

Navigating Reliability of Small Area Data Lessons from New York City

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Reliability of ACS Poverty Data Across Tracts of Varying Size

Tract Population	Number of Tracts	Median CV	Mean CV
Less than 1000	713	31.3	37.9
1000-2999	18910	29.0	32.6
3000-4999	30568	28.1	31.0
5000-6999	16263	28.2	30.5
7000 or more	5831	27.8	29.6
Source: PRB analysis of 2008-2012 ACS data.			

What are acceptable levels of relative reliability when using ACS estimates?

“CVs of 10-12 percent or less are often accepted as a reasonable standard of precision for an estimate.”

– *Using the American Community Survey: Benefits and Challenges, 2007*

“While there is no hard-and-fast rule, for the purposes of this handbook, estimates with CVs of more than 15 percent are considered cause for caution when interpreting patterns in the data.”

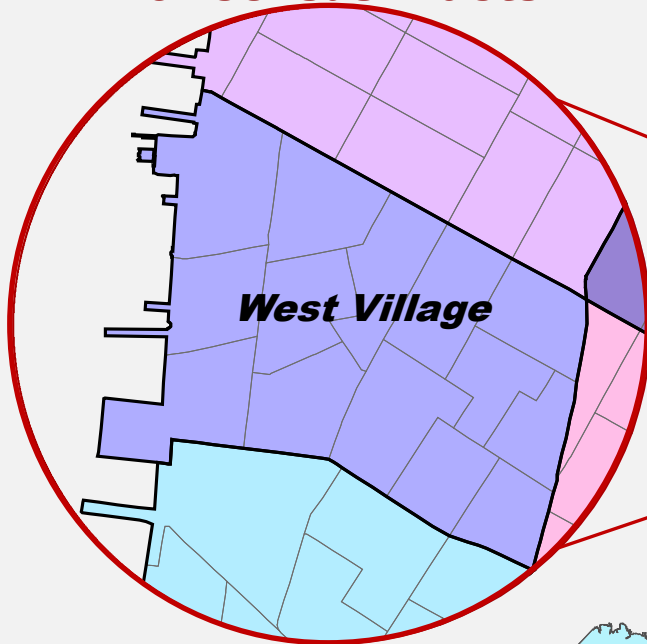
– *Census Bureau’s ACS Compass Handbook Series, 2009*

Remember:

**Income of \$60,000
with CV of 20 percent
has MoE of +/- \$20,000**

Neighborhood Tabulation Areas (NTAs) New York City

**NTAs are composed
of Census Tracts**



NTAs
NYC Count = 188
Median Population = 36,600
Median # HUs = 15,100

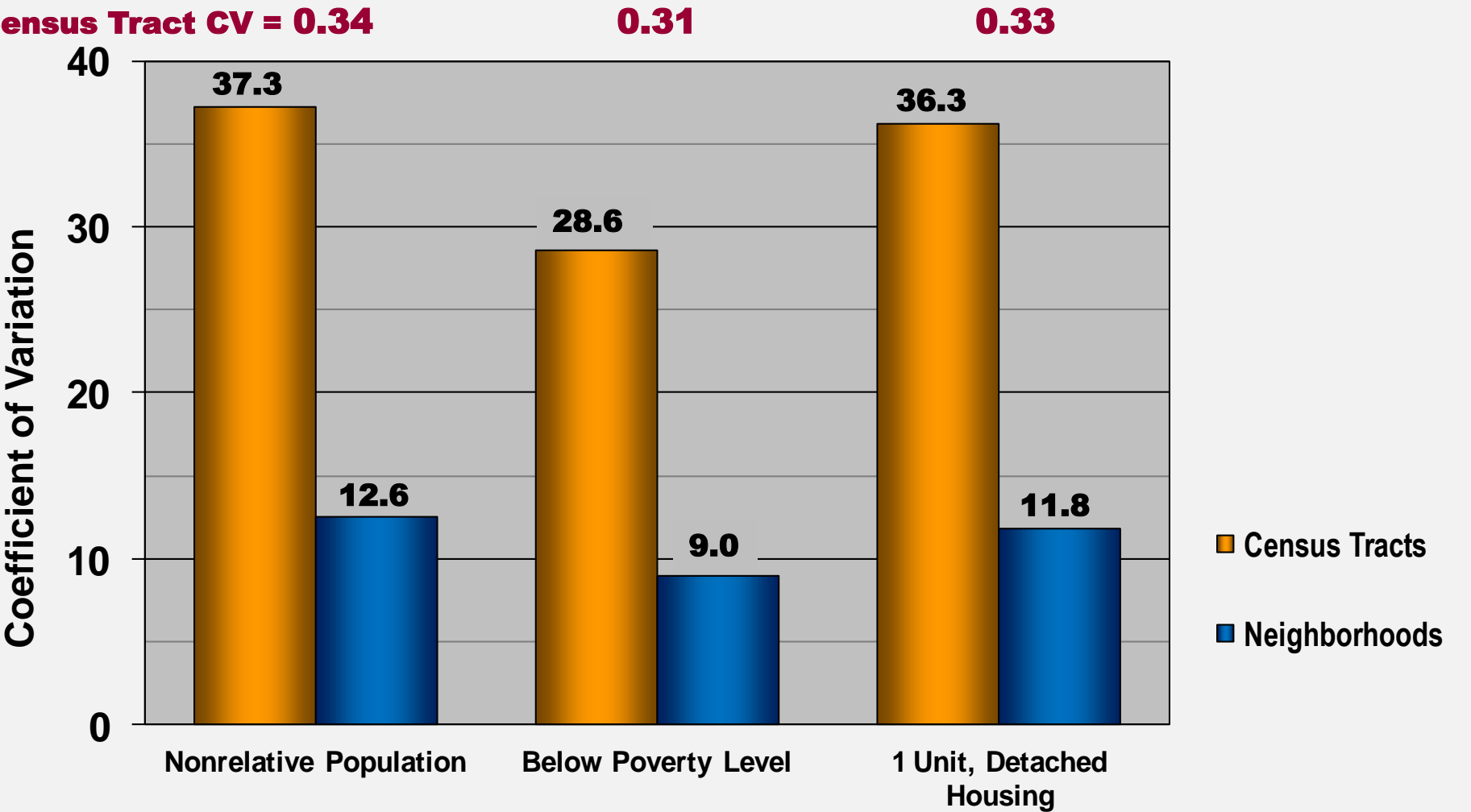
Source: U.S. Census Bureau, American Community Survey, 2006-2010 Summary File
 Population Division-New York City Department of City Planning

Neighborhood Tabulation Areas or NTAs, are aggregations of census tracts that are subsets of New York City's 55 Public Use Microdata Areas (PUMAs). Primarily due to these constraints, NTA boundaries and their associated names may not definitively represent neighborhoods.

Median Coefficients of Variation for Selected Variables

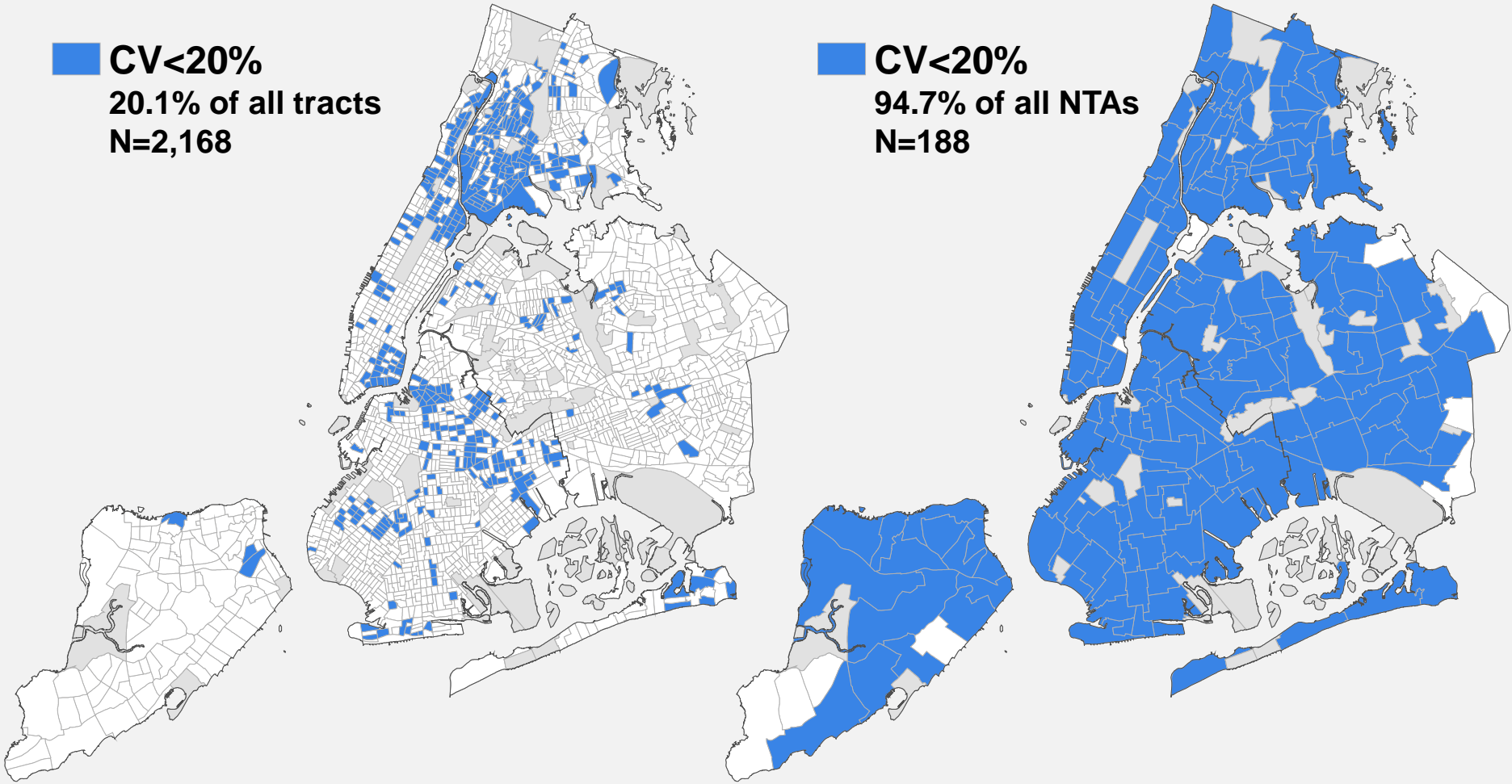
NYC Census Tracts and Neighborhoods (NTAs), 2008-2012 ACS

Ratio of NTA CV to
Census Tract CV = 0.34



Note:
CVs for tract estimates of zero were omitted.
For NTA aggregation, MOEs associated with tract estimates of zero were converted to zero.

Coefficients of Variation (CV) for Population Living Below Poverty New York City Census Tracts & Neighborhoods (NTAs), 2008-2012



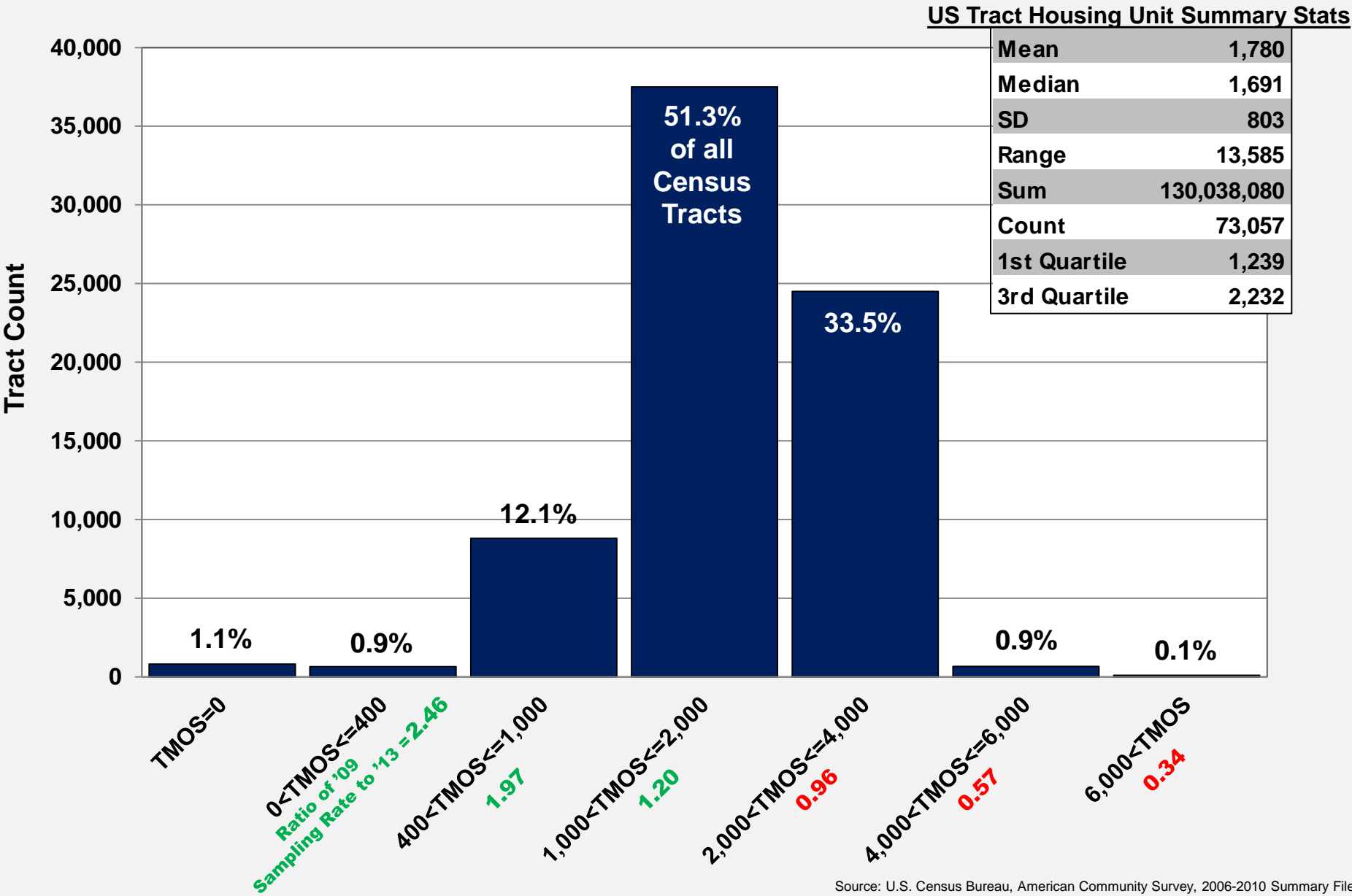
Source: U.S. Census Bureau, 2008-2012 American Community Survey-Summary File
Population Division-New York City Department of City Planning

Tract Measure of Size (TMOS) Sampling Rates 2009 and 2013 American Community Surveys

Tract Measure of Size In Housing Units	2009 Average of Post-reduction Sampling Rates	2013 Average of Post-reduction Sampling Rates	Ratio of 2013 Sampling Rate to 2009 Sampling Rate
0<TMOS<=400	2.141	5.275	2.464
400<TMOS<=1,000	2.141	4.220	1.971
1,000<TMOS<=2,000	2.141	2.562	1.197
2,000<TMOS<=4,000	1.573	1.507	0.958
4,000<TMOS<=6,000	1.573	0.904	0.575
6,000<TMOS	1.573	0.528	0.335

Tract Measure of Size (TMOS) Strata Tract Counts

United States, 2006-2010 ACS



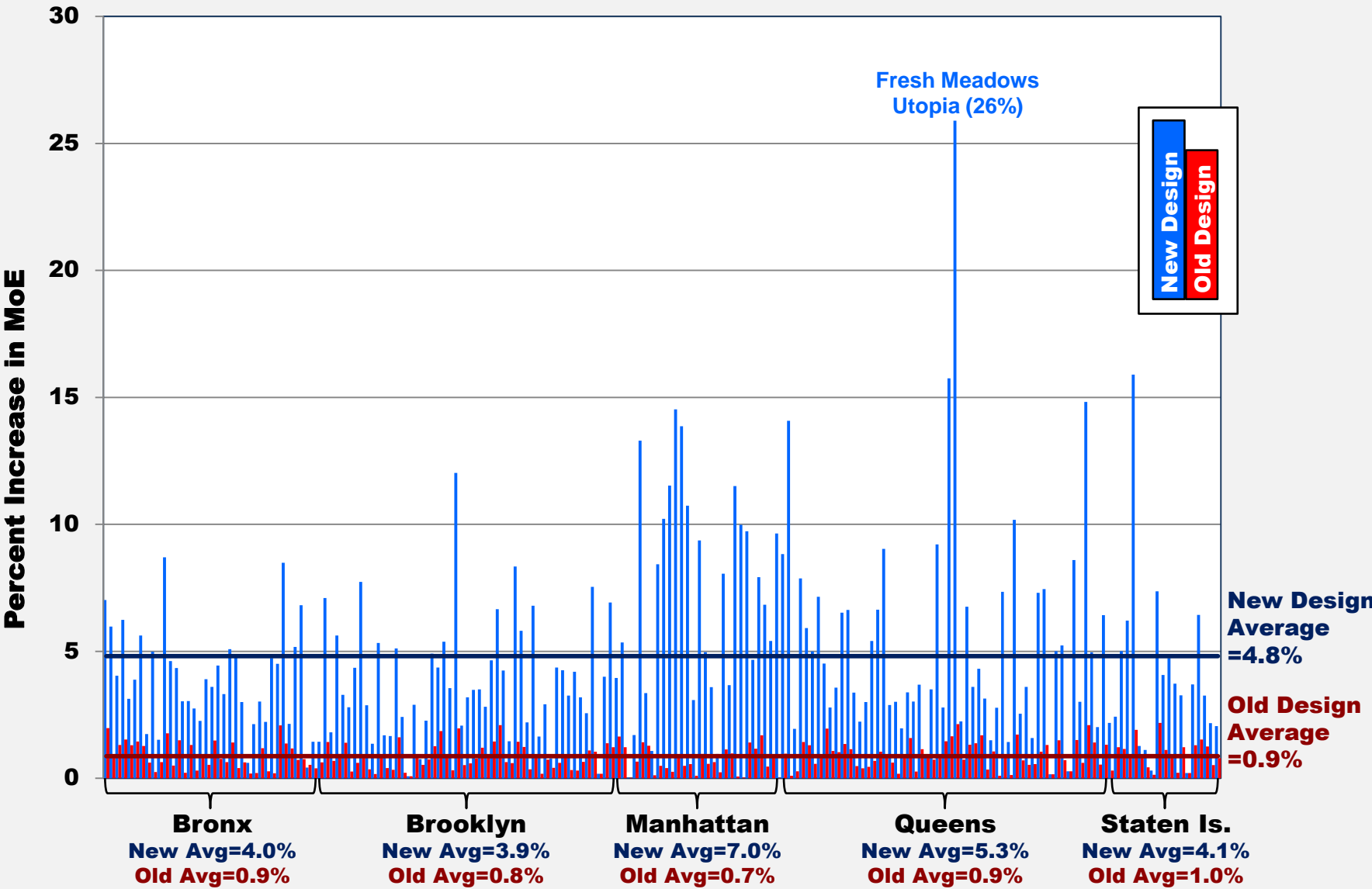
Effect of New ACS Sample Design on Sample Size & Weight Variability

New York City Housing Estimates*, 2006-2010

	Housing Units				Average	SD of
	Estimate	Unweighted Sample	Percent in Sample	Average Weight	Weight by Tract	Tract Weight
2006-2010 data	3,342,799	200,343	6.0	16.7	16.3	2.6
Simulated New Design	3,342,799	233,390	7.0	14.3	13.7	6.9
Percent Change	-	16.5	16.5	-14.2	-16.0	160.9

**Excludes tracts with estimates of zero and those in parks, airports, and Rikers Island Neighborhood Tabulation Areas (NTAs)*

**Percent Increase in MoEs (When Aggregating Tract Estimates) Attributable to Differential Weights Used in Old vs. New ACS Sample Design, 2006-2010
New York City Neighborhood Tabulation Areas (NTAs)**

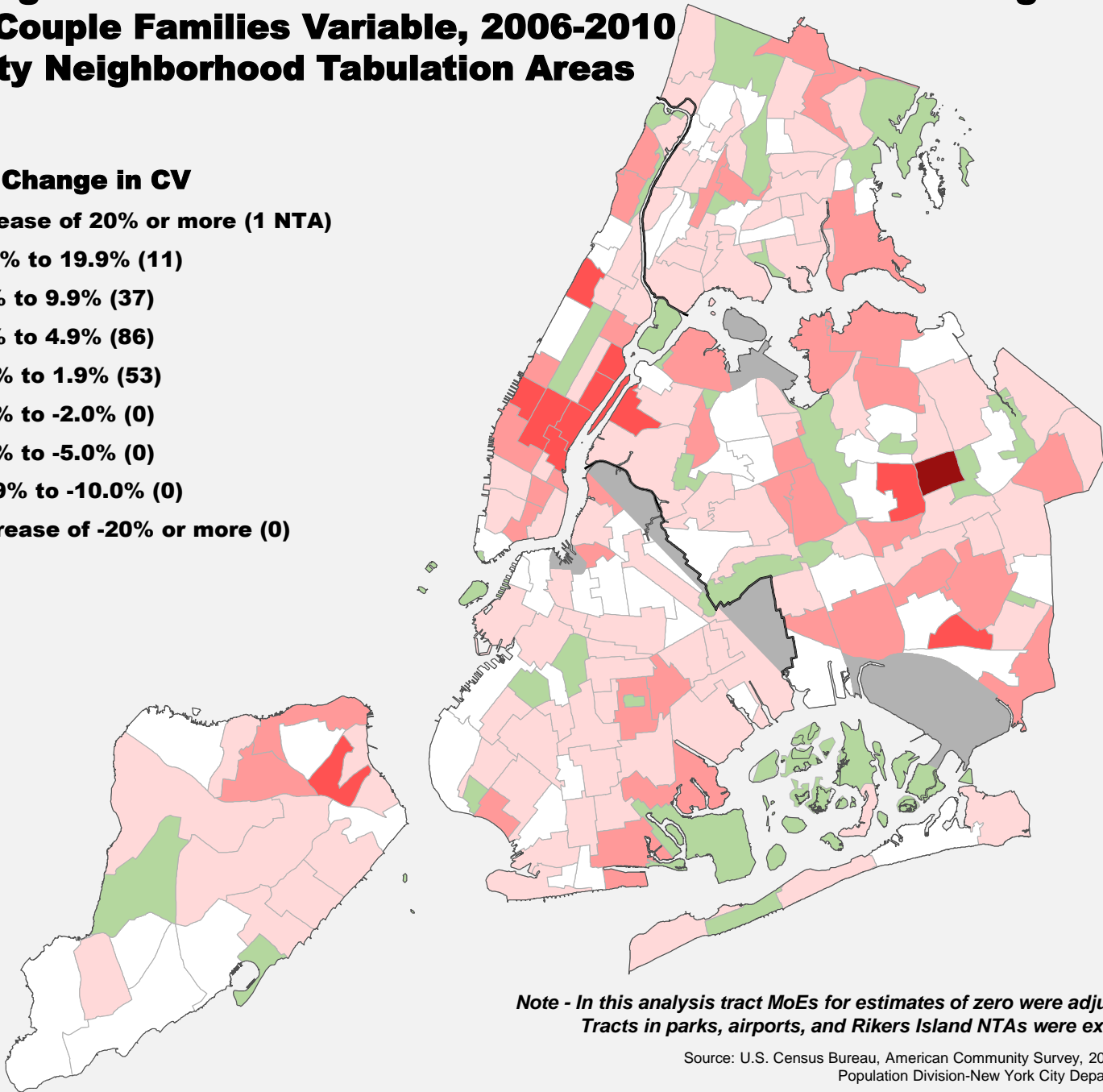
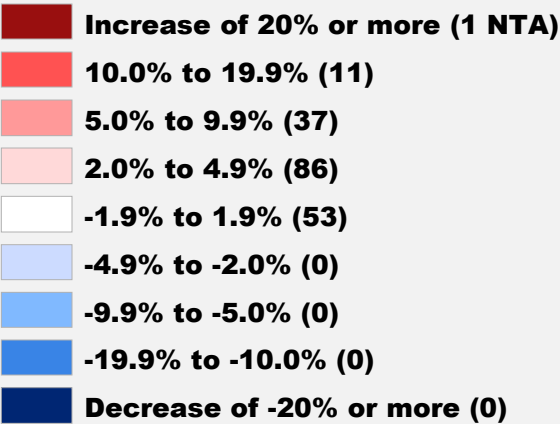


Note - In this analysis tract MoEs for estimates of zero were adjusted to zero. Tracts in parks, airports, and Rikers Island NTAs were excluded.

Source: U.S. Census Bureau, American Community Survey, 2006-2010 Summary File
Population Division-New York City Department of City Planning

Percent Change in Coefficients of Variation Due to Differential Weights For Married Couple Families Variable, 2006-2010 New York City Neighborhood Tabulation Areas

Percent Change in CV



*Note - In this analysis tract MoEs for estimates of zero were adjusted to zero.
Tracts in parks, airports, and Rikers Island NTAs were excluded.*

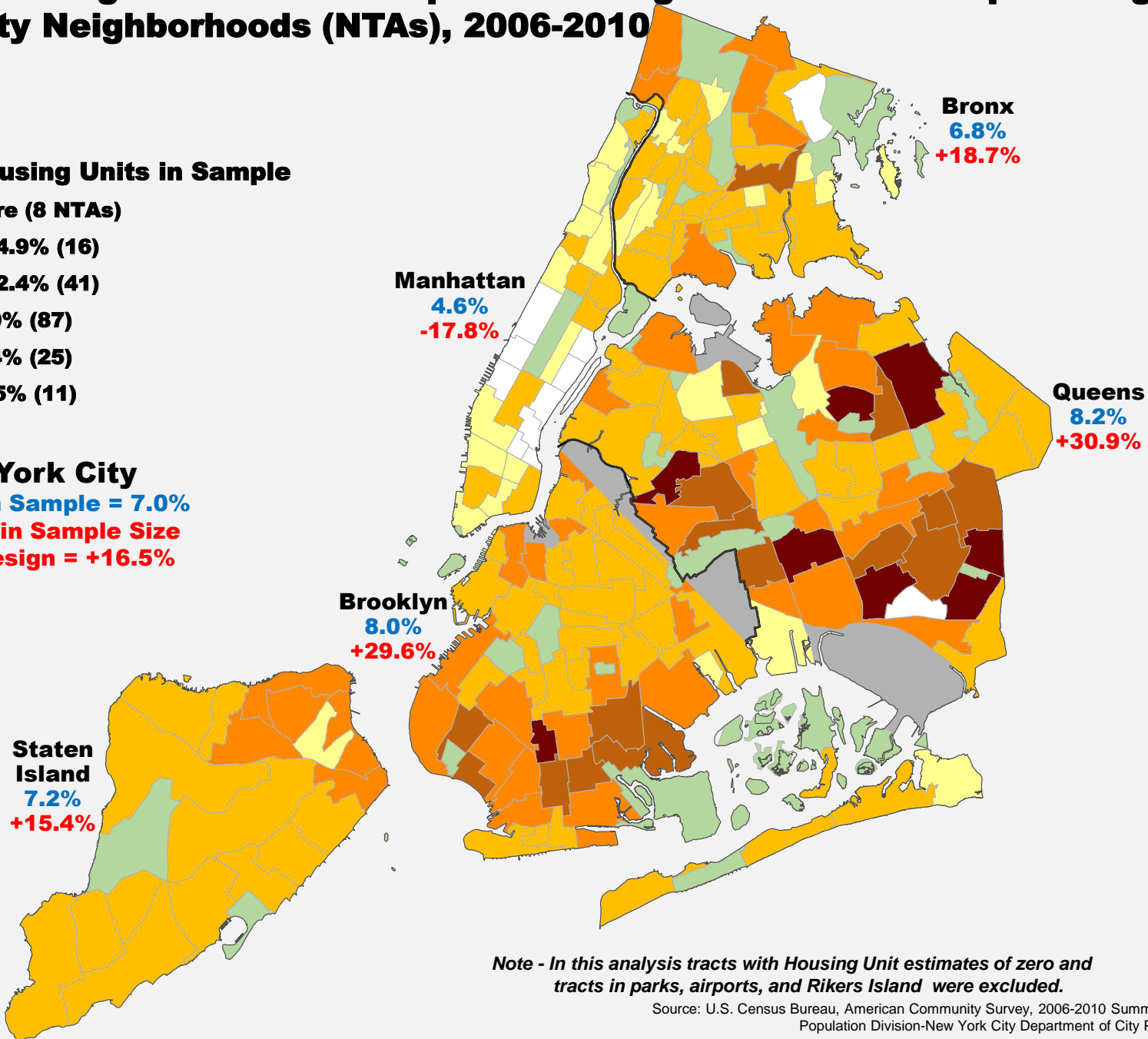
Percent of Housing Units in the Sample According to New ACS Sample Design New York City Neighborhoods (NTAs), 2006-2010

Percent of Housing Units in Sample

- 15% or more (8 NTAs)
- 12.5% to 14.9% (16)
- 10.0% to 12.4% (41)
- 7.5% to 9.9% (87)
- 5.0% to 7.4% (25)
- Less than 5% (11)

New York City

% of HUs in Sample = 7.0%
% Change in Sample Size
w/ New Design = +16.5%

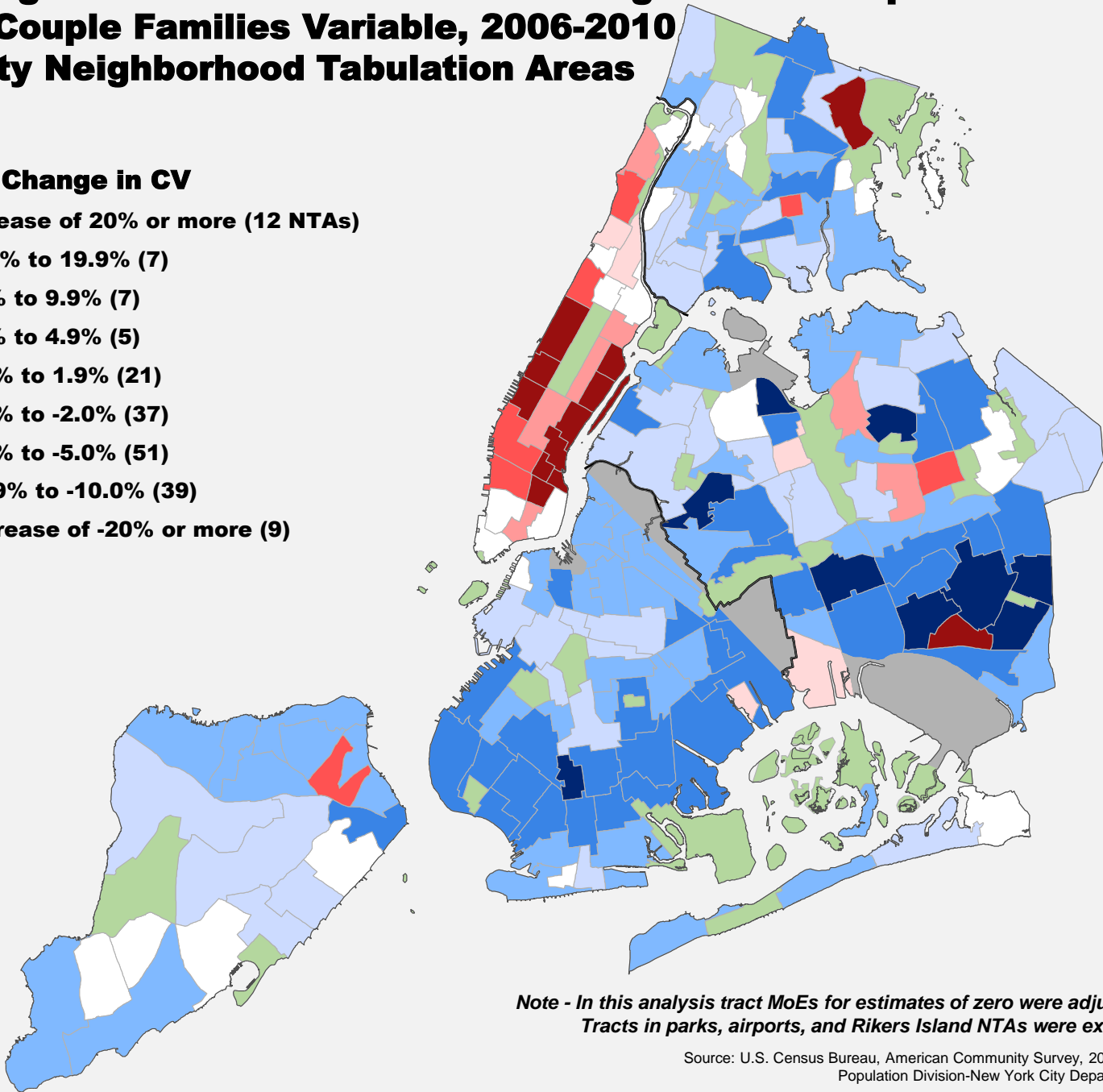
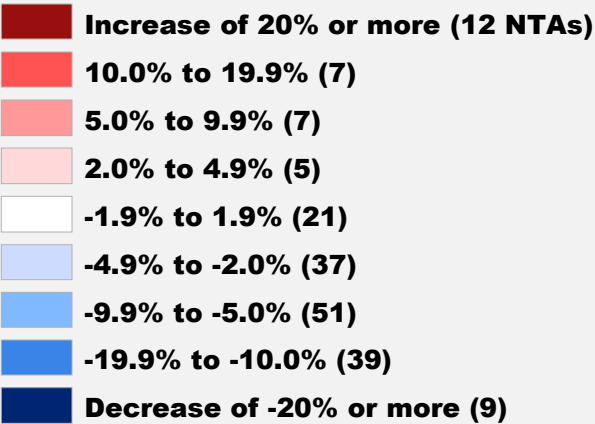


Note - In this analysis tracts with Housing Unit estimates of zero and tracts in parks, airports, and Rikers Island were excluded.

Source: U.S. Census Bureau, American Community Survey, 2006-2010 Summary File
Population Division-New York City Department of City Planning

Percent Change in CVs Due to Differential Weights and Sample Size Changes For Married Couple Families Variable, 2006-2010 New York City Neighborhood Tabulation Areas

Percent Change in CV



*Note - In this analysis tract MoEs for estimates of zero were adjusted to zero.
Tracts in parks, airports, and Rikers Island NTAs were excluded.*

Suggestions for the Census Bureau

- **Provide more guidance on acceptable levels of reliability (examples)**
- **More guidance on aggregation of summary level ACS data**
- **Reconsider the impact of new sample design on data aggregation**
- **Longer-term: Press for further increases in sample size and/or endorse new small area geography**

Neighborhood Statistics

From the 1980 Census



Data for neighborhoods were prepared by the Census Bureau for the first time from the 1980 Census of Population and Housing. Almost 1,300 cities, counties, townships, and other areas participated in the 1980 Census Neighborhood Statistics Program (NSP).

Following Census Bureau guidelines, NSP participants defined "Neighbor-

hood Publication Areas" (which were usually whole cities or counties) and, within these areas, the neighborhoods for which they wanted data prepared. These neighborhoods do not always coincide with the common, local perception of neighborhoods. For example, some communities defined what actually are neighborhood subareas, because traditional neighborhoods were too large to be useful areas of analysis.

Information about the neighborhood boundaries was sent to the Census Bureau for use in tabulating the data. The neighborhood statistics then were provided to a local contact person for use in the community.

To find out if your community participated in the NSP, contact your local city or county planning agency, State Data Center, or the nearest Census Bureau regional office. More information about State Data Centers and regional offices is found at the end of this booklet.



Data Links

- **DCP Population Division website:**
www.nyc.gov/population
- **New York City Census FactFinder:**
maps.nyc.gov/census/

