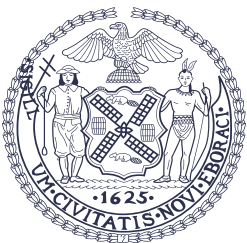# New York City Government Poverty Measure 2005–2015

An Annual Report from the Office of the Mayor

Appendix D:
The NYCgov Tax Model

Mayor's Office of Operations
The City of New York
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NYC
Opportunity

Appendix D

The NYCgov Tax Model

Low-income families, especially those with children, often find that their refundable tax credits are greater than the taxes they owe. The result is that many low-income families have a negative tax rate – they receive more from the income tax system than they pay into it. The expansion of tax credits to low-income families, as well as to those more well off, has been a key component of federal economic stimulus programs since 2008. Tax programs remain an increasingly important component of the resources available to families to meet their needs. At the same time, all working families are also subject to payroll taxes under the Federal Insurance Contribution Act (FICA). FICA payments offset some of the gains derived from income tax credits. But even when payroll taxes are accounted for, the total tax effect on income leads to a reduction in the NYCgov poverty rate.

The Tax Model

The American Community Survey (ACS), our primary source of data, does not include information about taxes. NYCgov, therefore, has created a tax simulation model. The first task in estimating taxes is to create tax filing units within ACS households. The model then applies the tax code to estimate the taxes owed and tax credits received for New York City tax filers.

Creating Tax Filing Units

ACS households consist of all persons residing in the same housing unit. Within the household, each member is identified only through their relationship to the person answering the ACS questionnaire. This person is designated as the reference person and is usually, but not always, the primary owner or renter of the household. The remaining residents of the household may form a complex network of relationships. Occupants may include a family embodying several generations; families unrelated to the respondent; and one or more unrelated individuals, including roomers and boarders. Because residents are only identified in relation to the reference person, we cannot always see how they may be related

to each other. For tax purposes, this presents a challenge. We need to use the information available in the ACS to estimate how many tax returns are filed from each household, and identify who on each return is the filer (along with their spouse and dependents). NYCgov addresses this problem by first dividing ACS households into Minimal Household Units (MHUs) that create a richer set of information about how people in the household are related to each other. For example, two boarders individually listed as married will be linked together using age and other demographic characteristics. The children of unmarried partners (unless they are coded as children of the respondent) are identified in a similar manner and are then coded as the child of a specific parent.[1] The tax model then identifies MHU members who are tax filers, along with their spouses and dependent(s). Additional decisions are made about allocating children and indigent household members to filers as dependents. Beginning with this year's report, the decision to assign tax dependents to adults is superseded by the need to keep children and adult children in their parent's health insurance unit.[2] Based on these decisions, each tax filer is then given a status of Married Filing Joint, Head of Household, Single, or Married Filing Separate.[3]

The Tax Calculator

A simulated federal, New York State, and New York City tax return is prepared for each tax filing unit based on income and other data provided in the ACS.[4] We identify adjusted gross income (AGI) for the tax unit, which is the sum of all earned income, interest income, and other income sources. Social Security income is included to the extent it is taxable. Personal exemptions and standard deductions are then subtracted from AGI to find taxable income. The federal tax liability on that income is calculated and then – going through the steps of a federal 1040 tax return – we compute each of the tax credits for which filers are eligible. Once the 1040 is completed, an IT-201 New York State tax return is modeled, which relies on income and credit calculations from the federal return. The IT-201 generates New York State and City tax liabilities and credits. In a final step, FICA payroll taxes are applied to all wage and salary income, and self-employment taxes are deducted from self-employment earnings.

Tax Policy

The poverty rates reported in this report are affected by changes in the tax code. NYCgov poverty rates for the years 2008 to 2012 contain deductions, credits, or

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1 The MHU methodology is derived from Jeffery Passel, "Editing Family Data in Census 2000 Public-Use Microdata Samples: Creating Minimal Household Units (MHUs)." August 23, 2002. The application of Passel's method to the NYCgov model is explained in Vicky Virgin, Creating the CEO Poverty Unit: An Evaluation Using the CPS ASEC. June 2011. Available at: www.irp.wisc.edu/research/povmeas/Poverty_unit_analysis_CEO_2011.pdf

2 The methodology used to create tax filing units is discussed at length in NYC Center for Economic Opportunity, The CEO Poverty Measure, 2005–2008. New York, NY: Center for Economic Opportunity. 2010. Available at: http://www.nyc.gov/html/ceo/downloads/pdf/ceo_poverty_measure_v5.pdf

3 The ACS does not provide enough information to identify widows, the other filing status used by the IRS.

4 Due to a lack of data in the ACS, tax estimates for middle to higher income households are less accurate than estimates for lower income households. We do not estimate itemized deductions, capital gains, and other tax items more common to higher income returns. For this reason, we confine our analysis to filers with AGI under $50,000.

expansion of existing credits that were a key feature of the Bush and Obama Administrations' economic stimulus programs. In 2014, the Affordable Care Act Individual Responsibility Mandate, a tax penalty, was activated, and several new income tax credits were enacted at the local level. We describe these policy initiatives in detail below:

- **Recovery Rebate Tax Credit for Individuals:** A one-time tax rebate included in the Economic Stimulus Act of 2008. The credit was based on information provided in the 2007 tax return, to be paid out in 2008. The maximum payment was $600 for single filers, $1,200 for married filers, and an additional $300 per qualifying child.[5]

- **Additional Standard Deduction for Real Estate:** Passed as part of the Housing Assistance Act of 2008 and extended for 2009 by the Emergency Economic Stabilization Act of 2009. Filers who took the standard deduction (all filers in the NYCgov tax model) and were homeowners could claim an additional standard deduction of up to $500 ($1,000 for married filers) against their local property taxes.

- **Additional Child Tax Credit:** The Additional Child Tax Credit is a refundable supplement to the Child Tax Credit. Prior to passage of the Emergency Economic Stabilization Act of 2008, the credit required a minimum earned income of over $12,050 in 2008 and $12,550 in 2009. The Act lowered the income threshold to $8,500 for 2008 and reduced it again to $3,000 in 2009. The result is that more filers with lower incomes receive a refundable credit.

- **Making Work Pay Tax Credit (MWP):** A credit of up to $400 ($800 for married filers). The NYCgov model added MWP as a refundable tax credit in 2009 and 2010. In 2009, the Economic Recovery Payment was deducted from the MWP for eligible recipients (see below).

- **Economic Recovery Payment:** A payment of $250 distributed in 2009 to recipients of Social Security or Supplemental Security Income (SSI) payments and Veterans or Railroad Retirement benefits. The ACS allows us to identify only Social Security and SSI recipients. Although not technically a tax credit, we included this payment as a tax offset.

- **Expansion of the Earned Income Tax Credit (EITC):** Two changes occurred in 2009. First, the increased maximum credit for married filers accelerated the already ongoing elimination of the marriage penalty in the EITC. Second, a third tier of credits was added to allow filers with more than two children to claim a larger credit. The maximum possible credit for a married couple with

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5 The Stimulus Act became law in early 2008, just as returns were being filed for 2007 taxes. It was paid as a tax refund, using 2007 income as an estimate for 2008 income. Filers who had already sent in a tax return could claim the rebate retroactively, carrying it into calendar year 2009. Filers whose 2008 income generated a different credit than the one based on their 2007 returns had to reconcile the difference in their 2008 return (filed in early 2009). We assume that all filers received the credit in calendar year 2008, at an amount based on the model's 2008 estimates. We include no rebate credit in 2009. We assume this overestimates the amount of credit actually awarded in 2008 and underestimates it for 2009.

three children was $4,824 in 2008. In 2013, the maximum credit for this family rose to $6,044.

- **College Tuition Credits:** The tuition credit in the NYCgov model combines the Lifetime Learning Credit and, prior to 2009, the Hope Credit for college students in the tax unit. In 2009, the Hope Credit was replaced by the American Opportunity Credit. The newer credit is up to 40 percent refundable.

- **Payroll Tax Cut:** The Making Work Pay Tax Credit expired and was replaced by a 2 percentage point cut in the payroll (FICA) tax in 2011 and 2012. For most filers in the NYCgov model, this represented a cut in the tax rate for the Social Security portion of FICA from 6.2 to 4.2 percent of earned income.[6]

- **Health Care Individual Responsibility Mandate:** Included as part of the Affordable Care Act (ACA) in 2010 and effective with the 2014 tax year. This is a penalty payment for failing to acquire minimum essential health care coverage. The ACA also includes a tax credit for lower income families who purchase health care coverage. This credit is included in the price structure of public plans available in New York City. We include it in the premium costs of medical out-of-pocket expenses. (See Appendix H.)

- **The American Tax Reform Act of 2012** extended some of the changes described above to 2017. The expanded Additional Child Tax Credit, the third child tier in the EITC, and the American Opportunity Credit were all extended. The elimination of the marriage penalty from EITC rates was made permanent.

Other changes occurred at the local level:

- **School Tax Relief Credit:** A credit against income tax for New York City residents and funded by New York State. This credit was reduced significantly in 2009.

- **New York State and City Earned Income Credit:** No legislative change was made to these credits, but they are calculated at 30 percent and 5 percent of the federal EITC, respectively. Thus, changes at the federal level beginning in 2009 resulted in an expansion of the state and city EITC.

- **New York State Family Tax Relief Credit:** A refundable credit of $350 for taxpayers with one or more dependents under age 17 and adjusted gross income between $40,000 and $300,000 with a tax liability greater than zero.

- **Enhanced Real Property Tax Credit:** A refundable credit for homeowners and renters in NYC beginning in tax year 2014. For homeowners, the credit applies to excess real property tax above a percentage of household gross income, capped at $500. For renters, real property tax is assumed to be 15.75 percent of annual rent and the credit is applied accordingly.

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6 The replacement of the MWP Tax Credit with the Payroll Tax Cut was less effective for filers close to, or just below, the poverty line. For an explanation, see the CEO Poverty Measure, 2005–2011, New York, NY: Center for Economic Opportunity, 2013, pp. 61-62.

Taxes in Detail

This section compares tax liabilities and tax credits from 2010 to 2015. Table D.1 and Table D.2 divide tax filers into two groups: Panel A consists of those filers with AGI from $1 to $25,000 and Panel B consists of filers with AGI from $25,001 to $50,000. This divides filers into those who are most likely to be poor, with incomes close to or below the poverty threshold, and those filers with incomes close to or somewhat above the poverty line. The division roughly illustrates the impact of tax programs as income rises.

Major Tax Components

Table D.1 shows the major components of the tax model. Taxable Income is AGI after standard deductions and exemptions. Pre-Credit Liability is the total federal, state, and city income taxes due on taxable income before any credits are applied. Federal, state, and city credits are the sum of tax credits received from each level of government. The Net Income Tax Effect is the total effect of the income tax system on resources. A positive value for Net Income Tax Effect indicates that tax credit refunds are greater than the taxes owed. In other words, the tax system generates a net gain to the taxpayer. A negative number indicates a net loss to the taxpayer since taxes paid are greater than taxes refunded.

Panel A of Table D.1 shows that filers with AGI up to $25,000 have a positive value for their Net Income Tax Effect for each of the years shown, representing a net gain to NYCgov's measure of family income after taxes. Filers with AGI over $25,000 and up to $50,000, shown in Panel B, have an annual net loss to their household resources after income taxes in all years.

In addition to income taxes, FICA (payroll taxes for Social Security and Medicare) is another piece of the total tax picture. The combined rate for both is 7.65 percent of wages, with the exception of 2011 and 2012 when the combined rate was 5.65 percent.

The final line of each panel, Net Income Tax + Net FICA Effect, shows the combined effect of income and payroll taxes, including tax credits. Again, a positive number represents a net gain to the taxpayer and a negative number a net loss to the taxpayer.

Individual tax credits from 2010 to 2015 are detailed in Table D.2. Total Tax Relief is the sum of all credits. We include the Health Care Responsibility Mandate, effectively a tax penalty, in this table as a negative tax credit in 2014 and 2015.

Taxes and the Poverty Rate

The poverty rate would be higher in the absence of net taxation. For low income New Yorkers, payroll and income taxes are offset by tax credits large enough to

allow the tax system to create an addition to their total resources. Table D.3 illustrates the impact of taxation on the poverty rate. The table compares poverty rates calculated net of the tax effect against poverty rates calculated with total NYCgov income including a tax effect. Some of the income tax benefit is offset by mandatory payroll taxes. The marginal effect of FICA increases the poverty rate on average by 2 percentage points from 2010 to 2015, yet taxes still have an overall positive effect on household resources. Measuring the combined effect of payroll and income taxes, we find a 1.9 percentage point decline in the NYCgov poverty rate in 2015. In the absence of payroll and income taxes, the NYCgov poverty rate of 19.9 percent in 2015 would have been 23.8 percent.

Table D.1
Components of Net Income Tax Effect, 2010–2015
Total Dollar Value ($1,000s)

	2010	2011	2012	2013	2014	2015	Percentage Change 2010–2015	Percentage Change 2014–2015
A. Adjusted Gross Income, $1 - $25,000								
Adjusted Gross Income	16,415,124	16,397,662	16,050,919	15,960,865	15,274,542	15,405,127	-6.2%	0.9%
Taxable Income	4,021,022	3,870,181	4,046,988	4,002,862	3,777,638	3,743,513	-6.9%	-0.9%
Pre-Credit Liability	945,158	936,451	885,342	865,463	820,894	814,385	-13.8%	-0.8%
Federal Credits*	2,001,340	1,718,323	1,761,032	1,694,450	1,700,945	1,717,083	-14.2%	0.9%
State Credits	480,164	497,728	512,457	494,866	497,249	504,256	5.0%	1.4%
City Credits	150,106	152,705	152,902	149,345	178,842	183,512	22.3%	2.6%
Net Income Tax Effect**	1,686,453	1,432,306	1,541,048	1,473,198	1,556,142	1,590,466	-5.7%	2.2%
Payroll Tax (FICA)***	1,038,761	797,345	791,306	1,082,635	1,063,874	1,074,803	3.5%	1.0%
Net Income Tax + Net FICA Effect	**647,692**	**634,961**	**749,742**	**390,564**	**492,268**	**515,663**	**-20.4%**	**4.8%**
B. Adjusted Gross Income, $25,001 - $50,000								
Adjusted Gross Income	36,586,259	34,923,181	34,052,106	34,656,453	35,541,044	35,429,434	-3.2%	-0.3%
Taxable Income	22,207,204	20,826,172	20,082,899	20,094,838	20,421,046	20,244,797	-8.8%	-0.9%
Pre-Credit Liability	4,978,139	4,685,528	4,481,333	4,482,489	4,531,370	4,501,124	-9.6%	-0.7%
Federal Credits*	1,470,725	1,046,896	1,019,805	1,131,548	1,104,386	1,144,582	-22.2%	3.6%
State Credits	275,916	283,167	284,847	306,542	325,891	343,062	24.3%	5.3%
City Credits	97,797	96,834	95,427	101,095	129,181	137,714	40.8%	6.6%
Net Income Tax Effect**	-3,133,702	-3,258,631	-3,081,254	-2,943,304	-2,971,911	-2,875,765	-8.2%	-3.2%
Payroll Tax (FICA)***	2,644,189	1,903,662	1,844,407	2,499,625	2,584,619	2,595,878	-1.8%	0.4%
Net Income Tax + Net FICA Effect	**-5,777,891**	**-5,162,292**	**-4,925,662**	**-5,442,929**	**-5,556,531**	**-5,471,643**	**-5.3%**	**-1.5%**

Source: American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.
*   Net of Affordable Care Act Penalty in 2014.
** Net income tax differs slightly from pre-credit liability net of credits, due to rounding and limits on some nonrefundable credits by tax liability; The sign of net income tax effect indicates effect of taxes on household income. A negative tax is the same as a positive effect on household income.
*** 2 percent FICA tax cut is included in FICA for 2011 and 2012.

Table D.2, Panel A
Selected Tax Credits, 2010–2015
Total Dollar Value (in $1,000s)

A. Adjusted Gross Income, $1 - $25,000						
Federal	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Child and Dependent Care Credit	534	1,052	415	682	646	450
Child Tax Credit (+ACTC)*	314,249	329,816	327,503	306,122	310,898	311,425
Elderly and Dependent Credit	1,090	1,095	912	1,036	890	1,201
Education Credit**	114,680	114,275	117,436	109,852	101,029	108,803
Earned Income Credit, Federal	1,217,028	1,273,363	1,316,004	1,278,543	1,299,870	1,325,599
Making Work Pay Credit	355,648	N/A	N/A	N/A	N/A	N/A
Payroll Tax Cut	N/A	228,050	225,739	N/A	N/A	N/A
Affordable Care Act Penalty	N/A	N/A	N/A	N/A	-15,353	-38,919
New York State						
Household Credit	39,166	39,319	38,698	37,220	35,381	34,290
Child and Dependent Care Credit	588	1,157	456	751	711	496
Child Tax Credit	20,918	21,471	20,208	15,163	16,229	14,120
Tuition Credit	94,332	100,954	104,172	104,507	100,392	106,530
Real Property Tax Credit	3,621	3,260	3,330	2,844	2,741	2,598
Earned Income Credit, NY State	348,247	364,293	376,435	366,907	373,917	381,870
Family Credit	N/A	N/A	N/A	N/A	N/A	N/A
New York City						
Household Credit	9,776	10,020	9,998	8,631	8,546	7,811
School Tax Credit (STAR)	102,041	104,236	101,588	101,959	100,295	99,886
Expanded Real Property Tax Credit	N/A	N/A	N/A	N/A	47,360	52,090
Child and Dependent Care Credit	247	664	257	490	381	267
Earned Income Credit, NYC	60,851	63,668	65,800	63,927	64,994	66,280
Total Tax Relief	**2,683,015**	**2,656,693**	**2,708,950**	**2,398,634**	**2,448,928**	**2,474,796**

Source: American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.
* Includes refundable additional child tax credit.
** Combines American Opportunity Credit and Hope Credit in 2007–2008; American Opportunity Credit and Lifetime Learning Credit in 2009 and following years.
Note: N/A - Not applicable in that tax year. The sum of nonrefundable credits may be limited by total tax liability at the level of individual filers.

Table D.2, Panel B
Selected Tax Credits, 2010–2015
Total Dollar Value (in $1,000s)

B. Adjusted Gross Income $25,001 - $50,000						
Federal	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Child and Dependent Care Credit	8,753	10,961	9,706	8,580	9,649	7,573
Child Tax Credit (+ACTC)*	388,174	392,457	353,272	377,503	366,241	371,003
Elderly and Dependent Credit	N/A	N/A	N/A	N/A	N/A	N/A
Education Credit**	211,255	204,360	205,105	207,786	199,269	192,107
Earned Income Credit, Federal	406,990	439,118	451,723	537,680	541,611	608,850
Making Work Pay Credit	455,552	N/A	N/A	N/A	N/A	N/A
Payroll Tax Cut	N/A	594,958	575,826	N/A	N/A	N/A
Affordable Care Act Penalty	N/A	N/A	N/A	N/A	-12,384	-34,951
New York State						
Household Credit	6,902	6,912	6,758	6,756	6,721	7,088
Child and Dependent Care Credit	9,005	11,285	9,965	8,881	9,928	7,869
Child Tax Credit	78,406	78,159	72,674	72,391	71,110	71,212
Tuition Credit	63,874	59,486	64,093	61,614	64,332	64,070
Real Property Tax Credit	N/A	N/A	N/A	N/A	N/A	N/A
Earned Income Credit, NY State	117,729	127,325	131,356	156,901	158,402	178,241
Family Credit	N/A	N/A	N/A	N/A	15,398	4,580
New York City						
Household Credit	N/A	N/A	N/A	N/A	N/A	N/A
School Tax Credit (STAR)	77,183	7,419	72,623	73,299	75,623	74,926
Expanded Real Property Tax Credit	N/A	N/A	N/A	N/A	26,154	31,555
Child and Dependent Care Credit	264	689	218	912	323	791
Earned Income Credit, NYC	20,350	21,956	22,586	26,884	27,081	30,442
Total Tax Relief	**1,844,437**	**1,955,084**	**1,975,905**	**1,539,186**	**1,559,459**	**1,625,358**

Source: American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.
* Includes refundable additional child tax credit.
** Combines American Opportunity Credit and Hope Credit in 2007–2008; American Opportunity Credit and Lifetime Learning Credit in 2009 and following years.
Note: N/A - Not applicable in that tax year. The sum of nonrefundable credits may be limited by total tax liability at the level of individual filers.

Table D.3
Impact of Net Taxes on Poverty Rates, 2010–2015
(Numbers are Percent of the Population)

A. Poverty Rates	2010	2011	2012	2013	2014	2015
Total NYCgov Income	20.6	20.8	20.7	20.7	20.6	19.9
Net of:						
Income Taxes	24.7	24.2	24.4	24.6	24.5	23.8
FICA (Payroll Taxes)	18.6	19.2	19.0	18.5	18.3	17.7
Income Taxes and FICA	22.6	22.8	22.7	22.5	22.2	21.8
B. Marginal Effects						
Income Taxes	-4.1	-3.5	-3.7	-3.9	-4.0	-3.9
FICA (Payroll Taxes)	2.1	1.6	1.7	2.2	2.3	2.2
Income Taxes and FICA	-2.0	-2.0	-2.0	-1.8	-1.6	-1.9

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