



Commonfund Higher Education Price Index

2016 Update

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I N S T I T U T E

Higher Education Price Index Introduction

About HEPI

The Higher Education Price Index (HEPI) is an inflation index designed specifically for use by institutions of higher education. Compiled from data reported by government agencies and industry sources, HEPI measures the average relative level in the price of a fixed market basket of goods and services purchased by colleges and universities each year through current fund educational and general expenditures, excluding research. A more accurate indicator of cost changes for colleges and universities than the Consumer Price Index (CPI), HEPI is used primarily to project future budget increases required to preserve purchasing power. With compilations dating back to 1961, HEPI offers more than 50 continuous years of higher education inflation data. It is an essential tool enabling schools to determine increases in funding necessary to maintain both real purchasing power and investment.

In 2005, Commonfund Institute assumed responsibility for the index and the proprietary model used to calculate HEPI's values from Research Associates of Washington, D.C. In subsequent years, in keeping with its commitment to improving and expanding the index, Commonfund Institute has initiated a number of additional HEPI services and refinements.

HEPI is compiled using data items from publicly-available sources that are released at different points in the academic fiscal year, from July 1 through June 30. This HEPI report uses the accumulated data set as of June 30, and may be subject to further small adjustments when the last of the underlying data items are finalized in November.

IMPORTANT NOTE: Two of the main HEPI cost factors, faculty salaries and fringe benefits, are derived from faculty compensation data published by the American Association of University Professors (AAUP), which this year began using a new methodology that is not comparable with the past. Due to this change in methodology, in this year's report we have used what we believe are reasonable estimates for changes in faculty salaries and fringe benefits to aid in the transition from FY2015 to FY2016. The new AAUP methodology represents

a discontinuity with past years, and as a result future HEPI calculations, which will be based on the new methodology, will not be comparable with years prior to FY2016. Furthermore, because of this discontinuity, this year's HEPI report does not contain information on HEPI calculated by type of institution or by region, and does not include an analysis of changes in the purchasing power and salaries of full-time professors. In future years, we anticipate being able to resume offering these features of the HEPI report, calculating changes from this year's new AAUP base data.

For further information on the AAUP's new methodology, see Barnshaw, "Facilitating Institutional Improvement Through Enhanced Benchmarking", *Academe*, March-April 2016, pp. 4-8, found at <https://www.aaup.org/sites/default/files/FacilitatingInstitutionalImprovementMA16.pdf>.

Administrative salaries throughout this report were sourced from The CUPA-HR 2015-16 Administrators in Higher Education Salary Survey Report. Research report. Knoxville, TN: CUPA-HR, March 2016. Available from <http://www.cupahr.org/surveys/ahe.aspx>.

All HEPI services are provided free of charge via Commonfund Institute's website at www.commonfund.org.

About Commonfund Institute

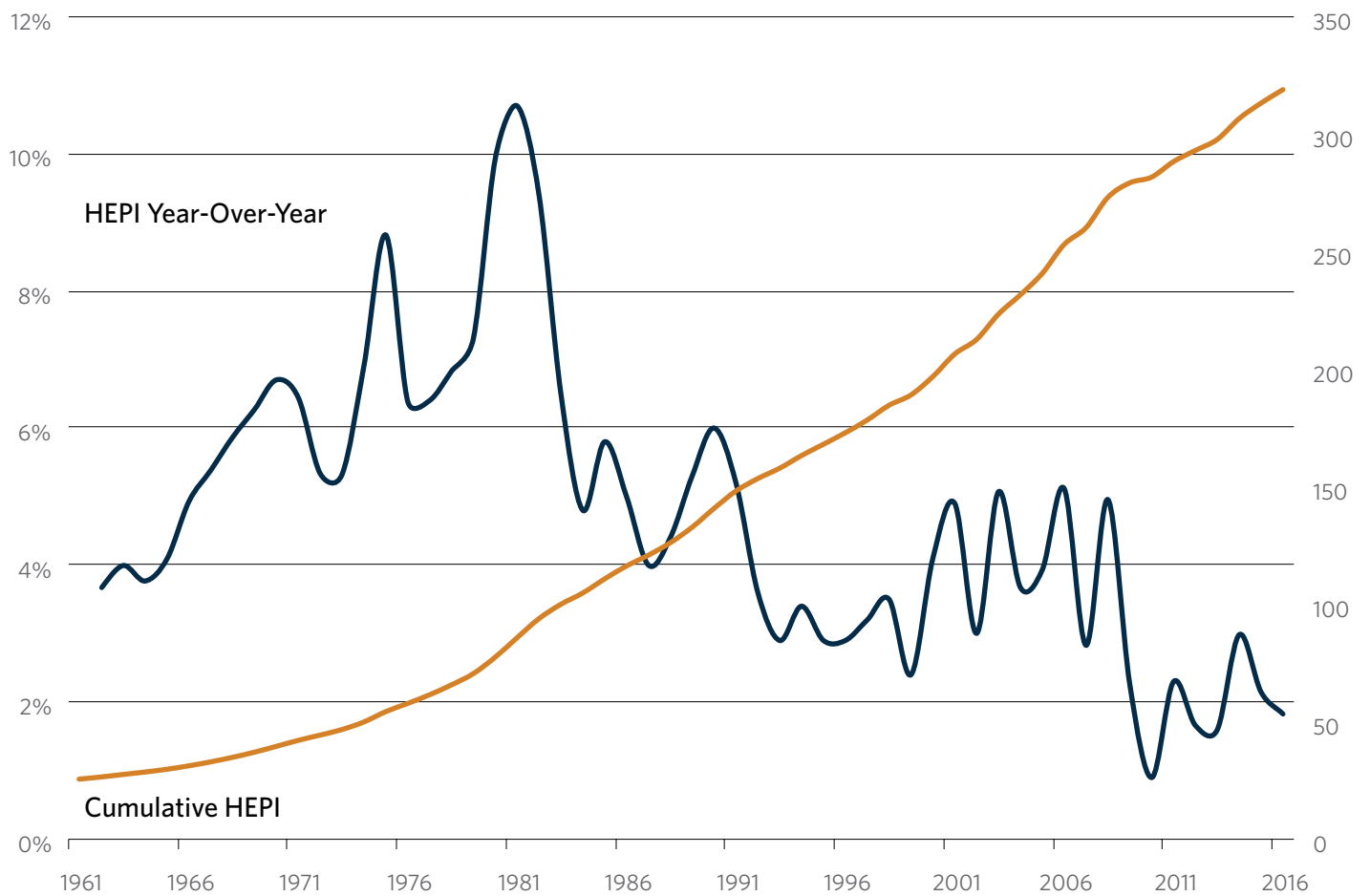
Commonfund Institute houses the education and research activities of Commonfund and provides the entire community of long-term investors with investment information and professional development programs. Commonfund Institute is dedicated to the advancement of investment knowledge and the promotion of best practices in financial management. It provides a wide variety of resources, including conferences, seminars and roundtables on topics such as endowments and treasury management; proprietary and third-party research such as the NACUBO-Commonfund Study of Endowments®; publications including the Commonfund Higher Education Price Index® (HEPI); and events such as the annual Commonfund Forum and Commonfund Endowment Institute.

The HEPI Tables

The chart below shows HEPI from fiscal years 1961 to 2016. Table A on page 3 summarizes HEPI and CPI for the same period. Table B on page 4 summarizes the regression formula used since FY2002 to calculate HEPI. HEPI data beginning with FY2002 have been re-stated to reflect methodological improvements adopted in 2009.

HIGHER EDUCATION PRICE INDEX

1961 - 2015



This chart traces the Higher Education Price Index (HEPI) from 1961 to 2016. Cumulative HEPI is represented by the steadily increasing orange line, indexed to 100 for 1983, and should be read using the right-hand scale. The jagged line traces percentage year-over-year changes in HEPI and should be read using the left-hand scale. In this chart and in the supporting data in Table A on page 3, the HEPI is presented in two ways—as an index level and as a year-over-year percent change. HEPI data beginning with FY2002 have been restated to reflect the methodological improvements adopted in 2009.

TABLE A**HISTORICAL SUMMARY OF HIGHER EDUCATION PRICE INDEX AND CONSUMER PRICE INDEX**

Fiscal Years 1961 to 2016

College and university operations			Consumer prices			College and university operations		Consumer prices	
Fiscal year	HEPI Index Value 1983 = 100	Yearly % Change	CPI Index Value 1983 = 100	Yearly % Change	Fiscal year	HEPI Index Value 1983 = 100	Yearly % Change	CPI Index Value 1983 = 100	Yearly % Change
1961	25.6	-	30.3	-	1991	148.2	5.2%	136.4	5.4%
1962	26.5	3.7%	30.6	1.0%	1992	153.5	3.6%	140.8	3.2%
1963	27.6	4.0%	31.0	1.1%	1993	157.9	2.9%	145.2	3.1%
1964	28.6	3.8%	31.4	1.4%	1994	163.3	3.4%	148.8	2.5%
1965	29.8	4.1%	31.8	1.3%	1995	168.1	2.9%	153.2	3.0%
1966	31.3	4.9%	32.6	2.3%	1996	173.0	2.9%	157.4	2.7%
1967	32.9	5.4%	33.5	3.0%	1997	178.4	3.2%	161.9	2.9%
1968	34.9	5.9%	34.6	3.3%	1998	184.7	3.5%	164.8	1.8%
1969	37.1	6.3%	36.3	4.8%	1999	189.1	2.4%	167.6	1.7%
1970	39.5	6.7%	38.5	5.9%	2000	196.9	4.1%	172.5	2.9%
1971	42.1	6.4%	40.5	5.2%	2001	208.7	6.0%	178.4	3.4%
1972	44.3	5.3%	41.9	3.6%	2002	212.7	1.9%	181.6	1.8%
1973	46.7	5.3%	43.6	3.9%	2003	223.5	5.1%	185.5	2.2%
1974	49.9	6.9%	47.5	8.9%	2004	231.7	3.7%	189.6	2.2%
1975	54.3	8.8%	52.8	11.2%	2005	240.8	3.9%	195.3	3.0%
1976	57.8	6.4%	56.5	7.1%	2006	253.1	5.1%	202.7	3.8%
1977	61.5	6.4%	59.8	5.8%	2007	260.3	2.8%	208.0	2.6%
1978	65.7	6.8%	63.8	6.8%	2008	273.2	5.0%	215.7	3.7%
1979	70.5	7.3%	69.8	9.3%	2009	279.3	2.3%	218.7	1.4%
1980	77.5	9.9%	79.1	13.3%	2010	281.8	0.9%	220.8	1.0%
1981	85.8	10.7%	88.2	11.6%	2011	288.4	2.3%	225.3	2.0%
1982	93.9	9.4%	95.8	8.7%	2012	293.2	1.7%	231.9	2.9%
1983	100.0	6.5%	100.0	4.3%	2013	297.8	1.6%	235.7	1.7%
1984	104.8	4.8%	103.7	3.7%	2014	306.7	3.0%	239.4	1.6%
1985	110.8	5.8%	107.7	3.9%	2015	313.3	2.1%	241.1	0.7%
1986	116.3	5.0%	110.8	2.9%	2016	319.0	1.8%	242.8	0.7%
1987	120.9	4.0%	113.3	2.2%					
1988	126.2	4.4%	118.0	4.1%					
1989	132.8	5.3%	123.5	4.7%					
1990	140.8	6.0%	129.4	4.8%					

Sources: HEPI, Research Associates of Washington and Commonfund Institute, July 1 - June 30 data
CPI, U.S. Department of Labor, data is calculated July 1 - June 30 (annual published CPI is computed over the calendar 12-month period)

IMPORTANT NOTE: Two of the main HEPI cost factors, faculty salaries and fringe benefits, are derived from faculty compensation data published by the American Association of University Professors (AAUP), which in FY2016 began using a new methodology that is not comparable with the past. Due to this change in methodology, in this year's report we have used what we believe are reasonable estimates for changes in faculty salaries and fringe benefits to aid in the transition from FY2015 to FY2016.

TABLE B**HIGHER EDUCATION PRICE INDEX 2005 - 2016**

Regression analysis of components—Fiscal Years 1961 to 2001

	Fiscal	Regression HEPI	Faculty salaries	Administrative salaries	Clerical	Service Employees	Fringe Benefits	Miscellaneous services	Supplies and materials	Utilities
Index Value	2005	240.8	240.7	274.0	223.4	201.4	327.2	222.7	145.5	200.2
	2006	253.1	248.2	287.7	229.5	205.5	343.7	228.8	158.1	255.7
	2007	260.3	257.6	299.2	237.7	213.6	360.8	238.3	165.3	220.6
	2008	273.2	268.1	314.0	245.1	220.5	380.7	246.4	180.0	252.0
	2009	279.3	277.3	330.9	251.6	226.7	394.4	253.1	181.6	213.8
	2010	281.8	280.6	337.6	255.2	230.0	402.8	255.8	179.3	193.6
	2011	288.4	284.5	343.2	260.2	233.2	417.6	260.3	193.9	201.5
	2012	293.2	289.6	352.3	264.8	235.7	425.3	264.6	203.9	191.7
	2013	297.8	294.6	362.4	269.8	239.4	437.5	269.4	180.0	195.6
	2014	306.7	301.0	366.4	274.8	242.0	458.3	274.2	200.2	211.4
	2015	313.3	307.7	381.9	280.4	248.4	484.0	279.8	190.6	183.5
	2016	319.0	316.0	393.3	289.1	253.3	503.9	285.7	179.5	146.5
Standard Deviation	2002-2016	33.4	29.9	48.7	26.2	20.7	68.7	26.0	24.9	36.3
Yearly % change	2005	3.9%	2.8%	4.1%	2.9%	1.9%	4.6%	2.9%	7.3%	13.5%
	2006	5.1%	3.1%	5.0%	2.7%	2.0%	5.0%	2.7%	8.7%	27.7%
	2007	2.8%	3.8%	4.0%	3.6%	4.0%	5.0%	4.2%	4.5%	-13.7%
	2008	5.0%	4.1%	5.0%	3.1%	3.2%	5.5%	3.4%	8.9%	14.2%
	2009	2.3%	3.4%	5.4%	2.7%	2.8%	3.6%	2.7%	0.9%	-15.1%
	2010	0.9%	1.2%	2.0%	1.4%	1.4%	2.1%	1.1%	-1.3%	-9.5%
	2011	2.3%	1.4%	1.7%	2.0%	1.4%	3.7%	1.8%	8.2%	4.1%
	2012	1.7%	1.8%	2.7%	1.7%	1.1%	1.8%	1.7%	5.2%	-4.9%
	2013	1.6%	1.7%	2.9%	1.9%	1.6%	2.9%	1.8%	-11.7%	2.0%
	2014	3.0%	2.2%	1.1%	1.9%	1.1%	4.8%	1.8%	11.2%	8.1%
	2015	2.1%	2.2%	4.2%	2.1%	2.6%	5.6%	2.1%	-4.9%	-13.1%
2016	1.8%	2.7%	3.0%	3.1%	2.0%	4.1%	2.1%	-5.8%	-20.2%	

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Summary Output**Regression Statistics**

Multiple R	0.999998904
R Square	0.999997809
Adjusted R Square	0.999997261
Standard Error	0.096391663
Observations	41

Coefficients

Intercept	-0.286286907
Faculty	0.353741718
Admin	0.104289477
Clerical	0.18408585
Service	0.082314791
Fringe	0.131020859
Services	0.022899544
Supplies	0.055138426
Utilities	0.068247106

Higher Education Price Index Analysis

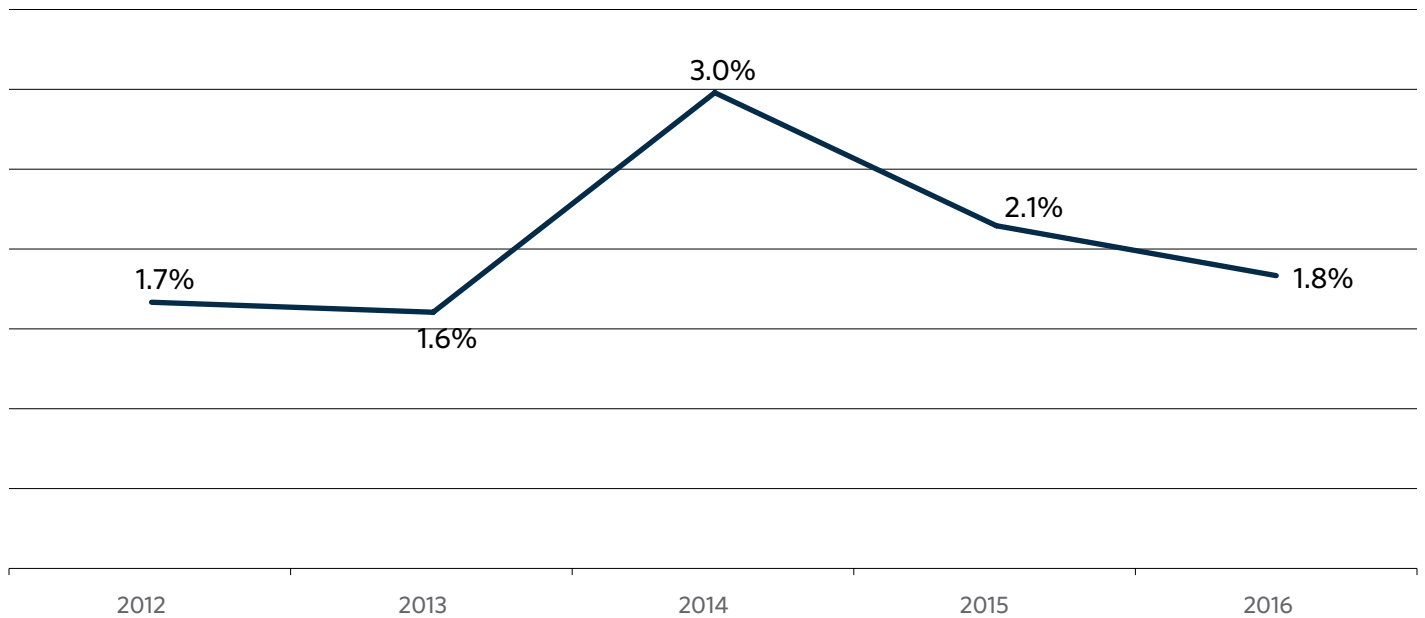
HEPI for 2016

For fiscal year 2016, which ended on June 30, the HEPI calculation reveals that inflation for colleges and universities was 1.8 percent, a decrease of 14.3 percent from the 2.1 percent rate for FY2015. HEPI for FY2016 was 120 basis points (1.2 percentage points) below the 3.0 percent rate for FY2014 and 20 basis points (0.2 percentage points) above the 1.6 percent rate for FY2013.

FIGURE 1

THE HIGHER EDUCATION PRICE INDEX

Fiscal years 2012 - 2016



There are eight cost factors that contribute to the HEPI regression calculation: faculty salaries, administrative salaries, clerical salaries, service employee salaries, fringe benefits, miscellaneous services, supplies and materials, and utilities. The regression equation assigns a different weighting to each cost factor, and therefore a change in one component may influence the final HEPI calculation more than another. The components that are most heavily weighted are faculty and clerical salaries and fringe benefits.

The cause of the decrease in HEPI from FY2015 to FY2016 was a decline in the rates of inflation for three of the eight cost factors - administrative salaries, service employee salaries and fringe benefits — combined with no change in the inflation rate for a fourth factor, miscellaneous services, and a continuation of the deflationary trend of the last two fiscal years in the cost of supplies and materials and utilities. These factors were sufficient to offset modest increases in the inflation rates for the remaining two factors, faculty salaries and clerical salaries, notwithstanding the fact that the latter, taken together, account for 53.8 percent of the regression weighting. Movement in the cost of supplies and materials and utilities has been

very volatile in recent years. The inflation rates for these factors, which carry a combined regression weighting of 12.3 percent, have in FY2015 and FY2016 become negative, reflecting actual cost decreases in response to deflationary forces in the world economy.

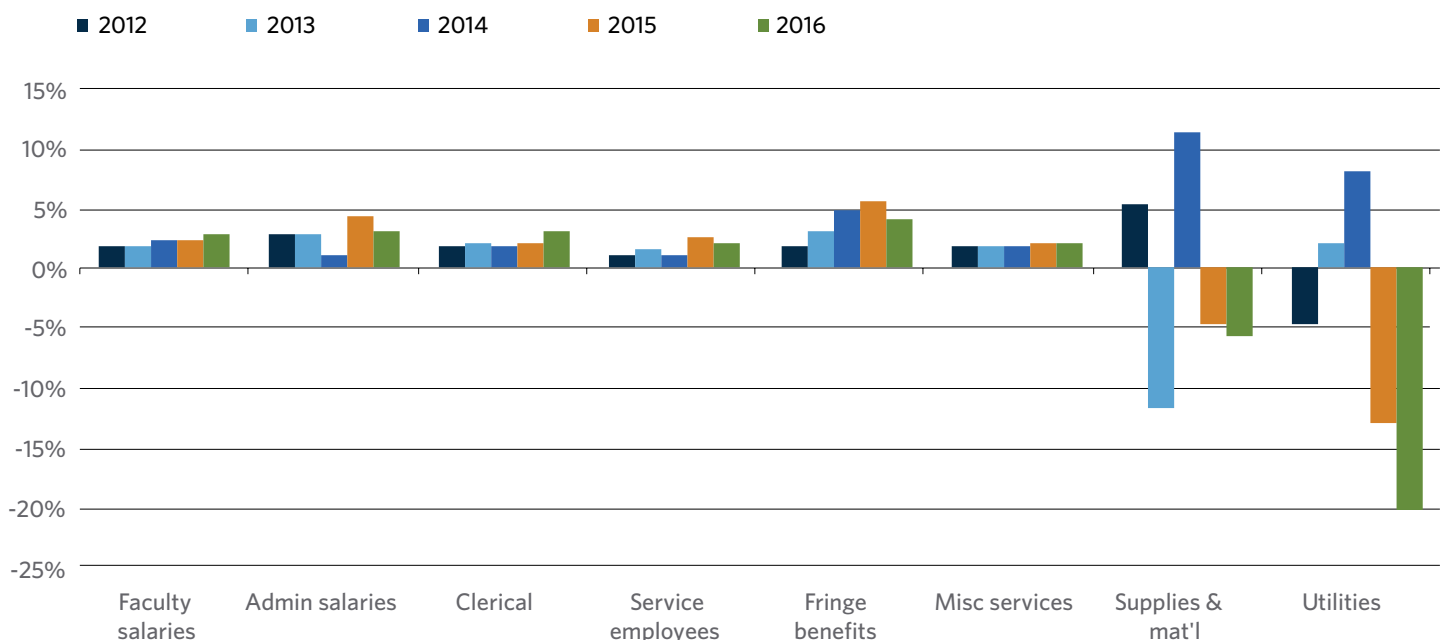
Fringe benefits and faculty salaries, on the other hand, carry heavier weightings in the regression equation of 13.1 percent and 35.4 percent, respectively, but have experienced much less volatility. The inflation rate for fringe benefits ranged from 1.8 percent to 3.7 percent between FY2010 and FY2013 before jumping to 4.8 percent in FY2014 and increasing further by 5.6 percent in FY2015. In FY2016, the inflation rate for this factor declined to 4.1 percent. Faculty salaries' inflation rates exhibited an even more moderate movement, staying between 1.2 percent and 1.8 percent between FY2010 and FY2013 prior to 2014's increase to 2.2 percent from FY2013's 1.7 percent. For FY2016, faculty salaries increased by 2.7 percent, up from 2.2 percent in FY2015.

The combined effect of these factors resulted in a decrease in the overall HEPI from 2.1 percent in FY2015 to 1.8 percent in FY2016.

Figure 2 below shows a graphical representation of the changes in these cost factors from FY2012-16. For FY2016, utilities had a deflation rate of -20.2 percent, continuing the sharply deflationary trend in energy costs that began with last year's rate of -13.1 percent. Supplies and materials had a deflation rate of -5.8 percent, also down from last year's -4.9 percent. Inflation in fringe benefits was 4.1 percent, down from 5.6 percent in FY2015, while faculty salaries rose at a rate of 2.7 percent, up from 2.2 percent the previous year. Clerical costs rose by 3.1 percent, up from 2.1 percent in FY2015, while miscellaneous services costs rose by 2.1 percent, unchanged from FY2015. Administrative salaries rose at a rate of 3.0 percent, down from last year's 4.2 percent, while service employee salaries rose at a 2.0 percent rate, down from last year's 2.6 percent.

FIGURE 2

ANNUAL PERCENTAGE CHANGES IN THE EIGHT HEPI COST FACTORS, FISCAL YEARS 2012 - 2016



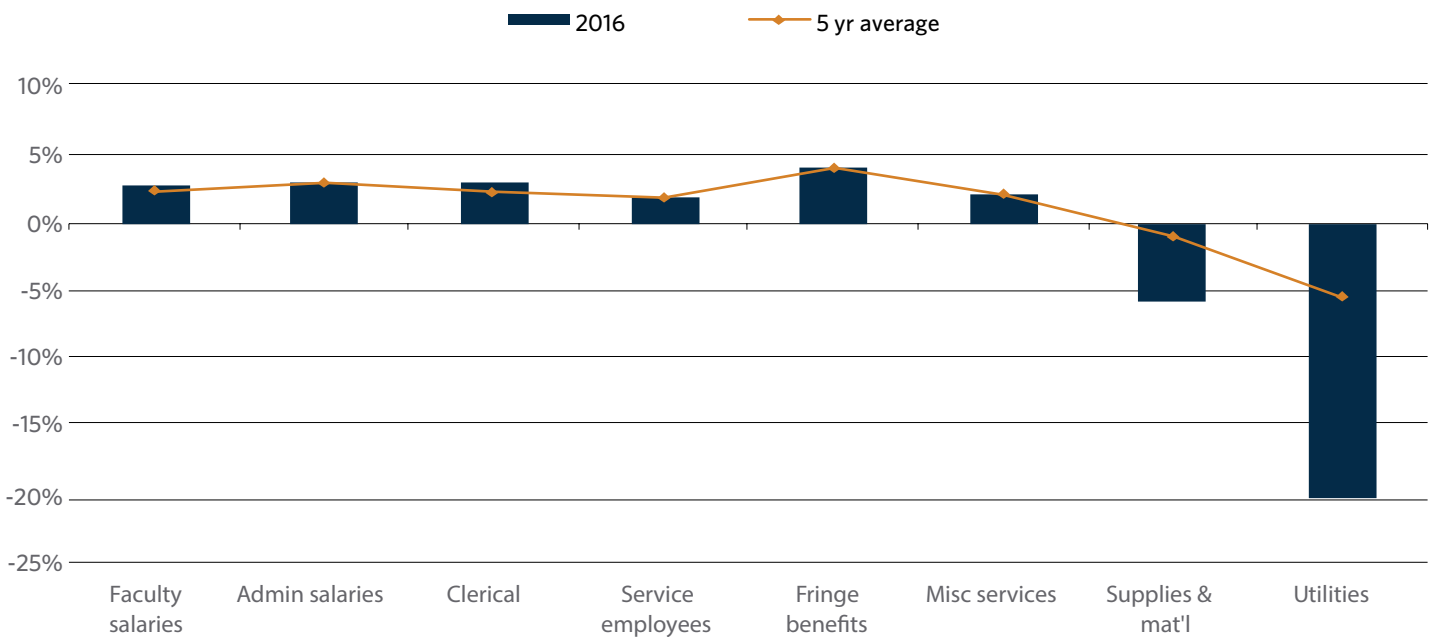
HEPI for FY2016 versus a Five-Year Average

Figure 3 shows the results of a longer-term analysis of HEPI's components that compares the reported rates for FY2016 against their historical five-year averages. On this basis, the greatest deviation from the five-year average was in the category of utilities, a deflation rate of -20.2 percent for FY2016, which was 1,460 basis points lower than the five-year average of -5.6 percent. The second-highest difference, in supplies and materials costs, was 460 basis points lower than the five-year average for this factor, at -5.8 percent versus -1.2 percent. A difference of 100 basis points was observed for clerical salaries, where the FY2016 rate of 3.1 percent was higher than the five-year average of 2.1 percent. And in the case of faculty salaries, the FY2016 rate was 60 basis points above the five-year average, at 2.7 percent versus its five-year average of 2.1 percent.

The four other factors had FY2016 readings that were only slightly higher than their five-year averages. For service employee salaries and fringe benefits the difference was a modest 30 basis points, while for administrative salaries and miscellaneous services the difference was just 20 basis points.

FIGURE 3

ANNUAL PERCENTAGE CHANGES IN THE EIGHT HEPI COST FACTORS VS. 5-YEAR AVERAGE



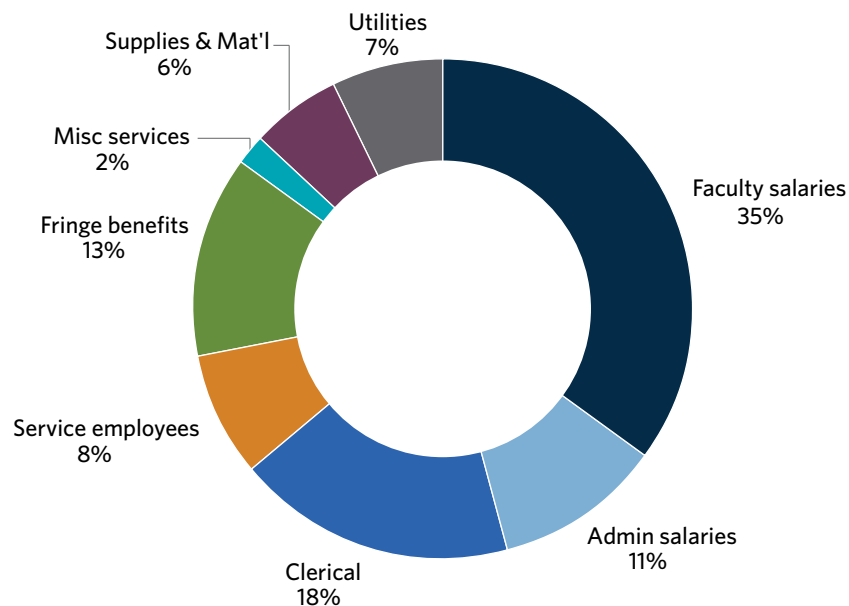
Over the five-year period, inflation rates for utilities have seen the most volatility, owing to strong positive and negative movements in this cost factor. FY2012 brought deflation in the form of a -4.9 percent rate, while in FY2013 inflation returned with a rate of 2.0 percent and a still higher rate of 8.1 percent in FY2014, prior to FY2015's strongly deflationary -13.1 percent and this year's plunge of -20.2 percent. Inflation in materials and supplies has been nearly as volatile, particularly in the last four years, which saw a pronounced swing from a deflation rate of -11.7 percent in FY2013 to FY2014's inflation rate of 11.2 percent – a difference of 2,290 basis points – before FY2015's deflationary figure of -4.9 percent and a further -5.8 percent price decline this year. In the aftermath of the financial crisis of 2008-09, inflation in factors other than utilities and supplies and materials has been markedly subdued, leading to less volatility in nearly all the factors. FY2014's increased 4.8 percent inflation in fringe benefits, however, followed by a rate of 5.6 percent in FY2015 and a further increase of 4.1 percent this year, seem to indicate inflationary pressures that may emerge in other cost factors in the future. Both administrative salaries and clerical salaries have risen by 3.0 percent and 3.1 percent, respectively, this year.

Sensitivity Analysis of the Eight HEPI Regression Components

Figure 4 shows how the HEPI regression equation assigns a different weighting to each cost factor. Owing to the large variance in these weightings (a difference of 33 percentage points between the high and low), an increase in one component may influence the final HEPI calculation more than an identical increase in another. Those components that are most heavily weighted are faculty and clerical salaries and fringe benefits. Utilities represent the third-lowest weighting and supplies and materials the second-lowest, facts that have served to mitigate somewhat the effect of the extreme volatility that has characterized these cost factors in recent years.

FIGURE 4

HEPI COST FACTOR WEIGHTINGS



The sensitivity analysis in Figure 5 shows that a 5 percent increase in faculty salaries, the largest component of HEPI, from an index value of 316.0 to 331.8, has the effect of increasing HEPI by 180 basis points, keeping all other components constant. However, a similar 5 percent increase in the index for miscellaneous services, the smallest component, has the effect of adding only 10 basis points to HEPI.

FIGURE 5

SENSITIVITY OF HEPI TO A 5 PERCENT INCREASE IN FACULTY SALARIES OR MISCELLANEOUS SERVICES

	Total	Faculty salaries	Admin salaries	Clerical	Service employees	Fringe benefits	Misc. services	Supplies & mat'l	Utilities
Current									
Index Value	319.0	316.0	393.3	289.1	253.3	503.9	285.7	179.5	146.5
Yearly % Change	1.8%	2.7%	3.0%	3.1%	2.0%	4.1%	2.1%	-5.8%	-20.2%
Scenario: Faculty Salaries up 5%									
Index Value	324.6	331.8	393.3	289.1	253.3	503.9	285.7	179.5	146.5
Yearly % Change	3.6%	7.8%	3.0%	3.1%	2.0%	4.1%	2.1%	-5.8%	-20.2%
Δ	180 b.p.	510 b.p.							
Scenario: Misc. Services up 5%									
Index Value	319.4	316.0	393.3	289.1	253.3	503.9	300.0	179.5	146.5
Yearly % Change	1.9%	2.7%	3.0%	3.1%	2.0%	4.1%	7.2%	-5.8%	-20.2%
Δ	10 b.p.						510 b.p.		

Higher Education Price Index for Different Types of Educational Institutions

As noted earlier, beginning in FY2007 Commonfund expanded its HEPI service to include calculations of HEPI for eight categories of educational institutions:

- Public institutions as a whole
- Public doctoral degree-granting institutions
- Public masters' degree-granting institutions
- Public two-year colleges
- Private institutions as a whole
- Private doctoral degree-granting institutions
- Private masters' degree-granting institutions
- Private baccalaureate institutions

These indices were calculated using the appropriate faculty salary and fringe benefit information for each type of institution, while holding the other six HEPI cost factors constant.

The faculty salary and fringe benefit cost factors are derived from data published by the American Association of University Professors (AAUP), which this year began using a new methodology that is not comparable with the past. Because of this discontinuity, this year's HEPI report does not contain information on HEPI calculated by type of institution or by region, and does not include an analysis of changes in the purchasing power and salaries of full-time professors. In future years, we anticipate being able to resume offering these features of the HEPI report, calculating changes from this year's new AAUP base data.

For further information on the AAUP's new methodology, see Barnshaw, "Facilitating Institutional Improvement Through Enhanced Benchmarking", *Academe*, March-April 2016, pp. 4-8, found at <https://www.aaup.org/sites/default/files/FacilitatingInstitutionalImprovementMA16.pdf>.

Higher Education Price Indices for Different Regions of the Country

Beginning in FY2009, Commonfund further expanded its HEPI service to include calculations of HEPI for the nine standard census divisions of the United States:

- New England Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
- Middle Atlantic New Jersey, New York, Pennsylvania
- East North Central Illinois, Indiana, Michigan, Ohio, Wisconsin
- West North Central Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
- South Atlantic Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, Puerto Rico, South Carolina, Virginia, West Virginia
- East South Central Alabama, Kentucky, Mississippi, Tennessee
- West South Central Arkansas, Louisiana, Oklahoma, Texas
- Mountain Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
- Pacific Alaska, California, Guam, Hawaii, Oregon, Washington

These indices were calculated using the appropriate faculty salary and fringe benefit information for each region, while holding the other six HEPI cost factors constant.

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Purchasing Power and Salaries of Full-Time Professors

As part of the calculation of HEPI, Commonfund Institute also gathers information about the salaries of full-time professors at public and private institutions.

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15 Old Danbury Road
P.O. Box 812
Wilton, CT 06897-0812

Tel 888-TCF-Main
Tel 203-563-5000
www.commonfund.org

commonfund