An Evaluation of the Quality and Utility of ACS Five Year Estimates for Bronx Census Tracts and Neighborhoods

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Introduction

The American Community Survey (ACS) conducted its first full-scale national data collection in 2005, following nearly a decade of pilot-testing in selected counties across the nation, and after successfully fielding large national samples to demonstrate the operational feasibility of the program. ACS estimates will replace those from the decennial census long-form, thus becoming the nation's primary source of socioeconomic data for all geographic areas.[1] The ACS plan calls for data collection from approximately 250,000 housing units every month, or from 3 million units annually, with samples averaged to derive annual estimates for all geographic areas of the nation of at least 65,000 persons. For smaller areas, ACS estimates are created from 3 year samples (for places of 20,000 to 65,000) and from five year samples (for areas of under 20,000).

The ACS represents a significant departure from the decennial census, especially with respect to the form and scale of data collection. The census employs a "usual residence" concept, while the ACS is based on residence of at least two months at the time of interview. The 2000 Census enumerated over 105 million households, including nearly 18 million that received the long-form, over a period lasting about six months (using an April 1 reference point). Follow-up was done on all non-responding households using a large group of temporary workers. In comparison, the ACS employs a pool of experienced interviewers to follow-up a one-in-three subsample of units not responding by mail or telephone.[2] Estimates are derived from pooling successive monthly samples, as opposed to data collected using a single point-in-time reference, as in the decennial census.

While the ACS provides more timely data at regular intervals, the ACS sample is smaller than that of the decennial long form. As a result, ACS estimates are subject to higher levels of sampling variability than their 2000 Census long form counterparts (Citro and Kalton, 2007). The key question for data users is whether the utility of these estimates for small areas is maintained, despite larger standard errors. Thus far, research with three-year estimates in selected parts of the nation has indicated that the ACS has the potential to serve as a replacement for the census long form at the county level (Salvo et al., 2004; Hough and Swanson, 2004; Van Auken et al., 2004; Gage, 2004; Diffendal et al., 2004). With the advent of the five year estimates, it is now possible to examine the utility of tract level estimates. Such an evaluation also needs to take into account the goals and requirements of individual data applications, since the level of precision required varies across applications. This paper conducts such an evaluation.

Overview of the Bronx Test Site and the Methodology Used in this Study

The Bronx is one of five counties (or boroughs) comprising the City of New York and has been an ACS test site since 1999. With a population of nearly 1.4 million, it would qualify on its own as one of the nation's largest cities. The Bronx is an ideal test site

because its residents span the demographic, social, and economic spectra: it has large numbers of younger and older people, new immigrants and long-time native-born residents, and a blend of affluent households and those that are among the poorest in the city. What distinguishes the Bronx from other boroughs is the large share of Hispanics, now over one-half of the borough. The declining European-origin population constitutes less than 15 percent, and African Americans comprise most of the remainder. Although there has been a continued influx of immigrants to the Bronx, the share of the foreign-born in 2005 (32 percent) was still well below the city average of 37 percent. Another distinguishing feature of the Bronx is that it is a young borough, much of it tied to the youthfulness and fertility of the Hispanic population. In 2000, 22 percent of the borough's population was under 18 years of age, compared to the city average of 18 percent. With respect to housing, the Bronx has an abundance of public housing, creating pockets of a largely native-born population that are "aging in place." Another effect of public housing is that it concentrates poverty, especially in the southern and central parts of the borough. At the same time, the large number of working and middle-class homeowners and renters in other neighborhoods produces huge differences in socioeconomic levels across the borough.

ACS data for the Bronx have been evaluated at the borough (Salvo et al., 2003) and neighborhood levels (Salvo et al., 2004; Salvo and Lobo, 2006), comparing the quality of ACS data with that of the census long form. Analysis of data at the borough level involved a comparison of specially prepared data from the 2000 ACS and from the 2000 Census, while the neighborhood level analysis used specially prepared three-year census tract estimates (1999-2001), which were then aggregated to the neighborhood level and compared to decennial data (Salvo et al., 2004). These evaluations show that despite higher levels of sampling variability, the ACS benefits from lower levels of non-sampling error, especially error related to missing data (Salvo and Lobo, 2006; Bench, 2004; Salvo et al., 2003). The higher level of ACS data quality has been associated with the use of a cadre of professional interviewers who are regular employees of the Census Bureau, as opposed to the temporary workforce employed by the decennial census.

The ACS plan calls for census tract estimates to be created from five years of aggregated data, and for the first time, these data have been released by the Census Bureau for the test counties. Data released by the Bureau allow us to evaluate the reliability and validity of estimates at the census tract level, which are aggregates of samples from the 2001-2005 ACS. We also examine whether these data are good enough to take on real-life data applications at the census tract level.

We begin this analysis by first assessing the precision of the five year ACS census tract estimates for the 2001 to 2005 period, for over 40 key variables. We also examine the precision of these variables in the 2000 decennial tract data – these were specially prepared data that excluded the group quarters population, and were thus comparable to the ACS. We analyze how the level of sampling variability in the ACS compares with the 2000 Census. This includes an analysis of tracts with the lowest estimates, to see just how robust smaller estimates are in the ACS. A key part of Section 1 aggregates census tracts

into neighborhoods, in an effort to gauge the increases in precision that occur as a result of using geographic areas with larger populations.

While reliable data are critical to local applications, it is also important that users have confidence that the five year ACS tract estimates are valid, i.e. they actually measure what is purported to be measured. Previous analyses on selected attributes have answered this question in the affirmative for the Bronx as a whole using three-year estimates (Salvo et al., 2004). Now, however, Section 2 focuses on how the five year estimates of 2 variables at the person level, and 3 variables tabulated at the household level, hold up against administrative measures at a sub-county level.

We start with the individual level data, first analyzing how the ACS estimate of the number of women who had given birth in the prior 12 months compares with vital statistics data on women giving birth during approximately the same period.[3] Next, the ACS estimate of children ages 0 to 4 is evaluated against the same age group derived from births in the preceding five years. The focus then moves to household level variables, with estimates of households receiving public assistance income and households receiving food stamps compared to administrative data from the city's social service system.[4] Finally, we examine how ACS estimates of units in structures built between 1990 and 2005 measure up against city records on newly constructed units.[5] These comparisons will indicate whether the ACS accurately measures what it purports to measure.

Exercises in data reliability and validity notwithstanding, a major goal of this research is to assess the utility of ACS data for real-life applications. Section 3 of this paper applies the ACS five year averages to two local government issues involving the identification of populations for service delivery. Since data at the local level are often used to target neighborhoods for programs ranging from child care to fire prevention, this section directly addresses the utility of ACS data at the sub-county level for targeting/programmatic purposes. Data on two measures are examined for their utility in targeting at the sub-county level: the number of children ages 0 to 4 and persons with limited English language proficiency. We use administrative data and the decennial census to examine how these data compare to ACS data for targeting purposes. We expect that the ACS will do as well as the administrative data in identifying neighborhoods that may be of interest to policymakers and program planners.

In the final section, we move away from assessing ACS estimates for one period to an examination of *changes* in the ACS estimates over time. Five year estimates at the neighborhood level are compared to see whether they are able to discern changes over time in four attributes: percentage of households receiving public assistance; percentage of households receiving food stamps; percentage of the population 0 to 4 years of age; and the percentage of persons who speak a language other than English at home. Two types of comparisons are done: estimates with four years of overlap and estimates with three years of overlap. Despite the large size of the neighborhood areas and real change in some of these attributes, we expect that the high degree of overlap will make the identification of change a challenge.

Section 1. Reliability of the 2001-2005 ACS Estimates at the Census Tract Level

The Bronx has 355 census tracts, of which 330 had a sample that was adequate for the purposes of deriving estimates from the 2001-2005 ACS and the 2000 Census.[6] The median household population in Bronx tracts was 3,400 persons, with a relatively high median coefficient of variation (CV) of 8.2 percent (Table 1).[7] At the outset, it is important to recognize that the ACS Bronx sample for this period was exceedingly small, compared to the census long form. There were two reasons for this. First, the mail response rate was low, ranging from 30 to 40 percent in the 2001-2005 period. The effect of the low response rate was compounded by a follow-up of only one-in-three respondents in Computer Assisted Personal Interviewing (CAPI), resulting in a reduced final ACS Bronx sample. In 2001, 2.8 percent of Bronx households were in the initial sample, but the final response was just 1.5 percent of households (Figure 1). In 2002, the initial sample was reduced to 2.2 percent of households, and the final response was 1.1 percent of all households. Starting in 2005, the Census Bureau based the CAPI subsampling ratio on the level of mail response at the census tract level. Given the low levels of mail response in the Bronx, the increased subsampling ratio in follow-up translated into a final response of 1.2 percent of households. Overall, for the 2001-2005 period, the Bronx had an initial sample of about 11 percent of all housing units. The low mail response and follow-up of only a CAPI subsample produced a final sample of just 6 percent, some 29,900 interviews out of a total of 496,500 housing units. This is well below the 11.3 percent of households that were in the sample for the long form in the 2000 Census (U.S. Census Bureau, 2003).

For this analysis, the level estimates of over 40 variables were chosen to represent a cross-section of the ACS questionnaire. They were divided into three series: demographic/social, economic, and housing. Median CVs were calculated across the 330 census tracts and are presented for each of the three series in Table 2. Given the smaller sample in the ACS, vis-à-vis the census, the almost uniformly higher CVs for the ACS are to be expected. Indeed the ratio of the ACS median CV to the census median CV for the variables ranged from 1.1 to 2.2. An often overlooked fact, however, is that CVs are substantial in *both* surveys, with most in double-digits. The median CV for the demographic/social characteristics was 12 percent in the decennial census, compared to 21 percent in the ACS; for the economic variables, the CVs were 17 percent and 27 percent, respectively. Turning to housing attributes, the median CV stood at 18 percent in the census and at 27 percent in the ACS.[8]

The problem of high CVs is exacerbated when the frequency of the attribute measured is low. To illustrate the point, zero estimates were excluded and all 330 census tracts were ranked from lowest to highest on each attribute. For each attribute, the median estimate and median CV were then calculated for the 30 tracts with the lowest frequencies (Table 3). For example, the 30 census tracts in the ACS with the lowest number of foreign-born persons yielded a median estimate of 146 persons with a CV of 46 percent. The corresponding numbers for the long form were 140 persons and 24 percent. Overall, demographic and social characteristics had a median CV of 34 percent in the census, compared to 56 percent in the ACS. For economic variables, the median CV was 50

percent in the census and 65 percent in the ACS; for housing characteristics, the CVs were 70 percent and 95 percent, respectively. [9] It is interesting to note that tracts with the lowest estimates in both the ACS and census included many tracts with large populations. Despite the generally smaller CVs in the long form, the fact remains that small occurrences are impossible to estimate with great precision, irrespective of the survey.

What should a data user do given the small sample size at the tract level, or samples of comparable size for other geographic areas? One avenue is to aggregate census tracts to form larger geographic units, such as neighborhoods. In this paper, we aggregate Bronx tracts into 36 neighborhoods[10] (Figure 2 and Appendix Table 1), with a range of household population from just under 18,000 persons to a high of more than 59,000. The median neighborhood population was 34,300, with a median CV of 2.7 percent, compared to 8.2 percent at the tract level (Table 1).

Table 4 focuses on the improvements in sampling variability in the ACS that can be achieved through geographic aggregation of 330 census tracts into 36 neighborhoods. For each series of attributes, the improvement in reliability is marked, with the median CV for neighborhoods only one-third the median CV for census tracts. The median CV for the demographic/social attributes declines from 22 percent to 8 percent; for economic variables, from 27 percent to 8 percent; and for the housing attributes, from 33 percent to 11 percent.[11] More important, the median CVs fall below 10 percent for many variables, when we move to the neighborhood level. Still, even at the neighborhood level, there are some variables that remain problematic, although the CVs were substantially reduced.

[While Tables 2, 3, and 4 examine CVs of variables expressed as level estimates, Appendix Tables 2, 3, and 4 replicate these analyses using variables expressed as percentages. Irrespective of how the variables are coded, the conclusions remain the same.]

Section 2. Validity of the 2001-2005 ACS Estimates at the Neighborhood Level

This section examines the validity of five ACS estimates: the number of women who had given birth in the preceding 12 months, the number of children 0 to 4 years of age, households receiving public assistance, households receiving food stamps, and housing units in structures built 1990 or later. Since the previous section clearly showed that 2001-2005 ACS data were not reliable at the census tract level, the analysis in this section will focus on the validity of these estimates at the neighborhood level only. For each of these variables, ACS estimates are compared to estimates derived from administrative data.

In this analysis, we regard the administrative data as representing the true measure of the variable. This does not mean that we expect the ACS estimates to match the administrative data, but we do expect these estimates to be a valid representation of administrative data across the 36 neighborhoods in the study. Each data source has its own raison d'etre and unique methodology, factors that must be taken into account when comparing data from these two sources. Responses to questions on surveys are heavily

influenced by factors such as question wording and the mode of data collection. Similarly, data extracted from administrative files are shaped by the accuracy and completeness of these records. In this section, we compare similar concepts involving data collected from the ACS and compiled from administrative data, one a product of statistical estimation, and the other a byproduct of administrative record-keeping.

An examination of correlation coefficients, an admittedly broad measure, shows that the ACS estimates are highly correlated with the administrative data across neighborhoods in the Bronx, ranging from .98 for households receiving food stamps, to .87 for units in structures built 1990 or later (Table 5). But to make a determination of validity we compute three other measures. For each of these variables, a median is computed from the absolute neighborhood difference between the ACS and administrative data across 36 neighborhoods. For each neighborhood, the absolute difference is then percentaged on the administrative data, and the median absolute percent difference between the ACS and administrative data is calculated. Finally, the percent of neighborhoods that had significant differences between the ACS and administrative data is computed. We use the following, albeit arbitrary, yardstick to determine validity: the ACS estimate is deemed valid if the median percent difference between the administrative data and the ACS estimates is under 20 percent *and* no more than one-third of the neighborhoods show a significant difference between the two data sources. To better evaluate the validity of ACS estimates, the validity of the 2000 Census equivalents is also examined (though data are not presented in tables or charts), thus providing measures of validity for the same variables in both surveys. [12]

Women Giving Birth in the Prior 12 months

Vital statistics data on births can be used as a basis for a comparison with ACS estimates of women who had a child in the 12 months prior to the interview. The prior 12-month interval is different depending on when the interview is conducted — for a woman interviewed on January 1, 2001, the prior 12 month period would be from January 2000 to December 2000; for a woman interviewed on December 31, 2001, the prior 12 months would be from January 2001 to December 2001. Therefore, for all interviews in 2001, the prior 12 month period would have been between January 2000 and December 2001. We simulated this sequence with vital statistics by taking average annual births for each two-year period to represent each single year of ACS data. Thus, the vital statistics data equivalent of the 2001 ACS data would be average annual births for the years 2000 and 2001. Annual averages were created from vital statistics, separately for each of the five year time points, and an average for the whole interval was derived. For the Bronx overall, the ACS estimate of the number of women who had children in the last 12 months was 23,500, 6 percent higher than the vital statistics figure of 22,200.

Figure 3 compares the number of women who had a child in the previous 12 months in the ACS (blue diamonds) to the numbers from vital statistics (red squares). The green bars represent the 90 percent confidence interval around the ACS estimates. Neighborhoods are sorted in descending order on the ACS estimate of women who had a child in the prior 12 months. The median absolute difference between the ACS and

administrative data over all neighborhoods was 116 persons — this represents a median percent difference of 18 percent over the administrative neighborhood data. Across the borough, just 6 percent of neighborhoods displayed statistically significant differences between the ACS and vital statistics data, partly a result of wide confidence intervals around the ACS estimates. With both figures meeting the validity yardstick we have established, we conclude that the ACS variable *women giving birth in the prior 12 months* measures what it purports to measure.

The 2000 Census does not provide information on *women giving birth* in the prior 12 months, but it does tabulate the population under the age of 1, which reflects the number of *children* born in the previous year.[13] While these measures are not identical, they are close enough for comparisons of validity. The 2000 decennial count of the Bronx population ages 0 to 1 was 21,400, compared to 22,400 using administrative data (data not shown). There is no sampling error associated with the decennial population count, either at the borough or neighborhood levels, since these data come from the census full count. The median absolute difference between the census and administrative data across all neighborhoods was 28, with the median percent difference at 6 percent vis-à-vis the administrative data (data not shown). On this measure, the 2000 decennial estimates are closer to the administrative data.

Children 0 to 4 Years of Age

The number of persons in the ACS survey by age is controlled to estimates by age/sex and race at the county level. Therefore, any comparisons with administrative data at the county level are as much a test of the validity of the population estimates as of the ACS survey itself. At the census tract level, however, estimates vary as a function of the survey sample and can be compared to independent benchmarks from administrative data. Data on births from 1996 through 2005 were used to "create" a cohort of children 0 to 4 years of age at each of the time points covered by the ACS estimate. For example, for persons 0 to 4 in 2001, births for persons born during calendar years 1996 to 2001 were compiled, again recognizing that each age group is derived by averaging annual births for two calendar years. An estimate from vital statistics was created for each of the five years in the ACS period, and an average for the interval was calculated.

The 0 to 4 age group is marginally affected by mortality, but it is especially influenced by migration. While we were tempted to use estimates of migration from our borough projections, we decided against it because migration rates vary by neighborhood, and we are unable to create migration rates for neighborhoods. Thus, comparisons are done using the birth data only, with a caveat that 0 to 4 year olds are likely to be overstated in the administrative data, since net migration for this age group is negative in the Bronx.

For the borough as a whole, the number of children 0 to 4 in the ACS was essentially the same as the number derived from vital statistics, 112,800 versus 113,000. Figure 4 presents the ACS estimates of children 0 to 4 years of age by neighborhood, in descending order of the size of the cohort, with the confidence intervals shown with green bars. In 22 percent of neighborhoods, the ACS estimate of this cohort significantly

differed from that derived from administrative data, a result of tighter confidence intervals around the estimates. The median absolute difference was 285 persons, with the median absolute percent difference at 10 percent over the administrative figure. (In comparison, the median absolute difference between the 2000 Census and administrative data across all neighborhoods was 169, and the median absolute difference was 6 percent vis-à-vis the administrative figure – data not shown.) Both measures meet the validity yardstick we have established.

Households Receiving Public Assistance Income

The ACS tabulates data on households with any person 15 years and over receiving public assistance income. ACS estimates on public assistance are lower than those reported by New York's Human Resources Administration, which administers the program in the city. For the Bronx overall, the ACS estimates that an average of 48,300 households received public assistance income between 2001 and 2005, 8 percent lower than the administrative figure of 52,200.

The median absolute difference over all neighborhoods was 117 households; the median absolute percent difference was 11 percent of the administrative figure (Figure 5). In 22 percent of all neighborhoods, differences between the ACS estimates and administrative data were statistically significant, with each of these neighborhoods showing ACS estimates to be lower than administrative counts. These figures approximately meet the validity threshold we have established, and we conclude that ACS data track well with administrative data. (Due to changes implemented from 2000 on, similar administrative data were not available for 1999, precluding a comparison with the decennial census.)

Households Receiving Food Stamps

The housing section of the ACS asks the reference person whether anyone in the household receives food stamps. While ACS estimates of public assistance were low, the ACS estimate of Bronx households receiving food stamps (93,700) was a dramatic 23 percent lower than that reported by administrative data (121,000). There were 10 neighborhoods where the difference was at least 1,000 households, accounting for about 54 percent of the borough-wide difference of 27,400 households. The median absolute difference at the neighborhood level was 630 households, and the median absolute percent difference over the administrative data was 22 percent, just outside our threshold (Figure 6). Overall, 81 percent of neighborhoods showed significant differences between the ACS and administrative data, well outside our validity yardstick established, and these were more likely to be neighborhoods with high food stamp recipiency.

Taeuber et al. (2004) compared food stamp recipiency in the Census 2000 Supplementary Survey (C2SS), the forerunner of the ACS, with administrative data for the State of Maryland and also found that the C2SS underestimated the number of food stamp households. A little more than 53 percent of households that received Food Stamps reported receiving them in the C2SS, compared with about 77 percent in our Bronx comparison. By matching records of survey respondents to their administrative records,

the researchers showed that more than two-thirds of the shortfall was related to underreporting in the survey, mostly among households where food stamp recipiency occurred during only a small portion of the reference period. The fact that Bronx households are among the poorest in New York City, where recipiency is likely to be continuous throughout the year, may promote a higher level of recall in the survey.

Y*ear Structure Built*

We compare ACS estimates of units in structures built 1990 or later with estimates derived using certificates of occupancy from the New York City Buildings Department. At the borough level, the ACS figure for units in structures built 1990 or later was 26,800, compared to 29,900 from administrative data. Figure 7 shows the number of units in structures built 1990 or later by neighborhood. The median absolute difference at the neighborhood level was 120 units; the median absolute percent difference between the two sources was 38 percent, nearly twice the maximum acceptable threshold established. But just one-third of neighborhoods showed significant differences between the ACS and administrative data, a function of the very large confidence intervals around the ACS estimates.

Other studies have also shown that data on units by year structure built are problematic, with older buildings being the most difficult to tabulate (Becker, 2000). In our earlier work, even at the borough level, the number of units in structures built prior to 1940 was far higher in the administrative data than in both the ACS and the 2000 Census (Salvo et al., 2004). At least part of this finding was attributed to high rates of allocation for this variable, ranging from 25 to 30 percent. This study shows that estimates for units in structures built 1990 or later do not track well with administrative data at the neighborhood level.

It is important to emphasize that concerns about validity with respect to year structure built also plague decennial census data, evident in the even larger differences between the census and administrative data. The median absolute neighborhood difference between the census and administrative data was 155 units, while the median absolute percent difference between the two sources was 43 percent. In 86 percent of the neighborhoods, the census estimates significantly differed from those derived from administrative data, which is related to the much smaller confidence intervals in the 2000 Census.

In summary, for all five variables examined in this study, ACS estimates are highly correlated with administrative data. Three out of five variables (women giving birth in the prior 12 months, children 0-4 years of age, households receiving public assistance) meet the more rigorous yardsticks used to determine validity. For the fourth variable, the number of households on food stamps, the ACS significantly understates such households, especially in some of the poorest neighborhoods. Finally, for year structure built, the response problems that have plagued the census also plague the ACS.

Section 3. Utility of the 2001-2005 ACS Estimates at the Neighborhood Level: Two Case Studies

The previous two sections have shown that in the Bronx, ACS sampling variability at the census tract level is very high and that CVs improve substantially when aggregated to the neighborhood level, typically decreasing by two-thirds. It has also been shown that these neighborhood estimates appear to be valid, in that they generally track well with administrative data. This section now turns to real-life examples of how data are used at the local level, and highlights the potential promise and pitfalls of using 2001-2005 ACS data at the sub-county level. We are cognizant that no single study can ever capture the breadth of applications for which these data can be applied. In this paper, we focus narrowly on the potential use of ACS data for targeting purposes, and present two case studies that require identifying target areas for program implementation.

We begin with the identification of neighborhoods with large numbers of children ages 0 to 4, which is necessary for the placement of pre-K programs, often funded by local governments. Since this variable is available from the 2000 Census, the 2001-2005 ACS, and administrative data, it allows us to compare neighborhoods with the largest number of children ages 0 to 4, identified by each data source. The second case study focuses on persons of limited English proficiency (hereafter referred to as LEP). In this instance the identification of neighborhoods with an abundance of LEP persons is used to target areas for basic fire safety education programs. Unlike children ages 0 to 4, there are no administrative data on the LEP population; we must rely on surveys. In this instance, the identification of neighborhoods from the 2000 Census is compared with those identified using the ACS.

Targeting Neighborhoods with Large Numbers of Children Ages 0 to 4

Figure 8 identifies the top 10 neighborhoods with the highest 0-4 population using the 2000 Census, 2001-2005 ACS, and 2001-2005 administrative data.[14] Though ACS data are more recent, compared to those from the decennial census, one would not expect the neighborhoods with the most children ages 0 to 4 to change dramatically during this period. Indeed, the list of top 10 neighborhoods generated using the 2000 full count data for persons 0-4 had 9 neighborhoods in common with the list generated using the ACS for 2001-2005 (the rankings differed slightly). Moreover, 9 out of 10 neighborhoods targeted by the 2001-2005 ACS data were also on the list based on administrative data. The neighborhoods that were not in common were Soundview-Castle Hill-Clason Point, which appeared only on the ACS list, and Norwood, which appeared only on the administrative data list. However, Norwood was ranked 11th in the ACS, and its estimate of the number of children ages 0 to 4 was not significantly different from the administrative estimate.

Thus, while the ACS points us to most of the same neighborhoods as the administrative data, it is important to acknowledge that these data, like most survey data, have errors associated with their estimates that program planners need to take into account. For example, it may be unrealistic for programs to put too much emphasis on the "top

neighborhood," or the specific ranking of any neighborhood for that matter, because these differences in the ACS may not be statistically significant. If, for instance, the three neighborhoods with the largest concentrations of children ages 0 to 4 are to be selected, it may be more appropriate to select any 3 out of the 5 highest ranked neighborhoods. This would be especially appropriate if the additional neighborhoods considered have other features that merit selection, including geographic contiguity, which may make program implementation more cost effective. Another strategy would be to establish the program's goal as a share of those in need. For example, the top 10 neighborhoods in the ACS captured 43 percent of all children 0-4 in the borough. (The top 10 neighborhoods in the census captured a similar share of the same age group, 42 percent.)

Targeting Persons with Limited English Proficiency

While administrative data are often a good source for targeting populations in need, they are often not representative of the overall population, or are unavailable, as is the case with data on the population with limited English proficiency (LEP). Since LEP data are available from the decennial census, these data have been used to help the Fire Department of New York (FDNY) identify neighborhoods with large immigrant populations not proficient in English who could be targeted for fire safety education. These outreach efforts were given a fillip as a result of a tragic fire in March 2007 that killed many members of an extended family of Malian immigrants in Highbridge, in the west Bronx (Barry, 2007). We use 2001-2005 ACS data to identify neighborhoods for these new efforts, and compare the results with neighborhoods identified using the 2000 Census.

Figure 9 displays the top 10 neighborhoods in the Bronx with the largest LEP populations, using data from the 2001-2005 ACS and the 2000 Census. Most of the top neighborhoods are on the western ridge of the borough, encompassing a primarily Spanish-speaking LEP population. The ACS shows that Bedford Park-Fordham North is the top neighborhood with 19,100 LEP residents, 2,200 persons more than the second ranked Mount Hope. In this instance, the ACS estimate of the LEP population in Bedford Park-Fordham North is robust enough to label it as having the largest LEP population in the Bronx. However, the other top neighborhoods, ranked second through fifth, have approximately the same number of LEP residents, making it necessary to use these rankings with caution.

The top 10 LEP neighborhoods using the 2000 Census showed 8 neighborhoods in common with the more recent ACS data. The census targeted neighborhoods included 143,300 LEP residents, representing 47 percent of all such persons in the borough, while the neighborhoods targeted by the ACS accounted for 48 percent of the 143,100 LEP residents. A prudent program planner ought to consider the targeting potential of all top neighborhoods, minimizing the importance of closely ranked neighborhoods. Moreover, it may be useful to take into account other factors when devising the targeting strategy, such as available sites for special events or space for conducting community outreach.

How Useful are the ACS Data at the Local Level?

This section examined two examples of using ACS for targeting purposes, which represents just a small fraction of all possible applications that data users pursue. In both case studies, the ACS did a superior job targeting neighborhoods for specific programs. Even when there were significant differences in the population of interest in two consecutively ranked neighborhoods, these differences were often not meaningful from a targeting perspective.

For some applications, the neighborhood estimate of the number of 0-4 year olds or the LEP population may not be critical; however, under some circumstances, the large standard errors associated with these estimates may be salient. For example, the budget of a nonprofit organization that provides care for all neighborhood children of working mothers in poverty could be overwhelmed by the addition of a few hundred children; other organizations with flexible budgets may not be as sensitive to these distinctions.

While ACS data at the neighborhood level would meet the needs of many data users, these data would fall short below the neighborhood level. For example, an entrepreneur who seeks to provide ferry service will be able to use ACS data to get detailed information on commuters' mode of transportation to work for various neighborhoods. But those trying to weigh the merits of such a plan at the sub-neighborhood or census tract levels will not be able to get reliable data. Similarly, ACS data would be useful for a large-scale retailer who needs to estimate the income distribution of the 75,000 residents in the neighborhoods surrounding a planned retail outlet, but a small-scale retailer or program planner seeking similar information for a sub-neighborhood area would likely end up with unreliable data.

Section 4. Measuring Change Over Time at the Neighborhood Level

Overview

Thus far, the analysis has focused on the reliability, validity, and utility of ACS estimates. Our evaluation of the coefficients of variation for more than 40 variables led us to conclude that the census tract level data for the Bronx were unreliable, but that geographic aggregation of census tracts into larger neighborhood aggregates increased the reliability of the data to an acceptable level. With respect to validity, the five ACS variables examined were highly correlated with local administrative data. However, only three of the five variables met the more rigorous criteria used to determine validity. Turning to the utility of ACS estimates, we conducted two case studies of neighborhoods in need of services and determined that the ACS was able to successfully identify differences in selected attributes *across* neighborhoods, permitting us to target areas for program implementation.

All of the above analyses focused on single estimates of attributes for geographic areas, effectively treating the ACS estimates for 2001-2005 much like point-in-time estimates from the census long form. In this final section, we shift the focus to change over time,

using successive ACS five year estimates. We delineate change in the 36 Bronx neighborhoods using four variables — percentage of households receiving public assistance; percentage of households receiving food stamps; percentage of population 0 to 4 years of age; and the percentage of persons 5 and over who speak a language other than English at home. Three sets of five year averages were available: 1999-2003; 2000-2004; and 2001-2005, allowing for three comparisons as shown in Table 6.

Comparing Pairs of Five Year Estimates, When Estimates Overlap

Of the three comparisons that can be made with the available five year estimates, two comparisons (1999-2003 vs. 2000-2004, and 2000-2004 vs. 2001-2005) involve estimates that cover a 6 year period with 4 years of overlap. For example, for the 1999-2003 vs. 2000-2004 comparison, the four overlapping years are 2000, 2001, 2002, and 2003, and change is solely a function of the difference between year 1 (1999) and year 6 (2004)[15] (Table 6). For the 2000-2004 vs. 2001-2005 comparison, the 4 overlapping years are 2001, 2002, 2003, and 2004, and change is solely a function of the difference between 2000 and 2005.

The four years of overlap produce a situation where change is likely to be statistically significant only if the magnitude of change between years 1999 and 2004 (in the case of the 1999-2003 and 2000-2004 comparison) is extremely large, which is not usually the case. Therefore, it is not generally useful to evaluate change using estimates with such a large overlap. While still not ideal, it is more prudent to use estimates with less of an overlap; in this case three years. Table 6 illustrates the degree of overlap when comparing estimates for 1999-2003 and 2001-2005. For the seven years covered in this comparison, the three overlapping years were 2001, 2002 and 2003. This means that the differences between the 1999-2003 and 2001-2005 estimates are a function of the change between two pairs of non-overlapping years: years 1 and 6 (1999 and 2004) and years 2 and 7 (2000 and 2005).[16] Figure 10 shows the changes at the neighborhood level between the two five year estimates for the four variables described earlier.

The comparison of estimates for the 1999-2003 and 2001-2005 periods shows statistically meaningful changes on several variables. For percent on public assistance, public assistance recipiency showed statistically significant declines in 21 of the 36 neighborhoods (Figure 10). For the other variables, changes were more modest: for food stamps, four neighborhoods showed significant changes: three had declines and one showed an increase. For the population ages 0 to 4, two showed increases and one a decline. Finally, five neighborhoods showed significant changes in the percent that speak a language other than English at home: three neighborhoods had statistically significant declines while two showed significant increases.

Implications of the Findings

The recent final report of the Panel on the Functionality and Usability of the American Community Survey emphasized that for optimal results, changes over time should be evaluated using data for non-overlapping periods, whenever possible (Citro and Kalton,

2007:133). It is important to acknowledge, however, that this is not always an option. For example, when areas are composed of census tracts, where five-year estimates are the only source of data, local governments may not have the option of waiting for non-overlapping estimates. Simply put, when attempting to measure change, use estimates with the fewest overlapping years. And, in general comparisons of five year estimates with four years of overlap should be avoided. It is important to bear in mind that these comparisons involve what are, from a national standpoint, large geographic areas. The Bronx neighborhoods in this study averaged more than 36,000 persons, with the smallest neighborhood at 18,000 residents. (More than 40 percent of all counties in the U.S. have less than 20,000 persons.) Thus, it is reasonable to conclude that comparisons involving five year estimates with three years of overlap, which may appear to be viable in this study, may not be viable for many other geographic areas. Given that the ACS was fully implemented in 2005, comparisons involving change in the five year estimates based on no more than a two year overlap (2005-2009 vs. 2008-2012) must wait until at least 2013; comparisons involving a one year overlap (2005-2009 vs. 2009-2013) must wait till 2014; while comparisons of five year non-overlapping data (2005-2009 vs. 2010-2014) would necessitate waiting until 2015.

Conclusion

This analysis leaves little doubt that due to their small sample sizes, most census tract estimates from the 2001-2005 ACS cannot be used for practical data applications, but must be aggregated to a higher level geography. Even if the differential sampling strategy for follow-up, implemented in 2005, was in place during the entire five year period, the data would still be problematic at the census tract level.

The poor utility of five year census tract estimates for data applications may be seen as a major blow to users who have relied on decennial census tract data. However, this analysis shows that, in the past, too much faith may have been placed in decennial census tract data: While CVs for census tract estimates from the decennial census are lower, they are still too high for many estimates to support real-life data applications at that geographic level. These issues have been historically overlooked by data users, and have become salient due to heightened awareness of sampling variability in the ACS.

The results of this work show that geographic aggregation does help a great deal to make estimates more reliable. Such an approach works well in New York City, where the writ of local government extends over five boroughs. Thus, there is no independent governmental unit in the Bronx at the sub-county level. The Bronx does have 12 administrative subunits called Community Districts, each with a board that acts as a local conduit with city government agencies on issues of need and proposed planning actions. The PUMAs in the ACS are approximations of these districts, and with an average population of over 100,000, these PUMAs are large enough for reliable estimates. The Bronx stands in contrast to other counties in the region, such as Westchester to the north or Nassau to the east, which contain many local governments, some the size of a Bronx census tract, often with overlapping jurisdictions. The ACS uses larger samples for small governments, generally designated as those with less than 1,200 occupied housing units

(U.S. Census Bureau, 2006). This means that estimates for many other small governments that exceed this threshold will likely be unreliable because samples will be too small. Combining these local governments, which may be very helpful from a reliability standpoint, is likely impractical from an administrative and political standpoint. Clearly, this poses a serious dilemma for data users in these areas.

For the Bronx, despite unreliable census tract data, the ACS works at the neighborhood level. When used for program targeting, it permits the identification of areas based on the presence of specific social/demographic groups. It is important to keep in mind, however, that the number of data applications that can be informed by the ACS is varied. This means that the Census Bureau needs to continue examining how ACS data are used at the local level, and whether they meet the needs of data users, especially when compared to decennial census data. Citro and Kalton (2007) argue that priority needs to be given to the establishment of a network with data users that allows for education, outreach, and feedback. This will permit the ACS to evolve, by tailoring content and methods to better suit the needs of its users.

The results involving change over time should be interpreted as yet another reason why it will be some time before the ACS reaches its full potential for small areas. The suggestion from the Panel on the Functionality and Usability of the American Community Survey that data for non-overlapping periods be used to evaluate change for small areas means waiting until 2015 for the required data (2005-2009 vs. 2010-2014). In the meantime, small area data users must contend with comparisons involving sets of estimates with overlapping periods, making an assessment of change difficult at best. While this work does show that the comparison of five year estimates with three years of overlap has its merits, we must keep in mind that our examples are for neighborhoods with populations that are larger than most counties in the U.S. It is likely that comparisons over time for areas under 20,000 persons, which will rely solely on five year estimates, will require estimates with no overlap in order to be useful, necessitating a wait until 2015.

Fortunately, once this cycle is initiated, analyses of change over time can occur more than once a decade. The Census Bureau should help to ensure the long-term viability of change analyses by using the interim years to make effective decisions on two fronts. First, the Census Bureau, in concert with the data user community, needs to implement a plan to ensure that “current” geographies drive the ACS estimates. Operational and logistical challenges need to be identified and addressed now to guarantee that estimates are geographically comparable in the future. Second, we encourage the Census Bureau to continue its efforts to find ways to use the decennial census counts to strengthen the ACS estimates, starting in 2011, especially for smaller geographic units.

It is important to remember that any verdict on the ACS in the Bronx needs to be set against the backdrop of the decennial census. The 2000 Census in the Bronx had higher levels of non-sampling error than the ACS, with more than one-in-five long forms discarded because they failed to meet the standard for minimal completeness (Salvo and Lobo, 2003). Moreover, decennial census estimates for many variables at the tract level

in the Bronx were unreliable, despite a sample totaling 11.5 percent of the population. The ACS sample was six percent, just over one-half of that in the decennial census, with estimates at the census tract level that were even more unreliable. If the ACS is to serve as a *superior* replacement for the decennial census and a model for local data collection in the 21st century, increases in sample size and follow-up are crucial, especially for counties such as the Bronx that have low mail response.

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ENDNOTES

[1] For budgetary reasons, the 2005 ACS data collection excluded the group quarters population. For information on ACS methodology and use, see http://www.census.gov/acs/www/UseData/index.htm.

[2] The subsample used in follow-up now varies depending on mail response. Census tracts with low mail response will have larger CAPI (Computer Assisted Personal Interviewing) subsamples.

[3] Births were to women who resided in New York City, including women who resided in New York City and gave birth outside of the city (but in New York State). Data were averaged for each two-year period in vital statistics that corresponds to each year of the ACS for 2001 to 2005. Since the comparison with the ACS involved *women giving birth* in the prior 12 months (and not *children born* in that period), women who had multiple births or gave birth more than once in a calendar year were counted just once.

[4] Data on households with any person 15 years and over receiving public assistance income and households with any person age 15 and over receiving food stamps were from the New York City Human Resources Administration. For both public assistance and food stamps, annual estimates were created for five time points (2001 to 2005), using estimates for the "previous 12 months," averaging two years of data for each annual period.

[5] Net new housing construction includes housing units in buildings that were newly constructed plus "gut rehabs." Newly constructed housing was determined using temporary and final certificates of occupancy. These figures do not include new housing that was created as a result of alteration of existing buildings.

[6] In order to preserve confidentiality, for both the ACS and the special 2000 Census file (that excluded the group quarters population), the Census Bureau did not release data profiles for census tracts with only a small number of housing units. The special decennial file had data for only 330 of the 355 Bronx tracts; in all our analyses, we include only the 330 census tracts common to the special decennial file and the ACS.

[7] In order to take into account differences in the size of estimates, we use the coefficient of variation to standardize comparisons of reliability. The Coefficient of Variation (CV) = Standard Error / Estimate from the Survey *100.

[8] This analysis was repeated for these variables, expressed as percentages (e.g., *percent* foreign-born). Compared to CVs for variables expressed in absolute terms, the CVs for variables expressed as percentages are slightly lower in both the ACS and census. However, CVs in the ACS remain substantially higher than those in the census (Appendix Table 2). The median CV for the demographic/social characteristics was 11 percent in the decennial census, but 20 percent in the ACS; for the economic variables, the median CVs were 15 percent and 22 percent, respectively; for housing attributes the median CVs were 18 percent and 27 percent, respectively.

[9] This analysis was also done for the 30 tracts with the lowest percent estimates (e.g., *percent* of foreign-born persons) and the CVs were much lower, but still substantial. For the 30 tracts with the lowest percentages on demographic and social characteristics, the median CV was 25 percent in the decennial census, compared to 40 percent in the ACS; for economic characteristics, the median CVs were 24 percent and 43 percent, respectively; and for housing characteristics, the median CVs were 39 percent and 62 percent, respectively (Appendix Table 3).

[10] In our previous ACS work, we identified 88 neighborhoods in the Bronx for study. Since then, a new 36 neighborhood template for the Bronx has been created as part of Mayor Bloomberg's Strategic Plan for NYC, PLANYC2030. In addition to having fewer neighborhoods designated for tabulation purposes, this scheme created neighborhoods as subunits of Community Districts (close equivalents of PUMAs), New York City's principal planning entities.

[11] This analysis was repeated for these variables, expressed as percentages (e.g., percent foreign-born). The median CV for the demographic/social variables declines from 20 percent for census tracts to 6 percent for neighborhoods; for economic variables, the median CV declines from 25 percent to 8 percent; and for housing attributes, the median CV declines from 33 percent to 11 percent (Appendix Table 4).

[12] Only three census variables were tested for validity: the number of children ages 0 to 1, the number of children ages 0 to 4, and housing units in structures built between 1990 and April 1, 2000. Data for the age variables are from census full count data, while information on year structure built are from sample data. Administrative data for the age variables are derived from Vital Statistics data from the NYC Department of Health and Mental Hygiene, while administrative data on year structure built were obtained from the NYC Buildings Department.

Administrative data on public assistance in 1999 were unavailable, precluding any census validation. Food stamp data were not collected in the 2000 Census, making the issue of validity moot.

[13] The number of women giving birth in the prior year and the number of children born in the preceding year should be close, but not identical, because some women give birth to more than one child at a time.

[14] The administrative data are from the Vital Statistics file of the New York City Department of Health and Mental Hygiene for the period from 1996 to 2005, as described in the earlier portion of this paper.

[15] Statistically, this translates into one-fifth of the five year difference between year 1 and year 6, assuming one actually had one year estimates for each of these two years. (For more information see Citro and Kalton, 2007: 105.)

[16] For the 1999-2003 and 2000-2005 comparison, this translates into taking two-fifths of the average five year difference between the two pairs of years that are not shared in common: years 1 and 6 (1999 and 2004) and years 2 and 7 (2000 and 2005). (For more information, see Citro and Kalton, 2007: 109.)

Table 1. Population and Housing Unit Attributes of Bronx Census Tracts and Neighborhoods, 2001-2005 ACS

	Census Tracts	Neighborhoods
Number of Areas	330	36
Population		
Median	3,356	34,256
Range	227- 24,829	17,934 - 59,033
Median Coefficient of Variation	8.2	2.7
Housing Units		
Median	1,304	12,916
Range	115 - 11,621	7,059 - 21,838
Median Coefficient of Variation	2.6	1.0

Source: 2001-2005 ACS

Table 2. Median Estimates and Coefficients of Variation for Selected Variables for Bronx Census Tracts, 2000 Census and 2001-2005 ACS

Variable	2000 Census		2001-2005 ACS		01-05 ACS / 2000 Census
Demographic and Social Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Children 0 to 4 years of age in households	275	16.7	285	30.6	1.8
Nonrelatives in household population	170	18.9	166	40.4	2.1
Married couple households	380	10.6	331	20.5	1.9
Nonfamily households	368	11.2	412	18.1	1.6
Persons 25 and over high school graduate only	525	11.1	612	18.6	1.7
Persons 25 and over with a bachelor's degree	160	21.3	178	36.0	1.7
Persons 15 and over never married	1,010	6.7	1,079	14.4	2.2
Persons 15 and over that are divorced females	130	23.6	143	35.8	1.5
Women giving birth in the last 12 months	-	-	60	59.0	-
Civilian veterans	120	23.1	104	41.5	1.8
Foreign-born in household population	930	9.5	1,004	19.4	2.0
Naturalized U.S. citizens	390	16.9	431	25.1	1.5
Persons 5 and over that speak a language other than English at home	1,535	6.3	1,637	14.1	2.2
Persons 5 and over who speak English less than "very well"	630	11.8	600	21.6	1.8
Persons 5 and over who speak Spanish at home	1,150	7.5	1,261	16.4	2.2
Median* CV of Demographic and Social Variables:		**11.5**		**21.1**	**1.8**
Economic Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Persons 16 and over that are employed	1,100	6.6	1,273	12.2	1.8
Females 16 and over that are employed	550	10.5	622	16.0	1.5
Workers 16 and over using public transportation	550	11.8	674	18.2	1.5
Employed civilian population 16 and over:					
Management, professional, and related (occupation)	260	16.6	290	26.8	1.6
Construction workers (occupation)	90	28.9	91	51.5	1.8
Workers in retail trade (industry)	110	28.2	123	44.3	1.6
Workers in educational services (industry)	330	15.0	395	22.7	1.5
Government workers (class of workers)	215	19.4	222	30.4	1.6
Self-employed workers (class of workers)	40	55.0	64	58.6	1.1
Households:					
with income and benefits, less than $10,000	260	15.0	210	28.1	1.9
with earnings	848	6.0	885	8.8	1.5
with social security	245	18.2	252	21.7	1.2
with cash public assistance income	150	24.0	115	39.8	1.7
Median CV of Economic Variables:		**16.6**		**26.8**	**1.6**
Housing Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Housing units in structures of 20 or more units	765	5.0	775	9.1	1.8
Year structure built:					
Housing units in structures built 1990 or later	-	-	61	52.6	-
Housing units in structures built 1980-1989	50	38.0	41	63.4	1.7
Housing units in structures built 1970-1979	90	26.3	81	47.6	1.8
Housing units in structures built 1939 or earlier	320	12.2	399	17.9	1.5
Number of rooms in housing unit:					
Housing units with one room	80	28.8	45	60.8	2.1
Housing units with five rooms	190	17.9	224	27.4	1.5
Occupied housing units with no vehicles available	723	6.3	690	10.9	1.7
Occupied housing units with one vehicle available	315	12.5	308	21.4	1.7
House heating fuel used in occupied housing units:					
Utility gas	520	8.7	367	18.6	2.1
Electricity	100	24.9	72	45.4	1.8
Fuel oil, kerosene, etc.	473	9.6	683	11.6	1.2
No telephone service available	55	34.5	94	49.3	1.4
1.5 or more occupants per room	98	29.1	43	61.0	2.1
Renter-occupied housing units:					
Gross rent is less than 15% of household income	170	20.0	122	38.5	1.9
Gross rent is 35% or more of household income	335	12.9	401	18.5	1.4
Median* CV of Housing Variables:		**17.9**		**27.4**	**1.5**

- Data unavailable or not comparable with the other series

* Variables included in overall median only if present in both data series

Sources: 2001-2005 ACS, 2000 Census specially prepared non-group quarters file

Table 3. Median Estimates and Coefficients of Variation for Selected Variables for Bronx Census Tracts with the 30 Lowest Estimates, 2000 Census and 2001-2005 ACS

Variable	2000 Census		2001-2005 ACS		01-05 ACS / 2000 Census
Demographic and Social Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Children 0 to 4 years of age in households	40	52.5	53	59.9	1.1
Nonrelatives in household population	40	47.5	22	80.8	1.7
Married couple households	75	23.3	52	43.7	1.9
Nonfamily households	65	29.2	73	46.8	1.6
Persons 25 and over high school graduate only	100	25.5	112	38.9	1.5
Persons 25 and over with a bachelor's degree	20	100.0	21	85.0	0.8
Persons 15 and over never married	190	15.0	184	33.2	2.2
Persons 15 and over that are divorced females	20	100.0	16	83.6	0.8
Women giving birth in the last 12 months	-	-	11	99.1	-
Civilian veterans	10	150.0	12	99.8	0.7
Foreign-born in household population	140	24.0	146	46.4	1.9
Naturalized U.S. citizens	60	42.9	51	60.4	1.4
Persons 5 and over that speak a language other than English at home	240	18.1	241	38.1	2.1
Persons 5 and over who speak English less than "very well"	75	38.8	79	60.0	1.5
Persons 5 and over who speak Spanish at home	130	26.9	130	52.9	2.0
Median* CV of Demographic and Social Variables:		**34.0**		**56.4**	**1.7**
Economic Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Number of persons employed	220	14.3	262	30.2	2.1
Females employed	90	24.3	90	39.1	1.6
Number using public transportation	90	27.3	97	41.6	1.5
Employed civilian population 16 and over:					
Management, professional, and related (occupation)	40	50.0	47	65.3	1.3
Construction workers (occupation)	10	170.0	17	101.3	0.6
Workers in retail trade (industry)	20	105.0	18	99.6	0.9
Workers in educational services (industry)	50	36.7	73	51.3	1.4
Government workers (class of workers)	40	55.0	35	68.9	1.3
Self-employed workers (class of workers)	10	220.0	9	106.4	0.5
Households:					
with income and benefits, less than $10,000	30	66.7	17	92.7	1.4
with earnings	185	14.1	176	26.8	1.9
with social security	50	48.0	48	54.7	1.1
with cash public assistance income	10	240.0	11	101.3	0.4
Median CV of Economic Variables:		**50.0**		**65.3**	**1.3**
Housing Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Housing units in structures of 20 or more units	15	113.3	21	95.2	0.8
Year structure built:					
Housing units in structures built 1990 or later	-	-	11	102.9	-
Housing units in structures built 1980-1989	4	437.5	9	102.3	0.2
Housing units in structures built 1970-1979	13	158.3	10	105.0	0.7
Housing units in structures built 1939 or earlier	60	32.0	74	47.7	1.5
Number of rooms in housing unit:					
Housing units with one room	10	190.0	8	102.8	0.5
Housing units with five rooms	28	69.7	47	57.1	0.8
Occupied housing units with no vehicles available	100	20.8	96	38.2	1.8
Occupied housing units with one vehicle available	58	30.0	54	51.1	1.7
House heating fuel used in occupied housing units:					
Utility gas	113	17.8	64	42.0	2.4
Electricity	10	190.0	10	100.6	0.5
Fuel oil, kerosene, etc.	75	25.4	117	36.9	1.4
No telephone service available	10	180.0	13	101.3	0.6
1.5 or more occupants per room	10	230.0	7	108.0	0.5
Renter-occupied housing units:					
Gross rent is less than 15% of household income	30	66.7	19	95.4	1.4
Gross rent is 35% or more of household income	48	38.9	53	58.8	1.5
Median* CV of Housing Variables:		**69.7**		**95.2**	**1.4**

- Data unavailable or not comparable with the other series

* Variables included in overall median only if present in both data series

Sources: 2001-2005 ACS, 2000 Census specially prepared non-group quarters file

Table 4. Median Estimates and Coefficients of Variation for Selected Variables for Bronx Census Tracts and Neighborhoods, 2001-2005 ACS

Variable	Tract Level		Neighborhood Level		Neighborhood / Tract CV
Demographic and Social Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Children 0 to 4 years of age in households	285	30.6	2,911	10.4	0.34
Nonrelatives in household population	166	40.4	1,779	15.0	0.37
Married couple households	331	20.5	3,612	7.1	0.34
Nonfamily households	412	18.1	4,585	5.9	0.33
Persons 25 and over high school graduate only	612	18.6	6,275	6.4	0.34
Persons 25 and over with a bachelor's degree	178	36.0	1,920	12.1	0.34
Persons 15 and over never married	1,079	14.4	11,241	4.8	0.33
Persons 15 and over that are divorced females	143	35.8	1,384	12.0	0.33
Women giving birth in the last 12 months	60	59.0	627	20.5	0.35
Civilian veterans	104	41.5	1,102	14.5	0.35
Foreign-born in household population	1,004	19.4	9,734	6.8	0.35
Naturalized U.S. citizens	431	25.1	4,058	8.7	0.34
Persons 5 and over that speak a language other than English at home	1,637	14.1	15,978	4.8	0.34
Persons 5 and over who speak English less than "very well"	600	21.6	7,410	7.7	0.36
Persons 5 and over who speak Spanish at home	1,261	16.4	13,735	5.3	0.32
Median CV of Demographic and Social Variables:		**21.6**		**7.7**	**0.36**
Economic Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Number of persons employed	1,273	12.2	13,513	4.3	0.35
Females employed	622	16.0	6,313	5.4	0.34
Number using public transportation	674	18.2	6,961	6.0	0.33
Employed civilian population 16 and over:					
Management, professional, and related (occupation)	290	26.8	3,174	9.3	0.35
Construction workers (occupation)	91	51.5	935	18.8	0.36
Workers in retail trade (industry)	123	44.3	1,199	15.7	0.35
Workers in educational services (industry)	395	22.7	4,100	7.9	0.35
Government workers (class of workers)	222	30.4	2,333	10.4	0.34
Self-employed workers (class of workers)	64	58.6	552	21.9	0.37
Households:					
with income and benefits, less than $10,000	210	28.1	2,579	8.4	0.30
with earnings	885	8.8	8,880	3.0	0.34
with social security	252	21.7	2,687	7.4	0.34
with cash public assistance income	115	39.8	1,396	13.3	0.33
Median CV of Economic Variables:		**26.8**		**8.4**	**0.31**
Housing Characteristics	**Median Estimate**	**Median CV**	**Median Estimate**	**Median CV**	**CV Ratio**
Housing units in structures of 20 or more units	775	9.1	8,502	2.5	0.27
Year structure built:					
Housing units in structures built 1990 or later	61	52.6	606	16.9	0.32
Housing units in structures built 1980-1989	41	63.4	447	22.4	0.35
Housing units in structures built 1970-1979	81	47.6	897	14.4	0.30
Housing units in structures built 1939 or earlier	399	17.9	4,944	5.3	0.30
Number of rooms in housing unit:					
Housing units with one room	45	60.8	428	21.2	0.35
Housing units with five rooms	224	27.4	2,002	9.0	0.33
Occupied housing units with no vehicles available	690	10.9	7,959	3.4	0.31
Occupied housing units with one vehicle available	308	21.4	3,704	7.0	0.33
House heating fuel used in occupied housing units:					
Utility gas	367	18.6	3,390	6.4	0.34
Electricity	72	45.4	716	16.0	0.35
Fuel oil, kerosene, etc.	683	11.6	7,302	3.8	0.32
No telephone service available	94	49.3	847	16.9	0.34
1.5 or more occupants per room	43	61.0	486	21.4	0.35
Renter-occupied housing units:					
Gross rent is less than 15% of household income	122	38.5	1,222	12.8	0.33
Gross rent is 35% or more of household income	401	18.5	4,049	6.1	0.33
Median CV of Housing Variables:		**32.9**		**10.9**	**0.33**

Source: 2001-2005 ACS

Table 5. Assessing Validity of Selected 2001-2005 ACS Variables Using Administrative Data

	ACS vs. Administrative Data								
	Borough-level			Neighborhood-Level					
				Median Estimates					
	ACS Total	Admin. Total	Admin. Minus ACS	ACS	Admin.	Absolute Difference	Correlation Coefficient	Med. Abs. % Dif. From Admin. Data	% Neigh. with Sig. Differences*
Births in Prior 12 Months	23,483	22,159	-1,324	627	554	116	0.88	18.0	5.6
Children 0 to 4 Years of Age	112,843	113,003	160	2,911	2,886	285	0.95	9.8	22.2
Households Receiving Public Assistance	48,278	52,220	3,942	1,396	1,484	117	0.98	11.0	22.2
Households Receiving Food Stamps	93,663	121,033	27,370	2,577	3,417	630	0.98	21.8	80.6
Housing Units in Structures Built 1990 or Later	26,830	29,923	3,093	606	444	120	0.87	37.5	33.3

*Differences significant at the .10 level

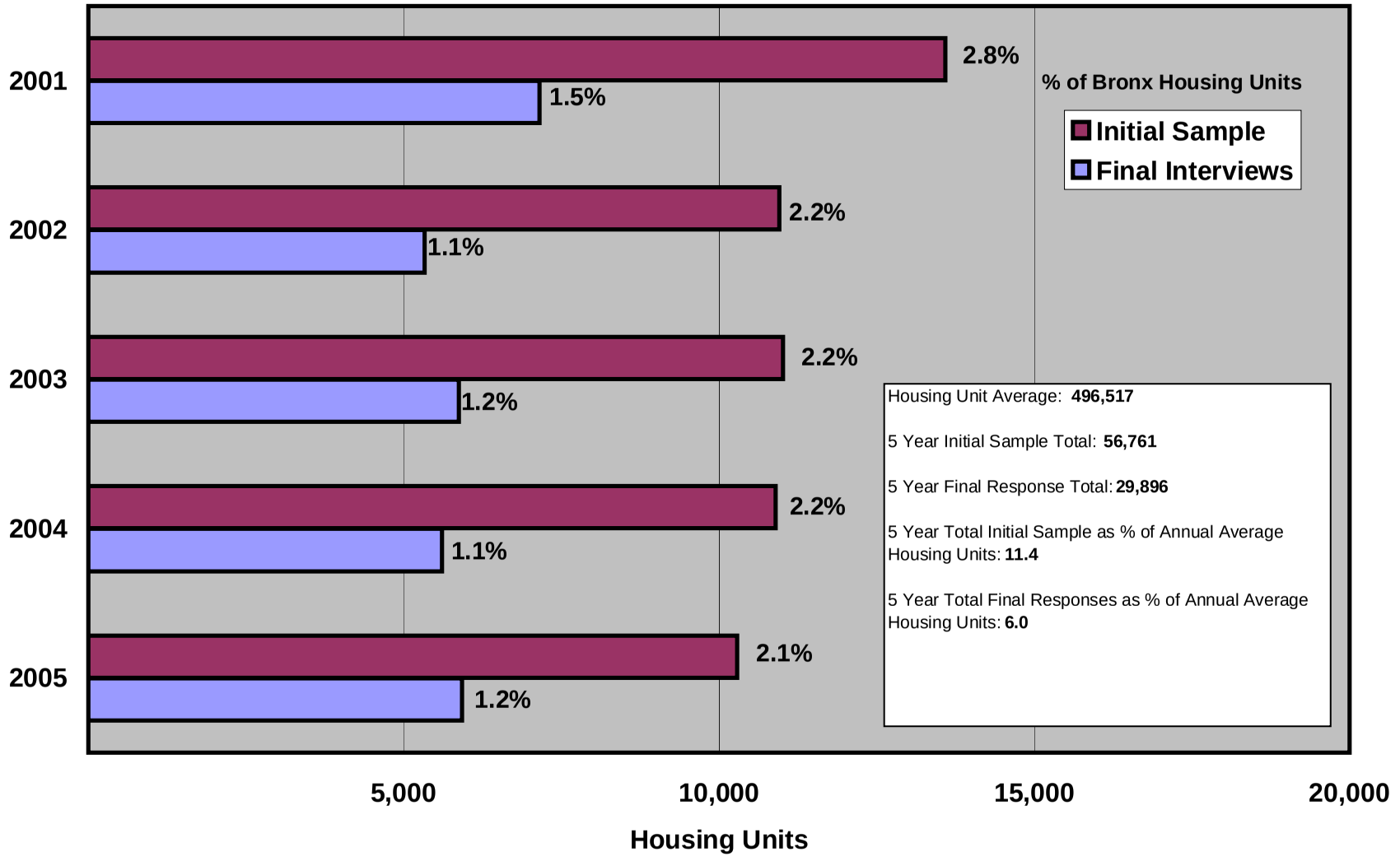
Sources: 2001-2005 ACS
NYC Dept. of Health and Mental Hygiene & NYS Dept. of Health, Births, 1996-2005
NYC Human Resources Administration, Public Assistance, 2000-2005
NYC Human Resources Administration, Food Stamps, 2002-2005
NYC Dept. of Buildings, Certificates of Occupancy, 1990-2005

Table 6. Overlapping Years in Successive ACS Five Year Estimates, 1999-2005

Estimate Period	ACS Years						
	1999	2000	2001	2002	2003	2004	2005
4 Years of Overlap							
1999-2003	(X)	X	X	X	X		
2000-2004		X	X	X	X	(X)	
2000-2004		(X)	X	X	X	X	
2001-2005			X	X	X	X	(X)
3 Years of Overlap							
1999-2003	(X)	(X)	X	X	X		
2001-2005			X	X	X	(X)	(X)

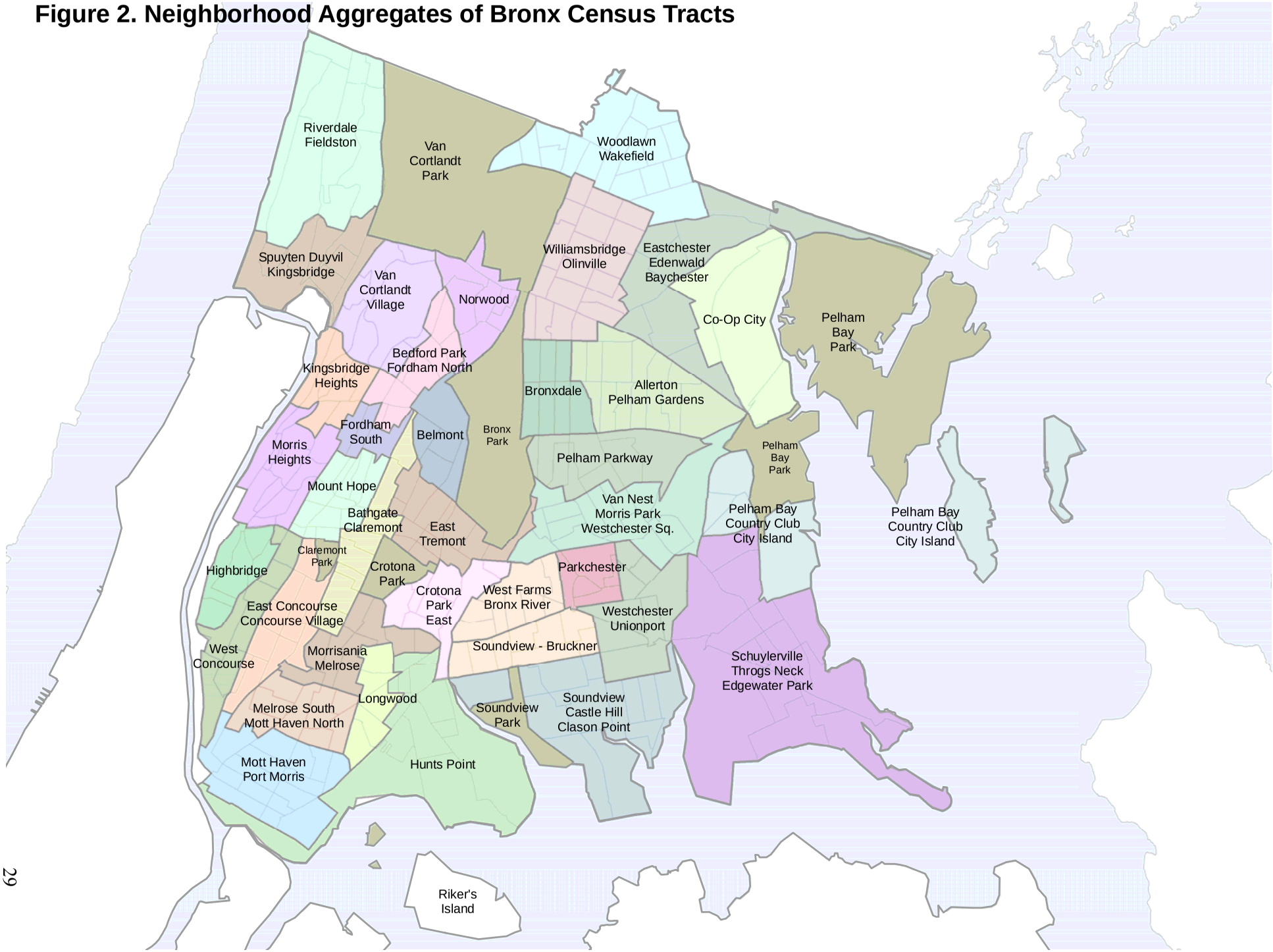
X - Overlapping Year
(X) - Unique Year (Non-overlapping Year)

Figure 1. ACS Initial Sample and Final Response as a Percent of all Bronx Housing Units, 2001-2005



Source: U.S. Census Bureau

Figure 2. Neighborhood Aggregates of Bronx Census Tracts



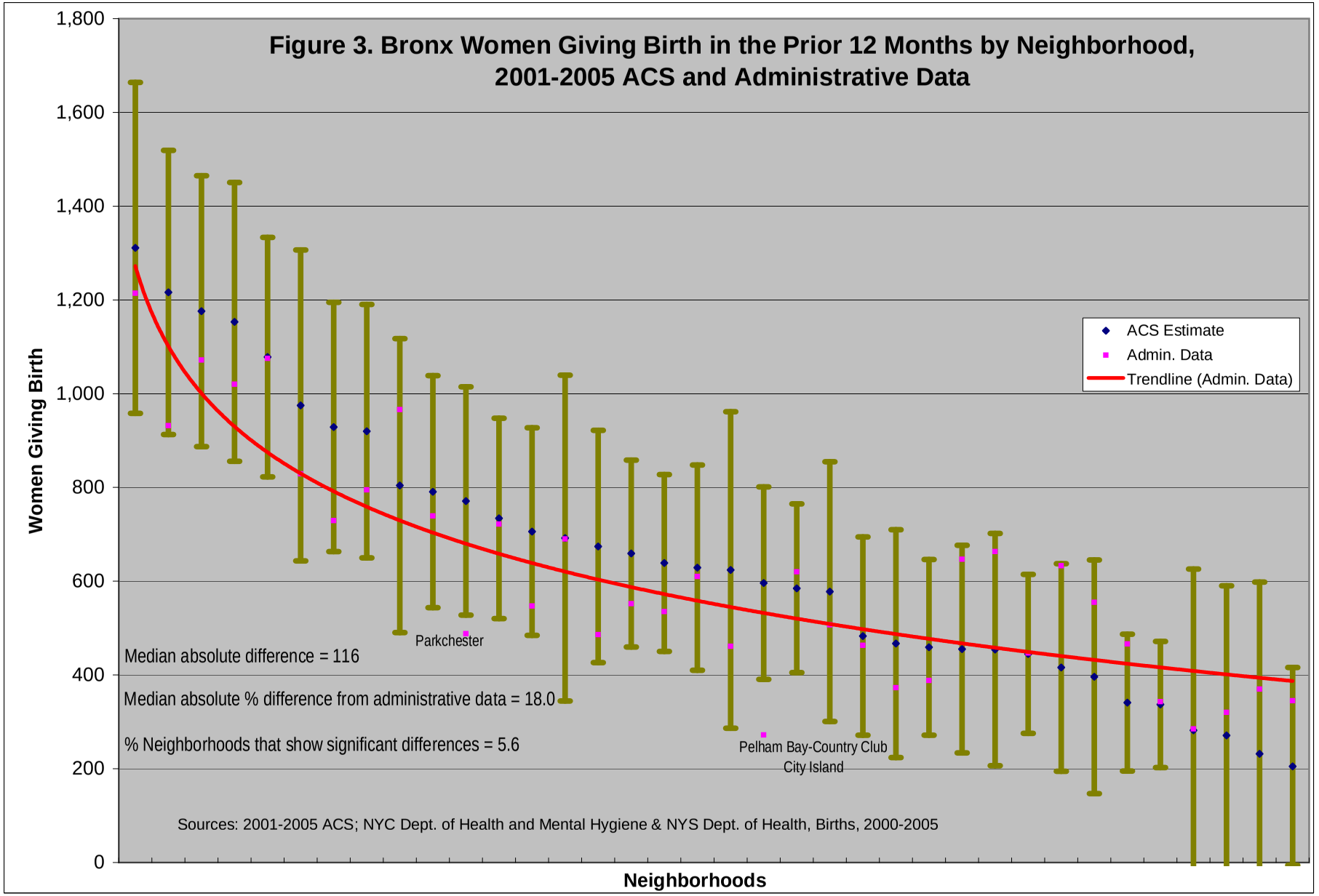


Figure 3. Bronx Women Giving Birth in the Prior 12 Months by Neighborhood, 2001-2005 ACS and Administrative Data
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Women Giving Birth
ACS Estimate
Admin. Data
Trendline (Admin. Data)
Median absolute difference = 116
Median absolute % difference from administrative data = 18.0
% Neighborhoods that show significant differences = 5.6
Parkchester
Pelham Bay-Country Club
City Island
Sources: 2001-2005 ACS; NYC Dept. of Health and Mental Hygiene & NYS Dept. of Health, Births, 2000-2005
Neighborhoods

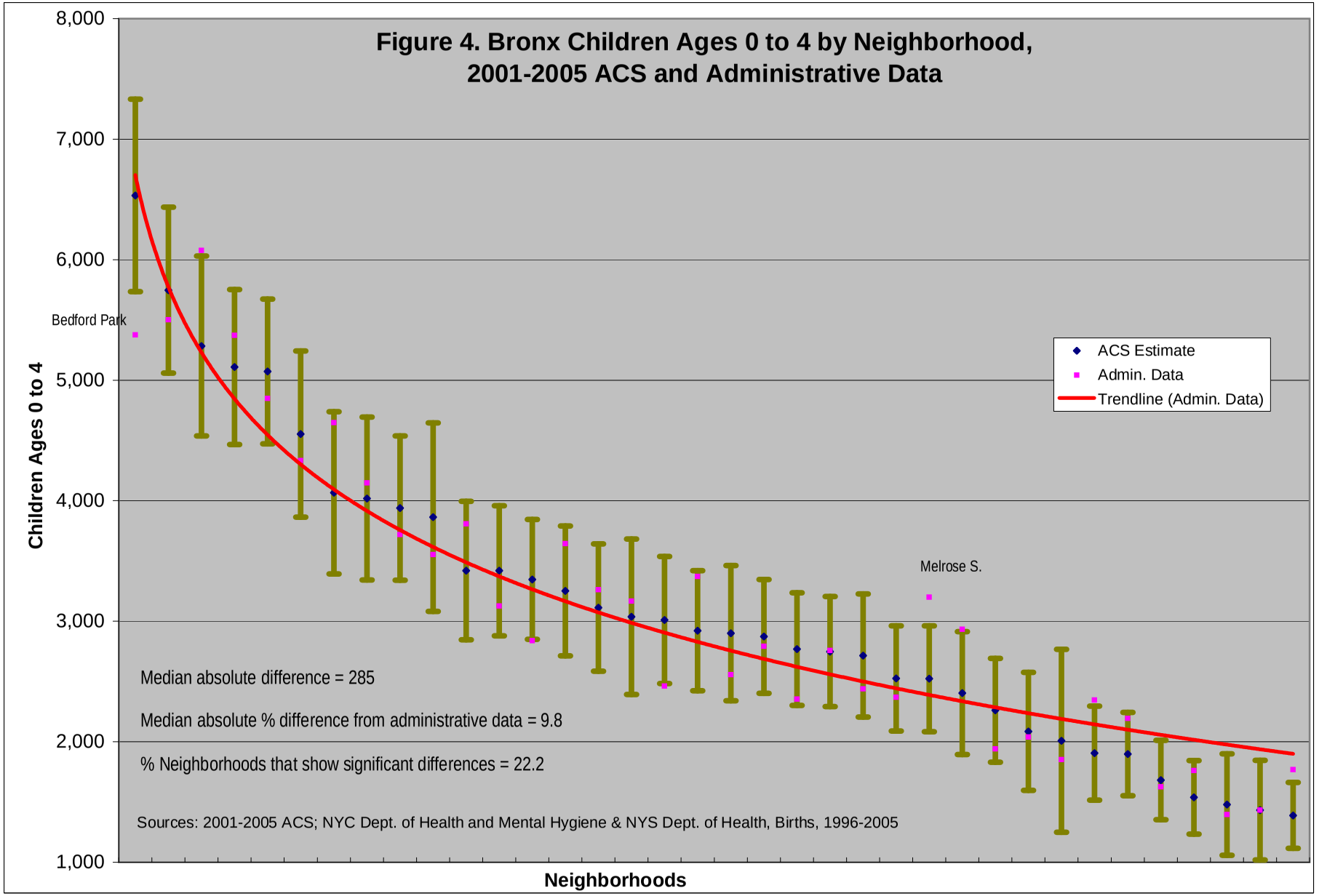


Figure 4. Bronx Children Ages 0 to 4 by Neighborhood, 2001-2005 ACS and Administrative Data
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
Children Ages 0 to 4
Bedford Park
Melrose S.
ACS Estimate
Admin. Data
Trendline (Admin. Data)
Median absolute difference = 285
Median absolute % difference from administrative data = 9.8
% Neighborhoods that show significant differences = 22.2
Sources: 2001-2005 ACS; NYC Dept. of Health and Mental Hygiene & NYS Dept. of Health, Births, 1996-2005
Neighborhoods

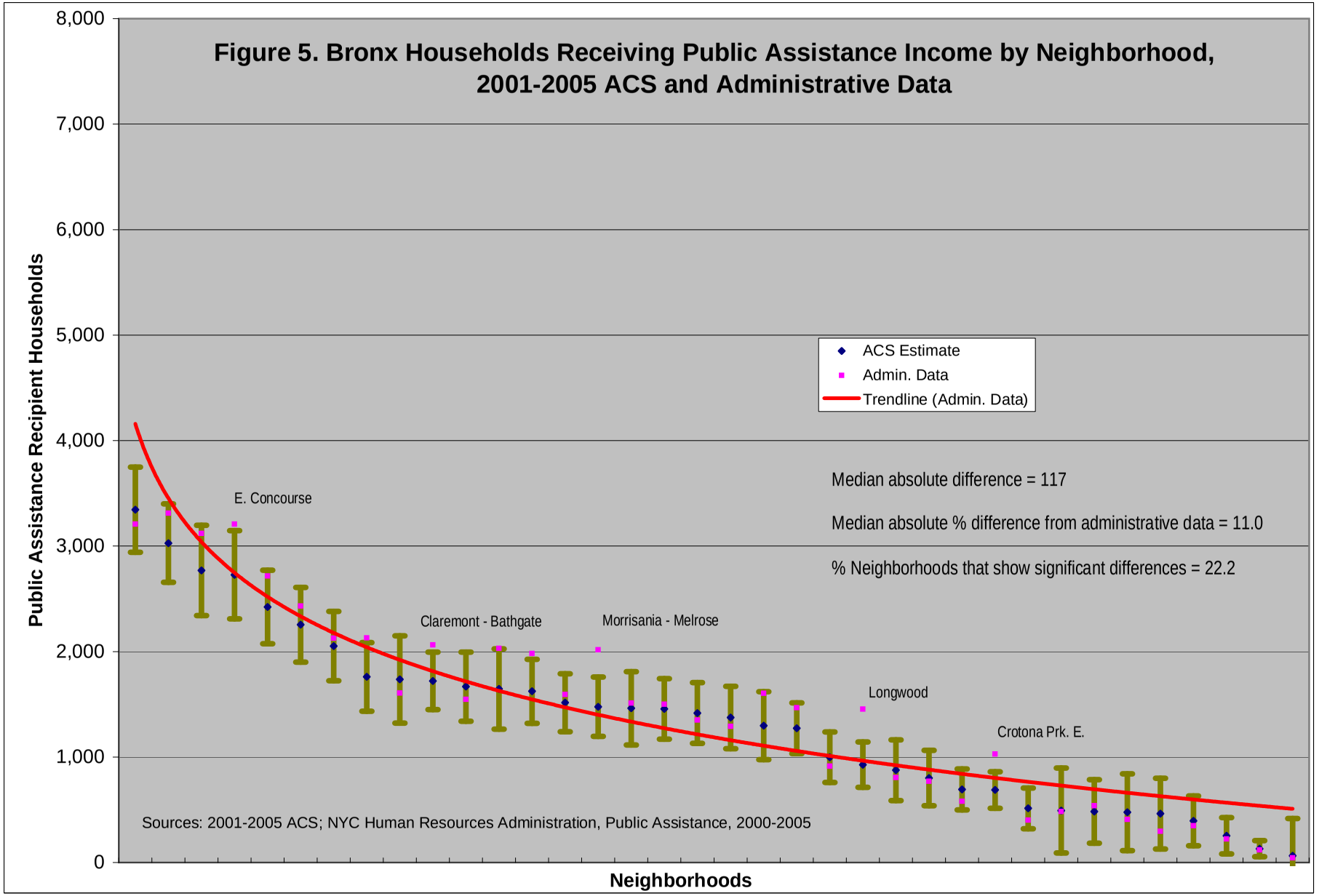


Figure 5. Bronx Households Receiving Public Assistance Income by Neighborhood, 2001-2005 ACS and Administrative Data
Public Assistance Recipient Households
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
ACS Estimate
Admin. Data
Trendline (Admin. Data)
Median absolute difference = 117
Median absolute % difference from administrative data = 11.0
% Neighborhoods that show significant differences = 22.2
E. Concourse
Claremont - Bathgate
Morrisania - Melrose
Longwood
Crotona Prk. E.
Sources: 2001-2005 ACS; NYC Human Resources Administration, Public Assistance, 2000-2005
Neighborhoods

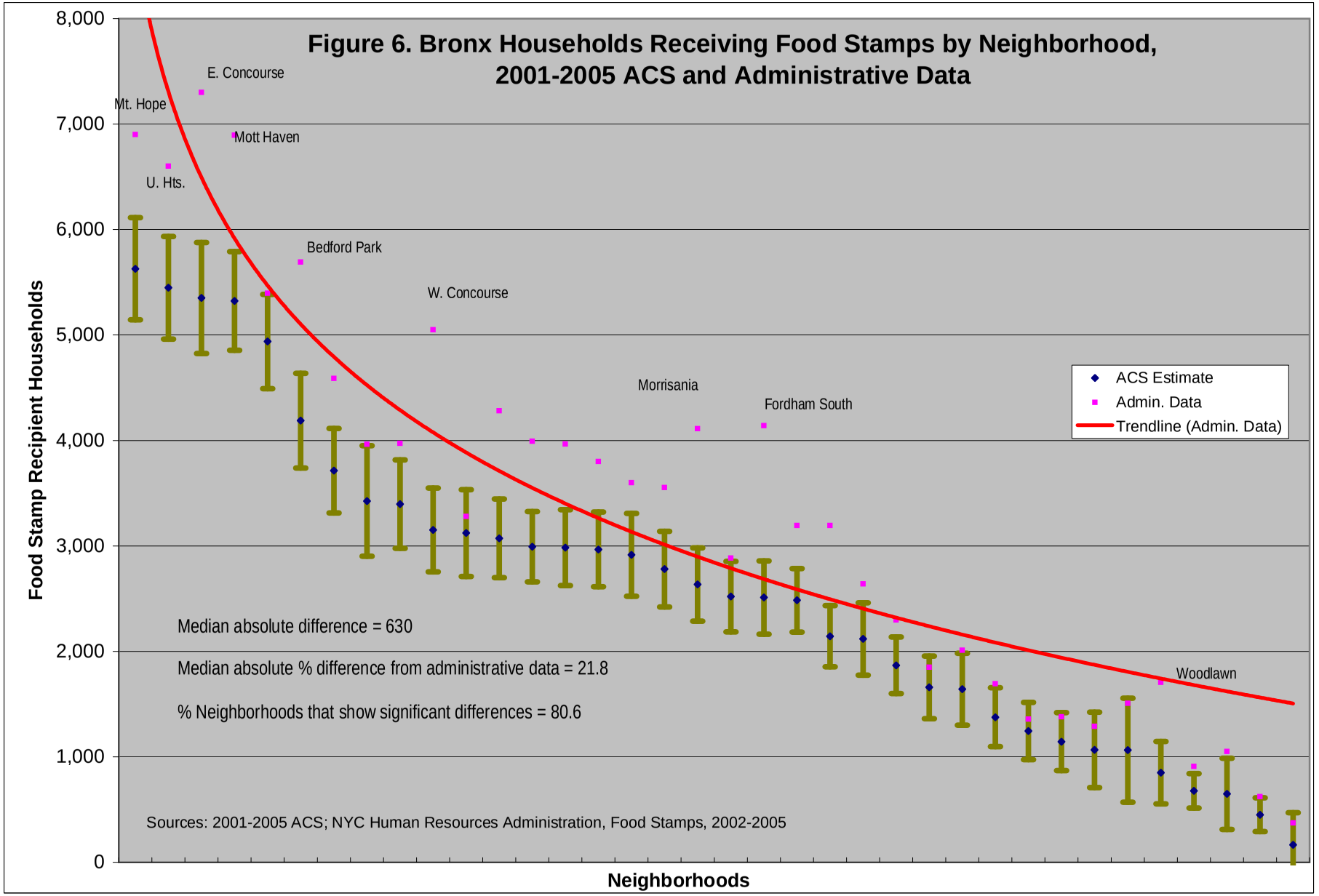


Figure 6. Bronx Households Receiving Food Stamps by Neighborhood, 2001-2005 ACS and Administrative Data
Food Stamp Recipient Households
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Mt. Hope
E. Concourse
Mott Haven
U. Hts.
Bedford Park
W. Concourse
Morrisania
Fordham South
Woodlawn
ACS Estimate
Admin. Data
Trendline (Admin. Data)
Median absolute difference = 630
Median absolute % difference from administrative data = 21.8
% Neighborhoods that show significant differences = 80.6
Sources: 2001-2005 ACS; NYC Human Resources Administration, Food Stamps, 2002-2005
Neighborhoods

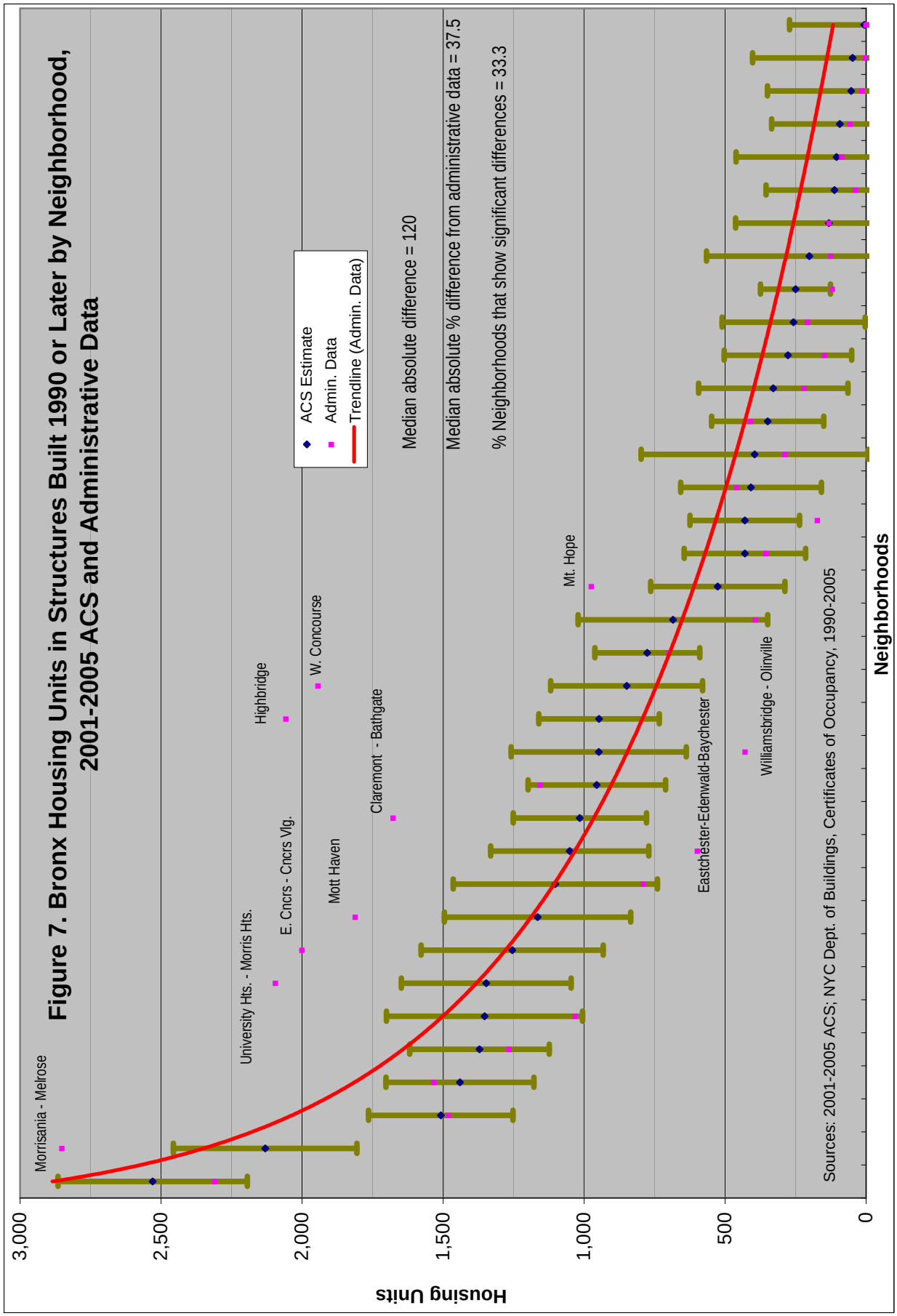
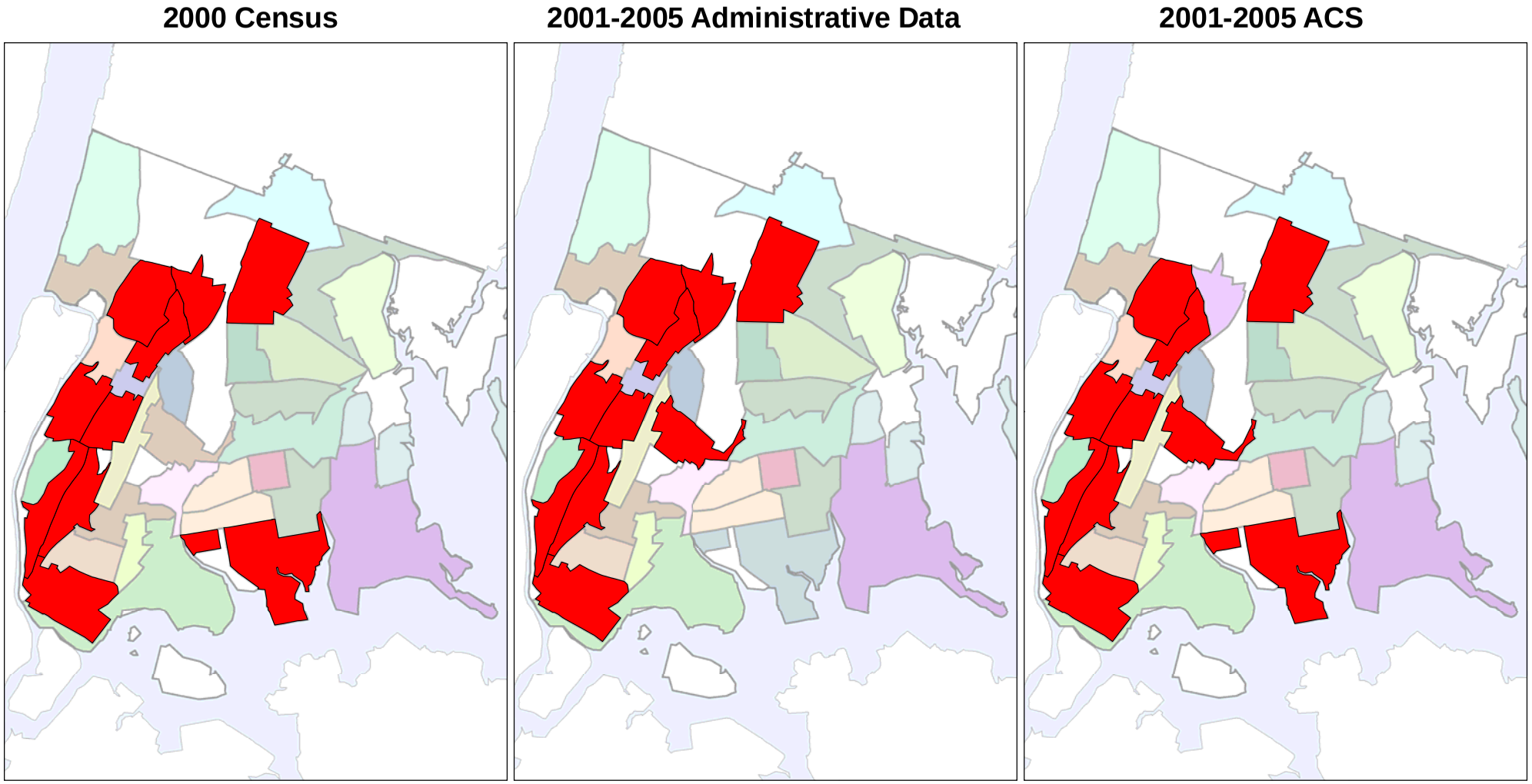


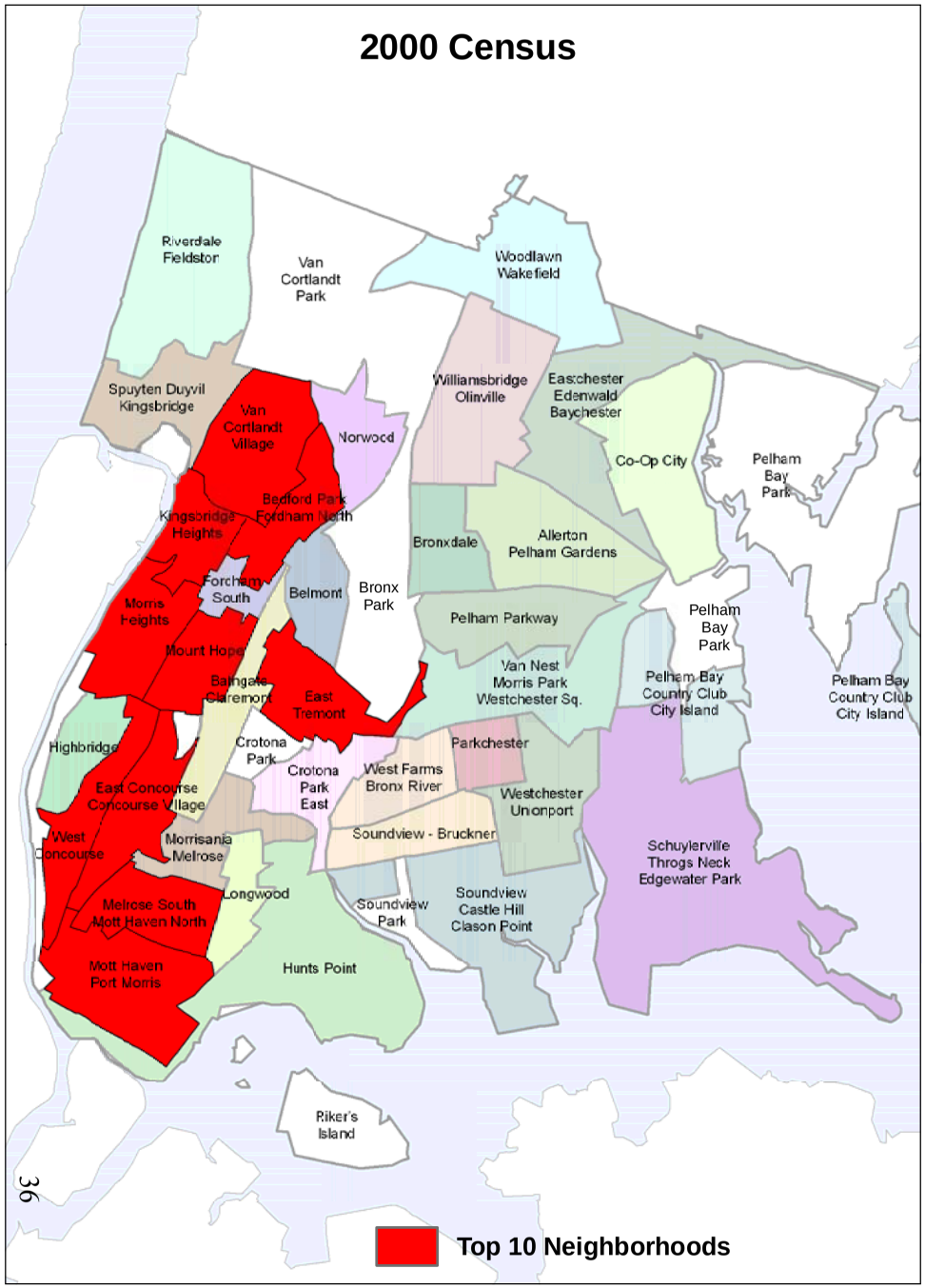
Figure 7. Bronx Housing Units in Structures Built 1990 or Later by Neighborhood, 2001-2005 ACS and Administrative Data
Median absolute difference = 120
Median absolute % difference from administrative data = 37.5
% Neighborhoods that show significant differences = 33.3
ACS Estimate
Admin. Data
Trendline (Admin. Data)
Housing Units
3,000
2,500
2,000
1,500
1,000
500
0
Neighborhoods
Morrisania - Melrose
University Hts. - Morris Hts.
Highbridge
E. Cncrs - Cncrs Vlg.
W. Concourse
Mott Haven
Claremont - Bathgate
Mt. Hope
Eastchester-Edenwald-Baychester
Williamsbridge - Olinville
Sources: 2001-2005 ACS; NYC Dept. of Buildings, Certificates of Occupancy, 1990-2005

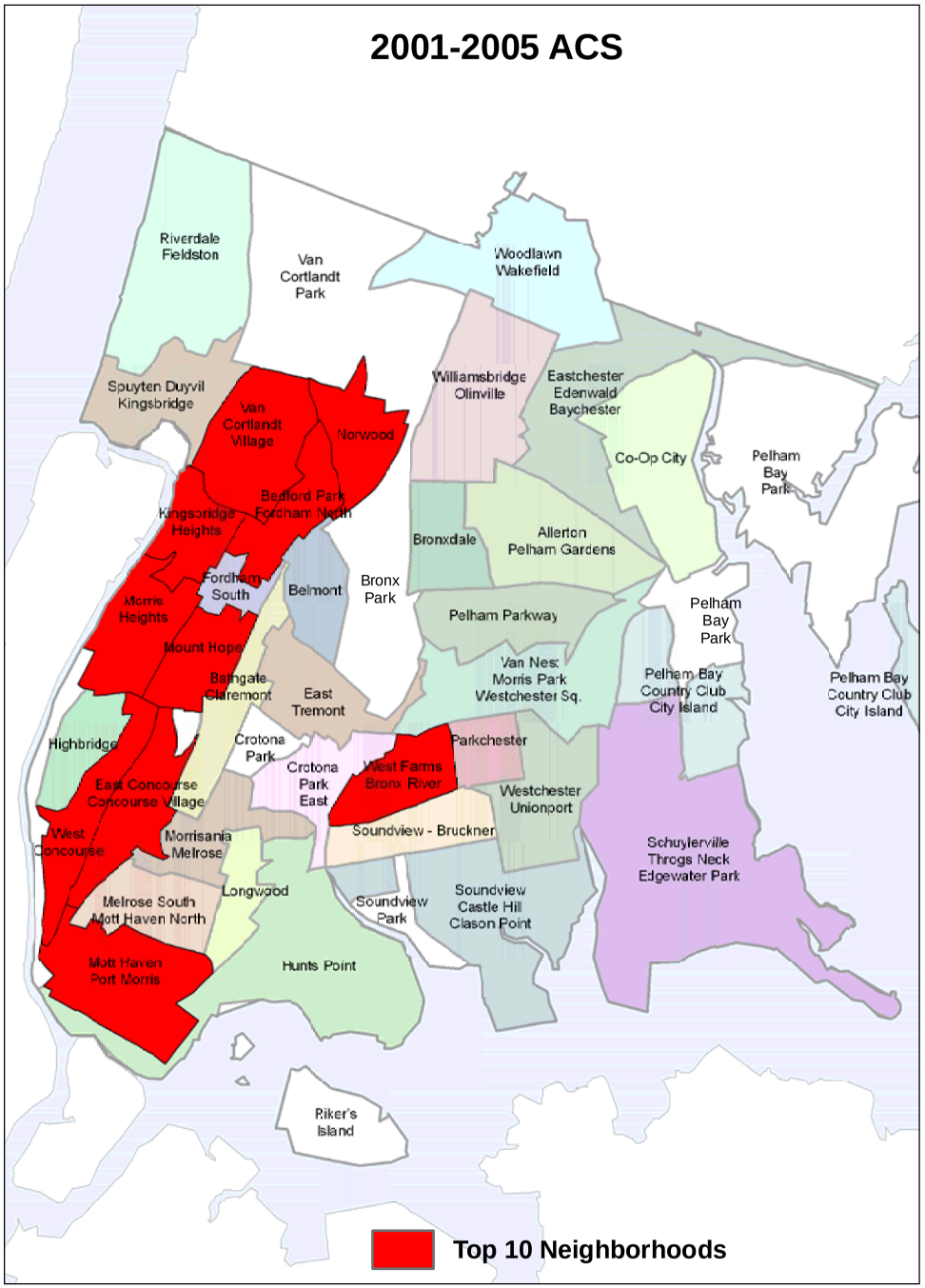
Figure 8. Top Ten Bronx Neighborhoods for Children Ages 0 to 4, 2000 Census and 2001-2005 Administrative and ACS Data



Sources: 2000 Census; NYC Dept. of Health and Mental Hygiene & NYS Dept. of Health, Births, 1996-2005; 2001-2005 ACS

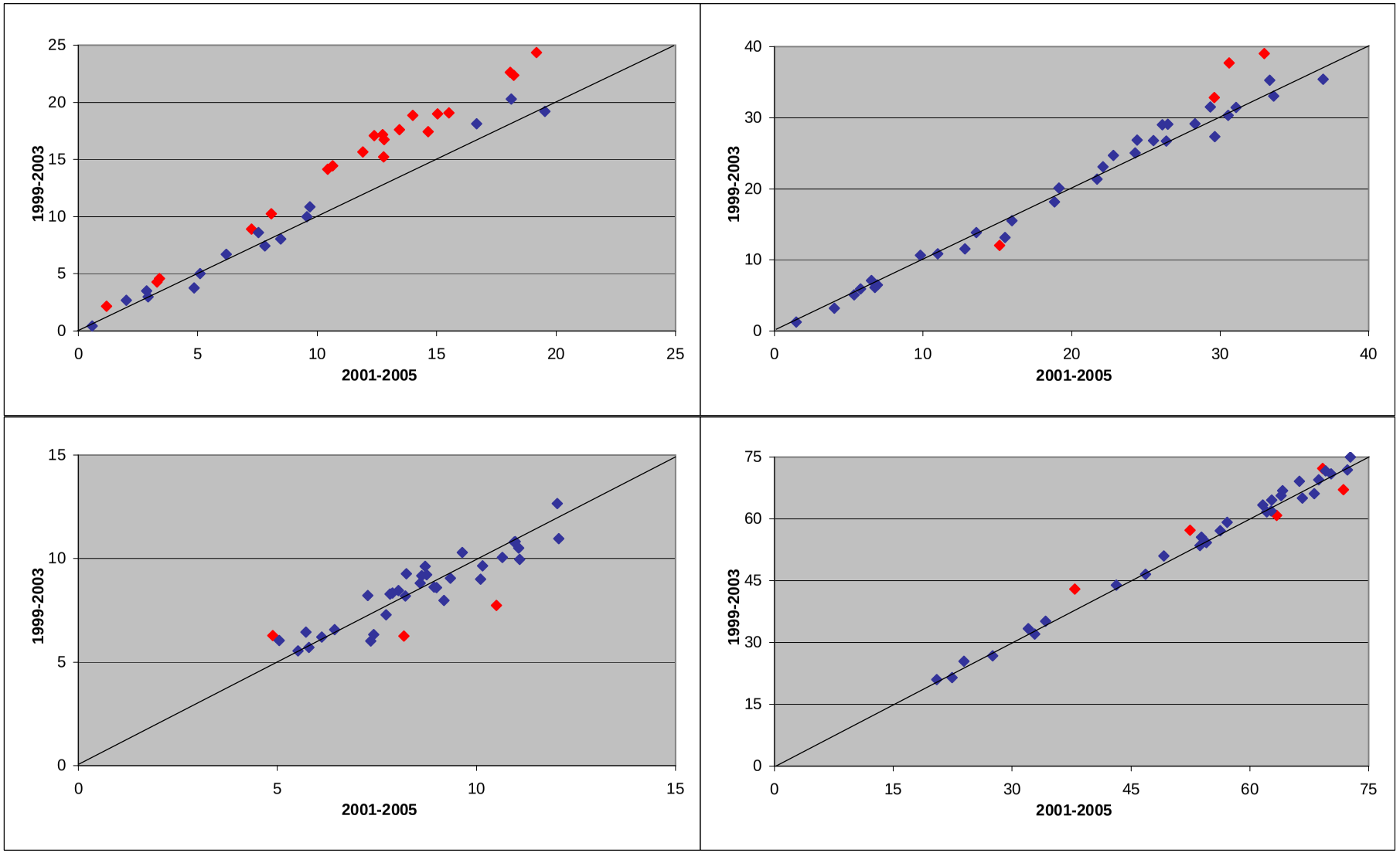
Figure 9. Top Ten Bronx Neigborhoods for Persons 5 and Over with Limited English Proficiency, 2000 Census and 2001-2005 ACS Data





Sources: 2000 Census; 2001-2005 ACS

Figure 10. A Comparison of Selected ACS Estimates for Bronx Neighborhoods, 1999-2003 & 2001-2005



Source: 1999-2005 ACS

Appendix Table 1. Census Tract Composition of Bronx Neighborhoods

Neighborhood	Census Tracts
Allerton - Pelham Gardens	031000, 031200, 031400, 031600, 031800, 032000, 032200, 034200, 034400, 034600, 035000, 035200, 035400, 036600
Bedford Park - Fordham North	023702, 039901, 039902, 040100, 040302, 040500, 040702, 041100, 041300, 041500
Belmont	038700, 038900, 039100, 039300, 039700
Bronxdale	032400, 032800, 033000, 033200, 033600, 033800, 034000
Claremont - Bathgate	014500, 014700, 016500, 016700, 016900, 037700, 038500
Co-Op City	030200, 046201, 046202
Crotona Park East	006000, 012300, 015300, 015500, 015700, 016100
East Tremont	022000, 035900, 036100, 036300, 036501, 036502, 036700, 036901, 036902, 037100, 037300, 037502, 037503
Eastchester - Edenwald - Baychester	035600, 035800, 036400, 038600, 045400, 045800, 046000, 048400, 050200
East Concourse - Concourse Village	005902, 006100, 014300, 017300, 017500, 017700, 017900, 018100, 018300, 022500
Fordham South	023701, 023900, 038300
Highbridge	018900, 019300, 019900, 020100, 021100, 021302, 021900
Hunts Point	008900, 009900, 010500, 011501, 011502, 011900, 012102, 012701, 012702, 012902
Kingsbridge Heights	025300, 025500, 026100, 026300, 026500, 026900
Longwood	008300, 008500, 008700, 012901, 013100
Melrose South - Mott Haven North	006500, 006700, 006900, 007100, 007300, 007500, 007700, 007900
Morrisania - Melrose	012101, 012500, 013300, 013500, 013700, 013900, 014100, 014900, 015100
Mott Haven	001100, 001700, 002300, 002500, 002701, 002702, 003100, 003300, 003500, 003700, 003900, 004100, 004300, 004700, 004900
Mount Hope	022701, 022702, 022703, 022901, 022902, 023100, 023301, 023302, 023501, 023502, 024100, 037900, 038100
North Riverdale - Fieldston - Riverdale	030700, 031700, 032300, 032900, 033300, 033900, 034100, 034300, 034500, 035100
Norwood	041900, 042100, 042300, 042500, 042901, 042902, 043100
Parkchester	020602, 020800, 021000, 021200, 021602
Pelham Parkway	022401, 022402, 022800, 024600, 024800, 025000, 028800, 029600
Pelham Bay - Country Club - City Island	026601, 026602, 027400, 030000, 051600
Schuylerville - Throgs Neck - Edgewater Park	011000, 011800, 013000, 013200, 013800, 014400, 015400, 015600, 015800, 016000, 016200, 016400, 016600, 018400, 019400, 026400
Soundview - Bruckner	004001, 004400, 004800, 005000, 005200, 006800, 007000, 007200
Soundview - Castle Hill - Clason Point - Harding Park	000200, 000400, 001600, 002000, 002800, 003600, 003800, 004600, 007400, 008400, 008600, 008800
Spuyten Duyvil - Kingsbridge	027101, 028300, 028500, 028700, 028900, 029300, 029500, 029700, 030100
University Heights - Morris Heights	005302, 020500, 021301, 021501, 021502, 021701, 024300, 024500, 024700, 025100, 025700
Van Cortlandt Village	026700, 027300, 027700, 027900, 028100, 040301, 040701, 040900
Van Nest - Morris Park - Westchester Square	019800, 023000, 023200, 023400, 023600, 024000, 024400, 025200, 025400, 025600, 025800, 028600
West Concourse	005700, 005901, 019500, 019700, 021702, 022100, 022300
West Farms - Bronx River	005400, 005600, 006200, 006400, 006600, 021400, 021601, 021800
Westchester - Unionport	007800, 009200, 009400, 009800, 019600, 020200, 020400, 020601
Williamsbridge - Olinville	036800, 037000, 037200, 037400, 037600, 037800, 038000, 038200, 038800, 039000, 039200, 039400, 039600, 039800, 040400, 040600, 040800, 042000, 042200, 042400
Woodlawn - Wakefield	041400, 041800, 042600, 042800, 043000, 043200, 043600, 043800, 044000, 044200, 044600, 044800, 044901, 044902, 045101, 045102

Appendix Table 2. Median Percent Estimates and Coefficients of Variation for Selected Variables for Bronx Census Tracts, 2000 Census and 2001-2005 ACS

Variable	2000 Census		2001-2005 ACS		01-05 ACS / 2000 Census
Demographic and Social Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent children 0 to 4 years of age in households	8.1	16.7	8.1	27.5	1.6
Percent of nonrelatives in household population	5.2	18.9	4.8	38.9	2.1
Percent married couple households	31.9	10.6	26.9	20.0	1.9
Percent nonfamily households	29.6	11.1	32.9	17.3	1.6
Percent of persons 25 and over high school graduate only	25.6	10.3	28.9	17.2	1.7
Percent of persons 25 and over with a bachelor's degree	8.1	21.2	8.5	34.9	1.6
Percent of persons 15 and over never married	40.2	6.2	43.2	12.1	2.0
Percent of persons 15 and over that are divorced females	5.5	23.3	5.3	35.0	1.5
Percent civilian veterans in population 18 and over	5.2	23.0	4.1	40.1	1.7
Percent foreign-born in household population	30.0	9.4	30.2	17.3	1.8
Percent naturalized U.S. citizen among foreign-born population	41.5	13.6	42.1	20.6	1.5
Percent 5 and over that speak a language other than English at home	57.2	6.0	59.0	10.2	1.7
Percent 5 and over who speak English less than "very well"	25.1	11.6	23.2	20.3	1.7
Percent 5 and over who speak Spanish at home	47.9	7.2	49.3	12.6	1.7
Median CV of Demographic and Social Variables:		**11.4**		**20.2**	**1.8**
Economic Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent of persons 16 and over that are employed	46.6	6.0	52.6	9.2	1.5
Percent of females 16 and over that are employed	41.1	8.8	46.2	13.3	1.5
Percent of workers 16 and over using public transportation	55.2	8.4	57.6	12.4	1.5
Employed civilian population 16 and over:					
Percent management, professional, and related (occupation)	24.1	14.8	23.4	24.6	1.7
Percent construction workers (occupation)	7.7	28.1	6.9	49.4	1.8
Percent workers in retail trade (industry)	9.9	26.5	9.8	41.4	1.6
Percent workers in educational services (industry)	29.8	13.2	30.3	20.3	1.5
Percent government workers (class of workers)	20.2	17.9	18.0	29.0	1.6
Percent self-employed workers (class of workers)	3.6	46.2	4.1	56.7	1.2
Households:					
Percent with income and benefits, less than $10,000	21.9	15.0	18.2	26.9	1.8
Percent with earnings	72.6	6.0	74.6	7.4	1.2
Percent with social security	22.0	18.2	22.0	21.5	1.2
Percent with cash public assistance income	14.2	24.0	8.9	39.4	1.6
Below poverty:					
Percent of all families	25.8	4.0	26.2	10.7	2.7
Percent of families with female householder, no husband	42.7	7.6	43.7	16.7	2.2
Percent of all individuals	-	-	27.8	9.5	-
Median* CV of Economic Variables:		**14.8**		**21.5**	**1.5**
Housing Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent of housing units in structures of 20 or more units	62.7	5.0	60.9	8.7	1.8
Year structure built:					
Percent of housing units in structures built 1990 or later	-	-	5.4	52.5	-
Percent of housing units in structures built 1980-1989	2.8	36.3	1.7	63.8	1.8
Percent of housing units in structures built 1970-1979	6.7	26.2	5.7	47.5	1.8
Percent of housing units in structures built 1939 or earlier	28.0	12.1	38.0	17.6	1.4
Number of rooms in housing unit:					
Percent of housing units with one room	6.5	28.8	2.6	60.8	2.1
Percent of housing units with five rooms	15.0	17.8	17.9	27.2	1.5
Percent of occupied housing units with no vehicles available	65.6	5.8	65.0	9.6	1.6
Percent of occupied housing units with one vehicle available	28.0	12.3	28.3	20.7	1.7
House heating fuel used in occupied housing units:					
Percent of occupied housing units with utility gas	43.7	8.4	30.0	18.0	2.1
Percent of occupied housing units with electricity	8.2	24.9	5.4	45.2	1.8
Percent of occupied housing units with fuel oil, kerosene, etc.	39.1	9.5	59.2	10.7	1.1
Percent of occupied housing units with no telephone service available	4.0	33.9	6.9	48.9	1.4
Percent of occupied housing units with 1.5 or more occupants per room	9.4	29.4	2.8	60.8	2.1
Percent of renter-occupied housing units:					
where gross rent is less than 15% of household income	18.2	19.2	12.0	38.1	2.0
where gross rent is 35% or more of household income	36.2	12.1	44.1	17.0	1.4
Median* CV of Housing Variables:		**17.8**		**27.2**	**1.5**

- Data unavailable or not comparable with the other series

* Variables included in overall median only if present in both data series

Sources: 2001-2005 ACS, 2000 Census specially prepared non-group quarters file

Appendix Table 3. Median Percent Estimates and Coefficients of Variation for Selected Variables for Bronx Census Tracts with the 30 Lowest Percent Estimates, 2000 Census and 2001-2005 ACS

Variable	2000 Census		2001-2005 ACS		01-05 ACS / 2000 Census
Demographic and Social Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent children 0 to 4 years of age in households	3.9	35.2	3.5	51.5	1.5
Percent of nonrelatives in household population	2.6	30.9	1.6	69.7	2.3
Percent married couple households	18.2	15.6	11.9	32.4	2.1
Percent nonfamily households	18.6	23.6	17.1	35.2	1.5
Percent of persons 25 and over high school graduate only	16.4	21.7	17.2	29.5	1.4
Percent of persons 25 and over with a bachelor's degree	2.3	43.8	1.8	81.1	1.8
Percent of persons 15 and over never married	26.3	10.1	24.6	20.3	2.0
Percent of persons 15 and over that are divorced females	2.7	50.8	1.8	64.3	1.3
Percent civilian veterans in population 18 and over	2.0	47.7	1.1	89.5	1.9
Percent foreign-born in household population	11.6	15.5	11.0	28.4	1.8
Percent naturalized U.S. citizen among foreign-born population	21.5	26.1	17.2	37.3	1.4
Percent 5 and over that speak a language other than English at home	18.0	16.8	14.7	36.1	2.1
Percent 5 and over who speak English less than "very well"	4.5	36.0	4.9	49.3	1.4
Percent 5 and over who speak Spanish at home	8.2	23.9	7.4	43.1	1.8
Median CV of Demographic and Social Variables:		**25.0**		**40.2**	**1.6**
Economic Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent of persons 16 and over that are employed	29.1	10.9	32.6	14.8	1.4
Percent of females 16 and over that are employed	25.2	14.6	26.8	24.8	1.7
Percent of workers 16 and over using public transportation	25.0	16.6	24.8	25.2	1.5
Employed civilian population 16 and over:					
Percent management, professional, and related (occupation)	11.8	23.7	8.3	47.0	2.0
Percent construction workers (occupation)	2.6	63.5	2.2	80.7	1.3
Percent workers in retail trade (industry)	4.5	53.0	2.7	75.4	1.4
Percent workers in educational services (industry)	19.5	17.5	18.3	29.8	1.7
Percent government workers (class of workers)	11.2	28.6	7.2	51.6	1.8
Percent self-employed workers (class of workers)	1.3	108.0	0.9	106.5	1.0
Households:					
Percent with income and benefits, less than $10,000	5.4	44.9	3.2	75.8	1.7
Percent with earnings	52.7	9.5	52.1	12.6	1.3
Percent with social security	10.3	29.0	8.8	43.3	1.5
Percent with cash public assistance income	1.2	121.4	1.2	99.3	0.8
Below poverty:					
Percent of all families	3.4	3.6	3.2	3.5	1.0
Percent of families with female householder, no husband	6.7	13.5	7.4	9.3	0.7
Percent of all individuals	-	-	3.8	3.6	-
Median* CV of Economic Variables:		**23.7**		**43.3**	**1.8**
Housing Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent of housing units in structures of 20 or more units	2.2	74.2	2.5	84.3	1.1
Year structure built:					
Percent of housing units in structures built 1990 or later	-	-	0.8	96.8	-
Percent of housing units in structures built 1980-1989	0.5	177.7	0.6	106.4	0.6
Percent of housing units in structures built 1970-1979	2.0	54.7	0.9	104.4	1.9
Percent of housing units in structures built 1939 or earlier	6.4	26.9	8.2	36.5	1.4
Number of rooms in housing unit:					
Percent of housing units with one room	1.4	87.0	0.6	101.3	1.2
Percent of housing units with five rooms	6.0	32.1	6.6	45.8	1.4
Percent of occupied housing units with no vehicles available	21.0	19.0	18.1	36.5	1.9
Percent of occupied housing units with one vehicle available	12.4	22.4	10.6	38.3	1.7
House heating fuel used in occupied housing units:					
Percent of occupied housing units with utility gas	28.6	11.4	13.0	27.3	2.4
Percent of occupied housing units with electricity	1.9	68.0	1.6	87.4	1.3
Percent of occupied housing units with fuel oil, kerosene, etc.	19.0	19.5	25.4	27.0	1.4
Percent of occupied housing units with no telephone service available	0.8	150.0	1.3	98.1	0.7
Percent of occupied housing units with 1.5 or more occupants per room	1.5	97.7	0.7	101.3	1.0
Percent of renter-occupied housing units:					
where gross rent is less than 15% of household income	9.6	39.2	4.6	62.3	1.6
where gross rent is 35% or more of household income	21.7	21.6	20.3	39.6	1.8
Median* CV of Housing Variables:		**39.2**		**62.3**	**1.6**

- Data unavailable or not comparable with the other series
* Variables included in overall median only if present in both data series

Sources: 2001-2005 ACS, 2000 Census specially prepared non-group quarters file

Appendix Table 4. Median Percent Estimates and Coefficients of Variation for Selected Variables for Bronx Census Tracts and Neighborhoods, 2001-2005 ACS

Variable	Tract Level		Neighborhood Level		Neighborhood / Tract CV
Demographic and Social Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent children 0 to 4 years of age in households	8.1	27.5	8.6	10.0	0.36
Percent of nonrelatives in household population	4.8	38.9	5.4	14.6	0.38
Percent married couple households	26.9	20.0	26.3	6.5	0.32
Percent nonfamily households	32.9	17.3	33.3	5.5	0.32
Percent of persons 25 and over high school graduate only	28.9	17.2	28.2	5.7	0.33
Percent of persons 25 and over with a bachelor's degree	8.5	34.9	9.3	10.4	0.30
Percent of persons 15 and over never married	43.2	12.1	43.9	4.0	0.33
Percent of persons 15 and over that are divorced females	5.3	35.0	5.5	11.9	0.34
Percent civilian veterans in population 18 and over	4.1	40.1	4.0	13.9	0.35
Percent foreign-born in household population	30.2	17.3	31.0	5.9	0.34
Percent naturalized U.S. citizen among foreign-born population	42.1	20.6	39.0	5.2	0.25
Percent 5 and over that speak a language other than English at home	59.0	10.2	61.2	3.6	0.35
Percent 5 and over who speak English less than "very well"	23.2	20.3	26.5	6.6	0.33
Percent 5 and over who speak Spanish at home	49.3	12.6	53.3	4.1	0.33
Median CV of Demographic and Social Variables:		**20.2**		**6.2**	**0.31**
Economic Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent of persons 16 and over that are employed	52.6	9.2	52.3	3.2	0.35
Percent of females 16 and over that are employed	46.2	13.3	46.4	4.5	0.34
Percent of workers 16 and over using public transportation	57.6	12.4	60.7	4.3	0.35
Employed civilian population 16 and over:					
Percent management, professional, and related (occupation)	23.4	24.6	21.9	8.1	0.33
Percent construction workers (occupation)	6.9	49.4	7.1	17.9	0.36
Percent workers in retail trade (industry)	9.8	41.4	10.6	14.6	0.35
Percent workers in educational services (industry)	30.3	20.3	30.1	6.2	0.31
Percent government workers (class of workers)	18.0	29.0	17.5	9.3	0.32
Percent self-employed workers (class of workers)	4.1	56.7	4.3	22.5	0.40
Households:					
Percent with income and benefits, less than $10,000	18.2	26.9	20.8	8.2	0.31
Percent with earnings	74.6	7.4	73.6	2.4	0.33
Percent with social security	22.0	21.5	22.1	7.0	0.33
Percent with cash public assistance income	8.9	39.4	10.5	13.5	0.34
Below poverty:					
Percent of all families	26.2	10.7	-	-	-
Percent of families with female householder, no husband	43.7	16.7	-	-	-
Percent of all individuals	27.8	9.5	-	-	-
Median* CV of Economic Variables:		**24.6**		**8.1**	**0.33**
Housing Characteristics	**Median Percent Estimate**	**Median CV**	**Median Percent Estimate**	**Median CV**	**CV Ratio**
Percent of housing units in structures of 20 or more units	60.9	8.7	69.5	2.3	0.26
Year structure built:					
Percent of housing units in structures built 1990 or later	5.4	52.5	4.3	27.5	0.52
Percent of housing units in structures built 1980-1989	1.7	63.8	3.4	36.6	0.57
Percent of housing units in structures built 1970-1979	5.7	47.5	7.5	15.6	0.33
Percent of housing units in structures built 1939 or earlier	38.0	17.6	35.6	5.1	0.29
Number of rooms in housing unit:					
Percent of housing units with one room	2.6	60.8	3.5	24.9	0.41
Percent of housing units with five rooms	17.9	27.2	16.3	9.0	0.33
Percent of occupied housing units with no vehicles available	65.0	9.6	67.8	2.9	0.30
Percent of occupied housing units with one vehicle available	28.3	20.7	27.2	6.8	0.33
House heating fuel used in occupied housing units:					
Percent of occupied housing units with utility gas	30.0	18.0	29.5	6.1	0.34
Percent of occupied housing units with electricity	5.4	45.2	6.2	16.7	0.37
Percent of occupied housing units with fuel oil, kerosene, etc.	59.2	10.7	59.8	3.3	0.31
Percent of occupied housing units with no telephone service available	6.9	48.9	7.0	17.8	0.36
Percent of occupied housing units with 1.5 or more occupants per room	2.8	60.8	4.0	26.3	0.43
Percent of renter-occupied housing units:					
where gross rent is less than 15% of household income	12.0	38.1	11.9	12.9	0.34
where gross rent is 35% or more of household income	44.1	17.0	45.2	5.8	0.34
Median CV of Housing Variables:		**32.7**		**11.0**	**0.34**

- Data unavailable or not comparable with the other series
* Variables included in overall median only if present in both data series

Source: 2001-2005 ACS