

## Faculty Salary Survey Comparison 2015-16

Prepared by the UTK Faculty Senate Budget and Planning Committee (L. J. Gross, Chair. March 2017

This report uses the UTK November 1, 2015 payroll and data from the Oklahoma State University Office of Institutional Research & Information Management 2015-2016 Faculty Salary Survey by Discipline (<https://irim.okstate.edu/FSS>) for Fall 2015 salaries from comparison institutions. It is compiled by the UTK Office of Institutional Research and Assessment and the Committee thanks Donald Cunningham for providing this report.

The columns in the table refer to:

1. College/Department/Rank
2. October 2015 UTK Average, Number of Faculty, Minimum, Maximum Salaries
3. October 2015 Research University Very High Comparison Group - Average, Minimum, Maximum Salaries
4. Cost to increase Average UTK salary to the Average for Research University Very High at each rank
5. Ratio of UTK Average Salary to Average for Research University Very High
6. October 2015 THEC Peer Comparison Group - Average, Minimum, Maximum Salaries
7. Cost to increase Average UTK salary to the Average for THEC Peer Group at each rank
8. Ratio of UTK Average Salary to Average for THEC Peer Group
9. October 2015 Top-25 Public Comparison Group - Average, Minimum, Maximum Salaries
10. Cost to increase Average UTK salary to the Average for Top-25 Public Comparison Group at each rank
11. Ratio of UTK Average Salary to Average for Top-25 Public Comparison Group

This table does not include salary data for Library Faculty. It includes all Full-time faculty with an instructional appointment from UTK, UTSI, and UTIA (it does not include Vet Med). It does not include administrative positions but does include department heads and those with job titles such as Professor and Associate Dean. Job titles starting with faculty titles are considered to be primarily instructional and are included. It does include Clinical Faculty but not Research Faculty without instructional appointments. All salaries are calculated on a nine-month basis, include any longevity pay and administrative supplements, and does not include any extra service pay such as summer pay from external grants. Top 25 institutions are those institutions selected by UTK for the Journey to the Top 25 comparison.

Note that the calculations include the funding needed to raise every unit/rank to average or above. When aggregated at the College or University level this can leads to anomalies in that some Colleges average salaries may be well above the average of a comparison group at all ranks, but the report still shows that funds are needed to increase that College to the average of the comparison group because of the funds needed to raise every unit/rank within the College to the respective averages of the comparison group. This approach does not account for any variance in average salaries across units/ranks relative to the peer group average that may exist at institutions in the comparison group.

## **Historical Analysis of Comparisons of UTK Faculty Salaries to Peer Groups**

Prepared by the UTK Faculty Senate Budget and Planning Committee (L. J. Gross, Chair). March 2017

Each year, the Faculty Senate Budget and Planning Committee produces a report, using data supplied by the Office of Institutional Research and Assessment, that compares UTK faculty salaries to those at peer group institutions. Based on these and other data, the Committee has provided the Senate with various reports including an historical analysis of average faculty salaries compared to tuition increases and UTK expenditures and an analysis of faculty salary with respect to gender. These reports are available at the Committee web page at <http://www.nimbios.org/~gross/SenateBudgetPlanningCommittee.html>

The historical analysis shows that there have been large increases in average faculty salaries over the past decade. From 2007 to 2015, average Professor salaries have increased by 31.7%, average Associate Professor Salaries have increased by 24.1% and average Assistant Professor salaries have increased by 26.5%. These increases are consistent with the long-term goal of UTK to move towards Top 25 Public University ranking, and former Chancellor Cheek clearly articulated that his highest priority over his tenure was to increase faculty and staff salaries. Given this, it is appropriate to analyze whether UTK has been successful, with regard to the metric of faculty salaries, in moving closer to Top 25 status over the past decade. It also provides an opportunity to analyze the changes, by different units, in progress towards salaries that are commensurate with those of Top 25 Public Universities.

### ***The objectives of this report are:***

- (i) To provide an analysis of the changes in UTK average salaries as compared to Top 25 Public Universities over the past decade; and
- (ii) To analyze any potential variation across units and ranks in changes of average salaries as compared to those at Top 25 institutions.

### ***Methodology***

To carry out these analyses, we have utilized data in the 2006-2007 Faculty Salary report, which compared Fall 2005 UTK faculty salaries across units and ranks to those at various peer groups, including Top 25 institutions. We compare the data in that report to the data provided in the 2015-2016 Instructional Faculty Salary Survey by Discipline, which is based on salaries from Fall 2015. This ten-year comparison period includes times in which UTK had three different Chancellors, but during the majority of the period the Chancellor was Jimmy Cheek. There are some differences between these two reports, in part due to administrative changes at UTK, with reorganization of some units and some units leaving UTK. In the below, we have endeavored to only include units in the analysis which are clearly identified in both reports. The spreadsheets of data underlying this analysis are posted on the above website, along with the dataset taken from that is used for much of the below analysis. We have carried out the analysis using comparison only to Top 25 Public Universities, while the base data includes comparisons to other groups, including SUG, THEC and AAU. The comparison groups have varied over the 10-year period, and those institutions which are in the Top 25 (determined using US News and World report rankings)

have changed as well. Given the stated objective of UTK to move towards Top 25 status, we have focused this report solely on comparisons to Top 25 data.

In all the below, we utilize only data for tenured and tenure-track faculty since the reports upon which these analyses are based do not include consistent data on instructors and lecturers. For all our calculations, we express the data as the ratio of UTK faculty salary to Top 25 salary times 100, so that it is expressed as a percentage. Thus, a value of 90 means that the average salary is 90% of the average for the Top 25 institutions and a value of 105 means that the average salary is 105% of the average for the Top 25 institutions. The 2015-2016 report uses fractions rather than percentages, while the 2006-2007 report used percentages. We have converted these and have also used the raw data in the 2015-2016 report to recalculate the same number of significant digits for the percentages as were used in the 2006-2007 report.

### **University-wide Comparisons**

When averaged across the entire faculty, in 2005 the ratio of UTK faculty salary to Top 25 salary (expressed as a percentage) was 85 for Professors, 89.8 for Associate Professors, and 90.9 for Assistant Professors. In 2015, the comparable figures were 94.6 for Professors, 95.2 for Associate Professors, and 90.1 for Assistant Professors. Thus, over the past decade, when considered across the entire campus, there have been major improvements towards salaries that are comparable to Top 25 salaries for tenured faculty, with slight decrease in this for Assistant Professors taken as a whole.

### **Comparisons by Units/Ranks**

It is clear from the 2015-2016 data at College level that there are major differences between aggregated units in the ratio of salaries to Top 25 institutions. While one College, when aggregated, has average salaries across all ranks higher than or at the level of Top 25 institutions (Engineering), some Colleges are far below the Top 25 averages at all ranks (e.g. Agriculture and Natural Resources, Law), with the other Colleges having averages close to the overall UTK percentages. Of interest to the Committee was whether the entire distribution across units and ranks of percentages relative to Top 25 has shifted in line with the overall gains at Professor and Associate levels, or whether there are major "laggards" in terms of units which have regressed and actually had losses in percentages relative to Top 25 institutions over the past decade. If so, this might encourage the administration institution to look more carefully at those units to ascertain any reasons for the lack of progress.

To accomplish the above, we have taken each departmental/school unit, along with the three ranks of faculty in each of these, as separate data points for comparison. For each unit and rank, we consider the percentage of salary relative to the comparable unit/rank at Top 25. This produced 160 percentages for each of 2005 and 2015. We excluded units/ranks in which there were no individuals at the rank in one or both of 2005 and 2015, and we excluded units we could not clearly identify as remaining in place over the 10-year period (e.g. Audiology and Speech Pathology is no longer based at UTK and so is not included). We realize that there are different numbers of faculty in each of these units/ranks so that treating them each as separate and equivalent samples is perhaps not perfect, but it does allow us to consider the broad picture of heterogeneity across units/ranks.

Figures 1 and 2 show the histogram of percentages of UTK to Top 25 salaries in 2005 and 2015 respectively. The mean of the 2005 data is 88.8 and the mean of the 2015 data is 95.3 and note that since these are means across units/ranks, treating them each as equivalent, these are not expected to be exactly the same as the average values for 2005 and 2015 noted above for the entire university, but they are not very dissimilar. The standard deviations are 10.2 and 12.6 in 2005 and 2015 respectively, so the variation in these has remained quite similar over 10 years.

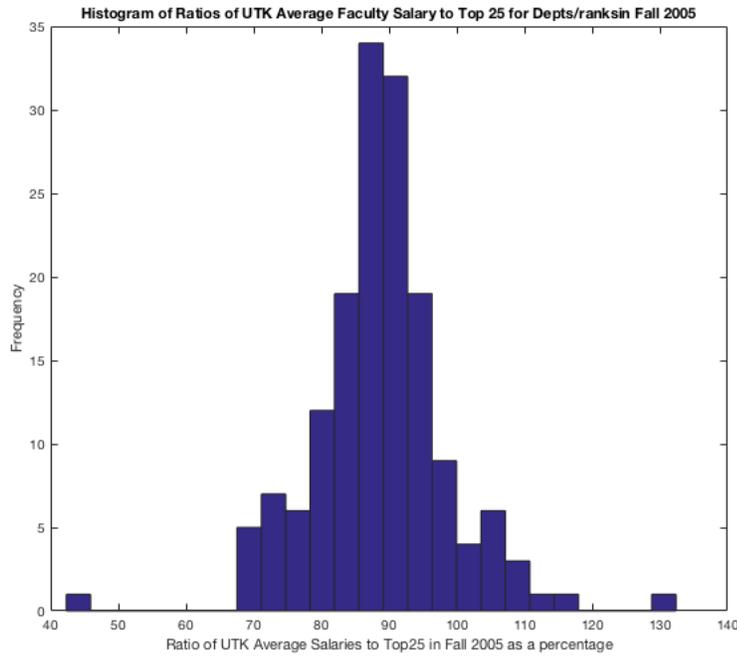


Figure 1: Histogram of percentage of UTK to Top 25 salaries for 2005 data.

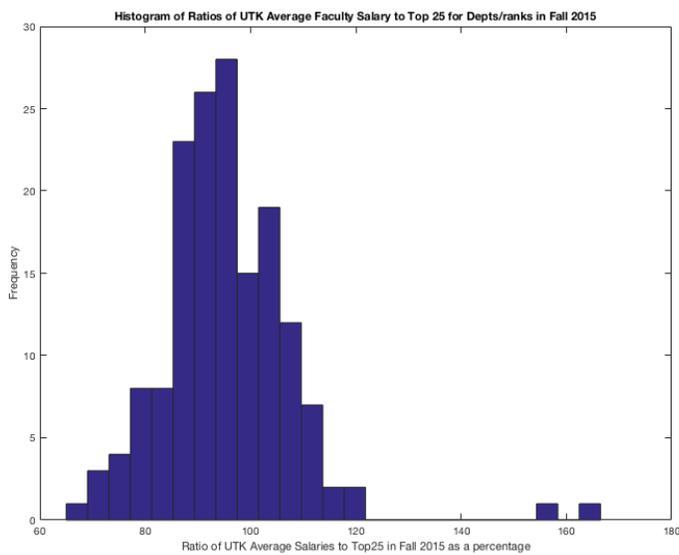


Figure 2: Histogram of percentage of UTK to Top 25 salaries for 2015 data.

To better view the changes over the 10-year period, Figure 3 shows the changes for each unit/rank in the percentage of the average salary relative to Top 25. This is calculated simply by taking the difference between the 2015 value and the 2005 value for the percentage of Top 25 for each unit/rank. The mean difference is 6.53, consistent with the above noted average change across all UTK. The standard deviation is 12.4 which is also consistent with the observed variation in Figures 1 and 2.

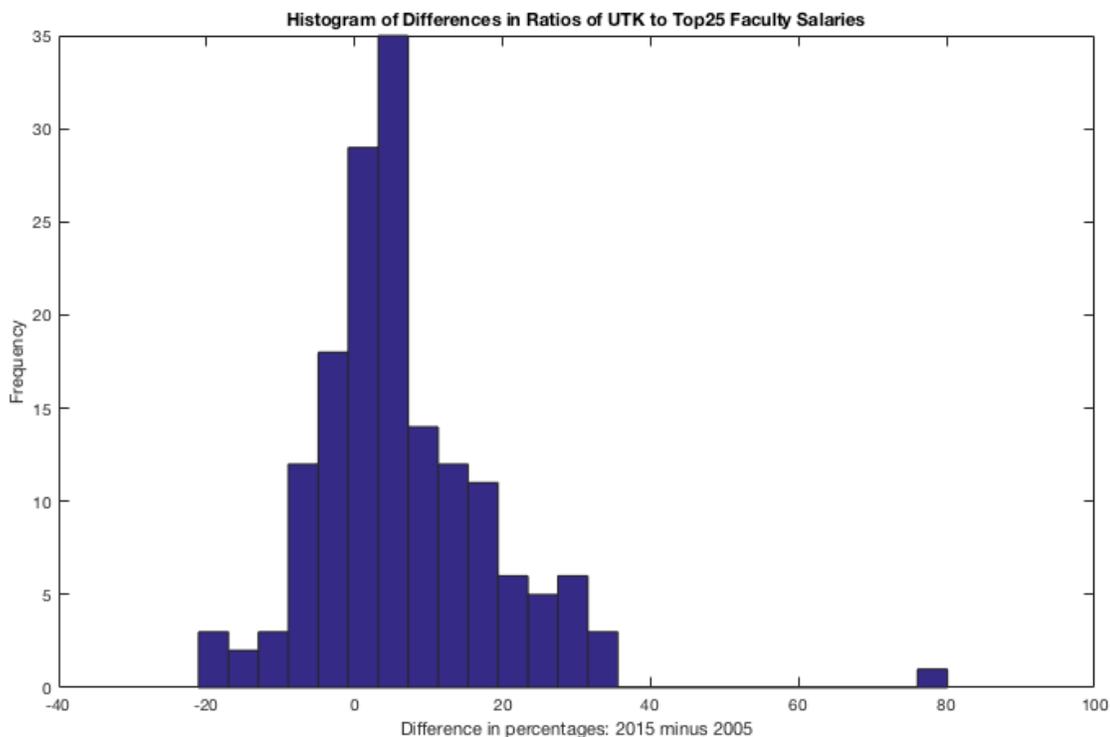


Figure 3: Histogram of differences (2015 value minus 2005 value) for percentage of UTK to Top 25 salaries.

Figure 3 clearly illustrates that there have been some large differences across different units/ranks in changes in percentage salaries relative to Top 25. If all units/ranks had progressed similarly, the distribution in Figure 3 would be far more peaked. That is, if each unit/rank had made similar progress towards having average salaries near those of the Top 25 comparable units/ranks, the distribution would be very clustered around 6. It is evident that a large number of units have actually regressed over the past decade in terms of the metric of percentage salary relative to Top 25. Similarly, some units/ranks have far outpaced others in progress towards having salaries comparable to Top 25. We have not "color coded" these groupings by units such as Colleges, but do further analysis by Colleges below. The results do merit perhaps further analysis by the administration as to which units have "fallen behind" and whether this is a desired outcome or one that is not intended.

It is possible that the variation noted in Figure 3 arises due to correlations between the relative standing of units in 2005 and their standing (in this metric) in 2015. To assess this, Figure 4 is a scatter plot of the 2005

percentages compared to the 2015 percentages across all UTK units/ranks. If there was a strong relationship between the two, these would be highly correlated. Figure 4 clearly illustrates that there is little correlation (the correlation coefficient is .42 indicating a very weak positive relationship). Thus, when viewed across all units, there is very weak evidence that units/ranks with higher percentages early in the 10-year period gained in this metric over the 10-years more than units with lower percentages early in the period.

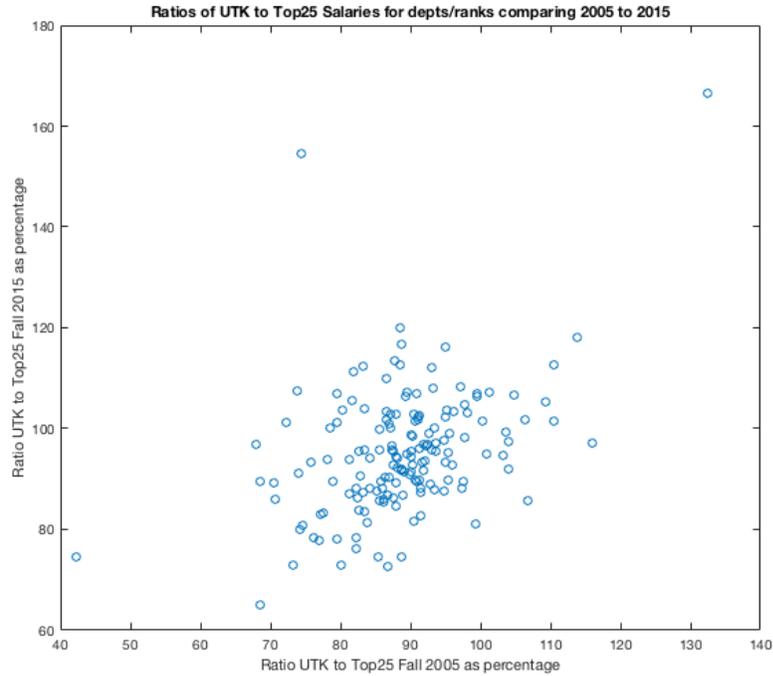


Figure 4: Plot of 2015 versus 2005 percentages of salaries relative to Top 25.

The variation in Figure 4 can readily be analyzed in more detail and to illustrate one additional aspect, we consider how the data from different Colleges appear by color-coding all units/ranks within a College in Figure 5. In this Figure, the 45° line indicates the points along which a unit/rank would have exactly the same percentage for its average faculty salary relative to Top 25 institutions in 2005 and 2015. Points above the line are for units/ranks for which there has been an increase in percentage relative to Top 25 over the ten years and points below the line indicate units/ranks which have regressed in this metric relative to the UTK goal of Top 25 ranking.

The results indicate some consistent results for particular Colleges. The Colleges of Engineering, Business and Communications have essentially all the units/ranks within them located above the 45° line, indicating that these Colleges have salaries that have improved relative to Top 25 comparative units/ranks over the ten years. Arts and Sciences has vast majority of its units/ranks located above the 45° line, indicating that most of its units have progressed in this metric. The College of Agriculture and Natural Resources has a large fraction of its units/ranks falling below the 45° line, indicating that CASNR has lost ground relative to Top 25 institutions in this metric. The other Colleges (Education, Law, Nursing, Social Work) have a scattering of units/ranks

above and below the 45° line, indicating lack of consistency across these Colleges in progress in this metric. We encourage caution in attributing too much credence to any single point (e.g. there are several outliers) since the points are averages within units/ranks and thus a single very high salary can skew results. We also make no attempt to weight points based on faculty numbers in the unit/rank. A preferable metric would be the median rather than average salaries in a unit/rank, but we do not have access to comparative data on medians for Top 25 institutions.

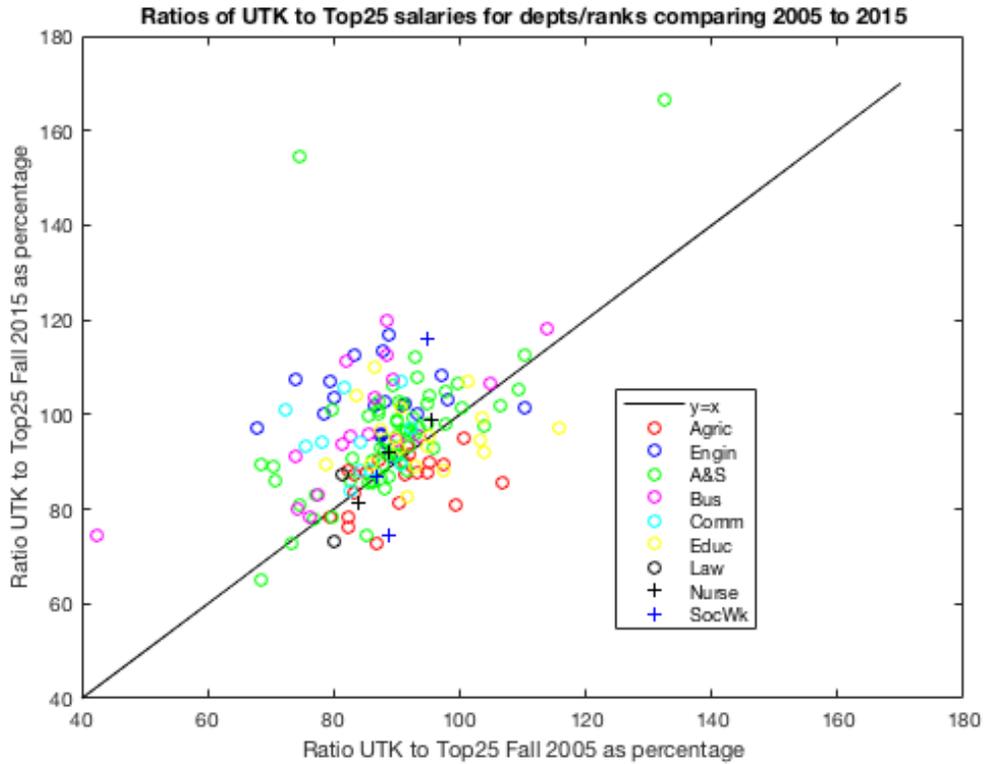


Figure 5: Plot of 2015 versus 2005 percentages of salaries relative to Top 25 color-coded by College.

**Summary**

These analyses indicate that there has been very significant progress across much of UTK towards having faculty salaries that are comparable to those at Top 25 institutions. Despite this, the progress has been very heterogeneous across UTK with some units advancing a great deal in this metric and others falling further behind. The aggregate data indicates certain Colleges which are clearly falling behind in this metric compared to others, and some that have moved to having comparable salaries to Top 25 institutions. There are many possible reasons why some units/ranks have progressed far more than others. The data indicate that there has been differential allocation of resources for salaries to different units over the past decade. Whether the resulting heterogeneity of progress was planned or unintentional might be of concern to the new UTK administration. While lifting every unit relative to Top 25 institutions may have been a goal, at least in the metric analyzed here it has not been realized.