SCESF Report on the Economic Status of the Faculty

Fiscal Year 2021
July 1, 2020 through June 30, 2021

I. Introduction

The Senate Committee on the Economic Status of the Faculty (SCESF) is charged by the "Rules of the Faculty Senate" to:

- Gather and organize data on faculty salaries and benefits;
- Issue an annual report on the economic status of the faculty; and
- Represent the faculty in the determination of University policy on salary issues.

The focus of this report is the current economic status of the faculty, based on salary and benefits data provided to the Committee by the Provost's Office, prepared by the Offices of Institutional Research & Analysis and Human Resources. The data as provided to SCESF preserve anonymity of individuals. Benefits data were provided by Human Resources; additional data were extracted from publicly available websites.

Salaries discussed in this report pertain to the aggregated nine-month (academic year) base salary in Fiscal Year 2021 (July 1, 2020, through June 30, 2021) data for 1,347 members of the tenure-line faculty (758 professors, 282 associate professors, and 307 assistant professors). The salaries of deans and faculty on phased retirement are excluded. As in past years, these data also exclude tenure-line faculty from the Perelman School of Medicine (PSOM), except for those in the basic sciences; as well as more than 1,000 clinician educators in the standing faculty from the Perelman School of Medicine, and the Schools of Dental Medicine, Veterinary Medicine, and Nursing. These exclusions are highly consequential. The University reports that we currently have 2,827 standing faculty.[1] Thus, the base salary data that we receive is for less than half of the standing faculty and there are 1,480 standing faculty whose compensation we cannot assess. Our repeated requests for the base salary data of the entire standing faculty, whose interests we are charged to represent, were denied. This *significantly limits the coverage of our analysis* to a subset of faculty for which we have base salary data.

An academic year base salary is that paid for the normal academic duties of a standing faculty member (teaching, research, and service) for a nine-month academic year, irrespective of whether the salary is disbursed over a nine- or twelve-month period, or paid from general operating funds and/or from designated funds. In the four healthcare schools listed above, which have some or all standing faculty on a 12-month or "annualized" base, salaries have been adjusted to be comparable with salaries reported on a 9-month basis.

It is important to emphasize that "summer money"—additional income paid from various sources for all or parts of up to three summer months—is *not* included in the academic year base salaries analyzed and reported here, nor are other emoluments such as compensation for clinical work, administrative stipends, pay for extra teaching, etc. This *significantly limits the scope of our analysis*, and we can offer no conclusions about the state of total compensation for faculty as we have no data on it, despite our repeated requests for this data.

Section VI details SCESF's conclusions and recommendations.

All publicly viewable tables provided to the Committee by the Office of the Vice Provost for Faculty are published on the following pages.

II. Key Developments and Focus of the Committee

As in previous years, the Committee has reviewed the data provided by the Provost's Office, with the findings summarized in Section III below. However, the Committee has also focused on the specific novel charges given to it by the Faculty Senate and several unusual developments as listed below.

1. Specific charges given to the Committee this year include identifying salary and compensation inequities based on race, color, religion, sex, national origin, age, disability, or genetic information, as well as providing a rationale for accessing data from the Office of Institutional Research and Analysis to permit an encompassing review of compensation issues, including for under-represented minorities and patterns by school. These charges are inter-related and we address them in Section IV.
2. Fiscal Year 2021 started right after the first wave of the Covid-19 pandemic, which dramatically affected the University budget and operations. In response, the University instituted a salary freeze for FY2021 for faculty earning more than $70,000. By the second half of FY2021, vaccines became widely available in the U.S. and the economy began re-opening but experienced significant labor shortages and supply chain disruptions. This led to a significant and persistent increase in inflation. A combined effect of the salary freeze and the increase in inflation has led to a decline in the real earnings of the faculty.[2] We discuss the implications of these developments in Section V.
3. During FY2021, the University announced university-wide course schedule changes that effectively increase the length of class meeting times by 10 minutes. This increase has substantial consequences. For example, for a class that used to meet twice a week for 80 minutes and now meets for 90 minutes, each class period becomes 12.5 percent longer. This is equivalent to keeping the length of a class period the same but increasing the length of the semester by 12.5 percent, or 1.75 weeks. For a class that used to meet three times per week for 50 minutes and now meets for 60 minutes, each class period became 20 percent longer. This is equivalent to increasing the length of the semester by 2.8 weeks.

The Committee acknowledges the University Policy on Class Meeting Times[3]: "The available teaching blocks (60-, 90-, and 180-minutes, for example) remain unchanged and the duration of class meetings remains at the discretion of the instructor, up to the scheduled class end time."

It is our understanding that this implies that faculty is free to choose how to use the newly added class time. However, it appears inevitable that faculty will end up spending this time on teaching. First, because faculty are passionate about teaching, and second, because the social norms and students' expectations will adjust over time so that the entire allotted class period is used for teaching. The increase in time spent on classroom teaching will have to be offset by a decline in time spent on student advising, interacting with students outside the classroom, and research. Given that the increase is not compensated, the Committee is concerned that it will be detrimental to attracting and retaining the best faculty. However, because this report covers only FY2021 and the policy is implemented in FY2022, the Committee decided against pursuing this matter further and plans to address it next year.

III. Review of Data Provided to SCESF

Table 1 indicates that the median faculty member in any academic rank (professor, associate professor, and assistant professor) did not receive a base salary increase in FY2021, consistent with Budget Guidelines. Tables 6, 7, and 8 further imply that the effects of the salary freeze were even more widespread as, in each school/area at Penn, at least 75% of faculty continuing in rank did not receive a base salary increase (the third quartile of salary increases is zero).

Against this backdrop, Table 1 indicates a significant increase in Consumer Price Index (CPI)—U.S. city average CPI growth of 5.4% and Philadelphia CPI growth 4.9%. With wages of most faculty fixed while prices are growing, *the real purchasing power of faculty salaries declines*. We discuss this in Section V.

While most faculty members did not see a base salary increase, a relatively small number did. Table 2 indicates that 7.9% of standing faculty were awarded salary increases that exceeded the rate of consumer price growth in Philadelphia. There is significant variation across schools as the percentage of such salary increases varies from 0.0% (Dental Medicine and Social Policy and Practice) to 13.2% (Nursing). With the data available to us, we cannot determine to what extent the variation is accounted for by different

1 https://home.www.upenn.edu/about/facts; retrieved February 28, 2022.

2 Nominal salary is the number of dollars a faculty is paid. Real salary is the amount of goods and services individuals can buy with the dollars they are paid. Inflation measures the growth in prices of those goods and services. When the nominal salary is fixed but prices of goods or services increase, the real earnings decline.

3 https://catalog.upenn.edu/pennbook/policy-class-meeting-times/; retrieved February 28, 2022.

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overall salary budgets versus administrative decisions. The increase of the salary among the small fraction of faculty receiving a raise must have been quite large to lead to the increase of the overall mean (average) salary of 0.5% for assistant professors, 2.9% for associate professors, and 1.2% for professors, as indicated in Table 1.

The data in Table 9 offer the potential to understand the reasons for the large increase in average base salaries of associate professors. The reason is that Table 1 reports data for faculty continuing at Penn from FY2020. In contrast, Table 9 reports data for faculty continuing at Penn from FY2020 but also remaining in the same rank. We observe in Table 9 that both mean and median salaries of associate professors continuing in rank remain essentially the same between FY2020 and FY2021. This suggests that the 2.9% increase in salaries of associate professors in Table 1 may reflect the increase in salaries upon promotions from assistant to associate professors. We are not entirely confident in this interpretation because data in Table 9 does not appear to align well with data in earlier tables, and we were not able to determine the reason for this discrepancy. For example, comparing FY2020 with FY2021 in Table 9, there is growth in the median salary for professors continuing in rank from $211,391 to $215,061, or 1.74%.[4] It is unclear how to reconcile this with zero increase in the median salary of professors in Table 1 and zero increase in salary for 75% of professors reported in Table 6.

Table 9 also reveals useful information about the distribution of salaries and their changes. Across all ranks and all years, the mean salaries are higher than the median. This indicates that the distribution of salaries across faculty is skewed to the right: salaries above the median are further above it than the salaries below the median are from it. A few very high salaries could also produce this result. The two columns of ratios in Table 9 are also informative. The column "Not Weighted" reports the ratio of the mean or median for each rank in a given year to the corresponding mean or median of assistant professors in the same year (shown in the "Amount" column). For example, the unweighted ratio of the mean associate professor salary in FY2021 ($144,238) to that of assistant professors ($133,275) is 1.08. This ratio is affected by how faculty at different ranks are distributed across schools that pay different salary levels. The column "Weighted" adjusts for this composition. When weighted by school, these ratios are in essence the average salary differential by rank within schools: Continuing associate professors are paid on average 23% more than continuing assistant professors. The fact that the weighted salary premium of associate professors exceeds the unweighted one implies that associate professors tend to be concentrated in lower-paying schools (this is also apparent in data reported to the Committee but not appearing in this report). To the extent that there is any trend in school-adjusted (weighted) ratios, the ratio of average salaries of continuing professors to continuing assistant professors has grown over time while the average salaries of associate professors have declined slightly relative to the average wages of assistant professors.

Table 10 presents the same rank- and Academic Year-specific medians shown in Table 9, now bracketed by Q1 and Q3 salaries (representing salaries at the 25th and 75th percentiles of salary distribution). The interquartile range (IQR) is the difference between these two quantities. The ratio of the IQR to the median is particularly informative because it adjusts for the fact that the dispersion as measured by the IQR alone could be expected to increase as average salaries grow. This measure continued the trends noted in Committee's reports in several preceding years. Dispersion of professors' salaries is increasing by about 1% annually, from 0.49 in FY2014 to 0.55 in FY2021; dispersion in the salaries of associate professors changes little; and dispersion in the salary of assistant professors continues to decline sharply from 0.82 in FY2014 to only 0.62 in FY2021. Nevertheless, the dispersion among assistant professors continues to exceed that among professors. While in previous years the decline in the dispersion of the middle 50% of assistant professor salaries was driven mainly by the rise of the assistant professor salary level at the 25th percentile (Q1), in FY2021 it was due to the decline of the salaries at the 75th percentile (Q3). Note that 75th percentile (Q3) salaries for assistant professors continue to exceed those for associate professors, due to the correlated school differences in (a) salaries and (b) proportions of faculty at the rank of associate professor noted above.

The most relevant comparisons, of course, are with the pay for faculty elsewhere. The University provides us with two sets of comparisons. Table 5 displays Penn's mean faculty salary by academic rank together with mean salaries at other Ivy Plus universities (8 Ivy League schools plus Chicago, Duke, MIT, and Stanford) expressed as percentages of Penn's mean salary. Among this comparison group, Penn's mean salaries ranked 2nd for assistant professors, 6th for associate professors, and 7th for professors—a ranking profile that has not changed greatly over the last ten years.

These comparisons are affected by the cost of living differentials across locations where these universities are located. Philadelphia is cheaper to live in than, e.g., Boston, New York, or Palo Alto. Thus, the same base salary goes further in Philadelphia. Table 5-Adjusted contains data with base salaries across Ivy Plus Universities (excluding Dartmouth) adjusted using Runzheimer living cost indices. While the surface take-away from this table is that salaries at Penn are quite competitive once costs of living are taken into account, the precise inference is challenging. First, these indices are updated only infrequently (the current version reflects 2017 estimates). These updates induce implausible swings in salaries adjusted by the costs of living. Moreover, it is unclear whether this adjustment is the appropriate one. For example, a major driver of the cost of living differences across locations is the cost of housing. While universities may pay comparable base salaries, universities located in high-cost housing markets (e.g., Columbia, New York University, Stanford) offer housing or housing subsidies. We do not see this in our data, and adjusting the base salary for the cost of housing appears not the right thing to do. Thus, we do not think that the patterns revealed by the data in Table 5-Adjusted are fully credible.

As mentioned above, salaries vary significantly across schools and disciplines even at the same academic rank. Thus, the comparison of average salaries across universities is affected by the differences in the faculty distribution across schools and disciplines. More revealing evidence would compare average faculty salaries across universities in the same academic field and rank. We cannot perform such a comparison among Ivy Plus universities, but we can do so based on data provided to us in Table 4 which come from approximately 60 universities that participate in the American Association of Universities Data Exchange (AAUDE), roughly half of which are state universities. These data paint a *less favorable picture of Penn's competitive standing*. Consider, for example, assistant professors. Table 5 suggests that Penn is Ranked #2 based on the overall average salary of assistant professors. However, Table 4 reveals that Penn is ranked #2 or better in only 3 out of 13 reported academic fields. Among AAUDE-participating universities[5], the average rank of assistant professor salaries at Penn across fields is around 8 and it has remained relatively stable over the years. The average ranks of associate professors and professors are 8 and 7, respectively, and they also do not exhibit a meaningful trend over time.

The preceding analysis of Penn's salary rank by academic rank and field set aside the fact that not all fields are present in all AAUDE-participating universities. For example, while 60 universities report data for humanities or natural sciences, only 30 report data for nursing, and only 15 for veterinary medicine. One way to incorporate this information is to consider Penn's position in salary distribution among all institutions reporting data for a given academic field. Figure 1 reports the average percentile across academic ranks for a given field (roughly interpreted as the fraction of universities in AAUDE sample paying higher salary than Penn in that field).[6] Figure 1 illustrates that while base salaries at Penn lead the distribution in some academic fields, others fare less well. For instance, between 25 and 40 percent of universities with graduate education, natural sciences, and veterinary medicine programs pay higher salaries in those fields than Penn does.

Finally, an important aspect of total compensation is employee benefits. Table 13 features a comparison of two of the primary benefits available to Penn faculty—employer retirement contributions and undergraduate tuition for dependents—with those prevailing at the other Ivy Plus institutions. Penn offers two types of retirement plans. In the Basic Plan, the University makes contributions to 403(b) tax-deferred retirement accounts, which increase with faculty member age to a maximum of 4% of base salary at age 40 and over. In the Matching Plan, Penn matches the faculty member's contributions dollar-for-dollar in a 401(a) tax-deferred retirement account,

4 The same numbers appear in Table 10.

5 https://www.aaude.org/

6 For example, if in some field Penn ranks 15th among 60 universities reporting data in that field to AAUDE, its percentile rank would be 15/60*100=25, implying that 25% of universities pay higher salary in that field than Penn does. Thus, the smaller the rank, the more competitive the salary at Penn is in that field. The interpretation of the numbers is not exact because of the relatively small size of the survey. Because of this, although Annenberg pays the highest salary to associate professors among 42 universities reporting data for associate professors in the field, its percentile rank is 1/43*100=2.3 rather than zero.

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up to a maximum of 5% of salary beginning after the faculty member's first full year of employment. Virtually all eligible faculty participate in the matching retirement account program. Penn's maximum contribution of 9% (4% to 403[b] plus 5% to 401[a]) remains below the Ivy Plus group median of 10%. Of Ivy Plus institutions, only one offers a maximum contribution lower than Penn's. Penn also offers benefits for the undergraduate tuition of dependents. Penn covers 75% of the tuition and technology fees ($41,664 in FY2020) for dependents enrolled at Penn ("home") and up to 40% of Penn's tuition fee ($21,861 in FY2020) for dependents enrolled elsewhere. Among 12 Ivy Plus institutions, Penn's tuition benefits rank 5th with respect to "home" tuition and 6th with respect to the tuition contribution for students not attending the university at which a faculty member is employed.[7] Unfortunately, our data on benefits have important limitations. They do not include, from the perspective of comparisons with peer institutions, data on major benefits including medical, vision, and dental insurance. They also do not include policies regarding retirement incentives. Within Penn, we do not have data on the distribution of *use* of various benefits across faculty, a matter that bears on the distribution of non-base salary and benefits as discussed in conjunction with gender and race/ethnicity equity and equality in the next section.

IV. Addressing New Charges to SCESF

This year, SCESF was given a charge to "Identify salary and compensation inequities based on race, color, religion, sex, national origin, age, disability, or genetic information." We have limited ability to do so in the data made available to us by the University. We can assess some patterns of compensation by gender and to an even more limited extent by race/ethnicity. We do not have access to any data that includes information on, e.g., religion, national origin, age, disability, or genetic information.

Table 12 indicates that the average base salary for women at Penn is lower than the mean salary for men at the same rank. At the professor level the difference is $18,386 (or 8.2%), at the associate professor level it is $11,067 (or 8.1%), and at the assistant professor level it is $13,550 (or 10.7%).

Women have historically been disproportionately represented in departments and schools that have lower salaries. To assess the importance of these compositional differences for the observed gender gap in base salaries, Table 12 features a second column for women, which recalculates the mean salaries of women by weighting their school-specific salaries by the proportion of all male faculty found in those schools. This weighted mean—what would the average salary be across all female faculty if female faculty maintained their own salaries, but were distributed across the University in the same proportion as males?—can then be compared with the existing (same) average male salary at Penn. The results are instructive. A very substantial portion of the actual, unweighted wage disparity stems from differences in gender ratios in faculty across the different schools. Specifically, after re-weighting, at the professor level the difference between male and female average base salaries falls to $3,341 (or 1.4%), at the associate professor level it shrinks to $661 (or 0.4%), and at the assistant professor level it declines to $3,060 (or 2.2%). We note that the adjustment is based only on the gender composition across schools without considering smaller divisions and departments within many schools, which may also contribute to accounting for the observed gender gap in base salaries.

Although some gender gap remains after accounting for differences in gender composition across schools, we do not detect clear evidence of compensation inequity based on gender within schools and academic ranks. However, it is important to emphasize that overall, women are paid significantly less than men at Penn. The statistical adjustment only reveals that this is largely due to the fact that women are more likely to be employed in lower-paying schools. We do not have access to data that can reveal why this is so and to verify that women are not receiving disparate treatment in hiring. In addition, the tendency of men and women to concentrate in different schools raises concerns about faculty diversity within schools.

The University also shared with SCESF a regression analysis that controls for a wider range of attributes. This analysis regresses the log of base salary on gender, coarse indicators for race/ethnicity, academic rank, time in rank, status as a department or endowed chair, and academic field. The academic field is roughly grouped at the school level, retaining some of the heterogeneity present in the weighted analysis of Table 12. The regression analysis shows that, without adjustment for field, rank, or time in rank, women have a base salary that is 16.8% lower than that of male faculty. Adjustment for rank reduces this gap to 7.8% because there are proportionally fewer women in higher-paid ranks. Adding controls for the academic field further reduces the gender gap to 0.2%, which is congruent with what was observed after direct re-weighting in Table 12.[8]

The regression analysis also gives us some visibility into the issues of potential base salary inequities based on race/ethnicity. The regression includes two indicator variables, one for Under-Represented Minority (URM) status (African American/Black, Hispanic, and Native American/Alaska Native) and the other for Asian/Pacific Islander. Thus, the control group contains faculty of all other races and ethnicities, predominantly white. The regression analysis shows that, without adjustment for field, rank, or time in rank, URM faculty have a base salary that is 3.4% lower than that of the control group. Adjustment for rank flips this gap to a premium of 7.1%, indicating that URM individuals are disproportionately concentrated at lower academic ranks, but are paid well relative to other individuals of the same rank. Adding controls for the academic field further increases the URM premium in base salaries to 8.8%. In contrast, Asian faculty starts with a base salary that is 10.6% lower than in the control group. The gap decreases to 4.6% after controlling for academic rank and to 2.3% after controlling for academic rank and school. While the latter two point estimates are economically large, they are noisy and one cannot statistically reject the hypothesis that they are equal to zero. All the regression-based estimates described up to this point have remained very similar over the last 10 years.

At the request of the Faculty Senate, the University has also provided us the estimates from a regression that, in addition to all other regressors mentioned above, included interaction terms for URM and Asian indicators and gender. This extended model was estimated on the full sample and separately for the three academic ranks. The point estimates on the interaction terms are not statistically significant, in part because of the samples becoming very small, and should be interpreted with caution.[9] Yet, they provide our only window on the interrelationship between base salary equity based on gender and race/ethnicity. On the sample that includes all academic ranks, a male URM faculty earns a 7.5% salary premium, while a female URM faculty member earns a 9.3% premium relative to her peers. On the sample of professors, a URM male can, on average, expect to earn a 10.8% premium, while the expected premium of a URM female is 21.3%. Among associate professors, the corresponding numbers are 2.1% and 4%, while on the sample of assistant professors they are 2.9% and 4.9%, respectively.

In response to the charge to rationalize a request for more comprehensive data, we note that all our analysis was based exclusively on information on base salaries because this is the only economic outcome available in the data provided to us by the University. Base salaries are important because they are the basis for most employee benefits, and they are also the component of pay to which annual increases are applied. However, in addition to base salary, total compensation includes summer support pay, compensation for clinical work, administrative stipends, pay for extra teaching, and so forth. We *can offer no conclusions about the state of total compensation for faculty as we have no relevant data*. Moreover, for assessing equity in compensation, it appears relevant to compare not just the base salaries by, e.g., gender but also to compare total compensation. This is important not only because total compensation is ultimately the relevant economic outcome for the well-being of the faculty. It is also important to counter some perceptions that may well be unwarranted. For example, there is anecdotal evidence that women do not fare as well as men within schools in the provision of non-"normal salary" economic compensation. In addition, conjectures abound that the school differences in salaries that maintain differences in overall pay by gender at the University (Table 12) would only exacerbate these differences were total salary compensation subject to observation. Absent a fuller accounting of faculty compensation, it is difficult to suppress anecdotal evidence and/or conjecture.

V. Consequences of Salary Freeze and Increase in Inflation

One-time events such as a salary freeze or a transitory spike in inflation

7 Benefits for two parent-partners employed at Penn are not summed, so when partners are both employed at Penn, only one tuition benefit can be used for each child. For this group of faculty, Penn's situation is less advantageous, since there are peer universities where these benefits pertain to the parent and not to the child.

8 Table 12 and the regression analysis rely on slightly different data. Table 12 limits the comparison to faculty who continued in rank, whereas the regression analysis includes promotions and appointments, and those in administrative positions (e.g., department chairs).

9 The results provided to us indicate statistical significance at 0.1, 1, and 5% levels. SCESF prefers them to be reported at the more conventional 1, 5, and 10% levels.

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have significant long-term consequences absent specific corrective actions in subsequent years. To help faculty appreciate the potential magnitude of these impacts, we decided to provide several illustrative calculations. We base them on a hypothetical associate professor earning $150,000 in FY2020 and who will remain at Penn for the next 20 years. In line with recent experience, we assume that real (i.e., adjusted for inflation) salaries at Penn grow at 2% a year. We then ask what are the implications for total earnings over the next 20 years of not receiving a 2% salary increase in one year only, i.e., due to the salary freeze in FY2021. We then similarly assess the implications of a one-time spike in inflation in FY2021 to 5%. We are aware that prices continue to increase rapidly after FY2021, but we are presenting a conservative calculation that assumes that after FY2021 Penn will compensate faculty for future rises in inflation to deliver the real salary growth of 2%.

1. Salary freeze, i.e., no increase in merit pay.

Consider two scenarios. In FY2021 because of the salary freeze, the wage of this professor remained the same as in FY2020, i.e., $150,000. If there were no salary freeze, it would have increased by 2% to $150,000*1.02=$153,000. What does this imply for total income over the FY2021-2040 period?

With salary freeze it will be $150,000*(1-1.02^20)/(1-1.02)= $3,644,605.[10] Without salary freeze it will be $153,000*(1-1.02^20)/(1-1.02)= $3,717,498. The difference is $72,893 and it represents the cumulative loss of income over 20 years only because of not increasing merit pay one time in FY2021. The reason for the large number is compounding (today's merit increase forms part of wages to which next period's merit increase is applied).

2. The effect of a one-time spike in inflation.

The inflation in FY2021 was approximately 5%. Salaries were frozen, and not adjusted for inflation. So the nominal wage of our hypothetic professor remained fixed at $150,000. Had the wage been adjusted for inflation (to keep the real wage unchanged), it would have been $150,000*1.05=$157,500. What are the effects of not adjusting salary for inflation in just one year, i.e., FY2021?

With salary freeze and an uncompensated spike in inflation in FY2021, total earning over 20 years will be $150,000*(1-1.02^20)/(1-1.02)= $3,644,605. If spike in inflation in FY2021 was compensated, they will be $157,500*(1-1.02^20)/(1-1.02)= $3,826,835. The difference of $182,230 represents the cumulative loss of income over 20 years only because of not adjusting salaries for inflation one time in FY2021.

3. The combined effect of salary freeze and inflation.

As we have already seen, with a salary freeze and an uncompensated spike in inflation in FY2021, the total earning of our hypothetical associate professor over 20 years will be $150,000*(1-1.02^20)/(1-1.02)= $3,644,605. Had wages been adjusted for merit (2%) and inflation (5%), the salary in FY2021 would have been $150,000*1.02*1.05 = $160,650, and total earnings over the next 20 years will be $160,650*(1-1.02^20)/(1-1.02)= $3,903,372. The difference in total earnings is then $258,767 and it represents the total cost over 20 years of implementing a one-time salary freeze while inflation jumped. It is equal to 1.725 current annual incomes of $150,000 of our hypothetical associate professor.

4. Effect on Retirement Account Balances after 20 years

So far, we have considered only the impact on base salaries. However, numerous benefits are tied to base salaries. Consider the impact on one such benefit—retirement savings. We assume that Penn's contribution to the retirement account of our hypothetical associate professor is 9% of annual income.

As above, we consider two scenarios. First, salaries in FY2021 were not adjusted for inflation or merit and remained fixed at $150,000. Second, had salaries in FY2021 been adjusted for merit (2%) and inflation (5%), the salary would have been $150,000*1.02*1.05 = $160,650.

Consider first FY2021. With a salary freeze, the retirement contribution was $150,000*0.09=$13,500. With merit increase and the adjustment for inflation, it would have been $160,650*0.09=$14,459, i.e., almost $1000 higher. Over the next 20 years, this difference earns compound interest. The same happens next year and so on. We omit presenting explicit calculations which are straightforward but less neat and just report the difference in retirement account balances after 20 years under the two scenarios. Assuming that the retirement account earns 5% per year, our professor's retirement savings would be $37,994 lower under the salary freeze. Assuming 10% return on the retirement account, they would be $63,939 lower.

Discussion

The Covid-19 pandemic dramatically affected the financial situation of the University in FY2021. Introducing a salary freeze in such circumstances seems to be a reasonable response. However, if the effects of the freeze are not reversed by supplying an appropriate increase in subsequent years, *a one-time freeze adds up to a large and lasting reduction in faculty salary payments by the University over time*. As the impact of the pandemic on University finances was hopefully transitory, once it subsides, it would seem important to return base salaries to the same point on their growth trajectory absent the freeze.

It is also very unfortunate that the salary freeze coincided with a large spike in inflation. The administration's Salary Guidelines for 2020-2021 explicitly proscribe salary adjustments to keep up with inflation: "As in previous years, there will be no cost of living increase for continuing faculty."[11] The same guidance remained in effect for 2021-2022.[12] Penn operates in a competitive environment and it is reasonable to base salary increases primarily on merit, as evidenced by scholarship, research, teaching, and service to the University and the profession. However, in times of high and accelerating inflation, ignoring it in salary-setting leads to a significant erosion of the faculty's standards of living. Moreover, the effect will not be distributed equally across the faculty, so an equity issue arises. In some departments, faculty have strong employment options outside of academia. For example, in various quantitative fields there are research positions available in many financial institutions or at Amazon, Uber, Microsoft Research, etc. Those organizations neither had a salary freeze nor let their real (adjusted for inflation) compensation drop. To retain faculty in such disciplines, schools will have to raise their salaries. But this will increase the inequality across schools and disciplines within Penn. It might also lead to an increase in compensation inequality across genders, as women seem to be less represented in quantitative fields. Moreover, there is some evidence that women seek fewer outside offers to re-establish their competitive market value and are generally less likely to ask or receive a raise, which in this case is not actually a raise but a request for their real wages not to fall. This is not a desirable outcome.

The University policy of not adjusting salaries for inflation has not always been in place. During the previous periods of high inflation in the 1970s and 1980s, the University would provide a general cost-of-living adjustment to all faculty and a separate pool for merit-based salary adjustments. For example, the SCESF report for FY1986[13] reads: "The University budget provides for both basic and merit increases. There is also a University reserve fund to cover special circumstances. Your Committee has urged the Provost to follow the principle that the minimum increase be at least equal to changes in the cost of living." This practice was discontinued when Penn issued Salary Guidelines for 1989-90,[14] which read, "Unlike previous years, however, there will be no minimum base increment stipulated for the individual members of the standing faculty. The entire pool available for salary increases will be allocated on the basis of merit." Salary Guidelines for 1991-92[15] state that SCESF has acquiesced to this change in policy: "With the concurrence of the Senate Committee on the Economic Status of the Faculty, we are maintaining the policy established two years ago of not establishing a minimum base increment for continuing standing faculty." We requested and received from University Archives scans of hundreds of pages of SCESF meeting notes and other documents, most of them handwritten. After reviewing this material, we could not find any references to SCESF discussions about this change in policy. Thus, we do not know the reasoning of the SCESF at that time. Regardless of the opinion of the SCESF from 30 years ago, we think that it would be appropriate to reengage in discussions and consider reintroduction of uniform base salary

10 This calculation invokes the standard formula for the sum of terms of a geometric series: , where represents income in FY2020, is the real salary growth rate in years other than FY2020, and is the number of years over which income is summed.

11 Available at https://almanac.upenn.edu/articles/of-record-salary-guidelines-for-2020-2021

12 Available at https://almanac.upenn.edu/articles/of-record-salary-guidelines-for-2021-2022

13 Available at https://almanac.upenn.edu/archive/v33pdf/n30/041487.pdf

14 Available at https://almanac.upenn.edu/archive/v35pdf/n32/042589.pdf

15 Available at https://almanac.upenn.edu/archive/v37pdf/n30/042391.pdf

(continued on page 10)

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"With the concurrence of the Senate Committee on the Economic Status of the Faculty, we are maintaining the policy established two years ago of not establishing a minimum base increment for continuing standing faculty." We requested and received from University Archives scans of hundreds of pages of SCESF meeting notes and other documents, most of them handwritten. After reviewing this material, we could not find any references to SCESF discussions about this change in policy. Thus, we do not know the reasoning of the SCESF at that time. Regardless of the opinion of the SCESF from 30 years ago, we think that it would be appropriate to reengage in discussions and consider reintroduction of uniform base salary adjustment for the cost of living in addition to separate merit increases, at least until the rate of increase in the costs of living subsides and as long as the University's financial situation permits doing so and the University is able to raise tuition at the rate matching or exceeding the rate of inflation.

VI. Issues of Concern and Recommendations from SCESF

In accordance with Faculty Senate policy, we present the following issues of concern and our recommendations to address these issues.

A. Adjusting Salaries for Inflation

Issue of Concern: Salaries of the vast majority of the faculty were fixed in nominal terms in FY2021 while price level increased dramatically, and this trend of sharply increasing prices continues. This lowers the real incomes of the faculty and may lead to undesirable distributional effects. Salary guidance from the University in recent years provided for merit increases but not for cost-of-living adjustments. Cost-of-living adjustments to salaries were provided by the University in the past when inflation rates substantially impacted real salaries of the faculty.

SCESF Recommendation: SCESF recommends that there should be a base salary increase to compensate faculty for the change in the cost of living. This is not an increase in real salaries, just an adjustment of the nominal salaries required to maintain the same standard of living for the faculty. This salary adjustment should be applied uniformly to all standing faculty within schools. Separately from this adjustment, SCESF recommends maintaining the merit increase program designed to recognize and reward the valuable contributions of faculty as evidenced by scholarship, research, teaching, and service. Of course, salary increases should be implemented in a fiscally responsible manner.

Response: The University is strongly committed to competitive compensation and to strategically planning in a fiscally responsible manner. It is also committed to awarding salary increases based on meritorious performance.

In response to the uncertainty of the early stages of the COVID pandemic, in April 2020 the University set the merit increase pool to 2.5 percent and limited merit increases for 2020-21 to faculty and staff with salaries at or below $70,000. The University raised the aggregated merit increase pool to 3 percent for 2021-22 and then to 4.5 percent for 2022-23. Over this period, the University also increased the minimum assistant professor salary from $72,600 in 2020-21, to $74,050 in 2021-22, to $82,200 in 2022-23 (a 13 percent increase from 2020-21 to 2022-23). These changes, along with the increase in the University's basic retirement contribution (described below), mitigate the long-term implications of the 2020-21 salary freeze and a spike in inflation on cumulative wages and retirement savings.

B. Expanding Economic Data beyond Base Salary

Issue of Concern: As in previous years, we note that the University provides SCESF only with the data on base salaries. While these salaries are likely a dominant form of faculty compensation, a significant but unaccounted for share of compensation for many faculty comes from sources such as summer salaries, administrative stipends, performance bonuses, pay for additional teaching, and support from grants and contracts. Depending on the distribution of this additional income, the finding that women and men receive similar base salaries within schools and ranks may not imply the conclusion that their total compensation is similar. Of course, the question about gender equality is but one example. Having some sense of what the distribution of total compensation looks like is the most useful and transparent means of assessing the state of faculty compensation.

SCESF Recommendation: SCESF requests that data from the Provost's Office be expanded next year to include total compensation for faculty. The array of sources of non-salary compensation is large and SCESF is ready to engage in the discussion with the Office of the Provost prior to next year's release of the data regarding the sources to be included in the measure of total compensation. However, as a practical matter, concerns over which sources "should" be counted is not a good reason for delaying presentation of these data. It is better to see the whole and let the debate over meaning commence from there.

Response: The Provost's Office invites discussion with SCESF to develop shared understanding of the questions the Senate is most interested in addressing and the data that will best address the questions. Determining the sources to include in a measure of total compensation is complex and careful consideration of the included sources is essential to the interpretation of any total compensation data. Also important is considering how and why sources of compensation beyond academic base salary may vary across and within Schools.

C. Assessing the Economic Status of the Entire Faculty

Issue of Concern: SCESF is charged with gathering and organizing data on academic salaries and benefits for the faculty and to represent the faculty in the determination of University policy on salary issues. We believe that the Committee should represent the interests of the entire standing faculty. Yet, this year, SCESF was provided academic base salary data for 1,347 standing faculty. This is less than half of the standing faculty at Penn. A majority of excluded faculty are clinician educators in the four health schools, mostly in the Perelman School of Medicine. We understand that their total compensation contains a clinical income component tied to patient care-related responsibilities and performance. However, as with other standing faculty, they have an academic base salary and evaluating their base salary should be no different than evaluating the salary data for the other faculty that we do now. We expect that there are rigorous processes in the departments and PSOM to ensure internal equity and national competitiveness of their base salaries. Yet, the same applies to all other schools that are included in the data provided to the SCESF. The inclusion of all standing faculty in discussions regarding compensation recognizes the University's commitment to collegiality and fairness while tamping down unnecessary conjecture and rumor that arise in its absence.

SCESF Recommendation: To provide a more complete analysis of faculty salary and benefits, SCESF requests that data from the Provost's Office be expanded next year to include the academic base salary for all standing faculty, subject to the standard exclusion of deans and faculty members in phased retirement. SCESF again requests the PSOM standing faculty data to analyze along with data from every other school at Penn.

Response: Like the recommendation for total compensation, and as noted in past reports, this recommendation represents an expansion of the data that the University has previously provided for SCESF reports. The University encourages SCESF to work with the Office of the Provost to develop a shared understanding of the data to be provided for future reports.

Academic base salary data for the majority of the Standing Faculty has been made available to the SCESF for many years. In fall 2021, there were 1,028 Standing Faculty on the CE track and 1,721 on the tenure track. A majority of CE faculty are based in the Perelman School of Medicine where the compensation packages typically include three components: (1) a published minimum base salary for a faculty member's academic rank; (2) a base salary supplement, also called an "adjusted base salary," that is the result of highly individual arrangements to respond to specific needs; and (3) clinical income tied to patient care-related responsibilities and performance. As SCESF notes, rigorous processes at the department and School levels promote internal equity and national competitiveness with respect to components (2) and (3).

D. Improving Retirement Benefits

Issue of Concern: As noted in several recent reports by SCESF, retirement benefits are almost universally taken by faculty but are less than those available at other competitive universities.

SCESF Recommendation: We encourage the President and Provost to increase the matching benefits contribution (above age 40) to 10%, bringing Penn's contribution closer to its Ivy Plus peers.

Response: As noted in section VII, the University announced in the *Almanac* on April 19, 2022 that, effective with the start of the next plan year (January 1, 2023), it is increasing its basic retirement contribution by 1 percent. thereby raising Penn's total maximum contribution from 9 percent to 10 percent. It is also eliminating the one-year waiting period for retirement contributions effective July 1, 2022. The University appreciates the engagement of SCESF on this topic and other matters affecting the University's faculty and looks forward to further discussion and collaboration into the future.

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VII. Forthcoming Enhancements to Faculty Retirement Benefits

Shortly before this report's finalization, SCESF learned of forthcoming enhancements to the faculty and staff Retirement Savings Program (announced in *Almanac* on April 19, 2022). Among the changes is an increase in the University's "Basic Plan" contribution from 4.0% to 5.0% of base salary for faculty and staff aged 40 and over, effective January 1, 2023. When considering the Matching Plan contribution of up to 5.0% of base pay, the maximum contribution by Penn increases from 9.0% to 10.0%. This increase brings Penn in line with the Ivy Plus group median and is consistent with recommendations made by SCESF in several of its recent-year reports. SCESF applauds the adjustment and thanks the leadership of the Division of Human Resources for their continued collaboration with SCESF. SCESF further notes that dialogues through shared governance practices such as these bring measurable added value to the faculty and staff experience at Penn.

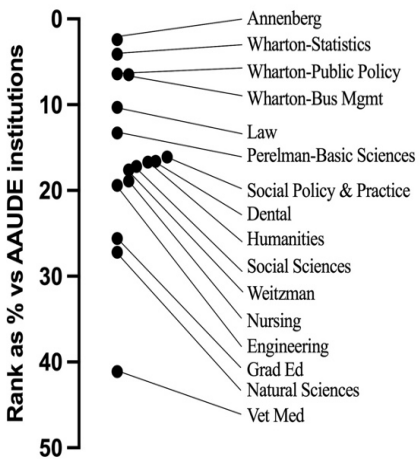
VIII. Members of the Committee

2021-2022 Committee Members
Shawn Bird, PSOM/Neurology
Jennifer Blouin, Wharton/Accounting
Dennis Culhane, Social Policy and Practice
Tulia Falleti, SAS/Political Science
Graciela Gonzalez Hernandez, PSOM/Biostatistics, Epidemiology & Informatics
Iourii Manovskii, SAS/Economics, *Chair*
Mark Oyama, Veterinary Medicine
Rand Quinn, GSE
Melissa Sanchez, SAS/English

Ex Officio:
William Braham, Weitzman Design, Faculty Senate Chair
Vivian Gadsden, GSE, Faculty Senate Chair-Elect
Kathleen Hall Jamieson, Annenberg, Faculty Senate Past Chair

The Committee gratefully acknowledges the essential and invaluable assistance of J. Patrick Walsh of the Office of the Faculty Senate and the additional information provided in response to SCESF requests by the offices of the Provost, Institutional Research and Analysis and Human Resources. The Committee also notes that this year's report directly benefited from presentation and analysis described in reports from previous years and, where appropriate, some previous text is included here.

IX. Figures and Tables



	Rank by count and % vs AAUDE institutions						
	Assistant		Associate		Full		Average %
Annenberg	-	-	1/42	2.4%	1/43	2.3%	2.4%
Wharton-Statistics	1/37	2.7%	-	-	2/37	5.4%	4.1%
Wharton-Public Policy	1/58	1.7%	2/56	3.6%	8/58	13.8%	6.4%
Wharton-Business & Management	4/56	7.1%	5/56	8.9%	2/56	3.6%	6.5%
Law	2/29	6.9%	-	-	6/44	13.6%	10.3%
Perelman - Basic Science	10/60	16.7%	8/60	13.3%	6/60	10.0%	13.3%
Social Policy & Practice	-	-	7/28	25.0%	2/28	7.1%	16.1%
Dental Medicine	-	-	3/49	6.1%	13/48	27.1%	16.6%
Humanities (A&S)	9/60	15.0%	11/60	18.3%	10/60	16.7%	16.7%
Social Science (A&S)	13/60	21.7%	9/60	15.0%	9/60	15.0%	17.2%
Weitzman	8/56	14.3%	9/56	16.1%	13/58	22.4%	17.6%
Nursing	7/30	23.3%	6/30	20.0%	4/30	13.3%	18.9%
Engineering & Applied Science	14/60	23.3%	13/60	21.7%	8/60	13.3%	19.4%
Graduate Education	13/46	28.3%	11/49	22.4%	12/46	26.1%	25.6%
Natural Science (A&S)	17/60	28.3%	19/60	31.7%	13/60	21.7%	27.2%
Veterinary Medicine	7/15	46.7%	7/14	50.0%	4/15	26.7%	41.1%

Figure 1. Unweighted rank of mean salaries of Assistant, Associate, and Full Professors across academic fields as compared to universities participating in the American Association of Universities Data Exchange (AAUDE) survey. Data derived from Table 4 of the publicly viewable tables provided to the Committee.

Table 1

Average academic base salary percentage increases of continuing Penn standing faculty members by rank in comparison with the Consumer Price Index (CPI) and Penn Budget Guidelines

Group/Condition/Metric		FY 2020-2021
Professor	Mean	1.2%
	Median	0.0%
Associate Professor	Mean	2.9%
	Median	0.0%
Assistant Professor	Mean	0.5%
	Median	0.0%
All Three Ranks	Mean	1.4%
	Median	0.0%
U.S. City Average CPI Growth	Mean	5.4%
Phil. CPI Growth	Mean	4.9%
Budget Guidelines	Mean	0.0%

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

FY 2020-2021 CPI growth for the U.S. and for Philadelphia are based on a change in CPI from June 2020 to June 2021

Table 2

Percentage of continuing standing faculty awarded salary increase percentages that exceeded the percentage growth in the consumer price index (CPI) for Philadelphia

Schools and Disciplinary Areas	Percentage FY 2020 to 2021
Annenberg	11.8%
Dental Medicine	0.0%
Engineering & Applied Science	11.0%
Graduate Education	2.8%
Humanities (A&S)	7.6%
Law	6.8%
Natural Science (A&S)	12.6%
Nursing	13.2%
Perelman-Basic Science	7.2%
Social Policy & Practice	0.0%
Social Science (A&S)	12.6%
Veterinary Medicine	5.5%
Weitzman	5.1%
Wharton	3.2%
All Schools/Areas	7.9%
U.S. City Average CPI Growth	5.4%
Phil. CPI Growth	4.9%
Budget Guidelines	0.0%

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

CPI reported for FY 2020-21 for the US and Philadelphia are based on growth for the period between June 2020 to June 2021.

Table 3

Percentage of continuing FULL PROFESSORS awarded salary increase percentages that exceeded the percentage growth in the consumer price index (CPI) for Philadelphia

Schools and Disciplinary Areas	Percentage FY 2020 to 2021
Annenberg	8.3%
Dental Medicine	0.0%
Engineering & Applied Science	8.0%
Graduate Education	5.3%
Humanities (A&S)	4.1%
Law	4.9%
Natural Science (A&S)	11.8%
Nursing	21.1%
Perelman-Basic Science	6.3%
Social Policy & Practice	0.0%
Social Science (A&S)	12.7%
Veterinary Medicine	6.1%
Weitzman	13.3%
Wharton	0.9%
All Schools/Areas	7.0%
U.S. City Average CPI Growth *	5.4%
Phil. CPI Growth *	4.9%
Budget Guidelines +	0.0%

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

CPI reported for FY 2020-21 for the US and Philadelphia are based on growth for the period between June 2020 to June 2021.

Table 4

Rank of mean salaries of Penn faculty by academic fields as compared to universities participating in the American Association of Universities Data Exchange (AAUDE) survey.

Academic Field	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020
Full Professor										
Annenberg	1/41	1/39	1/43	1/43	1/43	1/42	1/41	1/44	1/43	1/43
Dental Medicine	10/45	9/43	9/44	11/44	10/46	11/45	15/46	17/49	16/50	13/48
Engineering & Applied Science	13/55	14/54	13/58	14/59	17/59	16/56	11/56	16/62	13/63	8/60
Graduate Education	6/47	7/45	4/45	6/45	6/47	6/45	6/47	11/48	12/48	12/46
Humanities (A&S)	7/56	11/55	11/58	10/59	11/60	10/57	9/57	9/62	12/63	10/60
Law	7/39	8/38	7/39	8/38	6/41	6/40	4/38	6/43	6/44	6/44
Natural Science (A&S)	12/56	11/55	14/58	15/59	18/60	14/57	13/57	17/62	14/63	13/60
Nursing	1/19	1/19	1/21	3/23	1/24	2/24	2/30	2/31	3/31	4/30
Perelman - Basic Science	6/56	8/55	7/58	8/59	9/60	6/57	6/57	10/62	7/63	6/60
Social Policy & Practice	6/25	6/23	6/26	4/27	3/27	3/26	1/25	1/27	3/28	2/28
Social Science (A&S)	8/56	9/55	9/57	9/58	7/59	9/57	8/57	7/61	8/63	9/60
Veterinary Medicine	3/14	4/13	2/13	3/13	4/13	5/14	4/16	3/16	4/15	4/15
Weitzman	10/53	11/52	10/55	11/56	11/57	10/54	10/52	11/57	12/60	13/58
Wharton-Business & Management	5/53	2/52	3/55	2/56	1/56	1/53	1/53	2/58	2/58	2/56
Wharton-Public Policy	13/54	12/53	5/55	9/56	10/57	9/55	9/55	-	7/61	8/58
Wharton-Statistics	1/34	2/34	2/36	2/34	1/34	1/32	1/31	2/36	2/37	2/37
Associate Professor										
Annenberg	-	-	-	-	-	-	-	-	-	1/42
Dental Medicine	13/43	9/41	-	6/44	-	-	-	-	4/48	3/49
Engineering & Applied Science	11/54	11/53	10/56	11/57	10/57	7/54	7/55	11/61	17/62	13/60
Graduate Education	8/45	9/44	9/44	6/45	6/47	6/44	6/46	14/48	13/49	11/49
Humanities (A&S)	11/55	13/54	12/57	10/58	9/59	10/56	8/56	8/61	9/62	11/60
Law	-	-	-	-	-	-	-		n/a	n/a
Natural Science (A&S)	15/56	17/55	17/58	15/58	17/59	18/56	15/56	20/61	19/62	19/60
Nursing	5/19	3/19	2/21	7/24	7/25	4/25	5/31	6/31	7/31	6/30
Perelman - Basic Science	4/55	4/54	3/57	4/58	5/59	5/56	6/56	11/61	8/62	8/60
Social Policy & Practice	-	-	-	-	-	6/26	4/25	6/28	6/28	7/28
Social Science (A&S)	8/56	14/55	10/56	7/57	8/58	10/56	8/56	12/60	13/62	9/60
Veterinary Medicine	6/14	6/13	7/13	7/13	4/13	4/14	6/15	6/15	6/14	7/14
Weitzman	1/51	3/51	3/52	3/54	4/56	6/53	6/53	9/57	10/58	9/56
Wharton-Business & Management	2/51	2/51	3/54	3/56	3/56	1/53	1/53	2/58	3/58	5/56
Wharton-Public Policy	-	-	-	-	-	-	-	2/56	4/58	2/56
Wharton-Statistics	2/27	2/30	-	-	-	-	1/27	-	-	-
Assistant Professor										
Annenberg	-	-	3/41	3/42	-	2/40	-	-	-	-
Dental Medicine	-	-	-	-	-	-	-	-	-	-
Engineering & Applied Science	7/54	8/54	8/58	10/59	6/59	7/56	8/56	8/61	9/62	14/60
Graduate Education	-	15/43	12/44	13/44	11/46	13/44	10/45	12/47	14/49	13/46
Humanities (A&S)	14/56	17/55	14/58	13/59	9/59	9/56	8/56	12/61	13/62	9/60
Law	6/27	-	-	-	-	-	-	-	-	2/29
Natural Science (A&S)	15/56	22/55	16/58	18/59	20/60	18/57	12/57	17/62	16/63	17/60
Nursing	3/19	2/19	3/21	5/24	5/25	4/25	8/31	8/31	6/31	7/30
Perelman - Basic Science	6/56	9/55	9/58	10/59	15/60	5/57	6/57	9/61	9/63	10/60
Social Policy & Practice	-	5/24	5/26	5/27	6/27	8/26	3/25	-	-	-
Social Science (A&S)	7/56	8/55	7/57	8/58	11/59	14/57	13/57	17/61	14/63	13/60
Veterinary Medicine	5/14	5/12	5/13	5/13	5/13	4/14	8/16	8/15	6/16	7/15
Weitzman	6/51	4/50	5/54	7/55	7/56	5/52	5/52	6/56	8/58	8/56
Wharton-Business & Management	4/52	4/51	5/54	7/55	4/56	4/53	5/53	4/58	5/58	4/56
Wharton-Public Policy	1/54	1/53	1/52	1/55	1/56	1/55	1/55	1/59	1/61	1/58
Wharton-Statistics	-	-	-	-	-			-	2/37	1/37

Using the federal CIP (Classification of Instructional Programs) codes, departments at comparable universities were mapped to Penn Schools.

Calculations of rank only include those universities that have relevant departments. Therefore, the number of universities among which Penn is ranked varies by field.

Rank is suppressed for all cells which contain fewer than five Penn faculty members.

Table 5

Percentage differences in mean academic base salary of professors at selected research universities for Academic Years 2011-2012 through 2020-2021

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Full Professors - Mean Academic Base Salaries: Percentage Differences*										
Columbia	8.9%	13.5%	12.1%	13.4%	16.6%	16.8%	15.6%	16.1%	13.1%	18.6%
Stanford	7.6%	10.9%	11.9%	13.6%	13.3%	13.1%	13.3%	14.5%	10.4%	9.8%
Princeton	6.7%	7.0%	7.2%	9.3%	9.9%	9.7%	9.5%	10.9%	7.5%	8.8%
Harvard	9.3%	8.6%	7.7%	8.1%	8.7%	8.8%	13.1%	9.3%	7.0%	7.6%
Chicago	8.9%	8.9%	9.6%	10.0%	14.7%	9.0%	7.8%	8.2%	3.7%	6.0%
MIT	-5.4%	-4.4%	-3.3%	-1.8%	0.0%	1.4%	2.5%	3.8%	1.3%	1.1%
Penn	**$181.6**	**$187.0**	**$192.3**	**$197.5**	**$202.6**	**$209.2**	**$217.3**	**$223.6**	**$237.3**	**$236.8**
Yale	-0.7%	-0.4%	-0.1%	0.5%	0.4%	0.1%	-1.4%	3.3%	2.1%	-1.1%
Duke	-3.5%	-3.6%	-3.1%	-2.1%	-2.4%	-2.4%	-3.5%	-4.2%	-6.7%	-6.8%
Dartmouth	-10.7%	-10.5%	-9.5%	-9.6%	-9.0%	-9.6%	-9.5%	-7.1%	-8.9%	-14.3%
Brown	-13.7%	-14.0%	-14.4%	-14.6%	-14.3%	-14.5%	-15.4%	-16.1%	-18.9%	-18.9%
Cornell	-10.9%	-14.5%	-14.2%	-14.2%	-13.6%	-16.7%	-17.8%	-17.9%	-20.7%	-21.4%

NOTES: Excluded are all members of the faculty of PSOM (except basic scientists) and all clinician-educators.
Data source: AAUP Salary Surveys.

*Universities are listed from highest to lowest percentage difference for full professors as of 2020-2021. For each year reported, the difference between the Penn mean salary and the mean salary for a comparison university was computed as a percentage of the Penn salary.

Table 5

Percentage differences in mean academic base salary of professors at selected research universities for Academic Years 2011-2012 through 2020-2021

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Associate Professors - Mean Academic Base Salaries: Percentage Differences*										
Columbia	6.1%	12.9%	21.6%	21.2%	20.0%	20.4%	15.1%	19.3%	20.6%	25.9%
Stanford	11.4%	15.2%	17.3%	13.0%	9.2%	11.3%	12.6%	13.7%	15.2%	14.5%
MIT	2.1%	4.5%	6.4%	7.0%	3.2%	6.2%	6.4%	9.0%	11.7%	8.7%
Harvard	2.6%	1.4%	3.6%	2.3%	-2.3%	-5.6%	8.3%	0.5%	3.6%	4.7%
Princeton	5.0%	10.1%	8.5%	6.2%	4.5%	4.6%	2.6%	2.8%	5.8%	3.2%
Penn	**$117.8**	**$117.3**	**$119.5**	**$125.2**	**$132.3**	**$135.0**	**$140.1**	**$143.9**	**$145.6**	**$146.7**
Yale	-7.8%	-3.6%	-1.0%	-6.3%	-7.7%	-3.0%	-3.6%	-6.6%	0.1%	-1.2%
Duke	-2.8%	2.3%	1.1%	1.3%	-2.9%	-0.3%	-0.9%	-1.7%	-0.5%	-2.2%
Chicago	-3.1%	0.3%	-0.5%	-0.7%	-0.1%	-5.9%	-10.1%	-8.1%	-6.4%	-3.7%
Dartmouth	-7.9%	-4.9%	-4.9%	-9.6%	-11.9%	-9.6%	-8.4%	-5.6%	-5.9%	-8.1%
Cornell	-4.1%	-5.6%	-3.5%	-5.5%	-6.5%	-9.1%	-10.1%	-9.8%	-8.5%	-10.4%
Brown	-15.7%	-11.9%	-10.0%	-10.3%	-13.3%	-14.1%	-14.3%	-13.6%	-13.0%	-14.3%

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Assistant Professors - Mean Academic Base Salaries: Percentage Differences*										
Columbia	-11.8%	-9.0%	-6.0%	-4.6%	-1.5%	-3.7%	-3.1%	-1.8%	-0.6%	8.8%
Penn	**$112.3**	**$116.2**	**$118.0**	**$119.6**	**$123.3**	**$127.5**	**$130.3**	**$132.6**	**$136.5**	**$140.3**
Harvard	-2.2%	-2.4%	-3.0%	-5.3%	-2.5%	-3.0%	8.0%	1.5%	1.5%	-0.4%
MIT	-8.5%	-8.5%	-5.8%	-4.4%	-5.6%	-5.4%	-4.5%	-0.4%	1.7%	-1.8%
Stanford	-2.2%	-4.2%	-0.4%	2.4%	2.1%	0.5%	1.0%	3.3%	1.7%	-3.1%
Chicago	-8.6%	-11.6%	-10.5%	-6.1%	-6.1%	-7.3%	-6.8%	-3.1%	-0.9%	-7.1%
Princeton	-16.1%	-16.7%	-13.8%	-12.5%	-13.0%	-13.8%	-11.6%	-10.7%	-10.3%	-11.5%
Duke	-14.5%	-16.3%	-12.3%	-11.9%	-10.9%	-10.6%	-12.4%	-8.1%	-9.5%	-12.0%
Cornell	-13.6%	-15.8%	-16.6%	-13.6%	-8.4%	-11.8%	-10.5%	-10.3%	-10.7%	-14.2%
Yale	-20.1%	-18.9%	-18.7%	-16.7%	-16.2%	-14.7%	-15.9%	-11.1%	-11.9%	-14.6%
Dartmouth	-20.1%	-23.1%	-20.3%	-16.3%	-17.6%	-19.7%	-20.3%	-21.0%	-17.0%	-19.0%
Brown	-26.7%	-26.0%	-24.7%	-22.8%	-23.5%	-25.2%	-25.2%	-24.8%	-25.2%	-27.5%

Table 5 - Adjusted

Percentage differences in mean ADJUSTED academic base salary of professors at selected research universities for Academic Years 2011-2012 through 2020-2021

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Full Professors - Mean ADJUSTED Academic Base Salaries: Percentage Differences*										
Duke	12.7%	12.6%	11.7%	12.7%	12.5%	12.4%	9.8%	9.0%	6.2%	6.1%
Princeton	1.7%	2.0%	2.2%	4.2%	4.8%	4.5%	6.4%	7.7%	4.4%	5.7%
Columbia	-5.0%	-1.0%	-1.1%	0.1%	3.0%	3.2%	0.7%	1.1%	-1.6%	3.2%
Penn	**$158.5**	**$163.2**	**$169.1**	**$173.7**	**$178.2**	**$184.0**	**$192.5**	**$198.1**	**$210.2**	**$209.7**
Yale	0.0%	0.3%	-2.0%	-1.6%	-1.6%	-1.8%	-1.3%	3.3%	2.1%	-1.0%
Harvard	-5.9%	-6.5%	-8.1%	-7.8%	-7.3%	-7.2%	-3.9%	-7.2%	-9.1%	-8.5%
Chicago	8.3%	8.3%	5.7%	6.1%	10.6%	5.2%	-9.7%	-9.3%	-13.1%	-11.1%
MIT	-18.5%	-17.6%	-17.5%	-16.2%	-14.7%	-13.5%	-12.9%	-11.8%	-13.9%	-14.1%
Brown	-7.3%	-7.7%	-9.6%	-10.0%	-9.7%	-9.8%	-11.4%	-12.1%	-15.1%	-15.1%
Cornell	-1.2%	-5.2%	-7.2%	-7.1%	-6.5%	-9.9%	-13.5%	-13.7%	-16.6%	-17.3%
Stanford	-21.1%	-18.8%	-19.1%	-17.9%	-18.1%	-18.3%	-21.4%	-20.5%	-23.4%	-23.7%

NOTES: Excluded are all members of the faculty of PSOM (except basic scientists) and all clinician-educators. Data source: AAUP Salary Surveys.

*Universities are listed from highest to lowest percentage difference for full professors as of 2020-2021. For each year reported, the difference between the Penn mean salary and the mean salary for a comparison university was computed as a percentage of the Penn salary.

Salary figures adjusted using 2007, 2010, 2013, and 2017 Runzheimer Living Cost Indices. Indices for Hanover, NH (Dartmouth)are not available

Table 5 - Adjusted

Percentage differences in mean ADJUSTED academic base salary of professors at selected research universities for Academic Years 2011-2012 through 2020-2021

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Associate Professors - Mean ADJUSTED Academic Base Salaries: Percentage Differences*										
Duke	13.5%	19.4%	16.5%	16.7%	11.8%	14.9%	12.7%	11.8%	13.2%	11.4%
Columbia	-7.5%	-1.6%	7.3%	7.0%	5.9%	6.3%	0.2%	3.8%	5.0%	9.6%
Princeton	0.1%	4.9%	3.3%	1.3%	-0.5%	-0.3%	-0.2%	-0.1%	2.8%	0.3%
Penn	**$102.8**	**$102.4**	**$105.1**	**$110.1**	**$116.4**	**$118.7**	**$124.1**	**$127.5**	**$129.0**	**$129.9**
Yale	-7.2%	-2.9%	-3.0%	-8.2%	-9.5%	-4.9%	-3.5%	-6.6%	0.2%	-1.1%
Cornell	6.4%	4.7%	4.4%	2.3%	1.1%	-1.7%	-5.5%	-5.1%	-3.8%	-5.7%
MIT	-12.0%	-10.0%	-9.2%	-8.7%	-12.0%	-9.4%	-9.6%	-7.4%	-5.1%	-7.6%
Brown	-9.4%	-5.4%	-5.0%	-5.4%	-8.6%	-9.4%	-10.2%	-9.5%	-9.0%	-10.2%
Harvard	-11.6%	-12.7%	-11.6%	-12.7%	-16.8%	-19.5%	-8.1%	-14.7%	-12.0%	-11.0%
Chicago	-3.7%	-0.3%	-4.1%	-4.3%	-3.7%	-9.2%	-24.7%	-23.0%	-21.6%	-19.3%
Stanford	-18.4%	-15.6%	-15.2%	-18.3%	-21.0%	-19.5%	-21.8%	-21.1%	-20.1%	-20.5%

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Assistant Professors - Mean ADJUSTED Academic Base Salaries: Percentage Differences*										
Duke	-0.1%	-2.2%	1.1%	1.5%	2.7%	3.0%	-0.3%	4.7%	3.0%	0.1%
Penn	**$98.0**	**$101.4**	**$103.8**	**$105.2**	**$108.4**	**$112.1**	**$115.4**	**$117.4**	**$120.9**	**$124.3**
Columbia	-23.2%	-20.6%	-17.1%	-15.8%	-13.0%	-15.0%	-15.7%	-14.5%	-13.5%	-5.3%
Cornell	-4.2%	-6.6%	-9.8%	-6.6%	-0.8%	-4.6%	-5.8%	-5.6%	-6.0%	-9.7%
Princeton	-20.0%	-20.6%	-17.9%	-16.6%	-17.1%	-17.8%	-14.1%	-13.2%	-12.9%	-14.0%
Yale	-19.6%	-18.3%	-20.3%	-18.3%	-17.8%	-16.4%	-15.8%	-11.0%	-11.8%	-14.6%
Harvard	-15.7%	-15.9%	-17.2%	-19.2%	-16.8%	-17.2%	-8.2%	-13.7%	-13.7%	-15.4%
MIT	-21.1%	-21.2%	-19.8%	-18.5%	-19.5%	-19.3%	-18.8%	-15.3%	-13.6%	-16.6%
Chicago	-9.1%	-12.1%	-13.7%	-9.4%	-9.4%	-10.5%	-21.9%	-18.7%	-17.0%	-22.1%
Brown	-21.3%	-20.5%	-20.5%	-18.6%	-19.3%	-21.1%	-21.7%	-21.2%	-21.7%	-24.1%
Stanford	-28.4%	-29.8%	-28.0%	-26.0%	-26.2%	-27.3%	-29.9%	-28.2%	-29.4%	-32.7%

Table 6

FULL PROFESSORS: Median academic base salary percentage increases of faculty continuing in rank who were Penn FULL PROFESSORS for FY2021, along with the first and third quartile salary increases

School/Area	First Quartile (Q1), Median (Md.), and Third Quartile (Q3) Percentage Salary Increases, FY 2020-2021		
	(Q1)	(Md.)	(Q3)
All Schools	0.0%	0.0%	0.0%
Annenberg	0.0%	0.0%	0.0%
Dental Medicine	0.0%	0.0%	0.0%
Engineering & Applied Science	0.0%	0.0%	0.0%
Graduate Education	0.0%	0.0%	0.0%
Humanities (A&S)	0.0%	0.0%	0.0%
Law	0.0%	0.0%	0.0%
Natural Science (A&S)	0.0%	0.0%	0.0%
Nursing	0.0%	0.0%	0.0%
Perelman-Basic Science	0.0%	0.0%	0.0%
Social Policy & Practice	0.0%	0.0%	0.0%
Social Science (A&S)	0.0%	0.0%	0.0%
Veterinary Medicine	0.0%	0.0%	0.0%
Weitzman	0.0%	0.0%	0.0%
Wharton	0.0%	0.0%	0.0%
Budget Guidelines		0.0%	

NOTES: The Budget Guideline is provided for comparison purposes. As per Penn policy, it is a guideline for the salary increment pool for all standing faculty members in each school, but not specifically for each rank.

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

Salary increases include increases from all sources (e.g. merit, market, retention).

The median (Md.) percentage salary increase is the mid-point of all increases within each school and rank.

The difference between the third (Q3) and first quartile (Q1) provides a measure of variability in the percentage increases for each school and rank.

Median percentage increases are reported only if the number of faculty members in a given school and rank is five or more, quartile percentage increases are reported only if the number of faculty members is nine or more.

Table 7

ASSOCIATE PROFESSORS: Median academic base salary percentage increases of faculty continuing in rank who were Penn ASSOCIATE PROFESSORS for FY2021, along with the first and third quartile salary increases

School/Area	First Quartile (Q1), Median (Md.), and Third Quartile (Q3) Percentage Salary Increases, FY 2020-2021		
	Q1	Md.	Q3
All Schools	0.0%	0.0%	0.0%
Annenberg			
Dental Medicine		0.0%	
Engineering & Applied Science	0.0%	0.0%	0.0%
Graduate Education	0.0%	0.0%	0.0%
Humanities (A&S)	0.0%	0.0%	0.0%
Law			
Natural Science (A&S)	0.0%	0.0%	0.0%
Nursing	0.0%	0.0%	0.0%
Perelman-Basic Science	0.0%	0.0%	0.0%
Social Policy & Practice		0.0%	
Social Science (A&S)	0.0%	0.0%	0.0%
Veterinary Medicine	0.0%	0.0%	0.0%
Weitzman	0.0%	0.0%	0.0%
Wharton	0.0%	0.0%	0.0%
Budget Guidelines +		0.0%	

NOTES: The Budget Guideline is provided for comparison purposes. As per Penn policy, it is a guideline for the salary increment pool for all standing faculty members in each school, but not specifically for each rank.

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

Salary increases include increases from all sources (e.g. merit, market, retention).

The median (Md.) percentage salary increase is the mid-point of all increases within each school and rank.

The difference between the third (Q3) and first quartile (Q1) provides a measure of variability in the percentage increases for each school and rank.

Median percentage increases are reported only if the number of faculty members in a given school and rank is five or more, quartile percentage increases are reported only if the number of faculty members is nine or more.

Table 8

ASSISTANT PROFESSORS: Median academic base salary percentage increases of faculty continuing in rank who were Penn ASSISTANT PROFESSORS for FY2021, along with the first and third quartile salary increases

School/Area	First Quartile (Q1), Median (Md.), and Third Quartile (Q3) Percentage Salary Increases, FY 2020-2021		
	Q1	Md.	Q3
All Schools	0.0%	0.0%	0.0%
Annenberg			
Dental Medicine			
Engineering & Applied Science	0.0%	0.0%	0.0%
Graduate Education		0.0%	
Humanities (A&S)	0.0%	0.0%	0.0%
Law			
Natural Science (A&S)	0.0%	0.0%	0.0%
Nursing		0.0%	
Perelman-Basic Science	0.0%	0.0%	0.0%
Social Policy & Practice			
Social Science (A&S)	0.0%	0.0%	0.0%
Veterinary Medicine	0.0%	0.0%	0.0%
Weitzman		0.0%	
Wharton	0.0%	0.0%	0.0%
Budget Guidelines +		0.0%	

NOTES: The Budget Guideline is provided for comparison purposes. As per Penn policy, it is a guideline for the salary increment pool for all standing faculty members in each School, but not specifically for each rank.

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

Salary increases include increases from all sources (e.g. merit, market, retention).

The median (Md.) percentage salary increase is the mid-point of all increases within each school and rank.

The difference between the third (Q3) and first quartile (Q1) provides a measure of variability in the percentage increases for each school and rank.

Median percentage increases are reported only if the number of faculty members in a given school and rank is five or more, quartile percentage increases are reported only if the number of faculty members is nine or more.

Table 9

Mean academic base salary of Penn standing faculty members who continued in rank by rank

Rank/Academic Year/Metric			Amount	Not Weighted	Weighted
Professor	2016-2017	Mean	$213,373	1.72	1.84
		Median	$193,812	1.93	1.85
	2017-2018	Mean	$221,028	1.74	1.85
		Median	$200,460	1.92	1.85
	2018-2019	Mean	$227,354	1.72	1.87
		Median	$205,320	1.86	1.87
	2019-2020	Mean	$234,776	1.76	1.89
		Median	$211,391	1.93	1.88
	2020-2021	Mean	$237,520	1.78	1.90
		Median	$215,061	1.94	1.89
Associate Professor	2016-2017	Mean	$135,314	1.09	1.24
		Median	$115,816	1.16	1.27
	2017-2018	Mean	$137,758	1.09	1.24
		Median	$119,710	1.15	1.25
	2018-2019	Mean	$141,883	1.07	1.25
		Median	$124,309	1.13	1.24
	2019-2020	Mean	$144,264	1.08	1.25
		Median	$126,834	1.16	1.23
	2020-2021	Mean	$144,238	1.08	1.23
		Median	$126,408	1.14	1.21
Assistant Professor	2016-2017	Mean	$123,929	1.00	1.00
		Median	$100,255	1.00	1.00
	2017-2018	Mean	$126,802	1.00	1.00
		Median	$104,498	1.00	1.00
	2018-2019	Mean	$132,272	1.00	1.00
		Median	$110,123	1.00	1.00
	2019-2020	Mean	$133,263	1.00	1.00
		Median	$109,366	1.00	1.00
	2020-2021	Mean	$133,275	1.00	1.00
		Median	$110,864	1.00	1.00

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

The data are weighted by the number of continuing faculty members at each rank in each school.

Table 10

Variability of academic base salary for faculty who continued in rank: first, second and third quartile median salary by rank and year

Rank/Academic Year		Q1	Median	Q3	IQR	IQR-to-Median Ratio	# of Areas
Professor	2016-2017	$154,752	$193,812	$256,846	$102,094	0.53	14
	2017-2018	$160,557	$200,460	$268,324	$107,767	0.54	14
	2018-2019	$165,139	$205,320	$273,202	$108,063	0.53	14
	2019-2020	$170,360	$211,391	$283,242	$112,882	0.53	14
	2020-2021	$171,000	$215,061	$289,442	$118,442	0.55	14
Associate Professor	2016-2017	$105,210	$115,816	$138,339	$33,129	0.29	13
	2017-2018	$108,932	$119,710	$140,858	$31,926	0.27	13
	2018-2019	$111,554	$124,309	$145,655	$34,101	0.27	13
	2019-2020	$114,378	$126,834	$149,867	$35,489	0.28	13
	2020-2021	$112,664	$126,408	$148,650	$35,986	0.29	13
Assistant Professor	2016-2017	$89,746	$100,255	$164,250	$74,504	0.74	13
	2017-2018	$92,739	$104,498	$162,500	$69,761	0.67	13
	2018-2019	$95,383	$110,123	$170,500	$75,118	0.68	13
	2019-2020	$97,695	$109,366	$170,000	$72,305	0.66	14
	2020-2021	$97,850	$110,864	$166,000	$68,150	0.62	15

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

Table 11

Percentage Salary Increase Distribution of Faculty Who Continued in Rank by sex and rank

Rank/Sex		First Quartile (Q1), Median (Md.), and Third Quartile (Q3) Percentage Salary Increases, FY 2020-2021		
		Q1	Md.	Q3
Professor	Men	0.0%	0.0%	0.0%
	Women	0.0%	0.0%	0.0%
Associate Professor	Men	0.0%	0.0%	0.0%
	Women	0.0%	0.0%	0.0%
Assistant Professor	Men	0.0%	0.0%	0.0%
	Women	0.0%	0.0%	0.0%

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

Table 12

Mean academic base salary of Penn standing faculty members who continued in rank by rank and sex.

Rank/Academic Year/Metric			Unweighted			Weighted by School/Discipline			Men - Women	
			Women	Men	% Difference	Women	Men	% Difference	Unweighted	Weighted
Professor	2016-2017	Mean	$202,077	$216,822	7.3%	$210,304	$216,822	3.1%	$14,745	$6,518
		Median	$184,871	$195,432	5.7%	$208,079	$211,620	1.7%		
	2017-2018	Mean	$209,332	$224,612	7.3%	$219,887	$224,612	2.1%	$15,280	$4,725
		Median	$191,455	$202,303	5.7%	$214,914	$218,668	1.7%		
	2018-2019	Mean	$215,827	$231,146	7.1%	$227,665	$231,146	1.5%	$15,319	$3,481
		Median	$197,760	$207,566	5.0%	$224,511	$226,504	0.9%		
	2019-2020	Mean	$223,194	$238,722	7.0%	$237,028	$238,722	0.7%	$15,528	$1,694
		Median	$205,308	$214,505	4.5%	$235,083	$233,411	-0.7%		
	2020-2021	Mean	$224,050	$242,436	8.2%	$239,095	$242,436	1.4%	$18,386	$3,341
		Median	$205,242	$218,002	6.2%	$232,129	$236,778	2.0%		
Associate Professor	2016-2017	Mean	$125,640	$141,234	12.4%	$138,505	$141,234	2.0%	$15,594	$2,729
		Median	$112,232	$123,247	9.8%	$140,304	$137,831	-1.8%		
	2017-2018	Mean	$132,170	$141,178	6.8%	$141,845	$141,178	-0.5%	$9,008	-$667
		Median	$117,815	$124,877	6.0%	$141,123	$139,411	-1.2%		
	2018-2019	Mean	$136,518	$145,392	6.5%	$147,284	$145,392	-1.3%	$8,874	-$1,892
		Median	$122,250	$127,062	3.9%	$145,707	$143,502	-1.5%		
	2019-2020	Mean	$134,632	$149,871	11.3%	$144,834	$149,871	3.5%	$15,239	$5,037
		Median	$124,795	$130,139	4.3%	$141,486	$144,844	2.4%		
	2020-2021	Mean	$137,327	$148,394	8.1%	$147,733	$148,394	0.4%	$11,067	$661
		Median	$124,036	$128,902	3.9%	$142,294	$143,322	0.7%		
Assistant Professor	2016-2017	Mean	$114,342	$131,006	14.6%	$127,957	$131,006	2.4%	$16,664	$3,049
		Median	$96,914	$108,265	11.7%	$123,935	$126,603	2.2%		
	2017-2018	Mean	$117,892	$134,178	13.8%	$134,366	$134,178	-0.1%	$16,286	-$188
		Median	$100,131	$112,231	12.1%	$129,538	$130,074	0.4%		
	2018-2019	Mean	$122,891	$140,914	14.7%	$138,599	$140,914	1.7%	$18,023	$2,315
		Median	$103,186	$115,951	12.4%	$135,424	$136,582	0.9%		
	2019-2020	Mean	$126,569	$139,702	10.4%	$138,456	$139,702	0.9%	$13,133	$1,246
		Median	$103,629	$116,190	12.1%	$135,634	$135,234	-0.3%		
	2020-2021	Mean	$126,579	$140,129	10.7%	$137,069	$140,129	2.2%	$13,550	$3,060
		Median	$103,742	$116,473	12.3%	$133,360	$135,463	1.6%		

NOTES: All salaries are converted to a nine-month base. Academic base salary increases pertain to all Penn standing faculty members with an appointment at the time of the fall census for both years. Faculty members on paid leave or unpaid leave are reported at their full salaries.

Excluded are all members of the Faculty of PSOM (except basic scientists); all clinician-educators in Dental Medicine, Veterinary Medicine, Nursing, and Social Policy & Practice; faculty members on phased retirement plans; and the 12 Deans.

Salaries for female faculty members are weighted using male weights. Male weights are calculated as a ratio of male faculty in each school/area to the total number of male faculty at Penn. Percent difference is calculated as the difference between male and female salaries divided by the female salary. Negative percent differences indicate that salaries of female faculty exceed those of male faculty.

Table 13

Employer Contributions to Retirement Accounts and to Dependent Undergraduate Tuition at Penn and Ivy Plus Peer Group

University	Maximum Employer Contribution to Retirement Accounts*	Dependent UG Tuition Benefit to Attend home Institution#	Dependent UG Tuition Benefit to Attend Other Institution#
Penn	9%°	75% ($41,664)^	100% (up to $21,861)
Brown	Variable^	16% ($13,650)	100% (up to $13,650)
Chicago	8%	75% ($44,442)	100% (up to $44,442)
Columbia	9-11.2%†	100% ($66,232)	50% (up to $33,116)
Cornell	10%	50% ($30,143)	30% (up to $18,086)
Dartmouth	9%	0	0
Duke	13.2%&	75% ($45,446)	100% (up to $45,446)
Harvard	10%	0	0
MIT	10%	100% ($55,510)	up to $27,755
Princeton	9.3-15%†	36% ($20,150)	50% (up to $20,150)
Stanford	10%	50% ($27,737)	50% (up to $27,737)
Yale	10-11.38%†	28% ($16,500)	50% (up to $16,500)
Median Max Benefit (without Penn)	10%	$27,737	$20,150

*Data as of July 2021. Service minimums to qualify vary by institution. Combined contributions to 403(b) and 401(a) accounts for oldest age bracket; only salary up to $305,000 is eligible. A portion requires employee contribution to qualify.

†Rate differs above and below Social Security Wage base of $132,900

°Penn highest age bracket is age 40 and over

^Beginning November 1, 2020, all University contributions will be discretionary, which means that each Plan Year, the University determines whether to make employer contributions and the amounts and/or percentages of such employer contributions

&Rate differs above and below wages of $72,000

^Amount includes both Tuition and Technology Fee

#Data as of July 2019. Conditions to qualify vary by institution. Some benefits include tuition only, others include fees. At Duke, only tuition above $7,020 is eligible.