New York City Government Poverty Measure 2005–2016

An Annual Report from the Office of the Mayor

Appendix C: Adjustment for Housing Status

Mayor's Office of Operations
The City of New York
April 2018

NYC Opportunity

Appendix C

Adjustment for Housing Status

Housing plays a central role in National Academy of Sciences (NAS)-type poverty measures. As noted in Appendix B, housing needs are represented in the creation of the threshold and account for nearly one-half of the U.S.-wide Supplemental Poverty Measure (SPM) poverty line. Differences in housing expenditures are also the basis for adjusting the SPM poverty thresholds to account for inter-area differences in living costs.

An ongoing concern among poverty researchers is how to account for differences in housing status. Two distinct issues need to be resolved. One is the requirement to account for the lower spending needs that homeowners who are free and clear of a mortgage have relative to homeowners who are carrying a mortgage.[1] A second issue is how to value means-tested housing assistance, such as residence in public housing or participation in tenant-based subsidy programs.[2]

The Interagency Technical Working Group (ITWG) observations addressed these concerns. The SPM accounts for the first housing status issue by creating distinct thresholds for owners with a mortgage, owners without a mortgage, and renters. In addition, recent research by Census Bureau staff has established an approach to valuing means-tested housing assistance that has been incorporated into the SPM.[3]

Appendix B explained why we believe that a household-by-household adjustment on the income side of the poverty measure is the most appropriate way for us to measure the advantages of ownership free and clear of a mortgage, residence in rent-regulated housing units, or participation in a means-tested housing assistance program. This appendix begins with the conceptual issue of how best to define "advantage" in a way that can be measured in dollars that are added to a

1 See, for example: Garner, Thesia I., and David Betson, Housing and Poverty Thresholds: Different Potions for Different Notions. March 2010. Available at: https://www.bls.gov/pir/spm/spm_pp_housing10.pdf

2 A variety of approaches to valuing housing subsidies are discussed in Renwick, Trudi, Improving the Measurement of Family Resources in a Modernized Poverty Measurement. U.S. Bureau of the Census. January 2010. Available at: https://www.census.gov/content/dam/Census/library/working-papers/2010/demo/renwicksge2010.pdf

3 Johnson, Paul D., Trudi Renwick, and Kathleen Short. Estimating the Value of Federal Housing Assistance for the Supplemental Poverty Measure. SEHSD Working Paper #2010-13. Available at: https://cps.ipums.org/cps/resources/spm/SPM_HousingAssistance.pdf
Renwick, Trudi, Estimating the Value of Federal Housing Assistance for the Supplemental Poverty Measure: Eliminating the Public Housing Adjustment. U.S. Bureau of the Census. July 2017.
Available at: https://www.census.gov/content/dam/Census/library/working-papers/2017/demo/SEHSD-WP2017-38.pdf

family's income. After describing our approach, the appendix details the steps we take to create the estimates needed to implement it. We conclude with a note about the housing adjustment for homeowners without a mortgage.

Measuring Advantage

Not all New Yorkers require the same level of expenditure to obtain shelter of comparable size and quality. Renters in public housing or rent-regulated units, renters who receive a tenant-based subsidy, and homeowners free and clear of a mortgage have lower housing costs than residents of "market rate" housing. To account for this advantage, the NYCgov poverty measure makes an adjustment to the income of the non-market rate households.[4]

The housing adjustment for non-market rate renters is calculated as the lesser of either:

1) Adjustment = the estimated market rate gross rent of their housing unit minus their actual out-of-pocket housing expenditures

or

2) Adjustment = the housing portion of the threshold minus their actual out-of-pocket housing expenditures

The estimated market rate gross rent of a rent-regulated or subsidized unit is what the household would be paying for the unit if its costs equaled that of a market rate unit of similar size and quality. The housing adjustment for homeowners who are free and clear of a mortgage is always calculated using the second alternative. (The reason why we take a somewhat different approach for this group is taken up below.)

This approach rests on several judgments. The first is that the quality of non-market housing units is not inferior to market rate units of similar size and quality. If non-market housing residents were simply paying less for their housing because they were living in poorer quality homes, then there would be little or no advantage to their housing status. As we demonstrate below, our modeling of market rate rents indicates that many non-market rate renters, particularly those that are participants in means-tested housing programs, are able to secure housing whose market value is well in excess of what they actually spend to meet their housing needs.

A second judgment is that residence in non-market rate housing can make resources that would have been devoted to housing available to meet other non-housing needs. However, the advantage of residence in non-market rate housing is not fully fungible. By its construction, the adjustment cannot exceed the value of the housing portion of the threshold. Even if a household is enjoying

4 If more than one poverty unit resides in a household, the housing adjustment is prorated across the units according to their relative size.

shelter that would cost many times the value of the housing portion of the threshold, the entire difference between what the household is paying for housing and the housing's market value does not represent a resource that can be used for other purposes. Thus, a family will be counted as poor if its income, after meeting housing needs, is not sufficient to meet its non-housing needs.

In our final judgment call, we do not allow for negative adjustments. If out-of-pocket expenditures exceed the housing portion of the threshold, the difference is not deducted from the poverty unit's income. This rule rests on the judgment that housing of adequate quality is available at a level of expenditure equal to the housing portion of the threshold. Or, more simply put, that the housing portion of the threshold is not too low. Expenditures in excess of the housing portion of the threshold, therefore, are discretionary and do not belong in a measure of poverty.

In order to implement this approach, we need to: 1) Distinguish market from non-market rate housing units; 2) Measure out-of-pocket housing costs; and 3) Estimate market rents for non-market rate units. We begin with a description of how we create the necessary data by making use of the New York City Housing and Vacancy Survey (HVS), a survey conducted every three years by the Census Bureau and sponsored by the New York City Department of Housing Preservation and Development.[5]

Identifying Housing Status and Out-of-Pocket Rents

Participants in means-tested housing assistance programs, tenants in rent stabilized/controlled apartments, tenants who pay no rent, and homeowners free and clear of a mortgage receive a housing adjustment to their income. The American Community Survey (ACS) provides some of the information needed to identify these groups. The survey indicates which households own their home and whether they are carrying a mortgage. It also identifies those renter households who do not pay any cash rent.

There are, however, two crucial pieces of information that the ACS does not contain, both of which pertain to renters. First, the ACS does not indicate whether the household resides in public housing, a rent-regulated unit, or is receiving a tenant-based subsidy. The second piece of missing information is that the ACS does not identify a tenant-based subsidy recipient's out-of-pocket expenditures for shelter and utilities. There are two rent variables in the ACS: contract rent and gross rent. Contract rent is the rent received each month by the landlord. Gross rent is contract rent plus utility payments. These two variables do not represent renter out-of-pocket expenditures for shelter and utilities, if the household is participating in a rental subsidy program.[6]

5 A complete description of the HVS can be found at: https://www.census.gov/programs-surveys/nychvs/about.html

6 Although ACS respondents are instructed to provide the rent received by the landlord, it is unclear whether subsidy recipients include the portion of the rent they do not pay in their answers. See: Parker, Julie, Rent: A Story of Misreporting? NAWRS 2010. Available at: http://www.nawrs.org/LA2010/Papers/t1c3.pdf

To address these deficiencies we turn to the HVS, which collects detailed information on geographic, demographic, and housing-related characteristics of housing units and their occupants. By matching renter households in the ACS to renter households in the HVS, we are able to impute the missing housing program status and the out-of-pocket expenditures data to the ACS. In order to maintain a housing status distribution that matches that of the HVS as closely as possible, a cap of five donations per HVS household is imposed so that as many HVS households as possible donate data to the ACS. Our matching routine is based on a set of household and head-of-household characteristics that identify corresponding households between the ACS and the HVS. The housing expenses of the small number of ACS renter households that live in non-building structures (i.e., boats, recreational vehicles) are calculated by the same rules as those of market rate renters. This subset of renters is excluded from the match with the HVS, which only tracks households in buildings. Listed below are characteristics used for matching renter households in the matching algorithm:

1. Neighborhoods: Community District (CD) or Public Use Microdata Area (PUMA).

2. Race/Ethnicity of the householder: Non-Hispanic White, Non-Hispanic Black, Hispanic, Non-Hispanic Asian, and Other Race.

3. Whether the householder was 65 or older.

4. Equivalized household income as a ranking based on the distribution. (Income is banded into septiles, sextiles, quintiles, and quartiles calculated for each respective data set.)

5. Contract rent as a ranking based on the distribution. (Contract rent is also banded similarly to equivalized household income.)

6. Number of bedrooms in the household: Studio, 1 through 4+.

7. Household composition: Husband and wife with and without children, male- and female-headed single households with and without children, households of unrelated people, and single person households.

8. Whether the household had wage income.

Our initial match is an attempt to match on all eight household characteristics. If we do not find a matching household in the HVS, we incrementally remove or relax characteristics and attempt to match again. Our goal is to preserve the geographical, racial, and family composition distribution of the housing statuses found in the HVS. Because the distribution of participation in means-tested housing assistance (in particular, the location of public housing) varies by neighborhood, we attempt to match as many households as possible within the same neighborhood. We then move to adjacent neighborhoods and, finally, to

neighborhoods within the same borough. Beginning with last year's report, a change was added to the match so that donor households from the HVS with a Public Housing, Mitchell-Lama, or "Other Regulated" housing subsidy status are only matched to ACS recipients in PUMAs that, according to the HVS, contain housing with that status.

Once the ACS and HVS renter households are matched, a housing status variable is created to categorize the ACS households. This categorical scheme is derived from variables that are unique to the HVS[7] and others that are common to the ACS and HVS: renter with no rent, homeowner free and clear of a mortgage, and homeowner with a mortgage. The housing status categories are summarized in Table C.1. It is important to note that when a household lives in public housing or Mitchell-Lama rental housing and receives tenant-based subsidies, it is characterized as a tenant-based subsidy household. We use housing expenditures reported in the ACS for all housing statuses except subsidy recipients, whose out-of-pocket rent is derived from variables in the HVS. A more detailed description of our ACS-HVS match can be found in the housing appendix of our poverty report for 2005–2009, published in 2011.[8]

Table C.2 provides the results of the match between the 2014 HVS (the most recent available) and the 2016 ACS. The percentage distribution of households between the donor HVS and the recipient ACS by housing status categories is extremely close. In no case does the difference between the distributions exceed 1.3 percentage points.

Estimating Market Rents

Market value is a hypothetical level of expenditure that must be estimated. In economics literature, the value of housing services is often thought of as a bundle of different physical and location-specific characteristics of a given unit. We can, therefore, estimate the market rent of non-market rate housing by fitting a hedonic regression model accounting for these factors to a sample consisting of market rate units, and then applying the resulting coefficients to the same set of characteristics of non-market rate units.

Before describing the model, a clarification should be made. The dependent variable in the regression is the gross rent currently paid for the unit. Thus, in this context, market value is not necessarily equal to the amount a unit would rent for if it were placed on today's market. Since our concern is differences in current spending needs between residents of market and non-market rate housing units, the former sense of market value is what we need to measure.

To estimate market rate rents, we rely on the 2005, 2008, 2011, and 2014 New York City Housing and Vacancy Surveys, which contain detailed information on

7 The variable used was Control Status, which indicates what type of housing development the unit is in, as well as identifying whether that household participated in at least one of the several tenant-based subsidy programs that are available to low-income renters.

8 The CEO Poverty Measure, 2005–2009, is available at: http://www1.nyc.gov/assets/opportunity/pdf/11_poverty_measure_report.pdf

the location and physical condition of rental units. For these years, we estimate a regression model on the subset of observations that are in market rate rental units. We employ variables that measure housing quality at three levels: the unit/tenant, the building, and the neighborhood. The unit/tenant-specific indicators are the number of rooms and the length of the tenant's tenure, which captures the negotiating power accrued by long-term tenants. At the building level, we use measures of building conditions, building size, building age, and whether the owner lives in the building. To capture neighborhood effects, we include a subjective "neighborhood quality" measure as reported by the tenant, as well as median PUMA income and dummy variables for the super-PUMA in which the building is located.[9] We use super-PUMA dummies rather than PUMA dummies due to the limited number of market rate units in some PUMAs. By including median PUMA income in the model, however, we are able to capture some of the variation in neighborhood effects at the PUMA level.

The relationship between gross rent and many of its predictor variables is complex and nonlinear. In order to achieve the best possible fit to the data, we employ nonparametric techniques via a Generalized Additive Regression Model (GAM). A GAM is a regression model that allows different functional forms for each independent variable. Some of the variables used in the regression are included as dummy variables, while others are fit nonparametrically, using smoothing spline functions.[10] The regression variables are defined in Table C.3.[11]

The results of the regression for 2014 are shown in Table C.4. The models for 2005, 2008, and 2011 (not shown) have a similar fit. In particular, the relationship between gross rent and median PUMA income in the models for all four years is quite close. The widest divergence in coefficients across the years is in variables that are not statistically significant.

We then use the regression models to compute estimated market rate rent values for the non-market rental units. Table C.5 shows the reported gross rent, estimated market rent, and their difference for various categories of renters in the 2014 HVS. The data are presented as rent per bedroom, since the average number of bedrooms tends to vary across rental groups. The small difference between the reported and estimated rents for market rate units highlights the predictive accuracy of our model. By contrast, there are large per-bedroom differences between the reported out-of-pocket rent and the estimated market rate rents for all the non-market rate groups. This is especially the case for public housing units, with a mean per-room difference of $473 in 2014. The considerably higher market rate estimates are consistent with our assumption that non-market renters are, indeed, advantaged relative to market rate renters.

9 Super-PUMAs are Census-defined geographic units that represent approximately 400,000 residents. In their level of geographic detail, New York City's 15 super-PUMAs stand between the city's five boroughs and its 55 PUMAs.

10 Smoothing splines are a particular type of nonparametric smoothing technique. For an overview of smoothing spline functions and GAM, see Keele, Luke John. Semiparametric Regression for the Social Sciences. West Sussex, England: John Wiley and Sons, Ltd. 2008.

11 Nonparametric variables do not have reported coefficients, but rather have smoothed bivariate plots. These plots are available from the authors upon request.

Table C.6 reports the mean difference between households' out-of-pocket housing expenditures and two values: 1) the housing portion of the threshold, and 2) the estimated market rent. These two differences correspond to the two income adjustment equations described previously. The differences that are based on the estimated market rate rents are uniformly higher (on average) than those using the housing portion of the threshold for all groups.[12] When we apply the rule of taking the smaller of the two differences to compute the housing adjustment to income, Equation 1 is used in the majority of cases, ranging from 69.6 percent of the time for renters receiving a tenant-based subsidy such as such as Section 8 to 90.4 percent of the time for renters in Mitchell-Lama housing. This indicates that, for the most part, renters of non-market units are not "paying" for their cheaper rents by living in housing that is of such low quality that it would rent for less than the housing portion of the threshold.

Impact of the Housing Adjustment on the Poverty Rate

The housing adjustment continues to have the largest impact on the NYCgov poverty rate of all the non-cash resource components. In 2016, it reduced the citywide poverty rate by 6.1 percentage points. As Table C.7 indicates, the reductions for recipients of means-tested assistance are particularly large. For example, valuing housing assistance reduces the poverty rates for individuals in public housing and those receiving tenant-based subsidies by 26.8 and 27.0 percentage points, respectively.

The effect of our housing status adjustment on the poverty rate has not been constant over time. Panel B of Table 3.6 in Chapter 3 of this report shows the housing adjustment had a marginal impact of 6.5 percentage points in 2012 and 6.1 percentage points in 2016. In between, the marginal effect of housing remained at 6.5 percentage points from 2013–2014, but sank to 5.8 percentage points in 2015. What can account for this swing in the impact of the housing adjustment?

One possible explanation is that there was an unusual jump in the housing portion of the NYCgov threshold between the four years. Because the threshold determines the cap on the value of the housing adjustment, an unusually large rise in this part of the poverty threshold might explain a rise in the value of the housing adjustment and its effect on the poverty rate. However, no such jump occurred. Column A of Table C.8 shows the growth in the housing portion of the NYCgov threshold. When compared to the marginal impact of the housing adjustment in Column B, there is no apparent discernable relationship between the two.

Another possible explanation is the timeliness of the source data from which we generate imputed values. The HVS is conducted every three years to comply with

12 The mean adjustment using the housing portion of the threshold for rent stabilized and controlled units is negative, indicating that a majority of these households' housing expenditures exceed that standard. This is not surprising, as rent control and stabilization are not means-tested programs.

New York State and NYC rent regulation law. Since the inception of the NYCgov Poverty Measure there have been four releases of the HVS: 2005, 2008, 2011, and 2014. The 2005 HVS was used to impute the 2005–2007 housing data; the 2008 HVS was used to impute the 2008–2010 housing data; and the 2011 HVS was originally used for years 2011–2013. Continuing this pattern, the 2014 HVS should have been used to estimate 2014 and 2015 data. As explained below, the 2014 HVS was also used to estimate the 2013 housing adjustment in this edition of the report.

Because the HVS data has a three-year gap, there is a risk that introducing a new survey can cause an abrupt shift in the distribution of housing statuses and a marked change in the influence of the housing status on the poverty rate. For this reason we test the influence of each new HVS release. Most recently, we matched the 2014 ACS to both the 2014 and 2011 HVS and computed the before and after housing status adjustment poverty rates. We found that there was only a 0.2 percentage point difference (6.8 percentage points compared to 6.6 percentage points) in the effect of the adjustment on the New York City poverty rate.

However, even after testing for threshold and HVS effects, we continued to note an anomaly in the housing impact for 2013. In prior editions of this report we have used the 2011 HVS to estimate the 2013 housing adjustment. It was the most recent data available when the 2013 ACS was released and, given the minimal differences between surveys we have observed, consistency in our assignment of ACS to HVS was prioritized. But the housing adjustment for 2013 was larger than in 2012, 2014, or 2015, causing an unusually large drop in the poverty rate only in that year. Further testing proved that the decline in poverty in 2013 was driven solely by the housing adjustment. A review of administrative rent data provided further insight. Collected rents from regulated units grew faster from 2012 to 2014 (4.8 percentage points) than from 2009 to 2011 (2.6 percentage points).[13] Clearly, the 2014 HVS reported more realistic rent levels for 2013. A cyclical upswing in rents had occurred midway through the three-year HVS time gap. The lower rents imputed from the 2011 HVS generated a housing adjustment that was inordinately large, creating a larger-than-normal effect in lowering the poverty rate. Using the 2014 HVS for 2013 resulted in a smoother trend in the housing adjustment from 2012 to 2016, and a poverty rate that is consistent with the underlying data.

We tested other interim survey years and found that use of a past or future ACS made only a negligible difference. The difference in 2013 lies in the timing of the economic recovery and how much conditions changed from 2011 to 2014. Beginning with the next HVS release in 2017, we will test interim ACS years for accuracy.

13 For the historical rent growth table, see: New York City Rent Guidelines Board (RGB) (2016). The 2016 Income and Expense Study. Retrieved from: https://www1.nyc.gov/assets/rentguidelinesboard/pdf/ie16.pdf. Real Property Income and Expense (RPIE) rents are actual rent collections from rent stabilized units and do not include rents for vacant or non-paying units. They are compared in the Income and Expense Study to RGB annual rent increases for stabilized units and Division of Housing and Community Renewal (DHCR) rent registration data. The growth in RGB data closely matches the trends in RPIE growth. DHCR data is reported on a fiscal year basis and reporting of vacancies and uncollected rents as actual collected rent results in a higher estimate.

Holding 2013 aside, there are still large variances in the housing status adjustment effect. This suggests that there is something intrinsic to our method for valuing housing status that leads to a gap between the market-equivalent value of the non-market rate rental units and what these renters are paying out of pocket for their housing. We see evidence of this in Table C.9. Across nearly all of the renter groups that receive a housing status adjustment, the estimated market rent continues to be higher than what they are paying out of pocket for housing. We also note that starting in the 2014 HVS, there was a change in the method of estimating the number of rent regulated units. The result was a number of higher rent units re-categorized as rent stabilized that previously would have been categorized as deregulated market rate units.[14]

A Note on Accounting for the Advantage of Home Ownership Free and Clear of a Mortgage

As noted above, we do not take the same approach to valuing the advantage of owning a home free and clear of a mortgage as we do for non-market rate renters. We only use the difference between the housing portion of the threshold and out-of-pocket housing expenditures to make the housing adjustment for this group. In effect, we are assuming that the market value of the units that are owned free and clear would at least be equal to the housing portion of the threshold.

We attempted to test this assumption by applying our hedonic regression model to the housing units that are owned free and clear. The results we obtained were not credible. Table C.10 provides the distribution of estimated market rate rents for market rate units and units that are owned free and clear.

The monthly per-bedroom market rate rent estimates for the free-and-clear homeowners are below those for the market rate renters, by $156 for the mean and $52 for the median. This would suggest that the housing services consumed by the New York City homeowners are inferior to market rate renters. There are reasons to be skeptical of this result. As a group, the homeowners enjoy higher incomes than do renters. Table C.11 shows the distributions of family-size and composition-adjusted NYCgov income (net of the housing adjustment) for market rate renters and homeowners without a mortgage.

The free-and-clear homeowners enjoy considerably higher incomes than do market rate renters, by $25,559 for the mean and $20,284 at the median. Despite this, the hedonic model predicts that the rental value of their housing is inferior to that of the renters.

This seems highly implausible, suggesting that the hedonic model does not produce valid market rate rent estimates for this group. Hedonic models will only yield

14 The rent regulation sequence for the 2014 NYC HVS was adjusted to give higher priority to the DHCR's reported rent regulation status than in the past. If applied to the 2011 NYC HVS data, about 34,000 more rent stabilized units than previously reported would result, largely consisting of higher rent units that previously would have been coded as deregulated by virtue of high rent vacancy deregulation, but in fact were still listed by DHCR as stabilized. See: www1.nyc.gov/assets/hpd/downloads/pdf/2014-HVS-initial-Findings.pdf

accurate estimates if the market rate apartments are sufficiently similar in their physical characteristics and geographic distribution to those owned free and clear in the city. This does not appear to be the case. For example, only 5 percent of the market rate rental units are in single-unit buildings, compared to 33 percent of homeowners free and clear of a mortgage. This 5 percent of market rate renters translates into only 178 unweighted observations in the HVS. A second important difference is geographic location of housing. Homes that are owned free and clear tend to be located in the periphery of the city – in Staten Island, Eastern Queens, etc. They are less likely to be located in the city's core, especially Manhattan. There, we are more likely to find market rate rental units. Given the limitations of our model, we conclude that simply using the difference between the housing portion of the threshold and out-of-pocket housing expenditures is a less error-prone approach to the housing adjustment for the free-and-clear owners than the method we use for the non-market renters.

Table C.1
Definition of NYCgov Housing Status

Renter	
Public Housing	Living in a building that is NYCHA-operated public housing.
Mitchell-Lama	Living in Mitchell-Lama rental housing.
Tenant-Based Subsidy	Receiving Federal Section 8, Public Assistance Shelter Allowance, Senior Citizen Rent Increase Exemption, "Jiggets" rent supplement program, Employee Incentive Housing Program, Work Advantage Housing program for the homeless, or some other federal, state, or City subsidy program.
Stabilized/Controlled	Living in an apartment under rent control or rent stabilization status.
Other Regulated	Living in an apartment under Article 4 or 5, HUD or Loft Board regulated building, or building owned by the City in "In Rem" status.
Market Rate	Living in a rental apartment that is neither public housing nor stabilized/ controlled, and whose occupants do not receive a subsidy.
No Cash Rent	Does not pay cash rent to occupy apartment.
Owner	
Owned Free and Clear	Living in a housing unit that is owned with no mortgage.
Paying Mortgage	Living in a housing unit that is owned and has a mortgage.
No Mortgage Status Reported	There is no mortgage status reported in the HVS.

Sources: New York City Housing and Vacancy Survey and American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.
Note: Tenant-based subsidy takes precedence over all other housing statuses. For example, if someone lives in public housing and also receives a subsidy, they are categorized as receiving a subsidy.

Table C.2
Comparison of Housing Status Between 2014 HVS and 2016 ACS

	2014 HVS		2016 ACS		Percentage Point Difference
Housing Status	**Frequency**	**Percent**	**Frequency**	**Percent**	
Renter					
Public Housing	162,821	5.2%	164,122	5.3%	-0.1
Mitchell-Lama Rental	30,988	1.0%	31,744	1.0%	0.0
Tenant-Based Subsidy	257,717	8.2%	248,074	8.0%	0.3
Stabilized/Controlled	865,753	27.7%	860,334	27.7%	0.0
Other Regulated	26,503	0.8%	67,330	2.2%	-1.3
Market Rate	711,665	22.8%	675,303	21.7%	1.1
No Cash Rent	53,391	1.7%	65,885	2.1%	-0.4
Owner					
Owned Free and Clear	374,869	12.0%	399,319	12.8%	-0.8
Paying Mortgage	640,431	20.5%	596,560	19.2%	1.3
Total	3,124,138	100.0%	3,108,671	100.0%	

Sources: New York City Housing and Vacancy Survey and American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.

Table C.3
Regression Variables

Variable	Description	Variable	Description
Tenant Tenure	Years in Apartment	Number of Units	
Rooms	Number of Rooms	Super-PUMA Indicators	Northern Bronx Omitted
4+ Stories, No Elevator	Dummy (1 = Four or More Stories and No Elevator)		Southern Bronx
Median PUMA Income	Median Income within PUMA, in Thousands of Dollars		Northern Kings
Tenant Rating Indicators	Rated Fair Omitted		Western Kings
Rated Excellent	Buildings in Neighborhood Rated by Tenant		Central Kings
Rated Poor	Buildings in Neighborhood Rated by Tenant		Eastern Kings
Year Built Indicators	Built before 1947 Omitted		South Kings
	Built 2000+		Eastern Manhattan
	Built 1990–1999		Northern Manhattan
	Built 1980–1989		Western Manhattan
	Built 1970–1979		Richmond
	Built 1960–1969		Northern Queens
	Built 1947–1959		Eastern Queens
	Built 1930–1946		South Eastern Queens
	Built 1920–1929		Southern Queens
	Built 1901–1919		
	Built 1900 and earlier		

Table C.4
Regression Models of Market Rate Rents, 2014

Dummy Variables	Estimate	t-Statistic
Intercept	1642.43	23.07
4+ Stories, No Elevator	-265.11	-3.34
Rated Excellent	130.60	3.50
Rated Poor	-265.11	0.78
Southern Bronx	-25.17	-0.12
Northern Kings	286.36	3.21
Western Kings	407.40	4.26
Central Kings	176.22	1.90
Eastern Kings	-104.01	-1.20
South Kings	-67.39	-0.79
Northern Manhattan	525.84	4.61
Eastern Manhattan	1459.57	12.75
Western Manhattan	1707.02	13.94
Richmond	-418.58	-3.92
Northern Queens	119.25	1.37
Eastern Queens	19.37	0.20
South Eastern Queens	-318.33	-3.30
Southern Queens	-151.91	-1.60
Nonparametric Variables	**EDF**	**F-Statistic**
Log of Median PUMA Income	6.76	11.19
Tenant Tenure	1.00	111.00
Year Built	8.61	3.89
Number of Rooms	4.64	124.88
Number of Units	3.94	14.48
N		3,403
R^2		0.574

Source: 2014 New York City Housing and Vacancy Survey.
Notes: Dependent variable is monthly gross rent. Data weighted with the New York City Housing and Vacancy Survey household weight.

Table C.5
Mean Reported Gross Out-of-Pocket Rent and Estimated Market Rate Rent, Per Bedroom

Housing Status	Gross Out-of-Pocket Rent	Estimated Market Rent	Difference
Market Rate	$837	$849	-$12
Public Housing	$193	$666	-$473
Mitchell-Lama Housing	$567	$889	-$322
Tenant-Based Subsidy	$548	$638	-$89
Stabilized/Controlled	$691	$874	-$183
Other Regulated	$480	$949	-$469
No Cash Rent	$0	$626	-$626

Source: 2014 New York City Housing and Vacancy Survey.

Table C.6
Housing Portion of the Threshold vs. Estimated Market Rate Rent, 2016

Housing Status	(1) Adjustment Using Housing Portion of the Threshold		(2) Adjustment Using Estimated Market Rate		Share Using Household Portion of the Threshold
	Mean	Median	Mean	Median	
Public Housing	$6,864	$6,053	$16,427	$15,094	82.0%
Mitchell-Lama Housing	-$2,397	-$1,147	$11,071	$9,246	90.4%
Tenant-Based Subsidy	$7,436	$6,636	$12,410	$11,638	69.6%
Rent-Stabilized/Controlled	-$3,385	-$2,525	$5,732	$4,183	80.8%
Other Regulated	$3,495	$4,973	$13,755	$13,770	83.9%
No Cash Rent	$12,579	$11,479	$21,159	$18,963	77.3%

Source: American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.
Note: Data weighted by the ACS household weight.

Table C.7
Effect of Housing Adjustment on the Poverty Rate, 2016

	Poverty Rate Based on Total NYCgov Income	Poverty Rate without Housing Adjustment	Percentage Point Difference
Total Population	19.5%	25.6%	-6.1
Renter			
Public Housing	28.5%	55.3%	-26.8
Mitchell-Lama Rental	28.3%	31.8%	-3.5
Tenant-Based Subsidy	35.3%	62.3%	-27.0
Stabilized/Controlled	21.4%	25.9%	-4.6
Other Regulated	18.3%	41.8%	-23.5
Market Rate	24.0%	24.0%	0.0
No Cash Rent	16.5%	37.7%	-21.2
Owner			
Owned Free and Clear	10.2%	16.8%	-6.6
Paying Mortgage	10.4%	10.4%	0.0

Source: American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.

Table C.8
Growth in the Housing Portion of the Threshold and Marginal Impact of the Housing Adjustment

Year	A	B
	Year over year growth in housing portion of the NYCgov threshold	Marginal Effect of the Housing Adjustment on NYCgov Poverty Rate
2012	-0.2%	-6.5
2013	1.4%	-6.5
2014	1.9%	-6.5
2015	0.3%	-5.8
2016	1.9%	-6.1

Sources: U.S. Bureau of Labor Statistics and U.S. Department of Housing and Urban Development. American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.

Table C.9
Mean Actual Gross Out-of-Pocket Rent and Estimated Market Rate Rent

	2015			2016			Percentage Change from 2015		
Housing Status	Actual Out-of-Pocket Gross Rent	Estimated Market Rent	Difference	Actual Out-of-Pocket Gross Rent	Estimated Market Rent	Difference	Actual Out-of-Pocket Gross Rent	Estimated Market Rent	Difference
Public Housing	$562	$1,817	$1,255	$563	$1,816	$1,254	0.1%	0.0%	-0.1%
Mitchell-Lama Housing	$1,384	$2,214	$831	$1,465	$2,217	$752	5.9%	0.1%	-9.5%
Tenant-Based Subsidy	$599	$1,565	$966	$568	$1,529	$961	-5.2%	-2.3%	-0.5%
Stabilized/Controlled	$1,432	$1,857	$425	$1,509	$1,876	$368	5.4%	1.1%	-13.5%
Other Regulated	$918	$1,958	$1,039	$945	$1,944	$999	2.9%	-0.7%	-3.9%
No Cash Rent	$118	$1,682	$1,563	$128	$1,829	$1,701	7.7%	8.7%	8.8%

Sources: 2015 and 2016 American Community Survey as augmented by NYC Opportunity.

Table C.10
Distribution of Per-Bedroom Estimated Market Rent by Housing Status

	Renters Market Rate	Owners Free and Clear	Difference
Mean	$849	$694	-$156
Percentile			
5	$327	$319	-$8
10	$380	$355	-$25
25	$462	$434	-$28
50	$596	$544	-$52
75	$1,000	$757	-$243
90	$1,762	$1,280	-$482
95	$2,026	$1,692	-$334

Source: NYC Opportunity estimates from the 2014 NYC HVS.

Table C.11

Distribution of Family-Size Adjusted NYCgov Income by Housing Status, 2016

	Renters Market Rate	Owners Free and Clear	Difference
Mean	$73,143	$98,702	$25,559
Percentile			
5	$12,846	$14,974	$2,128
10	$21,969	$23,581	$1,612
25	$33,255	$40,293	$7,038
50	$50,084	$70,367	$20,284
75	$84,542	$110,434	$25,893
90	$144,234	$193,471	$49,236
95	$208,028	$306,283	$98,255

Source: 2016 American Community Survey Public Use Microsample as augmented by NYC Opportunity.
Note: Income is measured before the addition of the housing adjustment.