**KU Faculty Compensation Committee 2019-2020**

# Executive summary

The committee received data comparing KU salaries to peer institutions' in October, 2019. Those data reflect salaries before the merit raise given in the fall; in that fall, KU gave a merit raise to its employees that averaged 2.5% of their pay.  Unlike previous years, the salary analysis now uses the Runzheimer index to correct for differences in cost of living between Lawrence and the homes of our peer institutions. KU level of pay continues to worsen compared to peer institutions. In 2019 KU faculty made 83.0% of the pay rate of our peers (82.7% for full professors, 82.4% for associates, 80.7% for assistant professors and 92.4% for lecturers). The 2.5% merit raise would mean that KU faculty were making 85% of faculty at our peers, if those peer institutions did not give additional raises since October, 2019. The gap is still large and accounting for cost of living does not alter the analysis much.

Much of the committee's work consisted of reacting to a report on salary equity prepared by Analytics & Institutional Research (AIR, which performs the tasks formerly performed by KU OIRP). In the Fall of 2019, deans were provided for funds to address issues of equity in compensation - specifically, a 0.5% equity merit pool and $192K provided by the provost's office. AIR provided the committee with a faculty salary equity study that examined salaries before and after merit raises at KU. In particular the report looked at whether or not gender or identifying as a member of an underrepresented minority showed statistically significant effects on a measurement of salary. That report only included full-time faculty at the Lawrence campus who have teaching as a large portion of their job responsibilities. Overall, the report showed that the equity merit pool had addressed some issues. The statistical effect of being a woman on salary was slightly negative in both the before-merit-raise (-1.8%) and after-merit-raise (-0.9%) analyses. In neither case did the effect pass the traditional threshold used in many statistical tests (the threshold is a $P$-value below 0.05; the $P$-value was close to 0.07 in the pre-merit-raise analysis, and 0.37 in the post-merit raise analysis). Identification as a member of an underrepresented minority had a small positive effect on salary in both analyses (3.0% and 2.5% respectively; the $P$-values in both analyses were near the 0.05 threshold).

The committee discussed the weakness of the equity study, and conveyed these concerns to AIR: A large number of faculty (e.g. Professors of Practice, Clinical faculty, and part-time lecturers) are excluded from the report; the report uses pay rather than total compensation; the study treats rank as an explanatory variable, etc. The latter point is particularly notable. If there are disparities in hiring that result in people performing equivalent tasks being assigned different titles, then those disparities can show up as an effect of the job title in a regression analysis. AIR has expressed a willingness to work with the committee on improving the study, but those efforts have been hamstrung as AIR tries to hire another data analyst. AIR is under significant pressure to produce analyses to help KU respond to changes in the budget landscape and KU's administration changes. This has led to delays in our committee getting data, and made it infeasible to finish more thorough analyses.

**KU Faculty Compensation Committee 2019-2020**
The members of the 2019-2020 faculty compensation committee were: Joshua Arpin, Dr. Mark Holder (chair), Dr. Cambrey Nguyen, Dr. Hossein Saiedian and Dr. David Weiss. Dr. Chris Brown (ex-officio) and Dr. Suzanne Valdez also participated.

# Standing charge

In October 2019, Analytics & Institutional Research (AIR) provided the committee with an analysis of data comparing KU salaries to peer institutions. Those data reflect salaries before the 2.5% merit raise given in the fall of 2019.  Unlike previous years, that analysis now uses the Runzheimer index to correct for differences in cost of living between Lawrence and the homes of our peer institutions. The set of "peer institutions" referred to in our report are the AAUDE 16-member comparison group using in many AIR analyses (Colorado, Illinois, Indiana, Iowa, Iowa State, Michigan, Michigan State, Minnesota, Missouri, Nebraska, Ohio State, Purdue, Texas, Texas A&M, and Wisconsin). In 2019 KU faculty made 83.0% of the pay rate of our peers (82.7% for full professors, 82.4% for associates, 80.7% for assistant professors and 92.4% for lecturers). The 2.5% merit raise would mean that KU faculty were making 85% of faculty at our peers, if those peer institutions did not give additional raises since October, 2019. The gap is still large and accounting for cost of living does not alter the analysis much.
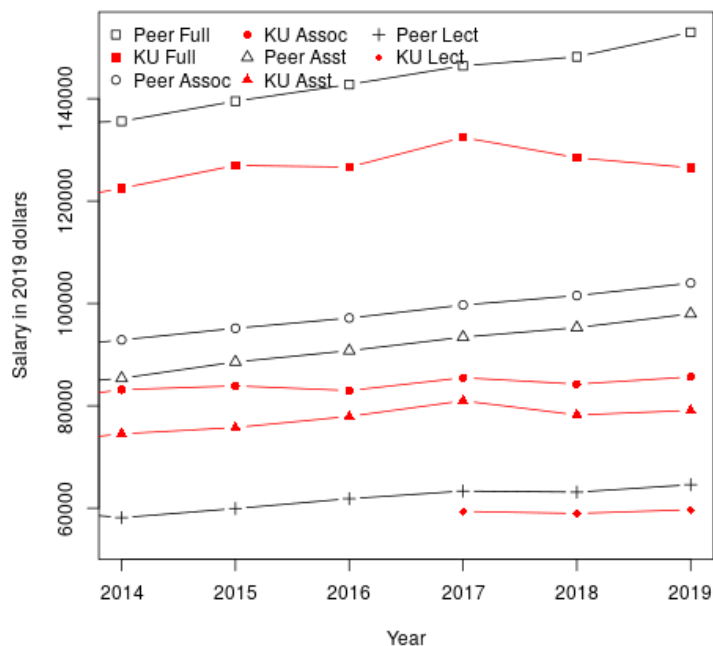
**Figure 1**: Salary corrected for inflation and location-specific cost of living over time. Average salaries for KU faculty at each of four ranks are shown as red lines and points. Average salaries for faculty at the same rank at peer institutions is shown in black. KU data on lecturer average pay was not available in the AIR reports for years prior to 2017.



As **Figure 1** shows, KU level of pay continues to stagnate or decline, while salaries at peer institutions have consistently increased (although lecturer salary has only modestly increased in peer institutions).

As noted in previous years, KU has an unusual distribution of faculty across ranks. Compared to peers KU has fewer full professors and more associate professors. The 2018-2019 faculty compensation committee found it useful to examine the average salary at KU and peers by looking at trends in both "headline" numbers (KU mean and Peer), but also the salary using KU's proportions of faculty in each rank combined with peer's salary rates, and Peers' proportions in each rank along with KU's salary rate. **Figure 2** demonstrates that KU's rank proportions do lower the overall average (black line vs blue line), but the KU salary rates for each rank have a larger effect (black line vs green line). Both combine for the large gap comparing peers (black lines) with KU mean salary (red line).
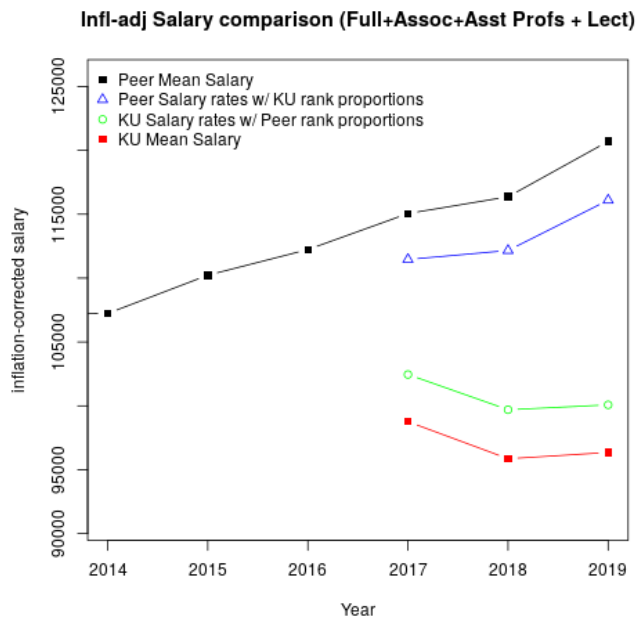


**Figure 2** Weighted average salaries (inflation corrected) over time. Peer institutions are shown in black. KU reported information on lecturer salary for only the last 3 years. The red line shows the KU mean salary for faculty. The blue line shows the average our peers would pay if they had KU's proportion of faculty in each rank. The red line shows the mean salary if one were to use our peer's mean proportion in each rank, but KU's mean salary at each rank.

The analyses indicate that (once again) KU professors are paid substantially less than faculty of the same rank at our peer institutions. Addressing this pay gap continues to be the most obvious recommendation from the analyses that the faculty compensation committee comments on.

## Faculty Salary Equity Study

A formal faculty equity study had not been run at KU since 2015. At that point (based on an informal summary to the current committee), the study did not find evidence of lower salaries being associated with gender or membership in an underrepresented minority group. The 2018-2019 year faculty compensation committee tried to get a report in early 2019. Initially AIR estimated that it could be run in early summer, then the date was delayed until late summer. Given the existence of pools of money to address equity in salary (a 0.5% equity merit pool and $192K provided by the provost's office) as a part of the fall 2019 merit raises, the analysts from AIR recommended waiting until late fall, so that the faculty compensation committee would have

access to an analysis of the post-merit-raise salary data. Their report was delivered to the committee on 20 December, 2019.

AIR's study uses regression with the natural logarithm of salary as the response variable. They examined salaries before and after merit raises at KU. Explanatory variables used include:
1. Rank (assistant, associate, or full; part-time lecturers and non-tenure track faculty were not included);
2. School/division;
3. Whether or not the discipline was affected by a salary for premium (used to correct for the fact that economics faculty make more money than faculty in other social sciences).
4. Three measures of accomplishment (distinguished professorship, named teaching professorship, or high rate of research funding spent);
5. Three measure of experience;
6. Gender of the faculty member (based on the demographic records that AIR has access to); and
7. Whether or not the faculty member is a member of an underrepresented minority.

That report only included full-time faculty at the Lawrence campus who have teaching as a large portion of their job responsibilities. Overall, the report showed that the equity merit pool had addressed some issues. In the analysis of pre-merit-raise salaries, the regression model found a small negative salary coefficient for the explanatory variable "gender is female";  The estimated effect size was small (-1.77% of annual salary), and the P-value (which summarizes the extent to which the apparent effect could be the result of random sampling error) was 0.07 which is close to the widely-used 0.05 threshold.
When analyzing the salary data after the merit raise, AIR found the effect of gender=female was smaller (-0.86%) and further from the significance threshold (0.37).
This constitutes some evidence that deans and other heads of units at KU were able to address some of the disparity in salary across gender via the merit raises.
In both the before- and after-merit-raise analyses, the regression model estimated that faculty who were members of an underrepresented minority group was associated with a small increase in the predicted salary (2.97% and 2.53% higher respectively).

The committee discussed several weaknesses of KU's current equity study.

## Weakness #1: Only full time, tenured and tenure-track faculty are analyzed in the study

A large number of faculty (e.g. Professors of Practice, Clinical faculty, and part-time lecturers) are excluded from the report. Part of AIR's rationale for doing this is that some aspects of job performance (e.g. measures of research expenditure) are not available for these faculty. This is a valid concern. Simply entering a value of $0 in research expenditure for non-research faculty would penalize those faculty in a general model. Doing that would present data to the model that these faculty were doing poorly in one metric, when in fact that metric is not a part of their job description. Despite the fact that it may be wise to exclude these faculty from a general model that assigns rewards for research productivity, KU should be looking carefully at equity

issues for all of its employees. There is a clear need to design a new study that is capable of assessing salary equity issues across all of the faculty.

## Weakness #2: The report just uses salary, not full compensation

Benefits such as health care and retirement are ignored by AIR's study. KU is also unusual in giving its employees very little tuition assistance. This is not captured in the salary equity study (or in the study that compares KU salaries to peer institutions).

## Weakness #3: The report treats rank and job descriptions as explanatory variables only

Regression models attempt to explain variation in the response variable, but treat the explanatory variable data as "given". Relying solely on them could lead to KU being unable to detect some forms of inequitable compensation. For example, consider a hypothetical case in which a discriminatory organization used one job title for most of the women they hired. If people in that job title were paid less, and the job title was used as an explanatory variable in a regression model, then it is possible that discrimination in practice could appear to the regression model as simply a negative effect on salary associated with a particular job title. This hypothetical is meant to underscore the committee's main point: KU should perform a careful analysis of the way we study equity in compensation. We should not rely too strongly on the fact that the current regression model does not find statistically significant evidence of inequity in pay by gender.

## Discussion of the report's weaknesses with AIR

Committee chair Holder has discussed these points with Nick Stevens at AIR. He has been quite receptive to feedback from the committee. In fact, Mr. Stevens has several good ideas about improving the study. For instance, Mr. Stevens recommended the interesting idea of using machine learning methods trained on data about salary and explanatory variables for KU's male faculty. Such a model could then be used to predict salaries for female faculty. Looking for a discrepancy between the actual salary of a woman and her predicted salary would be a way to identify problems of equity in compensation.

The committee also expressed a desire to get a fuller picture of compensation and benefits. The staff at AIR appears to be so busy with other analytics for KU that it is difficult for them to find data for peer institutions that is not reported in the AAUDE.

AIR has successfully recruited an additional data analyst who will start working in the Spring of 2020. Mr. Stevens recommends that the details of the equity study should be discussed with that analyst. It is worth noting that the staffing levels at AIR have been a noticeable impediment to the faculty compensation committee being able to work in an efficient manner. The faculty equity report was requested in January of 2019 and delivered in December (though there were several productive conversations on the topic between the committee chair and AIR during that time frame). The 2019-2020 academic year has certainly been a major stressor for many aspects of KU. This final paragraph in our report is not intended to be read as a criticism of AIR.

They have had to deal with turn-over at high levels of the KU administration, and those changes inevitably lead to the need for lots of analyses for them to perform.

This year's committee has a few concrete suggestions for working with the new data analyst at AIR in the next year on an improved equity study
1. In addition to the current regression model, committee members suggest an analysis of the distribution increases in compensation within a given rank using years in that rank as an explanatory variable. The current model uses rank and years of service as explanatory variables, but does not explicitly model years in rank as an explanatory variable.
2. Examining the range of current salaries as a percentage of each person's initial salary in their current rank could be a worthwhile method of detecting disparities in the distribution of raises.
3. The AIR reports in future years should strive to separate the effects that are the result of long-standing trends from those that are the results of recent budget cuts and the policy of incentives for early retirement.

Finally, the committee thinks that it may be wise for KU to find a contract with a consultant who can assist the committee, AIR, and KU with producing a report on equity in compensation such that we can all feel confident that the internal studies are robust and sensitive.