatives have addressed areas related to succession planning, increased involvement from mid-level audit management with systemwide projects, and mentorship. Our cross-campus UC Internal Audit mentorship program continues to provide mentors and mentees with a valuable learning and professional growth experience. This program provides our professional staff with an opportunity to be paired with a mentor at another campus who has significant experience and leadership responsibility within our UC audit community. Through a series of monthly meetings or calls, the mentor and mentee identify areas that contribute to professional and personal enrichment and satisfaction for both parties.

Internal Audit Leadership Staffing – During FY 2017-18, two campuses, UCSB and UCSC, appointed new Internal Audit Directors. Both directors have extensive audit, financial and higher education experience, and bring valuable leadership and direction to our internal audit program. The new UCSB Internal Audit Director, Ashley Andersen, is a Certified Public Accountant (CPA) and has over 14 years of experience in accounting and financial management. Prior to joining UCSB, Ashley held a management position at UC Berkeley and most recently served as the Controller and Director of Financial Services at California State University, Maritime Academy. The new UCSC Internal Audit Director, James Dougherty, has been with UCSC Internal audit for over 18 years and has over 25 years of experience in education in both the academic and administration areas. James also holds several professional certifications including a Certified Internal Auditor (CIA) and Certified Fraud Examiner (CFE).

Internal Audit Co-Sourcing Arrangement –In FY 2017-18, an RFP was conducted to identify a new exclusive provider for systemwide internal audit services, including co-sourced internal audit services for UCOP. The RFP committee included membership from systemwide internal audit and campus internal audit departments. As a result of this RFP process, Deloitte was selected as the new systemwide internal audit services provider. Since the inception of our co-sourcing efforts, we have realized a significant reduction in costs, experienced greater flexibility in staffing and scheduling internal audit projects, and gained the ability to deploy auditors with specialized skills where needed.

E. Statistics

This section provides summarized statistical information on the systemwide Internal Audit program for FY 2017-18. Resource and effort data is provided by type of audit service and across functional areas of the University (audits, advisory services, and investigations), demonstrating the breadth of coverage. Management corrective actions are analyzed by functional area, severity, and status.

1. Resources and Effort

Table 1 – UC Internal Audit Program Staff Qualifications provides an overview of the experience, education, and professional certifications of our staff.

UC Internal Audit Program Staff Qualifications

	FY18 Actual	Prior Year Actual
Average Years Total Audit Experience	16 years	16 years
Average Years UC Audit Experience	11 years	10 years
Average Years Audit Director Experience	24 years	27 years
Percent of Audit Staff with Bachelor’s Degree	100%	99%
Percent of Audit Staff with Advanced Degrees	36%	33%
Percent of Staff holding Professional Certifications	72%	77%

Table 1

Chart 1 – Audit Program Staff Years of Experience

The chart below illustrates the distribution of experience across our audit staff. A significant gap in experience can be observed between our most senior and least experienced auditors, which is due in large part to a low turnover rate over the last 10-15 years. As depicted below, 32% of our audit staff have 20 or more years of experience. Within the next few years, we are anticipating a significant loss of Directors and senior staff to retirement. Therefore, we have prioritized succession planning efforts such as training, development, and delegation of responsibility.



n=99

Chart 1

Audit Productivity - Each year, approximately 85% of our staff time is allocated to direct hours. Direct hours include all effort spent completing our annual plan of audit, advisory, and investigation projects, as well as audit support activities such as IT support, systemwide audit support, audit planning and quality assurance.

Table 2 below provides a summary of our direct hours, including a breakdown by service line, number of completed projects in each area, and average hours per completed project. In FY18, we completed a total of 699 audit, advisory, and investigation projects. Once again, we greatly exceeded our established benchmark for audit plan completion (70%) in FY 2017-18, with a systemwide completion rate of 95%.

Projects	FY18 Plan	FY18 Actual	Prior Year
Audits			
Audit Program Hours	102,142	91,181	96,326
Percent of total effort	65%	60%	64%
Number of Completed Projects	229	336	303
Advisory Services			
Advisory Service Hours	38,424	46,797	43,170
Percent of total effort	23%	31%	28%
Number of Completed Projects	102	289	311
Investigations			
Investigation Hours	16,372	13,385	11,744
Percent of total effort	10%	9%	8%
Number of Completed Investigations	N/A	74	67
Total			
Audit, Advisory & Investigation Hours	156,938	151,363	151,240
Audit Support Hours	13,989	13,036	13,982
Total Direct Hours	170,927	164,399	165,222
Summary Information			
Total Number of Completed Projects	N/A	699	681
Number of projects per auditor	N/A	6.6	6.5
Percent of Audit Plan Completed	100%	95%	99%
Productivity Percent	88.2%	86.4%	86.5%

N/A Not applicable to plan data

Table 2

Chart 2 – Effort Distribution by Service Type

The chart below depicts the 7-year trend of hours devoted to audits, advisory services and investigations. The program hours dedicated to advisory services have been on an upward trend, while the hours devoted to investigations has been moderately stable.

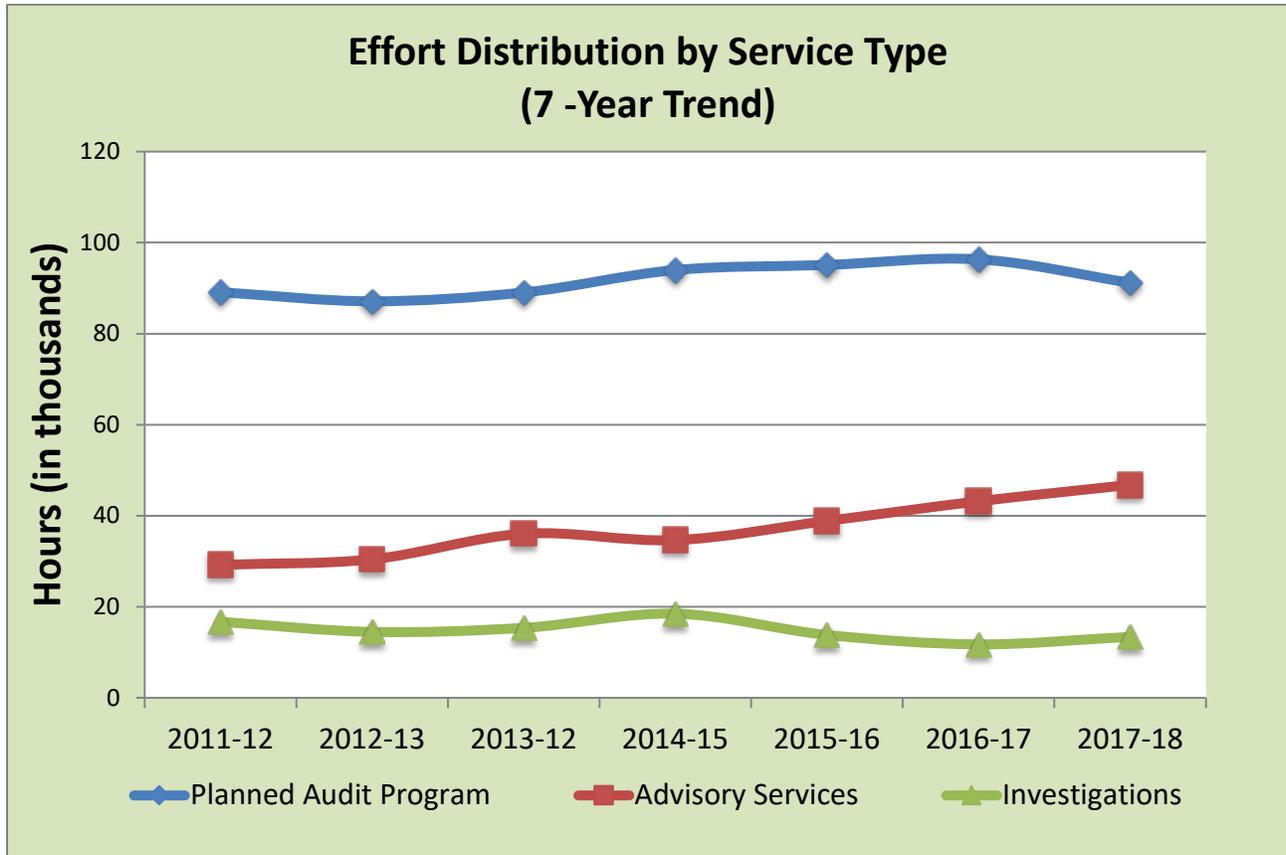


Chart 2

Chart 3 - Distribution of FY 2017-18 Hours

The following chart depicts the breadth of projects covered by Internal Audit hours over the 15 major functional areas of the University. As in prior years, our effort remained concentrated in the areas of financial management, health sciences operations, information management and technology and academic units and programs. These categories comprised over half of our project efforts.

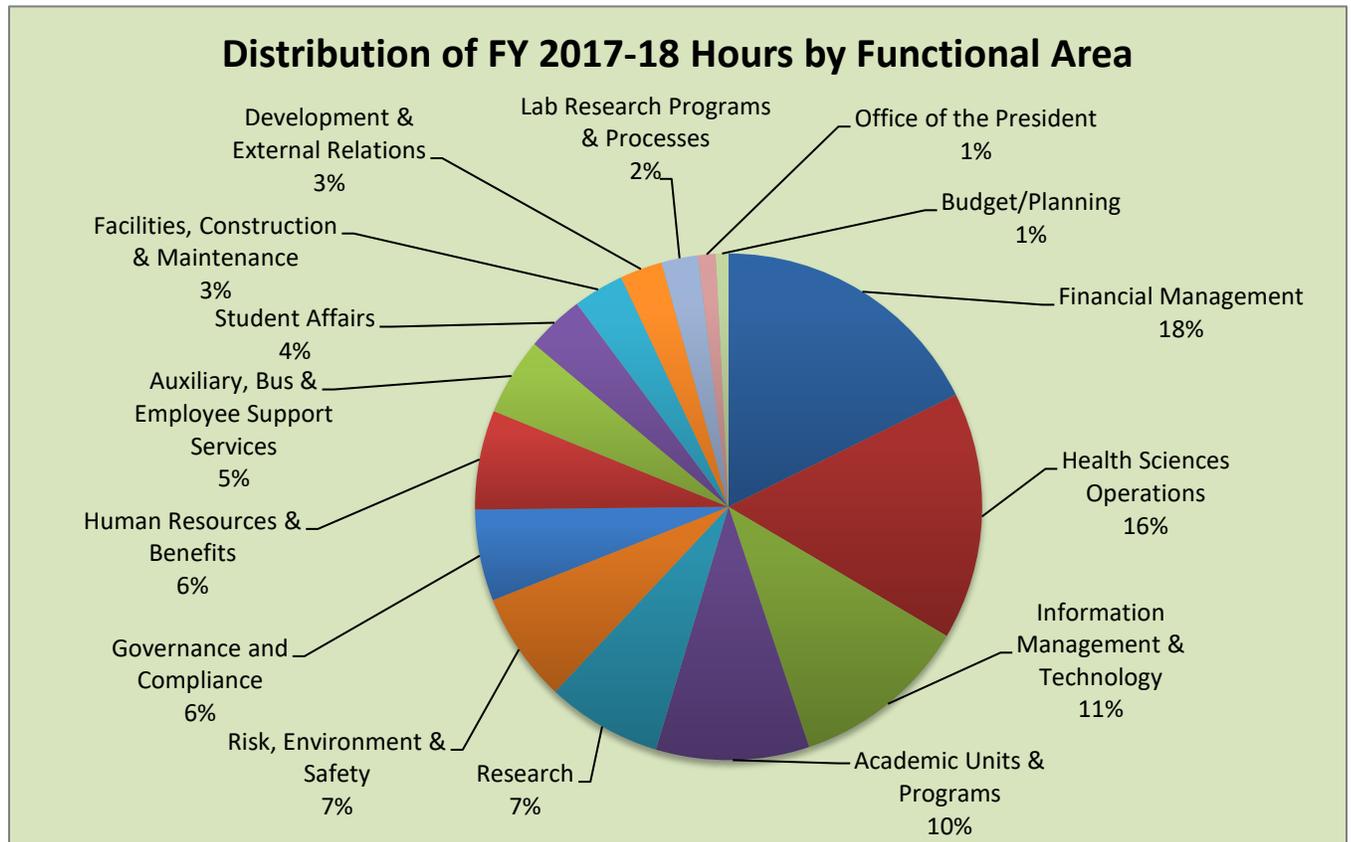


Chart 3

2. Management Corrective Actions

MCA Distribution

As previously indicated, our FY 2017-18 audit program work produced 398 audit, advisory service, and investigation reports resulting in 1,079 management corrective actions (MCAs).

As shown below in **Table 3 – Comparison of MCAs and Hours**, the distribution of MCAs correlates moderately closely with the effort expended across the functional areas, with the exception of a few areas. In the areas of Financial Management, Information Management & Technology, and Research, our reviews have yielded significantly more MCAs per hour of effort than in other areas. This may be partially due to the fact that internal control issues in these areas can often be more readily observed and do not necessarily require detailed analysis. The areas of Academic Units and Programs, Human Resources and Benefits, and Risk, Environment and Safety have yielded significantly fewer MCAs per hour of effort.

Comparison of MCAs and Hours for FY18

Functional Area	MCA %*	Hours %
Financial Management	30%	18%
Information Management & Technology	13%	11%
Research	12%	7%
Health Sciences Operations	11%	16%
Facilities, Construction & Maintenance	5%	3%
Student Affairs	5%	4%
Academic Units & Programs	4%	10%
Auxiliary, Bus & Employee Support Services	4%	5%
Human Resources & Benefits	4%	6%
Lab Research Programs & Processes	3%	2%
Governance and Compliance	3%	6%
Risk, Environment & Safety	3%	7%
Development & External Relations	1%	3%
Office of the President	1%	1%
Budget/Planning	1%	1%

*n=1,079 MCAs

Table 3

Status of Completion of MCAs

MCAs are initially classified as open and are only changed to a closed status after auditors have validated that the agreed-upon corrective actions have been taken or the associated risks have been adequately mitigated and sustainable improvements have been achieved. The number of open MCAs increased from 568 to 600 during FY 2017-18.

Chart 4 – MCAs Added and Closed is presented below and shows the number of MCAs added and closed each year for the past seven years. In FY 2017-18, our internal audit work throughout the system included the addition and closure of 1,079 and 1,047 MCAs respectively. This accounted for a net increase of 32 in the ending inventory of open MCAs.

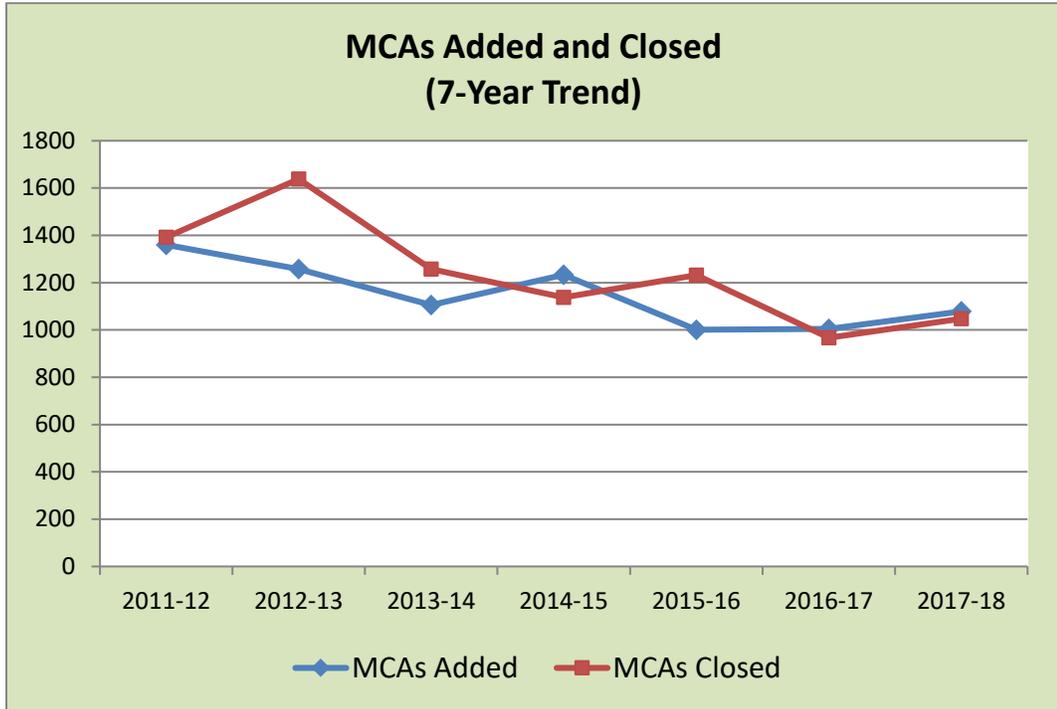


Chart 4

Chart 5 – Ending Inventory of Open MCAs shows the progress that has been made over the past seven years in reducing the inventory of open MCAs. Since FY 2011-12, there has been a net decrease in open MCAs of 597 due to extensive efforts from Internal Audit and management to resolve outstanding audit issues.

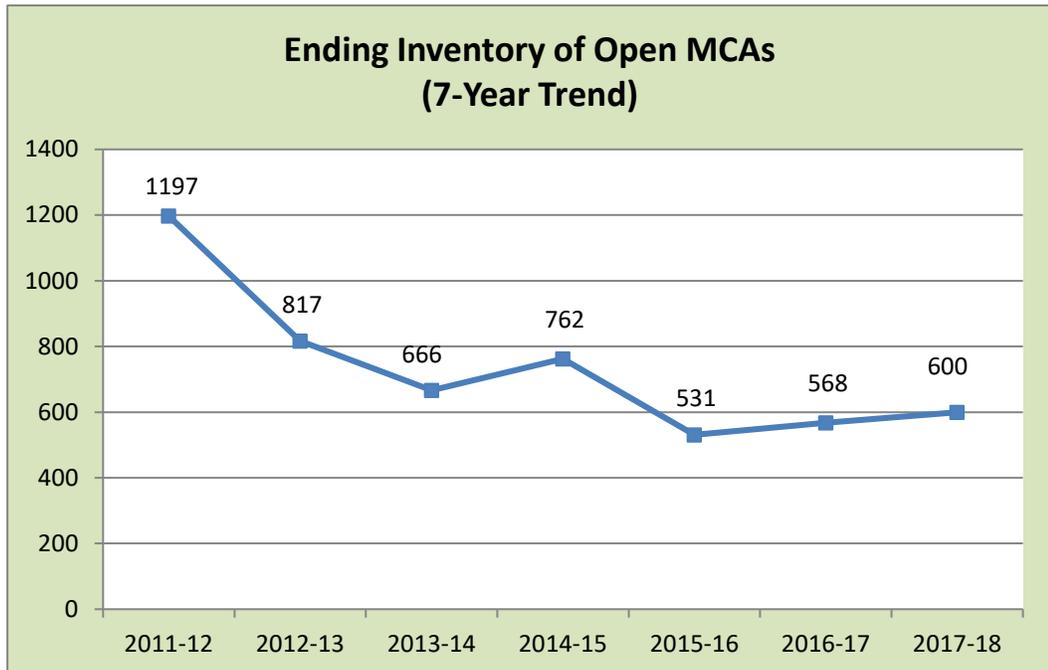


Chart 5

The systemwide Office of Audit Services routinely monitors MCAs across the system that have been open longer than 300 days from the date of the audit report. Many of the MCAs that are currently open the longest are actions that are complex, costly, strategic in nature, or time-consuming to implement. In nearly all of these cases, a short-term fix has already been implemented to address the noted control weakness. These longer-term risk mitigation efforts typically result in a “best practice” solution that is more efficient, reliable and has a lower risk of failure than the short-term fix.

Chart 6 – Number of Open MCAs Over 300 Days Old

This chart shows the progress that has been made over the last several years in closing these older management corrective actions, which is due in large part to a formalized escalation process and enhanced oversight from the Regents Committee on Compliance and Audit. Although these efforts have been largely successful, we recently observed a temporary increase in the number of MCAs over 300 days old, indicating a need for increased diligence and oversight to ensure that the outstanding management corrective actions receive appropriate attention and reach timely resolution.

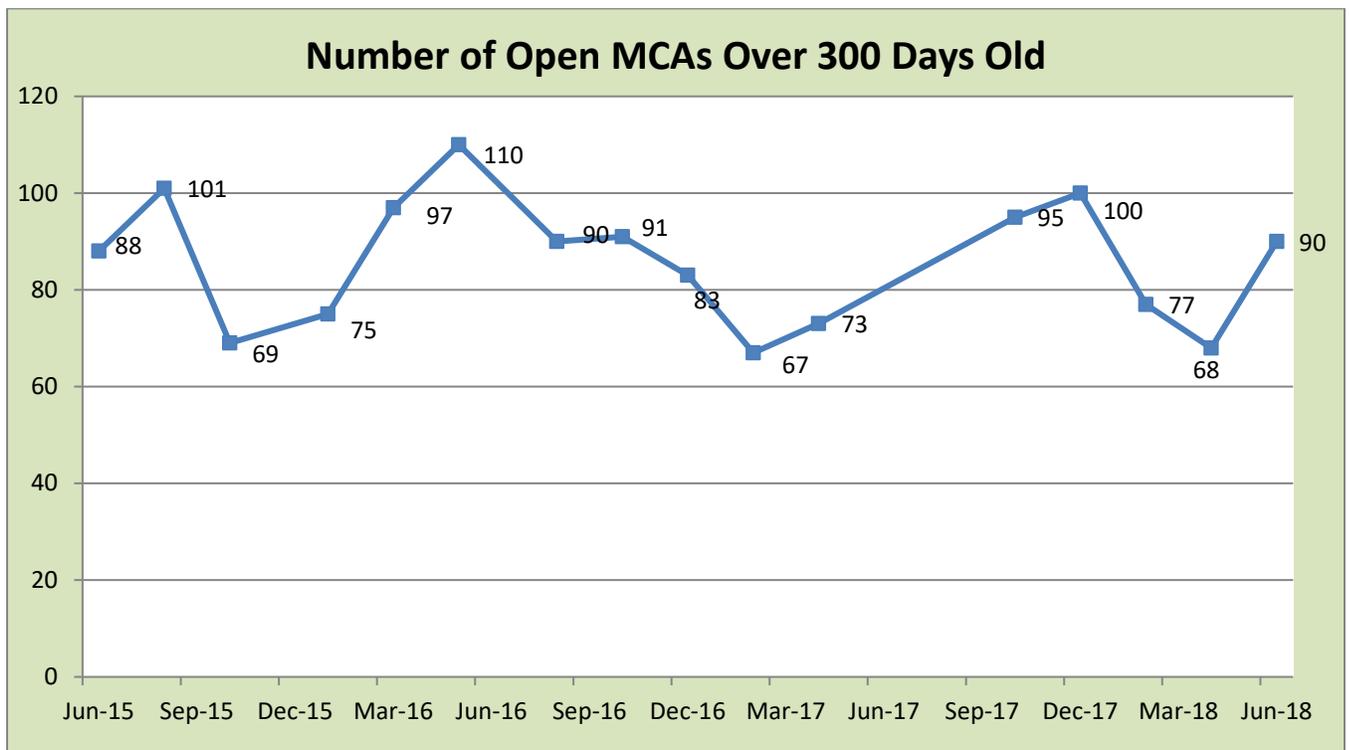
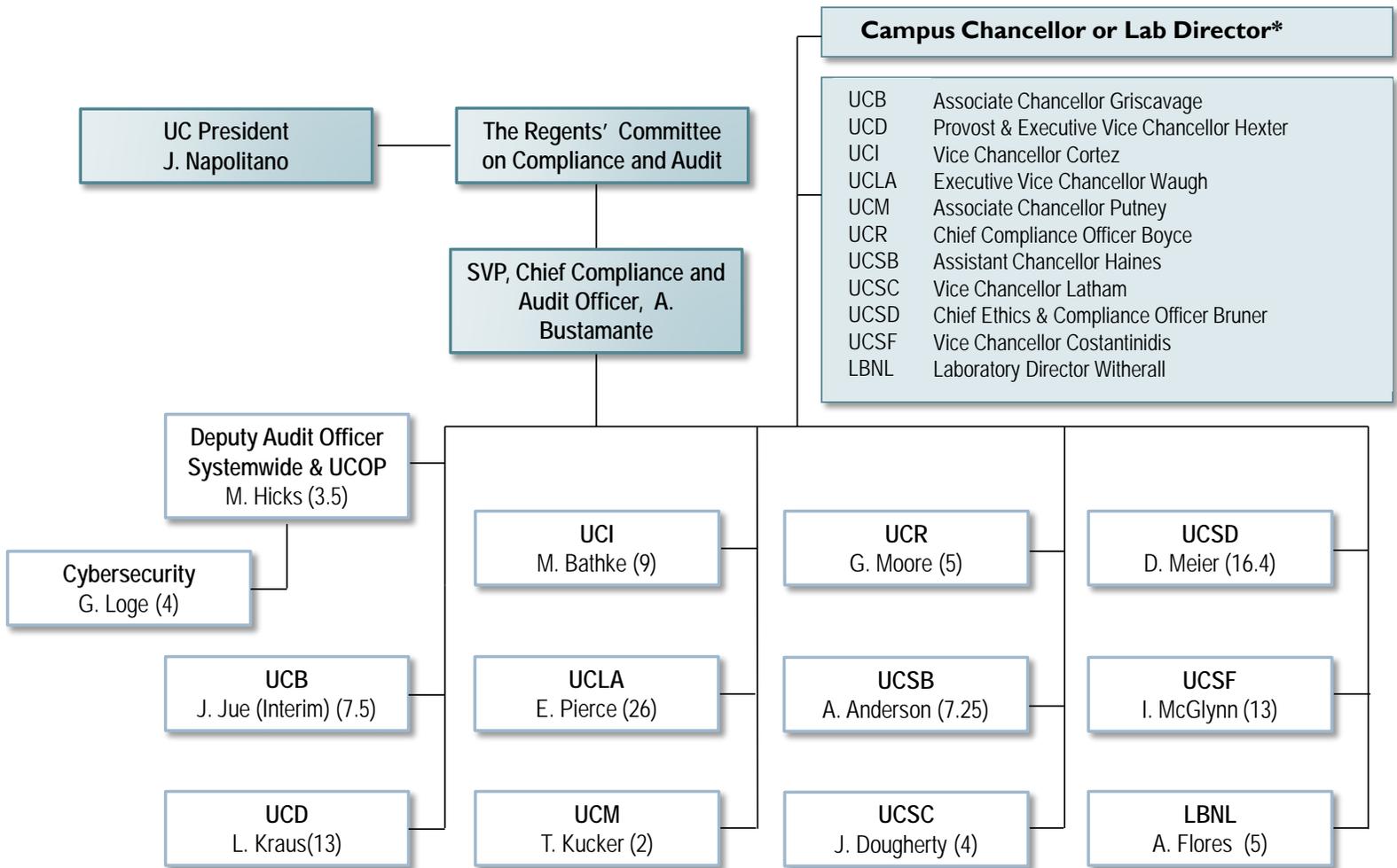


Chart 6

UC Internal Audit Organization Chart



Total Professional Staff, including the Director, is in parentheses. Total Authorized Professional Positions = 115.65 as of year end FY 2017-18

*** All Internal Audit Directors have a direct reporting line to the Chancellor/Laboratory Director. The Chancellor/Laboratory Director may delegate administrative oversight responsibilities to a Vice Chancellor or Associate Laboratory Director. These delegations are indicated in the box below "Campus Chancellor or Lab Director."**

APPENDIX 2 – FINAL AUDIT REPORTS ISSUED IN FISCAL YEAR 2017-18*

Office of the President

ANR Cooperative Extension - Stanislaus County
Cybersecurity - Vulnerability Assessments and Penetration Testing (7 reports)
Electric Service Provider (ESP) Power Supply Validation
Fair Wage/Fair Work 2017 (Systemwide)
Fair Wage/Fair Work 2018 (UCOP)
Medical Centers Clinical Enterprise Management Recognition Plan (CEMRP)
Office of the Treasurer Annual Incentive Plan (AIP)
Outside Professional Activities 2017
Rehired Retirees
UCB Chancellor Review
UCD Chancellor Review

UC Berkeley

Accessibility Governance
Annual Report on Executive Compensation
Capitalized Fixed Assets - Equipment
Electronic Data Warehouse and Business Intelligence Tools
Executive Compensation – Chancellor Expenses G45
Executive Travel (systemwide)
Facilities Services
Fair Wage/Fair Work
Human Resources - Information Management
Information and Technology Disaster Recovery
Intercollegiate Athletics – Expenses
Internal Communications
International Agreements
Leave Management and Liability
Records Management
Sponsored Projects - Award Closeout
Supply Chain Management
Sponsored Projects – Indirect costs

UC Davis

Annual Report on Executive Compensation
Cancer Center
Cashiering Supplemental Audit
Chancellor's Expenses (BFB G-45)
Chancellor's Expenses FY17
Cloud Computing and IT Vendor Management
Department of Radiology
Institutional Data Governance and Security
Environmental Health and Safety

**Only includes Audit Reports issued as Final as of 6/30/18*

UC Davis

Fair Wage/Fair Work (FY17)
Protection of Minors
Public Health Sciences Account Structure
Research Cores
Software Licensing
Senior Management Group Travel Review
Student Accounting
Temporary Employment Services
Vendor On-Site Monitoring

UC Irvine

Admissions/Enrollment
Alumni Association
Annual Report on Executive Compensation
Bio-Chemistry
Chancellor's Expenses
Contracts & Grants Accounting
Disability Services
Export Controls
Fair Wage/Fair Work
Gastroenterology
Graduate Division
Restricted Data
School of Humanities
Senior Management Group & Deans' Reimbursements
Stipends -Staff
Stipends -Academic

UC Los Angeles

ASUCLA - Facilities Maintenance
ASUCLA - General Books Division
ASUCLA - Lu Valle Division
Athletics - Information Technology
Campus - Executive Compensation-Annual Review of Executive Compensation (AREC)
Campus - Executive Compensation-Chancellor Expenses (G-45)
Campus - Executive Compensation-Chancellor's Associate
Campus - Phase II Program Review - Assessment of Export Control Compliance
Continuing Education of the Bar
Campus - UCLA Lab School
Campus - UCLA Recreation (UREC)
Capital Programs - Capitalization Procedures and Practices
Capital Programs - SharePoint System Review
Central Ticket Office – Cashiering

UC Los Angeles

Housing and Hospitality - Cashiering Operations
Central Ticket Office - Ticket Inventory
Clinical Laboratory
Conference Services
Department of Physiology
Department of Psychology
Department of Electrical Engineering
Employee Incentive Awards
Events & Transportation - Events Office
Events & Transportation - Vanpool Program
Facilities - Auto Parts Inventory
Facilities Management - Purchasing Process Review (Finance & Information Systems)
Fair Wage/Fair Work - Campus
Fair Wage/Fair Work - Hospital
Fielding School of Public Health
Finance Division - Loss Prevention
Gastroenterology 100 Medical Plaza Clinic
Hemapheresis Contract (SMUCLA)
Housing & Hospitality Services - Housing Maintenance
Housing & Hospitality Services - University Guest House
Institute of the Environment and Sustainability
International Services
Interventional Radiology
IT Access Controls - Off Boarding
IT Services – Recharges
Laundry Service Contract
Main Cashier's Office - Santa Monica
Neurology Westwood Clinic
On-Campus Housing - Major Maintenance Reserve
Pay Stations
Records Center Administration
Recycling and Waste Management
Residential Life
Santa Monica Pain Management Clinic
SMUCLA Emergency Physicians Contract
SOM Gift Processing
Student Technology Center
Thousand Oaks Clinic
UCLA Restaurants - North Campus Division
UCLA Store - Retail Division - Textbooks Division
Waste Management Contract

UC Merced

Annual Report on Executive Compensation
Business and Administrative Services VC Transition Review
Cash Management Controls
Downtown Center Construction Project
Employee Reimbursement
Fair Wage/Fair Work
Low Value Purchase Orders / Purchase Cards
Parts / Equipment Supply Management
Planning and Budget Vice Chancellor Transition Review

UC Riverside

Annual Analytic Review & Fraud Detection - Laptops
Annual Analytic Review & Fraud Detection (Disbursements)
Campus Mobile Devices
Cash Handling 2017
Cash Handling 2018
College of Natural and Agricultural Sciences Dean's Office
EH&S Laboratory Safety
Fair Wage/Fair Work
Overtime & Compensatory Time
Annual Review on Executive Compensation (AREC)
Senior Management Group Travel
Transportation and Parking Services

UC Santa Barbara

Annual Report on Executive Compensation
Environment and Health Construction Close-out
Deferred Maintenance
Executive Compensation: Chancellor's Expenses and Executive T&E
Faculty Recruitments – Hiring Practices
General Controls Cloud Computing
IT: Information Security - Web Applications
Marine Science Institute
Police Department
Transcript Tracking System
Fair Wage/ Fair Work

UC Santa Cruz

Annual Report on Executive Compensation
Chancellor's Expenses - G-45
Divisional Carryforward/Deficit Management
Fair Wage/Fair Work
Independent Contractors
Information Management of Sensitive Data - User Awareness and Use
Vivarium Operations and Governance

UC San Diego

Cancer Center Clinical Trials Office
Cashiering Compliance - Birch Aquarium
Cashiering Compliance - Muir
Clinical Engineering/SCADA (Supervisory Control and Data Acquisition)
Computer Science and Engineering - Department Audit
Concierge Medicine Patient Refunds
Facilities Management - Renovations and Alterations
Financial Aid Office
Free Clinic
HealthNet Blue & Gold
Human Subjects Research
Infusion Services (Hillcrest, La Jolla, Encinitas)

UC San Diego

- Medical Directorships
- Moore's Cancer Center
- Procurement Suspension and Debarment
- Psychiatry Clinical Services
- San Diego Supercomputer Center
- Stem Cell Clinical Trial Accounting
- Student Business Services
- Fair Wage/Fair Work (FY17)
- UCSD Link - Access by Community Providers
- Warren College
- Women & Infant Services

UC San Francisco

- Access to Electronic Medical Records / UCSF Systems
- Annual Review of Executive Compensation (AREC)
- Charge Capture & Billing - Clinic
- Clery Act Review - Follow-up
- Clinical Integration / Affiliations
- Disability Leave Management
- Fair Wage / Fair Work 2017
- Fair Wage / Fair Work 2018
- G-45 and Chancellor's Associates Expenses
- International Activities
- International Visa Processing
- IT Sourcing Model - IT Security
- Late Charges - Hospital Billing and Physician Billing
- Recruitment Process
- Research Partnerships
- School of Nursing - Student Records Security Administration Review
- Student Pay and Funding
- Third Party Access Follow Up
- Bay Children's Physician- Charge Capture
- Uniform Guidance
- Badge Access and Security
- Benioff Children's Hospital Oakland - IT Access & Change Management Follow-up
- Executive Travel and Entertainment
- International Research
- Radiation Oncology Revenue Cycle

Lawrence Berkeley National Laboratory

- FY18 Home Office Costs
- FY17 Cost Allowability
- Conflict of Interest – AskUs Post Implementation
- Time and Materials Subcontracts
- Fraud Risk Management
- Procurement Card
- Employee Concerns – Whistleblower Protection
- FY18 OMB Circular A-123 – IT Controls
- Onsite Security – Response to Active Shooter
- Director's Administrative Fund

