UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK
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SHAUNA NOEL and EMMANUELLA SENAT,

Plaintiffs,

-against- 15-CV-5236 (LTS) (KHP)

CITY OF NEW YORK,

Defendant.

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DECLARATION OF PROFESSOR ANDREW A. BEVERIDGE
IN SUPPORT OF PLAINTIFFS' MOTION FOR PARTIAL SUMMARY JUDGMENT

Part 1: Declaration and Exhibits

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DECLARATION OF PROFESSOR ANDREW A. BEVERIDGE IN SUPPORT OF PLAINTIFFS' MOTION FOR PARTIAL SUMMARY JUDGMENT

ANDREW A. BEVERIDGE declares, pursuant to 28 U.S.C. § 1746, that the following is true and correct:

A. Qualifications and experience

1. I am a Professor of Sociology at Queens College and the Graduate Center of the City University of New York and served as Chair of the Queens College Sociology Department from 2006 to 2018. My primary responsibilities at Queens College and the Graduate Center are teaching statistics and research methods at the graduate and undergraduate levels, and conducting quantitative, statistically based social research. I have a Ph.D. in Sociology and B.A. in Economics from Yale University. I have been a professor since 1973, first at Columbia University until 1981, and then at Queens College and the Graduate Center of the City University of New York.

2. My areas of expertise include demography and the statistical and quantitative analysis of social science datasets, most particularly including Census data, survey data and

administrative records. I am also an expert in the application of Geographical Information Systems ("GIS") technology to the analysis of social patterns. I am also considered an expert in urban change, particularly neighborhood change and long-term urban change. I regularly publish results and analyses in professional journals and peer-reviewed books. Some of my analyses have served as the bases for articles in the *New York Times*, where I have served as a demographic consultant since 1993.

3. I am the co-founder and CEO of Social Explorer Inc., a website that provides demographic and other social data in a visual form. The site and related projects have won eight awards and, in the last year, have had over 1.5 million users. The subscription product is used by over 300 libraries at educational institutions, and is also used by government, non-profit, and business customers. Beyond this, the company has developed curricular materials for over 300 digital textbook titles. I have also served as a consultant to public and private entities, where I provide services related to demographic analysis.

4. I have frequently provided expert opinions and testimony in demographic and statistical analysis, including numerous cases involving housing discrimination and housing segregation. My curriculum vitae is attached hereto as Exhibit 1.[1]

B. Summary of findings

5. I examined publicly available Census Bureau and related data, and data from defendant's affordable housing lotteries, including some analyses of those data from defendant's expert, Dr. Bernard Siskin. I determined, among other things, that:

a. New York City was and remains characterized by significant levels of residential

[1] I am being compensated at the rate of $200/hour for my work in this case; I am also being reimbursed for expenses, including the expenses for payment of members of my team.

segregation on the basis of race and Hispanic status. At the community district level, that citywide segregation is reflected in significant variation from one community district to another in terms of the distribution of racial groups and Hispanics.

b. Defendant's community preference policy in its affordable housing lotteries confers significant advantages on its beneficiaries, and significant disadvantages on those who are non-beneficiaries, with non-beneficiaries being denied a level playing field in competing for affordable housing. The policy-imposed disadvantages include imposing on non-beneficiaries lower odds of being awarded a housing unit; less likelihood of having one's application even reviewed and considered by a developer;[2] and a greater likelihood of being closed out of some or all of the housing unit types for which the non-beneficiary applicant was apparently eligible at the time of developer review.

c. The benefits and detriments of defendant's community preference policy are distributed in such a way as to create substantial discriminatory effects on the basis of race and Hispanic status; which demographic groups are victims of the policy varies according to which racial or Hispanic group dominates the community district. In other words, the policy, carried out on a community-district basis, causes a variety of localized discriminatory effects.

d. Defendant's community preference policy perpetuates segregation substantially more (and allows integration substantially less) than what would exist without the policy.

e. The overwhelming majority of unique applicants to housing lotteries apply at least 75 percent of the time to lotteries for housing *outside* of their community district.

f. The rent burden experienced by those who get the benefit of defendant's policy is similar to that experienced by those are who disadvantaged by defendant's policy.

[2] References to "developer" are meant to encompass the developer's marketing agent where it is the marketing agent handling the lottery process in a particular lottery project.

C. Introduction

6. Defendant has had and continues to have rules (adopted and enforced by HPD, the Department of Housing Preservation and Development, and by HDC, the New York City Housing Development Corporation (together, "the agencies") that govern the award of housing units in defendant-administered lotteries for development or preservation projects where some or all of the units are within various levels of what defendant considers "affordable." The eligibility criteria for some units makes them affordable, for example, to households with an annual household income up to 60 or 80 percent of Area Median Income ("AMI"). Other units are "affordable" at a different level: perhaps 130 or even 165 percent of AMI.[3]

7. The case and this declaration deal with that portion of affordable housing units that are distributed by what is referred to as a housing lottery for initial rent-up. Neither is concerned with units that are awarded through means other than the lottery (for example, units that are awarded by agency referral or with units that have been awarded as open market, the latter being a process that is supposed to be activated, on agency approval, only when one or more apartment unit-types have not been able to be filled in the lottery). Both also put to the side applicants who, at application, are not New York City residents, and the small number of units awarded through the lottery to non- New York City residents.[4]

8. The units in a project anticipated to be "lotteried" off are advertised to the public, including on "Housing Connect," defendant's online portal for advertising lotteries and accepting

[3] *See, e.g.,* Plaintiffs' Statement of Undisputed Facts ("PS"), at ¶¶ 4-7.

[4] New York City applicant households have a general preference over non- New York City applicant households. *See* PS at ¶ 24, n.9. Unless otherwise specified, references to "all households," "all units" or to "all" of a certain type or category of household or unit are to be understood as terms that do *not* encompass non- New York City applicant households, nor units awarded to non- New York City residents. Residents of places outside of New York City accounted for approximately 1.1 percent of the units awarded through the lottery (mostly higher-AMI units) and 5.5 percent of applications analyzed for this declaration.

applications for them. ("Housing Connect" also refers to the database in which application information provided by applicant households is stored.)

9. Within a project's lottery, there are, in the overwhelming percentage of lotteries, multiple apartment "unit types" that are, at least initially, available to be competed for. Each unit type in a lottery is characterized by a unique combination of number of bedrooms, a monthly rent, a minimum income, and a range of permissible household sizes, with the maximum permissible household income generally varying by each permissible household size. Each unit type is also associated with a particular AMI level of household income.

10. As I understand it, there is no "pre-qualification" or "qualification" process at the entrant stage. An applicant household who wishes to apply is permitted to do so, so long as required information is provided.[5] Neither HPD nor HDC make any initial threshold judgment about the qualifications of an applicant household.[6]

11. In some respects, the process at this point is unremarkable: those who have wanted to apply have applied; once the lottery application process has ended, the agencies assign random sequence numbers to each application to determine the order in which a developer is obliged to review them; and several pieces of data about applicant households, including, notably, the applicant household's self-reported annual household income and household-size, are made available to the developer.

12. If this were all that there were to the process, there would be no case: each applicant

[5] I am not opining on the extent to which inhibition effects – including potentially the existence of the preference itself – could have suppressed applications from some households residing in New York City outside of the community district for which preference is given.

[6] Notation is made – for later review by a developer – as to whether an applicant household appears to have submitted duplicate applications or whether a member of an applicant household is listed on more than one application.

household would have an equal chance to be considered by the developer in the lottery overall, and if selected for consideration, in respect to units for which the applicant household is apparently eligible.

13. But imposed on the random, equal-access process as a fact of life for all applicants (even before they are assigned a random lottery number) are a number of set-aside and preference rules, including rules that provide for priority being given for 50 percent of units anticipated to be allocated by lottery[7] to those applicant households who live in the community district ("CD") where the development is located (what I refer to as the "CD preference area").[8] This policy, which includes rules as to the ways in which developers are required to subordinate random lottery order when sequencing which groups of applications are treated before other groups of applications, is referred to by the defendant as the "community preference policy" and by plaintiffs as the "outsider-restriction policy."

14. For the purposes of this declaration, I use interchangeably the terms "CP beneficiaries" and "insiders" to refer to those New Yorkers who live in the CD preference area.[9] I explain later why all applicants who live in the CP preference area are indeed beneficiaries of community preference.[10] I use interchangeably the terms "non-beneficiaries" and "outsiders" to refer to applicant households for a lottery who reside in New York City outside of the CD

[7] *See* PS, ¶ 16. There are some circumstances where the percentage of lotteried units that go to applicant households living in the community district can be larger or smaller than 50 percent, but 50 percent is the norm.

[8] In a small percentage of cases, the preference is expanded to cover not only those who live in the community district or districts where the project is located, but also those who live in one or more nearby community districts; occasionally, the additional community districts are not adjacent to the community district in which the housing is being built.

[9] There is a small subset of insiders who, for the purposes of the analyses I have performed, are treated as non-beneficiaries. *See* discussion, below, at 16-17, ¶¶ 48-53.

[10] *See* discussion, below, at 19-20, ¶¶ 59-62, and at 52-54, ¶¶ 178-88.

preference area.

15. For the purposes of this declaration, where I use the term African American or Black, I am referring to "non-Hispanic Blacks" as classified by the Census Bureau; when I use the term White, I am referring to "non-Hispanic Whites" as classified by the Census Bureau; when I use the term Asian, I am referring to "non-Hispanic Asians" as classified by the Census Bureau; and when I use the term Latino or Hispanic, I am referring to "Hispanics of any race" as classified by the Census Bureau.

16. Where I use the terms "demographic group" or "demographic groups," I am referring to one or more of the four groups referred to in the preceding paragraph. Where I use the terms "race" or "racial," I am using them as shorthand for "race or Hispanic status," unless otherwise specified.

17. The universe of projects that I analyzed consists of 168 of the 185 rental lotteries where defendant had "reconciled" the results between and among multiple types of defendant's data.[11] These projects are listed by their Housing Connect ("HC") Project Identification Number in Exhibit 2. Lotteries from among this group had application deadlines for applicant households as early as August 2012 and as late as February 2017; full "lease-up" (that is, the moment at which the award of all of a project's lottery units for initial occupancy was completed) occurred between October 2012 and July 31, 2018.

18. In the aggregate, the 168 rental lotteries accounted for awards of 10,245 affordable

[11] In brief, the purpose of reconciliation was to confirm the accuracy of defendant's records as to which applicant households were awarded lotteried units. This included attempting, insofar as it was possible, to determine the *first* applicant household to be awarded each unit. Decisions as to how to reconcile and what the reconciliation results should be in each particular case were made by defendant. Further reference to the reconciliation process is made in Section XIII of the Sources and Methodology Appendix (separately filed on ECF as Part 2 of my declaration).

housing units through the lottery ("lotteried units").[12]

19. There were, in total, more than 7.2 million lottery applications for these units from more than 700,000 unique applicant households.

20. The reconciled rental lotteries that I did *not* analyze come in two categories: (a) 100 percent community-preference lotteries; and (b) 15 projects, where only one unit or two units were lotteried off (these 15 lotteries awarded by lottery 25 units in the aggregate). All of these projects are also identified in Exhibit 2. Each project in the 15-lottery group had been advertised as having community preference applicable, even though defendant has described community preference as not being available in projects with fewer than three units; in most of these projects, however, defendant's data show that community preference was not awarded in respect to any unit.

21. My analyses of lotteries, unit types, unit types awarded, and applicant households needed to take into account the fact that while the policy was *in force* citywide, it was *implemented in each case* at the CD level, and thus could have different impacts (could cause different demographic groups to be hurt) in different parts of the City. The analyses thus needed to recognize how the demographics of different CDs vary. My solution was to create a classification system of seven community district preference area typologies ("CD typologies") for my disparate impact analyses that I based on 2013-17 5-year American Community Survey ("ACS") population data:[13] (1) majority White; (2) majority Black; (3) majority Hispanic; (4) majority Asian; (5)

[12] As a reminder, I note that references to units and to applicant always exclude non- New York City applicant households and units awarded to non- New York City households. Note, also, that defendant did not provide equivalent household information on those who received units *outside* of the lottery process.

[13] 2013-17 ACS 5-year data comprises the most recent 5-year data available when the analysis was performed (data from 2013 to 2017). I was able to aggregate up from the Census block level to the community district level using a map that provided information on the location of every Census block in a community district (CD). The map is available online from the "Bytes of the Big Apple" database from the New York City Department of City Planning at https://www1.nyc.gov/site/planning/data-maps/open-data/districts-download-metadata.page. A few blocks (those in parks and other areas with little or no

plurality White; (6) plurality Black; and (7) plurality Hispanic.[14] This methodology provides a classification system that gave me the ability to prove or disprove the existence of a variety of localized disparities in the demographic groups benefitting from the community preference policy and those who are disfavored by the policy; enabled lotteries of different sizes to be weighted appropriately; and created more robust results.

22. A list of the HC Projects, the number of units awarded through the lottery for each such project, the project's CD typology, and the demographic composition of the project's CD preference area, is reported in Exhibit 3. Racial and Hispanic composition for the lotteries in each CD typology, along with the number of lotteries in each typology, is reported in Exhibit 4.[15]

23. As Exhibit 4 shows, while the majority typologies need only include at least 50 percent of a given non-Hispanic race group or Hispanics, the majority-Black typology has an African-American majority of nearly 60 percent, and the dominant racial group in the majority-White and majority-Hispanic CD typologies, respectively, reach or exceed 60 percent. The percentage difference between the dominant group in the CD typology and the next largest group is very substantial in majority typologies, but much less so in plurality typologies.

24. Through my analyses, I determined that defendant's community preference policy generally operates to the substantial detriment of members of a demographic group when members

population) were not assigned to a community district. The information from the ACS data was disaggregated to the block level based upon the percent of the block group population in each block, and then aggregated up to the CD. This is simply population weighting of block groups to blocks and makes it possible to have reasonable estimates of population.

[14] I sometimes abbreviate these typologies as: MW, MB, MH, MA, PW, PB, and PH, respectively.

[15] To make it possible to have reliable estimates of the composition of each typology based upon the number of units awarded, each CD or CD preference area that had one or more awardees was weighted based upon the total number of awardees in that CD or CD preference area. Thus, the composition of each typology best reflects that experienced by the awardees.

of that group are applying for housing outside of the CD typology in which they are dominant.

25. Likewise, I determined that defendant's policy generally operates to the greatest benefit for members of a demographic group when members of that group are applying *within* the CD typology in which they are dominant. This is, not surprisingly, especially so with regard to the majority typologies, where there is a group that has significant dominance.

26. In other words, defendant's community preference policy imposes a sorting process that would not otherwise exist and does so in a pattern that causes substantial disparities on the basis of race.

27. These disparities are manifested when analyzing the full set of applicants to lotteries ("entrants"). They are manifested when analyzing the subset of entrants whose household size and income, as self-reported and stored in the HC database, met the income- and household-size requirements for at least one unit-type in a lottery, as those requirements are set forth in various of defendant's data[16] ("apparently eligible" applicants). Lastly, the disparities are manifested in terms of the bottom-line: those applicants who are awarded units ("awardees").

28. One can still imagine some saying, "What is the problem? Each racial group is helped somewhere." Indeed (and I confess I was surprised by this), this argument has actually been put forward by the City as its defense the lack of a level playing field for participants.[17]

[16] My testing for apparently eligible households included that portion of applicant households self-reporting the availability of a housing subsidy who: (a) are not disqualified based on reporting more income than the maximum income permitted for the unit type or types for which they are household-size eligible; or (b) are not already eligible based on their household income compared with the relevant unit types' requirements for minimum and maximum income. I made the determination of apparent eligibility for those applicant households who have reported the availability of a subsidy and who: (a) have household income lower than the minimum income for the relevant unit types; and (b) by the operation of subsidy rules, are nonetheless deemed to be able to afford one or more of the relevant unit types (unit types which permit the applicant household's household-size).

[17] *See* PS, at ¶ 82-84.

29. But the powerful pattern – in majority CD typologies, unmistakable for entrants, apparently eligible applicants, and awardees – has a *particular* sorting effect. For example, as between Whites and Blacks in lotteries in the majority-White CD typology, White applicant-households are helped in the aggregate, and Black applicant-households are hurt in the aggregate by the community preference policy. When the lotteries take place in the majority-Black CD typology, Black households are helped in the aggregate and White (and Latino) applicant-households are hurt in the aggregate by the community preference policy. The relative difference between the dominant group and the other group(s) referenced is large.

30. The community preference policy has another pernicious result. Because of the policy's effective racial filtering (restricting the percentage of more-diverse outsiders that can move into a CD than would be the case without the policy), the policy has and will perpetuate segregation more (and allow integration less) than would be the case without the policy.

31. This result occurs for all six of the racial pairings that Dr. Siskin and I examined: White versus Black; White versus Hispanic; White versus Asian; Black versus Hispanic; Black versus Asian; and Hispanic versus Asian.

32. Other areas of analysis (corresponding to the conclusions referenced in paragraph 5(e) to 5(f), above), are discussed in the main body of the declaration.

D. Sources and methodology

33. With scant exception, the data I used were defendant's data provided to plaintiffs in discovery.[18] For example, data about applicant households, including race, household income, household size, claimed disability, address, and defendant-assigned designation of the household

[18] And as to the few exceptions, the data are publicly available to defendant, as noted where applicable.

as living in the CD preference area for a lottery, came from defendant's Housing Connect database as provided to plaintiffs on or about March 29, 2017.[19] Housing Connect data that had been made available to developers in the form of initial logs, to take another example, were, again, all data that came from defendant (as did final logs with information added to initial logs by developers). Data about which applicant-households were awarded lotteried units and about the data to determine unit type, were found in documents created and updated by the agencies (in the form of "status sheets" with this information and, in the case of HPD, also in the form of tables from its Access database which performed the same function as status sheets). To track the flow of applicants to awarded units required organizing and linking the information, all of which was available from the agencies.

34. Additional information about sources and methodology is contained in the body of this declaration and in the Sources and Methodology Appendix submitted herewith.[20]

35. I should note that I also took advantage of some of the analyses performed on defendant's lottery data by Dr. Siskin, as detailed later in this declaration.

E. Segregation in New York City

36. New York City has long been characterized by substantial levels of residential segregation; it continues to be characterized by substantial levels of residential segregation.

37. The table below shows two of the most common segregation indexes with the results for the City from 1980 through the present. I computed all of these indexes; those through

[19] The Housing Connect data were supplied to plaintiffs' counsel as a "dump" from the Oracle database that is used to manage those who applied for the lottery. The database was an exact copy except that some fields were redacted due to a variety of defendant concerns.

[20] The Sources and Methodology Appendix is separately filed on ECF as Part 2 of my declaration.

2010 were published in a book that I co-authored and co-edited.[21]

Table 1 - Segregation Indexes for New York City, 1980 through 2013-2017 ACS					
	1980	**1990**	**2000**	**2010**	**2013-17 ACS**
Dissimilarity Black/White	0.83	0.84	0.84	0.82	0.80
Dissimilarity White/Hispanic	0.64	0.66	0.67	0.66	0.64
Dissimilarity Asian/White	0.49	0.48	0.50	0.52	0.52
Isolation White/Black	0.82	0.84	0.85	0.84	0.82
Isolation White/Asian	0.25	0.34	0.44	0.52	0.54
Isolation White/Hispanic	0.62	0.69	0.73	0.73	0.75

38. These indexes get at two different dimensions of segregation. The dissimilarity index measures how evenly a population is spread out in a given area. If the population is evenly distributed, then the measure is zero; if completely segregated, the measure is one. The measure gives the proportion of the population that would need to be moved to get to perfect evenness. These figures have shown very little variation since 1980, with the measures remaining particularly high as between Blacks and Whites.

39. The isolation measures express the average percent of other groups that one would find in a specified region (here census tracts). The isolation measure for Blacks and Hispanics is high, and that for Asians seems to be rising. For all these measures, the contrast category is Whites.

40. New York City's level of segregation by these measures was and remains very

[21] The indexes for 1980 through 2010 are taken from Andrew A. Beveridge, David Halle, Edward Telles, and Beth Leavenworth Dufault, "Residential Diversity and Division" in *New York and Los Angeles: The Uncertain Future*, David Halle and Andrew A. Beveridge (eds.) (New York: Oxford University Press, 2013, p 316). The most recent set of indexes uses the same program as the earlier indexes, based upon more recent data from the 2013-17 ACS. All these indexes are based upon the Census tract data.

substantial. Particularly notable is the fact the City has apparently made little or no progress (depending on the which two demographic groups are being compared) in reducing segregation levels over time, especially as compared with the results of most other large cities.

41. New York City's levels of segregation translate quite directly into the highly racially concentrated nature of many of the 59 community districts in New York City. Four maps of the distribution of the population groups assessed in this declaration, overlaid with community district boundaries, are attached hereto as Exhibits 5-8. As is apparent from the maps and from the CDs, many of the CDs vary considerably in the extent to which each of the major groups is present. For example, Whites tend to be most concentrated in some areas of Manhattan, Brooklyn, and Staten Island. When compared with the map of the Black population, it is clear how separate the two populations are. The Hispanic population is concentrated in the Bronx and in some parts of Manhattan and Queens. And the Asian population is growing and becoming most concentrated in Queens.

42. Given a segregated city with great variation in the demographic composition of its community districts, one's first hypothesis would be that a community preference system, laid atop these patterns, would cause disparate impacts and permit less integration than would an equal-access lottery system. That hypothesis has been confirmed by the data.

F. Disparate impacts viewed in terms of all lottery entrants

43. I analyzed 7,245,725 applications for lottery housing across 168 lotteries.

44. In each lottery, at the moment that the application submission period closes, each entrant would have the ability to compete on a level playing field if there were an equal-access lottery system in effect. That is, within each CD typology, each entrant would have the same

chances to compete for all of the units. The community preference policy, however, distorts the odds. The agencies take a single, unified entrant pool and split it into two sub-pools: a very small one made up of insiders (CP beneficiaries) and a very large one made up of outsiders (non-beneficiaries).[22] By the community preference policy's *allocation* rules, developers must award 50 percent of the units to insiders if there are qualified insiders available. In other words, the policy increases the proportion of units that would otherwise go to the small group of insiders and reduces the proportion of units that would otherwise go to the overwhelming large groups of outsiders.

45. By the policy's *sequencing* rules, developers were also required to review insider applications before outsider applications.[23] In fact, when the agencies provide an initial log of lottery applicants to developers, that initial log reflects the agencies' identification of whether the entrant, regardless of how bad that entrant's random lottery that the agencies assign as part of generating the initial log may be, is a CP beneficiary.

46. I first explored the extent to which the odds of being awarded a unit differed as between those applicant households who could compete for units that were ultimately awarded on the basis of the household residing in the community district ("CP beneficiary units") versus those applicant households who could compete for units that were ultimately awarded independent of community district residence (non-beneficiary units).

47. In other words, awarded units had to be categorized as CP beneficiary or non-beneficiary units, and applicant households had to be categorized as CP beneficiary or non-beneficiary households.

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[22] For example, among entrants of all races in the majority-White CD typology, only 2.64 percent are insiders and 97.36 percent are outsiders. *See* further details, below, at 19, n. 29.

[23] That remains the default system. *See* PS, ¶ 24.

48. By using status sheets,[24] I determined the number and percentage of units that defendant awarded as CP beneficiary and non-beneficiary units, respectively. The CP beneficiary units were all units where the applicant household's listing on the status sheet specified that defendant was designating the household as one filling a preference that could only be met by a household residing in the CD.[25] I deducted from this total, however, all units where the household's listing on the status sheet *also* specified that the applicant household was receiving a disability set-aside unit. (This is because the first priorities in the processing of lottery applicants by a project's developer[26] are for units to be awarded to applicant households where a member of the household has: (a) a mobility disability; or (b) a hearing or visual disability. As such, applicant households who were denoted both as insiders and as recipients of a disability set-aside unit on the status sheets can be said to have been awarded the unit independent of – not benefitting from – community preference.) I treated the net number of units as CP beneficiary units.

49. I treated all units awarded by lottery to New York City residents other than CP beneficiary units as non-beneficiary units.

50. The next step was to categorize applicant households. Here again, I treated all outsider households as non-beneficiary households. As a general rule, I treated all applicant households who could compete for units that were ultimately awarded on the basis of the

[24] Except where otherwise specified, reference to "status sheets" means the status sheet (or HPD's "Access" equivalent) as reconciled by the reconciliation process.

[25] This includes units where the applicant had to be a New York City Housing Authority (NYCHA) resident living in the CD preference area, or a NYCHA resident living in a particular project in the CD preference area.

[26] Applicant households only come to the attention of the agencies if: (a) the developer submits them for the agency to approve an award of a unit; (b) the applicant household is appealing a determination that had been made at the developer level; or (c) the applicant household files a complaint.

household residing in the community district as beneficiary households.[27] It was, however, necessary to determine how to treat any applicant household who, as shown in Housing Connect: (a) listed a household member as having either a mobility disability or a hearing or visual disability; and also (b) based on the address provided, was determined by defendant to be living in the community district. I looked to the status sheet to find the number of awardee households where defendant deemed an awardee household to receive both disability set-aside and community district preference. (These are non-beneficiary circumstances where it was the fact of the disability and not community district residence that yielded the unit.)

51. I then took all of the circumstances where the status sheet showed that an award was based on CD residence but not on disability status and compared that to the Housing Connect data on those applicant households to see which listed a household member as having either a mobility disability or a hearing or visual disability. (These are CP-beneficiary circumstances where it was the fact of the CD residence and not the disability that yielded the unit.)

52. Of all the awarded units that went to applicant households living in the CD preference area and listing an household member as having either a mobility disability or a hearing or visual disability, I determined the percentage that yielded their unit because of disability status and the percentage that yielded their unit because of community district residence status.

53. Using these percentages, I then randomly assigned *all* of this subset of applicant households as either CP beneficiary households or non-beneficiary households.

54. Within each of the CD typologies, the odds of a CP beneficiary being awarded a

[27] It is true that CP beneficiary households can, once the requisite number of community preference units have been filled, continue to compete for units open to non-beneficiary households. By not including that additional participation, the analysis errs on the side of understating the odds of a CP beneficiary household getting an apartment (such applicants can actually compete for more apartments than are accounted for in my analyses) and of overstating the odds of a non-beneficiary household (they actually can have some more applicants competing against them – CP beneficiary households – than are accounted for in my analyses).

unit were substantially better than that of a non-beneficiary. This ranged from a multiple-of-benefit of more than six in respect to the plurality Black CD typology to a multiple of benefit of more than 30 in lotteries in the majority-White CD typology.

55. The differences, expressed in chances per 1,000 applicants to get an award (based on the number of units ultimately awarded through the lottery),[28] are shown in Table 2, below.

Table 2 – Chances per 1,000 entrants of an award of a lottery unit, by CD typology

CD typology	Non-beneficiary entrant chances	CP beneficiary entrant chances	Multiple by which CP beneficiary entrant chances exceed non-beneficiary entrant chances
Majority White	0.502	15.163	30.24
Majority Black	0.754	9.315	12.36
Majority Hispanic	1.073	14.416	13.44
Majority Asian	2.089	16.288	7.80
Plurality White	0.734	14.715	20.04
Plurality Black	0.552	3.621	6.55
Plurality Hispanic	1.330	24.954	18.76

56. In each case, the multiple shows at least a large difference in the chances of a CP beneficiary entrant to get an award as compared with the chances of a non-beneficiary entrant to get an award, in all cases favoring the CP beneficiary applicants. This is the necessary result of the policy's limiting, in each CD typology, the overwhelming percentage of entrants who are outsiders to 50 percent of awards while ensuring that the small fraction of the entrant group who

[28] The counts of entrant households by typology and CP beneficiary or non-beneficiary status (and associated percentages) are found in Exhibit 9. The analogous counts and percentages for apparently eligible applicants and for awarded units are found in Exhibits 10 and 11, respectively. Chances as reported in Table 2 were derived by comparing all CP beneficiary entrants with all CP beneficiary units that were awarded, and by comparing all non-beneficiary entrants with all non-beneficiary units that were awarded.

are insiders get the same percentage of awards.[29]

57. To be clear as to what causes the difference in odds: it is purely the community preference policy itself. There is simply nothing else at work in terms of the opportunity to compete on a level playing field – the odds have been modified before a single application has been reviewed or a random lottery number assigned.[30]

58. The next question, therefore, is to what extent, within each CD typology, is one demographic group getting the advantages of CP beneficiary status more than others?

59. Before proceeding to answer that question, however, I should explain that all insiders (those whom I also call "CP beneficiaries") are indeed beneficiaries of the allocation and sequencing rules required by the community preference policy. Under a system *without* community preference, entrants to a lottery would have the same "prior probability" of getting an award, regardless of where they live in relation to where they are applying to live.[31] These are the odds that exist at the moment one enters the lottery. Under the community preference system, by contrast, each insider applicant receives a very substantial boost in odds (the enormity of the advantage depends on community district typology, as shown in Table 2, above). From that moment on under the community preference system, insiders and outsiders are competing on a playing field that is tilted in the favor of insiders.

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[29] The fraction of insiders as a percentage of all entrants for each CD typology is the total for the typology shown in Section 1a of Ex. 9 divided by the total for the typology shown in Section 3a of Ex. 9; those fractions, expressed in percentage terms, are: MW, 2.64%; MB, 6.87%; MH, 5.48%; MA, 11.37%; PW, 5.06%; PB, 11.65%; and PH, 4.50%. The outsiders as a percentage of all entrants for each typology are the balance of the applicants (*e.g.*, 93.13 percent in MB). Averaging across all entrants across all CD typologies, insiders constituted 5.06 percent and outsiders constituted 94.94 percent.

[30] By any of a variety of measures, the differences in odds between insiders and outsiders is statistically significant in each typology. This has never been in dispute.

[31] As noted previously, I treat disability set-aside awards as non-beneficiary awards so long as the receipt of the award came as a matter of disability status and not as a matter of CP beneficiary status.

60. This is true not only for odds of awards, but in terms of the likelihood of being reached and having one's application considered by a developer. The system's allocation and sequencing rules are designed, in the face of an overwhelmingly larger pool of outsiders than insiders, so that a higher proportion of insiders than outsiders are reached and considered by developers. It is only those who are reached by a developer, of course, who have the opportunity to have their qualifications reviewed. It is only those who are reached and are being (or have been) considered by a developer who have the right to update the information they provided on an application or to appeal from an adverse determination by a developer.[32]

61. Because CP beneficiaries are normally reviewed and considered for units before non-beneficiaries, CP beneficiaries are more likely to have a full range of unit types available to them, whereas non-beneficiaries are more likely to be *partially closed out* when reached by a developer (some of the unit types for which they are apparently eligible no longer being available because the supply has already been exhausted) or *fully closed out* when reached by a developer (all of the unit types for which they are apparently eligible no longer being available because the supply has already been exhausted).[33]

62. These disparities have nothing to do with an applicant's qualifications; they result solely from the operation of the policy's sequencing and allocation rules.

63. Turning then to what the data show, within each CD typology, about whether one group is getting the advantages of CP beneficiary status more than other groups, I employed two methods to yield the answer.

[32] *See* PS, at 56-58.

[33] *See* further discussion, below, at 52-54, ¶¶ 181-88.

64. Method 1: Outsider-to-insider-change. Using the data on entrants reported in Exhibit 9, I examined the total number of applicants in a CD typology who were non-beneficiaries (outsiders) and determined the demographic distribution of those outsiders. I also examined the total number of applicants in a CD typology who were CP beneficiaries (insiders) and determined the demographic distribution of those insiders.

65. For each of the four demographic groups being analyzed – Whites, African Americans, Latinos, and Asians – I then calculated the relative change for the group from their share of all outsiders to their share of all insiders. This was done by subtracting the group's share of all outsiders from the group's share of all insiders and then dividing the difference by the group's share of all outsiders.

66. A relative increase in share from outsider to insider (represented by a positive number) represents an advantage being conferred on the group by the community preference policy (for that CD typology). A relative decrease in share from outsider to insider (represented by a negative number) represents a disadvantage being conferred on the group by the community preference policy (for that CD typology).

67. In those cases where benefit accrued to more than one group, the further question was: which group benefited most?

68. By comparing the change in demographic distribution from the outsider group to the insider group, we are able, in one snapshot, to compare directly how the policy as implemented is helping and hurting different demographic groups in each CD typology at the same time.[34] (It is important to underline the fact that these are helps and harms that would not exist absent the policy – the applicants are the same with and without the policy; only the policy causes the the single applicant pool to diverge into two sub-pools, each of which has a different trajectory.)

69. In each CD typology, the group that benefitted most is highlighted in yellow.

Table 3 – Outsider-to-insider-change method: Comparing relative percentage change for each group from share of non-beneficiary entrants to share of CP beneficiary entrants, by CD typology

CD typology	White	Black	Hispanic	Asian
Majority White	169.29%	-67.91%	23.43%	-28.07%
Majority Black	-55.56%	48.89%	-41.47%	-66.55%
Majority Hispanic	-64.17%	-21.33%	36.99%	-64.74%
Majority Asian	-49.44%	-90.77%	-58.50%	343.88%
Plurality White	35.50%	2.72%	-22.61%	3.53%
Plurality Black	-39.98%	36.36%	-21.95%	-78.24%
Plurality Hispanic	10.06%	-22.25%	17.23%	12.49%

70. To illustrate, in majority-White CD typology lotteries, the increase from the White share of non-beneficiary entrants (9.86157777874644 percent, rounded to 9.86 as presented in Exhibit 9) to the White share of CP beneficiary entrants (26.5565185688481 percent, rounded to 25.56 as presented in Exhibit 9) is an increase of 16.6949407901016 percent, or, in relative terms

[34] I note in this connection that a demographic group's share of the outsider sub-pool of applicants in a CD typology is very similar to that demographic group's share of the total applicants for that CD typology. *See* Table 9 (comparing Section 2b and Section 3b). In 19 cases, the difference is less than 0.5 percent; in five cases, the difference is less than 1.5 percent; in one case less than 2.0 percent; and in three cases less than 6.0 percent. In all cases, the variance between the share of *insiders* and the group's share of total applicants (comparing Section 1b and Section 3b) was larger.

(16.69, etc. divided by 9.86, etc.), an increase of 169.29279639291, rounded to 169.29 percent as presented in Table 3.[35] In the same CD typology, the drop of the share of Blacks from approximately 34.18 percent of non-beneficiary entrants to a share of approximately 10.97 percent of CP beneficiary entrants represents a loss of approximately -23.21 percent, or, in relative terms (approximately -23.21 divided by 34.18), a decrease of -67.91 percent (the rounded value shown in Table 3.

71. In each CD typology, it was the corresponding majority or plurality group that enjoyed the greatest benefit as reflected by relative size of increase from non-beneficiary entrant share to CP beneficiary entrant share.

72. In each CD typology, the disparities between the most-benefitted demographic group and two or three of the other demographic groups were substantial. Defendant's expert has not challenged the substantiality of the disparities, but were such a challenge to be made belatedly, it would be unavailing. One way that courts have sometimes assessed substantiality of variance is to apply as a rule of thumb the "80 percent test," which takes the result of the demographic group that performs best (or, here, has been conferred the greatest advantage by defendant's policy), and identifies what 80 percent of that result is (for example, the relative advantage for Whites in the majority-White CD typology is 169.29 percent; 80 percent of that is approximately 135.43 percent). A demographic group whose relative advantage is less than approximately 135.43 percent (including, of course, any disadvantage connoted by a negative value) would reflect a substantial disparity pursuant to the 80 percent test.

[35] There are trivial and inconsequential differences in some values from what I previously reported in reports shared with defendant because, in some instances, a percentage rounded to two decimal places was used in a calculation rather than the exact value (which, as one sees, can stretch on more than 10 decimal places). In this declaration, rounding is not used in any calculation, but only in presentation of a calculated result. Note: no underlying data have changed.

73. In all seven CD typologies, the disparity between the most-advantaged group and each of the other demographic groups is substantial pursuant to the 80 percent test.[36]

74. Method 2: Highest-insider-share. The method just discussed examined how outsiders were distributed by demographic group as opposed to how insiders were distributed by demographic group. That method has the advantage of showing *change* from outsider share to insider share. This next method, by contrast, looks only at insiders. It examines each demographic group and asks, "what share *of the demographic group* is comprised of insiders?" The share of insiders for each demographic group as a percentage of that demographic group's total entrants for each CD typology in shown in Section 1 of Exhibit 12. A higher share means a greater percentage of the demographic group is taking advantage of CP beneficiary status.

75. I then examined which demographic group had the highest percentage of CP beneficiaries among its members in a CD typology and compared that to the percentages of CP beneficiaries of the other demographic groups in the same CD typology.

76. The comparison shown in Table 4 on the following page takes the demographic group with the highest percentage of CP beneficiaries (highlighted in yellow) and answers the question, "by what relative percentage does that highest group *exceed* the percentage of insiders

[36] The most advantaged demographic group is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green.

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	-40.11%	13.84%	-16.58%
Majority Black	-113.64%	100.00%	-84.82%	-136.11%
Majority Hispanic	-173.48%	-57.66%	100.00%	-175.01%
Majority Asian	-14.38%	-26.40%	-17.01%	100.00%
Plurality White	100.00%	7.65%	-63.70%	9.94%
Plurality Black	-109.95%	100.00%	-60.36%	-215.15%
Plurality Hispanic	58.39%	-129.16%	100.00%	72.53%

in the other demographic groups?"

Table 4 – Highest-insider-share method: Comparing each group's CP beneficiary applications as a percentage of that group's total applications against the highest such percentage for any group, by CD typology					
CD typology	Group with highest percentage of its entrants being CP beneficiary entrants	Relative percentage by which highest group exceeds other groups			
		White	Black	Hispanic	Asian
Majority White	White	Highest	688.78%	110.14%	255.69%
Majority Black	Black	211.76%	Highest	139.09%	310.89%
Majority Hispanic	Hispanic	261.62%	68.68%	Highest	267.29%
Majority Asian	Asian	495.75%	3001.75%	617.82%	Highest
Plurality White	White	Highest	29.76%	70.03%	28.80%
Plurality Black	Black	107.82%	Highest	63.33%	446.35%
Plurality Hispanic	Hispanic	6.17%	48.11%	Highest	3.99%

77. The numerical values show, in relative terms, the extent to which the highest insider share of any demographic group in a CD typology – that is, the demographic group with the greatest percentage of its members enjoying the benefits of CP beneficiary status – exceeded the insider share of the other demographic groups in the CD typology.

78. Thus, for example, in the majority-White CD typology, only approximately 0.86 percent of African American applicant households were CP beneficiary applicants, as presented in Section 1 of Exhibit 12. In contrast, approximately 6.81 percent of White applicant households were CP beneficiary applicants, as presented in Section 1 of Exhibit 12. The difference is approximately 5.94 percent. The White percentage is approximately 688.78 percent relatively larger (the difference of approximately 5.94 divided by the lower African American percentage of approximately 0.86 percentage), as presented in Table 4, above.

79. As shown in Table 4, there is in every CD typology an impact to the detriment of

each of the non-dominant groups in the CD population, including extremely strong impact in all of the majority typologies.

80. The same data can be recast to show the extent to which a demographic group is *less* advantaged than the demographic group with the highest percentage of insiders among its members. To use the same example, if one takes the percentage of Blacks who are insiders in the majority-White CD typology (approximately 0.86 percent), and divides it by the White percentage of insiders (approximately 6.81 percent), one sees that the Black percentage is only approximately 12.68 percent of the White percentage. This recast, calculated from the data that underlies the rounded insider percentages presented in Section 1 of Exhibit 12, allows for the application of the 80 percent test ("80 percent test recast").

81. As shown in the footnote below, the 80 percent test recast confirms that disparities are substantial for all non-dominant groups in six of the seven CD typologies (all except plurality Hispanic). In the plurality-Hispanic CD typology, there is a substantial disparity as between advantaged Hispanics and disadvantaged Blacks.[37]

82. Statistical significance. As with not challenging the fact that there are one or more substantial disparities in each CD typology for entrants, defendant has not disputed the statistical

[37] The most advantaged demographic group in the CD typology is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green. Where it is not, it is shown in yellow.

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	12.68%	47.59%	28.11%
Majority Black	32.08%	100.00%	41.82%	24.34%
Majority Hispanic	27.65%	59.28%	100.00%	27.23%
Majority Asian	16.79%	3.22%	13.93%	100.00%
Plurality White	100.00%	77.06%	58.81%	77.64%
Plurality Black	48.12%	100.00%	61.23%	18.30%
Plurality Hispanic	94.19%	67.52%	100.00%	96.17%

significance of the disparities. Were there to be a belated challenge, it would be without merit.

83. As I understand it, courts typically treat a standard deviation greater than 2.00 as sufficiently statistically significant, although no standard-deviation test is necessarily required, and standard deviations of less than 2.00 would not necessarily preclude a finding of substantial deviation, depending on the circumstances.

84. To calculate standard deviation, I used tools built into SAS, a statistical software suite.[38]

85. I have reported the standard deviations in Exhibit 13. It shows standard deviations for each of the three categories of analysis (entrant, apparently eligible, and awarded) for each CD typology, for each race, and for both the outsider-to-insider-change method and the highest-insider-share method.

86. Focusing for now on the entrant analyses, there is no case in the majority CD typologies under either method where the standard deviation is not in excess of 2.00; on the contrary, the standard deviation in each case is substantially in excess of 2.00. In the plurality CD typologies, there is only one demographic group in one CD typology – Asians in the plurality White typology (by both methods) – that shows a standard deviation less than 2.00; in all the other cases, the standard deviation is substantially in excess of 2.00.

87. Recapitulation and conclusion. To recap, there are five CD typologies (majority

[38] The SAS FREQ Procedure was used to compute the exact confidence intervals, the standard errors and ultimately the standard deviations for the proportions and the difference in proportions for the rows and columns of the tables of each of the four demographic groups compared to all others for entrants, apparently eligible, and awarded participants in the housing lotteries for each of the seven typologies. The RISKDIFF option of the TABLES statement in PROC FREQ was used. According to SAS Documentation, "The RISKDIFF option in the TABLES statement provides estimates of risks (binomial proportions) and risk differences for 2X2 tables." *See* page 2727 SAS/STAT 13.1 User's Guide (Chapter 40). Using this approach, it was possible to calculate standard deviations for the difference in proportion for each of the tables considering both the row proportions and the column proportions.

White, majority Black, majority Hispanic, majority Asian, and plurality Black) where there is substantial disadvantage to all three of the non-dominant groups: first as shown in Tables 3 and 4 and then as assessed by the 80 percent test for both methods. The disparities are statistically significant in every case under both methods.

88. In the plurality-White CD typology, Blacks and Hispanics show substantial disadvantage: first as shown in Tables 3 and 4 and then as assessed by the 80 percent test pursuant to both of my methods and pursuant to the 80 percent test; there is also a showing that the differences for those groups are statistically significant. For Asians, there is a more mixed result.[39]

89. In the plurality-Hispanic CD typology, the unmixed result is in connection with Black disadvantage: first as shown in Tables 3 and 4 and then as assessed by the 80 percent test for both methods. The disparities are statistically significant for Blacks under both methods.

90. The inescapable conclusion required by the data is that defendant's community preference policy does cause substantial disparate impacts on the basis of race, including at least one in each CD typology; these impacts mean that all entrants are not permitted to compete on a level playing field.

G. Disparate impacts viewed in terms of apparently eligible applicants

91. Apparently eligible applicants are a subset of entrants. They are the applicants who, on the basis of their self-reported information on their applications, met the income- and household-size requirements for at least one unit-type in a lottery. All entrants begin competing upon applying to a lottery, but it is these apparently eligible applicants who, *if reached by a*

[39] I have been advised by plaintiffs' counsel that plaintiffs will not be proffering the disparities shown for entrants in the plurality-White CD typology in respect to Asians, nor in the plurality-Hispanic CD typology for Asians or Whites.

developer, would be able to continue on further in the competition by documenting their eligibility as opposed to being rejected out of hand.

92. In the same ways that are true for all entrants, the community preference policy prevents apparently eligible applicants who are outsiders from competing on a level playing field with apparently eligible applicants who are insiders.

93. As was true in connection with all entrants, the tilting of the playing field is exclusively the function of the imposition of the sequencing and allocation rules of defendant's community preference policy. The tilt occurs before anything has happened in the lottery.

94. I should also note that there is no procedure in the lottery process that comes to "un-tilt" the playing field. To take the simplest example, it does not matter how many apparently eligible outsiders there are in a particular lottery or in a particular CD typology; it does not matter how stellar their qualifications are documented to be; it does not matter how keen their interest; it does not matter how much they may need an apartment unit being lotteried; and it does not matter how good their random lottery numbers may be. So long as there are insiders available for the 50 percent of community preference units (and regardless of how few insiders may have applied, no matter how bad their lottery numbers, etc.), none of the 50 percent of those units will go to an outsider.

95. The only information available across all applicants in all lotteries that helps determine eligibility are self-reported data: household-size, household-income, subsidy status, and the presence of a "couple" in the household (the last being a factor that adjusts household-size eligibility).[40] The combination of household-size and household-income eligibility, of course, while not the only ultimate factors in eligibility, are principal ones. My definition of apparent

[40] *See* PS, ¶ 42.

eligibility for a unit-type was an applicant household who met the household-size and household-income eligibility requirements (the latter either by income or with the help of a subsidy) for that unit type, and my definition of apparent eligibility for a lottery was an applicant household who was apparently eligible for at least one unit type in a lottery.

96. From defendant's data (in this case principally from lottery advertisements), I was able to identify the different unit types and their household-size and household-income requirements for each of the lotteries (there were approximately 900 unit-types).[41]

97. For each applicant household, I compared the self-reported data points (which came from defendant's Housing Connect data) and found which unit types in a lottery, if any, for which the applicant household met the combination of household-size and household-income requirements.

98. These procedures allowed me to create a universe of apparently eligible households.[42] There were 3,115,032 applications that were apparently eligible.[43] Proceeding as I had with my entrant analysis, I was able to create a sub-universe of apparently-eligible CP beneficiary applicant households and a sub-universe of apparently-eligible non-beneficiary applicant households. These data are presented in Exhibit 10.

99. As was the case with all entrants, the odds of getting an award were much better for CP beneficiaries than for non-beneficiaries, as shown by Table 5 on the following page.

[41] *See* further discussion in Sections VI to XI in the Sources and Methodology Appendix.

[42] The counts of apparently eligible applicant households by typology and CP beneficiary or non-beneficiary status are found in Exhibit 6 hereto.

[43] Under Dr. Siskin's analysis, the number of apparently eligible applications was 3,118,966. The matching apparently eligible lists matched in more than 99.6 of the cases. As such, the variations are immaterial, as are variations in calculation of race for a very small number of applicants. *See* PS, ¶ 39.

Table 5 – Chances per 1,000 apparently eligible applications of an award of a lottery unit, by CD typology			
CD typology	Non-beneficiary apparently eligible household chances	CD beneficiary apparently eligible household chances	Multiple by which CD beneficiary apparently eligible household chances exceeds non-beneficiary apparently eligible household chances
Majority White	1.142	29.296	25.66
Majority Black	1.782	20.427	11.46
Majority Hispanic	2.646	34.136	12.90
Majority Asian	4.438	30.843	6.95
Plurality White	1.699	26.281	15.47
Plurality Black	1.167	7.770	6.66
Plurality Hispanic	3.105	56.134	18.08

100. The difference in chances expressed by the multiples shown in the right-most column are large and, beyond dispute, statistically significant.

101. As such, I again undertook to determine relative benefit or detriment to a demographic group, as those effects differ by CD typology because of the localized operation of the community preference policy. I applied the same methods (the outsider-to-insider-change method and the highest-insider-share method) as I did with all entrants.

102. Method 1: Outsider-to-insider-change. I applied this method using the data on apparently eligible applicants that one can find reported in Exhibit 10. The results of the outsider-to-insider change method[44] are shown first on the next page (most-benefitted group highlighted in yellow).

[44] *See* discussion, above, at 21-22, ¶¶ 64-70, for a full description.

Table 6 – Outsider-to-insider-change method: Comparing relative percentage change for each group from share of non-beneficiary apparently eligible households to share of CP beneficiary apparently eligible households, by CD typology				
CD typology	White	Black	Hispanic	Asian
Majority White	164.66%	-68.84%	27.01%	-31.14%
Majority Black	-56.54%	47.91%	-38.67%	-65.85%
Majority Hispanic	-66.25%	-15.20%	32.08%	-66.14%
Majority Asian	-59.80%	-90.80%	-66.83%	305.79%
Plurality White	29.72%	10.39%	-29.28%	-10.70%
Plurality Black	-41.29%	37.92%	-22.22%	-79.71%
Plurality Hispanic	21.37%	-23.09%	12.58%	16.97%

103. In six of seven CD typologies, the most benefit from community preference accrues to the dominant demographic groups in the CD typology, and there are substantial detriments suffered by all of the other demographic groups in each typology (all but plurality Hispanic).[45]

104. The substantiality of the disparities has not been disputed; the 80 percent test is confirmatory of my Table 6 for the six at-issue typologies for apparently eligible as shown below.[46]

[45] Plaintiffs' counsel advises that plaintiffs will not be proffering evidence of disparities for apparently eligible applicants in the plurality-Hispanic typology (despite substantial advantage for Hispanics in relation to Blacks); I therefore limit my discussion in this section to the other six CD typologies.

[46] The most advantaged demographic group in a CD typology is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green. Where it is not, it is shown in yellow. There is one exception to how demographic groups in a typology are highlighted: where the most-advantaged demographic group in the CD typology is not the largest demographic group in the typology, that largest demographic group, along with the other relatively disadvantaged groups, are all shown in red (even though various substantial disparities may be present).

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	-41.81%	16.40%	-18.91%
Majority Black	-118.03%	100.00%	-80.72%	-137.45%
Majority Hispanic	-206.50%	-47.37%	100.00%	-206.15%
Majority Asian	-19.56%	-29.69%	-21.85%	100.00%
Plurality White	100.00%	34.97%	-98.54%	-36.01%
Plurality Black	-108.90%	100.00%	-58.60%	-210.22%
Plurality Hispanic	100.00%	-108.05%	58.87%	79.38%

105. Method 2: Highest-insider-share.[47] All of the underlying percentages for the share of each demographic group in each CD typology that consists of insiders are presented in Section 2 of Exhibit 12.

106. As shown below by Table 7, in all of the CD typologies as to which plaintiffs are proffering evidence of substantial disparity (all CD typologies except plurality Hispanic) the group most benefitted under Method 2 is the dominant demographic group of the CD typology and all other demographic groups suffer relative detriment.

Table 7 – Highest-insider-share method: Comparing each group's CP beneficiary apparently eligible households as a percentage of that group's total apparently eligible households against the highest such percentage for any group, by CD typology

CD typology	Group with highest percentage of its apparently eligible households being CP beneficiary apparently eligible households	Relative percentage by which highest group exceeds other groups			
		White	Black	Hispanic	Asian
Majority White	White	Highest	690.98%	99.93%	262.16%
Majority Black	Black	215.04%	Highest	126.30%	298.01%
Majority Hispanic	Hispanic	269.86%	51.64%	Highest	268.67%
Majority Asian	Asian	574.21%	2722.99%	709.25%	Highest
Plurality White	White	Highest	16.07%	76.58%	41.54%
Plurality Black	Black	114.43%	Highest	65.58%	491.76%
Plurality Hispanic	White	Highest	54.58%	7.37%	3.56%

107. As with entrants, this same Section 2 of Exhibit 12 can be repurposed to show the 80 percent test recast (the extent to which a demographic group is *less* advantaged than the demographic group with the highest percentage of insiders among its members).

[47] The method is described in full, above, at 24-25, ¶¶ 74-78.

108. As shown in the footnote below, the disparities are substantial across six of the CD typologies (all except plurality Hispanic).[48] The exception to the rule – Black disadvantage in the plurality White CD typology – did not meet the letter of the 80 percent test under Method 1.

109. Statistical significance. As with not challenging the fact that there are one or more substantial disparities in each CD typology for apparently eligible applicants, defendant has not disputed the statistical significance of the disparities. Here again, were defendant to mount a belated attack, it would be without merit.

110. Focusing now on those portions of Exhibit 13 that show standard deviations for Methods 1 and 2 for apparently eligible applicants, there is no case in any CD typology under either method where the standard deviation is not in excess of 2.00; on the contrary, the standard deviation in each case is substantially in excess of 2.00.

111. Recapitulation and conclusion. To recap, there are five CD typologies (majority White, majority Black, majority Hispanic, majority Asian, and plurality Black) where there is substantial disadvantage to all three of the non-dominant groups: first as shown in Tables 6 and 7 and then as assessed by the 80 percent test for both methods. The disparities are statistically

[48] The most advantaged demographic group in a CD typology is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green. Where it is not, it is shown in yellow. There is one exception to how demographic groups in a typology are highlighted: where the most-advantaged demographic group in the CD typology is not the largest demographic group in the typology, that largest demographic group, along with the other relatively disadvantaged groups, are all shown in red (even though various substantial disparities may be present).

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	12.64%	50.02%	27.61%
Majority Black	31.74%	100.00%	44.19%	25.12%
Majority Hispanic	27.04%	65.95%	100.00%	27.12%
Majority Asian	14.83%	3.54%	12.36%	100.00%
Plurality White	100.00%	86.16%	56.63%	70.65%
Plurality Black	46.63%	100.00%	60.39%	16.90%
Plurality Hispanic	100.00%	64.69%	93.14%	96.57%

significant in every case under both methods.

112. In the plurality-White CD typology, Hispanics and Asians show substantial disadvantage: first as shown in Tables 6 and 7 and then as assessed by the 80 percent test as applied to both of my methods; the disparities for those groups are demonstrated to be statistically significant.

113. **It is important at this point to step back for a moment**. What we have seen – both for all entrants and for apparently eligible applicants – is a wide range of substantial race-based disparities in who is allocated the benefits of the policy and who, in relative terms, has those benefits withheld. The disparities exist across nearly all CD typologies (seven-out-of-seven for entrant and six-out-of-seven for apparent). As to the latter, just the apparently eligible applications for lotteries in the majority typologies make up more than 75 percent of all apparently eligible applications. Adding in applications for lotteries in plurality-White and plurality-Black CD typologies, there come to be just under 90 percent of the apparently eligible applications, insiders and outsiders combined, from the six CD typologies excluding plurality Hispanic.[49]

114. Put another way, the substantial disparities that exist are the polar opposite of an isolated phenomenon.

H. Disparate impacts viewed in respect to awarded units

115. What effectively happened in the lottery process is that defendant ran (over and over again with each lottery) a *natural* e*xperiment*. It is not as though defendant had additional people coming into a lottery after the deadline for lottery applications was passed. At that moment,

[49] This is true for entrants, too. For apparently eligible applicants, this is the sum of the totals for these six CD typologies in Section 3a of Ex. 10, divided by the total for all CD typologies in Section 3a of that exhibit). For entrants, it is the same procedure in respect to Ex. 9.

all the applications were in. All the characteristics of all the participants were already in place – their household income, their household size, everything about them that would be evaluated. Even more intangible things – why someone had decided to apply, how serious they were about the process – were already in place.[50]

116. The natural experiment was for defendant to take a fixed group and see what happens when they are treated differently by community preference policy rules.

117. Defendant could have had one result for the 50 percent of units currently subject to preference by allowing everyone to participate equally; it has had a different result by limiting the competition for that 50 percent of units to CB beneficiaries.

118. Outsiders act both as a good proxy for all applicants because the demographic composition of outsiders is so close to that of all applicants,[51] and because comparing insiders and outsiders directly shows how different the paths of the two groups distinguished by defendant are in their influence – whether in their contrasting influence on the 50 percent of units subject to the preference or any other preference percentage.

119. In terms of awardees, we were able to use the "status sheets" or their equivalent document as maintained by the agencies to see exactly which types of awards (community preference, disability mobility, no preference, etc.) were actually dispensed. There were, in all,

[50] It is true that, for outsiders, there are discouraging parts of the lottery process given the allocation and sequencing rules and their consequences; for insiders, by contrast, there are encouraging parts of the lottery process given the allocation and sequencing rules and their consequences. For our purposes, however, that simply means that it is necessary to bear in mind that the results do not take into account any outsider-discouragement or insider-encouragement effect.

[51] For apparently eligible applicants, for example, in eight comparisons across the four majority CD typologies – *e.g.*, Whites in White majority and Blacks in Hispanic majority – the difference between the racial group's share of the non-beneficiary apparently eligible applicants and all apparently eligible applicants was less than 0.5 percent; in five others, the difference is less than 1.5 percent; and in the remaining 3, all in the Asian majority typology, the difference ran from under 4 percent to under 7 percent). *See* Ex. 10, comparing Section 2b with Section 3b.

10,245 awards that Dr. Siskin and I each studied. The distribution of the awards within each CD typology by insider, outsider, and total, and then by demographic group is found in Exhibit 11.

120. I proceed with the now-familiar methods of assessing difference, but, in this case, we also have the confirmatory evidence provided by a simulation of the lottery run 1,000 times with community preference in effect.

121. Method 1: Outsider-to-insider-change. As with the other analyses, the group benefitting most is highlighted in yellow in Table 8, below.

Table 8 – Outsider-to-insider-change method: Comparing relative percentage change for each group from share of non-beneficiary actual awardees to share of CP beneficiary actual awardees, by CD typology

CD typology	White	Black	Hispanic	Asian
Majority White	88.37%	-65.94%	16.77%	-0.98%
Majority Black	-45.19%	21.39%	-25.45%	-45.19%
Majority Hispanic	-60.93%	-11.59%	17.76%	-12.16%
Majority Asian	-100.00%	-100.00%	-65.22%	157.14%
Plurality White	0.82%	41.74%	-3.67%	-37.54%
Plurality Black	15.75%	13.94%	-12.03%	-22.83%
Plurality Hispanic	25.84%	-40.15%	10.79%	13.06%

122. In each of the four majority CD typologies, the dominant demographic group once again secured the most benefit from the community preference policy, and there were one or more other groups that suffered significant detriment.[52] In the majority-White CD typology in this case, a detriment of approximately 65.94 percent for Blacks was paired with a benefit of approximately 88.34 percent for Whites.

[52] I have been advised by plaintiffs' counsel that plaintiffs will not be proffering evidence of disparities for awardees in plurality typologies. As such, the discussion in the balance of this awardee section will revolve exclusively around the majority CD typologies.

123. The substantiality of these majority CD typologies is evident on the face of Table 8, and Dr. Siskin has not challenged that fact.

124. The results of the 80 percent test, presented below, confirm their substantiality in all cases pursuant to Method 1.[53]

125. Further confirmation of substantial disparate impact comes from the simulations of the lottery process that Dr. Siskin ran in connection with disparate impact. One thing he did was to run the simulation 1,000 times with the community preference policy in effect. In each run of the simulation, the population for each of the 168 lotteries was redrawn and randomly reordered. According to Dr. Siskin, these preferences were implemented pursuant to lottery rules.

126. Using the data that he generated (which he did not report with the results disaggregated by CD typology or by CP beneficiary or non-beneficiary status), I created one of my Method 1 tables, which does disaggregate the data in those ways. The underlying data are shown in Exhibit 14; the Method 1 table derived from those data is shown in Table 9 on the next page.

127. As was the case with the actual awardees, the simulated awards results show that

[53] The most advantaged demographic group in a CD typology is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green. Where it is not, it is shown in yellow. There is one exception to how demographic groups in a typology are highlighted: where the most-advantaged demographic group in the CD typology is not the largest demographic group in the typology, that largest demographic group, along with the other relatively disadvantaged groups, are all shown in red (even though various substantial disparities may be present).

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	-74.62%	18.98%	-1.11%
Majority Black	-211.28%	100.00%	-119.01%	-211.28%
Majority Hispanic	-343.08%	-65.26%	100.00%	-68.45%
Majority Asian	-63.64%	-63.64%	-41.50%	100.00%
Plurality White	1.96%	100.00%	-8.80%	-89.95%
Plurality Black	100.00%	88.52%	-76.40%	-145.00%
Plurality Hispanic	100.00%	-155.33%	41.75%	50.53%

the dominant group secured the most benefit from the community preference policy in all majority typologies, and these benefits were paired with substantial detriment to the other demographic groups. In the majority-White CD typology in the simulations, for example, the detriment to Blacks, about 61 percent, is paired with a benefit of about 146 percent for Whites.

Table 9 – Outsider-to-insider-change method applied to defendant's 1,000 simulations of each of 168 lotteries with community preference in effect, by CD typology

CD Typology	White	Black	Hispanic	Asian
Majority White	145.58%	-61.30%	5.82%	-12.39%
Majority Black	-64.32%	44.56%	-33.41%	-68.49%
Majority Hispanic	-72.62%	-7.58%	23.91%	-72.52%
Majority Asian	-62.13%	-89.15%	-63.60%	303.45%
Plurality White	-0.38%	23.07%	-16.26%	-19.76%
Plurality Black	-23.32%	42.78%	-32.17%	-76.37%
Plurality Hispanic	10.12%	-31.49%	9.91%	51.36%

128. The 80 percent test, as applied to the simulation's Method 1 results, shows substantial disparities in *all* the majority CD typologies as between the dominant demographic group and each of the other demographic groups.[54]

[54] This is also true for the plurality Black typology, but as indicated, plaintiffs are not proffering evidence of substantial disparities in connection with the plurality CD typologies and awardees. The most advantaged demographic group in a CD typology is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green. Where it is not, it is shown in yellow. There is one exception to how demographic groups in a typology are highlighted: where the most-advantaged demographic group in the CD typology is not the largest demographic group in the typology, that largest demographic group, along with the other relatively disadvantaged groups, are all shown in red (even though various substantial disparities may be present).

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	-42.11%	4.00%	-8.51%
Majority Black	-144.34%	100.00%	-74.97%	-153.70%
Majority Hispanic	-303.75%	-31.72%	100.00%	-303.33%
Majority Asian	-20.48%	-29.38%	-20.96%	100.00%
Plurality White	-1.63%	100.00%	-70.49%	-85.66%
Plurality Black	-54.52%	100.00%	-75.20%	-178.52%
Plurality Hispanic	19.71%	-61.30%	19.29%	100.00%

129. Method 2: Highest-insider-share. The underlying percentages showing the share of each demographic group in each CD typology that consists of insiders are presented in Exhibit 12. Section 3 of that exhibit shows the insider-percentage for each demographic group for actual awardees; Section 4 of that exhibit shows the same for Dr. Siskin's simulation.

130. As shown on the below in Table 10 (referencing actual awardees), in all of the majority CD typologies[55] the demographic group most benefitted under Method 2 is the dominant demographic group of the CD typology and all other demographic groups suffer relative detriment.

Table 10 – Highest-insider-share method: Comparing each group's CP beneficiary actual awardees as a percentage of that group's total awardees against the highest such percentage for any group, by CD typology

CD typology	Group with highest percentage of its awardees being CP beneficiary awardees	Relative percentage by which highest group exceeds other groups			
		White	Black	Hispanic	Asian
Majority White	White	Highest	178.08%	24.10%	35.46%
Majority Black	Black	57.64%	Highest	29.82%	57.64%
Majority Hispanic	Hispanic	105.03%	17.31%	Highest	17.76%
Majority Asian	Asian	No Beneficiary Awards	No Beneficiary Awards	179.00%	Highest
Plurality White	Black	16.15%	Highest	18.76%	50.51%
Plurality Black	White	Highest	0.79%	15.79%	25.00%
Plurality Hispanic	White	Highest	52.18%	6.43%	5.35%

[55] The majority typologies account, in the aggregate, for slightly more than 70 percent of the total awarded units, both beneficiary and non-beneficiary. (This is the sum of the totals for each majority CD typology in Section 3a of Ex. 11 divided by the total for all CD typologies in Section 3a of that exhibit).

131. The first section of the footnote below shows the results of the 80 percent test recast as it pertains to actual awards.[56] I did not prepare an equivalent to Table 10 for the simulated results under Method 2, but report the results of the 80 percent test recast on the results of simulated awards in the second section of that same footnote.

132. Among the disparities in the majority CD typologies under Method 2:

a. Every majority CD typology has at least one demographic group that is less than 80 percent of the dominant demographic group, both in actual awards and in simulated awards.

b. The majority-Asian and majority-Black CD typologies show that all three non-

[56] The most advantaged demographic group in a CD typology is highlighted in grey. Where a disparity is substantial pursuant to the 80 percent test, it is shown in green. Where it is not, it is shown in yellow. There is one exception to how demographic groups in a typology are highlighted: where the most-advantaged demographic group in the CD typology is not the largest demographic group in the typology, that largest demographic group, along with the other relatively disadvantaged groups, are all shown in red (even though various substantial disparities may be present).

Actual awards:

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	35.96%	80.58%	73.82%
Majority Black	63.44%	100.00%	77.03%	63.44%
Majority Hispanic	48.77%	85.24%	100.00%	84.92%
Majority Asian	0.00%	0.00%	35.84%	100.00%
Plurality White	86.09%	100.00%	84.20%	66.44%
Plurality Black	100.00%	99.21%	86.36%	80.00%
Plurality Hispanic	100.00%	65.71%	93.96%	94.92%

Simulated awards:

CD typology	White	Black	Hispanic	Asian
Majority White	100.00%	39.23%	72.32%	65.68%
Majority Black	44.33%	100.00%	67.49%	40.39%
Majority Hispanic	38.73%	86.74%	100.00%	38.84%
Majority Asian	33.46%	11.83%	32.50%	100.00%
Plurality White	90.43%	100.00%	82.56%	80.64%
Plurality Black	73.68%	100.00%	68.59%	32.36%
Plurality Hispanic	86.95%	67.36%	86.87%	100.00%

dominant demographic groups are substantially disadvantaged compared to the dominant group both in actual awards and in simulated awards.

c. The majority-White CD typology only varies from majority Asian and majority Black insofar as actual awards for Hispanics under Method 2 are at 80.58 percent (the simulated awards, by contrast – run 1,000 times – have Hispanics in the majority-White CD typology at only 72.32 percent of the White result for Method 2).

d. In the majority-Hispanic CD typology, the most consistent result is shown for the disadvantage of Whites, which is substantial both in actual awards and in simulated awards for Method 2.

133. Statistical significance. Referring once again to Exhibit 13 (this time the "actual awardees" section), the statistical significance of the actual results are more than 2.00 standard deviations in all cases except for Asians in both majority-White and majority-Hispanic typologies, and Whites in the majority-Asian CD typology. The statistical significance of 1,000 simulations generating 10,245,000 results is, in practical terms, self-evident for all cases.

134. Recapitulation and conclusion. To recap in terms of awardees, here are the demographic groups that show substantial disadvantage under both methods, both for actual awards and for the simulated results, and are statistically significant not only for the simulated results but for actual awards as well:

CD typology	Substantially disadvantaged demographic group
Majority White:	Blacks
Majority Black:	Whites, Hispanics, and Asians
Majority Hispanic:	Whites
Majority Asian:	Blacks, Hispanics

135. In addition, there is substantial disadvantage for Hispanics in the majority-White CD typology when one considers: (a) substantial disadvantage per Method 1 as to both actual and simulated awards; (b) statistical significance for both Method 1 and 2; and (c) with Method 2, 80 percent tests came in at 80.58 percent for actual awardees and 72.32 percent for simulated awardees.

136. In addition, there is substantial disadvantage for Whites in the majority Asian CD typology, with all the indicators pointing in the same direction (substantial disadvantage per Methods 1 and 2 as to both actual and simulated awardees), and the lack of statistical significance for actual awardees under Method 1 counterbalanced by the statistical significance that is present pursuant to Method 2 (approximately 12 standard deviations) and in respect to the simulated awardees.

137. Regardless of the Court's view as to the opinions I express in paragraphs 135 and 136, the stark facts of paragraph 134 remain: substantial detriments and statistical significance by both measures and for both actual and simulated awardees, occurring eight times across the four majority typologies, at least once in each typology.

138. There are meaningful (substantial) disparate impacts for awardees.

I. Perpetuation of segregation

139. In view of the design of defendant's community preference policy, the allocation policy of which operates to filter down substantially the percentage of moves that can be made by outsiders to a community district, the policy could not help but to perpetuate segregation more (permit fewer racially integrative moves) than would be the case without the policy.

140. I have demonstrated that the population of New York City is segregated at the

census tract level and is segregated (concentrated by race) at the community district level, too (*see* Section E, above). This proposition is not in dispute.

141. Under these conditions, while it is certainly possible for a move by a member of a racial group within a CD where that racial group is dominant to be integrative, it is *more likely* that a move by a member of a racial group to a CD where that racial group is not dominant will be integrative. Put the other way, if you start with a segregated CD (a CD with a concentration of a particular demographic group) and reserve 50 percent of the units for those already living in the CD, you will predictably have more segregation (less integration) than if those units were open to all comers.

142. This result is also suggested by what we know from the data and has already been discussed in Sections F, G, and H, above, regarding disparate impacts:

a. the pattern of the share of *insiders* who are members of the *dominant* demographic group being *larger* than the share of *outsiders* who are members of the dominant demographic group; and,

b. conversely, the pattern of the share of *outsiders* who are members of *non-dominant* demographic groups being *larger*, most of the time, than the share of *insiders* who are members of non-dominant demographic groups.

143. Apparently eligible outsiders, looking across CD typologies, account for approximately 94.5 percent of all apparently eligible outsiders.[57] There is no dispute that the operation of the community preference policy preferring insiders for 50 percent of the units operates to reduce that outsider share substantially when it comes to awardees.

[57] *See* Ex. 10. Comparing the total number of all apparently eligible non-beneficiaries in each CD typology (Section 2a) with the total number of all apparently eligible applicants regardless of beneficiary status (Section 3a), the non-beneficiary percentages in each CD typology are approximately as follows: MW, 96.90%; MB, 92.63%; MH, 94.31%; MA, 87.42%; PW, 93.55%; PB, 88.51%; and PH, 95.34%.

144. If indeed it is the case that a greater percentage of outsider moves are integrative on net than the percentage of insider moves on net, then a policy to filter down the availability of those outsider moves, by definition, makes fewer net-integrative moves possible then would be the case without the policy.

145. Awardee data, apparently eligible data, and the simulation run by Dr. Siskin all confirm that outsider moves are more net-integrative a greater percentage of the time.

146. Dr. Siskin examined 145 of the 168 lotteries where the affordable housing to be lotteried off was contained in a single census district. I, in turn did the same.

147. What he did in all instances was to geocode the address of the lottery project. He also geocoded the address of the applicant where that was identifiable (a very large proportion of the cases). He proceeded to assess moves as "integrative," "segregative," or as having "no effect" on segregation, as those moves would be understood in the context of the dissimilarity measure.[58]

148. I have accepted for this declaration the data characterizing moves that corresponds to Dr. Siskin's report of those moves in his December 13, 2019 amended opposition report.[59]

149. Under this approach, there are six pairings of racial groupings that are each looked at separately to look at the impact of a move as it pertains to the relationship of the pairing: Whites in relation to Black ("W v AA"); Whites in relation to Hispanics ("W v H"); Whites in relation to

[58] With the exception of the fact, as explained below in paragraph 151 and 155, of there being a subset of the moves characterized by Dr. Siskin as "no effect" which, definitionally, could not be "integrative" or "segregative" because those moves involve a demographic group not part of the comparison being made. Such moves, in the context of the dissimilarity measure, are properly categorized as "not in group" as opposed to "no effect."

[59] Dr. Siskin corrected the data that he had originally reported because of a fundamental error I had identified in his chacterizations of moves as "integrative" or "segregative." Again, please note the caveat that some "no effect" moves still had to be reclassified as "not in group."

Asians ("W v A"); Blacks in relation to Hispanics ("AA v H"); Blacks in relation to Asians ("AA v A"); and Hispanics in relation to Asians ("H v A").

150. Since the measure pertains only to the relationship between a single pair of demographic groups, the only way to see, for example, whether a move is integrating, segregating, or has no effect in respect to Whites in relation to Blacks is to limit one's lens to the moves *made* by Whites and Blacks. Moves made by Hispanics and Asians could not have any effect or relevance to the Black comparison. It is absolutely basic to the social science of measuring segregation, and, more specifically, to the application of the dissimilarity measure, that two-group pairs are assessed entirely separately, one pairing at a time.

151. One of the things that Dr. Siskin did was to look at the moves made by actual awardees. An excerpt of his table that includes the number of integrative and segregative moves for each of the six demographic pairings, as well as the net number of integrative moves, is presented in Exhibit 15.

152. I do not disagree with the net number of integrative moves and the net number of segregative moves he reports for any of the six pairings.

153. The Court will notice, however, that he did not report results disaggregated by whether the awardee was a CP beneficiary or a non-beneficiary. I have disaggregated the results in that way.

154. Dr. Siskin also failed to disaggregate and put aside from "no effect" those "not in group" (*e.g.*, Hispanics and Asians in the White-Black comparison). I have done so in order to make the "no effect" count a true count of those moves *made by Whites and Blacks* that were neither integrative nor segregative. I followed the equivalent procedure with all of the demographic groups.

155. My table of disaggregated results for awardees is presented as Exhibit 16, showing counts on the first page and percentages and relative difference on the second.

156. In each demographic pairing, and separately for outsiders and insiders, the number of integrating moves is subtracted from the number of segregating moves. Where the number of integrating moves is greater, the result is a negative number. A convenient way to think about this is that when the result is a negative number that means less segregation and more integration. The more negative the number, the greater the net-integrative effect.

157. In each demographic pairing, I then calculated the net-integrative effect of outsider moves as a percentage of all outsider moves ("outsider net-integration percentage") and the net-integrative effect of insider moves as a percentage of all insiders moves ("insider net-integration percentage").

158. Comparing outsider net-integration percentage with insider net-integration percentage is particularly useful because one is able to compare the influence each type of move has, and thus reach a conclusion about whether ending the practice of suppressing outsider moves (abandoning the community preference policy) would allow more integration than has been the case, and *will allow more integration in the future as more lottery projects are developed.*

159. Before getting into the details, I should note that, in most cases that I have worked on involving perpetuation of segregation, the analysis did not involve an examination of all demographic pairings – it was enough for there to be perpetuation found in one of the pairings examined (usually W v AA or W v H).

160. Here, the greater integrating influence of outsider moves is present in each of the six demographic pairings, and is present in terms of actual awards (which I shall address first); in what the results would have been if all the moves sought by apparently eligible applications for

the lotteries examined had taken place; and in Dr. Siskin's 1,000 runs of a lottery simulation where community preference was in effect.

161. I summarize the results of my analysis of actual awardees for perpetuation of segregation purposes, the full results of which are presented in Exhibit 16, and summarized in Table 11, below.

Table 11 – Net-integrative outsider moves vs. net-integrative insider moves (actual awardees)

Demographic Pairing	Net integrative outsider moves (count)	Net integrative insider moves (count)	Insider net-integration percentage as percentage of outsider net-integration percentage (the 80 percent rule)
W v AA	-299	-84	32.71
W v H	-114	-57	45.87
W v A	-285	-179	65.98
AA v H	-399	-42	12.84
AA v A	-316	-63	25.43
H v A	-229	-182	89.52

162. The results all point in the same direction: a greater net-integrative effect both in raw numbers and in net-integration percentage for outsider moves. Five of the six pairings (all but H v A) have very substantial disparities (by analogy to the 80 percent test, the rightmost column in Table 11, those five pairings are easily substantial).

163. Even before looking at any other data, two things are clear: first, outsider moves are more integrative; and, second, the more outsiders are permitted to compete for all units (that is, the less filtering a community preference policy imposes), the more integration there will be.

164. This fact is illuminated by another lens that Dr. Siskin used: examining apparently eligible applicants. I disaggregated his non-scaled data and proceeded in the same way previously described.

165. My results are presented in full in Exhibit 17 and summarized below in Table 12:

Table 12 – Net-integrative outsider moves vs. net-integrative insider moves sought by apparently eligible applicants			
Demographic Pairing	Net integrative outsider moves sought (count)	Net integrative insider moves sought (count)	Insider net-integration percentage as percentage of outsider net-integration percentage (the 80 percent rule)
W v AA	-358,187	-5,609	29.51
W v H	-64,058	-598	17.03
W v A	-301,581	-8,041	49.23
AA v H	-358,681	-2,033	11.10
AA v A	-349,939	-2,273	13.22
H v A	-258,359	-7,941	61.24

166. The examination of apparently eligible applications shows vast disparities between the outsider net-integration percentage and the insider net-integration percentage, with the insider net-integration percentage being much less in each and all of the six typologies.

167. This is not just a confirmatory result; it also provides a glimpse into what happens when the percentage of outsiders is *not* constrained by the community preference policy. These are vast numbers of apparently eligible applicants, and it cannot be denied that the number of net-integrative outsider moves completely overwhelms the number net-integrative insider moves (just as it cannot and has not been denied that the community preference policy does act as a constraint on the percentage of outsiders who are permitted to obtain awards).

168. For example, if one adds together the net integrative moves for both insiders and outsiders in the W v AA pairing, net-integrative outsider moves constitute 98.4 percent of all net-integrative moves. Doing the same for the AA v H pairing, net-integrative outsider moves constitute 99.4 percent of all net-integrative moves.

169. Again, the greater the mix of outsiders in the awardee pool, the more integration (*i.e.,* the less perpetuation of segregation) there will be.

170. The apparently eligible analysis shows that the community preference policy not

only has, in fact, permitted less integration than would otherwise be the case, it shows that this result is *predictable* over a pool of apparently eligible applicants that is more than two-million strong.

171. Yet another way to examine predictability is to analyze a simulation of the lottery, which Dr. Siskin ran 1,000 times with the community preference policy in effect. As with the other analyses, I do not dispute his overall numbers, but I do disaggregate them in the ways previously described so that neither the influence of outsider moves versus that of insider moves is disguised, and so that "no effect" is not polluted by those not in the pairing. The results of my disaggregation are presented in Exhibit 18.[60] The summarized results are found in Table 13.

Table 13 – Cumulative net-integrative outsider moves vs. net-integrative insider moves (defendant's 1,000 runs of simulation with community preference in effect)

Demographic Pairing	Net integrative outsider moves (count)	Net integrative insider moves (count)	Insider net-integration percentage as percentage of outsider net-integration percentage (the 80 percent rule)
W v AA	-425,171	-125,801	29.61
W v H	-178,714	-68,995	33.03
W v A	-349,875	-215,080	57.90
AA v H	-530,630	-68,976	13.63
AA v A	-443,787	-92,294	22.60
H v A	-323,330	-197,830	61.76

172. Even though the simulation (similar to the actual awards) constrains the percentage of outsider that can get awards, the influence of outsider simulated awards as compared with the influence of insider simulated awards is clear. Insider net-integrative moves as a percentage of all outsider moves in relative and absolute terms are substantially less than outsider net-integrative moves.

173. This occurs in all six pairings. Analogizing to the 80 percent rule (*see* the rightmost column of Table 13), insiders in the AA v H pairing are the lowest in relative terms at 13.63

[60] Here, I also specify "race refused," which I do not include in the totals of any of the pairings.

percent; insiders in the H v A pairing are the highest in relative terms, at only 61.76 percent.

174. The only thing to add is a word about statistical significance. Certainly, the 1,000 runs of the simulation are statistically significant. As for actual awardees and the apparently eligible analyses, I used the same method as I did when computing standard deviation in connection with the disparate impact results.[61]

175. For actual awardees, the five pairings with substantial disparities all had statistically significant differences between the higher outsider net-integration percentage and the lower insider net-integration percentage. The measure of standard deviation was significantly greater than 2.00 in all five cases.[62]

176. For apparently eligible applicants seeking to move, all six pairings (all of which had substantial disparities) had statistically significant differences between the higher outsider net-integration percentage and the lower insider net-integration percentage. The measure of standard deviation was significantly greater than 2.00 in all five cases.[63]

177. In a city as large as New York (with more than 3.1 million occupied residential units),[64] and as segregated as New York, it is sadly the case that there will be some significant level of residential segregation deep into the future. People live where they live. The only question in terms of perpetuation of segregation has to do with the choice defendant has had and continues to have: is the process of desegregation more effectively *begun* with or without a community

[61] *See* description, above, at 27, n.38.

[62] W v AA = 10.54; W v H = 4.67; W v A = 5.15; AA v H = 17.02; and AA v A = 12.36. The sixth pairing, H v A, was equal to 1.18.

[63] W v AA = 183.00; W v H = 98.79; W v A = 108.00; AA v HA = 339.20; AA v A = 275.6; and H v A = 57.81.

[64] According to the most recent New York City Housing and Vacancy Survey results from 2017. *See* PS, ¶ 33.

preference policy in effect? It is clear beyond any doubt that the policy's filtering down of the percentage of outsiders who can be awarded units operates to permit less integration than would otherwise be the case. That is the definition of perpetuation of segregation.

J. Other benefits of CP beneficiary status; corresponding detriments of non-beneficiaries

178. Much earlier in this declaration, I adverted to the fact that better odds were not the only way that CP beneficiaries were a distinctly favored group in relation to non-beneficiaries.

179. Given the vast difference in the size of the respective CP-beneficiary and non-beneficiary pools and the much smaller difference between the number of CP-beneficiary units and non-beneficiary units in most lotteries, it is typically and predictably the case that a materially greater percentage of CP-beneficiary entrants will be reached and evaluated for eligibility by a developer than the percentage of non-beneficiaries. The same is true for apparently eligible applicants: just as outsiders are the overwhelming percentage of all applicants, apparently eligible outsider applicants are the overwhelming percentage of all apparently eligible applicants.

180. It is only by being reached and considered by a developer that one can have the opportunity to have one's qualifications evaluated, have the opportunity to update those qualifications from the information provided in the application, have the opportunity to document qualifications if one is an apparently eligible applicant, and have the opportunity to appeal an adverse determination by the developer. So typically having a greater proportion of one's defendant-assigned grouping reached and considered (the circumstance for CP beneficiaries) is better than having a smaller proportion of one's defendant-assigned grouping reached (the circumstance for non-beneficiaries).

181. It is also the case that, at the time of developer review, outsiders are more apt to be

either partially closed out of one or more of the unit types for which they are eligible or fully closed out of all of the unit types for which they are eligible. This is not a complicated process, and the result is entirely predictable.

182. In each lottery, there exists a finite supply of different unit types. Both the number of unit types and their supply varies by lottery. For example, there may be one-bedrooms available at only one rent – that is, at one level of affordability – there may be one-bedrooms available at three different rents – that is, at three different levels of affordability. There may be 20 one-bedrooms available or there may be only five.

183. The key point, regardless of lottery, is that, as the lottery proceeds, the supply begins to be diminished. As I understand it, there is no limit on what percentage of a particular unit type is permitted to be allocated to a preference group, including CP beneficiaries.[65] The mechanism is that any available unit can be taken on a first-come, first-served basis. Eventually, all of the supply of a unit type is exhausted. The supply is more apt to be exhausted later in the lottery (where non-beneficiary applicants are sequenced) than early in the lottery (where CP beneficiary applicants are sequenced).

184. To illustrate the point, of the approximately 900 unit-types for which there were at least one unit awarded to an applicant household in a lottery, I examined each unit type that had both of the following characteristics:

a. At least *five* applicant households listed on defendant's status sheets as having received community preference but not having received a disability set-aside; and

b. *Zero* applicant households listed on defendant's status sheets to outsiders who

[65] *See* PS, ¶ 28.

were not the recipient of a disability set-aside.

185. This subset of unit types, the projects they were associated with, their AMI bands, and the number of CP awards (other than disability) in each unit type are listed in Exhibit 19, hereto.

186. As the exhibit shows, there were 61 such unit types across 36 lotteries encompassing 565 units. 86.9 percent of the unit types, and 89.0 percent of the units were unit types at the 60 percent AMI level or below.

187. In other words, there are a substantial number of unit types where households who are outsiders not eligible for any preference or set-aside (whose processing is sequenced after CP beneficiary) are all closed out, even though the unit type might have been the only one for which they were eligible. This is the direct result of the rules governing the allocation of units based upon community preference.

188. But the illustration is only the tip of the iceberg. Disadvantage to an outsider does not only occur when *all* outsiders are excluded. Disadvantage also occurs when the sequencing rules result, as they must under the policy, in more outsiders than insiders predictably being confronted with one or more no-longer-available unit types. This can happen where those unit-type close-outs represent *some* of the unit types for which the outsiders were apparently eligible (being partially closed-out) and where those unit-type close-outs represent *all* the unit types for which the outsiders were apparently eligible (being fully closed-out).

K. Rent burden

189. Housing Connect provides each applicant the ability to report: (a) household

income data at the time of an application;[66] (b) total rent at the location from where the applicant household is applying; and (c) the applicant household's contribution to that total rent (an amount that may only be a portion of the full rent).

190. I calculated rent as a percentage of income based on total reported rent as well as based on contribution to total rent. Within each type of calculation, I distinguished between those applicant households claiming a subsidy and those who did not. Within "subsidy claimed" and "no subsidy claimed," I distinguished between CP beneficiary applications and non-beneficiary applications. The applications able to be included were those which reported both a positive income value and a positive dollar value for the relevant rental amount. There were a significant number where one or both values were missing. I also removed outliers.[67]

191. Nonetheless, this left me with slightly fewer than 5 million observations as to rent as a percentage of income based on total rent, and slightly more than 5 million observations as to rent as a percentage of income based on contribution to total rent.

[66] Calculated as described in the Sources and Methodology appendix.

[67] About one-fifth of all applications are missing data regarding the question of total rent; a similar percentage are missing data regarding the question of contribution to total rent. About three percent of applications were missing data with respect to income. All such cases were considered "missing," as were those for which zero was reported or recorded for the rent, contribution, and/or income values. Beyond this there were some rents as a percentage of income that were very high (above 90 percent) and some very low (below 5 percent). These were considered outliers and were also eliminated from analysis.

192. The results of the analysis are shown in Table 14 below.

Table 14: Rent Burden per Available Housing Connect Data								
	Rent as Percentage of Income Based on Total Rent				Rent as Percentage of Income Based on Contribution to Total Rent			
	No Subsidy Claimed		Subsidy Claimed		No Subsidy Claimed		Subsidy Claimed	
	No CP	CP	No CP	CP	No CP	CP	No CP	CP
N Obs	4,392,513	225,125	301,950	17,808	4,469,990	230,162	341,404	20,072
Mean	37.93%	36.91%	44.92%	43.94%	27.85%	27.35%	25.95%	25.72%
Max	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%
Min	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
1st Pctl	7.96%	7.73%	7.54%	7.06%	6.00%	5.95%	5.66%	5.63%
5th Pctl	13.68%	13.13%	13.57%	13.07%	8.84%	8.60%	7.79%	7.77%
10th Pctl	17.68%	16.94%	19.23%	18.53%	11.44%	11.08%	9.76%	10.00%
25th Pctl	25.00%	23.96%	29.54%	28.14%	17.14%	16.71%	15.59%	15.95%
30th Pctl	26.95%	25.74%	32.35%	30.60%	18.75%	18.35%	17.46%	17.77%
40th Pctl	30.75%	29.40%	38.11%	36.39%	22.00%	21.49%	20.83%	21.03%
50th Pctl	34.68%	33.19%	43.50%	41.79%	25.19%	24.64%	23.93%	24.00%
60th Pctl	39.32%	37.76%	49.03%	48.00%	28.77%	28.04%	26.85%	26.67%
70th Pctl	45.00%	43.54%	55.38%	54.27%	32.73%	31.91%	29.74%	29.36%
75th Pctl	48.08%	46.90%	59.08%	57.86%	35.24%	34.41%	31.39%	30.93%
80th Pctl	52.17%	51.18%	63.63%	62.87%	38.36%	37.50%	34.07%	33.38%
90th Pctl	63.83%	63.39%	73.85%	73.94%	47.62%	47.05%	44.88%	43.29%
95th Pctl	73.39%	73.35%	80.79%	81.00%	57.06%	56.76%	55.39%	54.02%
99th Pctl	85.71%	85.71%	88.21%	88.00%	76.88%	76.50%	77.33%	75.11%

193. Paying more than 30 percent of income is considered "rent burdened." Paying more than 50 percent of income on rent is considered "extremely rent burdened."[68]

194. The table is easiest to read if one imagines that each application (in each of four categories, as split by CP and no CP) is arrayed from lowest rent burden to highest rent burden, and from lowest percentile to highest percentile. It is not, for example, until the 80th percentile of "rent as percentage of income based on total rent" where no subsidy is claimed (the leftmost of the four pairings) that both CP beneficiary and non-beneficiary applicants begin to be extremely

[68] *See* PS, ¶¶ 142-43.

rent-burdened (as shown in red).

195. For each of the four comparisons between CP beneficiary applications and non-beneficiary applications, the results show that, at each percentile, rent as a percentage of income is very similar. The percentile band at which applicants breach the percentage of income spent on rent to be designated as "rent burdened" – the first band highlighted in yellow – is identical as between CP beneficiary applications and non-beneficiary applications in the second through fourth comparisons, and virtually identical in the first. The percentile band at which applicants breach the percentage of income spent on rent to be "severely rent burdened"– the first band highlighted in red – is identical as between beneficiaries and non-beneficiaries in all four comparisons.

196. So, to the extent that rent-burden or severe rent-burden is a proxy for risk of displacement (or for the fear of the risk of displacement), there is no distinguishing between CP beneficiaries and non-beneficiaries as a matter of percentages of each sub-pool burdened. As noted, the incidence is not materially different as between CP beneficiaries and non- beneficiaries. The current lottery system as it exists with a community preference policy is no more "aimed" at dealing with displacement and fear of displacement than would be a system that did not have a community preference policy.

197. The disconnect or lack of fit between an argument that the policy is designed to deal with displacement and/or the fear of displacement, on the one hand, and what the data shows, on the other, is revealed even more clearly when comparing the *number* of applications from rent-burdened non-CP-beneficiaries with the number of applications from rent-burdened CP beneficiaries. For example, in the portion of the table that shows rent as a percentage of income based on contribution to rent for those applications where no subsidy is claimed, "rent-burdened" (more than 30 percent) occurs at the 70th percentile. This translates to more than 1.3 million

applications that came from rent-burdened or severely rent-burdened applicants who are non-beneficiaries;[69] by contrast, fewer than 70,000 applications came from rent-burdened or severely rent-burdened applicants who are CP beneficiaries. A significant disparity is present whichever of the four comparisons are used, and regardless of whether one looks at those who are rent-burdened or severely rent-burdened.

198. Even though a rent-burdened or a severely rent-burdened New Yorker who is a non-beneficiary might want to secure a lottery apartment to be spared the "anxiety of potential displacement," the policy operates to hinder that outsider's chances to be spared.

199. To put it another way, defendant, through its policy, tells a rent-burdened or severely rent-burdened New Yorker eligible for lottery housing that if you choose to remain in your existing CD, the rules are designed to increase your chances; but that if you choose to move to another CD, the rules are designed to reduce your chances.[70]

L. Participation analysis

200. The policy reflects a judgment made by defendant: moves sought to be made within community district are to be valued more highly than moves sought to be made outside of community district. Does defendant's judgment match what actual lottery applicants do?

201. In fact, it does not. I was able to analyze the application or applications that each *unique* household (there were close to 700,000 of them) made for any of the 168 lotteries, and I

[69] The number of applications in each case is derived by multiplying the portion of the observations at and above the percentile referenced by the total observations in the category (*e.g.,* where the 70th percentile is referenced, the number of observations is multiplied by 30 percent).

[70] Professor Edward Goetz, an academic at the University of Minnesota who has been put forward by defendant as a proposed expert, agreed at his deposition that the community preference policy, if it is working as designed, reduces the chances of many families who want to move to different neighborhoods and could benefit from that mobility. *See* PS, at ¶ 182.

was able to distinguish between moves that were in-CD versus out-of-CD, and in-borough versus out-of-borough.

202. Table 15, below, classifies unique applications[71] both by how many lotteries they applied to and by the percentage of those lotteries that were for housing located out of their CD of lottery applications for each unique household.

Table 15: Unique Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside CD (Across)

	0.00%	01 to 24.99%	25.00 to 49.99%	50.00 to 74.99%	75.00 to 99.99%	100%	Total
One Lottery	38,848	0	0	0	0	224,560	263,408
	14.75%	0%	0%	0%	0%	85.25%	
2-4 Lotteries	4,601	0	1,612	14,862	5,198	104,265	130,538
	3.52%	0%	1.23%	11.39%	3.98%	79.87%	
5-9 Lotteries	2,461	152	899	6,191	20,474	69,159	99,336
	2.48%	0.15%	0.91%	6.23%	20.61%	69.62%	
10-19 Lotteries	2,081	87	778	4,207	29,844	46,643	83,640
	2.49%	0.10%	0.93%	5.03%	35.68%	55.77%	
20 or more Lotteries	2,048	363	1,722	4,486	60,885	38,721	108,225
	1.89%	0.34%	1.59%	4.15%	56.26%	35.78%	
Total	50,039	602	5,011	29,746	116,401	483,348	685,147
	7.30%	0.09%	0.73%	4.34%	16.99%	70.55%	

203. Regardless of how many lotteries a household entered (that is, whichever of the five ranges defined by number of lotteries entered), at least 80 percent of the households applied out-of-community-district a minimum of 75 percent of the time. When all of the ranges are combined, 87.54 percent of the households applied out-of-community-district at least 75 percent of the time, and only 7.30 percent of the households applied exclusively in-district.

204. There is thus no evidence of any substantial group of lottery applicants limiting themselves only to lotteries that occur in the CD from which they are applying; in contrast, there

[71] Excluding non-NYC households.

is clear evidence that the overwhelming percentage of unique applicant households have themselves made a decision that they value finding affordable housing somewhere in the City – even when that housing is not located in their existing community district.

205. Table 16, below, changes the analysis of household application patterns from in-CD versus out-of-CD to in-borough versus out-of-borough.

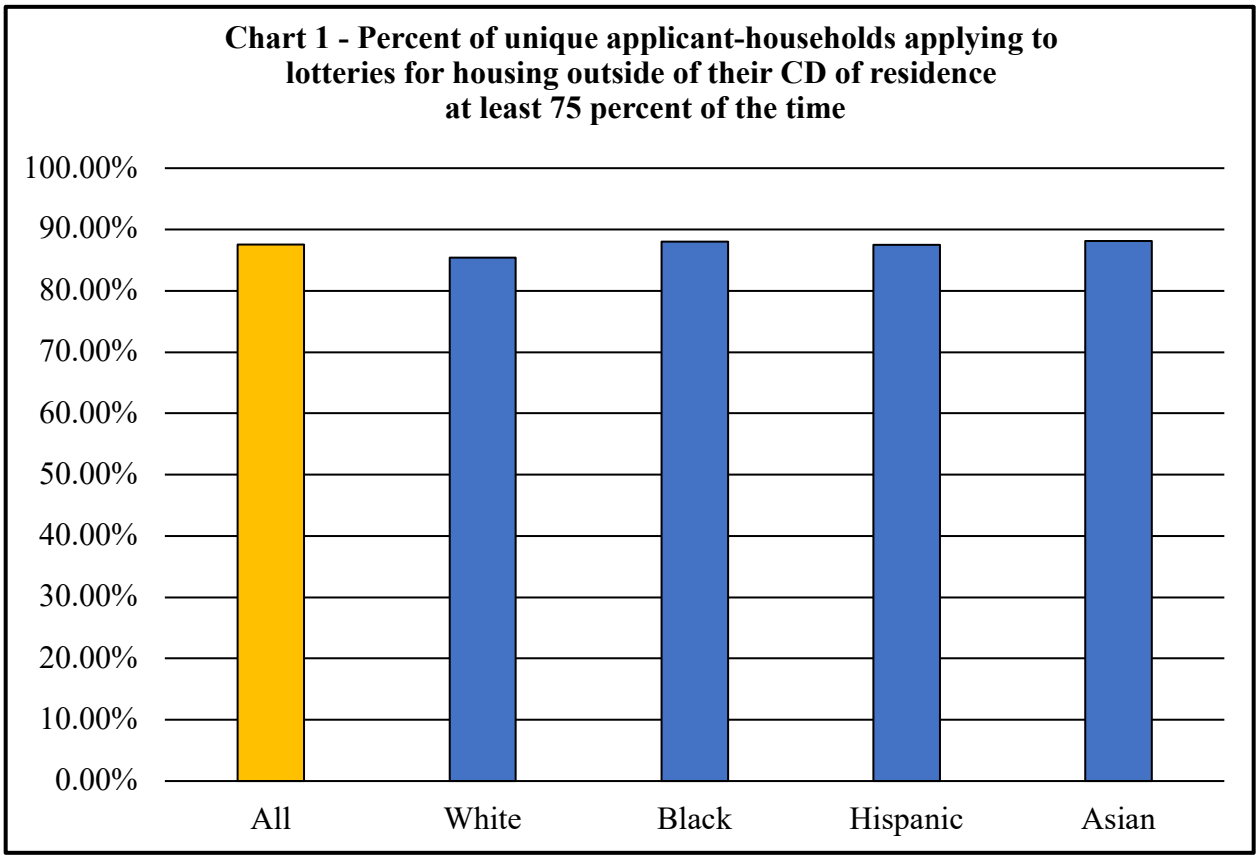
Table 16: Unique Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside Borough (Across)

	0.00%	01 to 24.99%	25.00 to 49.99%	50.00 to 74.99%	75.00 to 99.99%	100%	Total
One Lottery	149,779	0	0	0	0	113,629	263,408
	56.86%	0%	0%	0%	0%	43.14%	
2-4 Lotteries	33,951	0	16,194	38,353	7,734	34,306	130,538
	26.01%	0%	12.41%	29.38%	5.92%	26.28%	
5-9 Lotteries	7,812	10,815	19,357	29,755	17,867	13,730	99,336
	7.86%	10.89%	19.49%	29.95%	17.99%	13.82%	
10-19 Lotteries	2,203	8,938	19,406	30,921	16,859	5,313	83,640
	2.63%	10.69%	23.20%	36.97%	20.16%	6.35%	
20 or more Lotteries	501	8,387	23,928	52,784	20,221	2,404	108,225
	0.46%	7.75%	22.11%	48.77%	18.68%	2.22%	
Total	194,246	28,140	78,885	151,813	62,681	169,382	685,147
	28.35%	4.11%	11.51%	22.16%	9.15%	24.72%	

206. Using the same ranges of lottery applications and the same exclusion of non-NYC households, the application patterns show that there is significant willingness to consider not just a change of community district, but a change of borough: approximately 56 percent of households enter out-of-borough lotteries at least 50 percent of the time.

207. These data are not consistent with any presumption that a household seeking to move to new affordable housing will generally limit or want to limit its search to its existing community district, or that such desire as a household may have to stay within its community district trumps that household's desire to find affordable housing in multiple places in the City.

208. The patterns described in this section hold true regardless of race, as shown in Exhibit 20 in relation to out-of-CD applications. Chart 1, below, using data presented in that exhibit, shows the percentage for all unique applicant households, and the percentage for all unique household applicants from each demographic group, that has applied to a lottery for housing lottery outside the CD of their residence at least 75 percent of the time. The data show a tight pattern, regardless of demographic group, of an overwhelming percentage (ranging between 85.36 percent and 88.15 percent) applying outside of their CD of residence *at least* 75 percent of the time.



209. Comparing in-borough versus out-of-borough applications, as shown in Exhibit 21, the percentage of households in each group that has applied outside of the borough of residence at least a majority of the time ranges as follows: 54.85 percent for Blacks; 55.97 percent for Hispanics; 57.16 percent for Whites; and 62.48 percent for Asians.

210. In sum, a 50 percent preference based on community district bears no relation to what actual lottery applicants are telling defendant through their lottery applications about the decisions they themselves choose to make about their housing options. The percentages of applications out-of-CD are far in excess of the percentage allocated by the community preference policy. Those application percentages provide a very different picture than one created by the community preference policy (where a family's choice to stay in place is valued more than is a family's choice to move).

M. Concluding observations

211. My analyses were able to examine the implementation of the community preference policy across the City and capture a key feature of that policy: the benefits and detriments to racial groups vary by CD typology.

212. Substantial and statistically significant disparities in the opportunity to compete existed both when all entrants were examined and when apparently eligible applicants were examined.

213. Substantial and statistically significant disparities at the bottom line existed as well for multiple demographic groups in the four majority CD typologies.

214. Both the robustness of the sample and analyzing techniques for disparate impact (168 lotteries for entrants, apparently eligible applicants, and awardees; plus 1,000 runs of a simulation for awardees, all examined by two different methods) underline both the existence and predictability of the impacts.

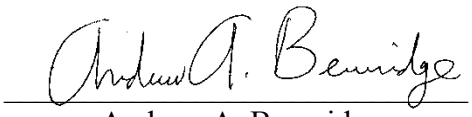
215. Both the robustness of the sample and analyzing techniques for perpetuation of segregation (145 lotteries for six racial pairings looking both at awardees and at apparently eligible

applicants; plus 1,000 runs of a simulation for awardees) underline both the existence and predictability that the removal of the community preference policy will enable there to be more of the more-integrative outsider moves than can currently be the case.

216. The policy prioritizes insider moves in a way that actual applicants do not.

217. The policy's distinctions between insiders and outsiders bear no relationship either to the similar distribution with each of the two groups in terms of rent burden or to the fact that far more outsiders are rent burdened and severely rent burdened than insiders.

Executed on March 4, 2020 in Westchester County, New York.



Andrew A. Beveridge

Exhibit 1

CURRICULUM VITAE **Updated 2/18/2020**

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EDUCATION

1968-73	Yale University (Sociology), M.Phil.1971; Ph.D. 1973
1967-68	Yale University (Econometrics, Economic Theory)
1964-67	Yale College (Economics), B.A. 1967, with honors in economics
1963-64	California Institute of Technology (Freshmen Year, Math, Science)

RECOGNITION AND AWARDS

2019	Choice (American Library Association) Outstanding Academic Title
2018	Best New End User Product, Charleston Advisor Sixteenth Annual Readers' Choice Awards (A Major Reviewer of Digital Products)
2016	*The Threat to Representation for Children and Non-Citizens (Evenwel v. Abbott)* (Report Author and Co-Creator) named Best Law Website by the Webby Awards
2015	*Census Explorer* (Co-Creator) named Webby Honoree in Government
2015	*Social Explorer* (Co-Creator) awarded Gold Medal, Modern Library Award
2014	*Social Explorer* (Co-Creator) named Webby Honoree in Education
2013	*Social Explorer* (Co-Creator) named Outstanding Achievement, Interactive Media Association
2012	*Social Explorer* (Co-Creator) named Publishing Standard of Excellence, Web Marketing Association
2010	*Social Explorer* (Co-Creator) named Outstanding Reference Source by the Reference and Users Services Association of the American Libraries Association
2007	American Sociological Association *Public Understanding of Sociology Award*
2006-pres.	Marquis *Who's Who in the World*
2005-pres.	Marquis *Who's Who in America*

TEACHING EXPERIENCE

2006-2018	Chair, Queens College, Department of Sociology
2002-pres.	Professor, Queens College and Ph.D. Program in Sociology, Graduate School and University Center, The City University of New York
1981-2001	Associate Professor of Sociology, Queens College, and Ph.D. Program in Sociology Graduate School and University Center, The City University of New York
1981-82	Associate Professor of Sociology, Columbia University
1973-81	Assistant Professor of Sociology, Columbia University
1972-73	Acting Instructor, Department of Sociology, Yale University
1969-70	Assistant in Instruction, Department of Sociology, Yale University

RESEARCH APPOINTMENTS

2008-pres.	Executive Committee Member and Affiliate, CUNY Institute for Demographic Research
1987-88	Visiting Researcher, Center for Studies of Social Change, The New School for Social Research
1982-83	Research Associate, Center for the Social Sciences, Columbia University
1980-82	Co-Director, Annual Housing Survey Project, Center for the Social Sciences, Columbia University
1970-72	Research Affiliate, Institute for African Studies (the former Rhodes-Livingstone Institute), Lusaka, Zambia
1965-69	Research Assistant and Programmer, Department of Economics and Economic Growth Center, Yale University

OTHER RELATED ACTIVITIES

2006-pres. Co-Founder (with Ahmed Lacevic) and President, *Social Explorer, Inc.* A web-based map and data service, now distributed by Oxford University Press and Pearson Publishing. Assisted Development of over 200 activities to accompany introductory Sociology, Political Science and History Texts.

1997-pres. President of Andrew A. Beveridge, Inc., a Demographic and Social Science Data Consulting Firm that provides consulting in litigation and other settings. (Cases and other engagements listed below.)

1993-pres. Consultant to the Newspaper Division of *the New York Times.* Work with reporters and editors regarding covering social science and demographic trends. Analyses and data cited over 1,000 times in newspaper. (Selected analyses listed below)

2001-pres. Columnist for the *Gotham Gazette*. Write Demographic Topic on recent trends and news related to social and demographic trends. (Topic Columns listed below.)

PUBLICATIONS

Book

1979 *African Businessmen and Development in Zambia.* Andrew A. Beveridge and A. Oberschall. Princeton N.J. and Guildford, Surrey, United Kingdom: Princeton University Press, 382 pages.

Edited Books

2013 *New York and Los Angeles: The Uncertain Future.* (David Halle and Andrew A. Beveridge, Co-Editors) New York: Oxford University Press. 624 pages; 38 maps, 35 graphs, 27 photos, and 79 tables.

2011 *Cities in American Political History,* (Associate editor) (Editor. Richardson Dillworth), Sage-CQ Press, 760 pages. Named one of *Choice*'s Outstanding Academic Titles of 2012.

Papers and Chapters

2018 "Relating Economic and Demographic Change in the United States from 1970-2012: A Preliminary Examination Using GIS and Spatial Analysis Techniques with National Data Sources." Andrew A. Beveridge. In Ian Gregory, Don Debats, Don Lafreniere (Eds.) *The Routledge Companion to Spatial History*. Pp. 92-129.

2014 "The Development and Persistence of Racial Segregation in United States Urban Areas: 1880 to 2010." Andrew A. Beveridge. Pp 35-61. In Ian Gregory and Alistair Geddes (eds.) *Towards Spatial Humanities: Historical GIS and Spatial History.* Bloomington, IN: Indiana University Press.

2013 "New York and Los Angeles: The Uncertain Future." David Halle and Andrew A. Beveridge. Pp. 1-30 in *New York and Los Angeles: The Uncertain Future.*

2013 "The Big Picture: Demographic and Other Changes." Andrew A. Beveridge and Sydney J. Beveridge. Pp. 33-78 in *New York and Los Angeles: The Uncertain Future.*

2013 "Financial, Economic and Political Crises: From Sub-Prime Loans to Dodd-Frank, Occupy Wall Street and Beyond." David Halle and Andrew A. Beveridge. Pp. 154-93 in *New York and Los Angeles: The Uncertain Future.*

2013 "Residential Diversity and Division: Separation and Segregation among Whites, Blacks, Hispanics, Asians, Affluent and Poor." Andrew A. Beveridge, David Halle, Edward Telles, and Beth Leavenworth Default. Pp. 310-42 in *New York and Los Angeles: The Uncertain Future*.

2011 "Avenue to Wealth or Road to Financial Ruin? Home Ownership and Racial Distribution of Mortgage Foreclosures." Elena Vesselinov and Andrew A. Beveridge. In Christopher Niedt and Marc Silver (eds.) Forging *a New Housing Policy: Opportunity in the Wake of Crisis.* Hempstead NY: National Center for Suburban Studies, Hofstra University, pp. 45-55.

2011 "The Rise and Decline of the L.A. and New York Schools." David Halle and Andrew A. Beveridge. In Dennis R Judd and Dick Simpson (eds.) *The City, Revisited Urban Theory from Chicago, Los Angeles and New York.* Minneapolis, MN: University of Minnesota Press, pp. 137-69.

2011 "Commonalities and Contrasts in the Development of Major United States Urban Areas: A Spatial and Temporal Analysis from 1910 to 2000." Andrew A. Beveridge. In Myron P. Guttman, Glenn D. Deane, Emily R. Merchant and Kenneth M. Sylvester (eds.) *Navigating Time and Space in Population Studies,* Springer for the International Union for the Scientific Study of Population, pp. 185-216.

2009 "How Does Test Exemption Affect Schools' and Students' Academic Performance?" Jennifer L. Jennings and Andrew A. Beveridge. *Educational Evaluation and Policy Analysis*, vol. 31: June, pp. 153-75.

2008 "A Century of Harlem in New York City: Some Notes on Migration, Consolidation, Segregation and Recent Developments." Andrew A. Beveridge. *City and Community* vol. 7:4 pp. 357-64.

2007 "Who Counts for Accountability? High-Stakes Test Exemptions in a Large Urban School District." Jennifer Booher-Jennings and Andrew A. Beveridge. In A. Sadovnik, J. O'Day, G. Bohrnstedt, & K. Borman (eds.) *No Child Left Behind and the Reduction of the Achievement Gap: Sociological Perspectives on Federal Education Policy.* Routledge, Taylor & Francis Group, pp. 77-95.

2006 "Community-Based Prevention Programs in the War on Drugs: Findings from the 'Fighting Back' Demonstration." Leonard Saxe, Charles Kadushin, Elizabeth Tighe, Andrew A. Beveridge, David Livert, Archie Brodsky and David Rindskopf, *Journal of Drug Issues,* vol. 36:2 pp. 263-94.

2006 "Varieties of Substance Use and Visible Drug Problems: Individual and Neighborhood Factors." Julie Ford and Andrew A. Beveridge. *Journal of Drug Issues*, vol. 36:2, pp. 377-92.

2006 "Neighborhood Crime Victimization, Drug Use and Drug Sales: Results from the 'Fighting Back' Evaluation." Julie Ford and Andrew A. Beveridge. *Journal of Drug Issues*, vol. 36:2, pp. 393-416.

2006 "Scale-Up Methods as Applied to Estimates of Heroin Use." Charles Kadushin, Peter D. Killworth, Russell H. Bernard, Andrew A. Beveridge. J*ournal of Drug Issues*, vol. 36:2, pp 417-40.

2004 "'Bad' Neighborhoods, Fast Food, 'Sleazy' Businesses and Drug Dealers: Relations between the Location of Licit and Illicit Businesses in the Urban Environment." Julie Ford and Andrew A. Beveridge. *Journal of Drug Issues,* vol. 34:1, pp. 51-76.

2003 "Race and Class in the Developing New York and Los Angeles Metropolises: 1940 to 2000." Andrew A. Beveridge and Susan Weber. In David Halle (ed.) *New York and Los Angeles: Politics, Society and Culture, A Comparative View.* University of Chicago Press, pp. 49-78.

2003 "Residential Separation and Segregation, Racial and Latino Identity, and the Racial Composition of Each City." David Halle, Robert Gedeon and Andrew A. Beveridge. In David Halle (ed.) *New York and Los Angeles: Politics, Society and Culture: A Comparative View*. University of Chicago Press, pp. 150-90.

2003 "The Black Presence in the Hudson River Valley, 1790 to 2000: A Demographic Overview." Andrew A. Beveridge and Michael McMenemy. In Myra B. Armestead (ed.) *Mighty Change, Tall Within: Black Identity in the Hudson Valley*. State University of New York Press, pp. 263-80.

2002 "Immigrant Residence and Immigrant Neighborhoods in New York, 1910 and 1990." Andrew A. Beveridge. In Pyong Gap Min (ed.) *Classical and Contemporary Mass Migration Periods: Similarities and Differences*. Altamira Press, pp.199-231.

2002 "Immigration, Ethnicity and Race in Metropolitan New York, 1900-2000." Andrew A. Beveridge. In Anne Kelly Knowles (ed.) *Past Time, Past Place: GIS for History.* ESRI Press, pp. 65-78.

2001 "The Visibility of Illicit Drugs: Implications for Community-based Drug Control Strategies." Leonard Saxe, Charles Kadushin, Andrew A. Beveridge, David Livert, Elizabeth Tighe, Julie Ford and David Rindskopf, *American Journal of Public Health*, vol. 91:12, pp. 1987-94.

2001 "Does Neighborhood Matter? Family, Neighborhood and School Influences on Eighth-Grade Mathematics Achievement." Sophia Catsambis and Andrew A. Beveridge. *Sociological Focus*, vol. 34, October, pp. 435-57.

2001 "Simulating Social Research Findings to Aid in Teaching Introductory-Level Sociology Courses." Andrew A. Beveridge, Joanne Miller, Dean Savage, Lauren Seiler and Carmenza Gallo. In Vernon Burton (ed.) *The Renaissance of Social Science Computing.* Champaign: University of Illinois Press.

2000 "Survey Estimates of Drug Use Trends in Urban Communities: General Principles and Cautionary Examples." Andrew A. Beveridge, Charles Kadushin, Leonard Saxe, David Rindskopf and David Livert. *Substance Use and Misuse*, vol. 35, pp. 85-117.

1997 "Think Globally Act Locally: Assessing the Impact of Community-Based Substance Abuse Prevention." Leonard Saxe, Emily Reber, Denise Hallfors, Charles Kadushin, Delmos Jones, David Rindskopf and Andrew A. Beveridge. *Evaluation and Program Planning,* vol. 20:3, pp. 357-66.

1988 "An Evaluation of 'Public Attitudes toward Science and Technology' in *Science Indicators the 1985 Report*." Andrew A. Beveridge and Fredrica Rudell. *Public Opinion Quarterly*, vol. 53: Fall, pp. 374-85.

1986 "Microcomputers as Workstations for Sociologists." Andrew A. Beveridge. *Sociological Forum*, vol. 1: Fall, pp. 701-15.

1985 "Running Records and the Automated Reconstruction of Historical Narrative." Andrew A. Beveridge and George V. Sweeting. *Historical Social Research* vol. 35: July, pp. 31-44.

1985 "Local Lending Practices: Borrowers in a Small Northeastern Industrial City, 1832-1915." Andrew A. Beveridge. *Journal of Economic History*, vol. 65:2, pp. 393-403.

1985 "Action, Data Bases, and the Historical Process: The Computer Emulating the Historian?" Andrew A. Beveridge and George V. Sweeting. In Robert F. Allen (ed.), *Data Bases in the Humanities and Social Sciences.* Osprey Florida, Paradigm Press, Inc., pp. 117-22.

1981 "Studying Community, Credit and Change by Using 'Running' Records from Historical Sources." Andrew A. Beveridge. *Historical Methods*, vol. 14:4, pp. 153-62.

1980 "Organizing 'Running' Records to Analyze Historical Social Mobility." Andrew A. Beveridge, George R. Hess and Mark P. Gergen. In Joseph Raben and Gregory Marks (eds.), *Data Bases in the Humanities and Social Sciences*. Amsterdam and New York, North-Holland Publishing Company, pp. 157-64.

1977 "Social Effects of Credit: Cheshire County, New Hampshire: 1825-1860." Andrew A. Beveridge. *Regional Economic History Research Center Working Papers*, Autumn, pp. 1-33.

1974 "Economic Independence, Indigenization and the African Businessman: Some Effects of Zambia's Economic Reforms." Andrew A. Beveridge. *African Studies Review*, vol. 17:3, pp. 477-92.

Maps

2011 "Charles Burnett's Los Angeles, Circa 1970: The City" and "Charles Burnett's Los Angeles, Circa 1970: His Neighborhood." Andrew A. Beveridge. In Robert E. Kapsis (ed.), *Charles Burnett Interviews.* Jackson, MS, University of Mississippi Press, in folio between p. 94 and p. 95.

Web Based Materials

2005-- *Social Explorer.* A system for retrieving, mapping, charting and graphing Census data from 1790 to present and other data. Co-Creator with Ahmed Lacevic and Social Explorer Team.

2013-15 *Census Explorer*. Visualizations of Census Data. People Education and Income Edition, Commuting Edition, Retail Edition, Population Estimates Edition, Young Adults: Then and Now Edition, and 2010 Census Participation Rate Edition. Co-Creator with Ahmed Lacevic and Social Explorer Team and US Census Bureau. Young Adults: Then and Now Edition. Co-Created with Minnesota Population Center and US Census Bureau. Winner Webby Honoree for Government, 2015.

Invited Pieces and Columns

Gotham Gazette Demographic Topic Columns: January 2001-2013.

"New York's Changing Electorate: What It Means for the Mayoral Candidates" Jun 16, 2013
"New Plan for City Council Districts" (November 16, 2012) (Christian Salazar and Andrew A. Beveridge)
"Proposed City Council District Map Protects Incumbents" (November 15, 2012)
"The Attempt to Kill the ACS" (July, 2012)
"10 Years Later: Enumerating the Loss at Ground Zero" (September 10, 2011)
"Under a Different Name Census Data is Ready for Perusal" (August 11, 2011)
"Failure of Redistricting Reform Could Bring Reprise of 2002's Fiasco" (June 16, 2011)
"Census Wounded City's Pride but Probably Got the Numbers Right" (April 26, 2011)
"Census Brings Unpleasant Surprise for State Politicians" (January 04, 2011)
"Census Likely to Offer Accurate Count of New Yorkers" (September 16, 2010)
"Census Could Set Off Major Redistricting in State" (February 25, 2010)
"New York's Now Beleaguered Financial Workforce" (August 2009)
"New York and the Fight Over the 2010 Census" (February 2009)
"The Senate's Demographic Shift" (November 2008)
"A Shift in Albany Could Avert Higher Rents" (October 2008)
"An Affluent, White Harlem?" (August 2008)
"The School Divide Starts at Kindergarten" (June 2008)
"Housing Squeeze Shows No Sign of Easing" (May 2008)
"A Religious City" (February 2008)
"Will the 2010 Census 'Steal' New Yorkers?" (December 2007)
"The End of 'White Flight'?" (November 2007)
"Feeling the Effects of a Housing Bust" (September 2007)
"No Quick Riches for New York's Twentysomethings" (June, 2007)
"Women of New York City" (March, 2007)
"Stuyvesant Town and Peter Cooper Village, Then and Now" (September, 2006)
"What New Yorkers Are Like Now" – First Results of the American Community Survey" (August 2006)
"Hitting the 9 Million Mark" (June, 2006)
"New York's Asians" (May, 2006)
"Undocumented Immigrants" (April, 2006)
"Transit Workers/Transit Riders; Beginning Lawyers Are Richer; 9 Million New Yorkers?" (March 2006)
"Teachers in NYC's Institutions of Higher Learning" (January, 2006)
"Hispanics and the Ferrer Candidacy" (December, 2005)
"Disabled in New York City; Also: Is The City Still Booming?" (November 2005)
"Who Can Afford to Live in New York City?" (October 2005)
"Can NYC "Profile" Young Muslim Males?" (August 2005)
"Upstate and Downstate – Differing Demographics, Continuing Conflicts" (July, 2005)
"Living at Home after College" (June, 2005)
"Four Trends That Shape The City's Political Landscape" (May 2005).
"High School Students" (April, 2005)
"New York's Responders and Protectors" (March, 2005)

"Who Got the Death Penalty" (February, 2005)
"Wall Street Bonus Babies" (January, 2005)
"New York Lawyers: A Profile" (December, 2004)
"Bush Does Better and Other Election Results In NYC" (November, 2004)
"New York's Creative Class" (October, 2004)
"Portrait of Same-Sex (Married) Couples" (September 2004)
"New York City Is a Non-Voting Town" (August 2004)
"New York's Divided Afghans" (July 2004)
"Flaws in the New School Tests" (June, 2004)
"Why Is There A Plunge In Crime?" (May 2004)
"Estimating New York City's Population" (April, 2004)
"The Passion for Religion Ebbs" (March, 2004)
"Imprisoned In New York" (February, 2004)
"Who Are NYC's Republicans?" (January 2004)
"Five Hidden Facts about Housing--An Analysis of Data from the Housing and Vacancy Survey" (December, 2003)
"Young, Graduated and in New York City" (October, 2003)
"Back To (Public and Private) School" (September, 2003)
"The Vanishing Jews" (July, 2003)
"The Affluent of Manhattan" (June, 2003)
"How Different Is New York City From The United States?" (May 2003)
"The Poor in New York City" (April, 2003)
"Eight Million New Yorkers? Don't Count On It" (March 2003)
"Does Archie Bunker Still Live in Queens?" (February 2003)
"Is There Still A New York Metropolis?" (January 2003)
"City of the Foreign-Born" (December, 2002)
"Can The US Live Without Race?" (November 2002)
"New York's Declining Ethnics" (October 2002)
"A Demographic Portrait of the Victims in 10048" (September, 2002)
"Manhattan Boom" (August, 2002)
"GOP Senate Majority Repeals Census 2000" (July, 2002)
"Changing New York City" (June, 2002)
"The Census Bureau's Bad Estimates" (May, 2002)
"The Boom 1990's?" (April 2002)
"Segregation" (March, 2002)
"Non-Legal Immigrants" (February, 2002)
"Counting Muslims" (January, 2002)
"The Arab Americans in Our Midst" (September, 2001)
"A White City Council" (August, 2001)
"Counting Gay New York" (July, 2001)
"Redistricting" (June, 2001)
"Politics and the Undercount" (May, 2001)
"False Facts about Census 2000" (April, 2001)
"Eight Million New Yorkers!" (March 2001)
"Redefining Race" (February, 2001)
"Census Bureau Finds 830,000 'Extra' New Yorkers" (January 2001)

Other:

2013 "The Two Cities of New York: Wealth, Poverty, and Diversity in the Big Apple." *ASA Footnotes*, February p. 1.
2007 "Four Trends Shaping the Big Apple." *ASA Footnotes*, February, p. 1.
1996 "Sociologists: Eyes Open for Trends in New York City." *ASA Footnotes*, January, p. 1.
1996 "Stroll the Upper East Side for Lifestyles of the Elite." *ASA Footnotes,* March, p. 1
1988 "Credit to the Community: American Banking's Tribal Roots." *Thesis* (Spring), pp. 18-23.
1976 "African Businessmen in Zambia." *New Society,* 35:702: pp. 599-601.

Book Reviews

2012 "Social Theory Two Ways: John Levi Martin's Structures and Actions" Review of *Social Structures* and *The Explanation of Social Action. Historical Methods Historical Methods: A Journal of Quantitative and Interdisciplinary History, 45:4, 179-182.*

1995 *The Assassination of New York.* Robert Fitch. *Contemporary Sociology*, vol. 24: March, pp. 233-34.

1990 *Doing Deals: Investment Banks at Work*. Robert G. Eccles and Dwight B. Crane. *Contemporary Sociology*, vol. 19: May, pp. 186-87.

1988 *The End of Economic Man? Custom and Competition in Labor Markets*. David Marsden. *Contemporary Sociology,* vol. 17: March, pp. 172-73.

1988 *Techno crimes: The Computerization of Crime and Terrorism*. August Beqaa. *Society*, vol. 25: May/June, pp. 87-88.

1985 *The Economic Basis of Ethnic Solidarity: Small Business in the Japanese American Community*. Edna Bonacis and John Modell. *American Journal of Sociology*, vol. 90: January, pp. 942-45.

1979 *Oneida Community Profiles.* Constance Noyes Robertson. *Business History Review*, vol. 53: Autumn, pp. 277-78.

1978 *Urban Man in Southern Africa.* C. Cleff and W.C. Pendleton (eds.) *African Studies Association Review of Books*, vol. 4, pp. 25-26.

1977 *Colonialism in Africa, 1870-1960 Volume Four: The Economics of Colonialism*. Peter Duignan and L.H. Gann (eds.) *Business History Review*, vol. 51: Autumn, pp. 382-85.

1976 *The Quality of American Life: Perceptions, Evaluations, and Satisfactions.* Angus Campbell, Philip Converse, and Willard L. Rogers (Eds.). *Political Science Quarterly*, vol. 91: Fall, pp. 529-31.

1976 *Corporate Power in an African State: The Political Impact of Multinational Mining Companies in Zambia*. Richard L. Skylar. *African Studies Association Review of New Books*, vol. 2, pp. 53-55.

Reports

2000 *Fighting Back Household Survey, Interim Report of 1995-1999 Findings.* David Livert, Charles Kadushin, Leonard Saxe, Andrew A. Beveridge, David Rindskopf, Elizabeth Tighe, Jennifer Hoffman, Saul Kellner, Ricardo Barrera's and Julie Ford.

1997 *Fighting Back Evaluation Interim Report: Wave II General Population*. Survey David Livert, Charles Kadushin, Leonard Saxe, Andy A. Beveridge, David Rindskopf, Elizabeth Tighe, Jennifer Hoffman, Saul Kelner, Ricardo Barreras and Julie Ford.

1997 *Monitoring Archival Indicators of Alcohol and Other Drug Harm: A Fighting Back Progress Repor*t. Andrew A. Beveridge, Elizabeth Tighe, Mary Jo Larson, David Rindskopf, David Livert, Susan Weber, Charles Swartz, John McKenna, Charis Ng and Leonard Saxe.

1997 *Social Trends in North America:* Andrew A. Beveridge, Vivian Brachet, Lorne Tepperman and Jack Veugelers. Prepared for the State of the Environment Report of the Consortium for Environmental Cooperation, Montreal, Quebec.

1996 *Fighting Back Program Interim Report,* Leonard Saxe, Emily Reber, Charles Kadushin, Andrew A. Beveridge, Mary Jo Larson, David Rindskopf, David Livert, Joe Marchese, Michael Stirrat and Susan Weber.

1994 *Black and White Property Tax Rates and Other Homeownership Costs in 30 Metropolitan Areas: A Preliminary Report.* Andrew A. Beveridge and Jeannie D'Amico. Queens College of the City University of New York, Department of Sociology, Program for Applied Social Research.

1994 *An Analysis of Black and White Income Differences: Queens County and the United States.* Andrew A. Beveridge and Jeannie D'Amico. Queens College of the City University of New York, Department of Sociology, Program for Applied Social Research.

1992 *Patterns of Residential Segregation in New York City, 1980-1990: A Preliminary Analysis.* Andrew A. Beveridge and Hyun Sook Kim. Queens College of the City University of New York, Department of Sociology, Program in Applied Social Research.

1988 *Integrating Social Science Workstations into Research and Teaching: Final Report to IBM.* Andrew A. Beveridge and Lauren Seiler. Queens College of the City University of New York, Department of Sociology.

1984 *Changing Lifestyles and Newspaper Reading: An Exploratory Study of Younger Adults*. Andrew A. Beveridge and Albert E. Gollin. Newspaper Readership Project, Newspaper Advertising Bureau.

1978 Social Effects of Time of Use Pricing of Electric Power: A Sociological Approach. Andrew A. Beveridge. Electric Power Research Institute

SELECTED RECENT PRESENTATIONS

Presentations of Scholarly Work

2019 Andrew A. Beveridge, "Impacts on Redistricting: The Case of New Rochelle, NY.' Presented at the Workshop on 2020 Census Data Products: Data Needs and Privacy Considerations, National Academies, Committee on National Statistic, Washington, DC, December 11 and 12, 2019.

2019 Andrew A. Beveridge and Lynn Caporale, "Unrestricted Immigration and the Dominance of Immigrant Family Members of United States Nobel Prize Winners in Science: Irrefutable Data and Exemplary Family Narratives." Presented at the Annual Meeting of the Social Science History Association, Chicago IL, November 21-24.

2019 Andrew A. Beveridge," Can Differentially Privatized Data be Used for Redistricting." Presented at the Annual Meeting of Association for Public Data Users, Arlington, VA. July 9-10**.**

2019 Andrew A. Beveridge, "Nobel Prize Winners, Immigration, New York City and Foreign Roots." Presented at the Annual Meeting of the American Association for the Advancement of Science, Washington, DC, February 14-17.

2017 Andrew A. Beveridge and Shige Song. "Is it Still the Economy Stupid? A Spatial Regression Analysis of the 2016 Presidential Election Using the American Community Survey Data and Other Materials." Presented at the 2017 American Community Survey, Users Group Conference, Alexandria, VA, May 11-12

2014 Andrew A Beveridge, "Four Mayor, Two Thugs and Governor Moonbeam: New York and Los Angeles Compared" American Sociological Association, Annual Meeting, San Francisco, August 16-19

2013 Ahmed. Lacevic, Andrew A. Beveridge, and Sydney. Beveridge. "New Directions in Visualization for Web Based Historical GIS.*"* Presented at the Annual Meeting of the Social Science History Association, November 21-24, Chicago, IL

2012 Elena Vesselinov and Andrew A. Beveridge. "Racial/Ethnic Typology, Occupational Structure and Mortgage Foreclosures in Neighborhood Context." Annual Meeting of the American Sociological Association, August 17 to 20, Denver, CO

2012 "Studying Disparate Impact in Housing." National Research Council, Committee for National Statistic. Workshop, June 14 and 15, Washington, DC. Presentation Summarized in *Benefits, Burdens, and Prospects of the American Community Survey: Summary of a Workshop.* (National Academies Press, Washington, DC. 2013)

2012 "The Genesis of Crisis: "looting" by lenders, default by profligate borrowers, or government housing incentives." Annual Meeting, Eastern Sociological Society, February 23 to 26, New York City.

2011 Elena Vesselinov and Andrew A. Beveridge. "Foreclosures, Subprime Loans and the Neighborhood Effects of Race and Class in Detroit and Phoenix." Annual Meeting of the American Sociological Association, Las Vegas, NV, August 23.

2011 Andrew A. Beveridge and Elena Vesselinov. "From Chicago to Las Vegas? The Housing Bubble, Ethnic Communities, Social Class and the Effects of Mortgage Foreclosures." Annual Meeting of the American Sociological Association, Las Vegas, NV, August 22.

2011 "The Demographics of Boom and Bust: New York and LA Metros, 1990 to 2011." Annual Meeting of the American Sociological Association, August 20, Las Vegas, NV.

2011 "How Do Current Districts Stack-Up." The Redistricting Puzzle: The Shifting Sands of Population and the Electorate: Changes in New York. CUNY Graduate Center. May 5.

2011 "Displacing Hope: Hope VI and the Destruction of Housing for Poor Families." Annual Meeting of the Urban Affairs Association, March 16-19, New Orleans, LA.

2011 "2010 Census: Research Issues and Opportunities." Panelist. Annual Meeting of the Eastern Sociological Society, Philadelphia, PA, February 26.

2011 "The Effects of Foreclosure on Educational Performance." Annual Conference of the Sociology of Education Association. Asilomar Conference Center Pacific Grove, California. February 18-20, 2011.

2010 "The Origins of the "Bubble" and the Financial Crisis 2008: "Looting" by Lenders or Default by Profligate Borrowers." Andrew A. Beveridge. Annual Meeting of the Social Science History Association, November 18-21, Chicago, IL.

2010 "Success in Cumulative Voting Systems." Andrew A. Beveridge and Robert Smith. Annual Meeting of the Social Science History Association, November 18-21, Chicago, IL.

2010 "Avenues to Wealth or Roads to Financial Ruin? Homeownership and the Distribution of Mortgage Foreclosures. Elena Vesselinov and Andrew A. Beveridge. Annual Meeting of the American Sociological Association, August 15, Atlanta, GA.

2010 "Teacher Effectiveness on High- and Low-Stakes Tests," Corcoran, Sean P., Jennifer L. Jennings, and Andrew A. Beveridge. Presented at the Institute for Research on Poverty Summer Institute, University of Wisconsin – Madison, June.

2010 "Social Effects of Foreclosures in New York and Los Angeles Metros, a Preliminary Analysis. Andrew Beveridge and Elena Vesselinov. Eastern Sociological Society Annual Meeting, Boston, MA. March 18-21.

2010 "Homeowners No More: A First Look at the Foreclosure Crisis's Effects on Neighborhoods and Communities across the United States." Andrew Beveridge and Elena Vesselinov. Eastern Sociological Society Annual Meeting, Boston, MA. March 18-21.

2009 "Foreclosure Patterns and Demographic Trends in the Los Angeles and New York Metros." Presented at the Annual Meeting of the Social Science History Association. Long Beach, CA. November 12-15.

2009 "Cities: What the Classics Can Tell Urbanisms Today." Panel Presentation, Annual Meeting of the Social Science History Association, Long Beach, CA. November 12-15.

2009 "Reflecting on Efforts to Build Communities of Teachers, Learners, and Researchers using Web 2.0 Tools." Panel Presentation at the Annual Meeting of the American Sociological Association, San Francisco. August 8-11.

2009 "Sociologists and the Media: Developing Positive Relationships between Journalists and Academia." Workshop Presentation at the Annual Meeting of the American Sociological Association, San Francisco. August 8-11.

2008 "Religious Adherents and the 2000 Presidential Election: A Spatial Analysis." Presented at the Social Science History Association 2008 Annual Meeting, Miami, Florida, October 24-26.

2008 "Segregation Revisited: The Growth and Dispersal of Black, Latino, Immigrant and Ethnic Populations in United States Metropolitan Areas since 1950" Presented at Historical GIS 2008. University of Essex, UK. August 21-22.

2008 "Teacher Effects on High and Low-Stakes Tests," Jennifer L. Jennings and Andrew A. Beveridge. Annual Meeting of the American Education Research Association, New York, NY, March 25-28.

Selected Presentations Regarding *Social Explorer*

2014-19 American Sociological Association, Annual Meetings, Research Poster, Various Venues.

2014 National Science Foundation, March 25, Arlington, VA

2014 US Census Bureau, March 26, Suitland, MD

2014 American Association of Public Opinion Research, June 23, DC Chapter, Washington, DC3

2014 Bureau of Labor Statistics, June 23, Washington, DC.

2013 American Sociological Association, Annual Meeting, Research Poster, Annual Meeting, San Francisco, August 16-19

2013 National Science Foundation NSF Course Curriculum and Laboratory Improvement Program/Transforming Undergraduate Education in Science Conference and at NSF Atrium Presentation, January 23-25, Washington, DC.

2012 American Sociological Association, Annual Meeting, Research Poster, August 17-20, Denver, CO.

2011 American Sociological Association, Annual Meeting, Research Poster, August 21, Las Vegas, NV.
American Library Association, Annual Meeting, Oxford University Press, Booth, June 25, New Orleans, LA.
Center for Geographical Analysis, Harvard University, 2011 Conference, May 6 and 7, Cambridge, MA.
CUNY Journalism School, Ethnic Community and Media Census Training, May 5, New York, NY.
American Association of Public Opinion Research, New York Chapter, April 21, New York, NY.
Population Association of America, Pre-Conference Session, March 30, Washington, DC.
National Low Income Housing Coalition, Annual Conference, March 29, Washington, DC.
Census Bureau, Geography Division, January 28, Washington, DC.
National Science Foundation NSF Course Curriculum and Laboratory Improvement Program/Transforming Undergraduate Education in Science Conference and at NSF Atrium Presentation, January 26-28, Washington, DC.
CUNY Journalism School, Making Sense of the Census, January 3, New York, NY.

2010 Social Science History Association, Annual Meeting, “Exploring Long Term US Change: Research and Teaching with Social Explorer,” November 18, Chicago, IL.
Jewish Community Relations Council, Community Connections Fellowship Orientation, New York, November 9.
U.S. State Department, Office of International Visitors. “Changing Demographics and Multiculturalism in the United States.” Flushing, NY, September 21.
American Sociological Association, Annual Meeting, Research Funding Opportunities and Data Resources Poster, August 15, Atlanta, GA.

2009 American Sociological Association, Annual Meeting, Research and Data Support Poster, August 8-11, San Francisco, CA.
Eastern Sociological Association, Annual Meeting, Research Workshop, April 2-5. Baltimore, MD.

2008 American Sociological Association, Annual Meeting, Research and Data Support Poster, August 2, Boston, MA.

2007 New York Chapter of the American Association of Public Opinion Research, October 4, New York, NY.
American Sociological Association, Annual Meeting, Research and Data Support Poster, August 12, New York, NY.
Coalition for the National Science Foundation, U.S. House Office Building Reception, Official Representative of the American Sociological Association, Washington, DC, June 26,.
Pew Research Center, Washington, DC, June 25.

2006 National Center for Supercomputing Applications, Invited Conference on Spatial Thinking in the Social Sciences and Humanities," December 18-19, Urbana, IL.
Annual Meeting of the Social Science History Association, "Social Explorer as a Resource for Teaching," November 2-5, Minneapolis, MN.
Annual Meeting of the American Sociological Association, Research Workshop, "Geographical Information Systems (GIS) as a Research Tool for Sociologists," August 11-14, Montreal, Quebec.
Annual Meeting of American Sociological Association, Research and Data Support Poster, August 11-14, Montreal, Quebec...
National Center for Supercomputing Applications, Invited Conference on Spatial Thinking in the Social Sciences and Humanities, December 18-19, Urbana, IL.

GRANTS AND AWARDS

Grants and Awards in Progress

"Census Analyses for the New York Metropolitan Area." *New York Times* Newspaper Division and CUNY Center for Advanced Technology, 1993-pres. Renewed 9/2018 to 8/2021 ($317,563)

Grants and Awards Completed

"INSPIRE: Studying and Promoting Quantitative and Spatial Reasoning with Complex Visual Data Across School, Museum, and Web-Media Contexts" Leilah Lyons, Josh Radinsky (University of Illinois Chicago) and Andrew A. Beveridge (Social Explorer, Inc.). National Science Foundation, Tues-Type 2 Project, Information Technology Research, Discovery Research K-12, Cyberlearning: Transforming Undergraduate Education, Inspire Geography and Spatial Sciences. 2012 to 2016, $795,000 Total, $242,000 Sub-Contract to Social Explorer.

"Creating and Disseminating Tools to Teach with Demographic Data Maps and Materials." Andrew A. Beveridge and Josh Radinsky, National Science Foundation, Division of Undergraduate Education, 2009-2013, $332,896

"Integrated Public Use Microdata Sample Redesign." Subcontract through University of Minnesota from National Institutes of Health R01, 2006-2013 $175,000.

"Collaborative Research—The National Historical Geographic Information System." National Science Foundation, Sociology Program, 2007-2012, $99,725 (Continuing Award).

"The Distribution and Social Impact of Mortgage Foreclosures in the United States." Andrew A. Beveridge and Elena Vesselinov, National Science Foundation, Sociology Program, 2009-2010, $144,995.

"Collaborative Research—Creating Exemplary Curricula and Supporting Faculty Development in Using Social Explorer to Teach with Demographic Data Maps." Andrew A. Beveridge and Joshua Radinsky, National Science Foundation, Division of Undergraduate Education, CCLI, Phase 1, 2006-2008, $149,970.

"Collaborative Research—A Digital Library Collection for Visually Exploring United States Demographic and Social Change." Andrew A. Beveridge and David Halle, 2002-2007, $706,746.

"National Historical Geographical Information System." John Adams, Andrew A. Beveridge, et al, Subcontract of National Science Foundation Infrastructure Grant through University of Minnesota, Organize Historical City Based Data, 2001-2006, $194,000.

"Using Socio-Economic Characteristics of Residents of Student Neighborhoods as a Proxy for Socio-Economic Characteristics of Students: An Assessment Using ECLS-K." National Center for Education Statistic through Educational and Statistical Services Institute, 2004-2005, $57,958.

"Adding Census 2000 Data and Geographic Location to the ECLS-K Data Set" Andrew A. Beveridge and Sophia Catsambis, National Center for Education Statistic through Educational and Statistical Services Institute, 2002-2003, $59,335.

"Visualizing and Exploring United States Urban and Rural Social Change, 1790-2000: Interactive Multimedia and Web Based Tools." Andrew A. Beveridge and David Halle, National Science

Foundation, Division of Undergraduate Education, Educational Materials Development, 2001-2004, $418,000.

"Evaluation of Fighting Back." Leonard Saxe, Charles Kadushin, Andrew A. Beveridge, Robert Wood Johnson Foundation, 1994-2002, $370,000.

"Development of a Map and Demographic Data Server," CUNY Software Institute, 2001, $8,000.

"Redistricting and Minority Voting Rights in Metropolitan New York." Randolph McLaughlin and Andrew A. Beveridge, 2000-2001, Pace Law School $90,000 total; Andrew A. Beveridge $60,000.

"Mapping and Exploring New York City Change, 1905-2000: A Set of Interactive Web Based Tools." National Science Foundation, 1999-2000, $78,960.

"A Laboratory for Integrating Multimedia and World Wide Web Technology into Sociological Instruction." Samuel Heilman, Robert Kapsis, Max Kilger, Dean B. Savage and Andrew A. Beveridge, National Science Foundation, 1996-1998, $47,846.

"A Shared Computer Work Station and Storage System for Social Science Research." National Science Foundation, 1996-1997, $20,964.

"The Battle for Yonkers and the Dilemma of Desegregation." Presidential Research Award, 1993-1994, One Term Release.

"Why Do Neighborhoods Change or Stay the Same?" Ford Foundation, Diversity Initiative Grant. 1993, Course Release and Student Stipends.

"Separate American Dreams Face the Common American Dilemma: The Battle to Segregate Yonkers, New York, 1940-1990." Profession Staff Congress, Research Award Program, 1992-1994, $6,800.

"Using the Census for Social Mapping across the Sociology Curriculum." President's Mini-Grant for Innovative Teaching, 1992-1993, $3,500.

"Modeling the Results of Union Elections by Developing Standard and Hierarchical Logistical Models." Diane Poland, Andrew A. Beveridge, and Wing-Shing Chan, Probe Program for Grand Challenges in the Social Sciences, National Center for Supercomputing Activities, 1992-1994, Super-Computer Time at National Center.

"The Introductory Sociology Curriculum Initiative: An Empirical, Scientific Approach." Andrew A. Beveridge, Joanne Miller, Lauren H. Seiler and Dean B. Savage, National Science Foundation, Undergraduate Course and Curriculum Program, 1992-1995, $160,000.

"A Computer Laboratory for Quantitative and Scientific Reasoning in Sociology." Andrew A. Beveridge, Joanne Miller, Dean Savage and Lauren H. Seiler, National Science Foundation, Instructional Instrumentation and Laboratory Program, 1991-1994, $50,825.

"Socially Mapping the New York Area." Ford Diversity Initiative Grant, 1992, Course Release Time.

"Development of Research Mentorship and Laboratory in Sociology." CUNY Dean for Research and Academic Affairs, Department Faculty Development Program, 1991-1992, One Course Release Time.

"Integrating Yonkers." Faculty-In-Residence Award, 1988-1989, One Course Release Time.

"Credit Allocation and Community Change." Professional Staff Congress CUNY, Faculty Fellowship, 1987, $6,200.

"Credit Allocation and Community Change." Professional Staff Congress CUNY, Research Award Program, 1986-1988, $13,268.

"A Study of Industrial Development of an Agricultural Community Based Upon Financial Records: Keene and Cheshire County, New Hampshire, 1820-1915." Putnam Foundation, 1985-1988, $33,000.

"The Intelligent Work Station in Social Science Research: Development, Evaluation, Instruction and Demonstration." Lauren Seiler and Andrew A. Beveridge, International Business Machines Corporation, Special Study, 1985-1987, $78,000 of hardware and software, $17,000 funding.

"Integrated Software for the Social Research Workstation." Andrew A. Beveridge and Lauren Seiler, Inter-University Consortium for Educational Computing, 1985-1986, $20,000.

"A Study of the Industrial Development of an Agricultural Community." National Endowment for the Humanities Grant, Basic Research Program, 1984-1985, $75,000.

"Credit Allocation and Community Change." Professional Staff Congress CUNY, Research Award, 1984-1985, $6,973.

. "Credit Allocation and Community Change." Professional Staff Congress CUNY, Research Award, 1983-1984, $6,928.

Andrew A. Beveridge and Phoebus J. Dhrymes, "Longitudinal Transformation and Analysis of the Annual Housing Surveys." Department of Housing and Urban Development, 1980-1982, $248,000.

"Credit and Social Change: Cheshire County and Its Provident Institution, 1832-1915." American Council of Learned Societies, Fellowship, 1978-1979 $13,500.

"The Context of Credit in Wilmington, Delaware, 1800-1870." Regional Economic History Research Center, Eleutherian Mills Hagley Foundation, Grant and Fellow, 1978-1979, $12,000.

"Societal Effects of Credit Allocation." National Science Foundation Sociology Program Research Grant, 1976-1978, $81,781.

"Social Structure, Social Change and Credit Allocation: A Case Study." National Endowment for the Humanities Summer Stipend, 1976, $2,000.

"Social Structure, Social Change and Credit Allocation: A Case Study." American Philosophical Society, Grant, 1976, $750.

"African Businessmen in Zambia: Economic, Social and Governmental Impact." Foreign Area Fellowship Program Fellowship, 1970-1971, $11,400.

Pre-Doctoral Research Grant. National Institute of Mental Health, 1969-1972, Stipend and Tuition.

OTHER SOCIOLOGICAL RESEARCH ACTIVITIES

Selected Analyses Appearing in *New York Times* and Elsewhere

Since 1992, Professor Beveridge, Queens College Sociology, and Social Explorer have been cited over 1,000 times in the New York Times, and materials have been syndicated or appeared elsewhere. Other media appearances include NPR, WCBS, WABC, WNBC, WNYW, CUNY-TV, CBS Radio, and the Associated Press.

“Chicago’s Murder Problem.” *The New York Times*, May 27, 2016. By Ford Fessenden and Haeyoun Park.

“How Every New York City Neighborhood Voted in the Democratic Primary?” *The New York Times,* April 19, 2016. By Matthew Bloch and Wilson Andrews.

"In Chelsea, A Great Wealth Divide.” *The New York Times,* October 25, 2015. By Mireya Navarro.

"Move Over Millennials, Here Comes Generation Z.” *The New York Times,* September 20, 2015. By Alexis Williams.

"Ten Years After Katrina.” *The New York Times,* August 26, 2015. By Campbell Robertson and Richard Fausset

"We're Making Life Too Hard for Millennials,” *The New York Times,* August 2, 2015. By Steven Rattner.

“Why the Doorman Is Lonely.” *The New York Times*, January 11, 2015. By Julie Stow

“Ceding to Florida, New York Falls to No. 4 in Population.” *The New York Times*, December 24, 2014. By Jesse McKinley

“Gap between Manhattan’s Rich and Poor Is Greatest in U.S., Census Finds.” *The New York Times*, September 18, 2014. By Sam Roberts

"Mostly White Forces in Mostly Black Towns: Police Struggle for Racial Diversity." *The New York Times*, September 10, 2014. By Shaila Dawan

"No MetroCard Needed." *The New York Times*, May 25, 2014. By Michelle Higgins

"The Three-Seat Strollers," April 10, 2014 - By Hannah Seligson

"Racial Patterns Are Found in Recent School Budget Elections." *The New York Times*, August 25, 2010, Pg. A19. By Sam Roberts.

"In New York, Black and Hispanic Strongholds Become More White. *The New York Times*, December 15, 2010; Pg. A17, By Sam Roberts. (Maps Pg. A17)

"Immigrants Make Paths To Suburbia, Not Cities. *The New York Times*, December 15, 2010 Pg. A15. By Sabrina Tavernise and Robert Gebeloff. (Maps Pg. A1, A16)

"Economic Boom in Washington Leaves Gaping Income Disparities. *The New York Times*, December 18, 2010, Pg. A11. By Sabrina Tavernise and Robert Gebeloff; Sabrina Tavernise.

"A Slice of Queens Where People Who Arrived in 1977 Are Newcomers." *The New York Times,* January 8, 2011 Pg. A15. By Joseph Berger.

"Black? White? Asian? More Young Americans Choose All of the Above. *The New York Times*, January 30, 2011, Pg. A1. By Susan Saulny.

"Smaller New Orleans After Katrina, Census Shows." *The New York Times,* February 3, 2011. By Campbell Robertson. (Includes maps and graphics.)

"For City Parents, a Waiting List for Nearly Everything." *The New York Times*, February. 22, 2013, By Soni Sangha.

"A Survey of the Flooding in N.Y.C. After the Hurricane." *The New York Times*, Nov. 21, 2012.

"New York Led Country in Population Growth Since 2010 Census." *The New York Times*, June 28, 2012. By Sam Roberts.

"BIG CITY--Offspring Who Cling To the Nest." *The New York Times*, June 24, 2012 - By Ginia Bellafante.

"100 Years of Staying Put." *The New York Times*, April 27, 2012 - By Benjamin Weiser and Noah Rosenberg.

"Born Abroad, Well Off and Using Public Schools." *The New York Times*, February 14, 2012. By Kirk Semple.

"Solo in America" .*The New York Times*, February 5, 2012 - By Bill Marsh and Amanda Cox.

"Detroit Census Figures Confirm A Grim Desertion Like No Other." *The New York Times*, March 23, 2011 Wednesday, Pg. A1. By Katharine Q. Seelye.

"Non-Hispanic Whites Are Now a Minority in the 23-County New York Region." *The New York Times*, March 28, 2011, Pg. A19. By Sam Roberts.

"Cougars Aren't Mythical." *The New York Times*, October 15, 2009, Pg. C1. By Sarah Kershaw.

"Five-Year-Olds at the Gate: Why are Manhattan's elementary schools turning away kindergartners? How the Bloomberg administration missed the baby boom it helped create." *New York Magazine*, June 1, 2009. By Jeff Coplon.

STUDIES CONNECTED WITH LEGAL CASES

Legislative Districting and Redistricting (Including Plans for Jurisdictions and for Community Groups)

Paul Weiss and Make the Road, et al. *Flores, et al. v. Town Board of Islip, et al.,* US District Court for the Eastern District of New York (Report, Declaration, Deposition, PI Hearing Testimony, 2017--) 2:18-cv-03549 (ADS) (GRB).

Center for Law and Social Justice, Medgar Evers College and Newman, Ferrara. *Favors v. Cuomo, et al.,* U.S. District Court for the Eastern District of NY (Hearing Testimony, 2012).

Frederick Brewington and Randolph McClaughlin, *Melvin Boone, et al., vs. Nassau County Board of Legislators, et al*. U.S. District Court for the Eastern District of New York. Produced report and plan and testified in trial regarding redistricting of Nassau County Legislature. 2011

Westchester County Board of Legislators, Plan for Redistricting Westchester County, Adopted May 17, 2011.

City of New Rochelle. Plan for Redistricting City Council Districts. Adopted May 10, 2011.

United States Department of Justice. *United States v. Port Chester.* U.S. District Court for the Southern District of New York. Investigation, Voting Analysis, Analysis of Potential Plans, Reports and Declarations, Testimony, 2002-2009. Cited in Opinion.

Emery, Celli, Curti, Brinkerhoff and Abadi. *Rodriguez v. Pataki.* U.S. District Court for the Southern District of New York. Reports, affidavits, deposition testimony and trial testimony related to claims about the State Senate Redistricting Plan in New York State, 2002-2004. Decided.

Randolph McClaughlin, Esq. *New Rochelle Voter Rights Committee, et al vs. New Rochelle, et al*. U.S. District Court for the Southern District of New York. Plaintiff's redistricting plan, affirmation, report, trial testimony, negotiated redistricting plan, settlement hearing testimony, 2003-2005. Decided and Settled.

Frederick Brewington, Esq., *Montano v. Suffolk County Board of Legislators*. U.S. District Court for the Eastern District of New York. Produced report and plan and testified in trial regarding proposed redistricting of Suffolk County Legislature. Cited in District Court Opinion, 2003. Decided.

City of Yonkers. Plan for the Redistricting the City Council. Adopted June 24, 2003.

Center for Constitutional Rights and Social Justice Center, Pace University Law School. *Goosby v. Town Board of Hempstead.* U.S. District Court for the Eastern District of New York. Designed and presented plaintiff's plan for districting the Town of Hempstead, a community of 720,000. Created single member district plan using census data and boundary files. Submitted plan including maps and data and testified at trial. Court ordered plan; affirmed by 2nd Circuit; Supreme Court denied certiorari. Plan and testimony cited in District Court and 2nd Circuit opinions. 1995-1997.

Connecticut Civil Liberties Union. *Coalition for Fair Representation, et al v. City of Bridgeport, et al.* U.S. District Court for the District of Connecticut. Analysis of segregation patterns in Bridgeport Connecticut. Affidavit and maps filed. Cited in 2nd Circuit Decision. 1993-1994.

Berger, Poppe, Janiec. *Diaz, et al v. City of Yonkers*. U.S. District Court for the Southern District of New York. Prepared redistricting plan for the Yonkers City Council, met with plaintiffs and defendants and in court. Plan accepted by City Council and District Court. 1992-1993.

Housing Discrimination, Affirmative Steering, Rent Stabilization and Affordability, etc.

Consovoy McCarthy PLLC**.** *S&R Development Estates, LLC et al. v. Town of Greenburgh; Sisters of the Blessed Sacrament, LLC 16-cv-8043 (S.D.N. Y)* 2019-present (Report, Rebuttal Report and Scheduled Deposition.)

Szilagyi & Daly, Connecticut Commission on Human Rights and Opportunities. *Commission on Human Rights and Opportunities Ex Rel, Peter Chometa v.Town of Hamde*n. Superior Court. Judicial District of New Haven. Housing Session 2018—present (Report and Deposition).

Covington and Burling and Washington Lawyers' Committee for Civil Rights and Urban Affairs. *Adrian Borum, et al v. Brentwood Village, LLC, et al.*, United States District Court for the District of Columbia. 2016-present (Report, Declaration, and Deposition.)

Anti-Discrimination Center. *Janell Winfield et al v. The City of New York et al*. Case Number 15-cv-5236. United States Court for the Southern District of New York. 2017-- (Preliminary Report, Declaration, Two Reports, 3 depositions).

Relman, Dane and Colfax, *Westchester Residential Opportunities, Inc., et al v. Clinton Terrace LP, et al.*. Case Number 7:16-CV-09273-VB, 2017 (Report).

Bierman and Associates. *Akagi v. Turin HDFC et al*, United States Court for the Southern District of New York. 2016-Present (Report Deposition, Rebuttal Report.)

New York State Attorney General .*Eric T. Schneiderman, As Attorney General of the People of the State of New York v. Evans Bancorp, Inc. et al*. United States District Court for the Western District of New York. 2014-2015 (Report, Settled 2015)

United States Department of Justice. *United States* v. *City of New Orleans*, Case No. 12-cv-2011. United States District Court for the Eastern District of Louisiana. 2013-2014. (Report and Deposition, Settled 2014)

United States Department of Justice. *City of Joliet, v.Mb Financial Bank, N.A, et al, and United States v. City of Joliet* United States District Court for the Northern District of Illinois. Report and Deposition, Trial Testimony, 2012-2013. United States Department of Justice. Settled.

United States Department of Justice. *United States v. St. Bernard Parish.* United States District Court for the Eastern District of Louisiana. Report. Settled.

Disability Rights California**.** Analysis of Proposed City Council Group Home Zoning Law in Los Angeles. Report and Letter. 2012.

Relman and Dane. *Ex rel. Curtis Lockey, et al v. City of Dallas, et al., 3:11-CV-354-.* United States District Court for the Northern District of Texas. Two Reports. Dismissed. 2012-2013.

Marin Goodman, LLP. *Fair Housing Justice Center, Inc., et al, v. Silver Beach Gardens Corporation, et al.* United States District Court for the Southern District of New York. Report and Deposition, 2011.

Foley and Lardner and U.S. Department of Justice. *MSP Real Estate, Inc., et al., v. City of New Berlin, et al.*, and *United States v. City of New Berlin,* U.S. District Court for the Eastern District of Wisconsin; Report, 2011. (Settled 2011.)

Foley and Lardner. *Bear Development LLC v. City of Kenosha and Redevelopment Authority of the City of Kenosha,* U.S. District Court for the Eastern District of Wisconsin. Report and Deposition Testimony, 2011. (Settled 2011.)

Hofstra University, School of Law, Law Clinic. *Isidoro Rivera, et al v. Incorporated Village of Farmingdale, et al*. U.S. District Court for the Eastern District of New York. Report. 2009-2014. Settled.

Skadden, Arps, Slate, Meagher & Flom. *Fair Housing in Huntington Committee, et al v. Town of Huntington, New York, et al.* U.S. District Court for the Eastern District of New York. Report and Rebuttal Report. 2010. (Decided 2010.)

South Brooklyn Legal Services. *Barkley v. United Homes LLC. et al.,* U.S. District Court for the Eastern District of New York, Report, Deposition and Trial Testimony. 2009-2011. (Jury Verdict 2011.)

Relman and Dane. *Anti-discrimination Center of Metropolitan New York v. County of Westchester, et al.* U.S. District Court for the Southern District of New York. Report, Rebuttal Report and Deposition Testimony, 2008-2009. (Settled 2009.)

Sullivan & Cromwell. *Vargas, et al v. Town of Smithtown.* U.S. District Court for the Eastern District of Long Island. Report. 2008. (Settled 2008.)

Southern New Jersey Legal Services. *Mount Holly Gardens Citizens in Action, Inc., et al v. Township of Mt. Holly, et al*. U.S. District Court for the District of New Jersey. Declaration, 2008 and 2010. (Summary Judgment Reversed by 3rd Circuit, Certiorari Pending))

The Advancement Project. *Anderson, et al v. Jackson, et al.* U.S. District Court for the Eastern District of Louisiana. Report and Deposition re: Public Housing Demolition in New Orleans, 2007. (Decided 2007).

Three Rivers Legal Services and Southern Legal. *Helene Henry, et al v. National Housing Partnership.* U.S. District Court for the Northern District of Florida, Gainesville, Division. Three reports and deposition Testimony. 2007-2008. (Settled 2008.)

Legal Services of Southern New Jersey. *Bergen Lanning Residents in Action, et al. vs. Melvin R. "Randy" Primus, et al.* Superior Court of New Jersey, Law Division, Camden County Report re: Bergen Square Redevelopment in Camden, NJ. 2005. (Decided 2005.)

Legal Services of Southern New Jersey. *Cramer Hill Residents Association, et al. vs. Melvin R "Randy" Primus, et al.* Superior Court of New Jersey, Law Division, Camden County. Report re Cramer Hill Redevelopment in Camden, NJ. 2005. (Decided 2005.)

Legal Services of Southern New Jersey. Citizens In Action, et al. vs. Township of Mount Holly, et al. Superior Court of New Jersey, Law Division, Burlington County. Report and Certification re: Redevelopment of the Gardens in Mount Holly. 2005. (Decided 2005.)

Legal Services of Southern New Jersey. *Hispanic Alliance, et al. vs. City of Ventnor, et al.* Superior Court of New Jersey, Law Division, Atlantic County Report and Testimony re: Ventnor Redevelopment. 2005. (Settled 2005.)

Legal Services of New Jersey. *Connie Forest, et al vs. Mel Martinez, et al.* Superior Court of New Jersey, Law Division, Essex County. Report re: Brick Towers Demolition in Newark. 2003-2006. (Decided 2006.)

Legal Services of Southern Florida*, Reese v. Miami-Dade County Housing Authority*, Analysis of Relocation of Public Housing Tenants. U.S. District Court for the Southern District of Florida. Report and Testimony at Trial. Cited in District Court Opinion. 2001-2003, and 2009. (Decided 2003, 2009.)

City of Long Beach, *Walton v. City of Long Beach*. Analyzed the vacancy rate in the City of Long Beach for 1992 through 2000. Filed affidavits in state and federal court. Testified in proceedings. Carried out various studies related to vacancy rate. 1997-2000. (Decided 2000, Reversed by Appellate Court.)

Arnold and Porter. *Witt, et al v. New York State Board of Elections.* Analyzed those who have two or more domiciles where they regularly reside for case involving voting in more than one local election. 2000-2002. (Decided 2002.)

Coral Ortenberg Zeck and Condispoti. *Village of Spring Valley v. Town of Clarkstown.* Analyzed the affordability of housing in Rockland County New York for a case involving the annexation of a parcel to build such housing. Testified at trial. 2000. (Decided 2000.)

United States Justice Department, Civil Rights Division. *United States vs. Tunica Mississippi School District.* Analyzed proposal to build a new school near the Casino development in Tunica Mississippi, which was desegregated by order in 1971. 1999-2000. (Decided 2000).

New York City Environmental Justice Alliance. *New York City Environmental Justice Alliance, et al. v, Rudolph W. Giuliani, et al.* Filed an affidavit that analyzed the racial and Hispanic distribution of the various community gardens for sale and not-for-sale in New York City in 1999. Decided, Cited in the 2nd Circuit opinion.

Connecticut Civil Liberties Union, Center for Children's Advocacy, NAACP Legal Defense Fund, and the Puerto Rican Legal Defense and Educational Fund. *Sheff v. O'Neil.* Analyzed the changing patterns of school enrollments in the Hartford area for this landmark case. Supplied a series of exhibits used by plaintiffs. 1998. (Decided.)

Connecticut Civil Liberties Union and National Association for the Advancement of Colored People. *NAACP v. Milford.* Analyzed historical housing and segregation patterns in the Milford region, and provided disparate impact analysis for not providing low-income housing as agreed. 1997-1998. (Settled 1997.)

Connecticut Civil Liberties Union and Puerto Rican Legal Defense Fund. *Pitts v. Hartford.* Analyzed placement of low-income public housing tenants in wake of destruction of public housing. Case settled. 1997.

American Civil Liberties Foundation of Maryland. *Carmen Thompson, et al. vs. U.S. Department of Housing and Urban Development, et al.* Analysis of various proposed plans for the relocation of public housing tenants throughout the Baltimore metropolitan area. Created a series of maps and analyses. Prepared trial testimony. Consent Decree Entered, April 1996.

Gurian and Bixon; Davis, Polk and Wardwell. Open Housing Center, Inc. vs. Kings Highway Realty, a Division of Provenz Realty Corp.; Provenz Realty Corp; Diane Provenz; Evelyn Cannon; and Barbara Noonan. Analyzed real estate "tester" data and apartments that various clients were shown. Imputed racial status of clients by using GIS techniques. Prepared affidavit. Cited in judge's opinion denying summary judgment. 1994-1996. (Settled, 1996.)

Westchester Legal Services and Sullivan and Cromwell. Carol Giddins, et al v. U.S. Department of Housing and Urban Development, et al. Analyzed various proposed plans to end racial steering of Section 8 tenants to South West Yonkers. Maps and analyses incorporated into consent decree, and still in use in placing tenants. 1992-1994 and continuing.

Metropolitan Action Institute. Analysis of Housing Segregation Patterns in Yonkers, New York and Starrett City, Brooklyn, 1983-1984. (Materials Used for Testimony of Paul Davidoff.)

Federal Court Jury System Challenges (All Cases Decided.)

Andrea Hirsch, *Martinez v. Kelly.* U.S. Appeals Court for the Second Circuit. Analyzed effects of peremptory challenges for *habeas corpus* petition. 2006-2007.

Stern Shapiro Weissberg & Garin. *United States v. Darryl Green, et al.* U.S. District Court for the Eastern District of Massachusetts. Analyzed jury selection system for using Census data, local lists and other materials. Filed seven declarations and testified twice. 2004-2006.

Federal Public Defender, Eastern District of LA, New Orleans, LA. *United States v. Torres*. Analyzed jury selection system for the Eastern District of Louisiana based upon Census Data and Estimates, as well as filings in the Eastern District. Declaration filed. 2006.

Federal Public Defender, Eastern District of LA, New Orleans, LA. *United States v. Caldwell*. Analyzed jury selection system for the Eastern District of Louisiana based upon Census Data and Estimates, as well as filings in the Eastern District. Declaration filed. 2006.

Federal Public Defender, Western District of PA, Pittsburgh. *United States v. Lawrence Skiba*. Analyzed jury selection system for the Pittsburgh Division of the Western District of Pennsylvania based upon Census Data and Estimates, as well as filings in the Western District. Affidavit filed. 2004.

Federal Public Defender, Western District of PA, Pittsburgh. *United States v. Minerd*. Analyzed jury selection system for the Pittsburgh Division of the Western District of Pennsylvania based upon Census Data and Estimates, as well as filings in the Western District. Affidavit filed. 2002.

Federal Public Defender, Western District of PA, Erie, PA. *United States v. Rudolph Weaver.* Analyzed jury selection system for the Pittsburgh Division of the Western District of Pennsylvania based upon Census Data and Estimates, as well as jury lists and voting. Affidavit Submitted 2001, Testified.

Newman Schwartz and Greenberg. *United States v. Albert J. Pirro, Jr*. Filed affidavit that analyzed representation in master jury wheel for White Plains and Foley Square Court Houses in the Southern District using census data with respect to the dilution of Italian Americans likely to be on a jury, if venue changed from White Plains to Foley Square. Venue change motion was denied. 2000.

Polstein, Ferrara, Dwyer and Speed and Stephen P. Scaring. *United States v. Dennis McCall, Trevor Johnson.* Analyzed representation in master jury wheel for White Plains Court House in the Southern District. Filed affidavit, which was cited in judge's opinion. 1998.

Curtis, Mallet-Prevost, Colt and Mosle, *United States v. Don King and Don King Productions.* Analyzed representation in master jury wheel for New York City Courthouse in the Southern District. Affidavit and Consulting. 1997-1998.

Dominick Porco. *United States v. Kevin Veale.* Analyzed representation in master jury wheel for White Plains Court House in the Southern District. Filed affidavit. 1997.

Diarmuid White, *United States v. Jose Reyes, et al.* Analyzed representation in master jury wheel for New York City Courthouse in the Southern District. Report and testimony in case cited in the judge's opinion. 1996.

State Court Jury System Challenges (All Cases Decided.)

Joseph Flood and Steven Malone. State of Arkansas v. Daniel Pedraza Munoz, Declaration. 2013.

Fitch Richardson, *Commonwealth of Virginia v. Prieto.* Fairfax County Virginia Circuit Court. Affidavit and Trial Testimony, 2010.

Capital Defenders Office, Atlanta GA. *State of Georgia vs. Jason McGhee.* Forsyth County Georgia State Court. Trial Testimony, 2010.

Public Defenders Office and Joseph Flood, *Commonwealth of Virginia v. Sanchez*. Prince William County Virginia Circuit Court. Analyzed Jury Selection in Prince William County, VA. Affidavit, 2008.

Ferrell Law, *Commonwealth of Virginia v. Alan*. Prince William County Virginia Circuit Court. Analyzed Jury Selection in Prince William County, VA. Affidavit, 2008.

New Hampshire Public Defender, *New Hampshire v. Addison.* Hillsborough County, New Hampshire, North Division, Superior Court. Declaration, Deposition and Testimony, 2008.

Public Defenders Office, *Commonwealth of Virginia vs. Portilla-Chicas.* Stafford County Virginia Circuit Court. Analyzed Jury Selection in Stafford County, VA. Affidavit, 2006.

Virginia Indigent Defense Commission, *Commonwealth of Virginia vs. Rogers.* Stafford County Virginia Circuit Court. Analyzed Jury Selection in Stafford County, VA. Report and Testimony, 2006.

Criminal Legal Clinic of Syracuse University Law School, *People v. Tyisha Taylor.* Syracuse City Court. Analyzed Jury Selection System for Syracuse and Onondaga County, New York. Testimony, 2005.

Capital Defenders Office, *New York State v. Sweat.* Analyzed representation in jury selection in Broome County, New York. Two affidavits filed, one relating to factors likely to lead to underrepresentation of African Americans in Jury Pool, another related to the operation of the allocation of jurors among courts in Broome County. (Capital Murder Case.) 2003

Michael J. Spiegel, *New York State v. Dennis Salvador Alvarez-Hernandez,* Analyzed representation in jury selection in Westchester County, New York. Analysis based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. Filed affidavit reporting results. (Capital murder case.) 2001--.2003

Capital Defenders Office, *New York State v. Taylor.* Analyzed representation in jury selection in Queens County, New York. Analysis based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. Filed affidavit reporting results; testified at hearing. Produced demographic analyses by town to assist in jury selection. Testified in 2002. (Capital murder case.) 2000-2002

Mann and Mitchell, *State of Rhode Island vs. David Tremblay.* Analyzed representation in jury selection in Bristol and Providence Counties, Rhode Island. Affidavit filed that includes an analysis of the geographic, racial, and Hispanic representation of jurors in counties in Rhode Island and includes an estimate of the disparities by race and Hispanic status. 1999-2001.

Capital Defenders Office, *New York State v. McCoy.* Analyzed representation in jury selection in Suffolk County, New York. Analysis was based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. Filed affidavit reporting results. Produced demographic analyses by town to assist in jury selection. (Capital murder case.) 1997-1998.

Reynolds, Caronia and Gianelli. *New York State v. Robert Shulman.* Analyzed representation in jury selection in Suffolk County, New York. Analysis was based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. Filed affidavit reporting results. (Capital murder case.). 1997. Opinion reproduced in New York *Law Journal*.

Capital Defenders Office, *New York State v. Gordon.* Analyzed representation in jury selection in Queens County, New York. Analysis was based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. Filed affidavit reporting results. (Capital murder case.) 1997. Opinion reported on and reproduced in New York *Law Journal.*

Capital Defenders Office, *New York State v. Sam Chinn, III.* Analyzed representation in jury selection in Onondaga County. Affidavit filed that presented an analysis of the geographic, racial, and Hispanic representation of jurors. It includes an estimate of the disparities by race and

Hispanic status. Plea bargain offered and accepted. Discussed at presentation at the New York State Defenders Association, Glen Falls, NY. (Capital murder case.) 1997.

Capital Defenders Office, *New York State v. George Bell* Analyzed representation in jury selection in Queens County, New York. Analysis was based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. Filed affidavit reporting results. (Capital murder case.) 1996-1997.

Capital Defenders Office, *New York State v. Hale*. Analyzed representation in jury selection in Kings County, New York. Analysis was based upon census data and estimates, and an emulation of the reported jury selection process using voter lists and other sources. (Affidavit reporting results, capital murder case.) 1996-1997.

Employment Discrimination

Division of Human Rights, *New York State, DHR v. International Longshoremen Association, et al.* Case# 10156672. 2017-present. (Report, testimony, rebuttal report, rebuttal testimony).

Shneyer and Shen. *Grimston vs. Marsh and McLanahan.* Analyzed employment patterns based upon Census data and defendant records. Filed expert report and testified in deposition. Case Settled. 1998-2000.

Shneyer and Shen. *Maglasang vs. Beth Israel Medical Center.* Analyzed employment patterns based upon Census data and defendant records. Filed expert report and testified in deposition. Case Settled. 1999-2000.

Shneyer and Shen. *Williams vs. Safesites, Inc*. Analyzed employment patterns based upon Census data and defendant records. Filed expert report. 1998. Decided.

Shneyer and Shen. *Lachica vs. Emergency Medical Services.* Analyzed employment patterns based upon Census data and defendant records. Case Settled. Filed expert report. Case Settled. 1996-1997.

Other Legal Projects

Center for Constitutional Rights, *Aref, et al v. Holder* (now Sessions). (Report, Deposition 2013-present)

Dewey & LeBoeuf (transferred to Winston, Strawn) and Latino Justice (PRLDEF). *Adriana Aguilar, et al., v. Immigration and Customs Enforcement, Division of the United States Department of Homeland Security, et al*. U.S. District Court for the Southern District of New York. Report, Rebuttal Report and Deposition Testimony, 2010-2012. Settled 2013.

Debevoise & Plimpton; *Five Borough Bicycle Club, et al v. City of New York, et al*. U.S. District Court for the Southern District of New York. Summonsing Patterns Regarding Critical Mass Rides in Manhattan. Report, Deposition and Trial Testimony, 2008-2009. Decided.

Rabinowitz, Boudin, Standard and Krinsky, *Garrison v. I.R.S.* U.S. District Court for the District of Columbia. Filed expert report and testified at trial. Analysis based upon a survey of a sample of all synagogues in the United States. 1991-1992. Settled.

OTHER MAJOR STUDIES AND ANALYSES

Time-Warner Cable of New York. Analyzed and provided maps with underlying ethnic and racial composition for each of the six cable systems managed by Time-Warner Cable in Manhattan, Queens and Brooklyn, 1998-1999 (Proprietary).

New York Times. Analyzed circulation patterns of *the New York Times* in connection with their launch of the Boston and Washington editions, 1996-1997 (Proprietary).

Newspaper Association of America. Analysis of Field Experiment of Full-Color Run of the Press Advertisements in Richmond, Virginia, 1992.

Newspaper Advertising Bureau. Analysis of a Panel Study of Change in Newspaper Readership among Young Adults, 1983-1984.

Friends of Vincenza Restiano. Political Consulting, Polling, and Voting Analysis, Computer Based Voter List Organization, 1983, 1985, 1987, and 1991.

Abt Associates, through Center for the Social Sciences, Columbia University. Transfer of Annual Housing Survey Project to Abt, 1982.

Response Analysis Corporation, Princeton, N.J. Problems in Reliability of Longitudinal Household Surveys. 1982.

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Future Directions in Spatial Demography Specialist Meeting. Invited participant. Convened by the University of California, Santa Barbara, Penn State University, and NIH Advanced Spatial Analysis Training Program (NICHD 5R-25 HD057002-04) Santa Barbara, CA December 12-13, 2011.

Editorial Board Member, Spatial Demography, 2012-pres.

American Sociological Association: Member, Park Award Committee, 2013; Search Committee, Editor of City and Community; 2008-2009; Organizer, sessions on Applied and Evaluation Research, 1998; Organizer, special session on New York Trends, 1996; Organizer, sessions on Economy and Society, 1984; Organizer, sessions on Social Change, 1979.

National Science Foundation
Review Panel Member: Transforming Undergraduate Education in Science, (also Course Curriculum and Laboratory Improvement) 2011, 2010, 2007, 2006, 2005, and other earlier years; Cyber Discovery of Innovation, 2011; Math Science Partnership, 2009.
Advisory Board Member: School Attendance Boundary Information System (SABINS), 2009 to present.
Advisory Workshop Member, General Social Survey (GSS): The Next Decade and Beyond, 2007; Future Investments in Large-Scale Survey Data Access and Dissemination, 2010.
Occasional Reviewer, NSF Sociology Program.
Occasional Reviewer, American Sociology Review, American Journal of Sociology, Sociological Forum, and other journals

Eastern Sociological Society: Vice President 1997-1998; Program Committee, 1991-1992; Co-Chair, Computer Committee, 1985-1987; President and Discussant, Women's History Session, 1985; Member, Computer Committee, 1984-1985; Coordinator, Computer Workshops, 1984 Annual Meeting; Co-Chair, Membership Committee, 1983-1984; Member, Papers Committee, 1983-1986; President, Historical Sociology Session, 1983; Co-Chair, Papers Committee, 1982-1983; Chair, Membership Committee, 1981-1982; Co-Chair, Conference Committee, 1980-1981.

American Association for Public Opinion Research: Program Committee, 1983-84; Nominating Committee, 1985-1986; Task Force Regarding the Use of Survey-based Evidence in Legal Proceedings, 2010.

New York Chapter, American Association for Public Opinion Research, Associate Program, Chair 2006-07; Program Chair, 2007-08.

International Sociological Association, Research Liaison Committee on Economy and Society
American Economic Association
Social Science History Association
Population Association of America

COURSES TAUGHT

Graduate: (M.A. and Ph.D.) Demography; Computer Applications in the Social Sciences; Advanced Social Statistics; The Sociological Study of Economies; Logic of Social Research; Survey Research Methods; Co-Operative Education Field Placement; Demography; Integrated Social Research; Ph.D. Dissertation and M.A. Thesis Supervision.

Undergraduate: New York City in Your Neighborhood; The Digital Transformation of Everyday Life; Social Change in the City; Methods of Social Research; Sociology of Economic Life; Third World in Social Change; Social Statistics; Sociological Analysis; New York Area Undergraduate Research Program (at Columbia): Housing Crisis in New York City, Equity of the Criminal Justice System, Implementation of No-Fault in New York.

UNIVERSITY, COLLEGE AND DEPARTMENTAL ACTIVITIES

CUNY Podcast, 2011, Assessing the Census

CUNY Forum on CUNYTV, October 27, 2009; April 20, 2011, and May 5, 2012,

CUNY Research Foundation, Faculty Advisory Committee, 2006-2017 Board of Directors, 2006-2017.

CUNY Professional Staff Congress, Legislative Committee, 2000-2001; CUNY, University Committee on Research Awards, 1988-1991; CUNY, University Computer Policy Committee, 1986-1987; CUNY/PSC Sociology Research Award Panel, 1986-1987; Graduate Center Sociology Program, Chair, Search Committee, 1989-1990; Methods Subcommittee, 1986-1987; Computers Committee, 1987-1990.

Queens College, Committee on Fellowship Leave, 1990-1991; Queens College, Committee on Research and Sponsored Programs, 1982-1986; Ad Hoc Computer Committee, Division of Social Sciences, 1982-1986, 1994-1996, 1998-pres.; Official Representative to the Inter-University Consortium for Political and Social Research (ICPSR), 1983--; Workload Committee, 2007-09; Executive Committee of College Personnel and Budget Committee, 2006-2011

Queens College, Department of Sociology, Chair 2006-18; Computer Committee, 1981-2005. (Chair most years); Queens College, Departmental M.A. Program Committee, 1981-2005 (Director and Chair, 1982-1987, 2001-2003, 2004-2006).

CIVIC AND COMMUNITY ACTIVITIES

Appointed Member of New York State [Census] Complete Count Commission, 2019-2020.

Yonkers Board of Education, Trustee 1986-1990. President, 1988-1989. Chair, Policy Committee, 1989-1990; Chair, Spelling Bee Committee, 1986-1988.

Yonkers Democratic Party, Second Vice-Chair and District Leader, 1991-1992; District Leader, 1993-1995.

Council of Large City School Districts, 1986-1991. Executive Committee, 1990-1991; Committee on School Choice, 1991; Lobbying Committee, 1989-1990.

New York State School Boards Association, Member Federal Relations Network, 1989-1990.

Long vale Homeowners Association, Board of Directors, 1983-1985. President 1985.

Yonkers Private Industry Council, 1988-1990. Chair, Program and Planning Committee, 1989-1990.

Founding Member and Vice-President, Citizens and Neighbors Organized to Protect Yonkers (CANOPY), 1987-1992.

Volunteer, Friends of Nicholas Wasicsko, 1989 and 1991.

Volunteer, Friends of Vincenza Restiano, 1983, 1985, 1987, and 1991.

Volunteer, Friends of Terence Zaleski, 1991.

Exhibit 2 - List of Projects by Housing Connect Project Identification Number

168 Rental Project Universe				Excluded 1- & 2-Unit Rental Projects	Excluded 100% Community Preference Projects
1	98	176	248	30	294
2	99	179	250	78	308
4	100	180	251	97	
5	102	181	253	119	
7	105	182	255	122	
8	106	183	256	139	
9	107	185	257	144	
10	108	186	258	174	
11	109	188	260	187	
12	110	189	261	200	
13	111	192	262	203	
14	114	193	263	217	
16	115	194	267	266	
17	116	195	268	288	
18	117	196	269	312	
19	118	198	270		
20	120	199	271		
21	121	201	272		
22	124	202	275		
23	125	206	276		
24	126	208	277		
25	131	210	278		
27	132	211	279		
28	133	212	281		
29	135	215	284		
75	136	216	285		
80	137	218	286		
82	138	219	287		
83	140	220	289		
84	141	222	290		
85	142	223	298		
86	145	224	299		
87	146	225	300		
88	147	226	301		
89	148	229	304		
90	149	230	310		
91	150	231	311		
92	170	232	313		
93	171	234	315		
94	172	236	316		
95	173	237	317		
96	175	247	320		

Exhibit 3 - Projects by CD Typology, with CD Typology Demographic Data

CD Typology	CD Preference Area	HC Project No.	No. of Lottery Awards	CD Preference Area Population					
				Total Population	% White	% Black	% Asian	% Hispanic	% All Other
Majority Hispanic	BK04	28	8	140,999	16.22	20.16	6.15	55.79	1.68
Majority Hispanic	BK04	90	17	140,999	16.22	20.16	6.15	55.79	1.68
Majority Hispanic	BK04	117	3	140,999	16.22	20.16	6.15	55.79	1.68
Majority Hispanic	BK04	132	3	140,999	16.22	20.16	6.15	55.79	1.68
Majority Hispanic	BK04	135	3	140,999	16.22	20.16	6.15	55.79	1.68
Majority Hispanic	BK04	301	3	140,999	16.22	20.16	6.15	55.79	1.68
Majority Hispanic	BX01	85	157	110,923	1.89	28.88	0.62	67.17	1.44
Majority Hispanic	BX01	91	125	110,923	1.89	28.88	0.62	67.17	1.44
Majority Hispanic	BX01	100	13	110,923	1.89	28.88	0.62	67.17	1.44
Majority Hispanic	BX01	253	135	110,923	1.89	28.88	0.62	67.17	1.44
Majority Hispanic	BX01	257	133	110,923	1.89	28.88	0.62	67.17	1.44
Majority Hispanic	BX01	261	64	110,923	1.89	28.88	0.62	67.17	1.44
Majority Hispanic	BX02	5	38	57,278	1.12	25.66	0.78	71.44	0.99
Majority Hispanic	BX02	126	140	57,278	1.12	25.66	0.78	71.44	0.99
Majority Hispanic	BX03	8	151	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	23	20	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	93	17	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	120	66	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	147	64	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	196	209	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	250	77	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	275	147	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	289	5	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03	316	112	64,405	1.20	37.32	0.63	59.80	1.04
Majority Hispanic	BX03, BX04	18	45	223,477	1.56	31.65	1.42	63.88	1.49
Majority Hispanic	BX04	11	83	159,072	1.71	29.35	1.74	65.53	1.67
Majority Hispanic	BX04	22	111	159,072	1.71	29.35	1.74	65.53	1.67
Majority Hispanic	BX04	216	15	159,072	1.71	29.35	1.74	65.53	1.67
Majority Hispanic	BX04	218	8	159,072	1.71	29.35	1.74	65.53	1.67
Majority Hispanic	BX04	219	8	159,072	1.71	29.35	1.74	65.53	1.67
Majority Hispanic	BX04	284	56	159,072	1.71	29.35	1.74	65.53	1.67
Majority Hispanic	BX04, BX09	247	101	342,200	2.16	29.64	4.38	61.49	2.33
Majority Hispanic	BX05	84	19	143,861	1.47	25.24	1.61	70.46	1.22
Majority Hispanic	BX05	102	7	143,861	1.47	25.24	1.61	70.46	1.22
Majority Hispanic	BX05	107	20	143,861	1.47	25.24	1.61	70.46	1.22
Majority Hispanic	BX05	131	14	143,861	1.47	25.24	1.61	70.46	1.22
Majority Hispanic	BX05	171	49	143,861	1.47	25.24	1.61	70.46	1.22
Majority Hispanic	BX05	320	5	143,861	1.47	25.24	1.61	70.46	1.22
Majority Hispanic	BX05, BX09	277	28	326,988	2.08	27.84	4.44	63.47	2.16
Majority Hispanic	BX06	20	139	95,483	6.69	26.16	1.16	64.79	1.20
Majority Hispanic	BX06	27	20	95,483	6.69	26.16	1.16	64.79	1.20
Majority Hispanic	BX06	145	10	95,483	6.69	26.16	1.16	64.79	1.20
Majority Hispanic	BX06	181	42	95,483	6.69	26.16	1.16	64.79	1.20
Majority Hispanic	BX06	313	7	95,483	6.69	26.16	1.16	64.79	1.20

CD Typology	CD Preference Area	HC Project No.	No. of Lottery Awards	CD Preference Area Population					
				Total Population	% White	% Black	% Asian	% Hispanic	% All Other
Majority Hispanic	BX07	114	7	136,568	6.35	16.21	5.22	70.24	1.98
Majority Hispanic	BX07	116	18	136,568	6.35	16.21	5.22	70.24	1.98
Majority Hispanic	BX07	199	56	136,568	6.35	16.21	5.22	70.24	1.98
Majority Hispanic	BX09	118	106	183,128	2.56	29.89	6.67	57.97	2.90
Majority Hispanic	BX09	141	95	183,128	2.56	29.89	6.67	57.97	2.90
Majority Hispanic	MN12	92	6	220,205	18.30	9.03	2.67	68.34	1.67
Majority Hispanic	MN12	110	41	220,205	18.30	9.03	2.67	68.34	1.67
Majority Hispanic	QN04	86	6	178,010	6.70	6.30	33.14	52.22	1.64
Majority Asian	QN07	16	142	242,159	24.95	2.14	53.04	17.58	2.29
Majority Black	BK02, BK03, BK08, BK16	185	51	438,627	23.44	52.35	4.97	16.30	2.94
Majority Black	BK03	95	47	135,201	19.43	56.78	3.41	17.96	2.41
Majority Black	BK03	148	8	135,201	19.43	56.78	3.41	17.96	2.41
Majority Black	BK03	180	7	135,201	19.43	56.78	3.41	17.96	2.41
Majority Black	BK03, BK08	99	16	231,813	19.18	58.52	3.67	15.81	2.82
Majority Black	BK03, BK08	150	14	231,813	19.18	58.52	3.67	15.81	2.82
Majority Black	BK05	24	22	179,274	3.31	55.49	3.74	35.16	2.30
Majority Black	BK05	125	143	179,274	3.31	55.49	3.74	35.16	2.30
Majority Black	BK05	170	221	179,274	3.31	55.49	3.74	35.16	2.30
Majority Black	BK05	272	255	179,274	3.31	55.49	3.74	35.16	2.30
Majority Black	BK05	279	189	179,274	3.31	55.49	3.74	35.16	2.30
Majority Black	BK08	88	78	96,613	18.83	60.96	4.04	12.79	3.38
Majority Black	BK08	258	23	96,613	18.83	60.96	4.04	12.79	3.38
Majority Black	BK09	182	5	110,329	23.05	63.33	2.06	9.09	2.47
Majority Black	BK16	140	33	83,109	2.94	72.70	1.67	21.33	1.37
Majority Black	BK16	186	39	83,109	2.94	72.70	1.67	21.33	1.37
Majority Black	BK16	206	71	83,109	2.94	72.70	1.67	21.33	1.37
Majority Black	BK16	237	86	83,109	2.94	72.70	1.67	21.33	1.37
Majority Black	BX12	124	201	176,849	6.27	61.70	3.45	26.07	2.51
Majority Black	BX12	198	61	176,849	6.27	61.70	3.45	26.07	2.51
Majority Black	BX12	263	59	176,849	6.27	61.70	3.45	26.07	2.51
Majority Black	BX12	286	14	176,849	6.27	61.70	3.45	26.07	2.51
Majority Black	MN10	10	51	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	12	28	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	89	99	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	106	18	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	109	20	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	137	17	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	146	10	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	176	49	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	201	20	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	226	34	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	231	46	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	MN10	260	30	112,939	14.68	54.86	3.07	24.17	3.22

CD Typology	CD Preference Area	HC Project No.	No. of Lottery Awards	CD Preference Area Population					
				Total Population	% White	% Black	% Asian	% Hispanic	% All Other
Majority Black	MN10	278	44	112,939	14.68	54.86	3.07	24.17	3.22
Majority Black	QN12	82	46	239,955	1.62	64.01	10.64	16.06	7.67
Majority Black	QN12	83	100	239,955	1.62	64.01	10.64	16.06	7.67
Majority Black	QN12	173	53	239,955	1.62	64.01	10.64	16.06	7.67
Majority White	BK01	4	78	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	14	45	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	87	4	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	94	105	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	115	38	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	195	19	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	211	92	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	212	7	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	225	32	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	230	30	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	232	95	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	256	3	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	267	3	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	268	7	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	281	10	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	304	39	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK01	310	102	187,804	60.08	5.69	6.74	25.14	2.35
Majority White	BK06	188	3	131,658	62.60	9.13	6.71	16.77	4.79
Majority White	BK13	9	111	113,667	56.36	11.33	14.39	15.39	2.54
Majority White	MN01	202	22	73,927	63.92	3.55	21.05	7.43	4.04
Majority White	MN02	255	29	80,194	75.91	2.04	12.92	5.96	3.17
Majority White	MN02	270	41	80,194	75.91	2.04	12.92	5.96	3.17
Majority White	MN04	7	40	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	17	78	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	19	142	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	172	117	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	193	51	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	251	60	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	262	17	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	285	34	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	287	61	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN04	298	85	89,295	56.48	7.92	14.78	18.37	2.45
Majority White	MN05	142	64	106,409	65.32	3.31	19.08	9.16	3.13
Majority White	MN05	224	61	106,409	65.32	3.31	19.08	9.16	3.13
Majority White	MN05	269	43	106,409	65.32	3.31	19.08	9.16	3.13
Majority White	MN06	133	19	109,621	68.51	3.43	14.95	9.83	3.27
Majority White	MN06	189	14	109,621	68.51	3.43	14.95	9.83	3.27
Majority White	MN07	136	55	170,171	65.15	6.25	9.03	16.93	2.63
Majority White	MN07	194	127	170,171	65.15	6.25	9.03	16.93	2.63
Majority White	MN08	208	48	217,906	75.64	2.33	9.88	9.46	2.69

CD Typology	CD Preference Area	HC Project No.	No. of Lottery Awards	CD Preference Area Population					
				Total Population	% White	% Black	% Asian	% Hispanic	% All Other
Plurality Hispanic	BX08	290	7	92,586	38.85	10.07	4.32	44.05	2.70
Plurality Hispanic	MN09	29	98	102,003	26.47	22.08	8.58	39.43	3.44
Plurality Hispanic	MN09	179	21	102,003	26.47	22.08	8.58	39.43	3.44
Plurality Hispanic	MN09	223	77	102,003	26.47	22.08	8.58	39.43	3.44
Plurality Hispanic	MN09	229	65	102,003	26.47	22.08	8.58	39.43	3.44
Plurality Hispanic	MN11	2	36	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	13	170	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	21	119	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	96	89	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	108	87	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	138	31	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	215	7	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	222	16	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	236	3	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	MN11	248	2	157,002	16.25	33.36	7.44	40.66	2.29
Plurality Hispanic	QN02	111	911	122,814	29.53	2.01	31.67	34.25	2.54
Plurality Hispanic	QN02	299	25	122,814	29.53	2.01	31.67	34.25	2.54
Plurality Hispanic	QN09	1	96	140,472	16.45	5.91	27.13	43.21	7.30
Plurality Black	BK01, BK03, BK04, BK05, BK16, BK17	210	29	861,514	20.14	45.72	4.17	27.92	2.06
Plurality Black	BK03, BK04, BK16	192	19	359,308	14.36	46.09	4.08	33.58	1.88
Plurality Black	BX06, BX12	75	27	272,332	6.42	49.24	2.65	39.65	2.05
Plurality Black	MN09, MN10	105	22	214,942	20.28	39.30	5.68	31.41	3.32
Plurality Black	MN10, MN11	121	12	269,941	15.60	42.36	5.61	33.76	2.68
Plurality Black	MN10, MN11	234	13	269,941	15.60	42.36	5.61	33.76	2.68
Plurality Black	QN14	311	52	123,012	35.09	35.14	3.46	24.40	1.92
Plurality Black	QN14	317	100	123,012	35.09	35.14	3.46	24.40	1.92
Plurality White	BK02	149	19	123,705	45.20	27.12	9.62	13.84	4.21
Plurality White	BK02	183	197	123,705	45.20	27.12	9.62	13.84	4.21
Plurality White	BK02	220	220	123,705	45.20	27.12	9.62	13.84	4.21
Plurality White	BK02	315	23	123,705	45.20	27.12	9.62	13.84	4.21
Plurality White	BK02, BK03, BK06, BK08	276	170	487,176	37.52	37.20	6.01	15.57	3.70
Plurality White	BK02, BK06, BK07	98	8	369,694	45.57	13.13	12.37	25.21	3.72
Plurality White	MN03	80	30	165,962	35.64	6.87	30.32	24.27	2.88
Plurality White	MN03	175	16	165,962	35.64	6.87	30.32	24.27	2.88
Plurality White	QN01	25	105	181,668	45.86	8.36	16.12	26.85	2.81
Plurality White	QN01	271	5	181,668	45.86	8.36	16.12	26.85	2.81
Plurality White	QN01	300	5	181,668	45.86	8.36	16.12	26.85	2.81

Exhibit 4 - CD Typologies, with Project Counts and Demographics

CD Typology	No. of Lotteries	% White	% Black	% Asian	% Hispanic	% All Other
Majority White	40	60.65	6.34	11.67	18.78	2.56
Majority Black	38	7.66	58.97	3.98	26.44	2.96
Majority Hispanic	52	2.62	30.24	1.75	63.95	1.45
Majority Asian	1	24.95	2.14	53.04	17.58	2.29
Plurality White	11	43.11	25.26	11.01	16.80	3.82
Plurality Black	8	26.27	39.40	3.87	28.33	2.13
Plurality Hispanic	18	24.46	14.50	20.80	37.41	2.84
All Lotteries	168	23.32	28.58	9.17	36.46	2.48

Exhibit 5 – Distribution of NYC White Population by Census tract and CD boundaries overlaid (2013-17 ACS)

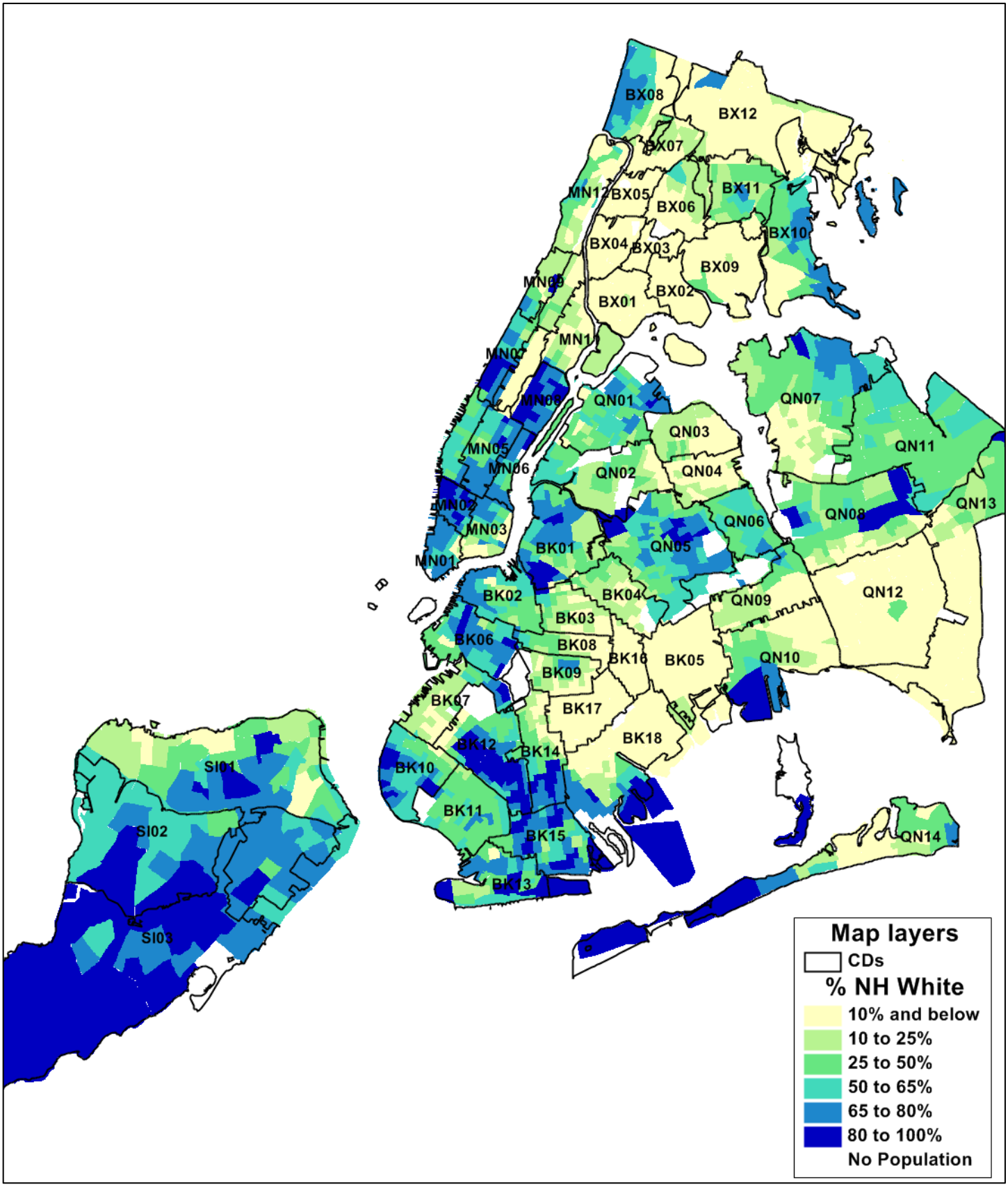

Exhibit 6 – Distribution of NYC Black Population by Census tract and CD boundaries overlaid (2013-17 ACS)

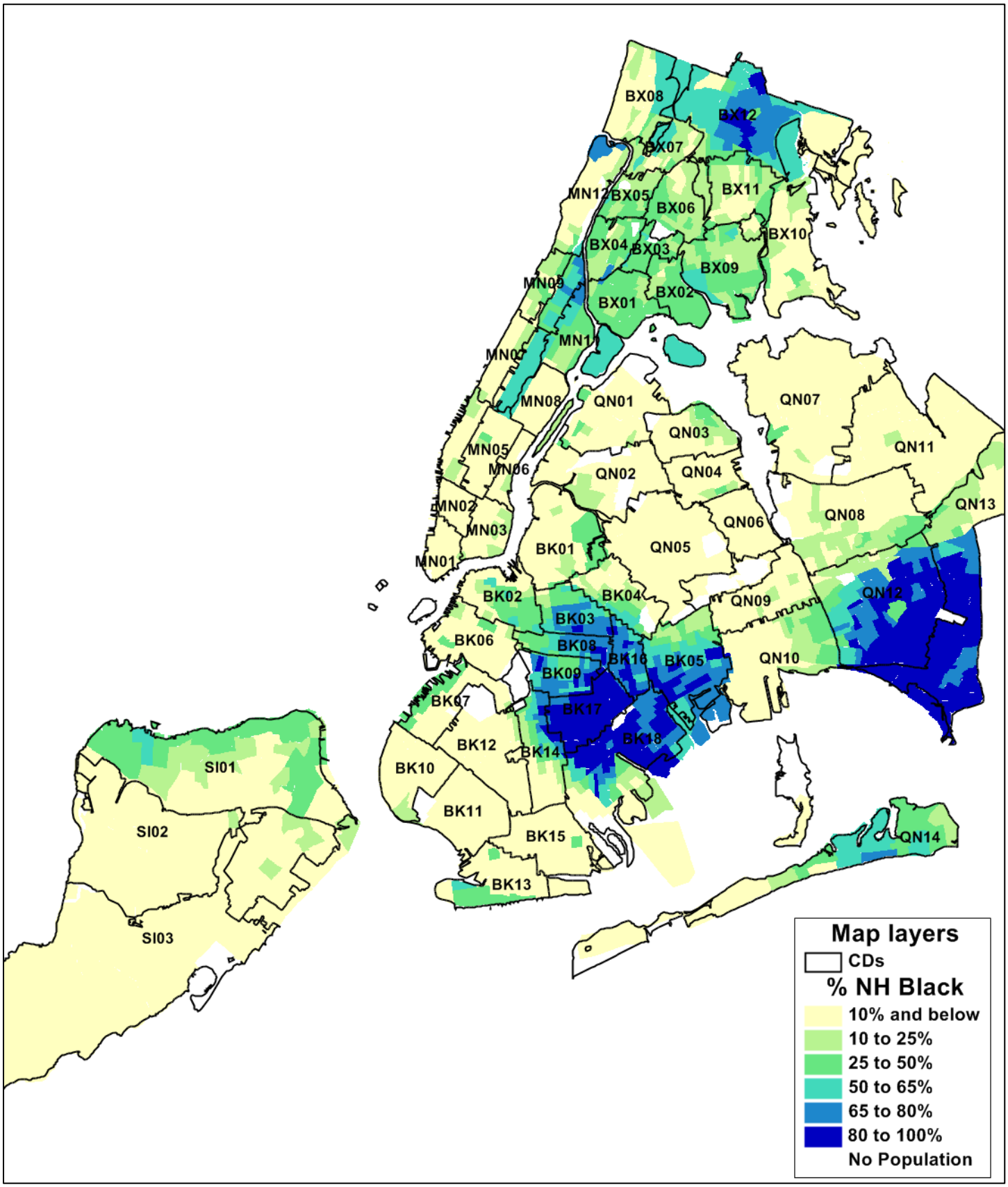

Exhibit 7 – Distribution of NYC Hispanic Population by Census tract and CD boundaries overlaid (2013-17 ACS)

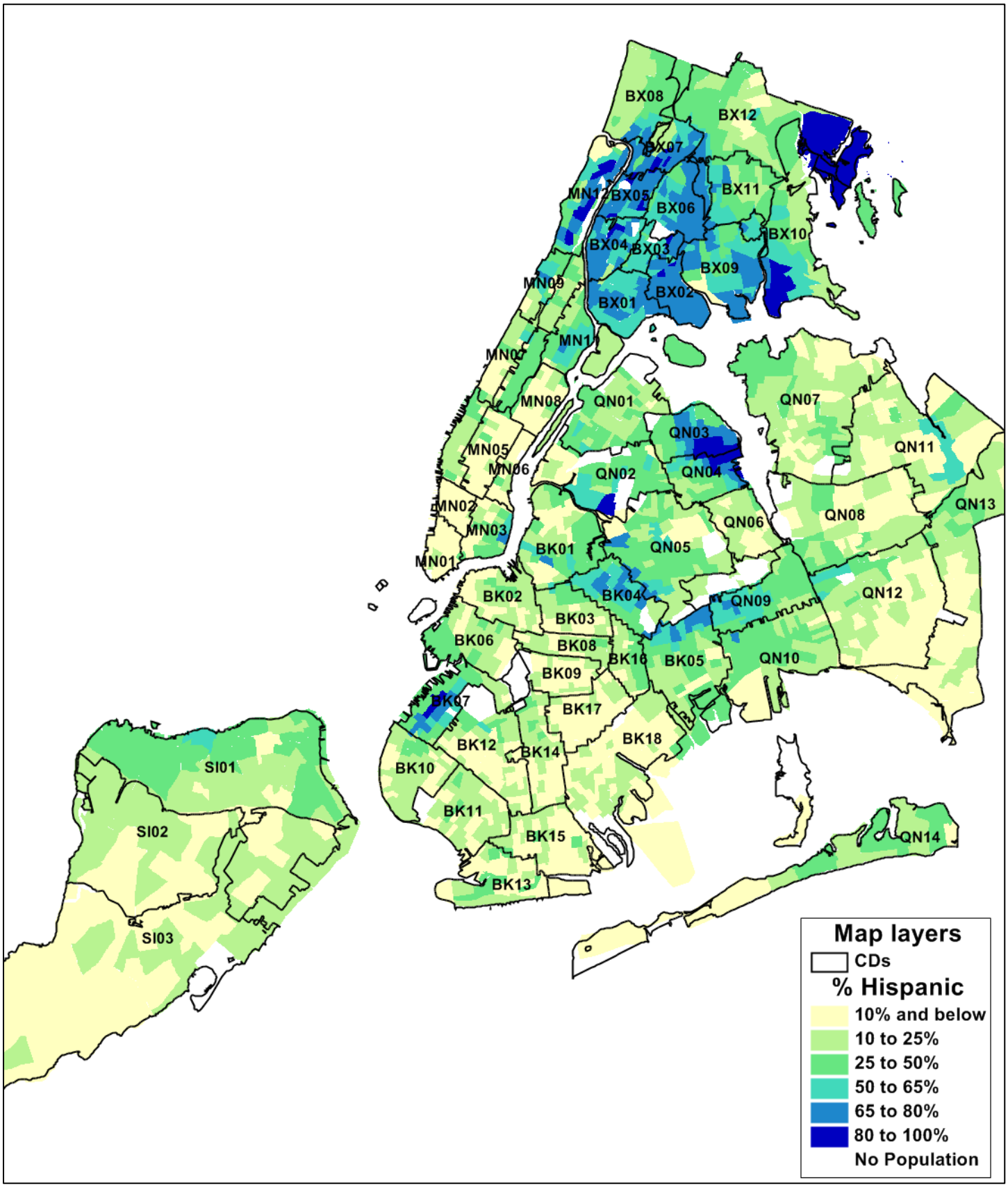

Exhibit 8 – Distribution of NYC Asian Population by Census tract and CD boundaries overlaid (2013-17 ACS)

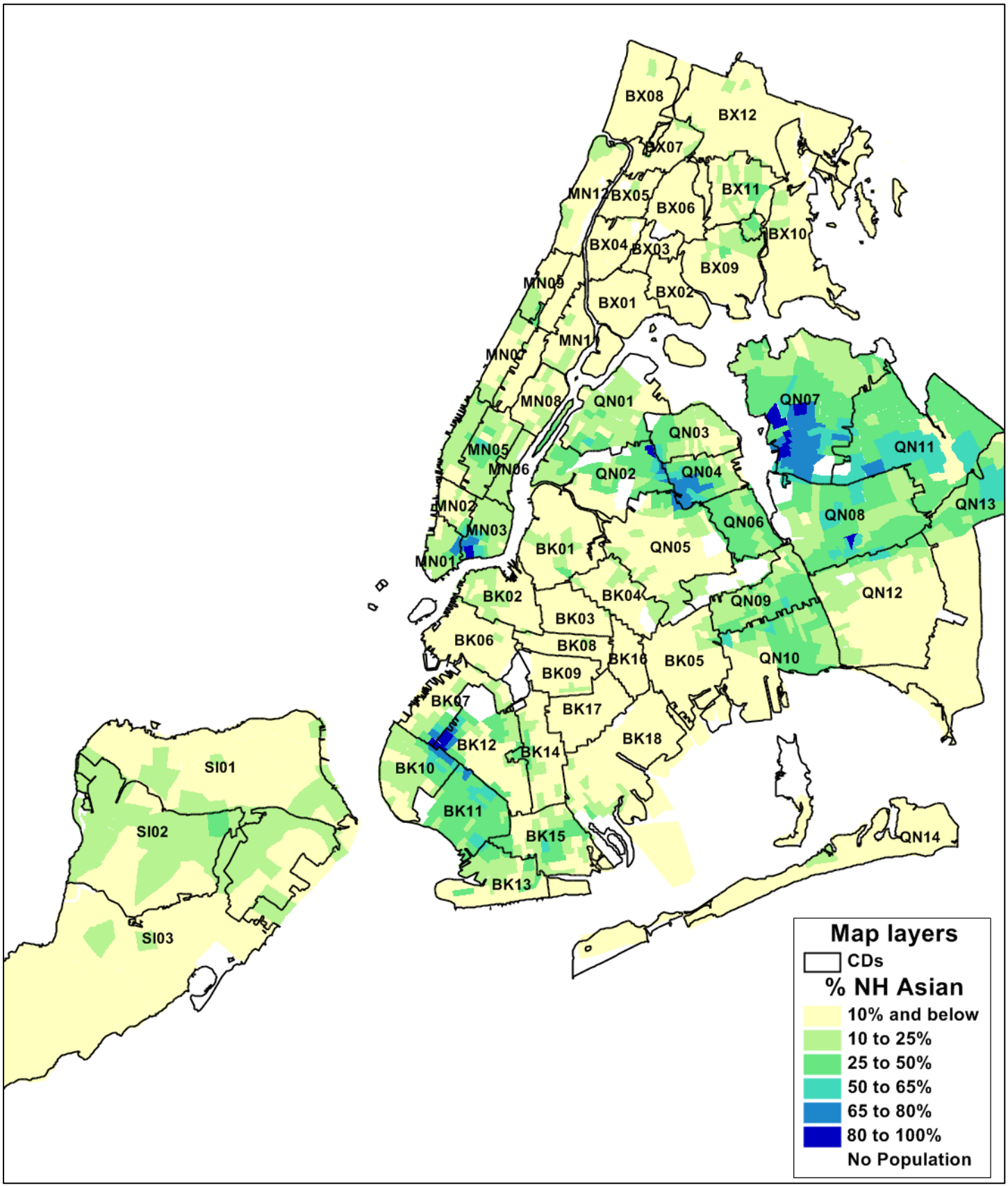

Exhibit 9 - Demographic Distribution of Entrants by Insiders, Outsiders, and Total, and by CD Typology

Section 1a - Demographic Distribution of Insider Entrants by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	16,025	6,619	26,288	3,108	4,426	3,877	60,343
Majority Black	3,071	72,485	24,802	1,812	7,443	8,579	118,192
Majority Hispanic	1,197	26,785	49,692	1,027	3,712	3,605	86,018
Majority Asian	92	137	612	2,953	286	279	4,359
Plurality White	3,519	10,875	7,054	1,890	2,320	2,341	27,999
Plurality Black	1,393	18,809	9,941	406	2,077	2,452	35,078
Plurality Hispanic	2,700	9,987	15,556	2,106	2,105	2,531	34,985
All Typologies	27,997	145,697	133,945	13,302	22,369	23,664	366,974

Section 1b - Demographic Distribution of Insider Entrants (demographic group as percentage of all insiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	26.56%	10.97%	43.56%	5.15%	7.33%	6.42%	100.00%
Majority Black	2.60%	61.33%	20.98%	1.53%	6.30%	7.26%	100.00%
Majority Hispanic	1.39%	31.14%	57.77%	1.19%	4.32%	4.19%	100.00%
Majority Asian	2.11%	3.14%	14.04%	67.74%	6.56%	6.40%	100.00%
Plurality White	12.57%	38.84%	25.19%	6.75%	8.29%	8.36%	100.00%
Plurality Black	3.97%	53.62%	28.34%	1.16%	5.92%	6.99%	100.00%
Plurality Hispanic	7.72%	28.55%	44.46%	6.02%	6.02%	7.23%	100.00%
All Typologies	7.63%	39.70%	36.50%	3.62%	6.10%	6.45%	100.00%

Section 2a - Demographic Distribution of Outsider Entrants by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	219,449	760,550	785,431	159,335	134,893	165,635	2,225,293
Majority Black	93,625	659,585	574,103	73,383	89,439	111,174	1,601,309
Majority Hispanic	57,655	587,510	625,930	50,259	72,715	90,236	1,484,305
Majority Asian	1,419	11,578	11,499	5,188	2,346	1,963	33,993
Plurality White	48,754	198,748	171,111	34,270	33,102	39,618	525,603
Plurality Black	17,607	104,636	96,621	14,152	14,080	19,006	266,102
Plurality Hispanic	52,041	272,484	281,501	39,713	43,428	52,979	742,146
All Typologies	490,550	2,595,091	2,546,196	376,300	390,003	480,611	6,878,751

Section 2b - Demographic Distribution of Outsider Entrants (demographic group as percentage of all outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	9.86%	34.18%	35.30%	7.16%	6.06%	7.44%	100.00%
Majority Black	5.85%	41.19%	35.85%	4.58%	5.59%	6.94%	100.00%
Majority Hispanic	3.88%	39.58%	42.17%	3.39%	4.90%	6.08%	100.00%
Majority Asian	4.17%	34.06%	33.83%	15.26%	6.90%	5.77%	100.00%
Plurality White	9.28%	37.81%	32.56%	6.52%	6.30%	7.54%	100.00%
Plurality Black	6.62%	39.32%	36.31%	5.32%	5.29%	7.14%	100.00%
Plurality Hispanic	7.01%	36.72%	37.93%	5.35%	5.85%	7.14%	100.00%
All Typologies	7.13%	37.73%	37.02%	5.47%	5.67%	6.99%	100.00%

Section 3a - Demographic Distribution of All Entrants by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	235,474	767,169	811,719	162,443	139,319	169,512	2,285,636
Majority Black	96,696	732,070	598,905	75,195	96,882	119,753	1,719,501
Majority Hispanic	58,852	614,295	675,622	51,286	76,427	93,841	1,570,323
Majority Asian	1,511	11,715	12,111	8,141	2,632	2,242	38,352
Plurality White	52,273	209,623	178,165	36,160	35,422	41,959	553,602
Plurality Black	19,000	123,445	106,562	14,558	16,157	21,458	301,180
Plurality Hispanic	54,741	282,471	297,057	41,819	45,533	55,510	777,131
All Typologies	518,547	2,740,788	2,680,141	389,602	412,372	504,275	7,245,725

Section 3b - Demographic Distribution of All Entrants (demographic group as percentage of all insiders and outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	10.30%	33.56%	35.51%	7.11%	6.10%	7.42%	100.00%
Majority Black	5.62%	42.57%	34.83%	4.37%	5.63%	6.96%	100.00%
Majority Hispanic	3.75%	39.12%	43.02%	3.27%	4.87%	5.98%	100.00%
Majority Asian	3.94%	30.55%	31.58%	21.23%	6.86%	5.85%	100.00%
Plurality White	9.44%	37.87%	32.18%	6.53%	6.40%	7.58%	100.00%
Plurality Black	6.31%	40.99%	35.38%	4.83%	5.36%	7.12%	100.00%
Plurality Hispanic	7.04%	36.35%	38.22%	5.38%	5.86%	7.14%	100.00%
All Typologies	7.16%	37.83%	36.99%	5.38%	5.69%	6.96%	100.00%

Exhibit 10 - Demographic Distribution of Apparently Eligible Applicants by Insiders, Outsiders, and Total, and by CD Typology

Section 1a - Demographic Distribution of Insider Apparently Eligible Applicants by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	8,317	3,317	13,725	1,590	2,295	1,989	31,233
Majority Black	1,418	32,443	11,670	902	3,559	3,907	53,899
Majority Hispanic	491	11,901	20,250	446	1,631	1,606	36,325
Majority Asian	38	69	253	1,636	149	157	2,302
Plurality White	2,139	6,305	3,471	980	1,415	1,367	15,677
Plurality Black	675	8,755	4,525	186	1,000	1,203	16,344
Plurality Hispanic	1,448	4,282	6,529	1,039	1,057	1,197	15,552
All Typologies	14,526	67,072	60,423	6,779	11,106	11,426	171,332

Section 1b - Demographic Distribution of Insider Apparently Eligible Applicants (demographic group as percentageof all insiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	26.63%	10.62%	43.94%	5.09%	7.35%	6.37%	100.00%
Majority Black	2.63%	60.19%	21.65%	1.67%	6.60%	7.25%	100.00%
Majority Hispanic	1.35%	32.76%	55.75%	1.23%	4.49%	4.42%	100.00%
Majority Asian	1.65%	3.00%	10.99%	71.07%	6.47%	6.82%	100.00%
Plurality White	13.64%	40.22%	22.14%	6.25%	9.03%	8.72%	100.00%
Plurality Black	4.13%	53.57%	27.69%	1.14%	6.12%	7.36%	100.00%
Plurality Hispanic	9.31%	27.53%	41.98%	6.68%	6.80%	7.70%	100.00%
All Typologies	8.48%	39.15%	35.27%	3.96%	6.48%	6.67%	100.00%

Section 2a - Demographic Distribution of Outsider Apparently Eligible Applicants by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	98,348	333,170	338,190	72,261	61,407	74,106	977,482
Majority Black	41,007	275,661	239,137	33,192	39,929	48,435	677,361
Majority Hispanic	24,102	232,489	253,980	21,821	31,673	37,703	601,768
Majority Asian	657	5,215	5,301	2,802	1,098	926	15,999
Plurality White	23,903	82,792	71,148	15,908	15,449	18,047	227,247
Plurality Black	8,859	48,913	44,827	7,064	7,045	9,227	125,935
Plurality Hispanic	24,387	113,817	118,546	18,158	19,678	23,322	317,908
All Typologies	221,263	1,092,057	1,071,129	171,206	176,279	211,766	2,943,700

Section 2b - Demographic Distribution of Outsider Apparently Eligible Applicants (demographic group as percentageof all outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	10.06%	34.08%	34.60%	7.39%	6.28%	7.58%	100.00%
Majority Black	6.05%	40.70%	35.30%	4.90%	5.89%	7.15%	100.00%
Majority Hispanic	4.01%	38.63%	42.21%	3.63%	5.26%	6.27%	100.00%
Majority Asian	4.11%	32.60%	33.13%	17.51%	6.86%	5.79%	100.00%
Plurality White	10.52%	36.43%	31.31%	7.00%	6.80%	7.94%	100.00%
Plurality Black	7.03%	38.84%	35.60%	5.61%	5.59%	7.33%	100.00%
Plurality Hispanic	7.67%	35.80%	37.29%	5.71%	6.19%	7.34%	100.00%
All Typologies	7.52%	37.10%	36.39%	5.82%	5.99%	7.19%	100.00%

Section 3a - Demographic Distribution of All Apparently Eligible Applicants by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	106,665	336,487	351,915	73,851	63,702	76,095	1,008,715
Majority Black	42,425	308,104	250,807	34,094	43,488	52,342	731,260
Majority Hispanic	24,593	244,390	274,230	22,267	33,304	39,309	638,093
Majority Asian	695	5,284	5,554	4,438	1,247	1,083	18,301
Plurality White	26,042	89,097	74,619	16,888	16,864	19,414	242,924
Plurality Black	9,534	57,668	49,352	7,250	8,045	10,430	142,279
Plurality Hispanic	25,835	118,099	125,075	19,197	20,735	24,519	333,460
All Typologies	235,789	1,159,129	1,131,552	177,985	187,385	223,192	3,115,032

Section 3b - Demographic Distribution of All Apparently Eligible Applicants (demographic group as percentageof all insiders and outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	10.57%	33.36%	34.89%	7.32%	6.32%	7.54%	100.00%
Majority Black	5.80%	42.13%	34.30%	4.66%	5.95%	7.16%	100.00%
Majority Hispanic	3.85%	38.30%	42.98%	3.49%	5.22%	6.16%	100.00%
Majority Asian	3.80%	28.87%	30.35%	24.25%	6.81%	5.92%	100.00%
Plurality White	10.72%	36.68%	30.72%	6.95%	6.94%	7.99%	100.00%
Plurality Black	6.70%	40.53%	34.69%	5.10%	5.65%	7.33%	100.00%
Plurality Hispanic	7.75%	35.42%	37.51%	5.76%	6.22%	7.35%	100.00%
All Typologies	7.57%	37.21%	36.33%	5.71%	6.02%	7.16%	100.00%

Ex 11 - Demographic Distribution of Actual Awardees by Insiders, Outsiders, and Total, and by CD Typology

Section 1a - Demographic Distribution of Insider Actual Awardees by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	278	86	337	82	67	65	915
Majority Black	18	640	272	17	78	76	1,101
Majority Hispanic	7	418	698	13	54	50	1,240
Majority Asian	0	0	8	54	4	5	71
Plurality White	99	118	73	42	47	33	412
Plurality Black	5	63	38	2	10	9	127
Plurality Hispanic	187	126	293	110	86	71	873
All Typologies	594	1,451	1,719	320	346	309	4,739

Section 1b - Demographic Distribution of Insider Actual Awardees (demographic group as percentage of all insiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	30.38%	9.40%	36.83%	8.96%	7.32%	7.10%	100.00%
Majority Black	1.63%	58.13%	24.70%	1.54%	7.08%	6.90%	100.00%
Majority Hispanic	0.56%	33.71%	56.29%	1.05%	4.35%	4.03%	100.00%
Majority Asian	0.00%	0.00%	11.27%	76.06%	5.63%	7.04%	100.00%
Plurality White	24.03%	28.64%	17.72%	10.19%	11.41%	8.01%	100.00%
Plurality Black	3.94%	49.61%	29.92%	1.57%	7.87%	7.09%	100.00%
Plurality Hispanic	21.42%	14.43%	33.56%	12.60%	9.85%	8.13%	100.00%
All Typologies	12.53%	30.62%	36.27%	6.75%	7.30%	6.52%	100.00%

Section 2a - Demographic Distribution of Outsider Actual Awardees by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	180	308	352	101	93	82	1,116
Majority Black	36	578	400	34	81	78	1,207
Majority Hispanic	23	607	761	19	98	84	1,592
Majority Asian	2	19	23	21	3	3	71
Plurality White	92	78	71	63	45	37	386
Plurality Black	5	64	50	3	12	13	147
Plurality Hispanic	168	238	299	110	99	73	987
All Typologies	506	1,892	1,956	351	431	370	5,506

Section 2b - Demographic Distribution of Outsider Actual Awardees (demographic group as percentage of all outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	16.13%	27.60%	31.54%	9.05%	8.33%	7.35%	100.00%
Majority Black	2.98%	47.89%	33.14%	2.82%	6.71%	6.46%	100.00%
Majority Hispanic	1.44%	38.13%	47.80%	1.19%	6.16%	5.28%	100.00%
Majority Asian	2.82%	26.76%	32.39%	29.58%	4.23%	4.23%	100.00%
Plurality White	23.83%	20.21%	18.39%	16.32%	11.66%	9.59%	100.00%
Plurality Black	3.40%	43.54%	34.01%	2.04%	8.16%	8.84%	100.00%
Plurality Hispanic	17.02%	24.11%	30.29%	11.14%	10.03%	7.40%	100.00%
All Typologies	9.19%	34.36%	35.52%	6.37%	7.83%	6.72%	100.00%

Section 3a - Demographic Distribution of All Actual Awardees by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	458	394	689	183	160	147	2,031
Majority Black	54	1,218	672	51	159	154	2,308
Majority Hispanic	30	1,025	1,459	32	152	134	2,832
Majority Asian	2	19	31	75	7	8	142
Plurality White	191	196	144	105	92	70	798
Plurality Black	10	127	88	5	22	22	274
Plurality Hispanic	355	364	592	220	185	144	1,860
All Typologies	1,100	3,343	3,675	671	777	679	10,245

Section 3b - Demographic Distribution of All Actual Awardees (demographic group as percentage of all insiders and outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	22.55%	19.40%	33.92%	9.01%	7.88%	7.24%	100.00%
Majority Black	2.34%	52.77%	29.12%	2.21%	6.89%	6.67%	100.00%
Majority Hispanic	1.06%	36.19%	51.52%	1.13%	5.37%	4.73%	100.00%
Majority Asian	1.41%	13.38%	21.83%	52.82%	4.93%	5.63%	100.00%
Plurality White	23.93%	24.56%	18.05%	13.16%	11.53%	8.77%	100.00%
Plurality Black	3.65%	46.35%	32.12%	1.82%	8.03%	8.03%	100.00%
Plurality Hispanic	19.09%	19.57%	31.83%	11.83%	9.95%	7.74%	100.00%
All Typologies	10.74%	32.63%	35.87%	6.55%	7.58%	6.63%	100.00%

Ex 12 - Insider-Share Percentages for Each Demographic Group Among Entrants, Apparently Eligible Applicants, Actual Awardees, and Simulated Awardees, by CD Typology

Section 1 - Entrant Insider Percentages

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	6.81%	0.86%	3.24%	1.91%	3.18%	2.29%	2.64%
Majority Black	3.18%	9.90%	4.14%	2.41%	7.68%	7.16%	6.87%
Majority Hispanic	2.03%	4.36%	7.36%	2.00%	4.86%	3.84%	5.48%
Majority Asian	6.09%	1.17%	5.05%	36.27%	10.87%	12.44%	11.37%
Plurality White	6.73%	5.19%	3.96%	5.23%	6.55%	5.58%	5.06%
Plurality Black	7.33%	15.24%	9.33%	2.79%	12.86%	11.43%	11.65%
Plurality Hispanic	4.93%	3.54%	5.24%	5.04%	4.62%	4.56%	4.50%
All Typologies	5.40%	5.32%	5.00%	3.41%	5.42%	4.69%	5.06%

Section 2 - Apparently Eligible Insider Percentages

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	7.80%	0.99%	3.90%	2.15%	3.60%	2.61%	3.10%
Majority Black	3.34%	10.53%	4.65%	2.65%	8.18%	7.46%	7.37%
Majority Hispanic	2.00%	4.87%	7.38%	2.00%	4.90%	4.09%	5.69%
Majority Asian	5.47%	1.31%	4.56%	36.86%	11.95%	14.50%	12.58%
Plurality White	8.21%	7.08%	4.65%	5.80%	8.39%	7.04%	6.45%
Plurality Black	7.08%	15.18%	9.17%	2.57%	12.43%	11.53%	11.49%
Plurality Hispanic	5.60%	3.63%	5.22%	5.41%	5.10%	4.88%	4.66%
All Typologies	6.16%	5.79%	5.34%	3.81%	5.93%	5.12%	5.50%

Section 3 - Actual Awardee Insider Percentages

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	60.70%	21.83%	48.91%	44.81%	41.88%	44.22%	45.05%
Majority Black	33.33%	52.55%	40.48%	33.33%	49.06%	49.35%	47.70%
Majority Hispanic	23.33%	40.78%	47.84%	40.63%	35.53%	37.31%	43.79%
Majority Asian	0.00%	0.00%	25.81%	72.00%	57.14%	62.50%	50.00%
Plurality White	51.83%	60.20%	50.69%	40.00%	51.09%	47.14%	51.63%
Plurality Black	50.00%	49.61%	43.18%	40.00%	45.45%	40.91%	46.35%
Plurality Hispanic	52.68%	34.62%	49.49%	50.00%	46.49%	49.31%	46.94%
All Typologies	54.00%	43.40%	46.78%	47.69%	44.53%	45.51%	46.26%

Section 4 - Simulated Awardee Insider Percentages

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	71.02%	27.86%	51.36%	46.65%	54.99%	48.46%	49.95%
Majority Black	26.10%	58.86%	39.73%	23.77%	52.03%	47.60%	49.74%
Majority Hispanic	21.35%	47.81%	55.13%	21.41%	46.35%	40.83%	49.78%
Majority Asian	26.57%	9.39%	25.81%	79.40%	46.45%	54.14%	48.86%
Plurality White	49.75%	55.02%	45.42%	44.37%	50.47%	48.84%	49.85%
Plurality Black	43.14%	58.55%	40.16%	18.95%	52.97%	50.31%	49.74%
Plurality Hispanic	52.10%	40.36%	52.06%	59.92%	49.87%	48.03%	49.70%
All Typologies	55.49%	48.60%	49.94%	47.52%	50.74%	46.81%	49.78%

Exhibit 13 - Standard Deviations by Methodology, Typology and Demographic Group

ALL ENTRANTS								
	Method 1: Outsider-to-insider change				Method 2: Highest-insider-share			
CD Typology	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian
Majority White	92.72	178.54	41.35	22.33	92.80	134.00	46.50	19.50
Majority Black	65.00	134.27	123.92	76.25	65.33	131.75	104.75	77.83
Majority Hispanic	62.25	52.75	91.76	54.75	59.67	46.00	82.25	59.83
Majority Asian	8.58	83.57	33.54	71.89	8.58	61.17	31.83	57.49
Plurality White	16.45	3.43	27.26	1.53	16.82	3.50	27.00	1.50
Plurality Black	24.09	51.07	30.65	59.43	23.05	50.67	29.92	62.07
Plurality Hispanic	4.73	32.68	24.19	5.15	4.60	30.40	23.80	5.09

APPARENTLY ELIGIBLE APPLICANTS								
	Method 1: Outsider-to-insider change				Method 2: Highest-insider-share			
CD Typology	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian
Majority White	66.28	130.33	33.39	17.69	65.75	105.67	30.75	17.00
Majority Black	48.86	88.64	71.84	53.83	47.56	91.00	69.00	55.11
Majority Hispanic	37.86	23.48	50.15	40.00	42.67	22.17	49.50	38.20
Majority Asian	7.94	58.04	29.52	54.10	8.21	42.84	26.79	42.75
Plurality White	11.18	9.48	26.20	3.75	10.94	8.91	26.00	3.68
Plurality Black	17.06	35.93	20.82	40.64	16.86	34.50	20.88	44.76
Plurality Hispanic	6.83	22.35	11.73	4.85	6.80	23.00	11.13	4.65

ACTUAL AWARDEES								
	Method 1: Outsider-to-insider change				Method 2: Highest-insider-share			
CD Typology	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian
Majority White	7.58	11.03	2.50	0.07	7.77	11.90	2.50	0.07
Majority Black	2.18	4.95	4.49	2.12	2.26	4.95	4.51	2.20
Majority Hispanic	2.38	2.44	4.52	0.38	2.66	2.44	4.50	0.37
Majority Asian	1.44	5.10	3.15	6.26	11.99	12.97	3.38	6.28
Plurality White	0.06	2.79	0.25	2.55	0.07	2.81	0.25	2.61
Plurality Black	0.24	1.01	0.73	0.29	0.24	1.01	0.73	0.29
Plurality Hispanic	2.40	5.35	1.51	0.97	2.41	5.45	1.51	0.97

Ex 14 - Demographic Distribution of Simulated Awardees by Insiders, Outsiders, and Total, and by CD Typology

Section 1a - Demographic Distribution of Insider Simulated Awardees by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	309,374	128,232	356,466	73,721	80,132	66,573	1,014,498
Majority Black	20,271	693,709	271,162	19,142	74,814	68,961	1,148,059
Majority Hispanic	12,722	505,984	756,777	14,170	66,303	53,945	1,409,901
Majority Asian	1,231	2,407	8,426	47,981	4,602	4,739	69,386
Plurality White	83,529	128,405	81,779	29,823	38,474	35,785	397,795
Plurality Black	7,446	75,040	33,414	1,755	8,881	9,739	136,275
Plurality Hispanic	175,272	170,316	310,498	112,411	88,776	67,058	924,331
All Typologies	609,845	1,704,093	1,818,522	299,003	361,982	306,800	5,100,245

Section 1b - Demographic Distribution of Insider Simulated Awardees (demographic group as percentage of all insiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	30.50%	12.64%	35.14%	7.27%	7.90%	6.56%	100.00%
Majority Black	1.77%	60.42%	23.62%	1.67%	6.52%	6.01%	100.00%
Majority Hispanic	0.90%	35.89%	53.68%	1.01%	4.70%	3.83%	100.00%
Majority Asian	1.77%	3.47%	12.14%	69.15%	6.63%	6.83%	100.00%
Plurality White	21.00%	32.28%	20.56%	7.50%	9.67%	9.00%	100.00%
Plurality Black	5.46%	55.07%	24.52%	1.29%	6.52%	7.15%	100.00%
Plurality Hispanic	18.96%	18.43%	33.59%	12.16%	9.60%	7.25%	100.00%
All Typologies	11.96%	33.41%	35.66%	5.86%	7.10%	6.02%	100.00%

Section 2a - Demographic Distribution of Outsider Simulated Awardees by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	126,227	332,038	337,532	84,315	65,582	70,808	1,016,502
Majority Black	57,407	484,833	411,411	61,381	68,981	75,928	1,159,941
Majority Hispanic	46,871	552,246	616,037	52,015	76,753	78,177	1,422,099
Majority Asian	3,402	23,220	24,226	12,446	5,306	4,014	72,614
Plurality White	84,353	104,965	98,255	37,394	37,758	37,480	400,205
Plurality Black	9,814	53,116	49,786	7,506	7,884	9,619	137,725
Plurality Hispanic	161,111	251,641	285,971	75,176	89,225	72,545	935,669
All Typologies	489,185	1,802,059	1,823,218	330,233	351,489	348,571	5,144,755

Section 2b - Demographic Distribution of Outsider Simulated Awardees (demographic group as percentage of all outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	12.42%	32.66%	33.21%	8.29%	6.45%	6.97%	100.00%
Majority Black	4.95%	41.80%	35.47%	5.29%	5.95%	6.55%	100.00%
Majority Hispanic	3.30%	38.83%	43.32%	3.66%	5.40%	5.50%	100.00%
Majority Asian	4.69%	31.98%	33.36%	17.14%	7.31%	5.53%	100.00%
Plurality White	21.08%	26.23%	24.55%	9.34%	9.43%	9.37%	100.00%
Plurality Black	7.13%	38.57%	36.15%	5.45%	5.72%	6.98%	100.00%
Plurality Hispanic	17.22%	26.89%	30.56%	8.03%	9.54%	7.75%	100.00%
All Typologies	9.51%	35.03%	35.44%	6.42%	6.83%	6.78%	100.00%

Section 3a - Demographic Distribution of All Simulated Awardees by CD Typology (counts)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	435,601	460,270	693,998	158,036	145,714	137,381	2,031,000
Majority Black	77,678	1,178,542	682,573	80,523	143,795	144,889	2,308,000
Majority Hispanic	59,593	1,058,230	1,372,814	66,185	143,056	132,122	2,832,000
Majority Asian	4,633	25,627	32,652	60,427	9,908	8,753	142,000
Plurality White	167,882	233,370	180,034	67,217	76,232	73,265	798,000
Plurality Black	17,260	128,156	83,200	9,261	16,765	19,358	274,000
Plurality Hispanic	336,383	421,957	596,469	187,587	178,001	139,603	1,860,000
All Typologies	1,099,030	3,506,152	3,641,740	629,236	713,471	655,371	10,245,000

Section 3b - Demographic Distribution of All Simulated Awardees (demographic group as percentage of all insiders and outsiders in CD typology)

CD Typology	White	Black	Hispanic	Asian	Refused	All Other	Total
Majority White	21.45%	22.66%	34.17%	7.78%	7.17%	6.76%	100.00%
Majority Black	3.37%	51.06%	29.57%	3.49%	6.23%	6.28%	100.00%
Majority Hispanic	2.10%	37.37%	48.48%	2.34%	5.05%	4.67%	100.00%
Majority Asian	3.26%	18.05%	22.99%	42.55%	6.98%	6.16%	100.00%
Plurality White	21.04%	29.24%	22.56%	8.42%	9.55%	9.18%	100.00%
Plurality Black	6.30%	46.77%	30.36%	3.38%	6.12%	7.06%	100.00%
Plurality Hispanic	18.09%	22.69%	32.07%	10.09%	9.57%	7.51%	100.00%
All Typologies	10.73%	34.22%	35.55%	6.14%	6.96%	6.40%	100.00%

Exhibit 15 - Excerpt of Dr. Siskin's Table that Presented his Analysis of Net-Integrative Moves for Actual Awardees

Races	Total	Segregate	No Effect	Integrate	Net Effect Seg-Int
W vs. AA	8,224	203	7,435	586	-383
W vs. A	8,224	227	7,599	398	-171
W vs. H	8,224	312	7,136	776	-464
AA vs. H	8,224	697	6,389	1,138	-441
AA vs. A	8,224	176	7,493	555	-379
H vs. A	8,224	237	7,339	648	-411

(Excerpt taken from Dr. Siskin's Dec. 13, 2019 amended opposition report, at 57, Table 6 (top section).)

Exhibit 16 - Actual Awardees by Demographic Group Pairings, Net-Integrative Effect Disaggregated as between Insiders and Outsiders

(Counts)

Groups	Effect	Number	all_cb*	Net		Groups	Effect	Number	all_cb*	Net		Groups	Effect	Number	all_cb*	Net
W vs. AA	Segregate	151	0	-299		W vs. AA	Segregate	52	1	-84		W vs. AA	Segregate	203	Any	-383
W vs. AA	No Effect	1474	0			W vs. AA	No Effect	1594	1			W vs. AA	No Effect	3068	Any	
W vs. AA	Integrate	450	0			W vs. AA	Integrate	136	1			W vs. AA	Integrate	586	Any	
W vs. AA	Not In Group	2313	0			W vs. AA	Not In Group	2054	1			W vs. AA	Not In Group	4367	Any	
W vs. A	Segregate	144	0	-114		W vs. A	Segregate	83	1	-57		W vs. A	Segregate	227	Any	-171
W vs. A	No Effect	408	0			W vs. A	No Effect	660	1			W vs. A	No Effect	1068	Any	
W vs. A	Integrate	258	0			W vs. A	Integrate	140	1			W vs. A	Integrate	398	Any	
W vs. A	Not In Group	3578	0			W vs. A	Not In Group	2953	1			W vs. A	Not In Group	6531	Any	
W vs. H	Segregate	205	0	-285		W vs. H	Segregate	107	1	-179		W vs. H	Segregate	312	Any	-464
W vs. H	No Effect	1487	0			W vs. H	No Effect	1684	1			W vs. H	No Effect	3171	Any	
W vs. H	Integrate	490	0			W vs. H	Integrate	286	1			W vs. H	Integrate	776	Any	
W vs. H	Not In Group	2206	0			W vs. H	Not In Group	1759	1			W vs. H	Not In Group	3965	Any	
AA vs. H	Segregate	485	0	-399		AA vs. H	Segregate	212	1	-42		AA vs. H	Segregate	697	Any	-441
AA vs. H	No Effect	1928	0			AA vs. H	No Effect	2237	1			AA vs. H	No Effect	4165	Any	
AA vs. H	Integrate	884	0			AA vs. H	Integrate	254	1			AA vs. H	Integrate	1138	Any	
AA vs. H	Not In Group	1091	0			AA vs. H	Not In Group	1133	1			AA vs. H	Not In Group	2224	Any	
AA vs. A	Segregate	132	0	-316		AA vs. A	Segregate	44	1	-63		AA vs. A	Segregate	176	Any	-379
AA vs. A	No Effect	1345	0			AA vs. A	No Effect	1358	1			AA vs. A	No Effect	2703	Any	
AA vs. A	Integrate	448	0			AA vs. A	Integrate	107	1			AA vs. A	Integrate	555	Any	
AA vs. A	Not In Group	2463	0			AA vs. A	Not In Group	2327	1			AA vs. A	Not In Group	4790	Any	
H vs. A	Segregate	182	0	-229		H vs. A	Segregate	55	1	-182		H vs. A	Segregate	237	Any	-411
H vs. A	No Effect	1439	0			H vs. A	No Effect	1512	1			H vs. A	No Effect	2951	Any	
H vs. A	Integrate	411	0			H vs. A	Integrate	237	1			H vs. A	Integrate	648	Any	
H vs. A	Not In Group	2356	0			H vs. A	Not In Group	2032	1			H vs. A	Not In Group	4388	Any	
* all_cb was determined by joining against "beveridge_awd_unit_type" using field "all_cb"																

Exhibit 16 - Actual Awardees by Demographic Group Pairings, Net-Integrative Effect Disaggregated as between Insiders and Outsiders

(Percentages)

Groups	Effect*	Percentage	all_cb	Net		Groups	Effect*	Percentage	all_cb	Net		Groups	Effect*	Percentage	all_cb	Net		Relative percentage**
W vs. AA	Segregate	7.28%	0	-14.41%		W vs. AA	Segregate	2.92%	1	-4.71%		W vs. AA	Segregate	5.26%	Any	-9.93%		32.71%
W vs. AA	No Effect	71.04%	0			W vs. AA	No Effect	89.45%	1			W vs. AA	No Effect	79.54%	Any			
W vs. AA	Integrate	21.69%	0			W vs. AA	Integrate	7.63%	1			W vs. AA	Integrate	15.19%	Any			
W vs. AA	Not In Group	N/A	0			W vs. AA	Not In Group	N/A	1			W vs. AA	Not In Group	N/A	Any			
W vs. A	Segregate	17.78%	0	-14.07%		W vs. A	Segregate	9.40%	1	-6.46%		W vs. A	Segregate	13.41%	Any	-10.10%		45.87%
W vs. A	No Effect	50.37%	0			W vs. A	No Effect	74.75%	1			W vs. A	No Effect	63.08%	Any			
W vs. A	Integrate	31.85%	0			W vs. A	Integrate	15.86%	1			W vs. A	Integrate	23.51%	Any			
W vs. A	Not In Group	N/A	0			W vs. A	Not In Group	N/A	1			W vs. A	Not In Group	N/A	Any			
W vs. H	Segregate	9.40%	0	-13.06%		W vs. H	Segregate	5.15%	1	-8.62%		W vs. H	Segregate	7.33%	Any	-10.89%		65.98%
W vs. H	No Effect	68.15%	0			W vs. H	No Effect	81.08%	1			W vs. H	No Effect	74.45%	Any			
W vs. H	Integrate	22.46%	0			W vs. H	Integrate	13.77%	1			W vs. H	Integrate	18.22%	Any			
W vs. H	Not In Group	N/A	0			W vs. H	Not In Group	N/A	1			W vs. H	Not In Group	N/A	Any			
AA vs. H	Segregate	14.71%	0	-12.10%		AA vs. H	Segregate	7.84%	1	-1.55%		AA vs. H	Segregate	11.62%	Any	-7.35%		12.84%
AA vs. H	No Effect	58.48%	0			AA vs. H	No Effect	82.76%	1			AA vs. H	No Effect	69.42%	Any			
AA vs. H	Integrate	26.81%	0			AA vs. H	Integrate	9.40%	1			AA vs. H	Integrate	18.97%	Any			
AA vs. H	Not In Group	N/A	0			AA vs. H	Not In Group	N/A	1			AA vs. H	Not In Group	N/A	Any			
AA vs. A	Segregate	6.86%	0	-16.42%		AA vs. A	Segregate	2.92%	1	-4.17%		AA vs. A	Segregate	5.13%	Any	-11.04%		25.43%
AA vs. A	No Effect	69.87%	0			AA vs. A	No Effect	89.99%	1			AA vs. A	No Effect	78.71%	Any			
AA vs. A	Integrate	23.27%	0			AA vs. A	Integrate	7.09%	1			AA vs. A	Integrate	16.16%	Any			
AA vs. A	Not In Group	N/A	0			AA vs. A	Not In Group	N/A	1			AA vs. A	Not In Group	N/A	Any			
H vs. A	Segregate	8.96%	0	-11.27%		H vs. A	Segregate	3.05%	1	-10.09%		H vs. A	Segregate	6.18%	Any	-10.71%		89.52%
H vs. A	No Effect	70.82%	0			H vs. A	No Effect	83.81%	1			H vs. A	No Effect	76.93%	Any			
H vs. A	Integrate	20.23%	0			H vs. A	Integrate	13.14%	1			H vs. A	Integrate	16.89%	Any			
H vs. A	Not In Group	N/A	0			H vs. A	Not In Group	N/A	1			H vs. A	Not In Group	N/A	Any			
* "Not in group" not included in calculation																		
**CP beneficiary net percentage as percentage of non-beneficiary net percentage																		

Exhibit 17 - Moves Sought by Apparently Eligible Applicants (by Demographic Group Pairings), Net-Integrative Effect Disaggregated as between Insiders and Outsiders

(Counts)

NOT SCALED																
Groups	Effect	Number	cd_pref	Net		Groups	Effect	Number	cd_pref	Net		Groups	Effect	Number	cd_pref	Net
W vs. AA Section 3	Segregate	72797	0	-358187		W vs. AA Section 3	Segregate	1618	1	-5609		W vs. AA Section 3	Segregate	74415	Any	-363796
W vs. AA Section 3	No Effect	645987	0			W vs. AA Section 3	No Effect	52171	1			W vs. AA Section 3	No Effect	698158	Any	
W vs. AA Section 3	Integrate	430984	0			W vs. AA Section 3	Integrate	7227	1			W vs. AA Section 3	Integrate	438211	Any	
W vs. AA Section 3	Not In Group	1240841	0			W vs. AA Section 3	Not In Group	61975	1			W vs. AA Section 3	Not In Group	1302816	Any	
W vs. A Section 3	Segregate	53278	0	-64058		W vs. A Section 3	Segregate	1838	1	-598		W vs. A Section 3	Segregate	55116	Any	-64656
W vs. A Section 3	No Effect	180866	0			W vs. A Section 3	No Effect	14988	1			W vs. A Section 3	No Effect	195854	Any	
W vs. A Section 3	Integrate	117336	0			W vs. A Section 3	Integrate	2436	1			W vs. A Section 3	Integrate	119772	Any	
W vs. A Section 3	Not In Group	2039129				W vs. A Section 3	Not In Group	103729	1			W vs. A Section 3	Not In Group	2142858	Any	
W vs. H Section 3	Segregate	108002	0	-301581		W vs. H Section 3	Segregate	3329	1	-8041		W vs. H Section 3	Segregate	111331	Any	-309622
W vs. H Section 3	No Effect	612327	0			W vs. H Section 3	No Effect	46498	1			W vs. H Section 3	No Effect	658825	Any	
W vs. H Section 3	Integrate	409583	0			W vs. H Section 3	Integrate	11370	1			W vs. H Section 3	Integrate	420953	Any	
W vs. H Section 3	Not In Group	1260697	0			W vs. H Section 3	Not In Group	61794	1			W vs. H Section 3	Not In Group	1322491	Any	
AA vs. H Section 3	Segregate	265344	0	-358681		AA vs. H Section 3	Segregate	5476	1	-2033		AA vs. H Section 3	Segregate	270820	Any	-360714
AA vs. H Section 3	No Effect	990859	0			AA vs. H Section 3	No Effect	83068	1			AA vs. H Section 3	No Effect	1073927	Any	
AA vs. H Section 3	Integrate	624025	0			AA vs. H Section 3	Integrate	7509	1			AA vs. H Section 3	Integrate	631534	Any	
AA vs. H Section 3	Not In Group	510381	0			AA vs. H Section 3	Not In Group	26938	1			AA vs. H Section 3	Not In Group	537319	Any	
AA vs. A Section 3	Segregate	63270	0	-349939		AA vs. A Section 3	Segregate	1148	1	-2273		AA vs. A Section 3	Segregate	64418	Any	-352212
AA vs. A Section 3	No Effect	625317	0			AA vs. A Section 3	No Effect	49549	1			AA vs. A Section 3	No Effect	674866	Any	
AA vs. A Section 3	Integrate	413209	0			AA vs. A Section 3	Integrate	3421	1			AA vs. A Section 3	Integrate	416630	Any	
AA vs. A Section 3	Not In Group	1288813	0			AA vs. A Section 3	Not In Group	68873	1			AA vs. A Section 3	Not In Group	1357686	Any	
H vs. A Section 3	Segregate	100362	0	-258359		H vs. A Section 3	Segregate	2002	1	-7941		H vs. A Section 3	Segregate	102364	Any	-266300
H vs. A Section 3	No Effect	622857	0			H vs. A Section 3	No Effect	42354	1			H vs. A Section 3	No Effect	665211	Any	
H vs. A Section 3	Integrate	358721	0			H vs. A Section 3	Integrate	9943	1			H vs. A Section 3	Integrate	368664	Any	
H vs. A Section 3	Not In Group	1308669	0			H vs. A Section 3	Not In Group	68692	1			H vs. A Section 3	Not In Group	1377361	Any	

Exhibit 17 - Moves Sought by Apparently Eligible Applicants (by Demographic Group Pairings), Net-Integrative Effect Disaggregated as between Insiders and Outsiders

(Percentages)

NOT-SCALED RESULTS TRANSLATED TO PERCENTAGES																
Groups	Effect*	Percentage	cd_pref	Net	Groups	Effect	Percentage	cd_pref	Net	Groups	Effect	Percentage	cd_pref	Net		Relative percentage**
W vs. AA Section 3	Segregate	6.33%	0	-31.15%	W vs. AA Section 3	Segregate	2.65%	1	-9.19%	W vs. AA Section 3	Segregate	6.15%	Any	-30.05%		29.51%
W vs. AA Section 3	No Effect	56.18%	0		W vs. AA Section 3	No Effect	85.50%	1		W vs. AA Section 3	No Effect	57.66%	Any			
W vs. AA Section 3	Integrate	37.48%	0		W vs. AA Section 3	Integrate	11.84%	1		W vs. AA Section 3	Integrate	36.19%	Any			
W vs. AA Section 3	Not In Group	N/A	0		W vs. AA Section 3	Not In Group	N/A	1		W vs. AA Section 3	Not In Group	N/A	Any			
W vs. A Section 3	Segregate	15.16%	0	-18.23%	W vs. A Section 3	Segregate	9.54%	1	-3.10%	W vs. A Section 3	Segregate	14.87%	Any	-17.44%		17.03%
W vs. A Section 3	No Effect	51.46%	0		W vs. A Section 3	No Effect	77.81%	1		W vs. A Section 3	No Effect	52.83%	Any			
W vs. A Section 3	Integrate	33.38%	0		W vs. A Section 3	Integrate	12.65%	1		W vs. A Section 3	Integrate	32.31%	Any			
W vs. A Section 3	Not In Group	N/A			W vs. A Section 3	Not In Group	N/A	1		W vs. A Section 3	Not In Group	N/A	Any			
W vs. H Section 3	Segregate	9.56%	0	-26.69%	W vs. H Section 3	Segregate	5.44%	1	-13.14%	W vs. H Section 3	Segregate	9.35%	Any	-25.99%		49.23%
W vs. H Section 3	No Effect	54.19%	0		W vs. H Section 3	No Effect	75.98%	1		W vs. H Section 3	No Effect	55.31%	Any			
W vs. H Section 3	Integrate	36.25%	0		W vs. H Section 3	Integrate	18.58%	1		W vs. H Section 3	Integrate	35.34%	Any			
W vs. H Section 3	Not In Group	N/A	0		W vs. H Section 3	Not In Group	N/A	1		W vs. H Section 3	Not In Group	N/A	Any			
AA vs. H Section 3	Segregate	14.11%	0	-19.08%	AA vs. H Section 3	Segregate	5.70%	1	-2.12%	AA vs. H Section 3	Segregate	13.70%	Any	-18.25%		11.10%
AA vs. H Section 3	No Effect	52.70%	0		AA vs. H Section 3	No Effect	86.48%	1		AA vs. H Section 3	No Effect	54.34%	Any			
AA vs. H Section 3	Integrate	33.19%	0		AA vs. H Section 3	Integrate	7.82%	1		AA vs. H Section 3	Integrate	31.96%	Any			
AA vs. H Section 3	Not In Group	N/A	0		AA vs. H Section 3	Not In Group	N/A	1		AA vs. H Section 3	Not In Group	N/A	Any			
AA vs. A Section 3	Segregate	5.74%	0	-31.76%	AA vs. A Section 3	Segregate	2.12%	1	-4.20%	AA vs. A Section 3	Segregate	5.57%	Any	-30.47%		13.22%
AA vs. A Section 3	No Effect	56.75%	0		AA vs. A Section 3	No Effect	91.56%	1		AA vs. A Section 3	No Effect	58.38%	Any			
AA vs. A Section 3	Integrate	37.50%	0		AA vs. A Section 3	Integrate	6.32%	1		AA vs. A Section 3	Integrate	36.04%	Any			
AA vs. A Section 3	Not In Group	N/A	0		AA vs. A Section 3	Not In Group	N/A	1		AA vs. A Section 3	Not In Group	N/A	Any			
H vs. A Section 3	Segregate	9.28%	0	-23.88%	H vs. A Section 3	Segregate	3.69%	1	-14.62%	H vs. A Section 3	Segregate	9.01%	Any	-23.44%		61.24%
H vs. A Section 3	No Effect	57.57%	0		H vs. A Section 3	No Effect	78.00%	1		H vs. A Section 3	No Effect	58.54%	Any			
H vs. A Section 3	Integrate	33.16%	0		H vs. A Section 3	Integrate	18.31%	1		H vs. A Section 3	Integrate	32.45%	Any			
H vs. A Section 3	Not In Group	N/A	0		H vs. A Section 3	Not In Group	N/A	1		H vs. A Section 3	Not In Group	N/A	Any			
* "Not in group" not included in calculation																
**CP beneficiary net percentage as percentage of non-beneficiary net percentage																

Exhibit 18 - Defendant's Perpetuation of Segregation Simulation, Net-Integrative Effect
(1,000 Runs of Simulation with Community Preference in Effect, by Demographic Group Pairing)
Disaggregated as between CP-Beneficiary and Non-Beneficiary Simulated Awards

(Counts)

NOT SCALED													
Groups	Effect		pref=CB	Number	Net		pref=CB	Number	Net		pref=CB	Number	Net
W vs AA	Segregate		0	133,568	-425,171		1	47,982	-125,801		Any	181,550	-550,972
W vs AA	No Effect		0	1,344,122			1	1,812,936			Any	3,157,058	
W vs AA	Integrate		0	558,739			1	173,783			Any	732,522	
W vs AA	Not In Group		0	2,241,041			1	2,191,990			Any	4,433,031	
W vs AA	Race Refused		0	319,285			1	333,401			Any	652,686	
W vs. A	Segregate		0	105,812	-178,714		1	87,958	-68,995		Any	193,770	-247,709
W vs. A	No Effect		0	370,251			1	644,137			Any	1,014,388	
W vs. A	Integrate		0	284,526			1	156,953			Any	441,479	
W vs. A	Not In Group		0	3,516,987			1	3,337,690			Any	6,854,677	
W vs. A	Race Refused		0	319,285			1	333,401			Any	652,686	
W vs. H	Segregate		0	201,521	-349,875		1	123,718	-215,080		Any	325,239	-564,955
W vs. H	No Effect		0	1,340,947			1	1,760,560			Any	3,101,507	
W vs. H	Integrate		0	551,396			1	338,798			Any	890,194	
W vs. H	Not In Group		0	2,183,624			1	2,003,530			Any	4,187,154	
W vs. H	Race Refused		0	319,285			1	333,401			Any	652,686	
AA vs. H	Segregate		0	457,313	-530,630		1	228,316	-68,976		Any	685,629	-599,606
AA vs. H	No Effect		0	1,759,939			1	2,531,355			Any	4,291,294	
AA vs. H	Integrate		0	987,943			1	297,292			Any	1,285,235	
AA vs. H	Not In Group		0	1,072,187			1	1,169,596			Any	2,241,783	
AA vs. H	Race Refused		0	319,285			1	333,401			Any	652,686	
AA vs. A	Segregate		0	116,408	-443,787		1	39,792	-92,294		Any	156,200	-536,081
AA vs. A	No Effect		0	1,195,317			1	1,551,057			Any	2,746,374	
AA vs. A	Integrate		0	560,195			1	132,086			Any	692,281	
AA vs. A	Not In Group		0	2,405,550			1	2,503,756			Any	4,909,306	
AA vs. A	Race Refused		0	319,285			1	333,401			Any	652,686	
H vs. A	Segregate		0	175,649	-323,330		1	58,118	-197,830		Any	233,767	-521,160
H vs. A	No Effect		0	1,254,727			1	1,597,244			Any	2,851,971	
H vs. A	Integrate		0	498,979			1	255,948			Any	754,927	
H vs. A	Not In Group		0	2,348,133			1	2,315,296			Any	4,663,429	
H vs. A	Race Refused		0	319,285			1	333,401			Any	652,686	

Exhibit 18 - Defendant's Perpetuation of Segregation Simulation, Net-Integrative Effect
(1,000 Runs of Simulation with Community Preference in Effect, by Demographic Group Pairing)
Disaggregated as between CP-Beneficiary and Non-Beneficiary Simulated Awards

(Percentages)

NOT-SCALED RESULTS TRANSLATED TO PERCENTAGES													
Groups	Effect*	pref=CB	Percent	Net	pref=CB	Percent	Net	pref=CB	Percent	Net		cb net % as percentage of non-cb net %	non-cb net % as percentage of cb net %
W vs AA	Segregate	0	6.56%	-20.88%	1	2.36%	-6.18%	Any	4.46%	-13.53%		29.61%	337.68%
W vs AA	No Effect	0	66.00%		1	89.10%		Any	77.55%				
W vs AA	Integrate	0	27.44%		1	8.54%		Any	17.99%				
W vs. A	Segregate	0	13.91%	-23.50%	1	9.89%	-7.76%	Any	11.75%	-15.02%		33.03%	302.77%
W vs. A	No Effect	0	48.68%		1	72.45%		Any	61.49%				
W vs. A	Integrate	0	37.41%		1	17.65%		Any	26.76%				
W vs. H	Segregate	0	9.62%	-16.71%	1	5.57%	-9.67%	Any	7.53%	-13.09%		57.90%	172.71%
W vs. H	No Effect	0	64.04%		1	79.19%		Any	71.85%				
W vs. H	Integrate	0	26.33%		1	15.24%		Any	20.62%				
AA vs. H	Segregate	0	14.27%	-16.56%	1	7.47%	-2.26%	Any	10.95%	-9.58%		13.63%	733.72%
AA vs. H	No Effect	0	54.91%		1	82.81%		Any	68.53%				
AA vs. H	Integrate	0	30.82%		1	9.73%		Any	20.52%				
AA vs. A	Segregate	0	6.22%	-23.71%	1	2.31%	-5.36%	Any	4.35%	-14.91%		22.60%	442.57%
AA vs. A	No Effect	0	63.86%		1	90.02%		Any	76.40%				
AA vs. A	Integrate	0	29.93%		1	7.67%		Any	19.26%				
H vs. A	Segregate	0	9.10%	-16.76%	1	3.04%	-10.35%	Any	6.09%	-13.57%		61.76%	161.91%
H vs. A	No Effect	0	65.03%		1	83.57%		Any	74.26%				
H vs. A	Integrate	0	25.86%		1	13.39%		Any	19.66%				
* "Not in group" and "Race refused" not included in calculation													

Exhibit 19 - Lottery Unit Types with at Least Five CP-Beneficiary Awards but Closed to All Outsiders

HC Project No.	BR Size	Rent	CP awards other than disability	Income AMI
2	1	781	5	60
4	1	659	11	50
4	2	801	5	50
8	1	511	6	40
13	0	474	8	40
13	1	511	8	40
13	2	623	8	40
14	0	814	7	60
16	2	655	10	40
17	1	564	5	40
22	1	659	5	50
22	2	623	6	40
22	2	801	7	50
25	0	1103	7	130
83	1	640	8	50
83	2	1565	6	90
89	1	528	6	40
91	2	648	6	40
94	1	690	14	50
95	0	640	5	50
95	2	835	6	50
111	2	835	39	50
125	0	640	5	50
126	1	533	12	40
149	1	877	5	60
170	0	500	5	40
170	3	972	5	50
181	1	847	6	60
181	2	1024	5	60
183	0	651	11	50
183	1	699	10	50
183	2	849	10	50
198	1	850	7	60
202	1	860	5	60
208	1	769	15	50
211	2	647	6	40
220	1	861	33	60
220	2	1042	17	60
232	1	847	10	60
232	1	1178	5	80
253	1	1208	10	100
253	2	1458	9	100
257	2	655	14	40
257	3	749	8	40
263	1	929	6	60
272	1	690	9	50
272	2	836	9	50
275	1	532	5	40
275	1	847	22	60
275	2	647	8	40
275	3	1182	9	60
276	0	865	9	60
276	0	1729	9	145
276	1	589	6	40
276	1	929	21	60
276	1	1320	5	100
276	2	1121	14	60
276	2	1591	11	100
287	2	1183	7	60
310	2	676	7	40
317	2	1047	7	60

Exhibit 20 - Unique Lottery Entrants by Race by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside CD (Across)

White Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside CD (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	4,701	0	0	0	0	19,280	23,981
	19.60%	0%	0%	0%	0%	80.40%	
2-4 Lotteries	616	0	254	1,795	576	12,819	16,060
	3.84%	0%	1.58%	11.18%	3.59%	79.82%	
5-9 Lotteries	158	54	143	646	1,755	7,269	10,025
	1.58%	0.54%	1.43%	6.44%	17.51%	72.51%	
10-19 Lotteries	114	10	78	375	2,087	4,497	7,161
	1.59%	0.14%	1.09%	5.24%	29.14%	62.80%	
20 or more Lotteries	83	18	58	279	2,866	3,575	6,879
	1.21%	0.26%	0.84%	4.06%	41.66%	51.97%	
Total	5,672	82	533	3,095	7,284	47,440	64,106
	8.85%	0.13%	0.83%	4.83%	11.36%	74.00%	

Black Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside CD (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	11,780	0	0	0	0	81,531	93,311
	12.62%	0%	0%	0%	0%	87.38%	
2-4 Lotteries	1,477	0	501	5,099	1,892	34,045	43,014
	3.43%	0%	1.16%	11.85%	4.40%	79.15%	
5-9 Lotteries	1,054	17	283	2,417	7,960	23,689	35,420
	2.98%	0.05%	0.80%	6.82%	22.47%	66.88%	
10-19 Lotteries	964	29	307	1,618	12,159	16,125	31,202
	3.09%	0.09%	0.98%	5.19%	38.97%	51.68%	
20 or more Lotteries	997	174	852	1,641	25,035	12,753	41,452
	2.41%	0.42%	2.06%	3.96%	60.40%	30.77%	
Total	16,272	220	1,943	10,775	47,046	168,143	244,399
	6.66%	0.09%	0.80%	4.41%	19.25%	68.80%	

Hispanic Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside CD (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	13,841	0	0	0	0	75,902	89,743
	15.42%	0%	0%	0%	0%	84.58%	
2-4 Lotteries	1,641	0	580	5,225	1,948	37,641	47,035
	3.49%	0%	1.23%	11.11%	4.14%	80.03%	
5-9 Lotteries	915	58	307	2,268	7,779	25,792	37,119
	2.47%	0.16%	0.83%	6.11%	20.96%	69.48%	
10-19 Lotteries	724	36	298	1,576	11,406	17,513	31,553
	2.29%	0.11%	0.94%	4.99%	36.15%	55.50%	
20 or more Lotteries	642	115	563	1,906	23,191	14,199	40,616
	1.58%	0.28%	1.39%	4.69%	57.10%	34.96%	
Total	17,763	209	1,748	10,975	44,324	171,047	246,066
	7.22%	0.08%	0.71%	4.46%	18.01%	69.51%	

Asian Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside CD (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	3,419	0	0	0	0	17,579	20,998
	16.28%	0%	0%	0%	0%	83.72%	
2-4 Lotteries	282	0	66	1,078	255	8,849	10,530
	2.68%	0%	0.63%	10.24%	2.42%	84.04%	
5-9 Lotteries	138	3	37	205	1,017	5,379	6,779
	2.04%	0.04%	0.55%	3.02%	15%	79.35%	
10-19 Lotteries	112	1	18	121	1,161	3,604	5,017
	2.23%	0.02%	0.36%	2.41%	23.14%	71.84%	
20 or more Lotteries	98	1	25	141	1,797	3,113	5,175
	1.89%	0.02%	0.48%	2.72%	34.72%	60.15%	
Total	4,049	5	146	1,545	4,230	38,524	48,499
	8.35%	0.01%	0.30%	3.19%	8.72%	79.43%	

Exhibit 21 - Unique Lottery Entrants by Race by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside Borough (Across)

White Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside Borough (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	13,699	0	0	0	0	10,282	23,981
	57.12%	0%	0%	0%	0%	42.88%	
2-4 Lotteries	4,020	0	1,794	4,468	915	4,863	16,060
	25.03%	0%	11.17%	27.82%	5.70%	30.28%	
5-9 Lotteries	732	965	1,882	2,874	1,861	1,711	10,025
	7.30%	9.63%	18.77%	28.67%	18.56%	17.07%	
10-19 Lotteries	207	606	1,551	2,606	1,519	672	7,161
	2.89%	8.46%	21.66%	36.39%	21.21%	9.38%	
20 or more Lotteries	37	430	1,539	3,079	1,490	304	6,879
	0.54%	6.25%	22.37%	44.76%	21.66%	4.42%	
Total	18,695	2,001	6,766	13,027	5,785	17,832	64,106
	29.16%	3.12%	10.55%	20.32%	9.02%	27.82%	

Black Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside Borough (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	52,701	0	0	0	0	40,610	93,311
	56.48%	0%	0%	0%	0%	43.52%	
2-4 Lotteries	12,142	0	5,766	12,411	2,546	10,149	43,014
	28.23%	0%	13.40%	28.85%	5.92%	23.59%	
5-9 Lotteries	2,981	4,260	7,225	10,876	5,871	4,207	35,420
	8.42%	12.03%	20.40%	30.71%	16.58%	11.88%	
10-19 Lotteries	925	3,751	7,377	12,153	5,419	1,577	31,202
	2.96%	12.02%	23.64%	38.95%	17.37%	5.05%	
20 or more Lotteries	195	3,575	9,449	21,029	6,440	764	41,452
	0.47%	8.62%	22.80%	50.73%	15.54%	1.84%	
Total	68,944	11,586	29,817	56,469	20,276	57,307	244,399
	28.21%	4.74%	12.20%	23.11%	8.30%	23.45%	

Hispanic Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside Borough (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	52,311	0	0	0	0	37,432	89,743
	58.29%	0%	0%	0%	0%	41.71%	
2-4 Lotteries	12,153	0	5,902	13,906	2,822	12,252	47,035
	25.84%	0%	12.55%	29.57%	6%	26.05%	
5-9 Lotteries	2,920	3,972	7,294	11,348	6,597	4,988	37,119
	7.87%	10.70%	19.65%	30.57%	17.77%	13.44%	
10-19 Lotteries	720	3,267	7,607	11,624	6,392	1,943	31,553
	2.28%	10.35%	24.11%	36.84%	20.26%	6.16%	
20 or more Lotteries	173	3,005	9,020	20,113	7,497	808	40,616
	0.43%	7.40%	22.21%	49.52%	18.46%	1.99%	
Total	68,277	10,244	29,823	56,991	23,308	57,423	246,066
	27.75%	4.16%	12.12%	23.16%	9.47%	23.34%	

Table 24: Asian Lottery Entrants by Total Lotteries Entered (Down) and Percent of Applications to Projects Outside Borough (Across)							
	0.00%	**01 to 24.99%**	**25.00 to 49.99%**	**50.00 to 74.99%**	**75.00 to 99.99%**	**100%**	**Total**
One Lottery	11,281	0	0	0	0	9,717	20,998
	53.72%	0%	0%	0%	0%	46.28%	
2-4 Lotteries	1,801	0	978	3,646	679	3,426	10,530
	17.10%	0%	9.29%	34.62%	6.45%	32.54%	
5-9 Lotteries	332	520	973	1,913	1,750	1,291	6,779
	4.90%	7.67%	14.35%	28.22%	25.82%	19.04%	
10-19 Lotteries	90	346	784	1,646	1,650	501	5,017
	1.79%	6.90%	15.63%	32.81%	32.89%	9.99%	
20 or more Lotteries	28	361	703	1,887	2,014	182	5,175
	0.54%	6.98%	13.58%	36.46%	38.92%	3.52%	
Total	13,532	1,227	3,438	9,092	6,093	15,117	48,499
	27.90%	2.53%	7.09%	18.75%	12.56%	31.17%	