

**FY 2016 Additional Statistical Distributions and Capitalization Rate Methodology**

**Prepared by the Property Division**

**Michael Hyman, Deputy Commissioner**

**Timothy Sheares, Assistant Commissioner**

**Carmela Quintos**

**Alberto Mateu**

**Sarah Welt**

**For Assessment Roll Published January 15, 2015**

**TABLE OF CONTENTS**  
**FY 2016 Additional Statistical Distributions and Capitalization Rate**  
**Methodology**

	Page
1. Guideline Distributions	3
2. RPIE 2013 Distributions	4
A. Citywide	4
B. Industrial	5
C. Lofts	6
D. Office	7
E. Rental Apartments	8
F. Retail	9
3. Capitalization Rate Methodology	10-14

## Guideline Income, Expense, and Cap Rate Distributions

Major Building Categories	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
INDUSTRIAL	Income	\$9.55	\$12.73	\$17.03	\$13.61
	Expense	\$1.63	\$2.28	\$2.74	\$2.25
	Cap Rate	15.22%	15.22%	15.27%	15.19%
LOFTS	Income	\$22.96	\$29.61	\$34.63	\$31.69
	Expense	\$5.38	\$7.53	\$9.30	\$7.68
	Cap Rate	13.47%	13.52%	13.72%	13.96%
OFFICE	Income	\$24.74	\$30.60	\$44.10	\$36.06
	Expense	\$5.94	\$7.63	\$11.09	\$9.16
	Cap Rate	15.22%	16.22%	16.70%	15.76%
RENTAL APARTMENTS	Income	\$13.81	\$17.03	\$31.01	\$23.32
	Expense	\$6.76	\$8.30	\$11.13	\$9.20
	Cap Rate	12.98%	13.85%	14.65%	14.07%
RETAIL	Income	\$22.03	\$28.58	\$39.90	\$36.19
	Expense	\$4.03	\$5.34	\$7.19	\$6.18
	Cap Rate	15.51%	16.44%	16.85%	15.86%

Notes:

Income = Income per square foot

Expense = Total Expense per square foot

## RPIE 2013

### Income, Expense, and Year-Year Change Distribution-Citywide

Major Building Categories	Count	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
INDUSTRIAL	2,452	Income	\$8.01	\$11.29	\$14.77	\$12.61
		Income % Change	-2.03%	1.71%	8.31%	2.33%
		Expense	\$1.26	\$2.35	\$3.96	\$3.11
		Expense % change	-16.14%	2.08%	24.89%	7.77%
LOFTS	437	Income	\$19.54	\$28.77	\$37.52	\$31.06
		Income % Change	-0.14%	4.93%	10.39%	4.04%
		Expense	\$5.61	\$9.26	\$13.93	\$10.65
		Expense % change	-7.54%	5.88%	18.48%	4.91%
OFFICE	2,043	Income	\$19.03	\$30.83	\$47.58	\$36.53
		Income % Change	-1.48%	2.45%	8.22%	1.79%
		Expense	\$4.51	\$9.41	\$16.86	\$11.44
		Expense % change	-7.88%	3.42%	15.12%	3.56%
RENTAL APARTMENTS	12,591	Income	\$12.46	\$16.38	\$28.74	\$23.01
		Income % Change	0.85%	3.53%	6.69%	3.11%
		Expense	\$6.61	\$8.50	\$11.42	\$9.86
		Expense % change	-3.99%	3.92%	13.42%	3.82%
RETAIL	6,519	Income	\$17.03	\$26.90	\$42.25	\$37.56
		Income % Change	-1.99%	1.57%	7.42%	1.45%
		Expense	\$3.00	\$5.72	\$9.80	\$8.11
		Expense % change	-14.94%	1.59%	19.18%	4.10%

**Notes:**

Income = Gross Income per square foot

Expense = Total Expense per square foot

Income and Expense % changes based on information filed in RPIE 2013 and RPIE 2012

Rental Apartments with greater than 10 units

Does not include outlier filers and or partial year filers

## RPIE 2013

### Income, Expenses, and Year-Year Change Distribution by Borough-Industrial

Major Building Category	Borough	Count	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
INDUSTRIAL	Manhattan	26	Income	\$9.79	\$21.68	\$27.42	\$26.27
			Income % Change	-4.59%	0.57%	7.15%	1.38%
			Expense	\$1.71	\$3.58	\$5.17	\$4.19
			Expense % change	-14.08%	2.83%	36.87%	13.87%
	Bronx	302	Income	\$5.77	\$9.32	\$12.96	\$10.73
			Income % Change	-5.98%	0.81%	7.83%	0.45%
			Expense	\$1.28	\$2.14	\$3.42	\$2.70
			Expense % change	-16.35%	3.82%	26.77%	7.45%
	Brooklyn	1,066	Income	\$7.91	\$10.91	\$14.25	\$12.14
			Income % Change	-0.77%	1.89%	9.28%	2.88%
			Expense	\$1.34	\$2.47	\$3.98	\$3.13
			Expense % change	-15.91%	1.54%	24.62%	8.55%
	Queens	987	Income	\$8.96	\$12.08	\$15.78	\$13.30
			Income % Change	-2.59%	1.68%	7.39%	2.06%
			Expense	\$1.24	\$2.32	\$4.17	\$3.21
			Expense % change	-16.32%	1.85%	22.93%	6.95%
	Staten Island	71	Income	\$6.56	\$9.69	\$12.83	\$13.16
			Income % Change	0.00%	3.24%	12.85%	6.39%
			Expense	\$0.80	\$1.78	\$3.69	\$2.72
			Expense % change	-27.12%	7.51%	32.67%	6.37%

**Notes:**

Income = Gross Income per square foot

Expense = Total Expense per square foot

Income and Expense % changes based on information filed in RPIE 2013 and RPIE 2012

Does not include outlier filers and or partial year filers

## RPIE 2013

### Income, Expense, and Year-Year Change Distribution by Borough-Lofts

Major Building Category	Borough	Count	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
LOFTS	Manhattan	393	Income	\$22.66	\$30.65	\$38.20	\$32.91
			Income % Change	-0.05%	5.00%	10.70%	3.94%
			Expense	\$6.14	\$10.01	\$14.52	\$11.17
			Expense % change	-7.82%	5.94%	19.82%	5.35%
	Bronx	4	Income	\$4.56	\$5.95	\$9.59	\$7.07
			Income % Change	-15.90%	-2.72%	7.78%	-4.06%
			Expense	\$0.64	\$2.10	\$4.62	\$2.63
			Expense % change	-16.34%	9.39%	15.15%	-0.59%
	Brooklyn	35	Income	\$9.83	\$13.92	\$20.96	\$15.84
			Income % Change	-2.53%	4.12%	9.92%	5.24%
			Expense	\$3.53	\$5.56	\$8.52	\$6.50
			Expense % change	-9.17%	3.53%	14.14%	-0.01%
	Queens	5	Income	\$7.90	\$10.11	\$12.02	\$11.20
			Income % Change	5.89%	6.94%	10.03%	10.33%
			Expense	\$5.01	\$5.43	\$6.02	\$5.57
			Expense % change	4.20%	9.72%	10.41%	9.89%

**Notes:**

Income = Gross Income per square foot

Expense = Total Expense per square foot

Income and Expense % changes based on information filed in RPIE 2013 and RPIE 2012

Does not include outlier filers and or partial year filers

## RPIE 2013

### Income, Expenses, and Year-Year Change Distribution by Borough-Office

Major Building Category	Borough	Count	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
OFFICE	Manhattan	941	Income	\$34.21	\$46.07	\$60.27	\$50.49
			Income % Change	0.00%	3.95%	8.83%	3.95%
			Expense	\$10.90	\$16.47	\$21.75	\$16.78
			Expense % change	-3.40%	4.24%	12.91%	5.22%
	Bronx	151	Income	\$16.34	\$22.65	\$30.26	\$24.55
			Income % Change	-5.04%	1.66%	8.33%	0.82%
			Expense	\$3.00	\$5.57	\$7.54	\$6.76
			Expense % change	-6.91%	6.89%	25.12%	9.24%
	Brooklyn	396	Income	\$14.36	\$20.00	\$28.39	\$23.31
			Income % Change	-4.80%	0.99%	7.97%	-0.34%
			Expense	\$2.73	\$5.19	\$8.80	\$6.35
			Expense % change	-15.14%	1.40%	17.26%	0.40%
	Queens	377	Income	\$16.54	\$22.68	\$32.00	\$25.76
			Income % Change	-2.74%	0.95%	6.54%	0.06%
			Expense	\$3.33	\$6.31	\$10.02	\$7.62
			Expense % change	-13.01%	2.23%	15.81%	2.01%
	Staten Island	178	Income	\$14.47	\$20.56	\$29.89	\$25.17
			Income % Change	-2.03%	0.01%	5.84%	-0.44%
			Expense	\$2.78	\$5.37	\$8.92	\$6.65
			Expense % change	-16.42%	0.23%	14.66%	0.27%

**Notes:**

Income = Gross Income per square foot

Expense = Total Expense per square foot

Income and Expense % changes based on information filed in RPIE 2013 and RPIE 2012

Does not include outlier filers and or partial year filers

## RPIE 2013

### Income, Expense, and Year-Year Change Distribution by Borough-Rental Apartments

Major Building Category	Borough	Count	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
RENTAL APARTMENTS	Manhattan	5,128	Income	\$18.59	\$32.22	\$43.79	\$34.14
			Income % Change	0.75%	3.83%	7.12%	3.29%
			Expense	\$8.61	\$11.21	\$14.60	\$12.51
			Expense % change	-5.18%	3.55%	13.76%	3.43%
	Bronx	2,600	Income	\$10.51	\$12.28	\$14.29	\$13.21
			Income % Change	0.61%	3.17%	6.33%	2.94%
			Expense	\$6.39	\$7.60	\$9.08	\$8.18
			Expense % change	-2.11%	4.97%	13.43%	4.93%
	Brooklyn	3,175	Income	\$11.26	\$13.69	\$17.06	\$15.95
			Income % Change	1.00%	3.62%	6.36%	2.93%
			Expense	\$5.52	\$6.89	\$8.80	\$7.85
			Expense % change	-4.19%	3.86%	12.99%	3.71%
	Queens	1,585	Income	\$14.50	\$17.12	\$20.19	\$17.70
			Income % Change	1.37%	3.24%	6.04%	3.29%
			Expense	\$6.17	\$7.86	\$9.73	\$8.24
			Expense % change	-4.44%	3.43%	13.07%	3.65%
	Staten Island	103	Income	\$13.11	\$14.58	\$16.80	\$15.02
			Income % Change	0.00%	2.19%	5.53%	0.95%
			Expense	\$5.37	\$6.91	\$9.17	\$7.39
			Expense % change	-5.32%	2.69%	12.70%	1.34%

**Notes:**

Income = Gross Income per square foot

Expense = Total Expense per square foot

Income and Expense % changes based on information filed in RPIE 2013 and RPIE 2012

Rental Apartments with greater than 10 units

Does not include outlier filers and or partial year filers

## RPIE 2013

### Income, Expenses, and Year-Year Change Distribution by Borough-Retail

Major Building Category	Borough	Count	Variable	25th Pctl	50th Pctl	75th Pctl	Mean
RETAIL	Manhattan	1,017	Income	\$31.36	\$52.86	\$88.23	\$73.38
			Income % Change	-0.13%	3.19%	8.71%	2.83%
			Expense	\$5.14	\$9.44	\$16.78	\$13.51
			Expense % change	-12.81%	2.06%	19.25%	5.21%
	Bronx	1,059	Income	\$15.52	\$23.12	\$34.29	\$28.21
			Income % Change	-4.63%	0.94%	7.24%	0.50%
			Expense	\$3.33	\$5.86	\$9.40	\$7.27
			Expense % change	-15.61%	1.93%	20.33%	4.23%
	Brooklyn	1,828	Income	\$15.00	\$23.25	\$34.30	\$28.03
			Income % Change	-1.69%	1.13%	7.26%	1.18%
			Expense	\$2.40	\$4.57	\$8.02	\$6.19
			Expense % change	-17.35%	0.76%	18.96%	2.83%
	Queens	2,198	Income	\$18.06	\$27.33	\$41.32	\$34.78
			Income % Change	-1.95%	1.43%	7.00%	1.72%
			Expense	\$3.04	\$5.69	\$9.44	\$7.65
			Expense % change	-13.26%	2.08%	19.18%	4.90%
	Staten Island	417	Income	\$14.33	\$22.89	\$32.30	\$30.39
			Income % Change	-2.15%	0.68%	6.58%	0.32%
			Expense	\$2.78	\$5.12	\$7.77	\$7.91
			Expense % change	-21.18%	1.13%	17.24%	2.37%

**Notes:**

Income = Gross Income per square foot

Expense = Total Expense per square foot

Income and Expense % changes based on information filed in RPIE 2013 and RPIE 2012

Does not include outlier filers and or partial year filers

## FY16 Capitalization Rate Methodology Tax Class 2

- Capitalization Rate based on Ellwood formula

$$R_o = Y_o - \Delta_n^{(an)}$$

Fallout Capitalization Rate = return *on* capital (dividend yield) - return *of* capital (capital gain/loss)

Capitalization Rate based on earnings

- Expected earnings at sale adjusted to maintain growth at 1\*

- the higher the growth rate, the lower the fallout Capitalization Rate, the more valuable the property

\*Guideline Cap rates will not reflect future property appreciation

## FY16 Capitalization Rate Methodology Tax Class 2

- $R_o$  and  $\Delta_n^{(an)}$  are *not* estimated for each property but are guideline curves that reflect median relationships with income
- $R_o$  is estimated by a median regression of market Capitalization Rate on income per square foot
- $\Delta_n^{(an)}$  is estimated by a median regression of annual sales growth of Class 2 rentals that were purchased between 2004-2013 and sold in 2014 (10 year holding period)

## FY16 Capitalization Rate Methodology Tax Class 2

- Guideline curves are applied on *rental filer* population and centered to reflect market rates

- For FY16: - the base Capitalization Rate  $R_0$  is centered on 4.75%

- the growth rate  $\Delta_n^{(an)}$  is centered around 4% to keep the median growth rate of FY16 to FY15 stable at 1

**Guideline Rates**

Variable	25th Pctl	50th Pctl	75th Pctl	Mean
$R_0$	4.08%	4.79%	6.02%	5.10%
$\Delta_n^{(an)}$	3.76%	4.04%	4.24%	4.01%

- FY16 versus FY15 Capitalization Rate \*

**Citywide**

Variable	25th Pctl	50th Pctl	75th Pctl	Mean
Cap Rate FY16	7.20%	7.89%	8.85%	8.24%
Cap Rate FY15	7.20%	8.35%	9.59%	8.68%
Cap Rate FY16/FY15	0.95	0.99	1.03	0.98

\*Does not include effective tax rate portion of Capitalization Rate

## FY16 Capitalization Rate Formulas and Example Tax Class 2

- Capitalization Rate used reflects earnings-based return

$$Y_o = R_o + \Delta_n^{(an)} - .0025$$

$$R_o = \exp(-1.1283 \cdot \ln(\text{income psf}))$$

$$\Delta_n^{(an)} = .002682509 + .014006 \cdot \ln(\text{income psf})$$

*Example:* income psf = **\$17.49\***

$$R_o = \exp(-1.1283 \cdot \ln(17.49)) \cdot 100 = 3.96\%$$

$$\Delta_n^{(an)} = (.002682509 + .014006 \cdot \ln(17.49)) \cdot 100 = 4.28\%$$

$$Y_o = 3.96\% + 4.28\% - .25\% = \mathbf{7.99\%}$$

\* FY16 Guidelines Post-1973 Rental Elevator Building Outer Borough

## FY16 Capitalization Rate Methodology Tax Class 4

	Cap Rate Adjustment to FY15
Loft, Garage, Factories	0.55%
Office Manhattan N 110th A/B	0.10%
Office Manhattan S 110th A/B	0.56%
Office Outer	0.10%
Office Manhattan N 110th not A/B	0.10%
Office Manhattan S 110 not A/B	0.10%
Retail Outer	-1.53%
Retail Manhattan	-1.78%

- Capitalization Rate are given a flat rate adjustment from FY15