

Practice Index Numbers - CPI & Tuition

To answer the questions below, begin by filling out all the the tables below.

1. What was inflation rate between 2010 and 2013?
2. Were some types of schools more egregious in raising tuition costs?
3. How does Hunter College tuition compare to national averages?
4. Using the CPI, incomes, and tuition, is education becoming more or less affordable?

Inflation Using the CPI Table (2010 - 2013)

1) What was inflation rate between 2010 and 2013? _____

Year	CPI	Inflation rate is about relative change. % Change = $\frac{\text{New Price} - \text{Reference Price}}{\text{Reference Price}} \times 100 = \frac{\text{absolute change}}{\text{Reference Price}} \times 100$ Inflation rate between 2010 and 2013: • CPI in 2010: 218.056 • CPI in 2013: 232.957 ◦ rate of inflation = $\frac{232.957 - 218.056}{218.056} \times 100 = 6.83\%$
2005	195.3	
2006	201.6	
2007	207.3	
2008	215.303	
2009	214.537	
2010	218.056	
2011	224.939	
2012	229.594	
2013	232.957	
2014	236.736	
2015	233.707	
2016	236.916	
2017	242.839	

(also see [full CPI table](#))

Tuition - National Averages & Hunter College (2010 - 2013)

Complete the following tables to answer the following questions:

- 2) Were some types of schools more egregious in raising tuition costs?
- 3) How does Hunter College tuition compare to national averages?

\$ Change is about Absolute Change:

- **\$ Change = New Price - Reference Price**

Practice Index Numbers - CPI & Tuition

% Change is about Relative Change:

- $$\% \text{ Change} = \frac{\text{New Price} - \text{Reference Price}}{\text{Reference Price}} \times 100 = \frac{\text{absolute change}}{\text{Reference Price}} \times 100$$

Hunter College Tuition

	Fall 2010	Fall 2012	Fall 2013	Fall 2014	Fall 2016	Fall 2017
	\$4999	\$5430	\$5730	\$6030	\$6330	\$6530
\$ Change	--	\$431	\$300	\$300	\$300	\$200
% Change	--	8.62%	5.52%	5.24%	4.98%	3.16%

Between 2012 - 2013, Hunter College increased by \$300, a rise of 5.52%.

Between 2010 - 2013, Hunter College increased by \$731, a rise of 14.62%.

National Average Tuition

Sector	Fall 2010 (2010-11)	Fall 2011 (2011-12)	Change	% Change	Fall 2012 (2012-13)	Fall 2013 (2013-14)	Change	% Change
Public 2-yr, in-state	\$2,727	\$2,963	\$236	8.65%	\$3,154	\$3,264	\$110	3.49%
Public 4-yr, in-state	\$7,613	\$8,244	\$631	8.29%	\$8,464	\$8,893	\$247	2.92%
Public 4-yr, out- of-state	\$19,648	\$20,770	\$1122	5.71%	\$21,533	\$22,203	\$670	3.11%
Private, nonprofit, 4-yr	\$27,265	\$28,500	\$1235	4.53%	\$28,969	\$30,094	\$1105	3.81%
For-profit	\$14,040	\$14,487	\$447	3.18%	\$15,060	\$15,130	\$70	0.46%

Data Source: College Board

National Average Tuition

Sector	Fall 2010 (2010-11)	Fall 2013 (2013-14)	Change	% Change
Public 2-yr, in-state	\$2,727	\$3,264	\$537	19.69%
Public 4-yr, in-state	\$7,613	\$8,893	\$1,280	16.81%

Practice Index Numbers - CPI & Tuition

Public 4-yr, out-of-state	\$19,648	\$22,203	\$2,555	13.00%
Private, nonprofit, 4-yr	\$27,265	\$30,094	\$2,829	10.38%
For-profit	\$14,040	\$15,130	\$1,090	7.76%

Data Source: College Board

Meanwhile, between 2010-2013, the average tuition increase for Public 2-yr in-state schools was \$537 (a 19.69% increase), Public 4-yr in-state colleges was \$1,280 (16.81% increase), Public 4-yr out-of-state colleges was \$2,555 (13% increase), Private non-profit 4-yr colleges was \$2,829 (10.38% increase) and For-Profit colleges was \$1,090 (7.76% increase).

Although Hunter College tuition is relatively inexpensive, Hunter College tuition increased by \$731 (a rise of 14.62%) for the 2010-2013 period. The change in Hunter College tuition is still lower than the national average increase for all Public 4-yr, in-state tuition which saw an average increase of 16.81% increase. Interestingly, although tuition was still highest for Private, non-profit 4-year colleges, the percentage change in tuition was one of the lower ones.

National Average Tuition and Inflation (2010 - 2013)

4) Using the CPI, incomes, and tuition, is education becoming more or less affordable?

Sector	Fall 2010	Fall 2013	Change	% Change	% "of" Fall 2010 price	Tuition for Fall 2013 if pegged to inflation**
CPI	218.056	232.957	14.901 pts	6.83%	CPI index = 1.07 or 107%	N/A
Public 2-yr, in-state	\$2,727	\$3,264	\$537	19.69%	1.197 or 119.7%	Fall 2010 price * CPI ratio = \$2727 * 1.07 = \$2,918
Public 4-yr, in-state	\$7,613	\$8,893	\$2555	13.00%	1.13% or 113%	\$8,146
Public 4-yr, out-of-state	\$19,648	\$22,203	\$2829	10.36%	1.103 or 110.3%	\$21,023
Private, nonprofit, 4-yr	\$27,265	\$30,094	\$1090	7.76%	1.078 or 107.8%	\$29,174
For-profit	\$14,040	\$15,130	\$731	14.62%	1.146 or	\$15,022

Practice Index Numbers - CPI & Tuition

					114.6%	
Hunter College	\$4,999	\$5,730	\$731	14.62%	1.15 or 115%	\$5,341
Median HH Income	\$49,445	\$52,250	14.901 pts	6.83%	CPI index = 1.07 or 107%	\$52,906

** You may want to check your results with the [CPI calculator](#).

** “as pegged to inflation” is another way of saying “price in 2013 as percentage **of** 2010 prices”; in other words, it uses the CPI ratio.

More troubling than these changes alone is the fact that inflation as measured by CPI for the same period was relatively low with only a 6.83% increase. If Hunter College tuition for 2013 had been pegged to inflation, 2013 tuition should only have been \$5,341 instead of \$5,730. Worse than that, median household income in 2013 should have been \$52,906 rather than \$52,250. In short, just as tuition increased well above inflation, income did NOT keep up with inflation. The end result is that college tuition was much more unaffordable in 2010 than in 2013 for the average family.

Tuition is rising higher than inflation at all educational institutions-- all tuition changes show a rise higher than than the 6.83% rise seen in the CPI. Moreover, between 2010 and 2013, in-state 2-yr and 4-yr public colleges saw the greatest percentage increases rising by 19.69% and 16.81% respectively. Interestingly, while private 4-yr institutions are clearly costly, they had one of the lower leaps in tuitions-- a 10.36% vs. 16.81% at public 4-yr institutions.

Hunter College Tuition and Inflation (2010 - 2017)

Sector	Fall 2010	2017	Change	% Change	“of” Fall 2010 price	Value if pegged to inflation**
CPI	218.056	242.839	24.78	11.37%	1.13	--
Hunter Tuition	\$4,999	\$6,530	\$1,531	30.63%	1.3	\$5,648
Median HH Income	\$49,445	\$56,516	\$7,071	14.30%	1.14 or 114%	\$55,872

** You may want to check your results with the [CPI calculator](#).

Between the years 2010-2017, inflation was 11.37%, but Hunter College tuition rose by a whopping 30.63%! If Hunter College tuition had been pegged to inflation, tuition in 2017 should only have been \$5,648 rather than the \$6,530 that was charged (a difference of \$882). The only good news is that average income finally seems to be keeping pace with inflation as the median income rose to \$56,516 (a 14.30% increase).

Practice Index Numbers - CPI & Tuition

Virginia Foxx on Education

In 2012, Republican Senator Virginia Foxx made headlines when she suggested that we could all work our way through college as she had done. To provide a bit of perspective, consider the following data. She attended the University of NC in 1968 when tuition was \$233/year (you read that correctly!). After completing this table, can we work our way through college? How would you respond to the her comments?

	1968	2017	Change	% Change	"of" 1968 price	2017 value if pegged to inflation
CPI	34.8	242.839	208.039	598%	6.98	
tuition	\$233	\$7,018*	\$6,785	2912%	30.12	\$1,626
Median income	7,700	\$56,516	\$4,8816	634%	7.34	\$53,746
Min wage	\$1.60	\$7.25	\$5.65	353%	4.53	\$11.17
Median Home	\$65,300 (1970)	\$199,200				

* Excludes room & board and fees, with those included, in-state students usually pay as much as \$21K+

Further reading: [The Myth of Working Your Way Through College](#) + [Students Can't Work Their Way Through College Anymore](#)

According the CPI, inflation between 1968 and 2017 increased by 598%; the cost of goods now is about 6.98 times that of 1968 prices. However, tuition at the University of Virginia increased by 2912% over the same period! If tuition had been pegged to inflation, the current tuition would only be \$1,626 rather than the \$7,018 the university currently charges. In short, tuition costs have risen much, much higher than inflation. Although median income seems to have kept up with inflation, the percent change in income was only 634%, about 35% points above inflation, but the astronomical rise in tuition likely makes college much more expensive in 2017 than in 1968 especially for the poorest give that the minimum wage now is much less now than in 1968 when adjusted for inflation.

Try thinking this way about NYC.

What is the minimum wage? What is the median home cost? Median rent?