A closer look at fringe benefits for faculty

Abstract

Despite the magnitude and variety of benefits paid to faculty, there has been little attention given to these benefits. It is important to evaluate how and why faculty benefits vary by institution. In this study, I focused on the levels of benefits provided by four-year institutions to faculty. The study relied on institution-level data from NCES and the AAUP on faculty salaries and benefits spanning the period from 1980 to 2021. Separate analyses were conducted for retirement benefits, health benefits, and total benefits, with the time periods for specific analyses depending on data availability which varied over this time frame. Overall, the study documents how faculty benefits have changed over time, and whether benefits in dollar and percentage terms were related to selected characteristics of the faculty and the institutions where they work.

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Introduction

Faculty compensation is an enduring topic of interest in higher education. This topic is important because faculty comprise a large share of the labor force at colleges, and colleges use different forms of compensation to attract and retain faculty. Most of the attention regarding faculty compensation to date has been directed towards salary. A number of studies have looked at the level of faculty salaries, how salaries have changed over time, and whether there are salary differences by gender, race, and type of institution (see, for example, Barbezat, 2002; Rippner & Toutkoushian, 2015; Toutkoushian & Conley, 2005).

There are, however, other ways in which faculty are paid for their work aside from salary. Benefits are in-kind payments that, unlike salary, must be used for a specific purpose. The two largest and most well-known forms of benefits for faculty are employer contributions to their retirement accounts and health insurance. In addition, faculty may receive money to pay for things such as college tuition, contributions to their Social Security, disability income protection, unemployment insurance, group life insurance, workers' compensation premiums, parking on campus, and even tickets to athletic events. Collectively, these non-salary benefits can be substantial, amounting to about one-quarter of someone's overall compensation.

Despite the magnitude and variety of benefits paid to faculty, there has been little attention given to these benefits. As noted by Hamermesh and Woodbury (1991, p.16): "More difficult to explain is why different institutions give different percentages of compensation to fringe benefits, and why these differences among institutions change over time." Most of the scholarly research on benefits, such as studies by Brown and Weisbenner (2009; 2014), Clark, Ghent, and McDermid (2006), Goldhaber and Grout (2016), and others has focused on retirement benefits. While it is well known that health care costs have risen substantially over the last thirty years (Leibowitz, 1983; Hamermesh & Woodbury, 1991), few studies have examined reasons for and impacts of health care subsidies for faculty.

It is important to evaluate how and why faculty benefits vary by institution. Faculty arguably take into account both salary and benefits when they make decisions about where to work, and depending on their circumstances may be willing to work at an institution with a lower salary but better benefits. In contrast to data on faculty salaries by institution, which are widely available through the annual faculty compensation surveys conducted by the American Association of University Professors (AAUP) and the National Center for Education Statistics (NCES), it is more difficult to find comparable data on the level and types of benefits faculty receive at different institutions. The AAUP regularly provides some information on benefits in their annual reports on the status of the academic profession (see Colby, 2022), but these data have not been widely analyzed to help gain an understanding of how benefits have changed and why they differ across institutions. The lack of information and analysis on benefits makes it challenging to evaluate the generosity of benefits at any particular college or university.

There is debate in the field with regard to how faculty salaries and benefits are related to each other. Standard labor economic theory suggests that colleges are most interested in the total level of compensation (salary plus benefits) paid to faculty, and thus would offer lower benefits when salaries are higher and vice-versa (Rosen, 1986). Alternatively, others such as Gordon and Blinder (1980) and Zoghi (2003) have observed that employers that are more generous with salary also tend to be more generous with benefits. The relationship between salary and benefits may depend on the type of benefit considered. Because retirement plans are normally structured so that employers give faculty a percentage of their salary for retirement, institutions with higher salaries may have larger dollar retirement benefits as well. The same may not be true for benefits such as health insurance and tuition payments that are not set in proportion to a faculty member's salary.

The importance of benefits to faculty could depend on the personal characteristics of faculty. Research on retirement plans, for example, has found that retirement benefits are less important to younger faculty than they are to older faculty who are closer to retirement (Toutkoushian, 2019). Likewise, faculty who have families and/or are older may place greater importance than younger faculty on the health insurance benefits they receive. And tuition benefits and health insurance could also be more relevant for faculty with children than for faculty without children.

In this study, I focused on the levels of benefits provided by four-year institutions to faculty. The study relied on institution-level data from NCES and the AAUP on faculty salaries and benefits spanning the period from 1980 to 2021. Separate analyses were conducted for retirement benefits, health benefits, and total benefits, with the

time periods for specific analyses depending on data availability which varied over this time frame. Overall, the study documents how faculty benefits have changed over time, and whether benefits in dollar and percentage terms were related to selected characteristics of the faculty and the institutions where they work. Particular attention was given to the interrelationships between benefits and salaries of faculty. The study contributes to our understanding of the different ways in which institutions compensate faculty for their work.

Types of benefits for faculty

Organizations including colleges and universities use compensation to entice people to work for them, and to keep them from leaving for another job (Goda, Jones, & Manchester, 2017; Gustman & Steinmeier, 1995). In general, higher levels of compensation enable an organization to more effectively compete for employees in their respective labor markets. Workers should, therefore, take into account the total compensation offered when making employment decisions, although they may weigh salary and benefits differently depending on their circumstances.

Employee compensation can be divided into two main categories: salary and non-salary benefits. Benefits are a form of in-kind compensation from the employer that can only be used for a specific purpose, such as retirement or health care, whereas employees have full discretion over how to spend their salary. Benefits themselves can be separated into voluntarily provided nonwage payments, such as for retirement contributions, and payments for things such as Social Security that are mandated by law (Hamermesh & Woodbury, 1990). Arguably, institutions have more flexibility with regard to setting voluntary benefit levels than they do salary. It is very difficult for a college or university to reduce faculty salaries. However, it would be much easier for an institution in bad economic times to cut their contributions to retirement funds or health insurance plans. A recent analysis by *The Chronicle of Higher Education*, for example, found that private colleges cut retirement contributions by a cumulative $729 million between 2019 and 2020 in response to economic concerns created by the covid-19 pandemic (Bauman, 2022).

Employee benefits come in many different forms. The two most common benefits for faculty are retirement benefits and health insurance benefits. Other benefits that are less common include tuition benefits for the employee and their family members, group life insurance plans, and so on. Other employer expenses for things such as Social Security contributions may also be thought of as an employee benefit. In practice, the relationships between salary and non-salary benefits may differ depending on the type of benefit.

Retirement benefits. Retirement benefits are monies that employees receive with the stipulation that they can only be used when they retire. There are two main types of retirement plans. The first is a defined benefit plan (or pension) where the employee benefits are determined by a formula using years of employment, final average salary, and annual multiplier. The second is a defined contribution plan where the employee and employer invest designated percentages of the person's salary to be used when they retire. Studies of note on the types of retirement benefit plans for educators include Conley (2008), Toutkoushian, Bathon, & McCarthy (2011), and Yakoboski & Conley (2013).

Regardless of the type of retirement plan, the amount of retirement benefit provided by a college to its faculty (*Retire $*) can be described by the following formula:

(1) $Retire\ \$ = a_0 * a_1 * Y$

where Y = faculty member salary, a_1 = proportion of salary used for retirement, and a_0 = proportion of total retirement benefit paid by the institution. The quantity a_1Y represents the total amount of money faculty invest for retirement purposes, with the total divided between the college and the faculty member according to the parameter a_0. For example, the defined contribution retirement plan for the University System of Georgia in 2022 specifies that 15.24% of an employee's salary is set aside for retirement, with the total benefit split between the institution (9.24%) and faculty member (6%), and thus $a_1 = 0.1524$ and $a_0 = 9.24 / 15.24 = 0.606$.

Colleges have more discretion over the share of retirement benefits that they cover (a_0) than the total amount that can be set aside for retirement (a_1) because the latter parameter is restricted by federal tax laws. The retirement benefit in dollar terms should, therefore, be positively related to salary because the plans call for these benefits to be a percentage of their salary. The average generosity of a college's retirement benefits depends on the average salary, the amount of income invested for retirement, and the share paid by the institution. Accordingly, retirement benefits could be associated with personal characteristics of faculty that relate to salary, such as gender and age, and institutional characteristics that also are associated with salary.

Health insurance benefits. Health insurance benefits operate differently than retirement benefits. Employees are offered the opportunity to enroll in an employer-sponsored health insurance plan for medical and/or dental services. These plans offer three advantages to individuals: (1) the rates are often better than what the person could get on their own due to the negotiating power of the organization, (2) the employer pays a portion of the cost of insurance, and (3) there may be tax advantages to paying insurance premiums through the institution. Unlike retirement benefits, however, the total health insurance benefit is not usually based on salary but rather factors such as the number of people covered, the level of health services desired, the local cost of health services, and the deductibles chosen by the employee. As a result, there should be a weaker relationship between salary and health insurance benefits as would be the case with retirement benefits. Colleges are subject to changes in the markets for health services, and thus may increase health care premiums when the cost to them of providing the insurance rises. Health benefits may vary with geographic location because the services are typically consumed near where the faculty member resides.

As is true with retirement benefits, institutions choose how to divide the health insurance cost between the faculty member and the institution. The formula for health benefits provided by an institution can be written as follows:

(2) $Health \$ = b_0 * P_H * Cov_H$

The health insurance dollar benefit for faculty ($Health \$$) is determined by the level of health services that the institution provides (Cov_H), times the cost per unit of service where the college is located (P_H), and the share of total health insurance cost paid by the institution (b_0). The institution has flexibility in choosing how much health coverage to provide faculty and the portion of the insurance cost that they will cover. Unlike retirement benefits, the coverage and hence benefit to faculty vary across individuals because faculty have some discretion over their level of health services they wish to cover and the amount that they will pay in premiums. The price of medical services can vary from region to region and is largely beyond the score of the institution, but can affect the generosity of health benefits given to faculty.

Tuition benefits. Some colleges offer discounted tuition to employees as an added employee benefit. The benefit may be extended to designated members of the employee's family. The size of the benefit varies by where the family member enrolls, and the portion of tuition that the employer decides to cover. This particular benefit is very uneven across faculty because it mainly helps those with children who are enrolled in a college where the benefit may be used.

Social Security benefits. Institutions that are located in states where employees must participate in the Social Security program also provide a benefit by paying a portion of the Social Security contribution to the federal government. The amount paid is a percentage of salary but there is an annual cap on contributions. In addition, most public employees in seven states (Alaska, Colorado, Louisiana, Maine, Massachusetts, Nevada, and Ohio) do not participate in the Social Security program and thus do not receive this employee benefit.

Miscellaneous benefits. Finally, there are a range of miscellaneous benefits that faculty may receive. These may include unemployment insurance, life insurance, workers' compensation, as well as various perks such as employee discounts on selected purchases and housing allowances. The availability and size of these benefits varies greatly by institution.
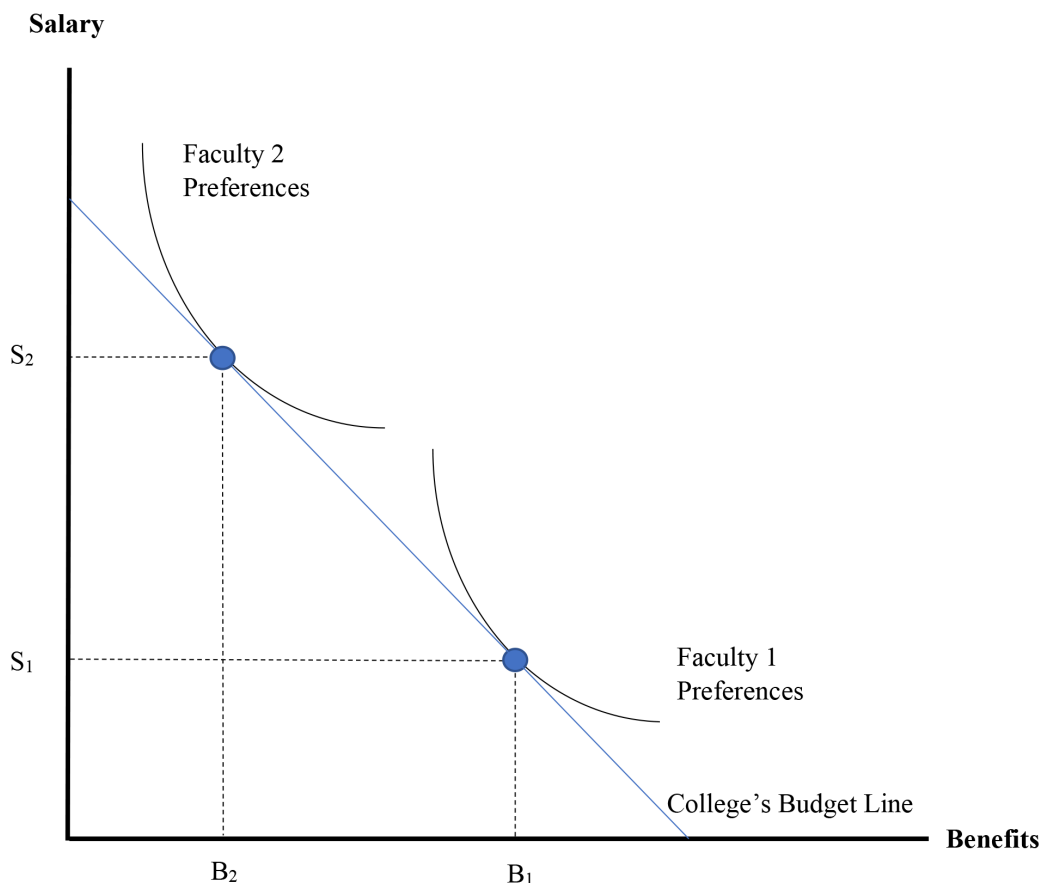
Theories of employee benefits

Despite the restrictions on how employees can use benefits, there are advantages to workers in having some portion of their compensation in the form of benefits as opposed to salary (Hamermesh & Woodbury, 1991; Marino & Zabojnik, 2008). Colleges may be able to negotiate better rates for things such as health insurance than an individual could get on his or her own, thus lowering the total cost of the service. There may be tax advantages to having certain expenses paid through their employer. Employers also may receive tax benefits from providing certain benefits to their workers. Finally, the employer may pay some portion of the total cost of the benefit for the employee, which lowers the cost to the employee. Employers can then attempt to tailor the mix of salar /benefits to attract and retain workers with desirable attributes (Leibowitz, 1983).

According to the theory of compensating wage differentials (Rosen, 1986; Ehrenberg & Smith, 2016), both workers and employers view salary and benefits as substitutes for each other. Figure 1 depicts how institutions and faculty might behave based on this theory. Faculty form preferences based on their willingness to trade salary for benefits, as reflected in their indifference curves. Each indifference curve is thought to be non-linear due to the diminishing marginal

rate of substitution between salary and benefits. A faculty member receiving few benefits would be willing to give up more salary to increase their benefits than would be true if he or she had a lower salary and higher level of benefits. Faculty member 1 in this figure, for example, places more value on benefits relative to salary than would faculty member 2. Hence, faculty member 1 would seek employment at colleges that offer relatively high benefits, even though this may mean sacrificing some salary.

Figure 1. Faculty and institution preferences and matching on salary and benefits

From the college's perspective, they would also be willing to exchange salary for non-salary benefits. Colleges are thought to be most interested in the total amount of compensation that they must pay faculty to achieve their goals and objectives. Organizations form a budget line (or isoprofit curve) that reflects different combinations of salary and non-salary benefits they would be willing to offer to achieve a certain outcome. As a result, colleges that have higher pay, ceteris paribus, should have lower benefits and vice-versa.

The preferences of faculty and the budget of the institution come together to find the combination of salary (S^*) and non-salary benefits (B^*) that are mutually beneficial to both parties. Figure 1 shows the case where a college might consider offering two different combinations of salary and benefits (S_1, B_1) and (S_2, B_2) to their faculty. Their choice could be related to factors such as the generosity of retirement benefits in their state, the cost of medical services in their area, and the type of faculty that the institution wants to hire. Individuals such as faculty 1 and 2 have different preferences for benefits versus salary, and match with the institution offering their preferred mix.

Review of prior studies

There is a fairly rich literature on the topic of faculty compensation. These studies originated in the 1960s and 1970s with the passage of the Equal Pay Act and

subsequent extension to colleges and universities. Most of the work on faculty salaries addressed the relative pay for male and female faculty (see, for example, Barbezat, 2002; Toutkoushian & Conley, 2005). This work has shown that the salaries paid to faculty are related to personal characteristics of faculty such as their gender and race, human capital characteristics including their years of experience and research productivity, the field in which they work, and the type of institution where they are employed.

Hamermesh and Woodbury (1990) noted that the topic of faculty salaries has received much more attention than nonwage benefits. Nonetheless, research has been conducted on different benefits received by faculty. Much of this literature examines retirement benefits. Studies by Brown and Weiesbenner (2009; 2014), Clark (1999), Clark, Hansen, and Mitchell (2016), Dulebohn and Murray (2007), Goldhaber and Grout (2016), Koedel, Ni, and Podgursky (2014), and others centered around the choice that academic employees make with regard to the type of retirement plan offered by their employers. Work by Balkin and Griffith (1993), Legrand, Mortier, Levecque, and Wille (2020), and Vashisha and Khan (2020) focused on the satisfaction of academic with their benefits. Another strand of literature examined the role of tax rates on benefits. Researchers such as Hamermesh and Woodbury (1991; 1992), Sloan and Adamache (1986), Gentry and Peress (1994), and Grubb and Oyer (2008) have noted that benefits have been taxed differently than salary, which may affect demand for benefits from faculty and the supply of benefits from colleges.

There have been several studies within this literature, such as Mayhall, Katsinas, and Bray (2016) and Smith and Ehrenberg (1983), that examined factors that are related to the average faculty benefits at colleges and universities. These studies varied with regard to the time period examined, the type of institution considered, and the way in which benefits were measured. Two particular studies within this group merit further attention.

Woodbury and Hamermesh (1992) used the modeling approach for demand systems of equations favored by Deaton and Muellbauer (1980) to explain the share of compensation in the form of total benefits at two- and four-year institutions. Their model controlled for the level of highest degree offered, whether the institution was public or private, geographic region, the number of faculty, total compensation, and the relative prices of benefits and salary. They found that the share of compensation in the form of benefits was lower at

institutions that offer graduate degrees, were larger in size, and/or had lower salaries. Interestingly, the authors did not find any evidence that total benefits were related to the public or private status of an institution.

In another study, Zoghi (2003) used data from the AAUP to examine factors that were related to the average salary of faculty members at public universities. Her dataset consisted of five years of cross-sectional data for institutions for the years 1975, 1980, 1985, 1990, and 1994. The dependent variable in Zoghi's study was the average salary for faculty in dollars broken out by rank. Her regressors included faculty benefits for retirement, health insurance, life insurance, and other fringe benefits, as well as control variables for highest degree, enrollments, student/faculty ratio, and the size of the library. She found that there was a positive association between retirement benefits and salary, but no relationship between salary and the other three categories of benefits. Accordingly, her results did not support the theory of compensating wage differentials (also see Brown, 1980).

Data and methods

Data

The data for this study were obtained from two main sources. The first source was the IPEDS surveys conducted annually by the NCES. For most years from 1980 through 2010, IPEDS collected information about institutional expenditures on retirement benefits and health insurance for faculty. IPEDS was also the source of institution-level data for faculty and institutional variables for the entire sample period of the study (1980 through 2021).[1]

The second source of data for this study was the AAUP. As part of their annual issue of faculty compensation, the AAUP conducts a survey of institutions on faculty compensation. The information on benefits collected by the AAUP varies by year. From 2005 through 2018, the AAUP provided data on both average salaries and average total compensation for faculty. The difference between the two represents the average total benefits from all sources, which includes retirement contributions,

1   IPEDS data were not available for the years 1981-83, 1986, 1988, and 2000.

medical premiums, dental premiums, tuition benefits for employees and/or their families, contributions to Social Security, disability income protection, unemployment insurance, group life insurance, workers' compensation premiums, and other benefits with cash alternatives. Beginning in 2015, the AAUP collected additional data on retirement and medical benefits, and starting in 2019 no longer collected data on total benefits.

The analysis for total benefits spanned the years 2005 through 2018. The analysis for retirement and health benefits covered the years from 1980 through 2020 except for years 1981-83 when IPEDS data were missing, and the years 2011 through 2014 when neither IPEDS nor AAUP data collected retirement and medical benefits. The universe for this study was restricted to four-year, degree-granting, not-for-profit (public and private) colleges and universities in the United States. From there, the numbers of institutions examined in each year were limited by how many reported data to the IPEDS and AAUP surveys. It should be noted that during the time span of the study more institutions participate in the IPEDS surveys than the AAUP surveys. The analytical sample was further restricted to institutions without "parent-child" financial reporting and without missing data on the variables used in the study.[2] Finally, approximately 20 institution/year data points were deleted from the analytical sample due to apparent data errors in reported benefits or average faculty salaries.

Dependent variables. There were eight dependent variables for this study. The eight variables were alternative measures of compensation for faculty depending on what was included in benefits and the units of measure (dollars or percent of compensation). The first four variables represented the average salary and benefits (total, retirement, health insurance, all other) in dollars for full-time faculty at the ranks of Full, Associate, and Assistant Professor. Depending on data availability, the variables were computed by either dividing the total reported institutional expenditures by the number of full-time, ranked faculty, or by finding the difference between average faculty compensation and average faculty salary. The last three variables represent the average benefits as percentages of their average total compensation.

A data issue of note in this study is that the AAUP changed how it classified health benefits over time. In some years, medical and dental were reported separately. In other years, only health expenditures were reported which included medical and dental. Accordingly, I used the most aggregate definition of health benefits

to include both medical and dental when applicable. The average salary and average dollar benefits were adjusted for inflation (base year = 2021) using the Consumer Price Index for all urban areas.

Independent variables. The independent variables were grouped according to whether they were institutional characteristics or faculty characteristics. The institutional explanatory variables included whether the college was public, whether the institution was an HBCU or tribal college, the geographic region of the institution (eight categories), the highest degree offered (bachelor, master, or doctor degree), and size as represented by the number of faculty. The financial health of the institution was captured by a variable for the total revenue per student, adjusted for inflation and converted to logarithms to account for the high skewness of the variable. Variables were also created for the faculty characteristics including the percentage of full-time, ranked faculty who were male, and the percentages of faculty at each of the three academic ranks. The gender composition may be relevant if benefits vary by gender due to different gender roles in families and the need for medical benefits. The rank distribution of faculty may reflect where faculty are in the life cycle and their subsequent demands on institutions for medical support and retirement funding.

Methods

The review of the literature points out that researchers have taken different statistical approaches to examining employee benefits. One of the main issues of contention is whether to focus on the level of benefits (dollars) or the share of compensation in benefits. Smith and Ehrenberg (1983), for example, argue that analyses of dollar benefits may not yield evidence of a tradeoff between salary and benefits because some benefits such as contributions to retirement and Social Security have technical relationships with salary. Likewise, examining only the share of compensation in benefits overlooks the question of whether the level of benefits is related to salary.

2   For information on parent-child data issues in IPEDS, see Jaquette and Parra (2014). The sample was further restricted to institutions with fewer than 75,000 students, average salaries of at least $20,000, and total revenue per student of at least $5,000. This was intended to rule out institutions with special circumstances.

In this study, I focused on both dollar benefits and benefits as a share of total compensation. I relied on multiple regression analysis to see how faculty and institutional characteristics were related to benefits. The first group of models focused on the determinants of total benefits, in both dollars and as a percentage of total compensation, in the year 2018 which was the last year when complete data were available on total benefits and benefits for retirement and health insurance:

(3a) $Benefits \$_{jt} = \alpha + \beta Salary_{jt} + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(3b) $Benefits \%_{jt} = \alpha + \beta Salary_{jt} + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\; t = 2018$

where $Benefits \$_{jt}$ = average total benefits for institution j in year t in dollars, $Benefits \%$ = average total benefits as a percent of compensation, $Salary$ = average faculty salary, FC = set of faculty characteristics with coefficients γ, and VC = set of institutional characteristics with coefficients δ. Of particular interest in these two equations are the coefficients on the average salary variable because they indicate whether total benefits are higher at institutions with higher average salaries, and if so, whether benefits are growing at a slower or faster rate as salaries rise.

The next set of models examined how the faculty and institutional characteristics were related to the type of compensation for faculty:

(4a) $Salary \$_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(4b) $Retire \$_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(4c) $Health \$_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(4d) $OtherBen \$_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

where $Retire \$$ = average dollar contributions to retirement benefits, $Health \$$ = average dollar contributions to health insurance, and $OtherBen \$$ = average dollar contributions to all other benefits. The coefficients capture the relationship between each factor and the average compensation amounts in dollars at these institutions. Another way to analyze the data is by specifying the dependent variables as shares of total compensation:

(5a) $Salary \%_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(5b) $Retire \%_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(5c) $Health \%_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

(5d) $OtherBen \%_{jt} = \alpha + FC_j\gamma + VC_{jt}\delta + \varepsilon_{jt},\quad t = 2018$

where the dependent variables were constructed by dividing the average dollar amounts by purpose by the average total compensation.

Results

Table 1 shows how the average total benefits for faculty changed from 2005 to 2018. The first column expressed average total benefits in inflation-adjusted dollars. The second column reports average total benefits as a percentage of average total compensation (salary plus benefits). It can be seen that average total benefits in dollar terms have risen steadily during this 14-year period, increasing from $25,205 in 2005 to $29,123 in 2018. The share of total compensation in the form of benefits has likewise increased during this period, from 21.7% in 2005 to 23.7% by 2018. Accordingly, a larger share of total compensation for faculty is going towards benefits over time.

Table 1. Average total benefits for four-year institutions by year

Year	Average Total Benefits		# Institutions
	Dollars	Percent of Total Compensation	
2005	$25,205	21.7%	781
2006	$25,367	21.8%	781
2007	$25,950	21.9%	784
2008	$25,826	22.0%	738
2009	$26,404	22.0%	764
2010	$26,489	22.3%	798
2011	$26,743	22.4%	766
2012	$26,696	22.5%	765
2013	$27,083	22.5%	743
2014	$27,739	22.7%	712
2015	$28,843	22.9%	655
2016	$28,833	23.5%	684
2017	$29,304	23.7%	647
2018	$29,123	23.7%	656

Notes: Data are from the annual survey of faculty compensation conducted by the AAUP. Total benefits include retirement benefits, health insurance benefits, tuition benefits, contributions to Social Security, disability income protection, unemployment insurance, group life insurance, workers' compensation premiums, and other benefits with cash alternatives. First column shows average total benefits adjusted for inflation (base year 2021). Second column represents ratio of average total benefits to average total compensation for full, associate, and assistant professors. Third column shows the number of four-year institutions participating in AAUP annual survey with data on average faculty salaries and benefits.

To better understand the trend in total benefits, Table 2 provides similar information on how the average retirement benefits, health benefits, and salaries paid by institutions have changed over time. The time span for this table is considerably longer than in Table 1 because IPEDS collected data on retirement and health benefits from 1980 to 2010, and then the AAUP reported retirement and health benefits starting in 2015. The first two columns pertain to retirement benefits, the next two columns address health insurance benefits, and the final column shows average faculty salaries. Benefits are shown in both inflation-adjusted dollars and as a percentage of average faculty salary.[3] Likewise, the average salaries have been adjusted for inflation. There are several years with missing data in the table because data were unavailable from either source for these particular years. Finally, only four-year institutions that reported data for almost all years over this time span were included in the analysis (350 to 400 per year).

3   Benefits were divided by average faculty salary and not total compensation because total benefits were not available for years prior to 2005.

Table 2. Average retirement and health insurance benefits and salary by year

Year	Retirement Benefits		Health Benefits		
	Dollars	Pct Salary	Dollars	Pct Salary	Average Salary
1980	$8,112	9.62	$2,305	2.75	$83,125
1984	$8,234	9.99	$3,390	4.15	$81,073
1985	$8,370	9.90	$3,473	4.15	$83,158
1986*	$8,539	9.92	$3,598	4.23	$85,550
1987	$8,937	9.96	$3,804	4.31	$87,942
1988*	$9,106	9.95	$4,389	4.84	$89,386
1989	$9,122	9.87	$4,883	5.36	$90,830
1990	$8,959	9.62	$5,256	5.72	$91,974
1991	$8,631	9.48	$5,607	6.21	$90,121
1992	$8,585	9.43	$5,968	6.59	$90,262
1993	$8,580	9.45	$6,043	6.69	$90,429
1994	$8,661	9.43	$5,975	6.56	$91,350
1995	$8,927	9.71	$5,698	6.25	$91,500
1996	$8,747	9.56	$5,606	6.16	$91,595
1997	$8,931	9.67	$5,500	6.04	$91,820
1998	$8,880	9.48	$5,737	6.18	$93,513
1999	$8,916	9.34	$5,972	6.35	$95,245
2000*	$8,963	9.28	$6,399	6.73	$95,754
2001	$8,928	9.24	$6,721	7.10	$96,264
2002	$8,994	9.15	$7,638	7.95	$97,948
2003	$9,128	9.34	$8,023	8.45	$97,199
2004	$9,319	9.45	$8,487	8.87	$98,211
2005	$9,309	9.43	$8,932	9.35	$98,572
2006	$9,356	9.53	$9,099	9.56	$98,323
2007	$9,603	9.59	$9,557	9.84	$100,428
2008	$9,283	9.45	$9,610	10.09	$98,578
2009	$9,474	9.39	$10,248	10.51	$101,123
2010	$9,393	9.41	$10,438	10.80	$100,129
2015**	$9,977	9.58	$11,556	11.64	$103,824
2016	$10,066	10.04	$11,444	11.86	$100,417
2017	$10,023	10.05	$11,588	12.11	$99,885
2018	$10,123	10.21	$11,712	12.27	$99,683
2019	$9,908	9.88	$11,749	12.39	$100,276
2020	$9,632	9.86	$12,151	12.86	$98,122
1980 to 2020	**+18.7%**	**+0.24**	**427.2%**	**+10.11**	**18.0%**

Notes: Data are from IPEDS for 1980 to 2010, and AAUP from 2015-20. First and second columns = average retirement benefits (in 2021 dollars and as percent of average salary). Third and fourth columns = average health benefits for health insurance (in 2021 dollars and as percent of average salary). Fifth column = average faculty salaries. * data extrapolated for missing years. ** data not available for prior years 2011-14.

Starting with retirement benefits, the data in Table 2 reveal that the average retirement benefits have increased slightly in inflation-adjusted dollars over time, with the trend following the trend in average salaries. For the most part, retirement benefits as a share of average faculty salary have remained steady within the range of 9.5 to 10 percent. In contrast, the average health insurance benefits in inflation-adjusted dollars have increased almost five fold from 1980 to 2020. As a share of faculty salaries, health benefits were in the four percent range in the 1980s and are now more than 12% of average salary and even larger on average than retirement benefits.

Table 3 provides a breakdown of descriptive statistics for benefits (total, retirement, and health) by type of institution for the year 2018. The first two rows focus on the distinction between public and private four-year, not-for-profit institutions. Looking across the columns, it can be seen that the average total benefits were higher at public than at private institutions in both dollars and as a proportion of total compensation, even though average salaries favored private institutions. Although the average health insurance benefits were similar for the two sectors, there was a large difference in average retirement benefits with public institutions awarding more than $3,000 more per faculty member than their private counterparts do in retirement benefits. The large difference may in part reflect the more generous state and/or system sponsored defined benefit plans that are available to many faculty at public institutions.

Table 3. Breakdown of mean benefits by institution type – 2018

| Institution Type | Total Benefits | | Retirement Benefits | | Health Benefits | | Number Institutions |
	Dollars	Pct Salary	Dollars	Pct Salary	Dollars	Pct Salary	
Control							
Public	$30,946	24.8%	$10,998	8.7%	$11,704	9.5%	323
Private	$27,388	22.6%	$7,769	6.1%	$11,203	9.7%	336
Mission							
HBCU/Tribal	$22,351	21.4%	$9,052	8.6%	$7,138	7.0%	15
Non-HBCU/Tribal	$29,282	23.7%	$9,381	7.4%	$11,549	9.7%	635
Highest Degree							
Bachelor	$25,092	23.8%	$7,052	6.5%	$10,723	10.5%	164
Master	$26,757	23.9%	$8,328	7.4%	$11,030	10.0%	298
Doctor	$36,097	23.2%	$12,827	8.2%	$12,679	8.3%	192

Notes: Data on benefits were obtained from the AAUP annual faculty compensation survey. Data on institution type were obtained from IPEDS. Number of institutions were based on those reporting total benefits.

The third and fourth rows of Table 3 compare average benefits for HBCU/tribal colleges and all other colleges. It is important to note that on average faculty salaries are higher at non-HBCU/tribal colleges. The average total benefits favor non-HBCU/tribal colleges by a large margin of close to $7,000 per faculty member. In contrast to the public/private differential, however, the average retirement benefits were comparable for these two groups of institutions and the average health benefits were notably higher for non-HBCU/tribal colleges.

Finally, the last three rows in Table 3 examine differences in average benefits by highest degree awarded. Although the average total benefits are highest at doctoral-granting institutions, faculty salaries are also highest for this group and thus the benefits as shares of total compensation salary were comparable across the three groups. Health benefits were fairly similar for bachelor-, master-, and doctoral-granting institutions. In contrast,

the retirement benefits in both dollar and percentage terms were highest at doctoral-granting institutions.

Figures 2 through 4 show the distributions of average dollar benefits (total, retirement, health) across institutions in 2018. The average total benefits in Figure 2 for institutions in this particular year were concentrated in the range of $20,000 to $30,000; however, the distribution was skewed to the right with a small number of institutions reporting relatively high levels of benefits. The distribution of retirement benefits in the second figure exhibited a similar shape, with most institutions paying retirement benefits in the $8,000 to $10,000 range and a small proportion of institutions having retirement benefits that exceeded $20,000/year. Finally, the distribution of average health benefits in Figure 4 had less skewness when compared to retirement and total benefits, with most institutions paying between $10,000 to $12,000 per year in health benefits.

Figure 2. Distribution of average total dollar benefits – 2018
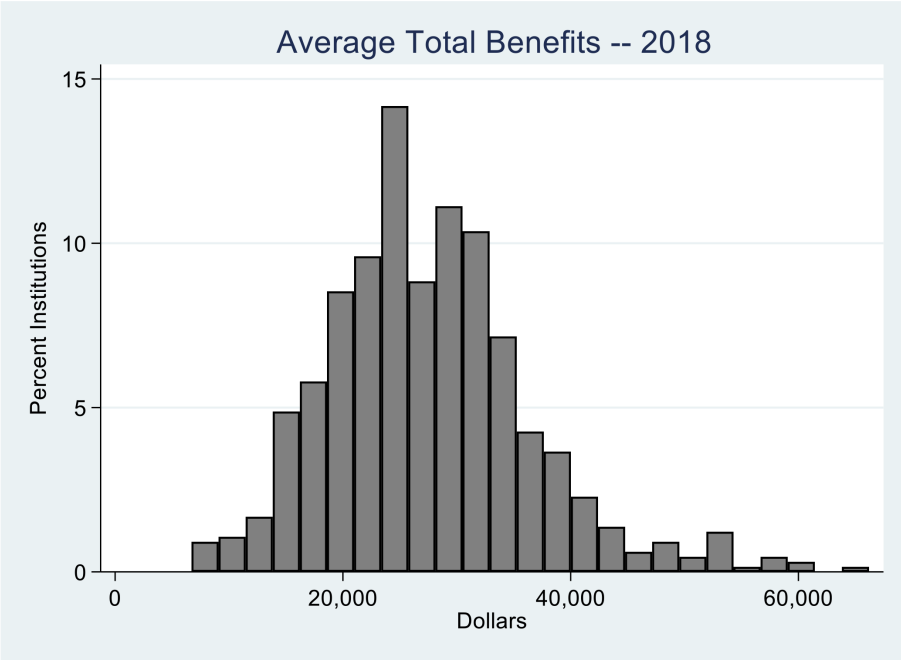
Figure 3. Distribution of average retirement benefits in dollars – 2018

Average Retirement Benefits -- 2018
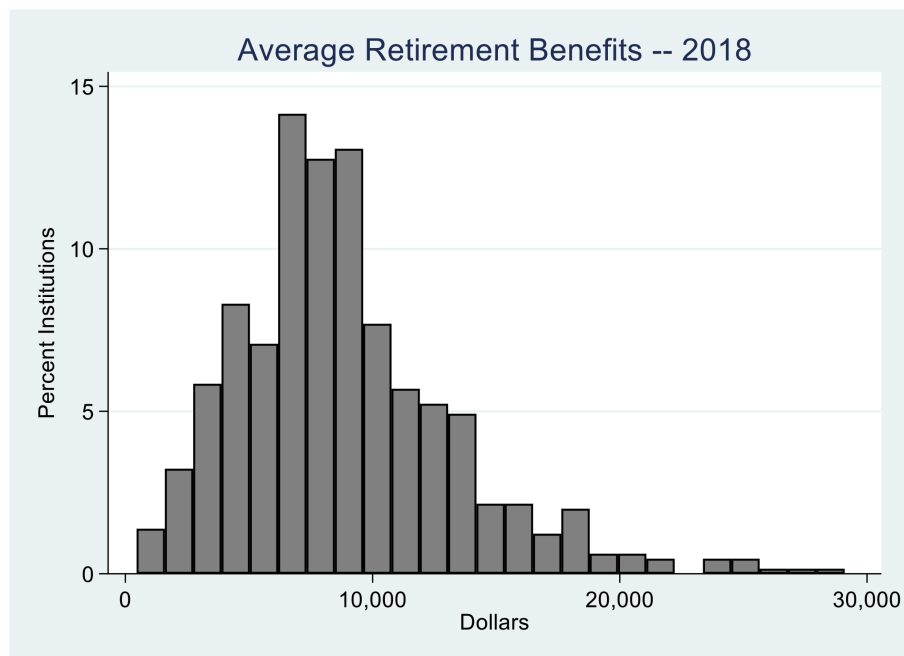
Figure 4. Distribution of average health benefits in dollars – 2018

Average Health Benefits -- 2018
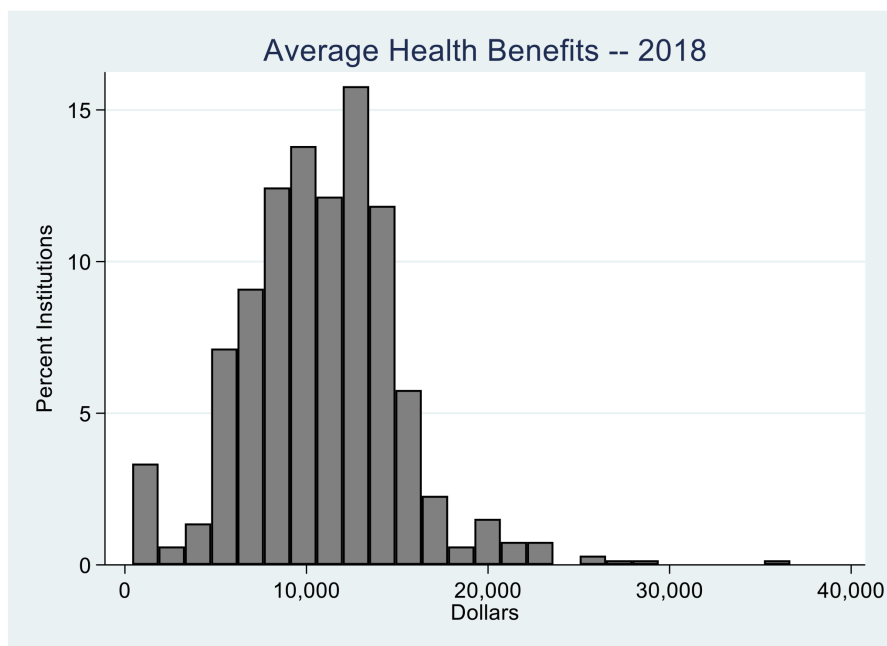
Descriptive statistics for the variables used in the multiple regression models to follow are shown in Table 4. The statistics pertain to the year 2018 and to institutions with non-missing values on total benefits and the other regressors in the model (N = 643). The average salary for ranked faculty across these institutions was $96,600 with average total benefits of about $29,000, giving rise to average total compensation of close to $126,000. Total compensation was divided among salary (77%), health benefits (9%), retirement benefits (7%), and all other benefits (7%). With regard to the control variables, faculty were fairly evenly split among the three ranks of Full, Associate, and Assistant professor. On average, institutions in the sample had about 400 faculty members, ranging from a low of 40 to a high of 2,419.

Table 4. Descriptive statistics – 2018

Variable	Mean	Std Dev	Minimum	Maximum
Average Compensation (dollars)	$125,849	$36,517	$59,392	$284,811
Faculty Salary (dollars)	$96,587	$28,689	$48,191	$232,651
Total Benefits (dollars)	$29,263	$9,418	$7,077	$69,856
Retire Benefits (dollars)	$9,411	$4,754	$479	$30,700
Health Benefits (dollars)	$11,410	$4,546	$425	$38,675
Other Benefits (dollars)	$8,174	$3,763	$35	$26,401
Faculty Salary (pct comp)	76.77	3.68	64.03	92.52
Total Benefits (pct comp)	23.23	3.68	7.48	35.97
Retire Benefits (pct comp)	7.25	2.67	0.42	18.73
Medical Benefits (pct comp)	9.35	3.58	0.35	21.60
Other Benefits (pct comp)	6.74	2.10	0.05	14.39
Pct Male	54.33	9.09	18.00	79.47
Pct Full Prof	34.41	10.94	9.03	82.71
Pct Assistant Prof	32.67	8.70	5.97	61.76
Pct Associate Prof	32.93	7.72	1.36	63.04
Total Enrollments (100s)	114.60	118.21	5.85	684.75
Number Ranked Faculty	401.94	403.76	40.00	2419.00
Region: New England	0.09	0.28	0.00	1.00
Region: Mideast	0.25	0.43	0.00	1.00
Region: Great Lakes	0.15	0.36	0.00	1.00
Region: Plains	0.08	0.27	0.00	1.00
Region: Southeast	0.23	0.42	0.00	1.00
Region: Southwest	0.06	0.24	0.00	1.00
Region: Rocky Mountains	0.03	0.17	0.00	1.00
Region: Far West	0.10	0.30	0.00	1.00
Revenue Per Student (log)	15.01	0.67	13.45	18.92

Table 4. Descriptive statistics – 2018 (continued)

Variable	Mean	Std Dev	Minimum	Maximum
Private	0.51	0.50	0.00	1.00
HBCU or Tribal	0.02	0.15	0.00	1.00
Doctoral Inst	0.30	0.46	0.00	1.00
Bachelors Inst	0.25	0.43	0.00	1.00
Masters Inst	0.46	0.50	0.00	1.00
N	643			

Notes: Data were obtained from IPEDS and AAUP annual surveys for the year 2018.

Tables 5 and 6 present the correlations between average faculty salaries and faculty benefits, with Table 5 focusing on average dollar benefits and Table 6 showing average shares of compensation. The correlations in Table 5 were all positive, meaning that on average institutions with higher levels of compensation also tended to have higher levels of benefits. The correlation between average salary and average total benefits was very high ($r = +0.78$). Health benefits exhibited weaker correlations with salary ($r = +0.26$) than did retirement benefits ($r = +0.70$), which is to be expected given that retirement benefits are normally set as a proportion of salary.

Evidence of how institutions trade off the shares of compensation emerge when correlations were calculated for percentage benefits (Table 6). On average, institutions with higher salaries had slightly lower benefits as a percent of compensation ($r = -0.10$), with the negative correlation driven mainly by health benefits ($r = -0.35$). The table also reveals that institutions with higher retirement benefits as a percentage of compensation have lower health benefits as a percentage of compensation ($r = -0.32$).

Table 5. Correlations among average salaries and benefits (dollars) – 2018

	Salary	Health	Retirement	Total
Salary	1.00	—	—	—
Health	0.26	1.00	—	—
Retirement	0.70	0.11	1.00	—
Total Benefits	0.78	0.60	0.76	1.00

Notes: Variables for benefits represent the average dollars per faculty member. Partial correlations are based on the numbers of institutions with non-missing values for the pair of variables of interest (643 to 654). All correlations are statistically significant at p = .01.

Table 6. Correlations among average salaries and benefits (percentages) – 2018

	Salary	Health	Retirement	Total
Salary	1.00	—	—	—
Health	-0.35	1.00	—	—
Retirement	0.21	-0.32	1.00	—
Total Benefits	-0.10	0.58	0.31	1.00

Notes: Variables for benefits represent the average faculty benefits as percentages of average total compensation. Partial correlations are based on the numbers of institutions with non-missing values for the pair of variables of interest (643 to 654). All correlations are statistically significant at p = .01.

Table 7 presents the results for multiple regression results for average total benefits in 2018. The first column uses average total benefits in dollars as the dependent variable, and the second column uses total benefits as a percentage of average compensation as the dependent variable. Robust standard errors are shown in parentheses below each regression coefficient. The regression models controlled for faculty characteristics (average faculty salary, the share of faculty by rank, and the percent of male faculty) and institutional characteristics (number of faculty and faculty squared, highest degree awarded, revenue per student, whether public/private, whether HBCU/tribal, and geographic region). The coefficients in the table indicate the differences between institutions in total benefits that are associated with a one-unit difference in each variable. Collectively, the explanatory variables used accounted for 67% of the variations in total dollar benefits and 20% of the variations in total benefits as a share of compensation.

Table 7. Multiple regression results for average total benefits – 2018

Variable	Average Total Benefits in:	
	Dollars	Percent of Comp
Avg Faculty Salary ($1000s)	210.12***	-0.050***
	(21.98)	(0.012)
Pct Full Prof	2.61	0.016
	(34.04)	(0.024)
Pct Assistant Prof	-9.94	0.014
	(38.51)	(0.027)
Pct Male	53.84	0.044+
	(34.49)	(0.023)
Number Ranked Faculty	4.37	0.003+
	(2.75)	(0.002)
Number of Faculty Squared	-0.002+	-0.000*
	(0.001)	(0.000)
Doctoral Inst	-591.62	-0.706
	(856.75)	(0.496)
Bachelors Inst	1460.19*	0.783+
	(581.32)	(0.414)
Revenue Per Student (log)	1125.48+	0.979**
	(596.60)	(0.359)
Private	-4222.63***	-2.924***
	(671.35)	(0.423)
HBCU or Tribal	-4463.69**	-3.328**
	(1387.78)	(1.140)
Region: Mideast	17.01	-0.339
	(1022.98)	(0.616)
Region: Great Lakes	-1307.20	-0.645
	(952.52)	(0.610)
Region: Plains	-3974.24***	-2.620***
	(1026.92)	(0.712)

Table 7. Multiple regression results for average total benefits – 2018 (continued)

Variable	Average Total Benefits in:	
	Dollars	Percent of Comp
Region: Southeast	-3679.44***	-2.648***
	(926.23)	(0.607)
Region: Southwest	-5921.77***	-3.882***
	(1245.02)	(0.811)
Region: Rocky Mountains	-3129.25*	-2.215*
	(1385.50)	(0.922)
Region: Far West	444.53	-0.823
	(1243.76)	(0.714)
Constant	-7352.63	12.649**
	(7759.79)	(4.615)
R-Squared	0.67	0.21
Sample Size	652	652

Notes: Data on total benefits were obtained from the AAUP annual faculty compensation survey. Data for all other variables were obtained from IPEDS. Robust standard errors are shown in parentheses. Reference category for geographic region is New England. Reference category for faculty rank is associate professor. Reference category for highest degree is master's institution. *** $p < .001$, ** $p < .01$, * $p < .05$, + $p < 0.10$ (two-tailed tests).

The results show that for every $1000 increase in average salary, holding constant the other variables in the model, total benefits were about $210 higher. At the same time, institutions with higher faculty salaries paid a lower share of total compensation in the form of benefits. The last result is due to the fact that a portion of total benefits is typically set independently of salary. Total benefits did not appear to be related to personal characteristics of their faculty such as the rank and gender distribution of faculty at the institution. There was evidence of a quadratic relationship between the size of the faculty and total benefits, meaning that total benefits in both dollars and percentages were highest for middle-sized institutions. There was also weak evidence that benefits were slightly better at bachelor-level institutions than at master- or doctoral-level institutions.

Of particular note in Table 7 is the large difference in total benefits between public and private institutions. Even after taking into account the other variables in the model, total benefits per faculty member at private institutions were $4,223 lower than at similarly-situated public institutions. Put another way, the share of total compensation for benefits was about three percentage points lower at private institutions than at public institutions The differences were similar to the average benefit figures shown earlier in Table 3, suggesting that

the public/private gap in average total benefits was not driven by differences in the characteristics of these colleges that could also be related to benefits. Total benefits at HBCU/tribal colleges were likewise notably smaller than at non-HBCU/tribal colleges on both a dollar ($4,464) and percentage of compensation (3.3%) basis.

There were also sizable regional differences in total benefits across institutions. When compared to institutions in the New England region of the country (reference group), total benefits were smaller at institutions located in the Plains, Southeast, Southwest, and Rocky Mountain regions. These differences are consistent with variations in the cost of living that could impact selected benefits such as health care.

Table 8 presents the results from multiple regression models explaining the dollar levels of different forms of compensation in 2018. Total compensation was divided into four categories for this analysis: salary, retirement benefits, health benefits, and all other benefits. In each model, the dependent variable represents average compensation by source in dollars. The same set of regressors was used as in the previous table for total benefits. The model explained a larger share of variation in salary, followed by retirement benefits, other benefits, and then health benefits.

Table 8. Multiple regression results for dollar compensation by form – 2018

Variable	Average Dollar Compensation for:			
	Salary	Retirement	Health	Other Benefits
Pct Full Prof	400.16***	19.03	-0.51	74.39***
	(83.27)	(18.77)	(24.13)	(18.89)
Pct Assistant Prof	-80.45	-43.35*	9.67	-0.64
	(90.37)	(21.23)	(27.92)	(22.22)
Pct Male	270.11***	31.45+	18.76	66.39***
	(63.48)	(16.05)	(26.59)	(18.74)
Number Ranked Faculty	50.85***	6.03***	2.38	7.32***
	(5.05)	(1.44)	(1.84)	(1.27)
Number of Faculty Squared	-0.02***	-0.00***	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Doctoral Inst	2867.43+	280.47	1135.24+	-1479.87***
	(1718.45)	(471.05)	(663.40)	(442.90)
Bachelors Inst	-4889.41***	62.59	261.46	170.09
	(1369.69)	(322.67)	(424.20)	(333.42)
Revenue Per Student (log)	16632.83***	2282.01***	-144.31	1985.51***
	(1278.41)	(327.79)	(347.13)	(323.98)
Private	5187.86***	-2901.14***	-635.15	880.85*
	(1480.56)	(345.44)	(512.15)	(341.66)
HBCU or Tribal	-1678.04	-329.47	-3311.74***	-912.51
	(3281.48)	(1013.92)	(896.02)	(665.58)
Region: Mideast	-1314.46	741.43+	-1540.26*	-58.85
	(2303.09)	(447.31)	(759.13)	(489.44)
Region: Great Lakes	-12943.47***	-1331.10**	-1767.68*	-928.04+
	(2363.28)	(444.67)	(705.77)	(552.44)
Region: Plains	-16476.14***	-1787.82***	-4204.83***	-1672.56**
	(2526.59)	(488.94)	(705.31)	(594.68)
Region: Southeast	-16392.01***	-596.19	-4871.87***	-1645.14***
	(2184.80)	(457.92)	(668.34)	(485.15)
Region: Southwest	-10763.85***	-2358.38***	-5256.12***	-832.90
	(2993.70)	(665.20)	(802.99)	(599.98)
Region: Rocky Mountains	-16237.02***	-1584.12*	-3227.81***	-1855.12*
	(3344.52)	(716.27)	(829.05)	(763.30)
Region: Far West	-666.33	1704.97*	-2098.96**	873.62
	(2587.01)	(668.28)	(777.15)	(581.89)
Constant	-187186.54***	-25794.02***	14434.37**	-28801.16***
	(19284.97)	(4611.41)	(5152.87)	(4545.04)
R-Squared	0.81	0.55	0.18	0.49
Sample Size	671	645	654	643

Notes: Data on retirement, health, and other benefits were obtained from the AAUP annual faculty compensation survey. Data for all other variables were obtained from IPEDS. *** p < .001, ** p < .01, * p < .05, + p < 0.10 (two-tailed tests). Reference category for geographic region is New England. Reference category for faculty rank is associate professor. Reference category for highest degree is master's institution. *** p < .001, ** p < .01, * p < .05, + p < 0.10 (two-tailed tests).

Beginning with average salary, the first column shows that average faculty salaries were associated with faculty rank and gender. Likewise, average faculty salaries were related to the type of institution, geographic location, and financial resources as reflected in their total revenue per student. It can also be seen that average faculty salaries were on average about $5,200 higher in private than public four-year institutions.

Turning to benefits, personal faculty characteristics were not found to be associated with retirement or health benefits, but were with other benefits. Benefits in all three categories were highest at mid-sized institutions. The models verified that retirement benefits were substantially lower at private institutions than at public institutions, and yet other benefits were slightly advantaged for private institutions. Revenues per student were positively related to retirement and other benefits, but not with health benefits. Finally, the models showed that there were large geographic differences in health benefits across institutions, which likely reflects differences in the cost of health care services by region of the country.

Finally, Table 9 has a similar structure as Table 8, except that the dependent variables represent the shares of total compensation for each source, and the models include a control variable for average faculty salary to see how shares of benefits are related to the level of salary. The four models explained less variation in shares of compensation than they did for the levels of compensation, with R^2 values ranging from 0.10 for all other benefits to 0.33 for retirement benefits. The first row shows that institutions with higher average faculty salaries also tended to pay a larger share of total compensation for retirement benefits and a lower share for health benefits. The share of compensation for retirement benefits was highest at institutions with more mid-career faculty, and institutions with more revenue per student. The results again showed that private institutions paid a lower share of compensation for retirement benefits, and a higher share in salary, which is consistent with the notion of compensating wage differentials. HBCU and tribal colleges paid a larger share of compensation in salary and less in health benefits. And institutions in the plains, southeast, southwest, and Rocky Mountain regions tended to emphasize salary over health benefits as shares of total compensation.

Table 9. Multiple regression results for share of compensation by form -- 2018

Variable	Salary	Retirement	Health	Other
		Share of Compensation for:		
Average Salary ($1000s)	0.016	0.020**	-0.044***	-0.004
	(0.018)	(0.007)	(0.010)	(0.008)
Pct Full Prof	0.005	-0.031*	0.005	0.033*
	(0.032)	(0.013)	(0.019)	(0.016)
Pct Assistant Prof	-0.041	-0.028+	0.036	0.002
	(0.037)	(0.014)	(0.023)	(0.019)
Pct Male	-0.005	-0.000	0.007	0.030*
	(0.032)	(0.012)	(0.019)	(0.015)
Number Ranked Faculty	-0.000	0.000	-0.001	0.003**
	(0.002)	(0.001)	(0.001)	(0.001)
Number of Faculty Squared	0.000	-0.000	0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Doctoral Inst	0.614	-0.124	0.582	-1.294***
	(0.660)	(0.321)	(0.440)	(0.307)
Bachelors Inst	-0.840	0.168	0.307	0.340
	(0.584)	(0.238)	(0.363)	(0.279)
Revenue Per Student (log)	-1.230*	0.378+	-0.361	0.433+
	(0.520)	(0.227)	(0.271)	(0.245)
Private	3.566***	-2.825***	-0.295	0.435+
	(0.524)	(0.248)	(0.400)	(0.253)
HBCU or Tribal	3.729**	0.161	-2.715***	-0.616
	(1.298)	(0.760)	(0.770)	(0.588)
Region: Mideast	-0.581	0.549*	-1.339*	0.064
	(0.910)	(0.263)	(0.534)	(0.369)
Region: Great Lakes	0.213	-0.134	-0.541	0.168
	(0.929)	(0.281)	(0.579)	(0.432)
Region: Plains	2.280*	0.005	-2.288***	-0.134
	(1.036)	(0.328)	(0.582)	(0.501)
Region: Southeast	2.309**	0.999**	-3.064***	-0.202
	(0.889)	(0.321)	(0.540)	(0.389)
Region: Southwest	4.120***	-0.635	-3.307***	0.328
	(1.121)	(0.508)	(0.627)	(0.449)
Region: Rocky Mountains	1.766	0.162	-1.624*	-0.427
	(1.132)	(0.464)	(0.636)	(0.552)
Region: Far West	1.439	0.758*	-1.932***	0.483
	(0.982)	(0.376)	(0.539)	(0.394)
Constant	90.114***	2.710	19.267***	-2.902
	(6.863)	(2.952)	(3.698)	(3.194)
R-Squared	0.14	0.33	0.23	0.10
Sample Size	652	643	652	643

Notes: Data on retirement and health benefits were obtained from the AAUP annual faculty compensation survey. Data for all other variables were obtained from IPEDS. *** $p < .001$, ** $p < .01$, * $p < .05$, + $p < 0.10$ (two-tailed tests). Reference category for geographic region is New England. Reference category for faculty rank is associate professor. Reference category for highest degree is master's institution. *** $p < .001$, ** $p < .01$, * $p < .05$, + $p < 0.10$ (two-tailed tests).

Summary and discussion

Faculty benefits are an important, and yet understudied, topic in higher education. Although much is known about how faculty salaries differ by institution, and the various factors that are associated with salaries, little is known about the size and variation of faculty benefits in academe. In this study, I used available data from the AAUP and NCES to help fill this gap.

The longitudinal analysis showed that total faculty benefits have been rising over time, both in absolute terms and as a proportion of total compensation. The growth was driven mainly by rising institutional subsidies for health care costs. As the price of health care has increased, institutions have had little choice but to pick up more of these costs rather than pass all of them along to faculty. Qualitative research has found that faculty are often more concerned about their medical benefits than they are their retirement benefits, even though they can modify their health care coverage annually and retirement plan choices are only made once near the time of hire (Toutkoushian, Riffe, Sanford, & Ness, 2022).

The statistical analysis presented in the paper helps to untangle some of the confusion over benefits versus salary for faculty. Overall, dollar benefits are higher at institutions with higher salaries, in large part due to the way in which benefits for retirement and Social Security are calculated. At the same time, the analyses for shares of compensation showed that institutions on average do trade off salary and non-salary benefits, in particular health benefits. This is not surprising given that institutions have some latitude in cutting back on the portions of health and retirement costs that they will cover, whereas they may find it more difficult to reduce salaries in bad financial times.

One of the most interesting results to emerge from the study is the stark difference in benefits between public and private four-year institutions. It has been well documented that faculty salaries are higher on average at private institutions than at public institutions. Research by Toutkoushian and Rippner (2015) has further shown that the private / public gap is concentrated among the most research-intensive four-year institutions. The large salary gap between the two sectors has raised concerns that public research institutions may not be

able to compete with their private counterparts for the best faculty in their respective fields (Alexander, 2001). The results from this study suggest that the total compensation gap between public and private institutions is not as dramatic in part because public institutions on average offer higher benefits, with most of the difference being due to retirement benefits.

There were several limitations to the study that readers should keep in mind. First, the analysis was restricted to four-year, not-for-profit institutions. Previous studies have demonstrated that faculty salaries are substantially lower at two-year institutions than at four-year institutions (Colby, 2022; Mayhall, Katsinas, & Bray, 2016), and the nature of faculty employment is often different with more faculty working off the tenure track at two-year colleges. Accordingly, the results from this study for four-year colleges should not be extrapolated to this group. As noted earlier, there were some important data limitations in the study. The AAUP and NCES collected data on different types of benefits in various years, which made it difficult to examine how total benefits and benefits by source changed over time. Although unverifiable, it is also likely that institutions were not always consistent in the benefits data that they reported to one or both source. Finally, the institutional-level approach used in this study has its advantages, but overlooks important differences in benefits within institutions. It would be useful to know, for example, which type of faculty utilize certain benefits.

These limitations notwithstanding, this study provides valuable information on the trends in benefits for faculty, and how they differ across institutions. The information will be useful for policymakers in evaluating how colleges and universities choose to compensate their faculty, and what may happen in the future. Colleges have wrestled with how to address the rising cost of health care coverage for their employees, and whether it is sustainable to continue to expand support for health care costs and maintain salaries that can attract faculty to their institutions. Likewise, as colleges move away from defined benefit plans to defined contribution plans, what will this mean for the types of faculty who they are able to employ? Will institutions be forced to cut back on other less-essential benefits such as tuition remission to meet more pressing financial obligations?

References

Alexander, K. (2001). The silent crisis: The relative fiscal capacity of public universities to compete for faculty. *The Review of Higher Education*, *24*, 113-129.

Balkin, D., & Griffeth, R. (1993). The determinants of employee benefits satisfaction. *Journal of Business and Psychology*, *7*, 323-339.

Barbezat, D. (2002). History of pay equity studies. In Toutkoushian, R. (Ed.), *Conducting salary-equity studies: Alternative approaches to research* (pp.9-39). New Directions for Institutional Research, Number 115. San Francisco: Jossey-Bass.

Bauman, D. (Oct. 4, 2022). A pandemic-era cut with a hidden price tag. *The Chronicle of Higher Education*. Retrieved from https://www.chronicle.com/article/a-pandemic-era-cut-with-a-hidden-price-tag.

Brown, C. (1980). Equalizing differences in the labor market. *Quarterly Journal of Economics*, *94*, 113-134.

Brown, J., & Weisbenner, S. (2009). Who chooses defined benefit plans? In J. Brown, J. Liebman, & D. Wise (Eds.) *Social Security policy in a changing environment* (pp.131-166). Chicago: University of Chicago Press.

Brown, J., & Weisbenner, S. (2014). Why do individuals choose defined contribution plans? Evidence from participants in a large public plan. *Journal of Public Economics*, *116*, 35-46.

Clark, R. (1999). Faculty choice of a pension plan: Defined benefit versus defined contribution. *Industrial Relations: A Journal of Economy and Society*, *38*, 18-45.

Clark, R., Ghent, L., & McDermed, A. (2006). Pension plan choice among university faculty. *Southern Economic Journal*, *72*, 560-577.

Clark, R., Hanson, E., & Mitchell, O. (2016). Lessons for public pensions from Utah's move to pension choice. *Journal of Pension Economics & Finance*, *15*, 285-310.

Colby, G. (2022). The annual report on the economic status of the profession, 2021–22. *Academe*, *Summer*, 74-111.

Conley, V. (2008). Retirement and benefits: Shifting responsibilities. *The NEA 2008 Almanac of Higher Education*, 101-111.

Deaton, A., & Muellbauer, J. (1980). An almost ideal demand system. *American Economic Review*, *70*, 312-326.

Dulebohn, J., & Murray, B. (2007). Retirement savings behavior of higher education employees. *Research in Higher Education*, *48*, 545-582.

Ehrenberg, R., & Smith, R. (2016). *Modern labor economics: Theory and public policy* (12th edition). New York, NY: Routledge.

Gentry, W., & Peress, E. (1994). *Taxes and fringe benefits offered by employers*. NBER Working Paper No. 4764. Cambridge, MA: National Bureau of Economic Research.

Goda, G., Jones, D., & Manchester, C. (2017). Retirement plan type and employee mobility: The role of selection. *Journal of Human Resources*, *52*, 654-679.

Goldhaber, D., & Grout, C. (2016). Which plan to choose? The determinants of pension system choice for public school teachers. *Journal of Pension Economics & Finance*, *15*, 30-54.

Gordon, R., & Blinder, A. (1980). *Market wages, reservation wages, and retirement decisions*. *Journal of Public Economics*, *14*, 277-308.

Grubb, M., & Oyer, P. (2008). Who benefits from tax-advantaged employee benefits? Evidence from university parking. NBER Working Paper No. 14062. Cambridge, MA: National Bureau of Economic Research.

Gustman, A., & Steinmeier, T. (1995). *Pension incentives and job mobility*. Kalamazoo: Upjohn Institute Press.

Hamermesh, D., & Woodbury, S. (1990). *Taxes, fringe benefits and faculty*. NBER Working Paper No. 3455. Cambridge, MA: National Bureau of Economic Research.

Hamermesh, D., & Woodbury, S. (1991). The stagnant fringe. *Academe*, *77(3)*, 13-17.

Jaquette, O., & Parra, E. (2014). Using IPEDS for panel analyses: Core concepts, data challenges, and empirical applications. In Paulsen, M. (Ed.), *Higher education: Handbook of theory and research* (pp. 467-533). Springer, Dordrecht.

Jianakoplos, N., & Bernasek, A. (1998). Are women more risk averse?. *Economic Inquiry*, *36*, 620–630.

Katsinas, S., Ogun, J., & Bray, N. (2016). Monetary Compensation of full-time faculty at American public regional universities: The impact of geography and the existence of collective bargaining. *Journal of Collective Bargaining in the Academy*, *8*, article 3, 1-28.

Koedel, C., Ni, S., & Podgursky, M. (2014). Who benefits from pension enhancements? *Education Finance and Policy*, *9*, 165-192.

Legrand, V., Mortier, A., Levecque, K., & Wille, L. (2020). There is more to life than money: PhD holders' satisfaction with their fringe benefits. *Ecoom Briefs*, 1-5. Retrieved from https://biblio.ugent.be/publication/8690946/file/8690951.pdf.

Leibowitz, A. (1983). Fringe benefits in employee compensation. In J. Triplett (Ed.), *The measurement of labor cost* (pp. 371-394). Chicago: University of Chicago Press.

Marino, A., & Zabojnik, J. (2008). A rent extraction view of employee discounts and benefits. *Journal of Labor Economics*, *26*, 485-518.

Mayhall, B., Katsinas, S., & Bray, N. (2016). The impact of collective bargaining and local appropriations on faculty salaries and benefits at U.S. community colleges. *Journal of Collective Bargaining in the Academy, 8*, article 4, 1-29.

Rippner, J., & Toutkoushian, R. (2015). The 'big bang' in public and private faculty salaries. *Journal of Education Finance*, 41, 103-123.

Rosen, S. (1986). The theory of equalizing differences. In Ashenfelter, O. & Layard, R. (Eds.), *Handbook of labor economics* (Vol. 1) (pp. 641-691). The Netherlands: Elsevier Science Publishers.

Sloan, F., & Adamache, K. (1986). Taxation and the growth of nonwage benefits. *Public Finance Quarterly, 14*, 115-139.

Smith, R., & Ehrenberg, R. (1983). Estimating wage-fringe trade-offs: Some data problems. In J. Triplett (Ed.), *The measurement of labor cost* (pp. 347-370). Chicago: University of Chicago Press.

Toutkoushian, R. (2019). What affects the choice of retirement plans among faculty? Evidence from the University System of Georgia. *Journal of the Professoriate*, *10*, 101-123.

Toutkoushian, R., Bathon, J., & McCarthy, M. (2011). A national study of the net benefits of state pension plans for educators. *Journal of Education Finance, 37, 24-51*.

Toutkoushian, R., & Conley, V. (2005). Progress for women in academe, but inequities persist: Evidence from NSOPF:99. *Research in Higher Education, 46*, 1-28.

Toutkoushian, R., Riffe, K., Sanford, P., & Ness, E. (2022). How do faculty select between defined benefit and defined contribution retirement plans? A qualitative investigation. *Journal of Education Finance*, *47*, 250-274.

Vashistha, N., & Khan, A. (2020). A study on the effects of fringe benefits on job satisfaction. *International Journal of Research and Analytical Reviews*, *7*, 6-16.

Woodbury, S., & Hamermesh, D. (1992). Taxes, fringe benefits and faculty. *The Review of Economics and Statistics*, *74*, 287-296.

Yakoboski, P., & Conley, V. (2013). Retirement plans, policies and practices in higher education. *Trends and Issues*, *March*, 1-13.

Zoghi, C. (2003). Why have public university professors done so badly? *Economics of Education Review*, *22*, 45-57.

About the author

Dr. Robert Toutkoushian, Associate Director of the McBee Institute and Professor of Higher Education, holds a Ph.D. in economics from Indiana University and specializes in the application of economic theories and quantitative methods to problems in higher education.

Prior to joining the McBee Institute in 2009, Dr. Toutkoushian held a faculty position in the Department of Educational Leadership and Policy Studies at Indiana University, he worked as a research analyst at the University of Minnesota, and also as executive director of the Office of Policy Analysis at the University System of New Hampshire. From 2011 to 2020, he served as editor of the journal Research in Higher Education, which is regarded as one of the leading journals in the field of higher education.

Professor Toutkoushian has published more than sixty studies in peer-reviewed journals and edited books on topics including faculty compensation, student demand for higher education, finance, and policy analysis. Of particular note, along with Mike Paulsen he published the book Economics of Higher Education: Background, Concepts, and Applications (Springer, 2016).

Dr. Toutkoushian is currently involved in several studies including an analysis of educator fringe benefits, the distance that students travel to go to college, how the college aspirations of students align with their expectations, the relationship between compositional diversity and institutional retention and graduation rates, and the retrospective views that people have regarding their educational attainment.

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