State of Colorado
Office of the State Auditor

Performance Audit of the Department of Personnel & Administration's Annual Compensation Study

May 2017

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May 18, 2017

Members of the Legislative Audit Committee:

This report contains the results of a performance audit of the Annual Compensation Study conducted by the Department of Personnel & Administration. The audit was conducted pursuant to Section 24-50-104(4)(b)(I), C.R.S., which requires the State Auditor to contract with a private firm "to conduct a performance audit of the procedures and application of data, including any survey conducted by the state personnel director." The State Auditor contracted with Sjoberg Evashenk Consulting, Inc., to conduct this audit. The report presents our findings, conclusions, and recommendations, and the responses of the Department of Personnel & Administration.

Respectfully submitted,

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CONCERN

The Department of Personnel & Administration (Department) was unable to demonstrate the accuracy and reliability of the 2017 and 2018 Annual Compensation Reports (Annual Reports). The Department could not produce supporting evidence for the labor market data used in either analysis, including the original survey data or underlying analyses used to derive results, and the Department and its contractor employed different methods to calculate their results.

KEY FINDINGS

- For the 2017 Annual Report, the Department paid its contractor the full amount of the $300,000 contract without receiving all the deliverables required by the contract, including supporting documentation to demonstrate the reliability of its analysis and work products intended to assist the Department in future studies.
- The 2017 Annual Report included compensation study results that may not have been accurate and reliable. The contractor could not demonstrate that it consistently used a technically sound methodology for collecting and analyzing market data and did not include private sector employers in comparing benefits, as required by statute.
- For the 2018 Annual Report, the Department's conclusion that State salaries fell 5.7 percent below the market is not supported. The Department did not conduct a study to determine market compensation. Rather, it relied on market data previously developed by its contractor for one-third of the classifications analyzed and, for the remaining two-thirds of the classifications studied, it incorporated no market data at all. Instead, it assumed no variance between average State salaries and the labor market.
- Compensation studies require current classification descriptions to ensure State positions are matched to like positions in the labor market. Nearly 20 percent of State classifications were last updated in the 1990s, and nearly 60 percent more were last updated in the 2000s. The Department does not have a plan requiring the periodic evaluation of all classifications to ensure they remain current.

BACKGROUND

- Statute defines the State's compensation philosophy as providing prevailing total compensation to ensure the recruitment, motivation, and retention of a qualified and competent work force [Section 24-50-104(1), C.R.S.].
- Statute requires the Department to analyze a fair sample of public and private sector jobs to determine any necessary adjustments to salaries, benefits, and merit pay (compensation study), and to submit an Annual Report to the Governor and Joint Budget Committee in August for budget deliberations [Section 24-50-104(4), C.R.S.].
- The Fiscal Year 2017 study, which the Department outsourced, concluded that State salaries fell below the market by 3 percent, and total compensation fell below the labor market by 0.2 percent.
- The Fiscal Year 2018 study, which was conducted in-house, concluded that State salaries fell below the market by 5.7 percent, and total compensation fell below the labor market by 2.4 percent.

KEY RECOMMENDATIONS

- Ensure contracts for outsourced compensation studies clearly define deliverables and tie compensation to deliverables.
- Implement contract monitoring procedures to ensure delivery of all work products prior to issuing payment.
- When outsourcing the compensation study, seek firms that have sufficient capacity to perform analyses using the most current survey data available.
- When conducting the study in-house, ensure staff has the technical resources necessary to conduct a technically and professionally sound compensation study.
- Review and analyze up-to-date published survey data for selected benchmark positions during the years when a comprehensive study is not conducted.
- Develop a plan to ensure the periodic evaluation of all classifications within the State's classification system.

Overview
Chapter 1

Colorado Revised Statutes (C.R.S.) establish the State's total compensation philosophy, which is to "provide prevailing total compensation to officers and employees in the State personnel system to ensure the recruitment, motivation, and retention of a qualified and competent work force" [Section 24-50-104(1)(a)(I), C.R.S.]. According to statute, "total compensation" includes, but is not limited to, salary, group benefit plans, retirement benefits, incentives, premium pay practices, and leave. Total compensation also includes merit pay; the General Assembly established the State's merit pay system in 2013 [House Bill 12-1321] with the purpose of providing salary increases to well-performing employees, particularly those whose base salaries are below market.

The Department of Personnel & Administration (Department) is required by statute [Section 24-50-104(1)(a)(II), C.R.S.] to annually review the results of appropriate compensation surveys to assess prevailing total compensation practices, levels, and costs. The annual compensation study assesses compensation in the labor market and provides a standard with which the Department can determine whether the State's salaries, employer contributions to benefit plans, and merit pay are comparable with other public and private employers and whether any adjustments are warranted [Section 24-50-104(4)(a), C.R.S.] to ensure the State continues to provide "prevailing total compensation" to its employees.

Statute [Sections 24-50-104(4)(b) and (c), C.R.S.] requires the Department to prepare an Annual Compensation Report (Annual Report) to communicate its study findings and recommendations to the Governor and the Joint Budget Committee of the General Assembly in August each year. The Annual Report is also required to include estimated costs for State employee compensation so that the General Assembly can determine what compensation adjustments, if any, it will include in the budget for the subsequent fiscal year. Thus, the Annual Report that is presented in August 2017 will contain recommendations and costs that will affect the Fiscal Year 2019 budget. Statute requires the conclusions and recommendations contained in the Annual Report to consider the results of annual surveys of comparable employers' compensation practices (compensation studies), fiscal constraints, the ability to recruit and retain State employees, and appropriate adjustments with respect to State employee compensation.

In this audit report, we refer to the Annual Compensation Reports by the year they impact the budget. Specifically, the Annual Compensation Report that was published in August 2015 affected the Fiscal Year 2017 budget and is referred to as the 2017 Annual Report; the Annual Report published in August 2016 affected the Fiscal Year 2018 budget and is referred to as the 2018 Annual Report.

Annual Compensation Studies

Establishing technically and professionally sound survey methods requires the deliberative consideration of several factors. In addition to a variety of methodological decisions that will determine which data are gathered and how the data are analyzed, compensation professionals must determine the frequency, scope, and type of surveys to perform, as well as whether to gather compensation data directly from employers or to purchase survey data from professional compensation firms. In this section, we discuss several of these methodological considerations.

Comprehensive versus Maintenance Study

Historically, it has been the Department's approach to conduct a comprehensive compensation study of all or most job classifications within the State personnel system every year utilizing in-house personnel. As part of its Fiscal Year 2015 budget request, the Department sought and received funding to outsource the performance of a comprehensive total compensation study for the 2017 Annual Report. In doing so, it was the Department's intent to change its historical approach by hiring a contractor to perform a comprehensive study every other year, while it would perform a smaller-scale, in-house study of certain benchmark classifications during the intervening year—i.e., "maintenance year" studies. In Fiscal Year 2015, the Department hired a contractor to (1) develop and implement a technically sound methodology for collecting and analyzing market data for pay, benefits, and merit increases, and (2) provide a methodology and sound framework for Department staff to maintain the compensation plan in subsequent years. The Department's contractor performed the study for the 2017 Annual Report, while the Department performed the study for the 2018 Annual Report.

Comprehensive and maintenance studies differ in scope, resources required to perform, and purpose. A "comprehensive" study includes an evaluation of the total compensation provided to a defined set of classifications comprising most of the organization's positions, and comparing the State's total compensation for those positions to that which is provided by other employers within the State's labor market. For an employer the size of the State, it would be common industry practice for a comprehensive compensation study to include 70 to 80 percent of all classifications within the State. This would allow the State to determine how the State compares to other employers in its labor market, and to identify all potential adjustments to the total compensation plan that would be required to ensure the plan provides competitive compensation for all positions throughout the State.

A maintenance year study differs from a comprehensive study in that it includes significantly fewer positions, possibly as few as 20 percent of the employer's classifications. The selected classifications, known as "benchmark classifications," represent a cross-section of jobs and all departments within the State, as well as the range of lowest to highest paying classifications. Benchmark classifications also represent positions that are easily identifiable in the labor market and for which compensation for similar classifications can be found in most published compensation surveys. Maintenance studies are less resource intensive and thus, more cost-effective than comprehensive studies and provide information on whether the labor market experienced a significant shift in any of the key sectors, professions, trades, or industries within which the State hires employees. If the maintenance study reveals a significant change, the employer may elect to expand the study to include additional positions within the sector or industry, implement targeted adjustments to compensate for the affected positions, or monitor the market more closely before determining a specific course of action. The overall results from a benchmark study will guide the State in determining how much, if any, total compensation must change to continue to ensure that it remains competitive in the upcoming fiscal year.

Published versus Custom Surveys

Determining how well the State's compensation plan compares to the labor market requires the State to measure compensation provided by other employers through annual compensation studies. Professional compensation firms publish annual surveys that employers can purchase and utilize when comparing their compensation plans to those of other employers. Employers may also conduct custom surveys of employers within their labor market. Custom surveys often allow employers to obtain more current compensation data from employers that best reflect their defined labor market, but they require more time and resources than utilizing published surveys.

In performing its study for the 2017 Annual Report, the Department's contractor obtained and analyzed 19 separate surveys published by eight different professional firms, as follows:

- Ten surveys that were published by large compensation firms such as the Economic Research Institute (ERI), Mercer, Towers Watson (now Willis Towers Watson), and Compdata Surveys, each of which gathered compensation data from employers throughout the nation. These surveys are designed to allow users to break out data by geographical area (e.g., by city, county, state, region, and/or metropolitan area).

- Nine regional surveys, four of which were published by the Mountain States Employers Council (MSEC), which provides data from private and public employers in Colorado, Wyoming, Nevada, and Utah. The other five were proprietary surveys of the Department's contractor and included employers within the Pacific Northwest region.

In addition to utilizing published surveys, the contractor also conducted a custom survey to capture data relating to the State's labor market that was not sufficiently available in the published surveys, such as more extensive benefits data as well as salary data for certain positions specific to state government. The contractor conducted the custom survey specifically to elicit this information from a sample of employers within the State's labor market—local, private and public employers within and outside the Denver Metropolitan Area.

Audit Scope and Methodology

The Colorado Office of the State Auditor (State Auditor) contracted with Sjoberg Evashenk Consulting, Inc., to conduct this performance audit pursuant to statute [Section 24-50-104(4)(b)(I), C.R.S.]. Founded in 2000 by the former State Auditor and Chief Deputy State Auditor of California, Sjoberg Evashenk Consulting and its project team have more than 30 years of experience conducting performance audits in accordance with generally accepted government auditing standards. The project team is experienced in evaluating classification and compensation systems and performing market studies, and includes a subject matter expert with more than 20 years of experience conducting classification and compensation studies in both the public and private sectors.

Statute requires the State Auditor to contract with a private firm "to conduct a performance audit of the procedures and application of data, including any survey conducted by the state personnel director" [Section 24-50-104(4)(b)(I), C.R.S.]. The objective of this audit was to determine whether the Department's survey approach, conclusions, and recommendations were reasonable and consistent with sound professional practice and statutory criteria. Audit work was performed from November 2016 through April 2017. We appreciate the assistance provided by Department management during the course of this audit.

To accomplish the audit objective, we conducted the following audit work:

- Reviewed statute [Section 24-50-104, C.R.S.], Department policies, Personnel Rules, the 2017 and 2018 Annual Reports, contract and invoice documentation related to the Department's contractor, Excel spreadsheets with the contractor's classification-specific results, the Department's analyses of these results, models developed by the contractor to demonstrate the analyses performed for the Fiscal Year 2017 compensation study, and other documentation related to the compensation studies.

- Reviewed best practices in performing compensation studies, including those promoted by human resources professional associations such as WorldatWork.

- Interviewed Department management and representatives of the Department's contractor regarding the methods employed in conducting the Fiscal Year 2017 and Fiscal Year 2018 annual compensation studies.

- Reviewed prior State Auditor findings and recommendations related to the Department's compensation studies and evaluated the Annual Reports to determine the extent to which the Department implemented prior recommendations.

- Selected a non-statistical sample of 30 classifications and requested from the contractor supporting documentation including portions of the published surveys used to identify comparable salaries for each position, and the analyses performed (including aging and normalization) to assess the contractor's conclusions regarding salaries provided in the labor market.

  While the results of the sample testing cannot be projected to the entire population, the results provide a sufficient basis to observe the methods employed in the contractor's analyses, and to assess the adequacy of the methods as they pertain to the objectives of this audit. We discuss details of the audit samples in the audit findings and recommendations.

We conducted this performance audit in accordance with generally accepted government auditing standards, except for certain areas where the audit team was not afforded access to documentation needed to conduct the audit. Those standards require that Sjoberg Evashenk Consulting plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on the audit objectives.

Scope Limitation

With respect to specific areas of the audit scope, the Department did not provide access to documentation necessary to perform certain analyses or to verify information presented to the audit team through interviews, thereby imposing scope limitations on this audit engagement. Statute requires the Department to provide compensation studies used in support of the Annual Report to the State Auditor for review [Section 24-50-104(1)(a)(II), C.R.S.], and requires the audit to conclude on the procedures and application of data, including data derived from published and custom compensation surveys [Section 24-50-104(4)(b)(I), C.R.S.]. The Department did not possess the surveys used by its contractor in preparing the 2017 Annual Report, and did not have access to documentation related to the contractor's methods and analyses in deriving its conclusions. We requested this information directly from the contractor, and the Department issued the contractor a notice to cure, but the contractor remained unwilling or unable to provide the necessary documentation.

Without the source survey data and documentation of the contractor's analyses, we could not conclude on the accuracy and reliability of the results reported in the 2017 Annual Report and we could not conclude on whether the application of data was consistent with technically and professionally sound methods. This includes evaluating whether the contractor correctly matched State classifications to like positions in other employers, utilized the correct data points from the surveys that best reflect the State's labor market, and correctly "aged" and "normalized" the survey data to ensure comparability with the State. Because the Department relied on the results of the contractor's analyses in performing the Fiscal Year 2018 compensation studies, we similarly could not conclude on the accuracy or reliability of the results presented in the Department's Annual Report or on the application of data in its analysis. We were able to evaluate and analyze certain procedures followed by the Department and the contractor, including those described in this report.

Except for the scope limitation described above, Sjoberg Evashenk Consulting believes that the evidence obtained provides a reasonable basis for the findings and conclusions based on the audit objectives.

Analysis of Compensation Studies
Chapter 2

The 2017 and 2018 Annual Reports reported that the State's compensation was in general alignment with the labor market, when accounting for base salaries, benefits, and employer contributions to retirement. Specifically, as illustrated in Table 1, the Department reported that its salaries fell below the market by 3 percent and 5.7 percent in Fiscal Year 2017 and 2018, respectively, while the value of the State's total compensation plan fell below the market by 0.2 percent and 2.4 percent during the same two years.

Table 1: Annual Compensation Study Results

Component of Total Compensation	2017 Annual Report			2018 Annual Report		
	State Average	Market 50th Percentile	Variance to Market	State Average	Market 50th Percentile	Variance to Market
Average Base Salary	$ 50,000	$ 51,500	-3.0%	$ 53,308	$ 56,513	-5.7%
Medical	$ 9,647	$ 8,981	7.4%	$ 10,528	$ 9,801	7.4%
Dental	$ 742	$ 735	1.0%	$ 770	$ 763	1.0%
Retirement	$ 7,700	$ 6,900	11.6%	$ 7,700	$ 6,900	11.6%
Disability	$ -	$ 80	0.0%	$ -	$ 80	0.0%
Life	$ 120	$ 120	0.0%	$ 120	$ 120	0.0%
Total:	**$ 68,209**	**$ 68,316**	**-0.2%**	**$ 72,426**	**$ 74,177**	**-2.4%**

Source: Fiscal Year 2017 and 2018 Annual Reports.

As Table 1 illustrates, the Department reported a growing variance between state and market compensation between Fiscal Year 2017 and 2018, an increase attributable to the "Average Base Salary" provided by the State and in the labor market.

In this section, we present four findings that address the Department's approach to conducting the compensation studies used to derive these conclusions, including findings related to the Department's management and oversight of its contractor, ensuring it uses the most up-to-date survey data available, and employing professionally and technically sound methods when comparing State compensation to the labor market. While the Department was unable to provide us with certain information necessary to determine whether the results presented in the two Annual Reports were based on accurate and reliable data or sound methods, our evaluation of the procedures employed identified problems that affect the reliability of the results presented in the Annual Reports.

The information provided to us by the Department and its contractor during the course of this audit was insufficient to allow us to conclude with certainty about the accuracy and reliability of the results reported in the 2017 and 2018 Annual

Reports. However, based on available information, we were able to identify inconsistencies and, in some cases, flawed methods. The first two findings in this report discuss the work done by the Department's contractor for the 2017 Annual Report, and illustrate areas where the contractor's methods were not consistent with the State's compensation philosophy or prior audit recommendations. The second two findings address responsibilities of the Department in conducting the work for the 2018 Annual Report and in carrying out system maintenance studies, and illustrate areas where the Department's methods were not consistent with best practices or where the data provided did not support the results presented in the Annual Reports.

Contract Monitoring and Oversight

In 2015, the Department sought and received $300,000 in funding to contract with an external service provider to conduct a comprehensive compensation study for the 2017 Annual Report. The Department's stated goal with this approach was to increase the reliability of the compensation study. The Department required its contractor to not only conduct the study for the 2017 Annual Report, but also to establish a formal methodology for future compensation studies and develop a compensation manual. The Department intended to use the established methodology and manual to guide future compensation studies.

What audit work was performed and what was the purpose?

To evaluate the work done for the 2017 Annual Report we reviewed available documentation; interviewed contractor and Department representatives involved in the study; evaluated whether the Department ensured the implementation of the State Auditor's 2013 audit recommendations when it outsourced the compensation study; and obtained and reviewed documentation related to the Department's contract, invoices and deliverables received from the contractor, and formal correspondence with the contractor. Because the Department did not have complete documentation for the work performed by its contractor, and the contractor could or would not provide all the underlying documentation for the 2017 Annual Report needed to fully evaluate the work, we selected a non-statistical sample of 30 classifications to validate the contractor's results reported to the Department. The Department's contractor did provide limited supporting documentation, including portions of the published surveys used to identify comparable salaries for selected positions and the analyses it performed (including aging and normalization). Based on this sample, we attempted to replicate the contractor's methodology to assess the accuracy of its work.

The purpose of the audit work was to determine whether the Department and its contractor employed sound methods in conducting the annual compensation study, whether relevant and reliable evidence supports the conclusions and recommendations presented in the 2017 Annual Report submitted to the Governor and Joint Budget Committee, and whether the contractor complied with relevant provisions of the Department's contract.

How were the results of the audit work measured?

The Department's contract was intended to achieve two distinct results: (1) to complete a total compensation study that would provide sufficient and reliable data for the 2017 Annual Report and (2) to provide resources and a methodological framework for future studies that addressed the findings and recommendations made in prior State Auditor reports and ensured consistency with best practices. The contracted scope of work required the contractor to:

- **Use market data representing both public and private sector organizations**. The State's compensation philosophy requires the Department to consider a fair sample of local, public, and private employers [Section 24-50-104(4)(a), C.R.S.], and standard professional practice requires the consideration of similarly situated employers in determining market-based compensation. Similarly situated could mean employers within a similar sector or industry, employers of a similar size (as measured by budget, employees, etc.), employers within a similar geographic location, and employers of a similar complexity.

- **Use a weighting methodology when assessing the State's competitive position.** Statute is silent with respect to how different aspects of the labor market are to be considered, but standard professional practice suggests an employer should establish an informed, reasoned, and deliberate method that gives key segments of the labor market (e.g., public v. private sector employers, large v. small employers) weight in the compensation analysis. Market data represent different mixes of employers and weighting of the data can prioritize segments of the labor market using factors such as public/private, geographic location (e.g., national v. local employers), employer's size, and industry (e.g., medical, corrections, finance, technology, etc.), among others. The State Auditor's May 2013 audit report recommended that the Department establish a defined and reasoned weighting policy.

- **Use a technically sound methodology for collecting and analyzing market data.** Establishing a technically and professionally sound survey approach requires the deliberative consideration of several methodological components, including:

- **Ensuring survey data are relevant to the labor market.** It is considered standard industry practice to use surveys in which participants are relevant to the labor market within which the employer resides, including the sector, geographic region, size, and other workforce characteristics, and to use only market data that "match" the classifications selected for the study. Utilizing surveys where participating employers vary markedly from the labor market increases the risk of inaccuracies in the market estimation. When possible, compensation professionals will use location-specific data in survey-collection efforts. Generally, region-specific data should be used within the region it represents. When using national surveys, the compensation professional must decide whether to analyze all or a subset of the data, such as only private sector, only public sector, only large employers, only a select region, or some combination thereof.

- **Employing a sound methodology to normalize survey data.** Normalizing survey data refers to applying an appropriate geographic differential to the survey data to reflect the differences between the locations of the employers in the survey and the State's location. This is necessary to ensure survey results are comparable with one another and comparable to the employer's specific labor market.

- **Ensuring sufficient market matches to each classification studied.** It is considered standard industry practice to utilize between three and five surveys for each position to determine market compensation. Using too few surveys may mean the analysis does not encompass a sufficiently diverse set of positions to establish a true snapshot of the market, as no single survey can fully account for the varied and interconnected dynamics in the United States. Using too many surveys, in addition to being unnecessarily resource intensive, may result in an over-reliance on certain survey participants prevalent in the industry that may be represented in multiple surveys—thus increasing the likelihood that the data will be weighted toward particular industries, locations, or employers with specific characteristics such as size.

These methodological decisions will affect the outcome of compensation analyses, and the conclusions derived. The ability to support the methodology employed and the results derived is essential to demonstrate the reliability and accuracy of the conclusions and recommendations contained in the Annual Report.

- **Provide the Department with a database containing all the survey data and analysis that supports the final report and recommendations.** The Department intended to use the database to validate the data gathered, methods employed, and results reported by the contractor. A review of such supporting documentation would give the Department reasonable assurance as to the accuracy and reliability of the contractor's conclusions and recommendations. The database would also enable the Department to provide survey data to the State Auditor as required in statute [Section 24-50-104(1)(a)(II), C.R.S.], and to facilitate an independent review of the procedures and application of data pursuant to statute [Section 24-50-104(4)(b)(I), C.R.S.].

- **Ensure the study accounts for all elements of total compensation.** Comparing an employer's total compensation plan to the compensation provided in its labor market requires employers to identify (a) the types or elements of compensation it provides its employees and (b) the elements that it deems relevant for comparative purposes. Statute [Section 24-50-104(1)(a)(I), C.R.S.] defines total compensation as including, but not being limited to, salary, group benefit plans, retirement benefits, merit pay, incentives, premium pay practices, and leave. Industry best practice is to include all relevant components of an employer's compensation plan in its calculation of total compensation, and to include all relevant components of compensation provided by employers within the defined labor market to ensure a genuine comparison of the compensation an individual can realistically earn within the labor market. Consistent with best practices and the statutory definition of total compensation, the contract required the contractor to "analyze market data and recommend changes to group benefit plan values, performance pay, incentives, premium pay practices, and leave."

- **Provide the Department with resources intended to facilitate future compensation studies.** In addition to the above, the contract also requires the delivery of the following work products.

    - **A compensation manual that Department staff can use to maintain the compensation system in the future.** In requiring a compensation manual, the Department stated the intent to establish a formal and consistent methodology for future comprehensive compensation studies, whether performed in-house or by a contractor, and to provide a framework for maintenance year studies that ensured a consistent and sound approach from year-to-year.

    - **A consistent approach to developing merit increases and merit allocation.** According to the Department, this provision was intended to help the Department fulfill the statutory requirement that it review the effectiveness of the use of quartiles for salary ranges and the existing structure of three performance categories in the merit pay system.

- **Benchmark classifications.** The purpose of identifying benchmark classifications, or categories of similar positions that facilitate human resources management, is to (a) ensure a consistent baseline of classifications to be evaluated every year and to facilitate like comparisons in compensation year-over-year; and (b) ensure that maintenance year studies are as efficient as possible by focusing on relatively few classifications that best represent the State's labor force. Selected classifications, whether conducting a comprehensive or a benchmark survey, should be those commonly found in many organizations within the identified labor market, easily defined and matched to similar positions in published and custom surveys, and be representative of all levels of the organization—from top to bottom and across all organizational units. For instance, accounting positions are easily defined in the industry, can be found throughout the State, and range from staff- to management-levels. The compensation professional must accurately match selected classifications to like positions in other organizations and surveys to ensure a valid comparison.

What problems did the audit work identify?

We identified problems with the contractor's methodology that raise concerns regarding the accuracy and reliability of the results and recommendations presented in the 2017 Annual Report. As discussed previously, we were unable to obtain necessary documentation to fully evaluate the data used or methods employed by the contractor in its work. We attempted to replicate the contractor's results by applying the methodology the contractor described to us and in its report to a non-statistical sample of 30 classifications. We were unable to replicate the results reported by the contractor. This analysis provides further indications that the results presented in the 2017 Annual Report may not be sufficiently reliable.

The compensation study excluded private sector employers in comparing benefits. According to the contractor, it used only public sector information to analyze the competitiveness of benefits for the entire State workforce. The contractor's analysis concluded that benefits exceeded what is available in the market, with the value of medical benefits exceeding the market by 7.4 percent and dental exceeding the market by 1 percent. However, according to the contractor, this conclusion was based only on data it acquired from 36 public sector employers through its custom survey. Some of the published surveys the contractor used for other aspects of its study included benefits information, but the contractor reported that it did not use the published data to analyze benefits. Due to the lack of access to information from the contractor, we could not determine why it decided to rely only on custom survey data for its benefits analysis rather than also using available published surveys.

Generally, benefits (e.g., health, dental, vision, etc.) provided by public and private employers have become very similar, though public sector employers tend to cover more of the costs of these benefits than private employers. For instance, research shows that public employers tend to offer plans with higher average premiums than private sector employers, suggesting the plans offer broader coverage and/or require lower out-of-pockets costs. Public sector employers tend to require employees to contribute less toward premiums for these health plans, and therefore are more likely to offer greater value to their employees. Further, public employers tend to offer health coverage for a larger percentage of their workforce than private employers. Because of this, accounting for benefits offered in the private sector is likely to lower the median value of benefits offered in the broader labor market when compared to the benefits offered by the State, suggesting the State is likely to compare more favorably to its labor market.

The compensation study did not use a weighting philosophy. Each of the 19 published surveys used in the contractor's analysis had a different mix of employers with varying characteristics. Some included a wide range of public, private, local, and large employers, while others included only public employers or included more employers with certain characteristics than those with other characteristics. However, the contractor did not employ a weighting methodology to ensure the results best reflected the State's defined labor market. Instead, it assigned an equal weight to each survey used, not to each segment of the labor market it was trying to measure, thereby giving unintentional weighting to some sectors.

Table 2 illustrates how different mixes between public and private employers within various surveys can affect the relative balance between segments of its labor market, such as public and private sector employers. The same is true for other employer characteristics, such as size, location, industry, and other factors a compensation professional may want to account for.

For example, Table 2 illustrates three positions found in both private and public employers. Market compensation for the Engineer-in-Training is more evenly weighted between public and private sector employers, at nearly 60-to-40 percent. In contrast, because more public sector surveys were used for the System Administrator III classification, it is more heavily weighted toward public sector, 73-to-27 percent; and, because only public sector employers participated in the surveys used for Dietician II, compensation for this classification is entirely based on public sector data. Without a deliberate, reasoned, and documented process for weighting different segments of the labor force, the Department is unable to provide assurances that the results of its compensation studies are consistent with the State's compensation philosophy.

Table 2: Participant Characteristics in Each Survey

Survey	Region	Sector	Public	Private
Engineer-in-Training				
ERI	Denver, CO	Government	100%	0%
MSEC	Mountain States	All	19%	81%
			59.5%	**40.5%**
Systems Administrator III				
ERI	Denver, CO	Government	100%	0%
MSEC	Mountain States	All	19%	81%
Custom Survey	National	Government	100%	0%
			73.0%	**27.0%**
Dietician II				
Custom Survey	National	Government	100%	0%
ERI	Denver, CO	Government	100%	0%
			100.0%	**0.0%**

Source: Auditor-generated based on the Detailed Market Report prepared by the Department's contractor.
Note: "Region" refers to region covered by the survey data; "Sector" refers to the make-up of employers covered by the survey data; and "Public" and "Private" refers to the percent of Employers included in the survey that are public or private sectors, respectively.

Given the specific market segments required to be included in the survey, an approach that would have more deliberately reflected the State's compensation philosophy would be to extract specific subsets of data for each segment of the labor market (public, private, local, and large employers) and assign a weight to each that corresponds to the State's compensation philosophy. This would have been possible in most of the surveys used, and doing so would have enabled the Department to implement the State Auditor's May 2013 recommendation to develop a reasoned weighting philosophy ensuring all components of the defined labor market are addressed in each Annual Report. While the Department plans to outsource this analysis every other year, it remains the responsibility of the Department to ensure the market segments and the weight given are clearly defined and consistent with the State's compensation philosophy.

The compensation study did not consistently use a technically sound methodology for collecting and analyzing market data. We found three areas in the contractor's analysis that were not always consistent with standard professional practice, as outlined below.

- **The compensation study included market data that are not directly relevant to the State's labor market.** The contractor used some survey data specific to the Pacific Northwest region of the United States, and applied the data to the State of Colorado. Tables 3 and 4 illustrate the potential impact of the contractor's inclusion of its survey of Pacific Northwest employers on a sample of classifications, as well as the impact of its inclusion on the State's comparability to the labor market. Table 3 illustrates instances in which the inclusion of the Pacific Northwest survey increased a classification's comparable salary by up to 9 percent (Librarian – Supervisor I). For three of the four classifications, the inclusion of the survey increased the average median compensation reflected in the marketplace by between 2 and 9 percent.

Table 3: Comparison of Survey Results on Select Classifications

Classification			Mkt Base 50th
Accountant I			
With Pacific Northwest Data	Average:	$	55,837.79
Without Pacific Northwest Data	Average:	$	54,481.69
	Percent change		**-2%**
Customer Support Technician - Journey			
With Pacific Northwest Data	Average:	$	49,547.90
Without Pacific Northwest Data	Average:	$	50,963.80
	Percent change		**3%**
Librarian - Supervisor I			
With Pacific Northwest Data	Average:	$	59,833.09
Without Pacific Northwest Data	Average:	$	54,633.02
	Percent change		**-9%**
Rehabilitation Counselor I			
With Pacific Northwest Data	Average:	$	54,020.96
Without Pacific Northwest Data	Average:	$	49,320.16
	Percent change		**-9%**

Source: Auditor-generated based on the Detailed Market Report prepared by the Department's contractor.

When viewed in aggregate for all 451 positions in the contractor's analysis, the inclusion of its survey of Pacific Northwest employers in evaluating the State's labor market resulted in the potential over-estimation of compensation levels in the State's labor market by 1 percent. Table 4 illustrates the average amounts paid by all employers in all 19 surveys the contractor used for the 451 positions included in its analysis. Removing salary data that is specific to the Pacific Northwest results in lower salaries in the State's labor market.

Table 4: Comparison of Aggregated Survey Results

	Mkt Base 25th	Mkt Base 50th	Mkt Base Avg	Mkt Base 75th
With Pacific Northwest Regional Data	$ 59,090	$ 65,899	$ 66,750	$ 73,651
Without Pacific Northwest Regional Data	$ 58,599	$ 65,032	$ 65,958	$ 72,463
Percent change	-1%	-1%	-1%	-2%

Source: Auditor-generated based on the Detailed Market Report prepared by the Department's contractor.

- **The compensation study did not employ methods to ensure survey data best reflected the State's workforce throughout Colorado.** The contractor did not use survey data that was specific to the State of Colorado when such data was available. All of the large published surveys used by the contractor report data collected throughout the nation, and they allow compensation professionals to breakout actual survey results by location, including city, state, and region. However, the contractor did not extract the results for Colorado or regions within Colorado. Instead, the contractor used and normalized the national data reported in the surveys. Using actual local data would have provided results that more precisely reflected Colorado's labor market.

  Further, when normalizing the national data, the contractor stated that it identified a factor specific to Denver; that is, it identified the national salary data for each classification, and then applied a factor (11 percent) to calculate what the salary data for that position would have been in Denver. This presents two problems. First, not all State employees reside in Denver; identifying a factor that also represented areas outside of Denver would have been more consistent with the State's compensation philosophy. Second, the contractor was not able to provide substantiating documentation to support the 11 percent normalization factor. In applying this factor, it asserted that salaries in Denver were 11 percent higher than the national average. Based on our research, evidence suggests this factor should have been between 5 and 6 percent. Using local data that extended beyond Denver would have been more consistent with the focus of the State's compensation philosophy on local employers (both in and outside of the Denver metropolitan area) [Section 24-50-104(4)(a), C.R.S.].

- **The compensation study did not include sufficient market matches for each classification studied.** Our analysis found that the contractor used one or two survey matches for 158 (or 35 percent) of the 451 classifications included in the annual compensation study. Because the contractor did not differentiate benchmark classifications from all other classifications in its study, the contractor could not demonstrate that it implemented the State Auditor's May 2013 recommendation to achieve a target of three independent survey source comparisons for each benchmark classification. Table 5 shows that 35 percent of the 451 classifications studied had too few matches, with 19 percent matched to only one of the 19 surveys used.

Table 5: Number of Classifications with Insufficient Data

Number of Survey Matches	Classifications	Match Share	Group Share
1	85	19%	35%
2	73	16%	
3 or more	293	65%	65%

Source: Auditor-generated based on the Detailed Market Report prepared by the Department's contractor.

Because no single survey can fully account for the labor market as a whole, utilizing too few survey matches for such a large portion of the classifications may not have captured the State's full labor market. In this case, most of the classifications with only one or two survey matches were matched to ERI (from which the contractor typically utilized government-only data) and the contractor's custom survey (which compiled data only from government entities), meaning the results were disproportionally weighted toward the public sector.

The contractor did not provide the Department with a database containing the survey data and analyses used in support of its conclusions and recommendations. The contractor provided an Excel spreadsheet that listed the 451 classifications included in its analysis, and key data points such as minimums and maximums, averages, and percentiles. However, this Excel spreadsheet did not include critical information the Department needed to review key assessments and assumptions that were made by the contractor, such as:

- The complete "raw" data included in the compensation study.
- Calculations of the aging and normalization factors applied to these data to determine market compensation.
- Data relating to the composition of the survey participants for each published survey, including the percent of participants that represent public employers, private employers, local employers, or large employers—thus impeding an assessment of how well the results truly represent the State's defined labor market.
- Data relating to the parameters the contractor used when analyzing published survey data, and extracting data specific to public and private sector employers, as well as local and large employers. This includes the extent to which the contractor used data that specifically represented key

segments of the labor market required in statute—public, private, and local employers.

The contractor did not include all elements of total compensation. The contractor's compensation study included information on each of the compensation components required in statute, with the exception of incentives. The contractor included "base salary" as the only cash compensation element in its calculations of State and market compensation. It did not include variable pay, such as incentives, in the analysis, and thus was not consistent with standard industry practice. The State Auditor's May 2013 audit report recommended specifically that the Department "expand its market assessment process to include variable pay in its analysis of total cash compensation."

The annual compensation study is required to determine whether the State's total compensation is competitive in the labor market, in order for the State to recruit and retain qualified employees. Other employers, notably those in the private sector, often provide incentives, such as annual bonuses, to reward employees beyond base pay and benefits. If the annual compensation study does not include incentive pay or other variable pay in its annual analyses, it will not be able to determine the total amount of compensation being paid to employees in similar positions in its labor market. Even if the State does not routinely provide incentives or other variable pay to its employees, knowing which positions in the State's labor market are likely to receive variable pay will enable the State to more accurately evaluate the extent to which it can compete with other employers.

The contractor did not develop or provide required work products intended to provide a framework for future compensation studies. The contractor did not deliver a compensation manual that the Department could implement for future studies or provide an approach for how the Department should develop merit increases and merit allocations. Both were intended to provide general guidance to the Department as it conducted future compensation studies.

In addition to this general guidance, the contractor also did not identify benchmark classifications, which directly affected the Fiscal Year 2018 study and the Department's ability to gauge labor market changes using a significantly smaller scope of classifications during the maintenance year. The contractor studied 451 of the State's more than 750 classifications for its comprehensive study, but did not identify which of the classifications studied, if any, should be the "benchmark" classifications that should be studied each year. Benchmark classifications should be those that, when combined, represent the State's overall workforce. By not identifying benchmark classifications as required, it did not ensure a consistent baseline for ongoing evaluation.

Why did these problems occur?

The Department did not ensure it received required deliverables from the contractor before issuing payment. Department staff approved payment of the contract although, according to the Department, the contractor did not deliver 17 of 27 defined tasks and work products. According to the Department, several factors created problems for the 2017 report. These include:

- While the contract included 27 work products and tasks, compensation was based on hourly rates and the delivery of the compensation study report. Compensation was not tied to any of the other work products, so the Department determined that it must pay the contractor based on the hourly rates in delivering the compensation study despite the fact that it did not receive the other work products.

- A substantial portion of the contractor's staff assigned to the study became unexpectedly less available during the contract period. To meet the Annual Report's August 1 deadline, Department staff decided to have the contractor delay any work that was not directly related to getting the study done (such as providing the database of underlying data and preparing the compensation manual).

- Department management reported that it believed it should issue the final contract payment by the end of Fiscal Year 2015 to correspond with the end of the budget year.

- The Department had been satisfied with the contractor's work on other projects and believed the contractor would ultimately fulfill all of its contractual obligations.

Ultimately, the Department issued full payment to the contractor, but did not receive key deliverables required in the contract or the full value it anticipated when seeking funding to outsource the compensation study.

The Department did not develop a scope of work that clearly reflected its expectations with respect to each deliverable. While the Department listed 27 deliverables and work products in its contract with the contractor, and required the contractor to perform each in accordance with statutory requirements, the contract did not always clearly define the Department's expectations in each area. For instance:

- In requiring the contractor to evaluate the overall effectiveness of the current merit pay structure, the contract stated that the contractor must "provide a consistent approach to developing merit increases and merit allocation." The Department did not cite statute in this provision or specify its expectations that the contractor conduct a review pursuant to statute [Section 24-50-104(1)(c)(I.1), C.R.S.] by evaluating the effectiveness of the current merit pay structure and to recommend appropriate changes.

- In requiring the contractor to "develop a compensation manual that State staff can use to easily maintain the system and processes in the future," the contract provided no specificity with respect to what the Department wanted this manual to include or address, such as best practices related to implementing the State's compensation philosophy and statutory requirements.

- In requiring the contractor to provide the Department "with a data base containing all the survey data and analysis that supports the final report and recommendations," the Department did not specify statutory requirements that the Department must make available compensation surveys (for both salaries and benefits) to the State Auditor, not just the data analyzed by the Department or the contractor. The contract also did not specify the level of detail the Department required, such as the application of aging and normalization factors to the source data to derive at salary data that would then be analyzed and compared to State salaries. The contractor generally provided data and analyses that supported the latter, but not the former, and stated that this level of data fulfilled its contractual requirement.

Recognizing these problems with its prior contract, the Department issued a new Request for Proposals (RFP) in 2016 and issued a new contract to a different contractor. We reviewed this contract and found that the scope of work more clearly defined work products and expectations, and clearly tied compensation to required deliverables. Because activity associated with this contract was outside the scope of this audit, we did not evaluate the Department's management or oversight of contract requirements.

Why do these problems matter?

The results presented in the 2017 Annual Report may not accurately reflect compensation in the State's labor market. The results were weighted toward the public sector without a clear rationale; they may have misstated compensation in the labor market by including survey results that were not relevant to the labor market and by utilizing a geographic normalization factor that was not supported by the data; and they did not include incentives provided by the State in its calculation of the State's total compensation plan.

Further, in seeking the additional funding to use a vendor to complete the compensation study, the Department reported that it expected to be able to implement the State Auditor's May 2013 audit recommendations and have a more reliable study. Specifically, in its budget request the Department reported that using a vendor would allow for the study to use broader compensation and benefit data, use more benchmark jobs for comparison, and employ a deliberate weighting philosophy in assessing the State's position against the market. However, there is no evidence that the contract ultimately achieved these goals, and it is not evident that the additional $300,000 in resources resulted in a superior product. As a result of the problems described in this finding:

- The Department lacks the foundation for future compensation studies that it sought to obtain by entering into the contract. The Department does not have a compensation manual to guide future comprehensive studies to ensure consistent methodologies regardless of who performs the studies, or a guide to perform maintenance studies, including defined benchmark classifications that would form the baseline for future studies. As a result, when the Department began its compensation study for Fiscal Year 2018, it found itself in the same position it was in prior to Fiscal Year 2017: in a struggle to implement prior audit recommendations and ensure a technically and professionally sound survey methodology.

  Further, because the contractor did not evaluate the structure of the merit pay system as required, the Department still does not know whether the structure facilitates, to the extent feasible, the movement of salaries for well-performing employees to the median of the market, or whether there are structural elements that are hindering this goal. As a relatively new system developed in 2013 [House Bill 12-1321], a periodic evaluation of quartile and performance rating structures in determining merit pay increases is necessary to ensure the merit based system is ultimately achieving its statutory intent.

- The contractor did not provide the Department with the required documentation and data supporting the surveys used and analyses employed and, as a result, the Department could not adequately substantiate its contractor's results when preparing and submitting the 2017 Annual Report to the Governor and the Joint Budget Committee. In addition to the Department's inability to validate the results and recommendations reported in the 2017 Annual Report, the Department also used this data in the 2018 Annual Report.

Recommendation No. 1:

The Department of Personnel & Administration should ensure all future contracts for compensation studies contain sufficient provisions to ensure it obtains the documentation necessary to support and validate the analyses, conclusions, and recommendations submitted to the Governor and Joint Budget Committee, and should ensure it exercises sufficient oversight of external contractors to ensure such work products are delivered. To achieve this, the Department should:

a. Ensure that in the future the contracts for outsourced compensation studies clearly define required tasks and work products and explicitly cite relevant statutory requirements related to each.

b. Implement contract monitoring procedures designed to ensure it receives all stated deliverables prior to authorizing payment, and obtains and reviews the contractor's supporting documentation to provide assurance regarding the accuracy and reliability of the Department's recommendations to the Governor and Joint Budget Committee.

c. Implement the State Auditor's May 2013 recommendation to achieve a target of three independent survey source comparisons for each benchmark classification and develop a reasoned weighting philosophy ensuring all components of the defined labor market are addressed in each Annual Report.

Department of Personnel & Administration Response:

a. Agree. Implementation Date: February 2017

This recommendation is implemented. Current contract includes specific work products and relevant statutory citations.

b. Agree. Implementation Date: July 2017

Partially implemented. Current contract includes specific work products tied to payment structure. Contract specifically requires production of all documentation related to the work performed and will be reviewed upon product completion. In addition to defined work products, the current contract requires a work plan with specific tasks and "check-ins" with the State of Colorado to ensure documentation/products are reviewed throughout the project and prior to payment. All products required in the initial contract term will have been reviewed by July 2017.

c. Agree. Implementation Date: July 2017.

Partially implemented. Current contract includes numerous specific market surveys to be obtained by contractor to ensure at least three market surveys are used as comparisons for benchmark classes. Weighting philosophy was discussed during contract negotiations and will be developed/implemented in the current FY 18-19 survey process. The process will be complete and the methodology implemented by July 2017.

Timeliness of Survey Data

Data compiled in published compensation surveys are historical in nature, reflecting compensation as it was at a specific point in time. Typically, a survey will ask employers to report actual compensation data as of a specific date—e.g., January 1, April 1—of a specific calendar year. This way, the surveyor can be assured that all employers are reporting comparable data. The survey results, however, will be issued at a later date—typically in the summer of each year—and analyzed even later. Because of this, survey data are inherently outdated.

However, compensation studies are typically used to estimate likely compensation levels in the market at a future date. Therefore, compensation professionals must apply appropriate "aging" factors to the historical survey data to estimate future competitive compensation levels. To age survey data properly, compensation professionals need information on the pace at which market pay rates are changing.

What audit work was performed and what was the purpose?

We interviewed the Department and the contractor representatives regarding the methods employed in preparing the Annual Reports, including the specific surveys used and data gathered to facilitate the required analyses. We reviewed the methodologies employed by the contractor in obtaining survey data. We also selected a sample of 30 classifications to compare projected compensation amounts using 2014 data and 2015 data aged to July 1, 2016. The purpose of the audit work was to determine whether the contractor and Department used sufficiently up-to-date compensation data when presenting conclusions and recommendations to the Governor and Joint Budget Committee.

How were the results of the audit work measured?

Statute [Section 24-50-104(4)(c), C.R.S.] requires the Department to submit an Annual Report by August 1 of each year to the Governor and the Joint Budget Committee. We evaluated whether the Department met this statutory requirement and, in doing so, whether the Department ensured the data analyzed for the 2017 Annual Report was as current as feasible, and in accordance with the following best practices:

- Using a reputable source for determining the factor to be used in aging survey data. This information is available from survey providers, compensation and human resources professional organizations, and the government.

- Using the most current survey data available and aging it no more than 18 months. If necessary, an employer could age survey data up to 24 months if data that are more current were not readily available, but data that are aged more than 24 months are considerably less reliable.

What problem did the audit work identify and why does this problem matter?

We found that the contractor used WorldatWork's Salary Budget Survey to determine the aging factor. This is consistent with the State Auditor's May 2013 audit recommendations, as well as our own findings regarding standard professional practice and the use of this factor is a widely recognized and reasonably accurate aging factor.

However, we also found that the contractor used surveys that largely contained outdated information and required aging longer than is considered best practice. Most of the non-proprietary published surveys used by the contractor for its compensation study, when it conducted the analyses for the 2017 Annual Report, reflected 2014 market compensation data, requiring aging of two or more years for an effective date of July 1, 2016.

Table 6 illustrates examples from two of the 30 sampled positions and reveals the potential differences between using 2014 data that is aged for nearly 30 months compared to 2015 data that is aged approximately 18 months. The results of using updated compensation data will vary by position. For instance, utilizing updated information in determining market compensation for the Accounting Technician I classification would have revealed that market compensation had increased at a faster rate than the aging factor suggested; at the same time, updated compensation data for the Electronic Engineer I classification revealed that market compensation did not show an increase at all.

Table 6: Illustrated Impact of Utilizing 2014 v. 2015 Data in Estimating July 1, 2016, Salaries

Accounting Technician I			Median	Percent Change
Compdata Benchmark	Accounting Clerk I	2015	$38,618	7%
		2014	$36,231	
Compdata Benchmark	Payroll Clerk I	2015	$43,961	8%
		2014	$40,746	
MSEC Colorado Benchmark	Payroll Clerk I (Entry Level)	2015	$48,455	15%
		2014	$42,014	
Electronic Engineer I			**Median**	**Percent Change**
Compdata Benchmark	Electrical Engineer I	2015	$74,789	0%
		2014	$74,833	
MSEC Colorado Benchmark	Field Service Engineer	2015	$88,271	-9%
		2014	$96,980	

Source: Auditor-generated based on the Department's aged data and 2015 compensation data derived from Mountain States Employers Council (MSEC) and Compdata surveys.

We cannot assess the net impact on the contractor's conclusion, as presented in the Department's 2017 Annual Report, that the State's salaries are within 97 percent of the median compensation provided in the market. The accuracy of this conclusion remains unknown because we were unable to access source data for all 451 classifications included in the contractor's analysis, and because we did not have access to updated versions of all of the published surveys used by the contractor. However, utilizing updated compensation data will result in more accurate classification-by-classification comparisons and will ultimately yield a more accurate overall measure of the State's comparability to the market.

Without sufficiently current market compensation data, the Department may be presenting to the Governor and the Joint Budget Committee outdated conclusions regarding how total compensation provided by the State to its employees compares to other employers within its labor market. As a result of the contractor's approach, the State may be at a disadvantage as it seeks to recruit and retain a talented workforce, or it may set compensation levels that exceed the market.

Why did this problem occur?

In order to submit the Annual Report to the Joint Budget Committee by August 1st of each year, as required by Section 24-50-104(4)(c), C.R.S., the compensation study process has typically begun the preceding spring. This is because, when the Department performed comprehensive studies in-house every year, the Department had only a few staff allocated to the work and required approximately five months to complete the study. However, most survey publishers issue updated compensation surveys between May and August of each year, so beginning the analysis before updated surveys are published requires the project team to use older data and age it longer. Thus, the statutory deadline for the report had driven the use of old data as the starting point for the study.

For the 2017 Annual Report, when the Department sought bids to conduct the study it had an opportunity to mitigate the need to use old survey data by seeking a compensation firm that could have devoted substantially more resources to the study over a shorter period, such as in June and July 2015. Conducting the work later in the year than the Department historically had, and over a shorter timeframe, would facilitate a timely analysis with up-to-date compensation data by allowing the contractor to use 2015, rather than 2014, survey data. Instead, the Department sought bids to conduct the study during the traditional timeframe of March to July.

Further, although the Joint Budget Committee needs the Annual Report early enough in the budget season to consider the results in budgeting for the next fiscal year, delaying the deadline a month or more would enable the State to access much more current data and to reduce distortions that can occur when data are aged more than 18 months. Legislation that has been passed by both the House and Senate and is awaiting the Governor's signature [House Bill 17-1298] would change the Annual Report due date to September 15, providing the Department or its contractor with an additional month and a half to perform its analysis. The Department should ensure that it or its contractor uses this additional time for gathering and analyzing more recent survey data.

Recommendation No. 2:

The Department of Personnel & Administration should use compensation survey data that is as up-to-date as possible for each Annual Report. To achieve this, the Department should:

a. Seek a firm with sufficient capacity to complete its analyses of up-to-date compensation surveys, when issuing Requests for Proposals for outsourced annual compensation surveys, with the expectation that many published surveys are published between the late spring and summer of each year.

b. Use the additional time provided by the passage of House Bill 17-1298, which extends the due date of the Annual Report to September 15, to analyze up-to-date compensation data.

Department of Personnel & Administration Response:

a. Agree. Implementation Date: June 2017.

   Partially implemented. Negotiations for current contract included specific discussions about timeline and capacity for completion. The final report is due by June 30, but we delayed the draft until mid June (from the end of May) to allow the vendor to obtain two more recent surveys to be issued in May and June.

b. Agree. Implementation Date: September 2018.

   DPA will adjust the timeline for the FY 19-20 survey process to incorporate inclusion of surveys published in late spring and summer, e.g. Mountain States Employers Council – Public Employers Survey. The final report will be completed by the newly established September deadline.

The Department's Maintenance Year Study Approach

Historically, the Department conducted a comprehensive compensation study every year, a resource-intensive practice that generally exceeds what standard industry practices require. As part of its Fiscal Year 2015 budget request, it requested and received funding to outsource the performance of a comprehensive total compensation study every other year with the expectation that the Department would perform a limited study of certain benchmark positions during the intervening year—the maintenance year. This approach is consistent with industry practices. In outsourcing the compensation study every other year, the Department did not reduce its in-house staffing resources, but rather planned to use the freed up staffing resources to work on other projects.

What audit work was performed and what was the purpose?

We reviewed the Department's 2018 Annual Report and available supporting documentation generated in preparing the Annual Report, compared data used by the contractor for the 2017 Annual Report to the data used by the Department for the 2018 Annual Report for a sample of 30 benchmark positions, and interviewed Department personnel responsible for the Report.

The purpose of the audit work was to determine whether the Department conducted its maintenance year study in a technically and professionally sound manner, and in accordance with statute.

How were the results of the audit work measured?

Statute requires the Department to perform a compensation study of comparable public, private, and local employers every year to determine market compensation [Section 24-50-104(4)(a), C.R.S.]. Statute also requires the Department to establish technically and professionally sound survey methodologies to assess prevailing total compensation practices, levels, and costs [Section 24-50-104(1)(a)(II), C.R.S.]. For conducting a maintenance study, a sound methodology would include:

- **Collecting and using updated survey data.** Compensation surveys, whether published by an independent firm or conducted by the employer, require that compensation data that are gathered from multiple employers reflect a consistent and reasonably current effective date. As discussed above, survey data that were effective the prior year, are "aged" to a future date, thereby ensuring that compensation gathered through various sources reflects the same effective date and are therefore comparable, and that market compensation estimates are as current as possible. Data aged between 18 and 24 months are considered less reliable than more recent data.

- **Establishing consistent and appropriate methods to measure changes in the market.** Standard professional practice requires compensation professionals to apply aging and normalization factors consistently to all data. It also requires the professional to maintain consistency year-over-year. The consistent application of survey methods and techniques enables compensation professionals to ensure comparability of data and to identify changes in the labor market over time, which is the purpose of conducting compensation studies. An inconsistent approach may produce inaccurate results, such as indicating that there have been changes in the labor market when in fact there were only changes in the methodology.

- **Incorporating all elements of the State's total compensation plan.** Comparing an employer's total compensation plan to the compensation provided in its labor market requires employers to identify (a) the types or elements of compensation it provides its employees and (b) the elements that it deems relevant for comparative purposes. Statute defines total compensation as including, but not being limited to, salary, group benefit plans, retirement benefits, merit pay, incentives, premium pay practices, and leave [Section 24-50-104(1)(a)(I), C.R.S.]. Industry best practice is to include all relevant components of an employer's compensation plan in its calculation of total compensation, and to include all relevant components of compensation provided by employers within the defined labor market to ensure a genuine comparison of the compensation an individual can realistically earn within the labor market.

What problems did the audit work identify and why did these problems occur?

The Department did not collect and use updated survey data to determine compensation in the State's labor market. Rather, our analysis found that the Department's conclusion in the 2018 Annual Report that the State's salaries fell 5.7 percent below the market is not supported. According to the Department, it identified 268 classifications to include in its analysis, but did not conduct a compensation study for the 2018 Annual Report. Instead, for nearly two-thirds of these classifications, the Department assumed no variance between the average State salaries for each classification and the salaries provided in the labor market. For the remaining one-third of the selected classifications, the Department used data provided by its contractor for the 2017 Annual Report and aged the data another year, despite the fact that aging data more than three years is considerably less reliable than up-to-date data.

In addition to the fact that the 2018 Annual Report was not based on reliable market data, we found problems with the Department's approach to the 2018 Annual Report, as well as questions about some of the data it used that, ultimately, raise questions as to the reliability of the conclusions presented in the 2018 Annual Report. The problems we found are described below.

The Department was unable to support the data reported for nearly two-thirds of the classifications included in its analysis. The Department used 268 classifications to calculate the 5.7 percent variance in salaries reported in the 2018 Annual Report. However, the Department was unable to demonstrate the source of the market median salaries for 175 of these classifications (65 percent). The Department's analysis revealed that the market median salaries for more than 93 percent of these 175 classifications matched exactly, or within 1 cent, the average State salaries for each respective classification. It is highly unusual to have such a large percentage of classifications with average salaries that match exactly to the market median, and the lack of source documentation for these classifications raises questions as to the validity of the comparisons.

These 175 classifications were different than the 451 classifications analyzed by the contractor for Fiscal Year 2017 compensation study; rather, these were additional classifications the Department decided to include for Fiscal Year 2018. According to the Department, it believed that its contactor had not included essential benchmark classifications as part of its 451 classifications, and developed what it believed to be a list of 268 benchmark classifications that properly reflected the State's overall workforce (93 benchmark classifications that had been analyzed by the contractor for Fiscal Year 2017 compensation study and an additional 175 benchmark classifications identified by the Department for the Fiscal Year 2018 compensation study). However, the Department did not gather or utilize market data for these 175 classifications. In lieu of acquiring market data, the Department incorporated the additional classifications; we noted that the average State salaries for these classifications equaled the average State salaries for each classification. The Department believed it was capturing a representative set of benchmark classifications. However, with nearly two-thirds of the Department's analysis not based on any market-derived data, the comparison between state and market salaries is no longer valid, and the conclusions presented in the 2018 Annual Report are not supported.

The Department relied on data developed by its contractor to evaluate the remaining one-third of the classifications included in its analysis, but it did not use consistent and appropriate methods. In lieu of obtaining updated survey data, the Department relied on its contractor's Fiscal Year 2017 compensation study for market data for 93, or more than one-third, of the classifications included in its analysis. According to the Department, it aged this data to reflect estimated compensation level effective July 1, 2017. We found the following problems with the Department's application of aging factors in aging its contractor's survey data.

- **The Department could not demonstrate the consistent use of reliable aging factors.** While the Department's contractor utilized the WorldatWork Salary Budget Survey to age compensation survey date, as recommended in the State Auditor's May 2013 audit report, the Department's data show that it did not use the same factor for the Fiscal Year 2018 compensation study. Using the WorldatWork Salary Budget Increase Survey is considered a reliable aging factor because it specifically focuses on increases to base pay, salary range adjustments, and merit budgets.

  Our analysis revealed that the Department appeared to use a 3.525 aging factor for many of its benchmark positions, but that the Department could not provide a basis for this factor. This factor was 0.525 higher than the recommended WorldatWork aging factor of 3 percent, and was not consistent with other known identifiable aging factors. Based on our analysis, the factor used by the Department was 0.525 percent higher than generally accepted aging factors during the relevant time period, and thus inflated salary growth in the market as compared to the State's compensation levels.

- **The Department did not employ a consistent approach in aging data for all positions.** To verify that the Department was consistent in aging the benchmark positions for the 2018 Annual Report, we compared the contractor's Fiscal Year 2017 salary data (which was the basis for the Department's aging process) to the Department's aged salaries for a sample of 30 of the benchmark positions. We found the Department did not employ a consistent approach to all of the positions we reviewed. If applied consistently, the compensation for each position should be aged using the same factor. As such, the aged compensation amount should differ from the original amount by the same percent for each position. Based on a comparison of the Department's aged data, the factor used to age most, but not all, of the data was 3.525 percent.

  For example, the contractor's compensation study identified the Fiscal Year 2017 market median salary for an Accountant I was $55,838 and for an Actuary I was $79,155. When the Department used these salaries as the base amounts to age for the 2018 Annual Report, the resulting salaries should have been 3.525 percent higher for each, or $57,806 for the Accountant I ($51,285 x 1.03525**)** and $81,945 for the Actuary I ($71,656 x 1.03525). Instead, the Accountant I was aged by a factor of 1.129 percent, while the Actuary I was aged by a factor of 8.171 percent. Table 7 shows these results as well as the results for another six classifications, illustrating that the actual aging factor used by the Department appears to have ranged from -1.491 percent to 8.171 percent, although it appears to have applied an aging factor of 3.525 percent to many other positions.

Table 7: Comparison of Aged Data v. Updated Survey Data

Classification		Mkt Base 50th	Classification		Mkt Base 50th
Accountant I	Base Year Salary	$ 55,838.00	Actuary I	Base Year Salary	$ 79,155.00
	Department-Aged Data	$ 56,468.18		Department-Aged Data	$ 85,622.89
	Percent Change	**1.129%**		**Percent Change**	**8.171%**
Accountant III	Base Year Salary	$ 75,674.00	Actuary III	Base Year Salary	$ 100,787.00
	Department-Aged Data	$ 74,545.91		Department-Aged Data	$ 104,340.09
	Percent Change	**-1.491%**		**Percent Change**	**3.525%**
Accounting Technician I	Base Year Salary	$ 40,144.00	Administrator II	Base Year Salary	$ 84,841.00
	Department-Aged Data	$ 41,233.45		Department-Aged Data	$ 87,831.92
	Percent Change	**2.714%**		**Percent Change**	**3.525%**
Accounting Technician III	Base Year Salary	$ 47,515.00	Administrator III	Base Year Salary	$ 89,468.86
	Department-Aged Data	$ 47,598.48		Department-Aged Data	$ 92,622.63
	Percent Change	**0.176%**		**Percent Change**	**3.525%**

Source: Auditor-generated based on the Detailed Market Report prepared by the Department's contractor and the Department's analysis of the Detailed Market Report to calculate updated compensation rates.

The Department used a different method for calculating the State's comparability to the labor market than the contractor. To compare the State's salaries to the defined labor market, the contractor calculated the average salary of incumbent employees for each classification in its analysis, and compared that average to the median of the labor market to derive a percentage that reflects how well the average State salary reflects the median salary in the market. The term "incumbent" refers to an individual who occupies a specific position within a State department, and differs from the terms "position" or "job" in general, which may be filled or vacant, authorized, or unauthorized. Determining the number of incumbents within a classification is useful in that it is an indicator of the extent to which the classification is representative of the State's overall labor force.

For instance, the contractor found that the Accountant I classification was paid an average of $49,886 within the State while the market median was $55,838; therefore, State salaries for the Accountant I classification were 89 percent ("the ratio") of the labor market median salary. The contractor then averaged all of the ratios in determining that the State's salaries for each *classification* were, on average, 3 percent lower than the average median salaries in the labor market.

For the 2018 Annual Report, the Department applied a similar approach with one exception: it weighted each ratio by the number of State incumbents within the classification. In applying this method, the Department determined the State's salaries for each *employee* rather than the average for each *classification,* as the contractor had done, and concluded that State's salaries for each *employee* were, on average, 5.7 percent lower than the average median salaries in the labor market.

In presenting this information inconsistently in the 2017 and 2018 Annual Reports, it appears that the State's salary compensation fell short of the market by 3 percent in 2017 and fell short by an additional 2.7 percent, at 5.7 percent below the market, in 2018. What appears to be a significant difference from one year to the next, in fact, can be explained by a change in methodology. This impedes year-over-year monitoring of the State's comparability to the market, and makes it difficult to identify actual changes in the market. For example, had the contractor employed this same approach, it would have concluded that the State's salaries for each employee were, on average, 5.5 percent lower than the average median salaries in the labor market, similar to the State's approach.

The Department did not use benchmark positions in the Fiscal Year 2018 study that sufficiently represented the State's workforce. The Department evaluated different classifications in the Fiscal Year 2018 study than the contractor did for the Fiscal Year 2017 study. In doing so, the Department underrepresented significant portions of the State's workforce and produced results that were not comparable to prior year analyses. This impedes year-over-year monitoring of the State's comparability to the market.

The Department did not analyze premium pay, leave benefits, or incentive pay. For the 2018 Annual Report, the Department did not include any information on variable pay (e.g., incentives), premium pay (e.g., shift differential, overtime pay or call back pay) or leave (such as vacation and sick leave, as well as other leaves of absence with or without pay, which may include jury duty, military duty, or educational leaves). When the Department aged the contractor's salary data, it did not age or modify the contractor's results relating to benefits and retirement, and reported them as they were in the 2017 Annual Report. It appears that because the 2017 Annual Report reported premium pay and leave separately, the Department neglected to include them in their reporting of total compensation in the 2018 Annual Report. Further, because the contractor did not include variable pay such as incentives in its analysis, the Department also did not include variable pay in its analysis.

Understanding that it needed professional guidance to conduct compensation studies, the Department entered into a contract to obtain this guidance. The contractor did not provide the guidance the Department sought and, because of this, the Department did not have the technical resources it required to produce a technically consistent and sound compensation study. Staff believed that aging the contractor's data was a sound approach to estimating market compensation for Fiscal Year 2018, and believed that including classifications for which no market data was evaluated was an appropriate method to account for positions not included in prior analyses; staff did not know which classifications used in the contractor's study should be considered true benchmark classifications that should be studied in a maintenance year; and staff were unaware of the methodological approaches employed by the contractor and thus, could not ensure consistency year-over-year.

Why do these problems matter?

Because nearly two-thirds of the data used to calculate the Department's results were not based on a market comparison at all, and compensation data for the remaining classifications were inconsistently aged, the basis upon which the results were derived for the 2018 Annual Report was significantly flawed and, thus, the results presented in the 2018 Annual Report cannot be relied upon as an accurate measure of compensation in the State's labor market. As a result, the 2018 Annual Report did not provide a reliable basis for budget deliberations for the Fiscal Year 2018 budget. The majority of the analysis was not based on valid market data, and the more than one-third that was based on market data from the 2017 Annual Report would have exhibited the same problems as the 2017 Annual Report. Specifically, the data were weighted toward the public sector without a clear rationale; overstated compensation in the labor market by including survey results that were not relevant to the labor market and by utilizing a geographic normalization factor that was not supported by the data; did not include incentives provided by the State in its calculation of the State's total compensation value; and were based on out-of-date surveys. These problems impact the State's ability to determine whether it is providing prevailing total compensation to State employees in two ways:

- The Department did not undertake a compensation study during the maintenance year, but relied in part on the data generated by its contractor for over one-third of its analysis. Each of the deficiencies identified in the 2017 Annual Report, as discussed in Finding 1, impact the 2018 Annual Report.

- The Department did not gather updated compensation data and thus, could not provide an updated comparison between actual State compensation and the current labor market. Without sufficient current market compensation data, the Department did not present to the Governor and the Joint Budget Committee up-to-date conclusions regarding how total compensation provided by the State to its employees compares to other employers within its labor market.

  The Department's approach is not capable of informing an employer if the market data reflects unique or specific changes or whether other factors caused market compensation to increase faster or slower for specific positions or occupational groups than general aging trends. The Department did not gather or utilize reasonable market information necessary to evaluate how its compensation compares to the market. As a result, the Governor and General Assembly were not provided the information they required during budget deliberations, potentially putting the State at a disadvantage as it seeks to recruit and retain a talented workforce. Because the Department was unable to provide original compensation survey data and documentation of its underlying analysis, as well as the analyses of its contractor, we were unable to determine the extent to which the Department's conclusion that State salaries fell short of the labor market by 5.7 percent was inaccurate or by how much.

Recommendation No. 3:

The Department of Personnel & Administration should improve its maintenance year study to ensure the results are as accurate and current as possible and in compliance with statute. To achieve this, the Department should:

a. Ensure it has the technical resources required to produce a technically consistent and sound compensation study in-house and, when the study is outsourced, to ensure consistency in the contractor's methodological approach.

b. Review and analyze up-to-date published survey data for selected benchmark positions during the years when a comprehensive study is not conducted (maintenance years).

c. Develop a consistent methodology for compensation studies in the future, and apply this methodology to ensure Annual Reports present sufficient and comparable information year-over-year to demonstrate changes in the labor market. This should include:

- Identifying within the classification structure the benchmark positions that the Department will use in all total compensation studies on a go-forward basis.

- Applying appropriate aging factors in a consistent manner to ensure sound assumptions and techniques form the basis for estimates of future compensation levels within the State's labor market.

d. Ensure that each Annual Report includes appropriate data and conclusions regarding incentives, leave, and premium pay, in addition to the other elements of total compensation mandated by statute.

Department of Personnel & Administration Response:

a. Agree. Implementation Date: August 2017

Currently in the process of redefining recently vacated positions within the Compensation Unit to ensure appropriate technical support for review of contract products and implementation of maintenance-year survey process. Compensation Specialists will be hired by August 2017.

b. Agree. Implementation Date: September 2018

The department will review and analyze up-to-date survey data for selected benchmark positions in the maintenance years.

c. Agree. Implementation Date: September 2018

The department is working with the current contractor to establish a consistent methodology for the maintenance year compensation studies to ensure annual reports provide accurate information relative to the State's position in the labor market. This will include, among other things, selecting benchmark positions, applying consistent weighting methodology, etc.

d. Agree. Implementation Date: July 2017

The current contractor will include data and conclusions about the use of incentives, leave and premium pay as part of the FY 18-19 Annual Total Compensation Report. This information will be included in all future reports.

System Maintenance Studies

Because the State's personnel system applies salary ranges to classifications, not positions, the reliability of compensation studies depends to some extent on the accuracy of up-to-date classification specifications. Classification specifications describe the body of work assigned to a group of employees, including essential duties and characteristics that distinguish one group or classification from another within the State's classification system. To illustrate, many employees may be assigned to a general classification such as an "Analyst," but those employees may be assigned to work in very specific areas, such as federal grant administration, contract administration, financial analysis, program evaluation, or a myriad of other specific functions. While each of these employees may have specific job titles that reflect their unique duties—e.g., grant analyst, contract analyst, financial analyst, program analyst, etc.—an "Analyst" classification generally describes the common body of work each performs. Using existing classification specifications, the compensation analyst reviews published and custom surveys to identify positions that match those described in the classification specification. Identifying these "matching positions" is crucial to ensuring that the comparison of compensation is indeed valid.

As business needs change, employees' functions, responsibilities, and duties will also change. Over time, even seemingly insignificant changes to employees' functions, responsibilities, or duties compound, potentially rendering outdated the classifications to which the employees are allocated. Therefore, it is best practice to conduct periodic system maintenance studies. Such studies can be comprehensive (analyzing all classifications within the personnel system) or they can be specific to a subset of classifications.

What audit work was performed and what was the purpose?

We interviewed the Department personnel involved in the system maintenance process, and obtained and reviewed the system maintenance studies between 2014 and 2016. The purpose of the audit work was to evaluate the methods employed to ensure the Department adequately maintains the State's classification system and to ensure the system contributes to the design of a competitive and efficient compensation structure.

How were the results of the audit work measured?

Statute requires the State personnel director to conduct "timely, ongoing, and technically sound evaluation and analyses of jobs in order to group similar duties and responsibilities into clearly distinguished classes and occupational groups…" [Section 24-50-104(1)(b), C.R.S.]. This work is generally known as system maintenance. It is standard professional practice to conduct a comprehensive system maintenance study every 15-20 years, and to conduct system maintenance studies on a select number of classifications on an annual basis.

What problem did the audit work identify?

While the Department has conducted periodic system maintenance studies, these studies focus on a limited number of classifications and classification series, and tend to be performed in response to external requests or recommendations and not the result of a systematic plan to ensure the entire classification system is periodically evaluated. A classification *series* is a group of like classifications with progressively advancing levels; for example, the Accountant series will consist of several levels of classifications representing progressively advanced duties, responsibilities, qualifications, and compensation—Accountant I, Accountant II, Accountant III, etc. With most of the State's classifications created in the 1970s, more than 40 years ago, keeping the State's compensation system up-to-date requires the periodic evaluation of all existing classifications and classification series. This can be achieved through comprehensive classification studies, evaluating all classifications at one time, or proactive system maintenance studies designed to address all classifications over a defined period of time. However, the Department has not re-evaluated the State's classification system as a whole in more than 20 years, and it does not have a plan to proactively conduct system maintenance studies on all classifications. Since the State Auditor's May 2013 audit report, the Department conducted system maintenance studies of 11 classifications, less than 2 percent of the more than 750 classifications in the State's classification system. At this pace, the Department is reviewing and evaluating less than 10 percent of the entire classification system in a 15-year period.

The Department's system maintenance studies tend to focus on classification series rather than on individual classifications within each series. Its roughly 750 classifications are grouped into 167 classification series. According to information from the Department, 36 of these 167 classification series are due for re-evaluation because they have not been updated in nearly 20 years or more, and more than half have not been reviewed or updated in approximately 10 or more years. Table 8 shows the number of classification series that have been updated each decade.

Table 8: Age of Existing Classifications

Number of Classification Series	Classification Series Last Updated
36	1990-1999
97	2000-2009
34	2010-2016

Source: Classification documentation provided by the Department.

In addition to updating existing classifications, system maintenance studies and comprehensive classification studies are also intended to evaluate the classification structure to ensure it continues to strike an effective balance between grouping as many similar positions as possible into a single classification while ensuring sufficient differentiation exists between classifications to account for the differing responsibilities of unique positions and the varying qualifications necessary to perform the functions of those positions—both of which may affect compensation.

Based on our review of the State's classifications, the Department has developed a classification structure that provides wide differentiation among positions. This is illustrated in Table 9, which shows that the majority of the State's classifications have between zero and 10 incumbents.

Table 9: Number of Incumbents per Classification

Number of Classifications	Number of Incumbents
391	0 to 10
252	11 to 50
46	51 to 100
61	101 to 500
7	501 to 1000
2	1000+

Source: Position incumbent report prepared by the Department.

Both comprehensive and benchmark compensation studies must account for a representative number of classifications to adequately measure comparable compensation in the labor market. The more classifications within the classification system, the more complex and resource intensive annual compensation studies will be, and the more system maintenance studies will need to be performed. Periodic evaluations of the classification system not only enable employers to ensure classifications are up-to-date, but also enable employers to ensure the structure can be managed in a cost-effective manner.

Why did this problem occur?

The Department does not currently have a plan for how it will review all classifications on a periodic basis. The Department's request for additional funding to outsource the annual compensation study every other year stated that the full-time equivalent position that would be freed up by outsourcing this function would be dedicated to regular ongoing maintenance of the job evaluation system and the resulting job classifications. According to the Department, this position was partially dedicated to deconsolidation of the General Professional and Information Technology classifications beginning in 2015, which was conducted in response to the State Auditor's May 2013 audit report. The Department does not have a written plan for how this FTE will continue to review classifications and what other resources may be needed to ensure that classifications are reviewed on a periodic basis, and with a goal of having all classifications reviewed over a 20-year period.

Why does this problem matter?

Accurate and up-to-date classifications, and summaries of those classifications, are essential to ensure appropriate matching of existing positions to sufficiently similar positions and classifications employed within the labor market. Inaccuracies in existing classifications, or outdated classifications, could result in mismatched comparisons, and lead to inaccurate estimates of compensation for specific positions within the labor market.

Recommendation No. 4:

The Department of Personnel & Administration should develop a written plan establishing system maintenance study cycles that address all classifications on a periodic basis, and for conducting comprehensive classification studies approximately every 20 years.

Department of Personnel & Administration Response:

Agree. December 2017.

The Department currently has a number of requests for system maintenance studies and is developing criteria for prioritizing those requests. The Department will develop a comprehensive plan to complete system maintenance studies on a cyclical basis to ensure all classifications are reviewed every 20 years.