Challenging the Current Estimates of New York City's Population for July, 2005

Introduction

The U.S. Census Bureau prepares estimates of total population for all counties in the United States on an annual basis, using a demographic procedure known as the "administrative records component of population change" method (described below). This method assumes that post-census population change can be closely approximated by administrative data on births and deaths, along with other data that are symptomatic of migration. We take issue with this assumption because administrative data fall far short of what is needed to calculate the components of change in New York City's five boroughs.

This presentation has four sections. We begin by describing the Census Bureau's 2005 population estimates for New York City's five counties (i.e., boroughs), including a presentation of the components of population change. We then turn to a critique of the components, with a special focus on Brooklyn, Queens and Manhattan. Third, we present an alternate method for creating population estimates for the boroughs, and discuss the implications of these results for the Census Bureau estimates. Finally, we provide some notes about the data sources used to create the revised estimates.

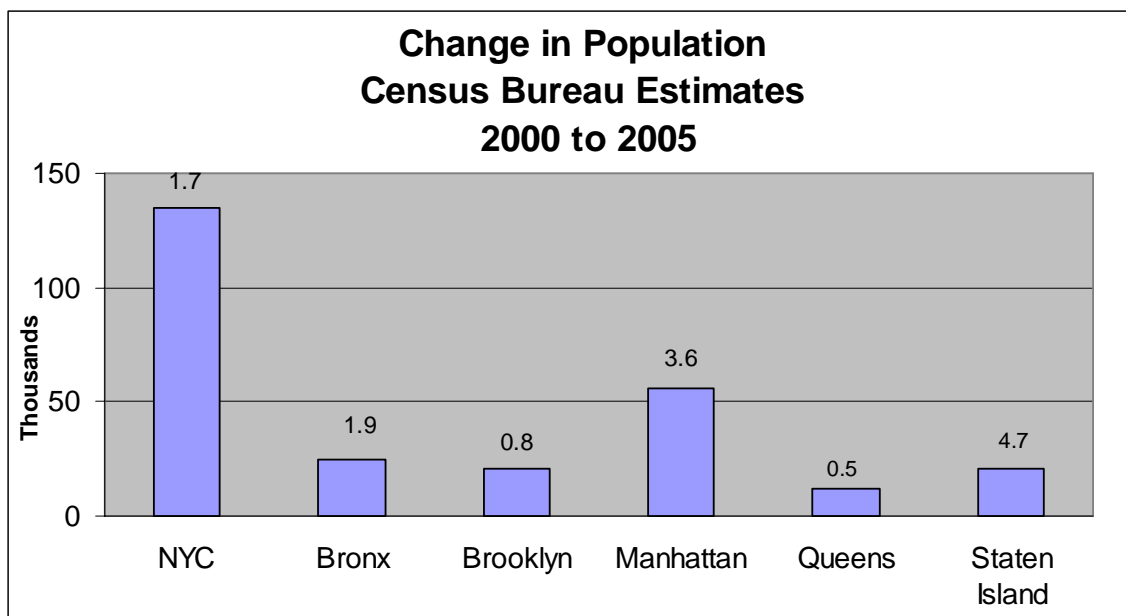**Census Bureau Estimates for July 1, 2005**

Total Population

According to Census Bureau population estimates, New York City's population increased from 8,008,278 in April of 2000 to 8,143,197 persons in July of 2005. This is an increase of 134,900 persons or about 1.7 percent and incorporates revisions to previous estimates for 2001, 2002, 2003, and 2004. The change in the city's population occurred because of increases in Staten Island (4.7 percent), Manhattan (3.6 percent), and the Bronx (1.9 percent). Population change, according to the Bureau, was much lower in both Brooklyn (0.8 percent) and Queens (0.5 percent).

Annual Estimates of the Population for Counties of New York: April 1, 2000 to July 1, 2005				
	Population estimates		**1-Apr-00**	
Geographic Area	**1-Jul-05**	**1-Jul-00**	**Estimates base**	**Census base**
New York State	19,254,630	18,998,889	18,976,821	18,976,457
New York City	8,143,197	8,017,980	8,008,654	8,008,278
Bronx	1,357,589	1,334,801	1,332,650	1,332,650
Brooklyn	2,486,235	2,466,784	2,465,525	2,465,326
Manhattan	1,593,200	1,539,558	1,537,372	1,537,195
Queens	2,241,600	2,231,312	2,229,379	2,229,379
Staten Island	464,573	445,525	443,728	443,728
Note: The April 1, 2000 Population Estimates base reflects changes to the Census 2000 population from the Count Question Resolution program and geographic program revisions.				
Source: Annual Estimates of the Population for Counties of New York, U.S. Census Bureau				

Change in Population
Census Bureau Estimates
2000 to 2005

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Thousands

150 ┤  1.7
    │  ███
    │  ███
100 ┤  ███
    │  ███                      3.6
    │  ███                      ███
 50 ┤  ███   1.9                ███
    │  ███   ███   0.8          ███              4.7
    │  ███   ███   ███          ███    0.5       ███
  0 ┴──███───███───███──────────███────███───────███──
      NYC   Bronx  Brooklyn  Manhattan Queens   Staten
                                                Island
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Components of Population Change

Demographers divide population change into components. *Natural increase* represents
the difference between births and deaths. *Net migration* represents the balance between
persons entering and leaving an area. Together, these components describe how
populations change over time. The Census Bureau constructs population estimates for all
counties in the United States by separately estimating the components of change. Births
and deaths are compiled using data from the national vital statistics system. Net migration
is calculated by estimating the rate of net migration for persons coming in from and
leaving for other counties in the 50 states (*net internal migration*) and the balance of
people who immigrate from and emigrate to other nations and Puerto Rico (*net
international migration*). The net internal migration rate is derived using income tax
returns from the Internal Revenue Service and Medicare enrollment data from the Social
Security Administration (see methods discussion below). The most recent estimates from
the Census Bureau indicate the following:

   a) Positive natural increase – more births than deaths added almost 341,000 persons
      to the population between 2000 and 2005;
   b) An overall net migration loss of 297,500 persons, the result of a negative net
      internal migration loss of 808,600 persons in part offset by a gain of 511,000
      persons through net international migration. More than ever, immigration is
      supporting the city's population, substantially offsetting domestic migration
      losses. Further, the gains through immigration are not keeping pace with
      domestic losses, yielding larger net migration losses than reported for the period
      ending July 1, 2004, when such losses were in the range of 211,500, compared to
      297,500 for the period ending July of 2005;
   c) Net migration losses varied by borough. When expressed as a percent of the 2005
      population, Manhattan showed a loss of about 1.4 percent and the Bronx had a
      loss in the range of 3.7 percent. Queens and Brooklyn showed the largest relative

losses, 4.6 and 5.3 percent, respectively. The Staten Island net migration picture is positive and in the range of two percent.

Table 4: Cumulative Estimates of the Components of Population Change for Counties of New York: April 1, 2000 to July 1, 2005					
		Natural Increase	Net Migration		
Geographic Area	Total Population Change*	(Births-Deaths)	Total	Net International Migration	Net Internal Migration
New York City	**134,543**	**340,643**	**-297,534**	**511,018**	**-808,552**
Bronx County	24,939	77,625	-50,329	68,981	-119,310
Kings County	20,710	119,231	-131,886	159,862	-291,748
New York County	55,828	51,776	-22,206	90,461	-112,667
Queens County	12,221	79,877	-102,397	181,176	-283,573
Richmond County	20,845	12,134	9,284	10,538	-1,254

Note: The estimated components of population change will not equal the numerical population change because of a small residual after controlling to the national totals.

Source: Population Division, U.S. Census Bureau

Census Bureau Methodology and Limitations

The Census Bureau subtracts the number of resident deaths from the number of resident births annually for each county in the U.S., to derive growth due to *natural increase*. Births are tabulated by residence of the mother, regardless of where the birth occurred. Similarly, deaths are tabulated by the most recent residence of the decedent, not where the death occurred. Birth and death certificates are used as the data source.

Net internal migration represents the net exchange between a county and other counties in the 50 states. Rates are calculated by comparing the addresses of income tax filers from year to year to determine residence at two points in time. For the July 1, 2005 estimates, the addresses of tax filers are compared for 2004 and 2005. They are subdivided into persons who were deemed in-migrants to a county (address in county in 2005 but outside the county in 2004), those who moved out of a county (address in county in 2004, but outside the county in 2005), and those who filed tax returns at the same address at both points in time (non-migrants). The number of taxpayers moving out of an area is then subtracted from those who move in to determine a **rate** of net internal migration. The calculations are limited to tax filers and their exemptions under the age of 65. For persons 65 years and over, addresses from Medicare enrollment data are used.

Net International Migration is the result of net flows to and from foreign countries and Puerto Rico. Data from the 2000 Census are used to allocate each county's share of the national non-citizen, foreign-born population that arrived in the U.S. between 1995 and 2000 for persons under age 65. Net movement from Puerto Rico is also allocated based on the county distribution of Puerto Ricans who entered the 50 states between 1995 and 2000. In addition, the Census Bureau creates a national estimate of emigration among the native-born. Each county receives a share of total emigration, based on its share of the national native-born population from the 2000 Census.

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While the data on births and deaths are generally considered to be reliable, the data on migration can be very problematic because the method assumes that tax filers represent the migration experience of the total population. The Census Bureau uses Medicare enrollment data for persons 65 years to create migration rates because many retired persons do not file tax returns. Yet, there are other groups that have a low propensity to file returns where no procedure is available to compensate for the shortfall: persons who are marginal to the formal economy, those who fear government, groups with serious language problems, and those who are otherwise alienated from the mainstream. For example, the Department of Homeland Security's Office of Immigration Statistics has estimated that New York State had 489,000 unauthorized residents (i.e. undocumented aliens) as of January 2000. Most of these immigrants probably lived in New York City, with few having a reason or sufficient incentive to file income tax returns. In addition, some persons enter the city as students, especially in Manhattan, having never filed an income tax return. After living and working in New York City, many do then file returns and migrate to other parts of the nation. These individuals are detected as they exit the city, but were not factored into the rate when they first arrived.

Since the Census Bureau is using a relatively new method to calculate net international migration, it will be some time before the efficacy of this method can be demonstrated. Suffice it to say that use of the 2000 Census to determine international migration for the post-2000 period is based on an assumption that the immigration picture has remained relatively unchanged. In addition, emigration remains enigmatic, given the absence of reliable data sources on persons who leave the U.S. We do know from past experience that immigration is malleable, with shifts in the country composition of immigration and in the patterns of settlement among immigrants commonplace. As it currently stands, the Bureau's methods are unable to incorporate any of the more dynamic aspects of international migration flows. While all of New York City's boroughs are affected by deficiencies in the calculation of migration, Brooklyn, Queens and large portions of Manhattan are especially at risk to problems with these methods, since these three boroughs receive about 85 percent of all the immigrants to New York City.

Alternative Method for Estimating Population

The component method is not the only method available for creating population estimates. An alternative method that is used frequently in jurisdictions where population growth is heavily driven by new housing construction is called the ***housing unit method.*** The housing unit method calculates the population in households as the product of housing units, occupancy rates and average household size. When persons in group quarters (i.e., prisons, nursing homes, dormitories and other facilities) are added to persons in households, an estimate can be created for the total population.

This method uses local administrative data on new housing to gauge change in housing units. In the absence of updated occupancy rates and persons per household, the Census Bureau recommends that counties preparing alternative estimates for the challenge process hold constant occupancy rates and persons per household from the previous census. Local administrative data on the number of persons in facilities is used to supplement the previous census's count of group quarters population. In fact, the Census

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Bureau currently uses a variant of the housing unit method in the population estimates program to allocate county population to subcounty geographic levels (e.g. places, towns) for the nation.

The method relies heavily on the number of housing units created through new construction from certificates of occupancy. In addition, a special effort was made this year to include selected classes of units created through the conversion of existing units in Manhattan and Brooklyn. The idea of using the housing unit method in the 1980s and 1990s would have been considered unreasonable for New York City because most growth was not a function of new housing. Instead, growth was linked to the creation of new housing units through the subdivision of existing units, which is very difficult to accurately document. Since the late-1990s, however, New York City's growth has become more closely tied with new construction, making it a much better candidate for the housing unit method. High levels of new construction have been the hallmark of this latest era.

Number of New Privately-Owned Residential Building Permits Issued New York City, 1994–2005
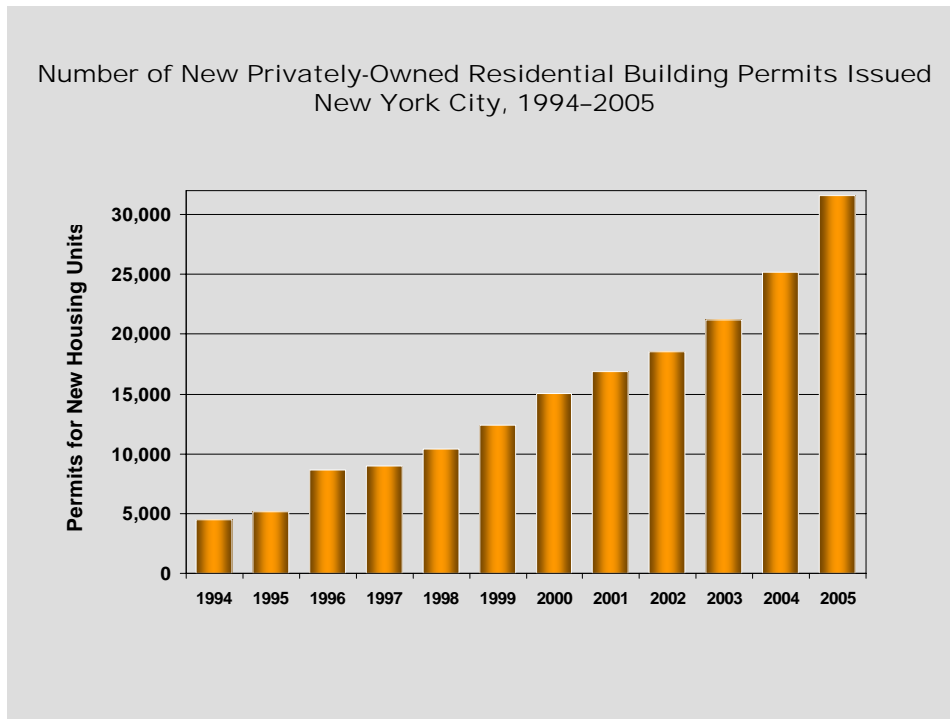
The data on new construction are at odds with that from the Census Bureau's population estimates program. Despite the sharp increase in annual permits for new residential construction, from 2,900 in 2000 to more than 9,000 in 2005, the Bureau shows a negligible increase in population of just 0.8 percent in Brooklyn. Similarly, in Queens, permits increased from 2,700 to 7,300 between 2000 and 2005, yet the Bureau estimates a paltry 0.5 percent increase in that borough. While the number of permits has not increased as dramatically in Manhattan, the volume of new construction has been and continues to be substantial. Moreover, the data for Manhattan more closely reflect the true housing situation because virtually all new units are created with permits; in Brooklyn and Queens, many new units are created without permits and are impossible to quantify. Further, in Manhattan, a considerable number of new units are created by way

of commercial to residential conversion, virtually all of it with firm documentation. In the Bronx, permits for new residential construction rose from 1,600 to more than 4,900. And, while local zoning initiatives have attempted to curb overdevelopment on Staten Island, permits for new residential construction have only recently begun to decline, from about 2,700 in 2000 to almost 1,900 in 2005. In all boroughs, new construction is distributed over a wide range of neighborhoods, some without large numbers of immigrants. The housing boom in areas with large native-born populations is inconsistent with the Census Bureau's estimate of huge domestic net migration losses.

The Department of City Planning recalculated the estimated population, based on certificates of occupancy, demolitions, and change in group quarters population, creating what we believe are more accurate estimates of population in all five boroughs. These results are shown in the table below.

According to the certificate of occupancy-driven DCP population estimates, the population of New York City in July of 2005 was 8,213,839, an increase of 205,600 or 2.6 percent since April of 2000. This figure is about 70,600 persons higher than the Census Bureau's July 2005 estimate.

Over the past few years, Brooklyn has lagged in our challenge efforts because housing permits for new residential construction were taking more time than expected to show-up in the form of certificates of occupancy. Similarly, we now have a firm idea of the number of units that have been created through the conversion of commercial/industrial buildings to residential use, and that number has grown. Using the DCP housing unit estimates, the population of Brooklyn increased by 46,100 between April of 2000 and July of 2005, a move up of 1.9 percent.

Similarly, Queens has lagged in our past challenge efforts and still probably suffers from a number of housing units that are created without the "paper trail" necessary for their inclusion in the estimate. Still, however, certificates of occupancy are up in Queens, creating an increase of 27,200 persons or 1.2 percent since 2000. This is still higher than the Census Bureau's estimate for July of 2005, using the component method.

The increment added via the housing unit method was very large for Manhattan in last year's challenge. This was testimony to the large number of new units added through the formal permit process, including a hefty number of units added through conversion, and some acute limitations of the component method regarding young migrants. The addition of new units did increase Manhattan's population beyond the estimate from the component method. Since April of 2000, Manhattan has added some 69,100 persons, an increase of 4.5 percent, based on the DCP estimate, which represents a significant increment above the estimate derived from the component method.

The Bronx and Staten Island are being challenged for the first time in 2006. The Bronx registered an increase of 31,900 or 2.4 percent since April of 2000, based on the DCP estimate. While important, the change represents a modest increase over that from the Bureau's component-based estimate.

Staten Island's population based on the DCP method may not seem large but, in relative terms, it is. The housing unit method yielded a population increase of 31,300, or 7.1 percent since April of 2000, well above the estimate from the Census Bureau. Although this level of growth has been substantial, recent declines in housing permits are likely indicative of slower growth in the future.

Change in Population
Census Bureau and DCP Estimates
April 2000 to July 2005

	2000 Census	2005 Census Bureau Estimates	Change: Census 2000 and Census 2005		2005 DCP Estimates	Change: Census 2000 and DCP 2005	
			Number	Percent		Number	Percent
New York City	8,008,278	8,143,197	134,919	1.7	8,213,839	205,561	2.6
Bronx	1,332,650	1,357,589	24,939	1.9	1,364,566	31,916	2.4
Brooklyn	2,465,326	2,486,235	20,909	0.8	2,511,408	46,082	1.9
Manhattan	1,537,195	1,593,200	56,005	3.6	1,606,275	69,080	4.5
Queens	2,229,379	2,241,600	12,221	0.5	2,256,576	27,197	1.2
Staten Island	443,728	464,573	20,845	4.7	475,014	31,286	7.1

Source: 2000 Census; Census Bureau Current Estimates Program; DCP Estimates of Population

Census Bureau Estimates and DCP Challenge Estimates
Change in Population, 2000 to 2005