

Appendix S



New York City Rent Guidelines Board

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Chair
Rachel D. Godsil

Executive Director
Andrew McLaughlin

Memo

To: Board Members
From: Andrew McLaughlin
Date: April 24, 2014
Re: Calculating the *Price Index of Operating Costs (PIOC)* Using Component Weights from the RPIE data presented in the *Income and Expense Study*

Introduction

The NYC Rent Guidelines Board (RGB) *Price Index of Operating Costs (PIOC)* gathers prices for a market basket of goods and services used in the operation and maintenance of rent stabilized buildings in NYC and uses these prices to estimate cost changes from one year to the next. This is the same approach used by the Consumer Price Index (CPI) and other similar indices, but the PIOC specifically analyzes the goods and services typically purchased by building owners. Every PIOC in the last 30 years, including the most recent Index, is based on expenditure patterns of owners from 1983. Although these expenditure weights are revised each year, and there have been some changes to expenditure items since 1983, the PIOC may no longer represent expenditure patterns that are prevalent today. In fact, the RGB report that measures recent owner-reported expenses, the *Income and Expense Study (I&E)*, shows that increases in overall operating costs have been smaller than those shown by the PIOC in recent years.

In the fall of 2013, the RGB commissioned Dr. James Hudson to study this issue and to offer suggestions on how to use the NYC Department of Finance Real Property Income and Expense (RPIE) data presented in the *RGB Income and Expense Studies* to update the expenditure patterns in the PIOC. The results of Dr. Hudson's analysis were released in his paper entitled *Comparing the Price Index of Operating Costs (PIOC) and the RGB Income and Expense Study* and were presented to the Board on March 27. Dr. Hudson concluded that the main cause of the differences between the PIOC and the I&E is "how owners change their spending in response to changes in prices and the goods and services that are available." These changes are not captured in the PIOC. He proposed two approaches to address the divergence between these indices:

- Use the most recent I&E to create the component weights for each year's PIOC. This will connect the PIOC much more closely to what owners have actually been buying so that we can better estimate the overall effect of price changes.

- Annually survey owners about their costs for various items within a single component, to update the item weights and allow development of improved items and specifications. Since this is not necessary for taxes and insurance (which have one item each in their components), it should allow updates of items weights across the PIOC every 5-6 years.

In an attempt to update the PIOC to reflect current expenditure patterns, Dr. Hudson, along with assistance from the RGB staff, used the expenditure patterns presented in the *2014 Income and Expense Study* to update the component weights for the *2014 PIOC*. In addition, a historical analysis was conducted to gauge the impact of using the I&E component weights in PIOC's dating back to 1999. The results of these analyses are presented in this memo. Note that this analysis does not alter the items priced in the PIOC, which may be updated by staff at a later date.

Updating the 2014 PIOC Using Weights from the 2014 I&E

Data used to update the component weights for the *2014 PIOC* is contained in the *2014 RGB Income and Expense Study*. The I&E used summary data from the NYC Department of Finance RPIE filings to report on owner expense. Data from the 2013 RPIE filings were used and represent owner reported expenses from calendar year 2012.

In order to update the PIOC component weights, there were two technical issues involved in using the I&E weights that had to be addressed.

First, the individual items in the PIOC needed to be allocated to the corresponding I&E components. The current PIOC contains nine components and the I&E data is categorized into eight components. Using the Expense Categories Chart of items in the 2013 RPIE Worksheet, PIOC expense items were allocated to the corresponding I&E expense categories. For example, the Fuel component in the I&E includes natural gas costs, fuel oil and steam. Therefore the gas and steam heating items from the PIOC Utilities component and the Fuel Oil component items were put into one component labeled Fuel. This same procedure was used with other PIOC items and I&E expense components. There were a few items that did not fit into any of the I&E expense categories, such as the PIOC items that priced air conditioners, so they were not included in this update. These items carried minimal weight in the PIOC so the effect of not including them was negligible. Furthermore, there were no items priced in the PIOC that fit into the I&E expense category of Miscellaneous, so that component is not included in this analysis. Therefore, seven components are used in this I&E weight-based 2014 PIOC.

Second, the I&E weights are from a year earlier than the PIOC. So those data needed to be updated based on the previous PIOC prices. For example, for 2014 this involved:

- Taking the I&E costs per component from 2012
- Updating those to estimated 2013 costs based on the 2013 PIOC
- Adjusting the weights based on those 2013 costs

This is the same methodology used in the PIOC to update weights each year. The only difference is using the I&E component weights as the starting point.

After applying the methodology outlined above, the impact of using I&E component weights with 2014 PIOC price relatives resulted in lowering the Price Index for Apartments from 5.7% to 5.2%. Below is a table that compares the component weights in each index.

A Comparison of Component Weights, 2014 I&E-Based PIOC vs. the 2014 PIOC, Apartments

2014 I&E-Based PIOC Components	Weight	2014 PIOC Components	Weight
Taxes	26.6%	Taxes	28.7%
Labor	11.6%	Labor	12.5%
Fuel	15.9%	Fuel Oil	14.9%
Utilities	11.8%	Utilities	16.4%
Administration	16.3%	Administration	6.9%
Insurance	4.9%	Insurance	6.9%
Maintenance	13.0%	Contractor Services	11.7%
		Parts & Supplies	1.4%
		Replacement Costs	0.6%
Total	100%	Total	100%

Source: 2014 PIOC and 2014 I&E Study

In this table, note that the weight in the I&E “Fuel” component (including Oil and Natural Gas) is similar to the weight in the PIOC for Fuel Oil alone. The I&E-based approach also shows Insurance as a smaller portion of expenditures and Administration as a larger one, compared to the 2014 PIOC.

It is important to note that this new methodology still uses the same prices and costs as reported in the 2014 PIOC. Therefore, the individual price relatives do not change from one to the other. Real estate taxes increased 5% in the 2014 PIOC. This same increase is used in the 2014 I&E-Based PIOC. What differs is the *importance* of these changes in price from one index to the other. Taxes represent 28.7% of the 2014 PIOC and 26.6% of the 2014 I&E-Based PIOC. Below is a table that outlines the price relative for the seven components in the 2014 I&E-Based PIOC.

2014 I&E - Based PIOC Components	Price Relative
Taxes	5.0%
Labor	3.0%
Fuel	9.5%
Utilities	6.0%
Administration	2.0%
Insurance	9.3%
Maintenance	3.9%
Total	5.2%

Since 1983, the PIOC has calculated separate indices for different types of buildings that contain rent stabilized units. In addition to the all Apartment PIOC, separate indices for buildings constructed before 1947 (pre-1947) and for buildings constructed in 1947 or later (post-1946) as well as gas-heated and oil-heated can also be calculated using I&E component weights. The master-metered building index cannot be calculated using this methodology because there is no usable data for calculating expenditure weights. Below is a table that compares these separate indices using the 2014 PIOC and the 2014 I&E-Based PIOC.

Price Indices for Different Building Types, 2014 PIOC vs. 2014 I&E- Based PIOC

	2014 PIOC	2014 I&E-Based PIOC
All Apartments	5.7%	5.2%
Pre-1947	6.2%	5.2%
Post-1946	5.2%	5.2%
Gas Heated	6.2%	6.0%
Oil Heated	5.6%	4.9%

Source: 2014 PIOC and 2014 I&E Study

After all is said and done, there are still limitations using this methodology. First, the PIOC still measures prices, not costs. It can be expected to slightly overestimate changes in costs. Secondly, the Hotel and Loft Indices cannot be updated using the I&E weights.

Historic Analysis

Now that a methodology is in place to update the PIOC expenditure weights using I&E data, we can go review previous Apartment PIOC indices, comparing these new I&E-based PIOC's with the traditional methodology. Below is a table that tracks these changes.

PIOC vs. I&E-Based PIOC, Apartments, 2000-2014

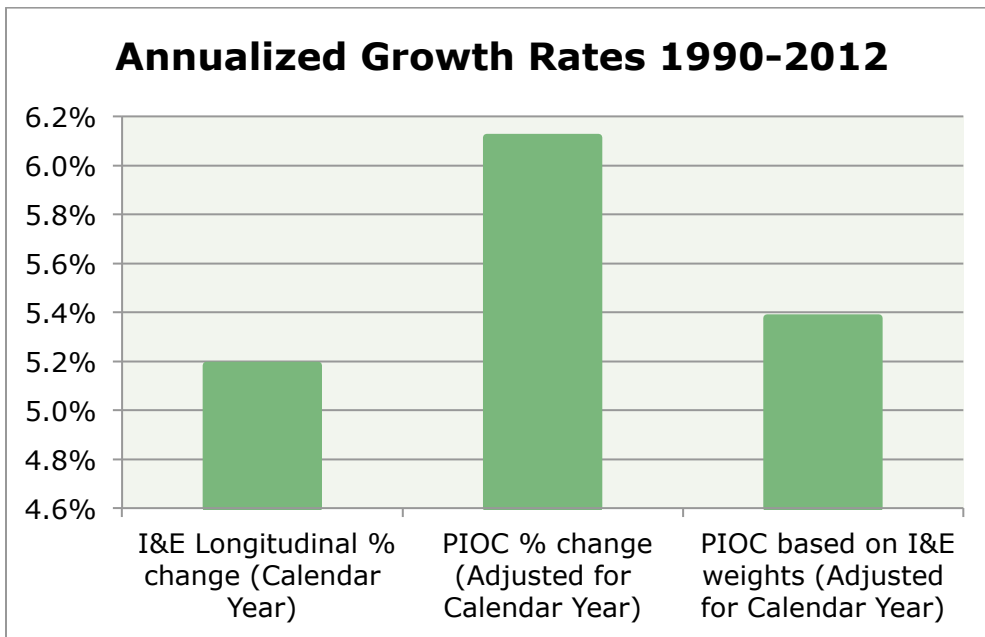
Year	PIOC	I&E-Based PIOC
2000	7.8%	6.5%
2001	8.7%	7.0%
2002	-1.6%	-0.8%
2003	16.9%	12.8%
2004	6.9%	5.5%
2005	5.8%	N/A
2006	7.8%	7.0%
2007	5.1%	5.2%
2008	7.8%	7.0%
2009	4.0%	4.5%
2010	3.4%	4.0%
2011	6.1%	3.5%
2012	2.8%	3.5%
2013	5.9%	5.2%
2014	5.7%	5.2%

N/A: I&E data not available

Source: PIOC's 2000-2014 and RGB *Income and Expense Studies*, 2000-2014

As the table illustrates, there are years in which the I&E-based changes exceed expense growth of the PIOC and other years where the PIOC grew faster. This comes from the differences in weights. For example, the 2014 I&E-based PIOC had a lower weight for fuel oil items (Specs 301, 302 and 303) than the PIOC, and that pattern shows up in the other years. So, in years when fuel oil increased faster than the overall PIOC, the I&E-based approach would typically show a lower increase; in years where fuel oil increased slower than the overall PIOC, the I&E-based approach would tend to be higher. Differences in weights for Insurance, Administration, and other areas will tend to lower or raise the I&E-based increase compared to the PIOC.

The more useful analysis is to examine the growth in expense from the I&E with both the PIOC and I&E-based PIOC over time. In order to do this analysis, we first needed to adjust the PIOC time frame to that of the I&E. The PIOC tracks price data from March to March while the RPIE data is based on a calendar year. Once this adjustment was made, the annualized growth rate for all three indices was computed. From 1999 to 2012, the PIOC witnessed an annualized growth rate of 6.1%. The I&E-based PIOC annualized growth rate was less, 5.4%, and more in line with that of the RPIE expense growth of 5.2%. See graph below.

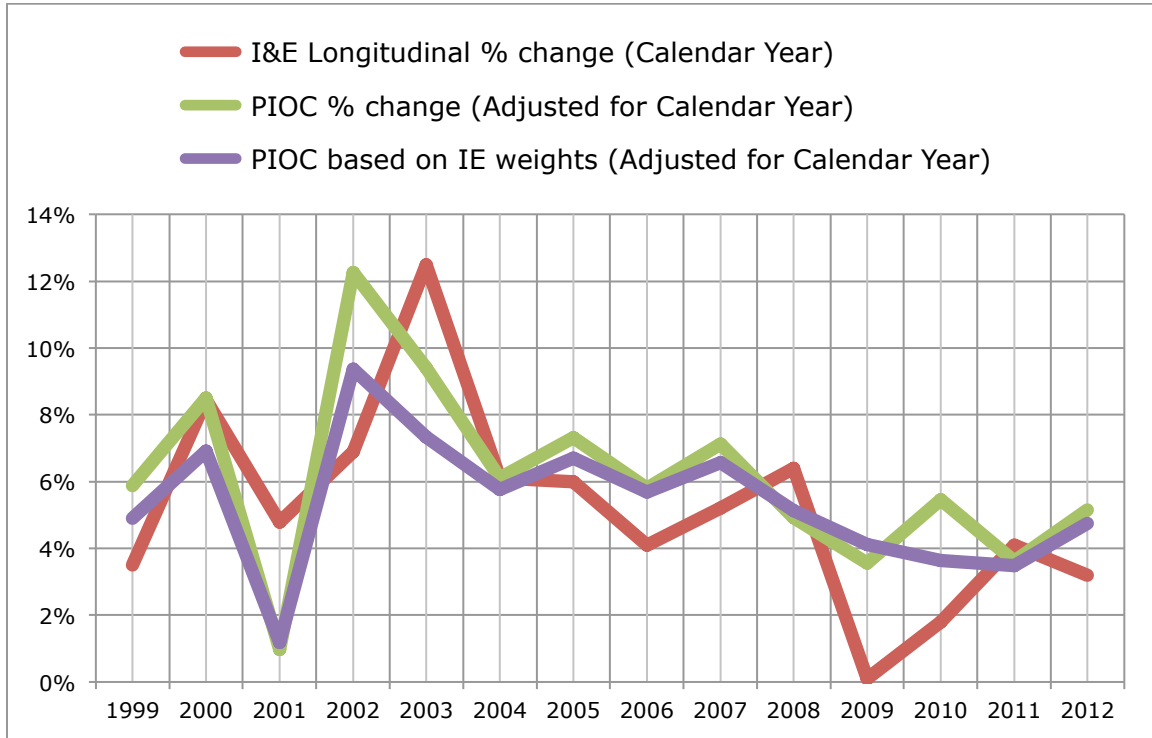


Note: Since no longitudinal data was available to calculate a cost change for the I&E in 2004, the PIOC percent change of 6.1% was used to calculate annualized growth rates for all three indices.

Source: PIOC, 1999-2012 and Income and Expense Studies, 2001-2014

The graph below outlines annual longitudinal percent cost changes reported in the RGB *Income and Expense Studies* along with annual changes in the PIOC and I&E-Based PIOC from 1999 to 2012.

Percent Change in I&E Longitudinal Annual Cost Change vs. that of the PIOC and the I&E-Based PIOC Annual Price Change, 1999-2012



Note: Since no longitudinal data was available to calculate a cost change for the I&E in 2004, the PIOC percent change of 6.1% was used.

Source: PIOC, 1999-2012 and Income and Expense Studies, 2001-2014