

2011 Faculty Salary Compression and Equity Analysis

Prepared by

Subcommittee of Salary, Benefits, Budget, and Fiscal Planning Committee

Introduction

This report presents an analysis of faculty salary compression, inversion, and equity at Weber State University and is a follow-up on the report generated by this subcommittee for the 2009-2010 academic year. The “2011 Faculty Equity Model” data is the primary source of data used in this analysis. This data gives salary and other related data for 463 Weber State University faculty members. Faculty members holding administrative positions (Dean and above) are not included within this dataset. The structure of the report is as follows:

- What is Salary Compression and Inversion?
- Salary Compression at Weber State
- Salary Inversion at Weber State
- Salary Equity at Weber State
- Summary of Findings
- Recommendations

What is Salary Compression and Inversion?

As noted in the version of this report for the 2009-2010 academic year, salary compression and inversion are defined as (Western Michigan University, 2010):

Salary compression is an internal problem initiated by external market conditions and exacerbated by other factors. Two points of comparison are typically used to measure salary compression: salaries of junior faculty versus salaries of senior faculty. When the salary differential between junior and senior faculty is smaller than it should be, compression occurs. Further, because junior faculty may be defined as those newly hired or newly promoted, salary compression can occur between ranks as well as within ranks. A related term ‘salary inversion’ occurs when salary compression, left unexamined or unadjusted, results in junior faculty salaries greater than senior faculty salaries. Like salary compression, salary inversion can occur between ranks as well as within ranks. Although the reverse is not necessarily true, whenever inversion exists compression also must exist.”

The key element of this definition is the subjective statement (underlined) regarding the salary differential between junior and senior faculty. We will attempt to address the question of what is the appropriate salary differential between faculty of various ranks in the next section of this report.

Salary Compression at Weber State

The mean salary of the 463 faculty members in this study is \$59,603 (for the 2010-2011 academic year). This mean salary represents a 1.1% decrease from the \$60,273 for the 2009-

2010 academic year. This decline can likely be explained by faculty retirements/attrition. By rank, the mean salaries are given below (percent change in salary from previous academic year in brackets and number of faculty members at each rank in parentheses):

Professor:	\$70,087	[-1.1%]	(185)
Associate Professor:	\$60,314	[-0.6%]	(102)
Assistant Professor:	\$52,092	[-0.6%]	(113)
Instructor:	\$40,913	[-4.4%]	(62)
Instructor Specialist:	\$55,290	[-12.4%]	(1)

Given these means (as well as mean salary data for each rank by college), salary compression can be examined. One method to evaluate salary compression is the rank ratio as described by Bereman and Lengnick-Hall (1994). Rank ratio is calculated by the following formula:

$$\text{Rank ratio} = (100) \frac{(\text{Mean Salary of Rank})}{(\text{Mean Salary of Professor Rank})}$$

Therefore, the rank ratio expresses the mean salary of each rank as a percentage of the mean salary of faculty members holding the rank of Professor. We posed in the “What is Salary Compression and Salary Inversion?” portion of this report, a question related to what is most reasonable salary differential between faculty members of various ranks. Unfortunately, this question does not possess a simple answer. Gomes-Meijia (1987) described the equitable rank ratio to be 100:67:33, suggesting a 33% increase in salary from Assistant to Associate Professor and from Associate Professor to Professor. We address the impact of applying such a rank ratio at Weber State in the “Recommendations” portion of this report.

The rank ratio (across all faculty, including the ranks of Instructor and Instructor Specialist) at Weber State is 100:86:74:58:79 (rank ratio for previous academic year was 100:86:74:60:69). Table 1 presents mean salaries and rank ratios for each Weber State’s colleges. Salary is most compressed in the AS&T and B&E colleges.

A&H	63196	53039	47257	35415	*	100:84:75:56
AS&T	73991	68146	61633	51897	*	100:92:83:70
B&E	89911	82682	68629	42381	*	100:92:76:47
CE	*	49811	*	38538	*	NA
EDUC	67711	53510	46334	39488	*	100:79:68:58
HP	73008	58989	51043	44663	*	100:81:70:61
LIB	64767	52996	44922	*	*	100:82:69
S&BS	67266	53241	46387	39903	*	100:79:69:59
SCI	71740	56484	49217	37980	55290	100:79:69:53:77

Table 1: Mean 9-Month FTE Salaries by College and Rank with Rank Ratios

For comparison, was Weber State to pay faculty members their College and University Professional Association (CUPA) Adjusted Market¹ salaries (from the 2011 Faculty Equity Model), the mean salaries for all faculty members, by rank, would then be (percent change from 2009-2010 academic year in brackets):

Professor:	\$86,933 [0.5%]
Associate Professor:	\$71,123 [1.6%]
Assistant Professor:	\$60,033 [1.6%]
Instructor:	\$43,034 [0.3%]
Instructor Specialist:	\$51,542 [1.0%]

The rank ratio (across all faculty) would then be: 100:82:69:50:59 as compared to 100:81:68:50:59 for the 2009-2010 academic year. Therefore, improving faculty salaries to reflect CUPA Adjusted Market salaries would reduce compression on a university-wide basis. Table 2 indicates this change would also reduce compression in each of Weber State's colleges. Note that, in all cases (university-wide or by college, for actual salaries or CUPA Adjusted Market salaries), salaries are compressed at Weber State when viewed in light of a proposed 100:67:33 equitable rank ratio.

College	Prof	Assoc	Asst	Instr	InSp	Rank Ratio
A&H	79127	62753	51319	40095	*	100:79:65:51
AS&T	86850	75874	63362	43174	*	100:87:73:50
B&E	111138	94398	89537	55016	*	100:85:81:50
CE	*	60727	*	39226	*	NA
EDUC	85921	66560	55883	43017	*	100:77:65:50
HP	92177	69506	58304	47686	*	100:75:63:52
LIB	91239	71821	55654	*	*	100:79:61
S&BS	85372	64730	53239	44062		100:76:62:52
SCI	87278	65991	56541	42014	51542	100:76:65:48:59

Table 2: Mean Adjusted Market (CUPA) Salaries by College and Rank with Rank Ratios

To test the sensitivity of the rank ratio metric for faculty salary compression, a single, Professor-ranked faculty member was added to each college. This hypothetical Professor was assigned a salary that is 50% greater than the highest paid faculty member in each college. For example, the highest paid faculty member with the rank of Professor in the College of Arts & Humanities (A&H) has a salary of \$77,222. The “outlier” Professor in this college would then have a salary of $(1.5)(\$77,222) = \$115,833$. Table 3 shows the mean salaries for each rank by college and rank ratios given the addition of an “outlier” Professor in each college.

¹ CUPA Adjusted Market Salary incorporates discipline and rank and is adjusted to include degree

College	Prof	Assoc	Asst	Instr	InSp	Rank Ratio
A&H	64119	53039	47257	35415	*	100:83:74:55
AS&T	76724	68146	61633	51897	*	100:89:80:68
B&E	93929	82682	68629	42381	*	100:88:73:45
CE	*	49811	*	38538	*	NA
EDUC	70536	53510	46334	39488	*	100:76:66:56
HP	79173	58989	51043	44663	*	100:75:64:56
LIB	76875	52996	44922	*	*	100:69:58
S&BS	69542	53241	46387	39903	*	100:77:67:57
SCI	73433	56484	49217	37980	55290	100:77:67:52:75

Table 3: Mean 9-Month FTE Salaries by College and Rank with Rank Ratios (With One Additional “Outlier” Professor-Ranked Faculty Member)

The data in Table 3 suggests that the addition of a single, highly paid Professor improves the rank ratio differential between the ranks of Professor and Associate Professor in each college. This effect is more pronounced in colleges with a small number of faculty at the Professor rank. In such situations, a single faculty member’s salary can easily influence the mean salary. It is possible that this “outlier” Professor effect may be present at other institutions (including Weber State’s peers) and may be driving an appearance of less salary compression. Future analyses of faculty salary compression should likely rely on a statistic (such as the median) that is less susceptible to influence from outliers. The next section of this report evaluates salary compression at Weber State’s peer institutions.

Peer Institutions

A list of institutions considered to be peers of Weber State University was provided to the committee. These peer institutions are:

- Boise State University, Idaho
- California State University, Dominguez Hills
- Clarion University of Pennsylvania
- Indiana University/Purdue University-Fort Wayne
- University of North Florida
- University of Northern Iowa
- University of Wisconsin-Whitewater
- Western Carolina University
- Western Washington University
- Youngstown State University

The most recent salary data available for these institutions was from the American Association of University Professors (AAUP) 2009-2010 survey of faculty salaries (AAUP, 2011). Note that the salaries given in this report are (as in the Weber State Equity Model) for instructional faculty only. This data, for Weber State’s peer institutions, is presented in Table 4 below. Note that the salary data and rank ratio for Weber State are different than those in the previous section of the report as the data in the previous section are more recent (2009-2010 versus 2010-2011).

Institution	Prof	Assoc	Asst	Inst	Rank Ratio
Boise State University	77600	63700	55500	48900	100:82:72:63
California State University, Dominguez Hills	95100	76600	71600	NA	100:81:75:NA
Clarion University of Pennsylvania	99700	78800	64000	49000	100:79:64:49
Indiana University/Purdue University-Fort Wayne	78300	64300	58500	44700	100:82:75:57
University of North Florida	94000	68700	54400	44300	100:73:58:47
University of Northern Iowa	85400	69600	54800	49200	100:81:64:58
University of Wisconsin-Whitewater	74500	63500	58200	NA	100:85:78:NA
Western Carolina University	89600	74400	59400	47000	100:83:66:52
Western Washington University	81100	65600	55700	49400	100:81:69:61
Youngstown State University	90500	71600	60100	47000	100:79:66:52
<i>Weber State University</i>	<i>70864</i>	<i>60692</i>	<i>52406</i>	<i>42805</i>	<i>100:86:74:60</i>

Table 4: Peer Institution Mean Faculty Salaries by Rank with Rank Ratios (2008-2009)

As in the 2009-2010 academic year, the data in Table 4 suggests that the mean salaries of Weber State faculty members are (when compared by rank) lower than those at the peer institutions. Salary data from all of the peer institutions also suggests that salary compression occurs, however, salaries at Weber State are generally more compressed.

Table 5 gives the mean salaries (by rank) for other four-year institutions within the state of Utah. Brigham Young University did not report salary data to the AAUP and is not included in this table. This table suggests that salaries of Weber State faculty members are (on average) lower (for each rank) than those at other Utah universities and colleges. The exceptions are the Associate and Assistant Professor ranks at Southern Utah University. Weber State faculty salaries are also, generally, more highly compressed than those at the other institutions.

Institution	Prof	Assoc	Asst	Inst	Rank Ratio
Dixie State College	76500	61400	51100	44500	100:80:67:58
Southern Utah University	74700	60200	49800	NA	100:81:67
University of Utah	115700	79900	73100	67100	100:69:63:58
Utah State University	89100	69100	62900	51900	100:78:71:58
Utah Valley University	72200	61100	56100	47800	100:85:78:66
Westminster College	79100	66900	58700	51500	100:85:74:65
<i>Weber State University</i>	<i>70864</i>	<i>60692</i>	<i>52406</i>	<i>42805</i>	<i>100:86:74:60</i>

Table 5: Utah Four-Year Institution Mean Faculty Salaries by Rank with Rank Ratios (2008-2009)

Table 6 gives the mean salaries (by rank) for the other institutions that are members of the Big Sky Conference. With the exception of the Associate and Assistant Professor ranks at Idaho State University and the Assistant Professor rank at the University of Northern Colorado, mean salaries at Weber State are less than those at the other Big Sky Conference institutions. Generally, salaries at Weber State are also more highly compressed than those at these other schools.

Institution	Prof	Assoc	Asst	Inst	Rank Ratio
California State University, Sacramento	93800	70400	64200	NA	100:75:68
Eastern Washington University	74800	64500	53900	NA	100:86:72
Idaho State University	76700	60200	51600	42300	100:78:67:55
Montana State University	82900	63500	58300	42700	100:77:70:52
Northern Arizona University	84300	63800	55200	34700	100:76:65:41
Portland State University	93600	73400	59300	42000	100:78:63:45
University of Montana	79200	63200	55900	44700	100:80:71:56
University of Northern Colorado	79600	63600	51900	46200	100:80:65:58
<i>Weber State University</i>	<i>70864</i>	<i>60692</i>	<i>52406</i>	<i>42805</i>	<i>100:86:74:60</i>

Table 6: Big Sky Conference Member Institution Mean Faculty Salaries by Rank with Rank Ratios (2008-2009)

Salary Inversion at Weber State

Salary inversion occurs when a faculty member of a lower rank earns a salary that is greater than that of one or more faculty members at a higher rank. On a University-wide basis, at Weber State, a number of faculty salaries are inverted. For example, the lowest paid, Ph.D.-holding, Assistant Professor in Business & Economics (the college with the highest mean faculty salary) has a salary greater than that of 51 faculty members of Professor rank in other colleges. The same faculty member also has a salary greater than that of 73 faculty members of Associate Professor rank in other colleges. Most of this university-wide inversion can be attributed to the perceived market value of faculty members in the various disciplines. Therefore, in order to perform a more meaningful analysis, salary inversion statistics are presented on an intra-department basis.

Table 7 gives a summary of the instances of intra-departmental salary inversion. Note that departments not listed in the table have no instances of intra-departmental salary inversion. Also, the number of instances does not reflect the number of faculty members suffering from inversion. For example, a listed instance of salary inversion may result in a faculty member of lower rank having a higher salary than more than one faculty member of high rank.

On an intra-departmental basis, there are only 15 instances of salary inversion among faculty at Weber State. Ten of the University's 45 departments have one or more instances of inversion. Seven of nine colleges (with the exception of the Science and Continuing Education) have at least one instance of inversion. The Applied Science and Technology (AS&T) and Business & Economics (B&E) colleges both have the most extreme form of inversion where an Assistant Professor's salary is greater than at least one Professor's salary.

College	Department	Assoc > Prof	Asst > Assoc	Asst > Prof
A&H	COMM	1	0	0
AS&T	CEET	1	0	1
AS&T	MMET	0	1	0
B&E	BSAD	0	1	1
B&E	IS&T	1	0	0
EDUC	HP&HP	1	1	0
HP	NURSING	0	2	0
LIB	LIBR INSTR	0	1	0
S&BS	CRIM JUST	0	1	0
S&BS	HISTORY	1	1	0
Sums		5	8	2

Table 7: Summary of Intra-Departmental Salary Inversion Instances

At this time, salary inversion information for peer institutions is not available. However, future salary analysis efforts at Weber State should more thoroughly evaluate the salary inversion, particularly in the context of peer institutions.

Salary Equity at Weber State

In this section, the salary of Weber State’s faculty members is compared to the CUPA Adjusted Market Salary and to an internal measure of Equitable Salary². This salary information is contained within Weber State’s “2011 Faculty Equity Model” dataset. This comparison allows for determination of the equity of Weber State’s faculty salaries compared to market salaries. Two performance metrics are used in this analysis: The ratio of actual salaries to CUPA Adjusted Market salaries (referred to as the actual/market ratio) and the ratio of actual salaries to the Weber State measure of Equitable Salary (referred to as the actual/equitable ratio). Values of these ratios that are less than one imply that faculty members are not being paid an equitable salary.

The mean actual/market ratio for all faculty is 0.853 (down from 0.872 in the 2009-2010 academic year). This suggests that the average Weber State faculty member has a salary that is slightly more than 85% of the market salary for his or her position. The decline in this ratio from the 2009-2010 to 2010-2011 academic years suggests that faculty salaries at Weber State continue to fall further behind market salaries. The mean actual/equitable ratio for all faculty is 0.888. As with the actual/market ratio, this ratio suggests that the average faculty member at Weber State has a salary that is less than equitable.

Figure 1 is a graphical illustration of the actual/market salary ratios by college at Weber State. This figure indicates that all colleges have a mean actual/market ratio that is less than one. Further analysis reveals that only 35 of the 463 (7.6%) WSU faculty members have actual/market ratios greater than one. This leaves 428 (92.4%) of faculty members that have a ratio less than one.

² Equitable Salary is derived by modifying the CUPA Adjusted Market salary to include the number of years a faculty member has been in rank

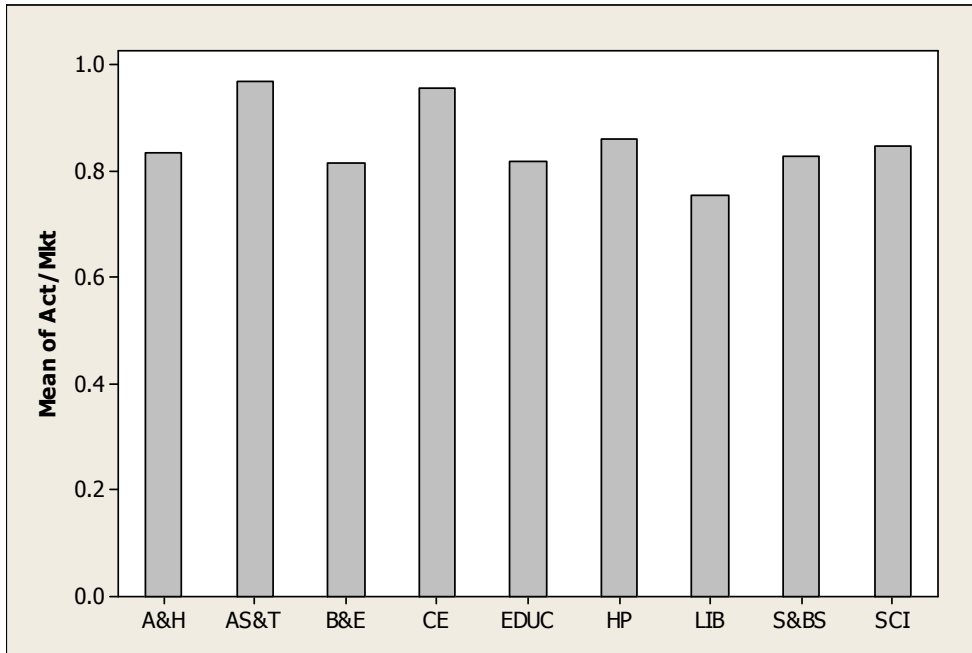


Figure 1: Chart of Mean Actual/Market Ratios by College

Figure 2 is a graphical illustration of the actual/equitable salary ratios by college at Weber State. This figure indicates that all colleges, with the exception of AS&T, have a mean actual/market ratio that is less than one. Further analysis reveals that only 44 of the 463 (9.5%) WSU faculty members have actual/market ratios greater than one. This leaves 419 (90.5%) of faculty members that have a ratio less than one.

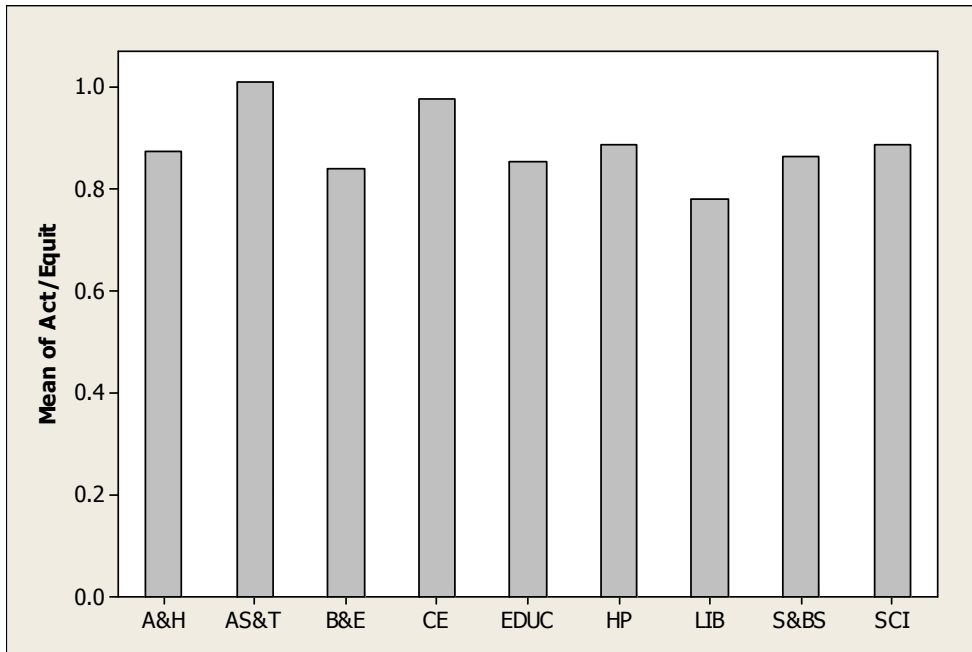


Figure 2: Chart of Mean Actual/Equitable Ratios by College

Figure 3 is a graphical illustration of the percentage of faculty members, by college, that have an actual/market ratio of at least 1.00. All colleges have at least one faculty member with a ratio greater than one. AS&T has 16 faculty members (of 57 in the college, or 28.1%) with a ratio greater than one. By contrast, B&E has only one faculty member with a ratio greater than one (2.3% of 43 faculty members in the college).

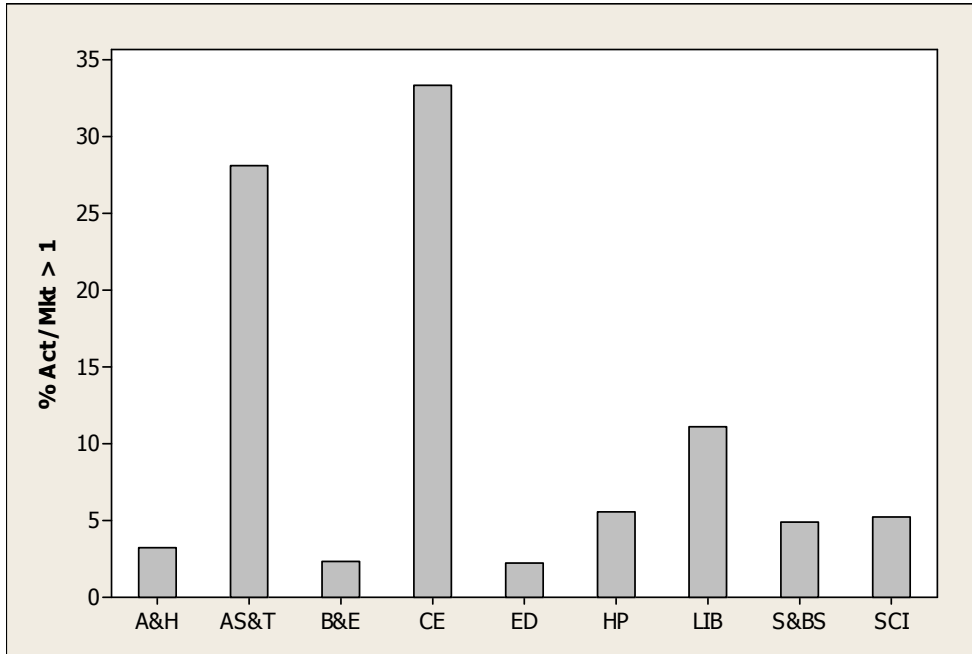


Figure 3: Percentage of Faculty Members (by College) With Actual/Market Ratio ≥ 1

Figure 4 is a graphical illustration of the percentage of faculty members, by college, that have an actual/market ratio of at least 1.00. All colleges have at least one faculty member with a ratio greater than one. AS&T has 25 faculty members (of 57 in the college, or 43.9%) with a ratio greater than one. By contrast, Science (SCI) has only one faculty member with a ratio greater than one (1.3% of 77 faculty members in the college).

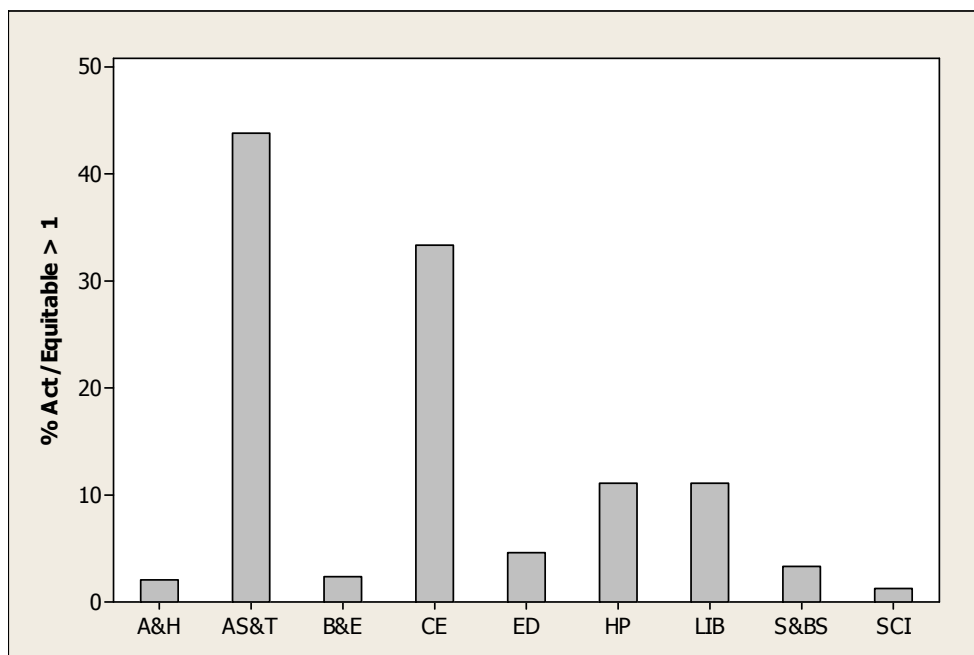


Figure 4: Percentage of Faculty Members (by College) With Actual/Equitable Ratio ≥ 1

Summary of Findings

The following is a list that summarizes the findings of this report:

- Compression of faculty salaries is present at Weber State University, its peers, other Utah institutions, and other members of the Big Sky Conference. However, salary compression is more severe at Weber State than at these other institutions. When compared to the 2009-2010 academic year, the degree of compression remains largely unchanged.
- On a college-by-college basis at Weber State, salary compression is evident. However, salaries of faculty members in AS&T and B&E are more compressed than those in other departments.
- Adding a single, highly paid faculty member at the rank of Professor to any of the colleges has the effect of reducing compression between the ranks of Professor and Associate Professor. This effect may be present at other institutions and may be skewing compression statistics. A shift to an outlier-resistant statistic for rank ratio calculation should take place.
- When examined on a university-wide basis, salary inversion is rampant, with a large number of lower ranked faculty members being paid salaries greater than those faculty members at higher ranks. When examining salary inversion on a department-by-department basis there were a total of 14 instances of inversion. Further analysis should be conducted to evaluate salary inversion at peer institutions.
- Over 90% of faculty members at Weber State have a salary that is below the market or equitable salary for their position. All colleges have a majority of faculty members with salaries below market and equitable. There is some disparity between colleges

with regard to the number of faculty members with salaries above or below market or equitable. Further analysis of salary equity at peer institutions should be conducted in the future.

Recommended Actions

Salary compression and equity problems are difficult to remedy. As noted in the “Summary of Findings” section of this report, compression occurs at all of Weber State’s peer institutions. In fact, salary compression is a problem that is endemic at virtually all public and private institutions of higher education. Due to already low (compared to peer institutions and the market) salaries at Weber State, any salary compression remedies must not involve the reduction of any faculty member’s current salary. Therefore, the only means by which to influence compression is the increasing of faculty salaries.

It should be noted that equity, compression, and inversion issues may be partially attributable to faculty performance or other issues. For example, a poorly performing Professor will likely not have received merit-based pay increases and will contribute to a lower overall mean salary for the Professor rank. This would further the appearance of compressed salaries. Any of the proposed remedies to salary equity, compression, and inversion should carefully account for faculty performance and other factors that may be present.

We present three potential target scenarios that focus on the ranks of Professor, Associate Professor, and Assistant Professor:

- Improve faculty salaries so that Weber State’s rank ratio is equivalent to the mean rank ratio of Weber State’s peer institutions (100:81:69).
- Improve faculty salaries so that Weber State’s rank ratio is equivalent to the best rank ratio among Weber State’s peer institutions (100:73:58 at the University of North Florida).
- Improve faculty salaries so that Weber State’s rank ratio is equivalent to a theoretical “best” compression ratio of 100:66:33.

To improve faculty salaries to achieve the peer mean rank ratio would require an approximately 5.8% increase in salary for faculty members of the Professor rank (holding the salaries of faculty members at the Associate Professor and Assistant Professor ranks unchanged). To improve salaries to achieve the equivalent of the best rank ratio among Weber State’s peers would require increases of 20.7% and 3.8% for faculty members of Professor and Associate rank, respectively (holding Assistant Professor salaries unchanged). To achieve a theoretical “best” compression ratio would require a dramatic change to the salaries of Professors and Associate Professors. Professor salaries would be increased by 66.4% and Associate Professor salaries would be increased by 29.5%. Assistant Professor salaries would remain unchanged.

Improving faculty salary equity has one remedy: additional funding for faculty salaries. However, there may be several mechanisms by which additional funding can be used to improve equity. For historical perspective, a table of across the board, merit, and equity pay increases for the fiscal years 2000 to 2011 is provided in Appendix 1. One potential action that could be taken

would be the allocation of funds to college deans to be used (strictly on a discretionary basis) to provide salary enhancement for faculty that are below equity.

References

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Appendix 1: Historical Across the Board, Merit, and Equity Pay Increases

<u>Year</u>	<u>Across the Board</u>	<u>Merit</u>	<u>Equity</u>
FY 00	0.83%		
FY 01	4.00%	2.00%	
FY 02	4.00%	2.00%	
FY 03	0.00%	0.00%	
FY 04	2.00%	0.00%	
FY 05	2.00%	0.00%	
FY 06	2.50%	1.00%	
FY 07	2.50%	1.00%	
FY 08	3.00%	1.00%	1.00%
FY 09	3.00%	1.00%	1.00%
FY 10	0.00%	0.00%	
FY 11	0.00%	0.00%	