The *Senate Alternative Revision (February 12, 2012)* Redistricting Plan: a Basis for Evaluating the LATFOR Senate Proposal Released on January 26, 2012

Todd A. Breitbart[*]
February 21, 2012

At the hearing on Thursday, February 9, 2012 of the NYS Legislative Task Force on Demographic Research and Reapportionment (LATFOR), in Hauppauge, I submitted a redistricting plan titled the *Senate Alternative (February 9, 2012)*. This was accompanied by extensive documentation showing how the *Senate Alternative (February 9, 2012)* illustrated the principles that ought to be the basis for any Senate redistricting plan, and demonstrating, by comparison, how far and in how many ways the Senate Majority proposal, published by LATFOR on January 26th, departs from sound principles. I submitted the block assignment list to LATFOR by e-mail on the evening of February 9th, so that the *Senate Alternative (February 9, 2012)* could be evaluated with geographic information system (GIS) redistricting software.

Then, on February 15, I sent a block assignment list to LATFOR by e-mail for the *Senate Alternative Revision (February 12, 2012)*, which corrects some flaws in the original version. This statement introduces the updated and expanded documentation of this proposal, and of the comparison with the Senate Majority / LATFOR proposal.

In addition to the block assignment list, the submission includes the following:

1. Maps showing details of the *Senate Alternative Revision (February 12, 2012)*.
2. This comparison of the *Senate Alternative Revision (February 12, 2012)* with the Senate Majority / LATFOR plan of January 26th, which is further documented by:
    a. Tables of demographic data for both plans.
    b. Measures of district compactness for both plans.
    c. Thematic maps of both plans, illustrating the size and distribution of district population deviations.
3. An appendix on determining the number of Senate districts.
4. An appendix, consisting of a fact sheet and maps, illustrating the history of racially discriminatory Senate redistricting in Long Island.
5. An appendix describing the statistical analysis of 'communities defined by actual shared interests,' which provides a partial basis for the *Senate Alternative Revision (February 12, 2012)*.

---

[*] I directed the staff work on redistricting for the Minority (Democratic) Leaders of the New York State Senate from 1980 through my retirement at the end of 2005. I have offered advice to the redistricting staff of the Democratic Senate Conference during the current redistricting process, and exchanged information with them, but I do not now work for or represent the Minority Leader. I consulted with the Committee on Election Law of the Bar Association of the City of New York during the preparation of their 2007 report on reform of the redistricting process, and was the principal drafter of the text, but I do not, and never did, represent or speak for the Committee or the Association. (I am not a lawyer.) *The opinions I express are solely my own.*

The *Senate Alternative Revision (February 12, 2012)*, like the earlier version, was drafted independently and on my own initiative. Neither the original version nor the revisions were requested, or subject to review or approval, by any member of the Legislature or the legislative staff. As I testified on February 9th, Senator Martin Dilan (the Senate Minority appointee to LATFOR) and his staff saw the proposal for the first time that day, at the same time as the other members and staff of LATFOR.

The *Senate Alternative Revision (February 12, 2012)* is a complete, correct Senate plan that could be enacted into law.

As I said of the earlier version, the *Senate Alternative Revision (February 12, 2012)* differs in some particulars from other Senate plans previously submitted to LATFOR – the Unity Plan Update and the Common Cause plans. In relation to those other submissions, it should be regarded as part of a continuing conversation about how best to apply sound principles. In relation to the Senate Majority / LATFOR proposal, however, it reveals the difference between principles that are valid, reasonable, and just, and those that are not.

I identified the original version of my Senate redistricting proposal by the date on which I intended to testify about it before LATFOR. The revision is identified by the date on which I completed the technical work, which I thought to be a fitting way to celebrate Lincoln's Birthday.

The *Senate Alternative Revision (February 12, 2012)*[1] differs from the earlier version in the following particulars:

i. Schenectady County is now kept whole within a single district (ASD 48), reducing from eight to seven the number of 'minor counties' (those without sufficient population to form at least one whole district) that are divided. The earlier version included a pair of districts in which each district contained parts of both Saratoga and Schenectady Counties. As discussed below, there is justification for only one such pair of bi-county districts in the state.

ii. The part Queens Community District 4 that would not fit in ASD 14 was split between two districts in the previous version. ASD 14 consists simply of Community District 3, plus as much of Community District 4 as will make up the full district population. The balance of Community District 4, in the Elmhurst neighborhood, is now included with the whole adjoining Woodside neighborhood in ASD 15. ASD 15 now consists of Community District 1, the balance of Community District 4, as just explained, and as much of Community District 2 as will fit within the required district population.

iii. The boundary in East Harlem between ASD 30 and ASD 32 has been revised in the interest of compactness, and the boundary between ASD 28 and ASD 30 on the Upper West Side has been slightly altered.

iv. The boundaries of ASD's 5, 6, and 7 have been slightly altered to create smoother boundary lines that better follow village boundaries where possible.

[1] **To avoid confusion I will refer, throughout this document, to the districts proposed in the *Senate Alternative (February 12, 2012)* as 'ASD #X' ('A' for 'Alternative), to districts proposed by the Senate Majority as 'MSD #X' ('M' for 'Majority'), and to the districts enacted in 2002 or in previous decades simply as 'SD #X.' (I have not, however, revised the attached memorandum on Long Island to conform with this protocol.)**

The Number of Senate Districts

All constitutional precedent and prior practice, applied to the 2010 census counts, would now yield a Senate of 62 districts. The *Senate Alternative Revision (February 12, 2012)* therefore consists of that number of districts. The rationale now offered by the Senate Majority for creating 63 districts is irrational and inconsistent. The Senate Majority's outside counsel framed his exposition of the new – or newly disclosed – constitutional theory as a correction of the supposed errors in my previous testimony to LATFOR on this subject. Essentially, I am accused of supposing that he meant what he said, and said what he meant, ten years ago. I have attempted to straighten out the confusion in a statement, *The Size of the New York State Senate: a Reply to Michael Carvin*, which is attached (along with a version of my prior testimony, updated to take account of the adjusted, legally-mandated redistricting database that LATFOR finally produced in the first week of January).

In addition, it would be useful to dispose of two excuses that have recently been offered to the press by Senators Skelos and Nozzolio. (Readers who find the following discussion obscure, will find a full explanation in the statement and previous testimony that are attached.)

The new revelation did not have to wait until January, when LATFOR, after much unjustified delay, finally produced the adjusted database required by Chap. 57 of the Laws of 2010. The table appended to Mr. Carvin's January 5, 2012 memorandum uses the unadjusted PL94-171 population counts released by the Census Bureau on March 25, 2011. He does not even refer to the adjusted database. The identical memorandum could have been written at the end of last March – except that the Senate Majority had not yet decided what number of districts they wanted to pretend the Constitution requires.

Furthermore, no method for determining the size of the Senate – neither the actual practice, nor Mr. Carvin's fanciful invention – was upheld by any court reviewing the 2002 Senate plan. The question was last litigated in *Schneider v. Rockefeller*, in 1972.

The only judicial ruling on the 2002 Senate plan was *Rodriguez v. Pataki*, 308 F.Supp.2d 346 (2004), which refers eight times to the creation of 62 Senate districts. (*Id*. at 353, 355, 356, FN7, 357, 358, 367, 441) The only reference to any possible legal controversy concerning the increase from 61, and the new constitutional theory that was offered to rationalize it, is the observation that the Department of Justice had granted VRA §5 preclearance to the increase. (*Id.* at 358). There are five references to NYS CONST. art. III, §4. (*Id.* at 354, FN25, 450, 451, 452.) None of these deals with the third paragraph of art. III, §4 – the formula for determining the size of the Senate.

The summary of 'Holdings' in the syllabus, and the Introduction of the opinion (*Id.* at 351- 354) show that the court made no ruling on the proper interpretation of the NYS constitutional rule for determining the size of the Senate. The opinion's summary of the Joint Consolidated and Amended Complaint (*Id*. at 359-360) shows that this question

was not before the Court. The parallel case in NY County Supreme Court, *Allen v. Pataki*, addressed the same questions, and did not result in a ruling on the merits.

And since Mr. Carvin's March 7, 2002 memorandum gives no indication that he proposed to treat the Suffolk/Richmond combination differently from Queens/Nassau, no one, including the *Rodriguez* Court and the Department of Justice, could even have been aware of this element of his constitutional theory - supposing that it was actually invented before last month. Nor could this distinction have been inferred from the Legislature's actual practice in 2002, since both methods of aggregation would have produced the same result for Richmond/Suffolk on the basis of the 2000 census counts (unlike the difference that arises when the 2010 census counts are applied).

Population Deviations

The *Senate Alternative Revision (February 12, 2012)* shows that the extreme population deviations in the Senate Majority / LATFOR proposal have no justification.

The deviation statistics for *Senate Alternative Revision (February 12, 2012)* are:

Total deviation (range between the most and least populous districts): 18,591
Total deviation %: 5.95%
Mean deviation %: 1.10%
Standard deviation %: 1.29%

The deviation statistics for the Senate Majority / LATFOR proposal are:

Total deviation: 27,035
Total deviation %: 8.80%
Mean deviation %: 3.67%
Standard deviation %: 3.85%

The *Senate Alternative Revision (February 12, 2012)* has no district with a population as much as 4% above the ideal population, only two with populations more than 3% above the ideal, and none with a population as much as 3% below the ideal.

The Senate Majority / LATFOR proposal has 23 districts with a population more than 4% below the ideal, and 26 districts with a population more than 3% above the ideal. (Neither plan has a district with a population more than 4% above the ideal.)

The *Senate Alternative Revision (February 12, 2012)* achieves this much higher degree of population equality, by every measure, while (as discussed further below):

a. Avoiding the regional malapportionment of the Senate Majority proposal;
b. Dividing fewer counties;
c. Achieving a higher degree of compactness by every measure; and
d. Providing better representation for members of minority groups.

Regional Apportionment

In the Senate Majority / LATFOR proposal, the contiguous cluster of 25 underpopulated upstate districts (MSD's 38-40 and 42-63) has a total population of 7,329,048. With a statewide average district population of 307,356 (based on the proposed 63 districts), those 25 upstate districts have enough population for 23.85 districts of the ideal population. In other words, the upstate region gets 1-and-1/7th district more than its share of the state population entitles it to.

At the same time, the contiguous cluster of 26 districts wholly or partly within New York City (MSD's 10-34 and 36) has enough population for 26.93 districts of the ideal population. In other words, New York City gets almost one full district less than its share of the state population entitles it to.[2]

The regional skewing of the population extremes is shown clearly in the thematic map titled, *Proposed Senate Districts, LATFOR January 26, 2012, % Deviation from Ideal Population, Based on LATFOR Adjusted Database.*

The *Senate Alternative Revision (February 12, 2012)* shows an entirely different pattern. In the two areas – New York City and Long Island - where large numbers of districts must have almost exactly equal populations, due to the NYS Constitution's block-on-border rule, the district populations are less than one per-cent above or below the ideal. There is no resulting malapportionment.

The 27 districts wholly or partly within New York City (ASD's 10-36) have the aggregate population for 26.78 districts of the ideal population. Include the two adjoining districts in lower Westchester that are part of the same 'block-on-border' cluster (ASD's 37 and 38), and the 29 districts have the population for 28.76 districts of the ideal population.[3]

The 26 districts north of New York City have the population for 26.14 districts of the ideal population. Subtract from this group the two Westchester districts mentioned just above, and the 24 upstate districts have the population for 24.15 districts of the ideal population.[4]

---

[2] Three Senate Majority / LATFOR districts in Westchester or the Mid-Hudson Valley (MSD's 35, 37, and 41) have populations almost exactly at the mean, ranging from 107 persons above the mean, (+0.03%), to 596 persons below (-0.19%). For this reason, including these districts in either of the clusters identified above will not change the apportionment arithmetic.

[3] In the statement I submitted on February 9th, I presented the same arithmetic for "[t]he 26 New York City districts," referring only to the districts (ASD's 10-35) wholly within the city. I then included the Bronx/Westchester ASD 36 among "the three adjoining districts in lower Westchester that are part of the same 'block-on-border' cluster." The categorization used here is parallel to that used to describe the Senate Majority / LATFOR proposal. The arithmetic is otherwise the same as in the earlier document.

[4] The apportionment figures add up, statewide, when Long Island is included. In the *Senate Alternative Revision (February 12, 2012)*, the nine Long Island districts (ASD's 1-9) have the aggregate population for 9.08 districts of the ideal population. In the Senate Majority / LATFOR proposal, the nine Long Island districts (MSD's 1-9) have the population for 9.23 districts of the ideal population (based on 63 districts).

The stark difference between the two proposals can be seen clearly by comparing the thematic map of the Senate Majority / LATFOR proposal with the map titled, *Senate Alternative Revision, February 12, 2012, % Deviation from Ideal Population, Based on LATFOR Adjusted Database*.

Not only are the deviations smaller on the whole in the *Senate Alternative Revision (February 12, 2012)*, but the distribution is also radically different. The upstate region shows a mix of under- and over-populated districts, and the most and least populous districts are both located upstate. Indeed, all the districts that are more than one per-cent above or below the ideal are located upstate. This is the pattern that results when population deviations are used for the legitimate purpose of minimizing the division of counties, as required by the NYS Constitution.

The malapportionment in the Senate Majority / LATFOR proposal is not the consequence of population deviations that serve some other, legitimate purpose. The extreme population deviations have been designed for the purpose of producing the malapportionment.

County Integrity

The strict rule in Article III, § 4, of the NYS Constitution, prohibiting the division of any county by Senate districts not wholly contained within the county, must now yield to the population equality standard arising from the Equal Protection Clause of the 14th Amendment. But the county integrity rule must still be observed *to the degree* that the population equality standard will permit.

The *Senate Alternative Revision (February 12, 2012)* minimizes departures from the county integrity rule. The Senate Majority / LATFOR proposal virtually erases county boundaries as the basis for drawing Senate districts.

Districts Wholly Within a Single Populous County.

Rockland and Albany Counties each have the correct population to constitute Senate districts by themselves. But both are divided in the Senate Majority / LATFOR proposal. And it is obvious from the promiscuous division of the surrounding counties that neither is divided so that another nearby county can be kept intact.

In contrast, the *Senate Alternative Revision (February 12, 2012)* creates one district that is simply Albany County, and another that is simply Rockland County.

Monroe County has the population for two whole districts and a fraction, and Orange County has the population for one whole district and a fraction. But in the Senate Majority / LATFOR proposal, Monroe County has only one wholly contained district, and is split up among five others, while Orange County has no wholly contained district.

In contrast, the *Senate Alternative Revision (February 12, 2012)* creates two districts wholly within Monroe County and one district wholly within Orange County.

The Senate Majority / LATFOR proposal creates three districts wholly within Nassau County, while the *Senate Alternative Revision (February 12, 2012)* creates four.

The Senate Majority / LATFOR proposal creates two districts wholly within Bronx County, while the *Senate Alternative Revision (February 12, 2012)* creates three.

There is no county in which the Senate Majority / LATFOR proposal creates more wholly contained districts than the *Senate Alternative Revision (February 12, 2012).* On the other hand, as can be seen from details above, the *Senate Alternative Revision (February 12, 2012)* creates six more districts wholly contained within a single county than the Senate Majority / LATFOR proposal (one each in Albany, Bronx, Monroe, Nassau, Orange, and Rockland Counties).

Splitting of 'Minor Counties'

A 'minor county,' with respect to redistricting, is one that does not have the population for even one wholly contained district. Any given 'minor county' might be kept intact within a single district, but some 'minor counties' will almost certainly have to be divided in a plan that complies with the 14th Amendment population equality standard. Due respect for the county integrity rule of the NYS Constitution requires, however, that the number of 'minor counties' divided, and the number of districts among which any such county is divided, be minimized.

The Senate Majority / LATFOR proposal divides 16 'minor counties': Cayuga, Chenango, Dutchess, Delaware, Herkimer, Livingston, Oneida, Ontario, Putnam Rensselaer, St. Lawrence, Saratoga, Schenectady, Tompkins, Ulster, and Washington.

The *Senate Alternative Revision (February 12, 2012)*, even though its total population deviation is much smaller, divides only seven: Broome, Dutchess, Niagara, Oswego, Ontario, Saratoga, and Steuben.[5]

The degree to which individual 'minor counties' are divided is also remarkable. In the Senate Majority / LATFOR proposal, three 'minor counties' are each divided among three districts: Cayuga (MSD's 50, 51, and 54), St. Lawrence (MSD's 45, 47, and 48), and Tompkins (MSD's 51, 54, and 58). And Ulster County is divided among *four* districts (MSD's 39, 42, 46, and 51). In the *Senate Alternative Revision (February 12, 2012)* only Saratoga County is divided among three districts (ASD's 46, 47, and 48).

[5] The earlier version of the *Senate Alternative* also divided Schenectady County. It proved to be very simple to revise the plan to keep Schenectady County intact, and to avoid a pair of Saratoga / Schenectady districts, without increasing the total deviation.

Pairs of Bi-County Districts

The Senate Majority / LATFOR proposal creates seven pairs of districts in which both districts contain parts of the same two counties. The pairs of bi-county districts are:

Monroe / Ontario: MSD's 54 and 55
Cayuga / Tompkins: MSD's 51 and 54
Delaware / Ulster: MSD's 42 and 51
Orange / Ulster: MSD's 39 and 42
Dutchess / Putnam: MSD's 40 and 41
Bronx / Westchester: MSD's 34 and 36
Nassau / Suffolk: MSD's 5 and 8

The *Senate Alternative Revision (February 12, 2012)*, in contrast, has only one pair of bi-county districts: the two Bronx / New York ASD's 31 and 32, which are designed to provide appropriate representation for Latino communities.

Moreover, the Bronx / New York county line – quite unlike the county lines that are breached by the pairs of bi-county districts in the Senate Majority / LATFOR plan – has lost almost all significance as a boundary between local government jurisdictions.[6] Yet the Senate Majority / LATFOR proposal creates pairs of bi-county districts without restraint throughout the state, including a Bronx / Westchester pair, while avoiding such a pairing only within New York City.

In upholding the 1992 Senate plan, the Court of Appeals said, "Although we are troubled by the number of divided counties in the new plan and by the four bi-county pairings, it is not appropriate for us to substitute our evaluation of the relevant statistical data for that of the Legislature." (*Wolpoff v. Cuomo*, 80 NY2d 70, 80 (1992)).

[6] Elsewhere (including the Bronx / Westchester and Queens / Nassau lines) persons residing on opposite sides of a county line rely on different local jurisdictions for schools, libraries, county and local police, sheriffs (who run the jails), courts, district attorneys, local roads, sewers, water supply, public health, public hospitals, etc. They elect separate county and local legislatures and executives. They have different local tax structures and rates, and are affected differently by state financing for education and Medicaid. Regional public transit agencies, such as the MTA and CDTA, constitute a partial exception in some areas.

The City of New York has its own personal income tax. Except for the City of Yonkers, other counties and local jurisdictions do not. Other counties and sub-county jurisdictions therefore rely on property taxes to a greater degree than the City of New York.

Within New York City, income and property tax rates are uniform across county boundaries, which have almost no remaining jurisdictional significance except for court administration and district attorneys. (County boundaries within New York City used to be of much more importance. The elected county sheriffs within New York City were replaced by the NYC Dept. of Corrections in 1942. The Borough Presidents, in addition to their former authority over the NYC budget and contracts as members of the Board of Estimate, were once responsible for road and sewer maintenance, duties now assumed by the City of New York. And of course, the county integrity rule in Article III, § 4, of the NYS Constitution predates the formation of the City of Greater New York.)

In his dissent, arguing that the Senate plan ought to have been struck down on those very grounds, Judge Titone said, "I am particularly concerned that the tolerance the majority has today expressed for a plan that all but disregards the integrity of county borders will be read by many as a signal that our State constitutional provisions no longer represent serious constraints on the critically important redistricting process." (*id*. at 85).

Judge Titone's fears have now been fully realized. Whether or not the even more egregious departures from the requirements of Article III, § 4, in the current Senate Majority / LATFOR proposal would now call for judicial intervention, this proposal should certainly be rejected by the Legislature and the Governor.

Compactness

The attached tables show that the *Senate Alternative Revision (February 12, 2012)* achieves a higher degree of district compactness than the Senate Majority / LATFOR proposal, by every standard measure available in the *Maptitude for Redistricting* (Version 4.6) redistricting software.[7] It accomplishes this even while showing far more respect for county integrity and achieving much smaller population deviations.

The Senate Majority / LATFOR plan contains many districts whose boundaries are so intricately convoluted and intertwined that it is impossible to follow them, except on a large-scale map. The most outstanding examples are MSD's 11, 12, 14, 15, 16, 19, 22, 34, 35, 37. This list does not include many other districts that are highly, and unjustifiably, non-compact, but that can at least be followed without too much difficulty on a map.

In contrast, the *Senate Alternative Revision (February 12, 2012)* districts can be easily distinguished even on a small-scale map. See the attached maps, and especially the very small-scale insets showing the New York City and suburban districts in the maps titled, *Senate Alternative Revision (Feb. 12, 2012)*, and *Senate Alternative Revision (Feb. 12, 2012), % Deviation from Ideal Population, Based on LATFOR Adjusted Database*.

The requirement of Article III, § 4, that Senate districts shall "be in as compact a form as practicable," is now being treated with utter contempt, as an absolutely dead letter. There is some dispute about which eminent New York statesman first asked, "What's the constitution among friends?" But if his identity can be settled, the Senate Majority / LATFOR proposal ought to be dedicated to his memory.

The Absence of Justifying Trade-offs in the Senate Majority Proposal

Each of the above comparisons understates the flaws of the Senate Majority / LATFOR proposal. There are significant potential trade-offs among the redistricting

[7] The latest version of *Maptitude for Redistricting* includes an additional measure, the Length-Width measure. Since I do not have the latest version, I have not been able to evaluate the plans using that additional measure.

criteria: population equality, preservation of local government units such as counties, and compactness. More counties can generally be kept intact with the flexibility allowed by a larger total deviation. Greater compactness can be achieved if counties can be freely divided. This is especially the case in New York State, where counties have irregular shapes and highly unequal populations. And compactness suffers when a county or town with extensive land area must be assigned to so as to make the adjoining districts more nearly equal in population, as the NYS Constitution requires.

And yet – the *Senate Alternative Revision (February 12, 2012)* is superior to the Senate Majority / LATFOR proposal by all of these criteria at the same time. If the *Senate Alternative Revision (February 12, 2012)* had the population deviations of the Senate Majority / LATFOR proposal, it could keep even more counties intact. If it divided more counties, it could achieve a higher degree of compactness. Comparing the plans by one criterion at a time makes the Senate Majority / LATFOR proposal, bad as it is, look better than it is.

Representation of Minority Groups

From the foregoing discussion, it will be evident that the failure of the Senate Majority / LATFOR proposal to provide fair representation to minority groups does not result from adherence to objective race-neutral redistricting principles. In several instances, it is the direct result of departures from those principles.

Long Island

The systematic splitting of African-American and Latino communities in Long Island by Senate district boundaries is continued in the Senate Majority / LATFOR proposal – for what will now be a full half-century. The attached fact sheet, maps, and demographic tables bring this appalling history up to date[8]

The *Senate Alternative Revision (February 12, 2012)* shows that adhering to other objective redistricting criteria, and uniting what the US Supreme Court has called "communities defined by actual shared interests" – *not* merely or primarily race or ethnicity – will produce Long Island Senate districts in which the splitting of the black and Hispanic communities does not continue, and in which all citizens of Long Island can be fairly represented.[9]

[8] See these attachments: *Facts About Racially Discriminatory State Senate Redistricting in Nassau and Suffolk Counties: 1992-2012*; the set of thematic maps, *Maps: Long Island Black and Hispanic Population 1970-2010, with Senate Districts 1972 to Proposed 2012*; and the demographic table, *Senate Majority / LATFOR Proposal – January 26, 2012*.

[9] See the map set, *District Maps – Senate Alternative Revision – 12 February 2012*; the demographic table, *Senate Alternative (Revised February 12, 2012)*; the section below, *'Communities Defined By Actual Shared Interests'*; the technical appendix, *Communities Defined By Actual Shared Interests: a Statistical Analysis*; and the associated map set, *Maps – Senate Alternative Revision – 12 February 2012 – with Principal Components*.

The Bronx and Upper Manhattan

By denying New York City its fair apportionment of districts, by creating a pair of Bronx/Westchester districts where one would do, and by departing shamelessly from the compactness rule of the NYS Constitution, the Senate Majority plan provides only two districts in the Bronx and northern Manhattan with a Latino majority of the citizen voting-age population (CVAP), and only two more with a Latino plurality.

In contrast, the *Senate Alternative Revision (February 12, 2012)* creates *five* districts in this area with a Hispanic CVAP majority – and it creates those districts as a direct result of minimizing population deviations, fairly apportioning districts to New York City (and every other region of the state), avoiding excess division of counties, and respecting the compactness requirement of the NYS Constitution.

Brooklyn and Queens

The *Senate Alternative Revision (February 12, 2012)*, creates a compact district (ASD 17) centered on Bushwick and Ridgewood, with a CVAP that is 51.4% Hispanic. The most nearly corresponding district in the Senate Majority / LATFOR proposal (MSD 18, which is much less compact) has only a Hispanic CVAP plurality of 47.22%.

The Senate Majority / LATFOR proposal has no district in Brooklyn or Queens with a Hispanic CVAP majority.

It is not possible to create a district in the Jackson Heights / Elmhurst / Corona area with a Hispanic CVAP majority. But the Senate Majority / LATFOR proposal's MSD 13 has a Hispanic CVAP plurality of only 42.37%, while the *Senate Alternative Revision (February 12, 2012)* ASD 14 has a Hispanic plurality of 46.32%. The *Senate Alternative Revision (February 12, 2012)* achieves greater Latino voting-power in this district by the simple device of creating a highly compact district that adheres to recognized neighborhood boundaries. As noted on p. 2, above, ASD 14 consists of Community District 3, plus as much of Community District 4 as will make up the full district population. The Senate Majority / LATFOR proposal reduces Latino voting power by extending MSD 13 into Astoria, Long Island City, and Flushing, including a small part of Community District 7 and a large part of Community District 1.

Contrary to the previous leaks to the press suggesting that there would be a new district empowering Asian-American voters in Queens, the plan would still divide the Asian-American communities in northeast Queens between MSD's 11 and 16, much as they are divided now, albeit with a somewhat larger Asian CVAP percentage in the new MSD 16.

The Asian CVAP percentage in MSD 16 (38.51%) is comparable to ASD 13 (38.44%), and it is probably not possible to create a district in northeast Queens with a larger Asian CVAP%. But demographics are not everything. Geography is important, too. The *Senate Alternative Revision (February 12, 2012)* offers a compact district where

Asian-Americans could effectively work together, among themselves and with their neighbors of other ethnic backgrounds, to secure representation of their interests in the Senate. The Senate Majority proposal preserves the intricately gerrymandered status quo, separating downtown Flushing from Bayside and dividing Flushing between two convoluted, intertwined districts whose boundaries defy comprehension on any but a large-scale map.

Similarly, in Brooklyn, ASD 23 would keep large Asian-American (specifically Chinese) and Hispanic communities intact within a compact district. Here too, the members of these communities, although not a voting majority, would be able to work together among themselves, and with their neighbors, to achieve representation of their common interests.

Buffalo and Niagara Falls

Having created a Buffalo / Niagara Falls District in 1992 that became the first district with a non-Hispanic white majority to elect a black candidate to the New York State Senate, the Senate Majority has now decided to make sure that doesn't happen again. After 20 years, they now propose to separate the two cities, which are united by economic factors,[10] and both of which have large African-American communities.

In 2000, Byron Brown, since elected Mayor of Buffalo, was elected to the Senate with 60% of the vote in the former SD 57. In order to win – and especially with such a large percentage – Senator Brown must have had the support of a broad interracial coalition of voters. During this decade, existing SD 60 has elected two black candidates (Sen. Byron Brown and Sen. Antoine Thompson) and two white candidates (Sen. Marc Coppola and Sen. Mark Grisanti). It is thus a district that requires – and rewards – the building of interracial coalitions. A black candidate cannot win without, at least, a large minority of the white voters. And a white candidate is unlikely to win who cannot appeal to black voters. This is healthy for the region and for the state.

Existing SD 60 has also proven to be, contrary to the expectations of those who designed it, a competitive district from a partisan standpoint. And for exactly that reason, it is now to be split up so that building interracial coalitions will no longer be either necessary or effective. The *Senate Alternative Revision (February 12, 2012)*, in contrast,

[10] To take just one economic factor, according to the Census Bureau's American Community Survey (ACS) five-year estimates for 2005-2009 (ACS Table S2405), 7.4% of the employed residents of New York State are engaged in manufacturing. The local figures are strikingly different: in Buffalo, 9.4%; in Niagara Falls, 14.5%; in West Seneca, 11.0%; in Hamburg, 11.4%; in Cheektowaga, 13.2%; and in Lackawanna, 16.5%. The census figures on occupational categories within the manufacturing sector are even more striking. Statewide, only 47.2% of those employed in the manufacturing sector are engaged in production, and 29.4% are classified as managerial or professional. But in Buffalo, 67.2% of the manufacturing employees are engaged in production, and only 14.5% are managerial; in Niagara Falls, 66.1% are in production, and only 11.7% are managerial; in Cheektowaga, 62.2% are in production, and only 16% are managerial; in Lackawanna, 62.3% are in production, and only 14.3% are managerial. [These figures are based on notes I made before the 2006-2010 ACS estimates were released. I have not had time to update the figures, but it is highly unlikely that the latest five-year average estimates will show a different pattern.]

maintains the connection between Buffalo and Niagara Falls, while still creating two districts wholly within Erie County.[11]

Rochester

The Senate Majority / LATFOR proposal would divide Rochester among three districts, splitting the city's black community among all three. The center of the city

[11] The *Senate Alternative Revision (February 12, 2012)* retains the connection between the city of Buffalo and the town of Grand Island, the city of Tonawanda, and the city Niagara Falls. In proposed ASD 62, Buffalo and Grand Island are explicitly connected, not only by the Niagara River, but also by River Road (State Highway 266), South Bridge (part of I-190), and the unpopulated land lying between the river and River Road. Buffalo is also connected to the city of Tonawanda by the Niagara River, State Highway 266, and the land lying between the highway and the river. Since the population of the town of Tonawanda is undivided, the town's integrity is preserved in accordance with Article III, §4.

The last point requires explanation. The former SD 57, as created in 1992, was challenged in court as consisting of discontiguous territory. In the maps and tabulations published by the Legislature, as in the metes and bounds, it appeared that the town of Tonawanda separated the Buffalo portion of SD 57 from the northern part of District 57 (comprising the town of Grand Island, and parts of the cities of Tonawanda and Niagara Falls), and it also appeared that the entire town of Tonawanda was in SD 60. In upholding the plan, the Court of Appeals addressed the question of SD 57 in a single sentence: "We have considered the petitioners' . . . contiguity claims, and we find them to be without merit." *Wolpoff v. Cuomo* 80 NY2d 70, 80 (1992).

In the absence of further explanation from the Court of Appeals, the reasons for regarding former SD 57 as contiguous must be inferred from the brief submitted to the Court by the successful defendant-appellant, the then Majority Leader of the Senate. The brief defended the contiguity of SD 57 on the grounds that:

a) "Buffalo and Grand Island are *connected* [emphasis in original] by the Niagara river," notwithstanding the fact that this portion of the river is "technically" within the town of Tonawanda. *Brief* at 87.
b) "The district encompassing Tonawanda does not intervene between Buffalo and Grand Island." *Brief* at 88.
c) It is not necessary to travel "through an intervening voting district" to reach Grand Island from Buffalo. *Brief* at 88.
d) "As stated by the Supreme Court in *Reynolds*, 'Legislators represent people, not trees or acres. . . . [P]eople, not land or trees or pastures, vote.' [citation omitted] The Supreme Court might well have added 'rivers or fish' to that list. Needless to say, there are no voters residing in the river that is technically within the statutory boundaries of the Town of Tonawanda." *Brief* at 89.

From the foregoing, two conclusions can be reached:

1) Some of the unpopulated territory of the town of Tonawanda – the Niagara River and possibly also some of the adjoining unpopulated dry land – was to be construed as forming part of SD 57.
2) The division of the *unpopulated territory* of the town of Tonawanda did not violate the provision of Article III, §4, forbidding the division of towns, just as the division of some of the unpopulated territory of the Orange County town of Wawayanda (between 1992 SD's 39 and 40) did not constitute such a violation.

In the Senate Plan enacted in 2002, existing SD 60, the nearly identical successor to former SD 57, is made contiguous by preserving the implicit division of the unpopulated territory of the Town of Tonawanda. In the *Senate Alternative Revision (February 12, 2012)*, however, the constitutionally acceptable division of the unpopulated territory of the Town of Tonawanda, and the contiguity of ASD 62, are made explicit.

would be connected by various paths to distant rural areas, and proposed MSD 61 would extend to the Buffalo city line. Indeed, the correction of a violation of the block-on-border rule would result in the inclusion of several blocks from the city of Buffalo in this district.[12] The plan is obviously designed to dilute the voting power not only of the black citizens of Rochester, but of their white neighbors as well. All are to be prevented from seeing that their common interests are represented in the Senate.

The *Senate Alternative Revision (February 12, 2012)*, by contrast, places virtually all of Rochester in a single district (ASD 56), which would be one of two districts wholly within Monroe County.[13]

‘Communities Defined by Actual Shared Interests’

The *Senate Alternative Revision (February 12, 2012)* is based in part on the statistical analysis documented in the appendix, *Communities Defined By Actual Shared Interests: a Statistical Analysis*, and in the map set, *Maps: Senate Alternative Revision (February 12, 2012) with Principal Components*.[14]

---

[12] The designers of the Senate Majority / LATFOR proposal have taken care to bring the populations of all the districts that adjoin within Rochester to within one person of equality. But MSD 61, which extends from Rochester to the Town of Amherst, adjoins MSD 63 along the Amherst / Buffalo boundary. The population of MSD 63 (292,661) exceeds that of MSD 61 (292,307) by 354 persons. There are seven blocks along this boundary, within Buffalo and within MSD 63, with a population of less than 354 persons. The ‘block-on-border rule of Article III, § 4, of the New York State Constitution would therefore require some of these blocks to be reassigned from MSD 63 to MSD 61. As LATFOR Co-Chair McEneny has observed several times during the hearings, the Constitution protects towns, but not cities, from being divided to comply with the block-on-border rule. Only by violating the block-on-border rule does the Senate Majority / LATFOR plan mask the obvious absurdity of a Senate district that contains parts of both Rochester and Buffalo.

[13] ASD 56 contains all of Rochester, except the two corridors that bisect the Town of Irondequoit. Blocks in these corridors with a total population of 25 persons are assigned, with the town, to ASD 55.

[14] In consultation with me, Dr. Andrew A. Beveridge, professor of sociology at Queens College and the Graduate School and University Center of CUNY, created the Summary Level 80 geographic database, assembled the database of variables from the American Community Survey, computed the *principal components* variables, and performed the statistical tests documented in the appendix. I drafted the districts proposed here, based in part on the principal components analysis.

The earlier version of the *Senate Alternative* redistricting proposal, like this revision, was based in part on the principal components analysis. Unfortunately, the pressure of time made it impossible to complete this analysis in time for the February 9th hearing (apart from a brief reference to preserving ‘communities defined by actual shared interests’).

It may be noted in this connection that when LATFOR, after long delay, finally adopted the legally mandatory adjusted database on January 10th, members of the public who wished to prepare redistricting proposals on that basis were told that they could submit their proposals at any time during the hearing schedule, which would run through February. Then on January 25th, LATFOR announced that the hearings would conclude on February 16th, abruptly shortening from five weeks to three the time then still available for public participation. I submitted the block assignment file for the earlier version of the *Senate Alternative* by e-mail February 9th, having presented the earlier version of the documentation at that day’s hearing. I submitted the block assignment file for the *Senate Alternative Revision (February 12, 2012)* by e-mail on February 15th. The documents assembled here have been completed and submitted as promptly as possible.

This analysis uses quantitative methods to identify "communities defined by actual shared interests" (*Miller v. Johnson*, 515 U.S. 900, 916 (1995)) in New York State, to present them in a comprehensible way, and to suggest State Senate district boundaries that encompass communities so defined (while obeying federal and state constitutional and statutory rules, and observing other reasonable, objective districting principles).

Outside of New York City, county and other municipal boundaries are important demarcations of shared interests, as discussed above on p. 8, and especially in Footnote 6, and the statistical identification of "communities defined by actual share interests" must necessarily be subordinate to constitutional and statutory rules. But the statistical analysis provides useful guidance in deciding among the various district configurations that may comply with those rules.

The database consists of 36 variables drawn from the Census Bureau's American Community Survey (ACS) 2006-2010 5-year-average estimates. The variables are obviously related to ways that a broad range of legislative and other pubic policy decisions may affect individuals, families, and communities. Every major category of socio-economic data in the ACS is represented in the database: population density, housing, age, household and family structure, income, poverty, sources of income, education, employment (job category and industrial sector), transportation, race, language, and citizenship.

As described in the appendix, the analysis produces a variable called the First Principal Component (1st PC), which captures roughly 40% of the variance in the entire database of 36 variables, in each of three broad regions. The 1st PC can then be displayed as a color theme on a map, and used as part of the basis for drawing districts. The 2nd PC captures an additional 14% of the variance in the whole database. The 2nd PC was not used to draw the districts, but the map set includes thematic maps showing the *Senate Alternative Revision* districts overlaid on both the 1st and 2nd PC's.

A few observations:

1. The *Senate Alternative Revision (February 12, 2012)* unites populations that form 'communities defined by actual shared interests,' as can be seen from the Principal Component maps and from Table 3 on p. 9 of the appendix. The correlations are particularly strong for the New York City / Westchester / Putnam / Rockland region and for Long Island.

2. In Long Island, the correlations of the *Senate Alternative Revision* districts with the racial/ethnic variables are even stronger than the correlations with the 1st PC. This reflects the fact that residential segregation by race is extreme in Long Island, and that residential patterns are defined more strongly by race and Hispanic origin than by other socioeconomic factors. Particularly illuminating in this connection is the testimony before LATFOR of Prof. Robert C. Smith, professor of sociology at the Baruch College School of Public Affairs and CUNY

Graduate Center.[15] It was not lack of means that kept African-American homebuyers out of Levittown, establishing a segregated pattern that has persisted to this day. And continuing racial steering by real estate agents presumes a degree of economic equality among the homebuyers who are subjected to it.

3. The maps of the 1st PC for Long Island show a coherent geographic pattern that is useful for drawing districts, and that will yield districts that keep the large and growing black and Hispanic communities intact, while uniting populations that have much more in common than race and ethnicity. But the patterns of residential segregation shown in the map set, *Maps: Long Island Black and Hispanic Population 1970-2010, with Senate Districts 1972 to Proposed 2012*, are more pronounced than the patterns that emerge in the thematic maps of the Principal Components.

4. The values of the 1st PC that are associated mostly with black and Hispanic communities in Nassau County and western Suffolk, are prevalent also in predominantly non-Hispanic white communities in the East End of Suffolk County: the central and eastern parts of the Town of Brookhaven, and the Towns of Riverhead, Southampton, and East Hampton. This helps to explain why the *Senate Alternative Revision* districts correlate more strongly with race than with the 1st PC, but also demonstrates that the 1st PC does not merely track race.

5. Although only the 1st PC was used as part of the basis for drawing districts, it can be seen from the maps that in many places the *Senate Alternative Revision* district boundaries are also a good fit for the pattern that emerges when the 2nd PC is mapped. This is notably the case for ASD's 4 and 8, the proposed districts that would end the systematic splitting of the African-American and Latino communities in Nassau and Suffolk Counties. The 2nd PC pattern indicates that these districts preserve 'communities defined by actual shared interests' to an even greater degree than is shown by the measures in Table 3 of the appendix.

6. The 1st PC indicates how both non-Hispanic white communities and minority communities (where the population is large enough) might be divided among districts that preserve 'communities defined by actual shared interests.' For example, the predominantly non-Hispanic white area in the southeastern quadrant of Nassau County, extending from the eastern boundary of Roosevelt and Freeport to the Suffolk County line, and from Old Country Road south to the shore, shows significantly different values of the 1st PC than the non-Hispanic white communities of the North Shore (in North Hempstead, the northern part of Oyster Bay, Huntington, Smithtown, and the northwestern part of Brookhaven). The 1st PC provides a basis for distinguishing ASD 6 from ASD's 5 and 7, and for

[15] LATFOR hearing transcript for October 27, 2011 at 185-196. Note two errors in the transcript: a) at several points where the word "equality" appears, the context shows that the word "inequality" was actually used; and b) where the transcript records Prof. Smith's responses to several questions from LATFOR Co-Chair McEneny, at 192-196, it misidentifies Prof. Smith as Rachael Krinsky, the witness who preceded him. The transcript is available at: http://latfor.state.ny.us/hearings/docs/20111027trans.pdf

distinguishing ASD 1 from ASD 2. Similarly, in Queens, the two proposed black-majority districts, ASD's 10 and 11 show markedly different patterns for the 1st PC; and in Brooklyn, ASD 18 shows a pattern much different from ASD's 19, 20, and 21.

7. The lower correlation upstate, between the *Senate Alternative Revision* districts and the 1st PC, is partly due to the more salient role of the county integrity rule in driving redistricting upstate – provided, of course, that the rule is conscientiously followed, as in the *Senate Alternative Revision (February 12, 2012)*. Where a single county has the population for many districts, there is much room for the exercise of discretion, and the Principal Components analysis provides important guidance. Where county populations are small relative to the ideal district population, the constitutional rules, if taken seriously, play a bigger role in determining how individual districts must be drawn.

Pairing of Incumbents

The *Senate Alternative Revision (February 12, 2012)* avoids pairing incumbent senators, except where a constitutional rule is at stake. There are three incumbent pairs.

1. Since the apportionment of districts in proportion to population must result in the reapportionment of one district from upstate to New York City, there must be an incumbent pair upstate. In the *Senate Alternative Revision (February 12, 2012)* this pairing occurs in Erie County, which is just short of the population for three districts, but has four resident senators. Senators Gallivan and Ranzenhofer are paired in ASD 59.

2. In Suffolk County, the Town of Huntington, which could otherwise be kept intact, would have to be divided to avoid pairing Senator Flanagan, who lives in Huntington, with Senator Marcellino. They are paired in ASD 5. Senator Flanagan would be eligible to run in any district in Suffolk County, and would undoubtedly seek reelection in ASD 2, which includes the greater part of the district he now represents (SD 2). If reelected he would have to move into the district, but he would hardly be the first incumbent senator who has faced that prospect during the last several decades. In contrast to the incumbent pairings in the Senate Majority / LATFOR proposal, and some of the incumbent pairings of previous decades, there is nothing arbitrary or malicious in this aspect of the *Senate Alternative Revision (February 12, 2012)*, which arises from adherence to a constitutional rule.

3. Senators Golden and Savino are paired in ASD 24. Avoiding such a pairing would require creating something like the extremely non-compact districts that were created in this area in 2002, or the even less compact and more intricately intertwined districts that the Senate Majority / LATFOR proposal offers for the southern part of Brooklyn. Bay Ridge is the most obvious part of Brooklyn to connect to the North Shore of Staten Island. It should be noted that this connection was first made in a compact district (SD 23) that was enacted in 1992 to secure the reelection of a Republican incumbent who lived in Bay Ridge.

The Size of the New York State Senate: a Reply to Michael Carvin

Todd A. Breitbart

January 8, 2012

On Friday, January 6, the NYS Legislative Task Force on Demographic Research and Reapportionment (LATFOR) posted on the FAQ page of its web site a memorandum titled "Senate Size," dated January 5, 2012, from Michael Carvin, outside counsel to the NYS Senate Majority. Mr. Carvin's memo presents the Republicans' new interpretation of the NYS constitutional rule for determining the number of State Senate districts. Mr. Carvin falsely claims that an increase from 62 to 63 districts is the necessary and straightforward application of his previous interpretation, given in a memo, also titled "Senate Size," dated March 7, 2002.

Most of Mr. Carvin's new memo is devoted to arguing that I erred in testifying at a LATFOR hearing that the interpretation he offered in 2002, when applied to the 2010 census data, would again produce 62 districts. **Essentially, Mr. Carvin faults me for applying, consistently, what he called in 2002 "the best method for apportioning the New York Senate," the "methodology [that] is most consistent with the intent underlying the New York Constitution."**

As explained below, the constitutional rule requires that present-day counties be compared with the counties and Senate districts as they stood when the rule was adopted in 1894. For this purpose certain pairs of counties must be treated as though each pair were a single county. There are two different procedures, both reasonable, that might be followed for combining the counties. One procedure was applied to every pair of counties in 1972, 1982 and 1992. The other was applied to every pair of counties in 2002.

The Senate Republicans and their counsel Mr. Carvin have now decided that they cannot achieve their partisan designs by following one constitutional rule consistently. They apply one procedure to one pair of counties, and a different procedure to another pair, in order to arrive at the exact number of districts that will suit their partisan purposes. There is no justification for this inconsistent and self-contradictory practice, and they have offered none. Instead, they attempt to obscure what they are doing.

Historical and Legal Background

For those coming into this conversation in the middle, some background will be helpful.

The number of Senate districts is determined by a rule, dating from 1894, in Article III, §4, of the NY State Constitution. The rule applies to counties that contain more than 6% of the total state population. Whenever the population of such a county rises to a larger proportion of the statewide total than in 1894 – counting by increments of $1/50^{th}$ (2%) of the state total, after dropping the remainders – then a district is added to the total of 50 districts that were created in 1894. The counties that have grown enough to

matter are Bronx, Nassau, Queens, Richmond, Suffolk, and Westchester. A county's decline in population, relative to the rest of the state, has no effect, and a county with less than 6% of the state population does not figure in the formula.

The rule is somewhat ambiguous because the NYS Court of Appeals has ruled that the population comparison must be based on the counties as they were in 1894.[1] Nassau County was created out of Queens County in 1899, so Queens and Nassau are treated as a unit.[2] According to one interpretation of the rule, Westchester County must be considered as a unit with the part of the Bronx east of the Bronx River, since that area was part of Westchester in 1894, but other interpretations combine the whole of Bronx County with New York County, or with both New York and Westchester Counties.[3] (Bronx County did not exist until 1914.) The Court has also ruled that Richmond and Suffolk Counties must be treated as a unit, since those two counties were combined as a single Senate district in 1894.[4]

There have been two different methods of combining the counties for this comparison. One method was used in the reapportionment law of 1972, upheld that year by the Court of Appeals in *Schneider v. Rockefeller*,[5] and used again without question in 1982 and 1992. The Senate Republicans drew all of these reapportionment plans. That formula produced 60 districts in 1972, and 61 districts in 1982 and 1992. The increase of one district resulted from changes in population distribution, not from a change in the formula. If the same formula had been applied in 2002, there would again have been 61 districts. The Republican Senate Majority decided, however, that their political calculations would be best served by creating 62 districts in 2002.[6] The Senate Majority's outside counsel, Mr. Carvin, then produced his March 7, 2002 memo justifying the new formula. From that date until last week, the 2002 memo, which remained on the LATFOR web site, was the only guidance provided to the public about the correct method for determining the number of Senate districts. Then late in the afternoon of Friday, January 6, 2012, Mr. Carvin's new memo was added.

---

[1] *Schneider v. Rockefeller*, 31 N.Y.2d 420, 432 (1972)

[2] *Id.* at 432-433.

[3] *Id.* at 433-434. *See also* Carvin, "Senate Size," March 7, 2002, section titled "**1. Westchester, New York and Bronx Counties**."

[4] *Id.* at 435.

[5] *Id.* at 432-433.

[6] An internal Senate Majority memorandum, dated July 20, 2001, and divulged during the document discovery phase of *Rodriguez v. Pataki* (2004), states: "We have had numerous discussions regarding the possibility of the Senate increasing in size to 63. While the ultimate decision will be made with political numbers for proposed districts at each size in hand, I believe that the decision basically comes down to the raw census numbers." There is no discussion of what the NYS Constitution might require. Memorandum titled "Size of the Senate" (filename: "Not63"), July 20, 2001, at 1, *Rodriguez v. Pataki* SDNY 02 Civ. 618.

The memo can be found at the following locations:
http://blog.timesunion.com/capitol/archives/81427/senate-spokesmen-duel-over-prospect-of-63rd-member/
http://www.nydailynews.com/blogs/dailypolitics/2011/09/hammond-the-smoking-gun-on-redistricting

Determining the Proper Number of Senate Districts

The current disagreement concerns the procedure for aggregating the populations of the present-day counties, for comparison with the counties and districts of 1894. This is not a dispute over the proper method to use. The question is whether one method – either method – is to be used consistently.

Mr. Carvin's new method is to follow one procedure for combining the populations of Queens and Nassau, which constituted Senate District 2 in 1894, and a different procedure for Richmond and Suffolk, which then constituted Senate District 1.

In the following discussion I will refer, for the sake of convenience, to Procedure A and Procedure B (my terms). The term 'ratio of apportionment' means 1/50th (2%) of the total state population. The number of 'full ratios' in a county is determined by dividing the county's population by the 'ratio of apportionment,' then dropping the remainder. So a county with 2.01% of the state population, and an county with 3.99%, would both have one 'full ratio.'

Procedure A: Combine the populations of the two counties, and then round down to the number of 'full ratios' contained in the combined population.

Procedure B: Round down the population of each county separately to the number of 'full ratios' in each county, and then add the 'full ratios' (after rounding, not before). This is the procedure that Mr. Carvin described in his March 7, 2002 memo as part of "the best method for apportioning the New York Senate," the "methodology [that] is most consistent with the intent underlying the New York Constitution."[7]

In 1972 (as upheld in *Schneider v. Rockefeller*), and again in 1982 and 1992, Procedure A was used – by Republican Senate majorities in each year. In order to get to 62 districts in 2002, but not 63, Mr. Carvin argued for the following.

1) The part of the Bronx east of the Bronx River should be combined with Westchester, not with New York County as in the three prior decades. This brought Westchester into play, by bringing the combined population above the 6% threshold, and thereby added two districts beyond what the previous interpretation of the Bronx/Westchester/New York history would have produced.

[7] Mr. Carvin's March 7, 2002 memo is now available as an attachment to his January 5, 2012 memo:
http://latfor.state.ny.us/faqs/docs/2012senatesize.pdf
The memos are also available by a link from the LATFOR FAQ page:
http://latfor.state.ny.us/faqs/

In the 2002 memo, the phrases quoted above appear in the first paragraph, and the method he advocated for combining counties is presented in the second and third paragraphs from the end, under the heading "**2. Nassau and Queens Counties**."

2) County-combination Procedure B, as described above, should be used instead of Procedure A. This second change produced a reduction of one district when applied to the Queens/Nassau combination, but no difference elsewhere. The net effect of the two changes was an increase of one district, from 61 to 62, as explained in Mr. Carvin's March 7, 2002 memo.

Mr. Carvin's New Mix-and-Match Calculation

Mr. Carvin now argues that county-combination Procedure A should be used for Richmond and Suffolk, while county-combination Procedure B should be used again for Queens and Nassau. He seeks to hide the inconsistency in the table that follows his new memo ("2010 Senate Size Calculation") by showing separately the populations of the counties (or parts of Bronx County) that figure in every other part of the calculation, but stating the combined population of Richmond and Suffolk, from the outset, as a single number. Of course, no such number is to be found in any census data tabulation except Mr. Carvin's. If he had displayed the entire calculation for every combination, the inconsistency would have been glaringly obvious.

The label Mr. Carvin uses in his table is "District 1 (Richmond/Suffolk)," after which he shows the combined current population of the counties and the number of 'full ratios' derived from that combined population. His justification for listing Richmond/Suffolk as a unit, with the combined 2010 population, not the sum of the separately computed 'full ratios' is that he is simply listing the present day population of what in 1894 was Senate District 1.

But the first three sentences of the NYS Constitution, Article III, §3, in the original 1894 text,[8] are as follows:

> § 3. [Senate districts.]-The State shall be divided into fifty districts to be called senate districts, each of which shall choose one senator. The districts shall be numbered from one to fifty, inclusive.
>
> District number one (1) shall consist of the counties of Suffolk and Richmond.
>
> District number two (2) shall consist of the county of Queens.

The area that in 1894 was the county of Queens now comprises the counties of Queens and Nassau. So why does Mr. Carvin list the present-day Queens and Nassau Counties separately, showing the current population of each? Why does he not simply show: "District 2 (Queens/Nassau)," with the combined population, since the present-day Queens and Nassau counties constituted District 2 in 1894? The obvious answer is that, in order to arrive at the exact number of districts that serves the Senate Republicans' partisan calculation, he must, when dealing with the District 2 of 1894, employ what he

[8] The 1894 text of the Constitution is available at:
http://www.nycourts.gov/history/constitutions/1894_constitution.htm

called in 2002 the "methodology [that] is most consistent with the intent underlying the New York Constitution." But to arrive at the desired result, he must also employ a different methodology when dealing with the District 1 of 1894.

If county-combination Procedure B were applied consistently, the result would be 62 districts, as shown in the technical appendix to the written testimony I submitted to LATFOR on September 22, 2011. If Procedure A were used consistently, the result would be 64 districts, since the combined populations of Queens and Nassau would equal 9.21 full ratios, which according to Procedure A would then be rounded down to 9, not 8 - producing an addition of 8 full ratios, not 7, over Queens County's one Senate district of 1894. (The 64-district possibility was not addressed in anyone's testimony, since no one has ever advocated that the treatment of the Bronx adopted in 2002, which Mr. Carvin proposes to employ again this year, be combined with county-combination Procedure A. The constitutional interpretation adopted by the Senate Republicans in 1972, 1982, and 1992, taken as a whole, and the different interpretation they adopted in 2002, would each produce 62 districts if applied *consistently* to the 2010 census data.)

Mr. Carvin offers no justification for the inconsistency, except to argue that Procedure A was always used previously for Richmond and Suffolk. But the same was true in 1972, 1982, and 1992 for Queens and Nassau as well. For 2002 the case of Richmond and Suffolk is undetermined, since both methods would have produced the same result for Richmond/Suffolk on the basis of the 2000 census.

The last paragraph of Part IV of the Court of Appeals decision in *Schneider v. Rockefeller*, 31 N.Y.2d 420, 434 (1972), reads in full:

> Finally, there is no dispute as to the increase of two senators attributable to the grouping of Richmond and Suffolk Counties, which under the 1894 Constitution constituted one Senate district. The apparent reason is that, in this instance, under either method -- aggregating of population or aggregating of full ratios -- the same result is indicated -- an increase of two senators.

The Court gives no indication that the case of Suffolk/Richmond was to be distinguished from that of Queens/Nassau, and it would have made no difference. The method of aggregating populations, then rounding down afterward, was used for all county combinations in 1982 and 1992 (and by the Federal District Court's Special Master in 1982). In 2002, both methods of aggregation would again have produced the same result for Richmond/Suffolk, just as noted by the Court of Appeals in reference to the 1972 redistricting. In 2002, both methods produced an increase of three districts over the one Richmond/Suffolk district of 1894.

Mr. Carvin's March 7, 2002 memorandum does not mention the Richmond/Suffolk combination. It was unnecessary to do so, since both methods would have produced the same result. **If he meant to distinguish the Richmond/Suffolk case, and to arrive at the same result, but by a different constitutional reading, he did not**

reveal that until January 5, 2012. If the two cases were indeed distinguished in 2002, Mr. Carvin has held that secret in his heart of hearts for ten painful years.

The Richmond/Suffolk combination did not figure in the size-of-the-Senate formula until 1972. (According to the 1960 census counts, the Richmond/Suffolk combination did not yet reach the threshold of three full ratios, by either method of reckoning.[9])

So when Mr. Carvin, in his January 5, 2012 memo, says that the proper method "is to combine Richmond and Suffolk's populations … as has been done in every redistricting," he is speaking only of the redistrictings of 1972 through 2002. In 1972, 1982, and 1992, however, this method was also used for Queens and Nassau, and in 2002 both procedures would have produced the same result for Richmond and Suffolk. Neither Mr. Carvin nor anyone else said anything in 2002 about adopting, for the first time, differing methods of calculation for Richmond/Suffolk and Queens/Nassau.

It seems that Mr. Carvin now reads his own March 7, 2002 memo as containing several substantial paragraphs that are not to be seen there, and that no one else could have guessed at. One might have supposed that Mr. Carvin was being consistent in 2002. He now tells us otherwise. The invisible paragraphs presumably explained that the method for aggregating county populations or full ratios was to depart from the 1972-1992 precedents for Queens/Nassau, but not for Richmond/Suffolk. Presumably the invisible paragraphs also explained the basis for this distinction, but Mr. Carvin has not yet revealed his reasoning. When I made the statement cited in Mr. Carvin's latest memo, that the legal theory in his March 7, 2002 memo - as distinguished from the circumstances in which it was produced - was reasonable, I was unaware that the theory had hidden, unexplained provisions that do not actually appear in the 2002 memo. [10]

---

[9] The total state population in 1960 was 16,782,304, yielding a 'full ratio' of 335,646. Richmond had a population of 221,991, and Suffolk had 666,784. The total of 888,775 would have been 2.65 ratios - only 2 full ratios - not enough to matter. Taken separately, Richmond had zero full ratios (its population was less than one full ratio), and Suffolk had one (1.99, rounded down), for a total of one full ratio for the combination

[10] The only difference between the two pairs of counties is that Queens/Nassau involves comparison with a single 1894 county (Queens) as well as a single 1894 district (District 2), while Richmond/Suffolk involves comparison with a single 1894 district (District 1) where the counties remain unchanged. But this provides no basis at all for using inconsistent procedures to combine present-day counties in making the comparison. If Queens and Nassau had been separate counties in 1894, but a single district (1894 District 2), the growth of their populations would still bring them into the Senate-size computation, just as population growth has brought Richmond and Suffolk (1894 District 1) into the computation. As noted above, the only legal precedent that addresses these two county combinations attaches no significance to this difference (*Schneider v. Rockefeller*, 31 N.Y.2d 420, 434 [1972]). Mr. Carvin does not mention it in his 2002 memo, and he offers no reason for it in his 2012 memo. Indeed, as shown above, his latest memo tries to obscure the fact that he is treating the two county combinations differently, not to offer a reason for doing so.

The Senate Majority's Tell-tale Timing

The timing of the new Carvin memo is telling. If the number of districts were to be determined on the basis of Mr. Carvin's reasoning, the matter could have been settled definitively in March, when the block-level census data became available. If Mr. Carvin had meant - for reasons not yet explained - to distinguish the Queens/Nassau and Richmond/Suffolk cases in 2002, but just forgot to mention it in his 2002 memo, he need not have waited until January 5, 2012 to make good his omission. Sen. Nozzolio could have sought Mr. Carvin's guidance on the constitutional issue after any of the many occasions when this matter was addressed during the hearings and meetings of LATFOR.

The public have again been misled, and encouraged as in 2001-02 to propose plans for a different number of districts than the Senate Majority intended to create. No one relying on Mr. Carvin's March 7, 2002 memo, as the LATFOR FAQ page encouraged them to do, could have guessed that his interpretation would yield any number but 62 districts when applied to the 2010 census data. To have known about the distinction between the method for combining Queens and Nassau and the method for combining Richmond and Suffolk, they had to be privy to the hidden provisions of Mr. Carvin's constitutional theory – the invisible paragraphs of his 2002 memo.

It is clear that Senators Skelos and Nozzolio waited until they had decided the number of districts that would serve their partisan purposes - exactly as Sen. Skelos did as Co-Chair of LATFOR in 2001-02 - and that, having again made the decision for reasons having nothing to do with constitutional rules, they again left it to Mr. Carvin to provide a constitutional rationale.

In 2002, Mr. Carvin was able to provide a legal theory that was reasonable, if considered apart from the circumstances in which he produced it, and if applied consistently. This year he has not been able to discover a reasonable theory that yields the desired result.

The Number of New York State Senate Districts

Todd A. Breitbart

Updated February 20, 2012

"The Constitution is an inconvenient truth."

- Sen. Michael F. Nozzolio, September 21, 2011

My epigraph is a statement made by Sen. Michael F. Nozzolio, the Co-Chairman of the NYS Legislative Task Force on Demographic Research and Reapportionment (LATFOR), at yesterday's LATFOR hearing in Manhattan. He was explaining that, absent an amendment to the NYS Constitution, the Legislature cannot divest itself of the authority to redistrict the Senate and Assembly.

Later in the same hearing, asked whether LATFOR intended to propose the creation of 62 Senate districts or some other number, Sen. Nozzolio said that no decision had yet been made. I urge Sen. Nozzolio to heed something that someone said yesterday when addressing a different question: "The Constitution is an inconvenient truth."

At the July 19, 2011 public hearing, in Syracuse, Sen. Nozzolio, expressed the belief that LATFOR should postpone determining and announcing the number of Senate districts to be created, but "should be asking the public for their view as opposed to determining any kind of dictation of a number," and should find out "what the public wants in terms of a number of representatives."[1]

At the July 20, 2011 hearing in Rochester, anticipating that Sen. Dilan would repeat his earlier request that LATFOR settle the size of the Senate, so that persons recommending redistricting plans to LATFOR would know how many districts to create, Sen. Nozzolio said:

> The Senate is currently at a number, the New York State Senate is currently at a number of 62 members, and that Senator Dilan raising a very thought-provoking question as to what will the number of the Senate be? The Constitution and the laws of the state provide for the ability for that number to grow or shrink depending on particular policy questions, and Senator Dilan has raised that question now twice. I think that it's important to put out that we certainly would welcome, and I frankly don't believe any decision should be made, Senator, until at such time as the public has an opportunity to review that process and provide us with input. Let the public tell us whether the State Senate, which is now at 62 should be changed to another number.[2]

---

[1] *New York State Legislative Task Force on Demographic Research and Reapportionment, Public Hearing, Congressional and State Legislative Redistricting, Syracuse, New York, Tuesday, July 19, 2011*, at 88:12-21; available at: http://latfor.state.ny.us/hearings/docs/20110719trans.pdf.

[2] *New York State Legislative Task Force on Demographic Research and Reapportionment, Public Hearing, Congressional and State Legislative Redistricting, Rochester, New York, Wednesday, July 20, 2011*, at 9:23 - 10:16; available at: http://latfor.state.ny.us/hearings/docs/20110720trans.pdf

These statements are disturbing for the following reasons:

1. There is no constitutional basis for creating any other number than 62 districts in the pending redistricting.

2. The New York State Constitution does not give the Legislature discretion to create a convenient number of Senate districts, whatever considerations may be thought to determine convenience, and it does not "provide for the ability for that number to grow or shrink depending on particular policy questions."

3. NYS CONST. art. III, §4, par. 3, contains a rule, which must be followed, for determining the number of Senate districts on the basis of the growth of certain county populations since 1894, relative to the state as a whole, and on no other factors whatever. The Legislature has no more discretion to vary the number of Senate districts on the supposed basis of "what the public wants in terms of a number of representatives" or "particular policy questions," than to create some number other than 150 Assembly districts. The county population figures from the 2010 census, which have been available since March, provide all the information that is necessary to determine the number of Senate districts to be created, and there is no valid reason for delaying that determination.

4. The correct interpretation of some aspects of the rule has been subject to dispute, and the ambiguities have provided an opportunity for the Legislature to manipulate the rule for the political convenience of the Senate Majority; but such a history hardly constitutes a constitutional grant of discretion to the Legislature.[3] The interpretation upheld by the NYS Court of Appeals in 1972, and followed by the Legislature in redistricting the Senate in 1972, 1982, and 1992, and the new interpretation followed in 2002, would both yield a Senate of 62 districts when applied to the 2010 census counts. The subtraction and reallocation of prison populations required by Legislative Law §83-m(13) cannot change the relevant county populations sufficiently to affect the number of Senate districts.

5. As of this date, September 14, 2011, the 'FAQ' page of the LATFOR website still shows a link, "Click here to view technical determination of the size of the Senate," which leads to the March 7, 2002 memorandum by the Senate Majority's outside counsel, Michael A. Carvin, advocating the interpretation of art. III, §4, par. 3, that was used to justify the creation of 62 districts in 2002.[4] The Senate Majority recently entered into a new $3 million contract with Mr. Carvin's firm, Jones Day, for legal consulting on redistricting through March 2014.[5] Sen.

---

[3] See the Appendix, *Determining the Number of New York State Senate Districts, 1972-2012*, for a detailed discussion of the rule, the development of its interpretation in a series of rulings by the NYS Court of Appeals, the variant interpretations of several elements of the formula, and the application of those interpretations to past and current census data.

[4] http://latfor.state.ny.us/docs/20020308/

[5] See a press report at: http://www.nydailynews.com/blogs/dailypolitics/2011/07/senate-and-assembly-lawyering-up-for-redistricting-updated; and the listing on the NYS Comptroller's web site at:

> Nozzolio's remarks in Syracuse and Rochester can only mean that either a) he has not read Mr. Carvin's memorandum; or b) he and his colleagues in the Senate Majority are preparing a further self-serving manipulation of the constitutional rule. This will presumably be followed by the discovery that a wholly novel constitutional interpretation is, in Mr. Carvin's words from 2002, "the best way to implement the New York and federal requirements governing apportionment," and the "methodology ... most consistent with the intent underlying the New York Constitution."

NYS CONST. art. III, §4, par. 3: the Constitutional History

There have been varying interpretations of the rule, arising from the fact that two populous counties – Bronx and Nassau – were erected after the adoption of art. III, §4, in 1894, and from the fact that in 1894 art. III, §4, established Richmond and Suffolk Counties, combined, as a single Senate district. In *Matter of Dowling*, 219 N.Y. 44 (1916), and *Matter of Fay*, 291 N.Y. 198 (1943), the NYS Court of Appeals determined that the rule must be based on the counties as they existed in 1894 (treating the Richmond/Suffolk combination as a single county). After the US Supreme Court ruled, in *WMCA, Inc. v. Lomenzo*, 377 U.S. 633 (1964), that the population deviations of New York State legislative districts violated the Equal Protection Clause of the 14th Amendment, the Court of Appeals considered, in *Matter of Orans*, 15 NY2d 339 (1965), the degree to which the rules established in NYS CONST. art. III, §§4-5, were still to be followed. The Court determined that although the rule for determining the number of Senate districts could no longer affect the apportionment of districts, it must still operate to determine the total number of Senate districts. The proper interpretation of the rule was last litigated in *Schneider v. Rockefeller*, 31 NY2d 420 (1972). The interpretation upheld in *Schneider* was followed without question or controversy in the redistrictings of 1982 and 1992, and followed also by the Special Master appointed by the US District Court to prepare a plan that the Court itself might have imposed in *Flateau v. Anderson* (1982).[6] In 2002 the Legislature created 62 Senate districts, adopting the interpretation that had been advocated by the unsuccessful *Schwartz* group of plaintiffs in *Schneider*. This is the interpretation presented in Mr. Carvin's March 7, 2002 memorandum. A more complete account of this history, with tables showing how the rule applied to the census counts of each decade, may be found in the Appendix.

The Manipulation of the Size-of-the-Senate Rule in 2001 - 2002

The Senate Majority announced on the LATFOR website, beginning in the spring of 2001, that the Senate would have 61 districts, and solicited proposals from the public

---

http://wwe1.osc.state.ny.us/transparency/contracts/contracttransactions.cfm?Contract=C150024&Agency=04000&entitytype=Agency

[6] See *Appendix II to Report of the Special Master: New York State Senate Plan*, June 7, 1982 and *Appendix B to Report of the Special Master: Report of Ketron, Inc.*, June 7, 1982. The Special Master proposed to create 61 Senate districts, in place of the 60 districts then existing, not from considerations of policy, convenience, or public opinion, but because the constitutional interpretation that was followed by the Legislature in 1972, and upheld in *Schneider*, yielded 61 districts when applied to the 1980 census data. The plan eventually enacted into law also created 61 districts, for the same reason.

on that basis. The website continued to indicate that there would be 61 districts until February 2002 (at least as late as February 13, *the day before* the Senate Majority first announced its 62-district proposal).

But the decision to create 62 districts was made long before it was disclosed to the public, and for reasons having nothing to do with the proper interpretation of NYS CONST. art. III, §4, par. 3. The story is told in three memoranda written by the staff member who performed most of the technical work of drafting redistricting plans for the Senate Majority, addressed to the principal policy-makers, and divulged in 2003 during the discovery phase of *Rodriguez v. Pataki* (2004).[7]

The May 4, 2001 Memorandum: "Reapportionment Areas"

An internal memorandum titled "Reapportionment Areas," dated May 4, 2001, shows that the Senate Majority had decided by that date that they would probably create 62 districts, and discusses the parts of the state where "wiggle room" could be found to create a Senate of either 61 or 62 districts.[8]

The July 20, 2001 Memorandum: "Size of the Senate"

A second internal memorandum, "Size of the Senate," dated July 20, 2001, shows that the decision to create 62 districts had been settled by that date, although there had been many internal discussions of the possibility of creating 63 districts.[9] The memorandum makes it clear that:

a. The decision to create 62 districts involved no discussion whatever of the proper interpretation of NYS CONST. art. III, §4, par. 3.

b. The decision to create 62 districts, and not 61 or 63, was purely a calculation of partisan advantage (p. 1, par. 1-2):

---

[7] I initially tried to keep the author's name out of the discussion, because I thought attention should focus on the decision-makers, not their staff member. But several reporters have understandably demanded the originals, and have published Mr. Burgeson's name in connection with the memos, so my delicacy on this point no longer serves any purpose. Why Mr. Burgeson may be regarded as a reliable witness to the decisions he describes is explained in *Rodriguez v. Pataki*, 308 F.Supp.2d 346, FN 6 (2004): "The defendants have relied, in part, upon the direct testimony of Mark Burgeson, assistant to Sen. Skelos (R), Co-Chairman of LATFOR, who worked on New York's redistricting plans during the 1980, 1990, and 2000 districting cycles. Mr. Burgeson testified as a redistricting expert and was 'asked to provide an objective assessment of the 2002 Senate plan's compliance with various redistricting criteria.' (Burgeson Aff. ¶ 2.)" The policy-makers to whom the memoranda were addressed are: Sen. Dean Skelos, then the Co-Chairman of LATFOR (since elected Majority Leader); Steve Boggess, then the Secretary of the Senate (since retired); and the late Vinnie Bruy, then the public member of LATFOR appointed by Majority Leader Bruno, and an expert analyst of political data for the Nassau County Republican Party.

[8] Memorandum titled "Reapportionment Areas," May 4, 2001, *Rodriguez v. Pataki* SDNY 02 Civ. 618. For "wiggle room," see p. 1, par. 2, ninth line.

[9] Memorandum titled "Size of the Senate," July 20, 2001, *Rodriguez v. Pataki* SDNY 02 Civ. 618. (PDF file name: "Not63."

> While the ultimate decision will be made with political numbers for proposed districts at each size in hand, I believe that the decision basically comes down to the raw census numbers.
>
> I have previously stated my contention that the only reason to go to 63 is to strengthen the Long Island delegation by combining politically undesirable areas in the extra district. There are no areas elsewhere in the state where we have the opportunity to pick up a district, or strengthen surrounding districts solely on the basis of adding another district to an area. [Emphasis in original.]

c. The size of the Senate was increased to facilitate the manipulation of district population deviations, so as to skew the apportionment of districts in favor of the upstate region, to the disadvantage of the downstate region – thus preventing population trends revealed in the 2000 census from leading to the reapportionment of one district from upstate to downstate (p. 1, par. 2, last two sentences):

> In fact, as you will recall, our proposed redistricting areas upstate are already configured in such a manner as to draw districts *light,* to avoid migration downstate. Adding another district anywhere upstate would exacerbate that situation. [Emphasis in original.]

The author uses "migration" in this passage to refer to the "migration" of a district, *i.e.*, reapportionment, not to the migration of persons. The LATFOR computer system was programmed at that time to produce a "Migration Report," showing how much of the population of each newly drawn district would come from each previously existing district. The "exacerbat[ion]" of "that situation" would have been the creation of a total population deviation of more than 10% between the largest and smallest districts, making the plan especially vulnerable to a complaint based on the Equal Protection Clause of the 14th Amendment.

In other words, the Senate was increased from 61 to 62 districts, and not to 63, to elect the maximal number of Republicans, and to permit the greatest skewing of the regional apportionment that could be achieved while keeping the total deviation below 10% – and for no other reason whatever.

The December 18, 2001 Memorandum: "The 135"

A third internal memorandum, "The 135," dated December 18, 2001 explains the number of persons from Westchester who will be included in Bronx/Westchester bi-county districts (approximately 135,000).[10] It is significant because:

a. There was no longer any discussion of a number of Senate districts other than 62, although the website still indicated at that date that there would be 61 districts, and proposals were still being solicited from the public on the basis of 61 districts.

[10] Memorandum titled "The 135," December 18, 2001, *Rodriguez v. Pataki* SDNY 02 Civ. 618.

b. The memorandum shows how assiduously the state constitutional rules were manipulated to underpopulate the upstate districts and overpopulate the downstate districts, within a total deviation of 10% (p. 2. par. 1-2, table omitted):

> In order to craft districts whose population falls within the acceptable overall deviation of 10%, 23 Senate districts, stretching from Brooklyn to Columbia County, are drawn at a population of 310,493. Because of manipulation of town combinations in Dutchess and Westchester, I was able to take advantage of the NYS Constitution's "town on border" rule and draw the Saland and Leibell districts a little bit "lite" at 301,541 and 303,359 respectively.
>
> **…**
>
> Dividing this remaining total by 21 gives us a district size of 311,259 for the remaining 21 SD's in this R/A [reapportionment area]. Because of the NYS Constitution's "block on border" rule, the size of the districts within the city and lower Westchester will each be within one or two of this 311,259 size, simply because you will almost always be able to find a block with small enough populations to equalize the districts.

After secretly deciding in the summer of 2001 that they would create 62 districts, while still encouraging and accepting public proposals for 61-district plans, the Senate Majority announced publicly only in February 2002 that they intended to create 62 districts.

The screen-shot of the 'Fequently Asked Questions' page of the LATFOR web site was made on February 13, 2002 – *the day before* the Senate Majority first announced its proposal for 62 Senate Districts. It shows that there are to be 61 districts with an average population of 311,089. It can hardly be claimed that use of the present tense in one sentence ("currently at 61") means that the FAQ page was not deceptive. The same paragraph gives the population to which the average Senate district "will increase," and – more significantly – the average population of the 29 congressional districts that were to be created, not of the 31 districts then existing.

There should be no room for quibbles. An outsider looking at a list of 'Frequently Asked Questions' reasonably expects to see basic information clearly presented in a form that an outsider can understand. The answers to the 'Frequently Asked Questions' are not understood to mean, "If you read carefully between the lines, and if you are alert to subtle nuances and linguistic hedges, here are some clues from which you may be able to guess at the truth." In any case, as shown above, the decision to create 62 districts had actually been made seven months before.

Then in March 2002 the Senate Majority produced Mr. Carvin's legal memorandum arguing that art. III, §4, par. 3, required 62 districts, rejecting the constitutional interpretation that was upheld by the Court of Appeals in 1972, and that had been followed without controversy in 1982 and 1992. The Senate Majority maintained that they could not seriously consider the public proposals of 61-district

plans, since these were for the wrong number of districts. When the Voting Rights Act complaints in *Rodriguez v. Pataki* alleged that the Legislature should have created the additional majority-minority district that was possible under a 62-district plan, the Senate Majority replied that there had been no proposal from the public for such additional district. But that, of course, was because the plans submitted by the public were based on a 61-district Senate.

The legal argument in Mr. Carvin's March 7, 2002 memorandum is reasonable, and it entails no intrinsic partisan bias. The *Schwartz* group of plaintiffs who unsuccessfully advocated precisely the same argument in *Schneider v. Rockefeller* (1972) were Democrats. But it is obvious that the decision to create 62 districts in 2002 was not based on Mr. Carvin's reasoning, and that his memorandum was only supplied in retrospect, to provide a legal rationale for a decision that had been made previously and for other reasons entirely.

The Manipulation of the Size-of-the-Senate Rule in 2011 – 2012

Either of the two interpretations of art. III, §4, par. 3, that have been followed previously – the only interpretations that anyone has advocated during the one-person-one-vote era – would yield a Senate of 62 districts when applied to the 2010 census counts. The arithmetic is shown in the tables in the Appendix. Moreover, as the tables show, if LATFOR complies with its legally mandatory duty to create a redistricting database free of prison-based gerrymandering, that will have no effect on the formula for determining the size of the Senate; none of the relevant county populations are close enough to a tipping point.

The adoption of a number of Senate districts other than 62 would not only entail the adoption of a completely unprecedented constitutional interpretation. It would be a repudiation of the constitutional interpretation advocated in 2002 by the Senate Majority's former and current legal advisor, Mr. Carvin.

LATFOR should decide now, publicly, that there are to be 62 Senate districts in 2012, because that is the only constitutionally correct decision.

And if the Senate Majority intends to create some other number, necessarily using an unprecedented reading of the NYS Constitution, they should at least announce now what that number is to be. The county population totals – the only constitutional basis for computing the number of Senate districts – have been available for five months.[11] As the internal memoranda show, in 2001 the Senate Majority had made their secret decision to change the size of the Senate by July 20. Surely they have had enough time by now to make this decade's calculations of partisan advantage and regional malapportionment.

Indeed, LATFOR is currently soliciting Senate redistricting proposals from the public on the basis of 62 districts. The second screen shot of the LATFOR 'Frequently

[11] The block-level counts, needed to determine the populations in Bronx County, respectively east and west of the Bronx River, have also been available since March. Both the county-level and block-level counts were released by the Census Bureau as part of the PL94-171 redistricting data set.

Asked Questions' page was made yesterday, September 21, 2011. (Unfortunately the frame and the text have been separated in the copying, but the content is not otherwise altered.) It offers a link, "Click here to view technical determination of the size of the Senate." Clicking the link leads to Mr. Carvin's March 7, 2002 memorandum. As noted above, and shown in the technical appendix to this statement, applying Mr. Carvin's constitutional interpretation to the 2010 census counts yields a Senate of 62 members.[12]

To keep the number of Senate districts secret until the end of the process, as in 2001-02, under the guise of waiting to hear from the public, as if there were no binding constitutional rule, would actually deprive the public of any meaningful participation in the process of State Senate redistricting.

When discussing Governor Cuomo's pledge to veto certain types of redistricting plans, members of LATFOR have argued emphatically that the Governor should not veto a redistricting bill merely because it is the product of LATFOR, but should base his decision on the substantive merits of the redistricting plans. They are right.

If the redistricting bill ignores the NYS Constitution, and all the relevant precedents, in determining the number of Senate districts – if there is any number but 62 – then the bill ought to be vetoed on its merits.

If the number of Senate districts is changed, ignoring the Constitution, so as to maintain or increase the regional malapportionment of Senate districts, or to facilitate a partisan gerrymander, or as an excuse for ignoring, in particular places, the county-integrity rule of the NYS Constitution, that will be an even stronger reason for a veto on the merits.

[12] Mr. Carvin's statement, in the next to last sentence, that his interpretation will yield 62 districts, is not what matters now. The point is that the interpretation also yields 62 districts *when applied to the 2010 census counts*.

Appendix: Determining the Number of New York State Senate Districts, 1972-2012

The formula for determining the number of Senate districts is based on Article III, §4, par. 3, of the New York State Constitution, originally adopted in 1894:

> The ratio for apportioning senators shall always be obtained by dividing the number of inhabitants . . . by fifty, and the senate shall always be composed of fifty members, except that if any county having three or more senators at the time of any apportionment, shall be entitled on such ratio to an additional senator or senators, such additional senator or senators shall be given to such county in addition to the fifty senators, and the whole number of senators shall be increased to that extent.

Art. III, § 4, was adopted at a time when New York County (then including much of what is now Bronx County) held nearly a quarter of the population of the state. Politicians representing upstate and rural areas feared that New York and Brooklyn would continue to grow until they entirely dominated state government. That outcome was to be prevented by a constitutional provision that effectively gave an extra Senate seat to the less populous counties, each time one of the more populous counties qualified for an additional seat on the basis of population growth. The provision was one of several that operated, over the following decades, to produce a gross malapportionment of Senate districts. By 1964, when the U.S. Supreme Court applied the equal representation principle to the New York State Legislature in *WMCA, Inc. v. Lomenzo*, the most populous Senate district had four times the population of the least populous.

In the equal representation era, art. III, § 4, should no longer operate to produce a malapportionment. Paragraph 3 just determines the total number of seats, and the state should then be divided into that number of districts, all of approximately equal population, according to the equal representation principle. The interpretation of Paragraph 3 was last litigated in *Schneider v. Rockefeller* (1972), a challenge to the reapportionment that took effect in 1972. The interpretation followed by the Legislature in the 1972 reapportionment was upheld by the NYS Court of Appeals in *Schneider*, and followed by the Legislature in 1982 and 1992.

Some of the language in art. III, § 4, par. 3, is not perfectly clear. The application of the formula is further complicated by the fact that some county boundaries have changed since 1894. As interpreted in a series of decisions by the Court of Appeals – *Matter of Dowling*, 219 N.Y. 44 (1916), *Matter of Fay*, 291 N.Y. 198 (1943), *Matter of Orans*, 15 NY2d 339 (1965), and *Schneider v. Rockefeller*, 31 NY2d 420 (1972) – the paragraph may be parsed as follows:

- **"ratio"** A ratio of apportionment is 1/50 (2%) of the total state population, not including remainders. The rounding is always downward; thus a county with 6.01% of the total state population is deemed to have as many 'full ratios of apportionment' as a county with 7.99% (three 'full ratios,' but still short of four).

- **"any county"** Territory comprising a single county, *as it existed in 1894*; the particular instances will be explained below.

- **"having three or more senators at the time of any apportionment"** Having a population, based on the new census data, equal to at least three 'full ratios.'

- **"shall be entitled on such ratio to an additional senator or senators"** In addition to the number of Senate districts apportioned to the county in 1894.

- **"such additional senator or senators"** In addition to the county's 1894 apportionment.

- **"and the whole number of senators shall be increased to that extent"** Increased above the basic number of 50. The application of the formula can only add districts to the basic 50. No loss of population share in any county can cause a subtraction from the original 50 seats.

There are three instances in which the application of the formula requires the reconstruction of counties as they were in 1894 (or, in one case, a bi-county Senate district of 1894):

New York/Bronx/Westchester

Bronx County was created in 1914. In 1894, that part of the Bronx west of the Bronx River was part of New York County, and the part east of the river was part of Westchester County. There are two ways to construe the application of the formula to these counties in the reapportionments that took effect in 1972, 1982, and 1992. In one way, New York and Bronx Counties are taken to be a single county, and the number of 'full ratios of apportionment' in their combined population is compared with the 12 Senate districts apportioned to New York County in 1894. The other way, the three counties – New York, Bronx, and Westchester – are treated as a single county, and the number of 'full ratios of apportionment' in their combined population is compared with the total of 13 Senate districts apportioned to New York and Westchester Counties in 1894 (12 to New York, one to Westchester). Both methods produce the same result: no effect on the size of the Senate.

Queens/Nassau

Nassau County was created in 1899, from territory that was part of Queens County in 1894. Under art. III, § 4, par. 3, the number of 'full ratios of apportionment' in the combined populations of Queens and Nassau Counties is compared with the one Senate district apportioned to Queens County in 1894.

Richmond/Suffolk

In 1894, Richmond and Suffolk Counties shared a single Senate district. (Without defending this odd arrangement, it can be explained as a reflection of the priority given in the 1894 Constitution to preserving the integrity of county boundaries. The creation of a district that divided a county without being wholly contained within the county was strictly forbidden. Richmond's population was too small for a Senate district of its own, and New York, Kings, and Queens Counties were each too populous to be combined with

Richmond in a single district, so a Senate district was created comprising Richmond and Suffolk.) Under art. III, § 4, par. 3, the number of 'full ratios of apportionment' in the combined populations of Richmond and Suffolk Counties is compared with the one Senate district apportioned to the pair of counties in 1894.

Kings County has also exceeded the three-full-ratios-of-apportionment threshold, but this case is not complicated by boundary changes.

An increase from 60 to 61 occurred in 1982, when the Richmond/Suffolk combination achieved its fourth 'full ratio.' **Tables A**, **B**, and **C** show how the number of Senate seats was determined in 1972, 1982, and 1992. Erie County appears only in the 1972 chart, since it did not reach three 'full ratios' in subsequent censuses.

Table A. Determining the Size of the Senate – 1972 ('Full Ratio' = 364,828)

1894 'County'	1970 (Combined) Population	'Full Ratios' of Apportionment	1894 Senate Districts	'Additional' Districts (above 50)
Erie	1,113,491	3	3	0
Kings	2,602,012	7	7	0
New York + Bronx	3,010,934	8	12	0
New York + Bronx + Westchester (alternate to above)	3,905,340	10	13	0
Queens + Nassau	3,416,012	9	1	8
Richmond + Suffolk	1,422,473	3	1	2

Table B. Determining the Size of the Senate – 1982 (Full Ratio = 351,146)

1894 'County'	1980 (Combined) Population	'Full Ratios' of Apportionment	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,230,936	6	7	0
New York + Bronx	2,596,648	7	12	0
New York + Bronx + Westchester (alternate to above)	3,463,247	9	13	0
Queens + Nassau	3,212,907	9	1	8
Richmond + Suffolk	1,636,352	4	1	3

Table C. Determining the Size of the Senate – 1992 ('Full Ratio' = 359,809)

1894 'County'	1990 (Combined) Population	'Full Ratios' of Apportionment	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,300,664	6	7	0
New York + Bronx	2,691,325	7	12	0
New York + Bronx + Westchester (alternate to above)	3,566,191	9	13	0
Queens + Nassau	3,239,164	9	1	8
Richmond + Suffolk	1,700,623	4	1	3

In 1982 it was not only the Legislature that applied the formula upheld in *Schneider* to arrive at a 61-seat Senate. The Special Master appointed by the three-judge Constitutional Court in *Flateau v. Anderson* also proposed the creation of 61 Senate districts, in place of the then-existing 60 districts. See *Appendix II to Report of the Special Master: New York State Senate Plan*, June 7, 1982 and *Appendix B to Report of the Special Master: Report of Ketron, Inc.*, June 7, 1982.

Note also that the combined population of Queens/Nassau achieved its ninth 'full ratio' in 1992 with only 882 persons to spare. The 1990 census showed the population of Nassau County declining during the 1980's. Had a further 883 persons been lost (assuming the same total state population), the number of Senate districts would have reverted to 60. Loss of population share by a county (or reconstructed 1894 county) cannot produce a subtraction from the basis of 50 seats – Kings County in the charts above produces a value of zero in the last column, not a negative value – but loss of population share can subtract from the number of 'additional' seats that have been generated by the county's previous (post 1894) growth. The formula is applied anew in the reapportionment following each census.

Table D shows how the application of the formula used in 1972, 1982 and 1992, would have produced a Senate of 61 districts if applied to the 2000 census counts.

Table D. Determining the Size of the Senate – 2002 ('Full Ratio' = 379,529)
(Using the Same Procedure as in 1972, 1982, and 1992)

1894 'County'	2000 (Combined) Population	'Full Ratios' of Apportionment	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,465,326	6	7	0
New York + Bronx	2,869,845	7	12	0
New York + Bronx + Westchester (alternate to above)	3,793,304	9	13	0
Queens + Nassau	3,563,923	9	1	8
Richmond + Suffolk	1,863,097	4	1	3

In 2002, however, the Legislature created a Senate of 62 districts. A memorandum dated March 7, 2002, from Michael Carvin, outside counsel to the Senate Majority, gives a constitutional rationale for this result. Mr Carvin asserts that the "best method for apportioning the New York Senate" would differ from the method approved by the Court of Appeals in *Schneider* and employed by the Legislature in 1972, 1982, and 1992. Although he does not note the fact, Mr. Carvin's favored interpretation is exactly that which was advocated unsuccessfully by the *Schwartz* group of plaintiffs in *Schneider*. (Mr. Carvin's memorandum does not mention the combination of Suffolk and Richmond Counties, but that combination does figure in the method employed in 2002, and its role in the formula is assumed in the calculation that concludes Mr. Carvin's penultimate paragraph.) The formula applied by the Legislature to the 2000 census counts differs in two respects from the formula employed during the previous three decades.

Manhattan, Bronx, and Westchester – the 2002 Interpretation

New York and Bronx Counties (or, alternatively, New York, Bronx, and Westchester Counties) were not combined in their entirety, to reconstitute an 1894 county. Instead, that part of Bronx County east of the Bronx River – the territory that was part of Westchester County in 1894 – was combined with all of Westchester County to construct the 'county' whose 'full ratios of apportionment' were to be compared with the one Senate district apportioned to Westchester in 1894. Only the part of Bronx County west of the river was combined with New York County.

Westchester County alone would have had only two 'full ratios of apportionment' (2.41, rounded down) according to the 2000 census, and therefore would not have figured in determining the number of Senate districts (only counties with at least three 'full ratios' are relevant). But when Westchester County was combined with the part of Bronx County east of the Bronx River, the resulting 1894 'county' had three full ratios of apportionment. Subtracting the single Senate district apportioned to Westchester in 1894, the reconstituted Westchester County of 1894 contributed two additional seats to the computation of the total number of districts.

Aggregation of County Apportionment Ratios – the 2002 Interpretation

When two counties were to be combined to reconstitute an 1894 county, by the method used in 1972, 1982, and 1992, the number of 'full ratios of apportionment' in the reconstituted 'county' was determined by first summing the populations of the present-day counties, then calculating the number of 'full ratios' in the combined total population (as shown in **Tables A** through **D**, above).

Under the new method adopted by the Legislature in 2002, the number of 'full ratios' was first calculated for each present-day county (or relevant part of such county), the remainders were dropped, and the rounded-down 'full ratios' – not populations – were then summed.

This change in procedure made a difference in the Queens-Nassau combination. The combined population of the two counties in 2000 was 3,563,923. Under the formula used previously, the combined total population would be divided by the 'full ratio' of

379,529; and the result would be 9.39, rounded down to 9 'full ratios of apportionment.' Subtracting the one district apportioned to Queens County in 1894, the reconstituted 'county' would have contributed 8 districts to be added to the basic number of 50.

But under the new method, the ratios of apportionment were calculated separately for present-day Queens and Nassau Counties. Queens's population of 2,229,379, divided by 379,529, yielded 5.87 'ratios,' rounded down to 5 'full ratios.' Nassau's population of 1,334,544 yielded 3.52 'ratios,' rounded down to 3 'full ratios.' Adding the 'full ratios' – not the populations – the reconstituted 'county' had 8 'full ratios.' Subtracting the one district apportioned to Queens County in 1894, the Queens-Nassau combination contributed 7 districts to be added to the basic number of 50.

For the Bronx-Westchester and Richmond-Suffolk combinations, the new method for aggregating county 'apportionment ratios' yielded the same results as the old method, as applied to the 2000 county population counts.

In summary, one change in the constitutional interpretation (the treatment of Bronx and Westchester Counties) produced two more Senate districts than the prior method, and the other change (aggregating 'full ratios' rather than populations) produced one less. The net result was a Senate of 62 districts, instead of 61, as shown in **Table E**.

Table E. Determining the Size of the Senate – 2002 ('Full Ratio' = 379,529)
(The New Procedure Adopted in 2002)

Modern County	2000 Population	'Full Ratios'	1894 'County'	Sum of 'Full Ratios'	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,465,326	6	Kings	6	7	0
New York	1,537,195	4	XXXXXXX	XXXX	XXXX	XXXXXXX
Bronx (west of the Bronx River)	794,061	2	New York + Bronx (pt.)	6	12	0
Bronx (east of the Bronx River)	538,589	1	Westchester + Bronx (pt.)	3	1	2
Westchester	923,459	2	XXXXXXX	XXXX	XXXX	XXXXXXX
Queens	2,229,379	5	XXXXXXX	XXXX	XXXX	XXXXXXX
Nassau	1,334,544	3	Queens + Nassau	8	1	7
Richmond	443,728	1	XXXXXXX	XXXX	XXXX	XXXXXXX
Suffolk	1,419,369	3	Richmond + Suffolk	4	1	3

Determining the Size of the Senate for 2012

Tables F1 and **G1** are based on the county population counts from the 2010 census, PL94-171 redistricting data set, published by the Census Bureau on March 25, 2011.

Table F1. Determining the Size of the Senate – 2012
***Based on 2010 County Population Counts* ('Full Ratio' = 387,562)**
(Using the Same Procedure as in 1972, 1982, and 1992)

1894 'County'	2010 (Combined) Population	'Full Ratios' of Apportionment	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,504,700	6	7	0
New York + Bronx	2,970,981	7	12	0
New York + Bronx + Westchester (alternate to above)	3,920,094	10	13	0
Queens + Nassau	3,570,254	9	1	8
Richmond + Suffolk	1,962,080	5	1	4

Table G1. Determining the Size of the Senate – 2012
***Based on 2010 County Population Counts* ('Full Ratio' = 387,562)**
(The New Procedure Adopted in 2002)

Modern County	2010 Population	'Full Ratios of Appor-tionment'	1894 'County'	Sum of 'Full Ratios'	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,504,700	6	Kings	6	7	0
New York	1,585,873	4	XXXXXXX	XXXX	XXXX	XXXXXXX
Bronx (west of the Bronx River)	829,963	2	New York + Bronx (pt.)	6	12	0
Bronx (east of the Bronx River)	555,145	1	Westchester + Bronx (pt.)	3	1	2
Westchester	949,113	2	XXXXXXX	XXXX	XXXX	XXXXXXX
Queens	2,230,722	5	XXXXXXX	XXXX	XXXX	XXXXXXX
Nassau	1,339,532	3	Queens + Nassau	8	1	7
Richmond	468,730	1	XXXXXXX	XXXX	XXXX	XXXXXXX
Suffolk	1,493,350	3	Richmond + Suffolk	4	1	3

Both methods would produce a Senate of **62 seats** in 2012. The convergence of the two methods is a coincidence, arising from the new population counts for certain counties, and may not hold after the 2020 census.

Tables F2 and **G2** use on the legally mandatory database, finally produced by LATFOR in January 2012, that subtracts inmates of federal and state prisoners from their places of incarceration, reallocating them insofar as possible to their prior home addresses. It will be seen that the adjustment has no effect on the Senate size calculation.

Table F2. Determining the Size of the Senate – 2012
2010 County Population Counts with Prisoner Subtractions and Reallocations
(Total State Population = 19,363,397; 'Ratio of Apportionment' = 387,268)
(Using the Same Procedure as in 1972, 1982, and 1992)

1894 'County'	2010 (Combined) Population after subtraction	'Full Ratios' of Apportionment	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,513,044	6	7	0
New York + Bronx	2,980,799	7	12	0
New York + Bronx + Westchester (alternate to above)	3,928,313	10	13	0
Queens + Nassau	3,574,678	9	1	8
Richmond + Suffolk	1,964,163	5	1	4

Table G2. Determining the Size of the Senate – 2012
2010 County Population Counts with Prisoner Subtractions and Reallocations
(Total State Population = 19,363,397; 'Ratio of Apportionment' = 387,268)
(The New Procedure Adopted in 2002)

Modern County	2010 Population after subtraction	'Full Ratios of Appor-tionment'	1894 'County'	Sum of 'Full Ratios'	1894 Senate Districts	'Additional' Districts (above 50)
Kings	2,513,044	6	Kings	6	7	0
New York	1,590,254	4	XXXXXXX	XXXX	XXXX	XXXXXXX
Bronx (west of the Bronx River)	833,760	2	New York + Bronx(pt.)	6	12	0
Bronx (east of the Bronx River)	556,785	1	Westchester + Bronx(pt.)	3	1	2
Westchester	947,514	2	XXXXXXX	XXXX	XXXX	XXXXXXX
Queens	2,233,796	5	XXXXXXX	XXXX	XXXX	XXXXXXX
Nassau	1,340,882	3	Queens + Nassau	8	1	7
Richmond	468,576	1	XXXXXXX	XXXX	XXXX	XXXXXXX
Suffolk	1,495,587	3	Richmond + Suffolk	4	1	3

Memorandum

To: Sen. Skelos, Steve Boggess

CC: Vinny Bruy

From: Mark Burgeson

Date: 05/04/01

Re: Reapportionment Areas

Following is a description of a preliminary "Reapportionment Area" configuration.

I use the term reapportionment area to refer to a group of counties whose combined population will allow a whole number of Senate Districts to be drawn within the exterior boundaries of that group and be within an acceptable population deviation from the ideal. I emphasize that this is just one of many possible configurations. An additional note; I've arranged this configuration based on a 62-seat Senate, but have given deviations from both a 62- and a 61-seat Senate for the upstate and island areas. I did this because I operated on the assumption that east of the Nassau/Queens line and north and west of the Hudson R/A district, the basic number of districts will not change. It is within the New York R/A's that we will have wiggle room to draw districts at a 61- or 62-seat Senate. Thus, a 61-seat Senate would combine the Queens, Kings and Hudson areas to create a New York R/A starting at Queens/Nassau and running to Columbia/Albany. Instead of the 30 districts apportioned to that area, it would entail 29 districts @ 323,128, a deviation of +3.87%.

Ideal Population for 62 is 306,072; for 61 it is 311,089

R/A	Description, Population and Deviation (62 / 61)	
Long Island	Nassau & Suffolk	2,753,913
	9 districts @ 305,990	-.03% / -1.64%

Queens	Queens	2,229,379	
	7 @ 318,483	+4.05% /+2.38%	
Kings	Kings	2,465,326	
	8 @ 308,166	+.68%/-.9%	
Hudson	Richmond, NY, Bronx, Westchester, Putnam, Dutchess, Columbia		
	4,676,021	15 @ 311,735	+1.85%/-.2%
Catskill	Rockland, Orange, Ulster, Sullivan, Delaware		
	927,890	3 @ 309,297	+1.05% / -.5%
Albany	Albany		
	294,565	1 @ 294,565	-3.76% / - 5.31%
Mohawk	Rensselaer, Saratoga, Fulton, Schenectady, Montgomery		
	604,509	2 @ 302,255	-1.25% / -2.84
Adirondack	Washington, Clinton, Hamilton, Warren, Essex, Franklin		
	299,603	1 @ 299,603	-2.11% / -3.69%

Binghamton	Broome, Tioga, Cortland		
	300,919	1 @ 300,919	-1.68% / -3.27%
Onondaga	Greene, Schoharie, Otsego, Chenango, Herkimer, Oneida, Madison, Onondaga, Cayuga, Oswego, Jefferson, St. Lawrence, Lewis	1,475,480	5 @ 295,096 -3.59% / -5.14
Western	Wayne, Ontario, Seneca, Yates, Schuyler, Tompkins, Steuben, Chemung, Monroe, Livingston, Orleans, Genesee, Niagara, Erie, Wyoming, Chautauqua, Cattaraugus, Allegany		
	2,948,852	10 @ 294,885	-3.66% / -5.21%

Overall deviation at 62 is 7.81% (-3.76% ..+4.05%)

Overall deviation at 61 is 9.18% (-5.31%..+3.87%)

New York State Senate
Majority Redistricting Office
250 Broadway
New York, NY 10007

To: Sen. Skelos, Steve Boggess
From: Mark Burgeson
CC: Vinnie Bruy
Date: July 20, 2001
Re: Size of the Senate

We have had numerous discussions regarding the possibility of the Senate increasing in size to 63. While the ultimate decision will be made with political numbers for proposed districts at each size in hand, I believe that the decision basically comes down to the raw census numbers.

I have previously stated my contention that the only reason to go to 63 is to strengthen the Long Island delegation by combining politically undesirable areas in the extra district. There are no areas elsewhere in the state where we have the opportunity to pick up a district, or strengthen surrounding districts solely on the basis of adding another district to an area. In fact, as you will recall, our proposed redistricting areas upstate are already configured in such a manner as to draw districts *light,* to avoid migration downstate. Adding another district anywhere upstate would exacerbate that situation.

Initially, my thinking was that in going to 63 we would strengthen all nine members by carving out a tenth district strictly on the island, combining all the minority areas from Elmont on the Nassau/Queens border east to Brentwood in the town of Islip. This would serve the dual purpose of carving out politically undesirable areas and at the same time demonstrate sensitivity to testimony received at both the Nassau/Suffolk and Westchester public hearings. There are four major reasons mitigating against this scenario:

a. At a district population of 275,391, the deviation from the ideal for 10 districts on the island would be –8.57%. With a total permissible deviation of 10%, this would give us precious little room to maneuver elsewhere in the state;
b. While this minority district is theoretically possible, it is extremely unsightly and would most likely bring scrutiny ala Shaw v. Reno;
c. Senator Trunzo lives squarely within one of the major minority concentrations which would be included in the minority district (Brentwood).
d. The additional district almost certainly would not be a republican pickup. Thus, all else being equal, the republican majority would be 36-27

The next option under a 63-seat Senate I considered was to include Queens with Long Island. Under this scenario, there would be a minority district bridging Nassau/Queens, with approximately 115,700 in Nassau. That number is reasonably close to the population of the minority areas of Hempstead, Lakeview, Elmont, Roosevelt and Baldwin and could be combined with black areas in Jamaica to form a minority district. Several pertinent comments regarding this scenario:

a. Politically, this would certainly help Senators Skelos, Fuschillo and Hannon.

b. We have received testimony that the minority areas in Hempstead should be together and this would accomplish that. The minority district is reasonably compact and should not run afoul of a Shaw v. Reno issue.
c. In this configuration, the Nassau/Suffolk bridge district(s) would have a population of 246,829 in Suffolk and 46,306 in Nassau. It is not my job to be an advocate of one county over another, but the fact of the matter at hand is that we currently have two Nassau-based Senators whose districts comprise portions of Suffolk county. The political reality is that it is extremely unlikely that Nassau (despite any agreement between the two county's organizations) would be able to control a bridge district(s) in which only 15% is in Nassau county; and that, in turn, while not necessarily meaning the loss of a republican seat, would mean the loss of an incumbent.
d. An additional county line cut (Nassau/Queens).
e. As above, the additional district would not likely be taken by a republican and the majority would stand at 36-27, all else being equal.

Finally, I looked at a reapportionment area which stretches from Suffolk to Columbia county. This would result in a district size of 303,151, of which several comments can be made:

a. The Nassau portion of the Nassau/Queens bridge district would contain a population of only 25,554. That few people would be of negligible political value.
b. Although the Nassau/Queens bridge would be a minority district, the above mentioned minority areas in Hempstead (with the exception of Elmont) would still need *attention.*
c. The Nassau/Suffolk district(s) would be a 32%/68% split. Not quite the current 44%/56% split, but closer than the above15%/85% split. Enough to avoid the loss of Nassau county control of that seat(s)? Hard to tell.
d. Another county line cut (Queens/Kings).
e. Again, unlikely that the additional district would be a republican pickup.

New York State Senate
Majority Redistricting Office
250 Broadway
New York, NY 10007

Memorandum

To: Senator Skelos
From: Mark Burgeson
CC: Vinny Bruy
Date: December 18, 2001
Re: "The 135"

There seems to be a bit of confusion over the provenance of the population number in Westchester which is to be attached to Bronx County. There has been some speculation that this number has been arbitrarily chosen out of thin air. It has not. It is arbitrary only to the extent of selecting which of several combinations of counties is to be used for this Reapportionment Area (R/A).

Through the examination of various combinations of counties, the following combination (which I'll call the Hudson R/A) maximizes the Westchester portion attached to Bronx.

Following are some numbers and calculations which I hope will better illustrate how this figure was determined. The process requires two distinct steps: **A.** determination of the size of Senate districts in the Hudson R/A; and, **B.** another calculation to determine the portion of Westchester attached to Bronx.

A. Senate District size calculation

First, calculate the total population of the Hudson R/A.

Hudson R/A: (Columbia, Dutchess, Putnam, Westchester, Bronx, New York, Richmond & Kings):

Kings	2,465,326
Richmond	443,728
New York	1,537,195
Bronx	1,332,650
Westchester	923,459
Putnam	95,745
Dutchess	280,150
Columbia	63,094
Total	7,141,347

In order to craft districts whose population falls within the acceptable overall deviation of 10%, 23 Senate districts, stretching from Brooklyn to Columbia County, are drawn at a population of 310,493. Because of manipulation of town combinations in Dutchess and Westchester, I was able to take advantage of the NYS Constitution's "town on border" rule and draw the Saland and Leibell districts a little bit "lite" at 301,541 and 303,359 respectively. This has the effect of further increasing the Westchester portion over what it would have been with the Saland and Leibell districts being drawn at 310,493. Subtracting the populations of those two "lite" districts now leaves a remaining population in the Hudson R/A of 6,536,447.

7,141,347	
- 301,541	Saland SD
- 303,359	Leibell SD
6,536,447	Total remaining in Hudson R/A

Dividing this remaining total by 21 gives us a district size of 311,259 for the remaining 21 SD's in this R/A. Because of the NYS Constitution's "block on border" rule, the size of the districts within the city and lower Westchester will each be within one or two of this 311,259 size, simply because you will almost always be able to find a block with small enough populations to equalize the districts.

21 Districts @ 311,259

B. Bronx/Westchester calculation:

Total population of counties Westchester-Columbia		1,362,451
SD 41	Saland	- 301,541
SD 40	Leibell	- 303,359
SD 37	Oppenheimer	- 311,259
SD 35	Spano	- 311,259
Total left in Westchester to be attached to Bronx		**135,033**

This total is set. It be changed only by adjusting the R/A itself. For example, it would be possible to create an alternate R/A which attaches Queens County to the above Hudson R/A. Running the same above calculations for this new R/A would result in a Westchester total of 131,418 connected to Bronx. Likewise, another adjustment to the R/A would be to add Nassau & Suffolk counties. Again, running the same above calculations results in a Westchester total of 134,515. Thus, there is method (maximizing the Westchester total), not arbitrariness in selecting which R/A to use in calculating the portion of Westchester connected to Bronx.

The only consideration now, is how (or if) it is divided between Senators Velella and Hassell-Thompson. If it is not divided, and Senator Velella receives the entire "135", I would suggest that the U.S. Justice Department would look unkindly on eliminating a minority legislator.

Facts About Racially Discriminatory State Senate Redistricting in Nassau and Suffolk Counties: 1972 - 2012

Todd A. Breitbart

January 31, 2012

The proposed State Senate districts, designed by the Senate Majority and released by LATFOR[1] on January 26, would continue – *through a full half-century* – the systematic splitting of Long Island minority communities, diluting the voting power of black and Hispanic voters. All nine Long Island districts have again been designed to have super-majorities of non-Hispanic white voters.

Long Island's black and Hispanic populations were systematically split in every Senate redistricting plan adopted by the Legislature during the one-person-one-vote era: the plans enacted in 1972, 1982 (slightly revised in 1984), 1992, and 2002.[2] The Republican Senate majority now proposes to add 2012 to this roll-call of shame.

This issue involves no conflict between the interests of Latino and African-American communities. In both counties, the black and Hispanic populations are concentrated in the same incorporated villages and unincorporated hamlets. Districts that split one group, diluting their voting power, will split the other group as well. Districts that permit one group to exercise their full voting power will do the same for the other.

The maps explained and listed in Appendix A show the pattern, with the demographic data from each census as a color theme, and an overlay of the Senate district boundaries for the same decade, including the newly proposed 2012 districts.

A Question of Justice – Not of Law

A group of voters brought suit to challenge the 2002 Long Island Senate districts, but a three-judge Federal District Court ruled, in *Rodriguez v. Pataki* (2004), that they were not entitled to relief under the Voting Rights Act of 1965. Whether the Court ruled correctly is not the important question now. The prospects for challenging a new discriminatory redistricting plan under the Voting Rights Act will depend largely on recent demographic trends, and on a statistical analysis of recent voting patterns. These essential facts may be different from 2002.

But the decision facing the Legislature and the Governor is not primarily a question of law. It is a question of justice.

The courts set limits: some things the Legislature and Governor must do, and some that they must not do. Within those limits, the Legislature and the Governor enjoy

[1] The NYS Legislative Task Force on Demographic Research and Reapportionment. The acronym LATFOR comes from a previous name for the Task Force.

[2] During the 1960's, court-imposed plans – not legislation – brought New York State into compliance with the original one-person-one-vote court rulings.

broad discretion to act wisely or unwisely, justly or unjustly. If that were not so, it would not much matter whom we elect, or how the districts are drawn.

Suppose, for the sake of argument, that the systematic splitting of Long Island minority communities by Senate district boundaries *may*, as a matter of law, be extended through a full half-century. That does not even begin to address the question of what the Legislature *should* do, or what the Governor *should* approve.

The Co-Chairs of the Legislative Task Force on Reapportionment (LATFOR) have argued that Governor Cuomo should not veto a redistricting bill merely because it was designed by them, and not by an independent commission. They urge the Governor to base his decision on the bill's substance, not its source.

Surely, though, if the racially discriminatory Long Island Senate boundaries of 1972, 1982, 1992, and 2002 are continued in 2012, then Governor Cuomo will have compelling grounds to veto the reapportionment bill – because what it does is morally repugnant, regardless of who has done it.

Legislative Decision-Making: the View from Inside

In 2002, the Senate Majority took advantage of a constitutional ambiguity to increase the number of Senate districts from 61 to 62. This was primarily a device to prevent the reapportionment of a district from upstate to downstate as the result of population trends. But it turns out that consideration was secretly given to the creation of 63 districts, for reasons that involved Long Island.

A Republican Senate staff member, who handled the technical work of designing the Senate districts, discussed this subject in a confidential July 20, 2001 memo titled "Size of the Senate," addressed to Sen. Dean Skelos, who was then the Co-Chair of LATFOR.[3] The memo became public during the *Rodriguez* case. The second paragraph begins: "I have previously stated my contention that the only reason to go to 63 is to strengthen the Long Island delegation by combining politically undesirable areas in the extra district." [Emphasis in original.]

The memo then explains the reasons for rejecting this idea:

> **Initially, my thinking was that in going to 63 we would strengthen all nine members by carving out a tenth district strictly on the island, combining all the minority areas from Elmont on the Nassau/Queens border east to Brentwood in the town of Islip. This would serve the dual purpose of carving out politically undesirable areas and at the same time demonstrate sensitivity to**

[3] Memorandum titled "Size of the Senate," July 20, 2001, *Rodriguez v. Pataki* SDNY 02 Civ. 618. (PDF file name: "Not63.") The addressees are: Sen. Dean Skelos, then the Co-Chairman of LATFOR (since elected Majority Leader); Steve Boggess, then the Secretary of the Senate (since retired); and the late Vinnie Bruy, then the public member of LATFOR appointed by Majority Leader Bruno, and an expert analyst of political data for the Republican Party.

> **testimony received at both the Nassau/Suffolk and Westchester public hearings. There are four major reasons mitigating against this scenario:**
> **a. At a district population of 275,391, the deviation from the ideal for 10 districts on the island would be –8.57%. With a total permissible deviation of 10%, this would give us precious little room to maneuver elsewhere in the state;**
> **b. While this minority district is theoretically possible, it is extremely unsightly and would most likely bring scrutiny ala Shaw v. Reno;**
> **c. Senator Trunzo lives squarely within one of the major minority concentrations which would be included in the minority district (Brentwood).**
> **d. The additional district almost certainly would not be a republican pickup. Thus, all else being equal, the republican majority would be 36-27**

Apparently it was decided that the "politically undesirable areas" could be handled just as well by splitting them evenly, once again, among several districts. There is nothing secret about the how this was done. It is described in detail below.

The geographic and demographic pattern. The 2012 Senate proposal continues to split the contiguous, large (and growing) concentrations of black and Hispanic population, so as to dilute the voting power of minority-group voters.[4]

- **In Nassau County** the communities with large black and Hispanic populations are split among four proposed districts. As in1972, 1982, 1992, and 2002, Freeport and Roosevelt are in Senate District 8; and Hempstead Village, Uniondale, and Lakeview are in SD 6. Valley Stream, North Valley Stream and part of Elmont are in SD 9, and the balance of Elmont, South Floral Park, Westbury, and New Cassel are in SD 7. Baldwin and Baldwin Harbor are divided between SD's 8 and 9.

- **In Suffolk County** the communities with large black and Hispanic populations are split among three proposed districts, a pattern that has been carefully maintained since 1982. The black and Hispanic communities in the Town of Babylon are divided once again between SD's 4 and 8, along a line that differs little from the previous decades. In the Town of Islip, the Hispanic and black communities are again divided between SD's 3 and 4. **The line through Brentwood, splitting the Hispanic and black populations of the Town of Islip between SD's 3 and 4, is precisely identical to the boundary that was drawn in 1982, 1992, and 2002**. Apparently it has proven its effectiveness.

- **The minority populations are so carefully balanced between the newly proposed districts** that the combined black and Hispanic voting-age population (**VAP**) percentage of Nassau County SD 6 is 31.42%, in adjoining SD 8 it is 31.24%, and in SD 9 it is 24.10%. In Suffolk County, the figure for SD 3 is 31.98%, and in SD 4 it is 25.97%. Each senator can be re-elected without support from minority-group voters.

[4] Unless otherwise stated, the figures given in this fact sheet for the black population include all persons who identified themselves in the census as black, whether or not they also checked off another racial category, and whether or not they also identified themselves as being of Hispanic origin. See the last paragraph of the Appendix for the legal background. **VAP** stands for 'voting-age population.'

- **The 2012 Senate proposal continues to create nine districts with non-Hispanic white super-majorities**, even though the non-Hispanic white share of Long Island's **VAP** dropped from 85.4% in 1990, to 78.2% in 2000, and then to 70.9% in 2010.

- In absolute numbers, **Long Island's total non-Hispanic white population (all ages) declined** by 89,228 (4.1%) during the 1990's, and by a further 159,315 (7.6%) in the 2000's. Long Island's total population nevertheless grew by 5.5% during the 1990's, and by 2.9% in the 2000's – keeping pace with the statewide growth rate and maintaining Long Island's share of representation in the State Senate – only because the growth of minority-group populations more than offset the decline in non-Hispanic white population. The 2012 Senate proposal, however, like the Senate plan enacted in 2002, minimizes the role of minority-group voters in electing Long Island's State Senate delegation.

- In 1992 the Senate Plan, the **VAP** in all nine Long Island nine districts was at least 76.8% non-Hispanic white, according to the 1990 census.

- In the 2002 Senate Plan, the **VAP** in all nine districts was at least 69.0% non-Hispanic white, according to the 2000 census.

- In the Senate Majority's proposal for 2012 no district has a non-Hispanic white **VAP** percentage of less than 62.65%. And none has a black **VAP** percentage exceeding 16.40%, or a Hispanic **VAP** percentage exceeding 23.90%

Racial gerrymandering. For a half-century, dividing large concentrations of black and Hispanic voters so as to dilute their voting power – and, conversely, concentrating non-Hispanic white populations to create nothing but super-majority non-Hispanic white districts – has been the only consistent principle followed in drawing Senate districts in Long Island.

- **The boundary between Senate Districts 6 and 8 in Nassau.** Both districts have changed greatly over the decades. In 1972, SD 8 extended from the New York City line to the Hempstead/Oyster Bay town line; in 1982, the western boundary of SD 8 was moved to South Hempstead, and the eastern boundary was moved to the Suffolk County line; in 1992, SD 8 was extended across the county line into the Town of Babylon. In 1972, SD 6 was entirely within the Town of Hempstead; in 1982 and 1992 SD 6 was extended through the Town of Oyster Bay to the Suffolk County line. For decade after decade, however, the boundary dividing the minority communities between the SD's 6 and 8 remained virtually unchanged. Under the 2002 Senate Plan, it remained virtually unchanged for a fourth decade, **and now the proposed districts would divide the minority communities along the same line for the fifth consecutive decade**. (In the 2012 proposal, as in 1982, 1992, and 2002, the principal boundary between SD's 6 and 8 follows the Roosevelt-Uniondale boundary line.)

- **The boundary line dividing the minority communities within the Town of Babylon.** In 1982 a section of the Town of Babylon – comprising East Farmingdale and North Amityville, and parts of Wyandanch, West Babylon, North Lindenhurst, Copiague, and Amityville – was attached to SD 5, which extended northward to the Long Island Sound, extending into the Towns of Huntington and Oyster Bay and the City of Glen Cove. It was primarily a North Shore district. In 1992, the same part of the Town of Babylon – identical except for three blocks – was attached to SD 8, a South Shore district extending into the southern part of the Town of Oyster Bay and thence into the Town of Hempstead. Under the 2002 Senate Plan, the line through the minority community in Babylon again remained unchanged for most of its length – southward from the Babylon-Huntington town line almost to the northern boundary of the Village of Lindenhurst – and then divided Lindenhurst, Copiague, and Amityville along a line only slightly different from the 1992 boundary. In the 2012 proposal, this line through Babylon remains almost the same, shifted slightly in response to the continued eastward movement of Long Island's population

- **The boundary line dividing the minority communities within the Town of Islip.** SD's 3 and 4 changed extensively from 1982 to 1992, and again changed extensively under the 2002 Senate Plan – except in one place. The portion of the district boundary that divides Brentwood – and thereby splits the minority communities in the Town of Islip – was precisely identical in the three plans, from the town line at Moreland Road in the north to the intersection of Commack Road and Candlewood Road in the south. The 2012 proposal again draws that line through Brentwood, along precisely the same streets as in the three previous decades.

  The pattern is too consistent to be coincidental. The parts of the Senate district boundaries that split the minority communities were established first, and any necessary changes (such as to equalize district populations in accordance with the latest census) were made around those fixed features.

- **The splitting of the minority communities did not result from any effort to preserve existing local government subdivisions or traditionally recognized communities.** Although it has been necessary to cut through county, town and village boundaries in Long Island in order to comply with the one-person-one-vote principle, the division of these local government units has been far more extensive than necessary. In 1992, for example, the Legislature created, for the first time, a pair of Nassau-Suffolk districts, one of which – SD 8 – splits the minority population in the Town of Babylon. If the Legislature had wished to keep local government units intact insofar as possible, it could have created a single Nassau-Suffolk district by including more of the Town of Huntington in SD 5, and it need not have brought SD 8 into Babylon at all. The 2002 Senate Plan again included a pair of Nassau/Suffolk districts, and the 2012 proposal does so yet again.

Systematically splitting the minority communities, decade after decade, undermines democracy.

- Splitting the minority populations denies representation to communities defined by actually shared interests, not just by race, and makes it difficult for their senators to respond to their needs. Education is the best example. Education is the largest single category of state and local government expenditure in New York State. Funding for local school districts is the largest single item in the state budget, and the education aid formula is the most contentious issue the Legislature addresses each year. In Nassau and Suffolk counties, the school districts with large minority populations tend to be less affluent, less able to finance public education from their local tax base, and less well financed than the districts with very small minority populations.

  Systematically splitting minority populations not only dilutes the voting power of minority voters, as such, but also dilutes the power of voters who have a shared interest in changing the state school aid formula to reduce the inequality in school financing. The senators, wishing to be re-elected, are then forced to respond to those voters who have a vested interest in the *status quo*.

- **Splitting the minority communities discourages interracial coalition-building.** Racially polarized or segregated politics has a corrosive effect on democracy. Interracial coalition-building should be encouraged. But redistricting so as to dilute minority voting power and minimize the minority percentage in any one district has just the opposite effect. Drawing districts in which black or Hispanic voters are not just a minority, but the smallest possible minority, reduces their value as coalition partners, and makes it easy – and tempting – for candidates to win election without appealing for their support or addressing their interests.

Appendix A: Mapping the Discriminatory Pattern in State Senate Redistricting

The maps show the black or Hispanic percentage of the total population in each census tract, from each census since 1970. Two maps show the combined black and Hispanic percentage from the 2010 census. In order to present the maps at the largest possible scale, they show only the part of each county where large Latino and African-American communities are located.

It was not possible to locate tract-level data for the Hispanic population from the 1970 census, so the maps showing Hispanic population begin with the 1980 census.

The percentages displayed in the map color themes are based on total population – all ages. This measure has been chosen in order to provide comparable data across the five decades. It was not possible to locate voting-age population (VAP) data from 1970. But the geographic distribution of the VAP for each group will be nearly the same as the geographic distribution of the total population.

The data from 1970, 1980, and 1990 have been matched to the census tracts from the 2000 census, which provide the geographic basis for those maps. The maps showing data from the 2010 census use the latest census tract boundaries. The Senate districts enacted in 1982 were revised slightly in 1984, to equalize the populations of several pairs of adjoining districts in compliance with the NYS Constitution's 'block-on-border' rule. The final 1984 district boundaries are shown.

The black percentage includes all persons who identified themselves in the census as black, whether nor not they also identified themselves as Hispanic. The maps based on the censuses of 2000 and 2010, which permitted multiple-race responses, include all persons who identified themselves as black, whether or not they also listed another race. This is the method of tabulation prescribed for enforcement of civil rights laws in US Office of Management and the Budget (OMB) Bulletin No. 00-02, *Guidance on Aggregation and Allocation of Data on Race for Use in Civil Rights Monitoring and Enforcement*. It also accords with the method prescribed by the US Supreme Court in *Georgia v. Ashcroft*, 539 US 461, FN1 (2003). The maps showing combined percentages are based on the sum of the non-Hispanic black and Hispanic populations.

List of Maps

Appendix B: Long Island Senate District Demographics

The data for race and Hispanic origin in the tables below are for voting-age population (VAP). Some of the percentages given in the section of the fact sheet on 'The Demographic Pattern' (pp. 4-5) refer to total population, the same variable displayed in the maps. Where the fact sheet gives voting-age population, that is stated in the text.

Current Long Island Senate Districts (2002 Plan) – 2000 Census Data

District	Population	Deviation from Ideal Population	% Deviation	Voting Age Population	Non-Hispanic White Voting Age Population	Hispanic Voting Age Population	Black Voting Age Population	Non-Hispanic Black Voting Age Population	Non-Hispanic Asian Voting Age Population	Hispanic plus Non-Hispanic Black Voting Age Population
1	305,989	-83	-0.03%	229,551	85.31%	6.92%	5.44%	5.19%	1.66%	12.11%
2	305,990	-82	-0.03%	226,892	88.46%	4.38%	2.10%	1.94%	4.81%	6.33%
3	305,989	-83	-0.03%	222,314	74.25%	15.59%	7.77%	7.09%	2.37%	22.68%
4	305,991	-81	-0.03%	225,017	76.41%	11.92%	9.33%	8.77%	2.17%	20.69%
5	305,990	-82	-0.03%	231,528	84.14%	7.18%	3.39%	3.23%	4.97%	10.41%
6	305,993	-79	-0.03%	229,090	69.04%	11.15%	16.51%	15.87%	3.48%	27.02%
7	305,991	-81	-0.03%	233,048	73.07%	9.26%	8.78%	8.36%	8.54%	17.62%
8	305,990	-82	-0.03%	225,348	71.85%	10.31%	15.69%	15.06%	2.25%	25.37%
9	305,990	-82	-0.03%	231,965	81.44%	8.48%	5.98%	5.67%	3.78%	14.15%

Long Island Senate Districts Proposed by LATFOR on January 26, 2012 – 2010 Census Data

District	Population	Deviation from Ideal Population	% Deviation	Voting Age Population	Non-Hispanic White Voting Age Population	Hispanic Voting Age Population	Black Voting Age Population	Non-Hispanic Black Voting Age Population	Non-Hispanic Asian Voting Age Population	Hispanic plus Non-Hispanic Black Voting Age Population
1	315,163	7,807	2.54%	243,135	79.36%	12.25%	5.87%	5.45%	2.23%	17.69%
2	315,164	7,808	2.54%	238,990	83.49%	6.96%	3.48%	3.19%	5.95%	10.15%
3	315,163	7,807	2.54%	235,923	64.43%	23.90%	9.21%	8.08%	3.09%	31.98%
4	315,163	7,807	2.54%	239,480	70.20%	16.73%	10.17%	9.24%	3.37%	25.97%
5	315,163	7,807	2.54%	239,647	78.37%	9.88%	3.76%	3.44%	7.99%	13.32%
6	315,163	7,807	2.54%	242,579	62.65%	16.52%	15.74%	14.90%	5.58%	31.42%
7	315,163	7,807	2.54%	242,166	64.34%	12.82%	8.09%	7.62%	14.68%	20.44%
8	315,163	7,807	2.54%	239,145	65.57%	15.86%	16.40%	15.37%	2.78%	31.24%
9	315,164	7,808	2.54%	242,567	69.57%	13.03%	11.81%	11.07%	5.77%	24.10%

The total populations and population deviations in the second table reflect the subtraction of prisoners in state and federal custody from the places of incarceration, and the reallocation of the prisoners to their prior home addresses, as now required by law. The *voting-age* population data do *not* reflect the reallocation of prisoners to their home addresses, since persons imprisoned for felonies are disenfranchised until the completion of the sentence, and should therefore be excluded from any estimate of voting-power. Moreover, the adjusted VAP data provided by LATFOR do not conform to the tabulation protocols of OMB Bulletin 00-02, or the US Supreme Court ruling in *Georgia v. Ashcroft*, 539 US 461, FN1 (2003).

Communities Defined By Actual Shared Interests: A Statistical Analysis

This analysis uses quantitative methods to identify "communities defined by actual shared interests" (*Miller v. Johnson*, 515 U.S. 900, 916 (1995)) in New York State, to present them in a comprehensible way, and to suggest State Senate district boundaries that encompass communities so defined (while obeying federal and state constitutional and statutory rules, and observing other reasonable, objective districting principles). The statistical identification of "communities defined by actual share interests" must necessarily be subordinate to constitutional and statutory rules, but provides useful guidance in deciding among the various district configurations that may comply with those rules.

The Database: Summary, Geographic Basis, and List of Variables

The database consists of 36 variables drawn from the Census Bureau's American Community Survey (ACS) 2006-2010 5-year-average estimates. The variables are obviously related to ways that a broad range of legislative and other pubic policy decisions may affect individuals, families, and communities. Every major category of socio-economic data in the ACS is represented in the database: population density, housing, age, household and family structure, income, poverty, sources of income, education, employment (job category and industrial sector), transportation, race, language, and citizenship.

The geographic basis for the analysis is the Census Bureau's Summary Level 80 (SL80). SL80 polygons are equivalent to tracts, except that where a tract crosses the boundary of a county subdivision (in New York State: city, town, or Indian reservation) or census place, the tract is divided into two or more SL80 polygons. Thus each SL80 polygon is unique to a single tract and county subdivision, and also to a single census place wherever census places have been designated. (While every census block in the state is in one county subdivision or another, much of the state does not lie within any census designated place.) New York State contains 4,919 census tracts, but 6,763 SL80 polygons.

The analysis has been performed separately for three regional databases, based on the U.S. Office of Management and the Budget (OMB) statistical area definitions:

Region 1: Long Island: Nassau and Suffolk Counties, the 'Nassau-Suffolk, NY Metropolitan Division' of the 'New York-Northern New Jersey-Long Island, NY-NJ-PA Metropolitan Statistical Area.'

Region 2: New York City and its Northern Suburbs: New York City, and Westchester, Rockland, and Putnam Counties, the entire New York State part of the 'New York-White Plains-Wayne, NY-NJ Metropolitan Division' of the 'New York-Northern New Jersey-Long Island, NY-NJ-PA Metropolitan Statistical Area.'

Region 3: Upstate: the 42 counties north or west of Region 2.

The reason for using regional databases is simple. One wishes to know, for example, how to associate or distinguish various locations in Long Island when dividing Long Island among nine Senate districts. A statewide statistical analysis would show how Nassau County might be distinguished from (or similar to) Cayuga County, but would be less useful for identifying associations and distinctions within Nassau County.

The 36 variables are listed below, with the abbreviations that were used in the statistical processing, and that will be used in the tables to follow.

Table 1 – The Variables

Abbreviation	Definition of Variable
POPDENSITY	Population Density (per Sq. Mile of Land Area)
PVACANT	% of Housing Units Vacant
POOWNER	% of Occupied Housing Units, Owner-Occupied with Mortgage or Loan
PORENTER	% of Occupied Housing Units, Renter-Occupied
PPOWNER	% of Population in Owner-Occupied Housing Units with Mortgage or Loan
PPRENTER	% of Population in Renter-Occupied Housing Units
PSINGLEUNITS	% of Housing Units in Single-Unit Structures
PTHREEUNITS	% of Housing Units in Multiple Dwellings (Three or More Apartments)
PAGELESS18	% of the Population Below Age 18
PAGEABOVE65	% of the Population Aged 65 or Above
PCHILDMARRIED	% of Children Living in Households Headed by a Married Couple
PCHILDWOMAN	% of Children Living in Households Headed by a Woman Alone
PINCOMEL25000	% of Households with Annual Income Below $25,000
PINCOMEA100000	% of Households with Annual Income $100,000 or above
PBPROVERTY	% of Population in Households with Income Below the Poverty Line
PBPROVERTYC	% of Children in Households with Income Below the Poverty Line
PHHWINTEREST	% of Households Receiving Interest, Dividend, or Rental Income
PHHWSSI	% of Households Receiving Social Security Income
PHHSNAP	% of Households Receiving Public Assistance or Supplemental Nutrition Assistance
PNOHIGHSCHOOL25A	% of Adults (25 years and older) Without a High School Diploma
PBAABOVE25A	% of Adults (25 years and older) With a Bachelor's or Higher Degree
P3AENROLL	% of Persons Aged 3 and Above Currently Enrolled in School (Pre-School to High School)
PEMPLOYMANAGERIAL	% of Employed Civilian Population in Managerial and Professional Occupations
PEMPLOYPRODUCTION	% of Employed Civilian Population in Construction, Production, Natural Resources, Transportation, Material Moving, and Maintenance Occupations
PEMPLOYAGRI	% of Employed Civilian Population Employed in Agriculture
PEMPLOYMANU	% of Employed Civilian Population Employed in Manufacturing
PEMPLOYARTS	% of Employed Civilian Population Employ ed in Arts, Entertainment, Accommodation, and Food Services
PVEHICLE	% of Households with a Vehicle Available for Travel to Work
PPUBLICTRANSPORT	% of Employed Population Traveling to Work by Public Transportation
PBLACK	% of Population Black, Alone or In Combination with Other Races
PASIAN	% of Population Asian, Alone or in Combination with Other Races
PHISPANIC	% of Population Hispanic, Any Race
PNOENGLISH	% of Households in Which No One Speaks English (Linguistically Isolated)
PONLYENG	% of Households in Which Only English is Spoken at Home
PBORNCITI	% of Population Natural Born Citizens
PNOTCITI	% of Population Not Citizens

The Analytic Method: Principal Components Analysis

The analysis employs *principal components analysis*, a standard method employed in geography, sociology, and other fields for summarizing large bodies of data attributed to geographic units (in this case, the ACS data, attributed to SL80 polygons). Statistical software – *SAS* (Statistical Analysis System) was used here – constructs a series of scales, or vectors, called *principal components*, that are measurably correlated with each variable in the database. Each principal component (PC) is a standardized variable, with a mean (average) of zero and with key measures of dispersion (specifically, variance and standard deviation) set equal to one. The importance of a PC is measured by the percent of the total variance in the database that it can statistically 'explain.' If a single PC explained 100% of the variance, one could predict the value of each variable for each polygon with perfect accuracy, as long as one knew the value of the principal component. If it did not explain any of the variance – if it explained 0% – then it would tell nothing about the original data set.

The number of PC's generated is equal to the number of the variables, and collectively the 36 PC's explain all of the variance in the database. The purpose of the analysis, however, is to identify a few measures, and preferably a single measure that can be displayed on a map, that will explain a large proportion of the variance in the entire database. That measure can then be used as a proxy for the entire database of 36 variables when drawing districts. As will be seen, the First Principal Component (1st PC) serves that purpose.

The coefficient of correlation (**r**) of a PC with a given variable is squared to determine that proportion of the variance in that variable ($\mathbf{r}^2$) that is explained by the PC. The sum of the $\mathbf{r}^2$ values for the PC yields the *eigenvalue* of the PC. With 36 variables in the database, the *eigenvalue* of a PC is the sum of that PC's 36 $\mathbf{r}^2$ measures. The sum of the *eigenvalues* of all PC's is equal to the number of variables, in this case 36.

Dividing the *eigenvalue* of a PC by the sum of the *eigenvalues* for all PC's, which is the same as dividing by the number of variables, yields the proportion of the variance in the whole dataset that is explained by the PC.

It is customary to display only the PC's that have an *eigenvalue* more than or equal to 1.0 (the first eight PC's in Regions 1 and 3, the first six in Region 2). Tables 2A through 2C show, for each regional database, the correlation (**r**) of each PC with each variable. In each table, the variables are ranked according to the strength of the correlation (positive or negative) with the 1st PC.

Tables 3A through 3C show the *eigenvalue* of each PC, and the proportion of the variance in the whole database that is explained by each PC. (This is actually shown here as a percentage, which is the more familiar way of thinking about such quantities.) Since all the PC's are completely independent of one another (in geometric terms, the PC's are completely non-colinear vectors), the percentage of variance explained cumulatively by two or more PC's is determined by simply adding the values for each individual PC.

Table 2A – Region 1: Long Island
Correlation of Principal Components with Variables

	1ST PC	2ND PC	3RD PC	4TH PC	5TH PC	6TH PC	7TH PC	8TH PC
PCHILDMARRIED	-0.90416	0.20794	0.12383	0.02725	-0.00210	-0.12567	0.05058	-0.05363
PPRENTER	0.86974	0.33638	-0.02212	0.12843	0.14332	-0.21361	-0.01246	0.06615
PNOHIGHSCHOOL25A	0.86398	-0.24757	0.07741	-0.14765	0.00170	0.05817	0.14049	0.03220
PHISPANIC	0.84336	-0.32468	0.12379	-0.20521	0.08540	-0.08985	0.07182	0.06404
PORENTER	0.83938	0.35142	-0.02205	0.16708	0.07961	-0.25025	0.05005	0.08941
PINCOMEA100000	-0.82212	-0.09244	0.33254	0.08475	0.19006	-0.00289	0.03366	0.04474
PNOTCITI	0.82002	-0.19123	0.29993	-0.25006	0.13298	-0.06825	-0.04872	-0.04809
PCHILDWOMAN	0.81190	0.04267	-0.22570	0.22155	0.10290	0.09567	-0.02229	0.14886
PHHSNAP	0.78008	-0.10765	-0.00602	0.18269	0.07944	0.20379	0.19390	-0.00824
PEMPLOYMANAGERIAL	-0.75853	0.35682	0.36140	0.15631	0.19086	0.01004	0.08669	-0.07502
PEMPLOYPRODUCTION	0.75853	-0.35682	-0.36140	-0.15631	-0.19086	-0.01004	-0.08669	0.07502
PHHWINTEREST	-0.75394	0.37854	0.25120	-0.08416	0.25890	0.02676	0.06072	-0.07255
PVEHICLE	-0.72517	-0.29552	-0.16112	-0.17175	0.08892	-0.26807	-0.08219	0.06533
PBPROVERTY	0.72118	0.09826	-0.10361	0.16500	0.15391	0.22702	-0.07579	-0.51262
PNOENGLISH	0.69667	-0.14093	0.45211	-0.24721	0.18109	-0.10426	0.14594	0.00555
PBORNCITI	-0.68699	0.17325	-0.56247	0.31871	-0.00622	-0.05412	0.06294	0.03124
PBAABOVE25A	-0.66229	0.33085	0.43288	0.11541	0.34517	0.03399	-0.02985	-0.11309
PBPROVERTYC	0.66161	-0.08930	-0.08809	0.26065	0.28116	0.27344	0.05361	-0.30207
PPOWNER	-0.65893	-0.63581	-0.03565	0.01171	-0.21431	0.14352	-0.04923	-0.10099
PINCOMEL25000	0.65665	0.40942	-0.15090	0.08368	-0.09886	0.27108	0.11409	-0.33718
PSINGLEUNITS	-0.61454	-0.58704	-0.12671	-0.28235	0.13643	0.27298	-0.02714	-0.04311
POOWNER	-0.60842	-0.68209	-0.06436	0.01999	-0.14851	0.15553	-0.12982	-0.13137
PBLACK	0.59985	-0.25454	0.12607	0.12212	-0.07835	0.46668	-0.06435	0.18153
PONLYENG	-0.57424	0.26499	-0.59517	0.36814	-0.00717	0.05561	-0.03566	0.08688
PTHREEUNITS	0.51462	0.60872	0.07219	0.31529	-0.10096	-0.27340	0.07597	-0.02070
POPDENSITY	0.45664	0.06357	0.48166	0.14871	-0.37351	0.09662	-0.25308	0.29016
PEMPLOYARTS	0.39032	0.05882	0.00413	-0.11903	0.26667	-0.11761	-0.53070	0.05120
PEMPLOYMANU	0.39022	-0.41843	-0.05027	-0.19211	0.00451	-0.32654	0.50366	-0.08199
PAGEABOVE65	-0.28341	0.69079	0.00206	-0.28616	-0.12627	0.21955	0.32660	0.10933
P3AENROLL	-0.24919	-0.58826	0.20883	0.38366	0.30139	0.01475	0.24707	0.15032
PHHWSSI	-0.23721	0.50097	-0.10171	-0.39259	-0.13065	0.36606	0.39596	0.22106
PASIAN	-0.18594	0.11693	0.60145	-0.26549	-0.14265	-0.03519	-0.08452	-0.37491
PVACANT	0.10040	0.31184	-0.32837	-0.36596	0.55647	0.12555	-0.18766	0.19621
PAGELESS18	-0.05852	-0.69469	0.18778	0.35870	0.34813	0.02047	0.24818	0.17123
PPUBLICTRANSPORT	0.03627	0.23254	0.71995	0.20984	-0.04629	0.29695	-0.13066	0.26086
PEMPLOYAGRI	0.02279	0.17477	-0.29865	-0.26734	0.43538	0.17006	-0.07224	0.07139

Table 2B – Region 2: NYC, Westchester, Putnam, Rockland
Correlation of Principal Components with Variables

	1ST PC	2ND PC	3RD PC	4TH PC	5TH PC	6TH PC
PPRENTER	0.89105	-0.35887	0.14433	0.02264	-0.03570	-0.00173
PORENTER	0.88100	-0.36154	0.16147	0.01838	-0.04057	0.01185
PINCOMEA100000	-0.87173	-0.19267	0.06701	0.20123	-0.10870	-0.07128
PINCOMEL25000	0.86029	0.11057	0.17832	0.10963	0.29234	0.07047
PHHSNAP	0.85341	0.23729	0.14322	0.19756	0.16594	0.04968
PPOWNER	-0.85040	0.44802	-0.11308	-0.02717	-0.07995	-0.02382
PBPROVERTY	0.84149	0.15476	0.17318	0.28200	0.13231	0.07929
PNOHIGHSCHOOL25A	0.84019	0.25184	-0.22767	0.03498	0.12716	0.00385
POOWNER	-0.83961	0.44891	-0.10955	-0.03038	-0.09686	-0.03887
PHHWINTEREST	-0.82983	-0.29476	-0.03895	0.21373	0.12357	-0.00229
PCHILDMARRIED	-0.73904	-0.26841	-0.35525	0.38335	0.05216	0.05548
PBPROVERTYC	0.72906	0.32785	0.19221	0.41380	0.06772	0.09728
PVEHICLE	-0.72100	0.55438	-0.26729	-0.07992	-0.01531	-0.02619
PHISPANIC	0.71623	0.13556	-0.16490	0.09068	0.00832	-0.24991
PEMPLOYMANAGERIAL	-0.70480	-0.53391	0.27503	0.24331	0.01216	-0.00469
PEMPLOYPRODUCTION	0.70480	0.53391	-0.27503	-0.24331	-0.01216	0.00469
PSINGLEUNITS	-0.70150	0.59869	-0.16379	0.03086	-0.04597	-0.04958
PCHILDWOMAN	0.69004	0.23965	0.51798	-0.25368	0.00697	-0.04389
PBAABOVE25A	-0.67548	-0.62252	0.16110	0.19642	-0.07228	-0.05813
PPUBLICTRANSPORT	0.66389	-0.39903	0.13362	-0.19632	-0.13350	-0.01949
PTHREEUNITS	0.62080	-0.65481	0.25152	0.06930	0.13448	-0.03189
PNOENGLISH	0.60969	-0.10582	-0.63411	0.10255	0.17263	0.04218
PONLYENG	-0.60670	0.04046	0.65737	-0.21859	-0.10670	0.03020
PNOTCITI	0.57360	-0.15013	-0.60477	-0.17852	-0.29095	-0.03213
POPDENSITY	0.53110	-0.55945	0.09541	0.09062	0.00464	-0.12734
PEMPLOYARTS	0.44064	-0.24517	-0.40967	0.00527	-0.08629	-0.14007
PAGEABOVE65	-0.42557	-0.14821	-0.01244	-0.27214	0.74404	0.08254
PBORNCITI	-0.41285	0.10361	0.68777	0.38082	0.18588	-0.05372
PHHWSSI	-0.34978	0.23820	-0.03530	-0.27048	0.75311	0.06481
PAGELESS18	0.32928	0.72874	0.05598	0.44218	-0.10955	0.05094
P3AENROLL	0.30510	0.73539	0.13910	0.40432	-0.07718	0.02137
PBLACK	0.26687	0.36251	0.54701	-0.51976	-0.23417	0.09492
PEMPLOYMANU	0.12229	0.05681	-0.47322	0.27151	0.09345	0.19207
PVACANT	-0.09696	-0.25893	0.08886	0.10748	-0.21543	0.58557
PASIAN	-0.03977	-0.28621	-0.69632	-0.09654	-0.00060	0.13533
PEMPLOYAGRI	0.03025	0.03939	-0.01701	0.12015	0.07801	-0.66803

Table 2C – Region 3: Upstate (42 Counties)
Correlation of Principal Components with Variables

	1ST PC	2ND PC	3RD PC	4TH PC	5TH PC	6TH PC	7TH PC	8TH PC
PPRENTER	0.91495	0.19880	-0.21804	0.07955	-0.08405	0.00492	0.09514	-0.04928
PPOWNER	-0.89453	-0.03026	0.30869	0.04337	0.00106	-0.11564	-0.12242	0.05499
PORENTER	0.88715	0.23286	-0.25781	0.09691	-0.05746	-0.03216	0.12441	-0.03366
PVEHICLE	-0.87666	-0.04901	-0.03177	-0.13586	-0.22453	-0.03192	-0.00125	-0.01355
POOWNER	-0.86278	-0.04403	0.36907	0.04375	-0.04248	-0.07518	-0.15949	0.03627
PINCOMEL25000	0.85632	-0.14844	-0.17888	0.03189	0.11905	0.08360	0.12898	0.05990
PBPROVERTY	0.84880	-0.02900	0.02762	0.04706	0.01715	0.20426	0.16577	0.05794
PCHILDMARRIED	-0.83769	0.25404	0.19745	-0.09856	0.05688	0.04517	0.20374	0.13003
PSINGLEUNITS	-0.82887	-0.31147	0.23189	-0.14791	0.01672	0.12101	-0.12401	-0.02450
PHHSNAP	0.82883	-0.22998	0.13373	0.15334	0.14925	0.05211	0.03612	0.02464
PCHILDWOMAN	0.82334	-0.14992	-0.09283	0.24611	0.08835	-0.11221	-0.21215	-0.11935
PNOHIGHSCHOOL25A	0.72143	-0.31762	0.21803	-0.24728	0.16507	0.01589	-0.01121	-0.03782
PBPROVERTYC	0.72079	-0.19862	0.36560	0.11652	0.16920	0.13409	0.18186	0.12288
PHHWINTEREST	-0.70031	0.36082	-0.06993	0.07644	0.25461	0.05371	-0.01926	-0.02734
POPDENSITY	0.69557	0.26308	0.02122	0.18037	-0.03150	-0.08005	-0.06001	0.02553
PINCOMEA100000	-0.67180	0.47309	0.27455	0.15775	0.03826	0.06436	-0.10548	0.03018
PBLACK	0.65502	0.00449	0.15974	0.28370	0.10313	0.09006	-0.45080	-0.28713
PTHREEUNITS	0.65474	0.44496	-0.29027	0.04830	0.00676	-0.11602	0.27152	0.06101
PPUBLICTRANSPORT	0.64420	0.19013	0.21358	0.24046	0.16327	0.18079	-0.26291	-0.12227
PHISPANIC	0.55644	0.18277	0.34402	-0.25429	-0.06834	-0.13726	-0.29890	0.00119
PNOENGLISH	0.53391	0.37052	0.38380	-0.34377	0.16724	-0.09512	0.14652	0.18704
PEMPLOYMANAGERIAL	-0.49599	0.69736	-0.05051	0.25287	0.22758	0.19699	0.11378	-0.04173
PEMPLOYPRODUCTION	0.49599	-0.69736	0.05051	-0.25287	-0.22758	-0.19699	-0.11378	0.04173
PONLYENG	-0.45399	-0.53047	-0.44532	0.31126	-0.08534	0.06501	-0.09787	-0.16244
PNOTCITI	0.42344	0.61308	0.13255	-0.47054	-0.05504	-0.04535	-0.13934	-0.14793
PBAABOVE25A	-0.41864	0.77461	-0.11742	0.22222	0.01956	0.17168	0.04825	0.00338
PBORNCITI	-0.34571	-0.70346	-0.18663	0.43004	-0.03483	0.09570	0.19063	0.09396
PEMPLOYARTS	0.33494	0.03026	-0.26012	-0.07460	-0.22227	0.05073	-0.13345	0.66108
PAGEABOVE65	-0.30430	-0.04641	-0.43089	-0.11189	0.68511	-0.20918	0.01467	0.07507
PHHWSSI	-0.23787	-0.32397	-0.32376	-0.24040	0.66400	-0.13684	-0.18560	0.10596
PASIAN	0.20220	0.73891	-0.02762	-0.16747	-0.04214	0.05663	0.04083	-0.17664
PAGELESS18	0.16126	-0.18776	0.80683	0.22356	0.14655	-0.04877	0.13903	0.07531
PVACANT	0.15838	-0.33643	-0.04085	-0.31247	0.14981	0.64047	-0.10899	0.00352
PEMPLOYAGRI	-0.15385	-0.33602	0.07149	-0.38146	-0.01892	0.53657	0.24741	-0.22270
PEMPLOYMANU	-0.10423	-0.32196	0.11201	-0.12833	0.04630	-0.39222	0.40504	-0.43937
P3AENROLL	0.07626	-0.16467	0.79678	0.25926	0.14110	-0.01657	0.13923	0.11777

Table 3A – Region 1: Long Island
Principal Component Eigenvalues and Percentages of Database Variance Explained

PC	Eigenvalue	% of Total Variance Explained	Cumulative % of Total Variance Explained
1	14.2804207	39.67%	39.67%
2	4.9895628	13.86%	53.53%
3	3.1865075	8.85%	62.38%
4	1.8599339	5.17%	67.55%
5	1.5975308	4.44%	71.98%
6	1.3400552	3.72%	75.71%
7	1.2262771	3.41%	79.11%
8	1.0779442	2.99%	82.11%

Table 3B – Region 2: NYC, Westchester, Putnam, Rockland
Principal Component Eigenvalues and Percentages of Database Variance Explained

PC	Eigenvalue	% of Total Variance Explained	Cumulative % of Total Variance Explained
1	15.0024919	41.67%	41.67%
2	5.2633197	14.62%	56.29%
3	3.9171272	10.88%	67.17%
4	1.9477525	5.41%	72.59%
5	1.6662981	4.63%	77.21%
6	1.0158040	2.82%	80.04%

Table 3C – Region 3: Upstate (42 Counties)
Principal Component Eigenvalues and Percentages of Database Variance Explained

PC	Eigenvalue	% of Total Variance Explained	Cumulative % of Total Variance Explained
1	14.0434529	39.01%	39.01%
2	5.0980904	14.16%	53.17%
3	3.1151840	8.65%	61.82%
4	1.7795622	4.94%	66.77%
5	1.4470690	4.02%	70.79%
6	1.2609897	3.50%	74.29%
7	1.1410049	3.17%	77.46%
8	1.0102173	2.81%	80.27%

The First Principal Component: A Mappable Variable

As can be seen from Tables 3A through 3C, the variance in the 1st PC captures 39.67% of the variance in the whole database in Long Island, 41.67% in the region comprising New York City, Westchester, Putnam and Rockland, and 39.01% in the region comprising the 42 counties to the north or west of Rockland and Putnam.

Although the 1st and 2nd PC's together would account for more than half the total variance in each region, it is useful to have a single variable that can be displayed on a map and used as part of the basis for drawing districts. The 1st PC captures enough of the total variance in each regional database to serve this purpose.

A set of maps shows the proposed district boundaries of the *Senate Alternative Revision (February 12, 2012)*, overlaid on a color-theme display of the principal component values for each SL80 polygon. In each area, the proposed districts are shown first with a color theme of the 1st PC, then with the 2nd PC. Four pairs of maps show Long Island in detail; two pairs of maps present New York City and Lower Westchester; one pair of maps shows Monroe County; and one pair of maps shows the cities of Buffalo and Niagara Falls, with the cities and towns in closest proximity to the two principal cities of that region.

The value ranges of the color theme are determined by the mapping software. The display setting calls for computing value ranges such that, as nearly as possible, an equal number of the SL80 polygons in each region will fall into each category. Because the setting also calls for a break at zero – the mean value of the PC, as explained above – the number of polygons above and below zero will not necessarily be equal, and at the extreme end of either the positive or negative value range there will be one category that contains fewer polygons than the others. The number of polygons in each category is shown in the legend. This is the number for the regional database as a whole, not for the specific area displayed in the map. The SL80 polygons in the 'Other' category, which are left blank, are those for which missing values of some variables prevent the computation of a value for the PC. These are typically polygons with no population, or with no households (Rikers Island being an obvious example of the latter, although it has a substantial population).

Correlation Between Districts and the First Principal Component

Although the association between the proposed districts and the 1st PC can be seen in an examination of the maps, it is important to have a numerical measure as well. The 1st PC forms a more coherent pattern in some areas than in others, and polygons with a large area but very small population can be misleading when viewed on the map.

Table 4 shows the correlation between the districts proposed in the *Senate Alternative Revision (February 12, 2012)* – the independent variable – and the 1st PC values of the SL80 polygons – the dependent variable. For the purpose of this correlation, the SL80 polygons have been weighted by total population. The squared coefficient of

correlation ($\mathbf{r^2}$) shows how much of the 1st PC value of a polygon can be statistically explained or predicted by the proposed district in which it is placed. This correlation is for all the districts in each region as a whole, not for a particular district. Some districts in a region will track the 1st PC pattern more closely than others. For comparison, the table also shows correlations in which the proposed district is the independent variable and the dependent variables are the racial and Hispanic origin percentages of the SL80 polygons. As above, variables that are actually computed as proportions are shown here as percentages.

Table 3
Correlation of Senate Alternative Revision (February 12, 2012) Proposed Districts with 1st PC and Minority Percentages

Region	$\mathbf{r^2}$ for 1st PC	$\mathbf{r^2}$ for % Black	$\mathbf{r^2}$ for % Asian	$\mathbf{r^2}$ for % Hispanic	$\mathbf{r^2}$ for Combined % Minority
Region 1: SD's 1-9	29.30%	45.49%	30.46%	34.92%	46.26%
Regon 2: SD's 10-40	53.74%	53.69%	52.32%	60.77%	52.81%
Region 3: SD's 41-62	19.32%	32.80%	16.46%	33.74%	36.20%

Although only the 1st PC was used as part of the basis for drawing districts, it can be seen from the maps that in many places the proposed district boundaries are also a good fit for the pattern that emerges when the 2nd PC is mapped. This is notably the case for the proposed districts (*Senate Alternative* SD's 4 and 8) that would end the systematic splitting of the African-American and Latino communities in Nassau and Suffolk Counties. This pattern indicates that these districts preserve "communities defined by actual shared interests" to an even greater degree than is shown by the measures in Table 3. This subject is discussed more fully in the main document, *The Senate Alternative Revision (February 12, 2012) Redistricting Plan: a Basis for Evaluating the LATFOR Senate Proposal Released on January 26, 2012*.

Based on statistical tests, all of the relationships are statistically significant, so it is virtually impossible for the patterns shown in this analysis to have occurred by chance.

A Note About Communities

This statistical analysis is not based on any ethnographic theory of community. If the expression had not already come into wide use, the concept of 'communities *defined by* actual shared interests' could just as well be described without the somewhat shopworn term 'community.' The object of the analysis is to identify populations – whose location and distribution permits them to be united in compact, contiguous districts that respect local government boundaries – which have similar socio-economic characteristics that are likely to give them a shared interest in legislation and other public policy decisions.

Senate Alternative (*Revised February 12, 2012* **)**

District	Total Adjusted Population	Deviation from Mean Population	% Deviation
01	315,163	2,850	0.91%
02	315,163	2,850	0.91%
03	315,164	2,851	0.91%
04	315,164	2,851	0.91%
05	315,163	2,850	0.91%
06	315,162	2,849	0.91%
07	315,163	2,850	0.91%
08	315,163	2,850	0.91%
09	315,164	2,851	0.91%
10	309,761	-2,552	-0.82%
11	309,760	-2,553	-0.82%
12	309,762	-2,551	-0.82%
13	309,762	-2,551	-0.82%
14	309,761	-2,552	-0.82%
15	309,761	-2,552	-0.82%
16	309,761	-2,552	-0.82%
17	309,759	-2,554	-0.82%
18	309,761	-2,552	-0.82%
19	309,761	-2,552	-0.82%
20	309,761	-2,552	-0.82%
21	309,760	-2,553	-0.82%
22	309,762	-2,551	-0.82%
23	309,761	-2,552	-0.82%
24	309,761	-2,552	-0.82%
25	309,761	-2,552	-0.82%
26	309,760	-2,553	-0.82%
27	309,761	-2,552	-0.82%
28	309,762	-2,551	-0.82%
29	309,759	-2,554	-0.82%
30	309,760	-2,553	-0.82%
31	309,762	-2,551	-0.82%
32	309,759	-2,554	-0.82%
33	309,767	-2,546	-0.82%
34	309,760	-2,553	-0.82%
35	309,759	-2,554	-0.82%
36	309,762	-2,551	-0.82%
37	309,760	-2,553	-0.82%
38	309,761	-2,552	-0.82%
39	311,978	-335	-0.11%
40	308,045	-4,268	-1.37%

Senate Alternative (*Revised February 12, 2012*)

District	Total Adjusted Population	Deviation from Mean Population	% Deviation
41	308,002	-4,311	-1.38%
42	312,620	307	0.10%
43	315,113	2,800	0.90%
44	304,217	-8,096	-2.59%
45	305,530	-6,783	-2.17%
46	320,823	8,510	2.72%
47	320,580	8,267	2.65%
48	321,880	9,567	3.06%
49	317,302	4,989	1.60%
50	322,808	10,495	3.36%
51	318,516	6,203	1.99%
52	318,516	6,203	1.99%
53	306,641	-5,672	-1.82%
54	318,586	6,273	2.01%
55	313,513	1,200	0.38%
56	309,143	-3,170	-1.02%
57	318,487	6,174	1.98%
58	313,490	1,177	0.38%
59	315,227	2,914	0.93%
60	316,690	4,377	1.40%
61	313,077	764	0.24%
62	313,077	764	0.24%
Ideal Pop.	312,313		
Min	304,217	-8,096	-2.59%
Max	322,808	10,495	3.36%
Range		18,591	5.95%
Mean Dev.		3,440	1.10%
Std. Dev.		4,044	1.29%

Senate Alternative (*Revised February 12, 2012*)

Voting-Age Population from Unadjused PL94-171 Data													
District	18+_Pop	18+ AP_Black	% 18+ AP_Black	18+ AP_Asian	% 18+ AP_Asian	18+ Hispanic	% 18+ Hispanic	NH18+ White	% NH18+ White	NH18+ AP_Black	% NH18+ AP_Black	NH18+ AP_Asian	% NH18+ AP_Asian
01	243,829	13,814	5.67%	5,377	2.21%	29,623	12.15%	194,547	79.79%	12,817	5.26%	5,227	2.14%
02	239,294	7,251	3.03%	13,793	5.76%	17,806	7.44%	200,294	83.70%	6,541	2.73%	13,634	5.70%
03	240,728	10,050	4.17%	6,248	2.60%	25,558	10.62%	198,973	82.65%	8,950	3.72%	6,101	2.53%
04	234,757	46,693	19.89%	7,828	3.33%	78,238	33.33%	105,579	44.97%	42,251	18.00%	7,395	3.15%
05	237,659	9,741	4.10%	16,867	7.10%	20,847	8.77%	190,284	80.07%	9,030	3.80%	16,706	7.03%
06	244,212	6,423	2.63%	18,958	7.76%	21,291	8.72%	197,504	80.87%	5,868	2.40%	18,771	7.69%
07	242,069	7,194	2.97%	32,935	13.61%	22,579	9.33%	179,184	74.02%	6,542	2.70%	32,714	13.51%
08	239,415	89,978	37.58%	14,344	5.99%	67,466	28.18%	71,114	29.70%	85,336	35.64%	13,952	5.83%
09	241,669	12,188	5.04%	9,606	3.97%	23,809	9.85%	196,333	81.24%	11,164	4.62%	9,393	3.89%
10	234,760	135,977	57.92%	22,381	9.53%	35,345	15.06%	43,392	18.48%	129,559	55.19%	21,938	9.34%
11	237,351	129,288	54.47%	39,572	16.67%	44,804	18.88%	23,031	9.70%	123,398	51.99%	38,981	16.42%
12	254,236	15,362	6.04%	68,175	26.82%	36,702	14.44%	134,900	53.06%	13,325	5.24%	67,609	26.59%
13	254,042	8,545	3.36%	135,700	53.42%	31,740	12.49%	79,182	31.17%	7,252	2.85%	135,097	53.18%
14	240,186	22,687	9.45%	53,528	22.29%	144,982	60.36%	24,431	10.17%	16,836	7.01%	52,650	21.92%
15	258,349	15,839	6.13%	68,896	26.67%	68,231	26.41%	106,236	41.12%	12,872	4.98%	68,140	26.38%
16	240,089	22,463	9.36%	46,899	19.53%	73,551	30.63%	95,761	39.89%	18,285	7.62%	46,101	19.20%
17	231,244	55,684	24.08%	19,914	8.61%	122,740	53.08%	42,657	18.45%	43,907	18.99%	19,155	8.28%
18	230,420	144,853	62.86%	8,644	3.75%	27,655	12.00%	56,253	24.41%	136,997	59.46%	8,457	3.67%
19	232,044	149,499	64.43%	15,244	6.57%	26,556	11.44%	47,455	20.45%	141,807	61.11%	14,964	6.45%
20	235,432	136,902	58.15%	16,103	6.84%	34,509	14.66%	55,510	23.58%	128,597	54.62%	15,754	6.69%
21	235,544	145,223	61.65%	10,321	4.38%	39,017	16.56%	49,440	20.99%	135,891	57.69%	9,936	4.22%
22	231,597	6,456	2.79%	29,788	12.86%	18,815	8.12%	176,629	76.27%	5,491	2.37%	29,578	12.77%
23	240,308	7,875	3.28%	93,111	38.75%	57,819	24.06%	84,019	34.96%	5,043	2.10%	92,549	38.51%
24	238,085	41,997	17.64%	26,634	11.19%	48,987	20.58%	124,449	52.27%	37,167	15.61%	26,161	10.99%
25	242,564	6,287	2.59%	19,258	7.94%	22,888	9.44%	194,305	80.10%	5,379	2.22%	18,999	7.83%
26	246,625	21,865	8.87%	22,599	9.16%	42,852	17.38%	162,130	65.74%	17,949	7.28%	22,101	8.96%
27	273,328	19,241	7.04%	67,913	24.85%	44,376	16.24%	145,008	53.05%	15,180	5.55%	67,232	24.60%
28	275,406	16,560	6.01%	36,992	13.43%	28,169	10.23%	195,150	70.86%	14,062	5.11%	36,523	13.26%
29	272,594	10,678	3.92%	31,437	11.53%	18,503	6.79%	212,249	77.86%	9,509	3.49%	31,119	11.42%
30	248,173	116,813	47.07%	16,176	6.52%	67,986	27.39%	59,631	24.03%	103,616	41.75%	15,542	6.26%
31	248,250	44,507	17.93%	10,760	4.33%	146,684	59.09%	66,005	26.59%	24,803	9.99%	9,506	3.83%
32	225,041	91,974	40.87%	7,371	3.28%	131,913	58.62%	13,115	5.83%	72,199	32.08%	6,437	2.86%
33	224,655	79,182	35.25%	12,540	5.58%	127,475	56.74%	22,664	10.09%	61,218	27.25%	11,548	5.14%
34	220,088	76,372	34.70%	9,671	4.39%	121,647	55.27%	29,311	13.32%	58,641	26.64%	8,885	4.04%
35	228,646	71,543	31.29%	13,281	5.81%	123,272	53.91%	35,536	15.54%	54,882	24.00%	12,368	5.41%
36	235,595	124,547	52.86%	8,179	3.47%	42,830	18.18%	64,950	27.57%	117,646	49.94%	7,829	3.32%
37	236,919	38,076	16.07%	18,385	7.76%	58,386	24.64%	126,437	53.37%	32,901	13.89%	17,967	7.58%
38	235,284	21,332	9.07%	14,270	6.07%	51,616	21.94%	149,338	63.47%	19,204	8.16%	13,952	5.93%
39	224,107	29,423	13.13%	16,027	7.15%	34,135	15.23%	146,105	65.19%	27,200	12.14%	15,775	7.04%
40	235,325	13,339	5.67%	6,895	2.93%	26,265	11.16%	189,380	80.48%	11,850	5.04%	6,673	2.84%

Senate Alternative (*Revised February 12, 2012*)

Voting-Age Population from Unadjused PL94-171 Data													
District	18+_Pop	18+ AP_Black	% 18+ AP_Black	18+ AP_Asian	% 18+ AP_Asian	18+ Hispanic	% 18+ Hispanic	NH18+ White	% NH18+ White	NH18+ AP_Black	% NH18+ AP_Black	NH18+ AP_Asian	% NH18+ AP_Asian
41	243,823	23,612	9.68%	8,846	3.63%	19,670	8.07%	192,000	78.75%	21,946	9.00%	8,701	3.57%
42	225,985	26,157	11.57%	6,888	3.05%	38,583	17.07%	155,990	69.03%	23,259	10.29%	6,649	2.94%
43	250,947	18,632	7.42%	4,773	1.90%	22,416	8.93%	205,042	81.71%	16,766	6.68%	4,607	1.84%
44	243,420	5,601	2.30%	2,254	0.93%	5,850	2.40%	228,431	93.84%	5,090	2.09%	2,180	0.90%
45	243,573	29,568	12.14%	12,103	4.97%	10,024	4.12%	192,347	78.97%	27,870	11.44%	11,960	4.91%
46	250,213	10,118	4.04%	6,359	2.54%	6,354	2.54%	226,622	90.57%	9,468	3.78%	6,256	2.50%
47	264,432	10,194	3.86%	2,100	0.79%	6,060	2.29%	242,399	91.67%	9,288	3.51%	2,054	0.78%
48	248,586	13,421	5.40%	5,603	2.25%	10,498	4.22%	216,907	87.26%	12,263	4.93%	5,488	2.21%
49	246,353	7,826	3.18%	3,156	1.28%	6,787	2.75%	226,235	91.83%	7,205	2.92%	3,058	1.24%
50	254,106	12,173	4.79%	5,253	2.07%	7,680	3.02%	228,427	89.89%	11,313	4.45%	5,176	2.04%
51	244,088	33,295	13.64%	9,817	4.02%	9,487	3.89%	190,316	77.97%	31,583	12.94%	9,695	3.97%
52	247,794	7,289	2.94%	3,505	1.41%	4,140	1.67%	230,511	93.03%	6,879	2.78%	3,461	1.40%
53	247,552	11,542	4.66%	15,396	6.22%	7,729	3.12%	212,105	85.68%	10,644	4.30%	15,224	6.15%
54	246,519	7,702	3.12%	3,423	1.39%	6,592	2.67%	227,820	92.41%	7,221	2.93%	3,384	1.37%
55	246,398	13,397	5.44%	11,143	4.52%	7,442	3.02%	213,898	86.81%	12,811	5.20%	11,043	4.48%
56	233,254	65,602	28.12%	7,552	3.24%	24,320	10.43%	137,743	59.05%	62,201	26.67%	7,348	3.15%
57	255,796	10,421	4.07%	2,606	1.02%	4,949	1.93%	236,503	92.46%	9,886	3.86%	2,536	0.99%
58	246,667	7,789	3.16%	2,041	0.83%	4,788	1.94%	229,794	93.16%	7,395	3.00%	1,998	0.81%
59	250,075	9,108	3.64%	10,654	4.26%	4,068	1.63%	225,484	90.17%	8,742	3.50%	10,585	4.23%
60	248,079	5,682	2.29%	2,139	0.86%	7,016	2.83%	230,345	92.85%	5,135	2.07%	2,087	0.84%
61	246,630	8,381	3.40%	2,507	1.02%	5,530	2.24%	227,935	92.42%	8,025	3.25%	2,477	1.00%
62	238,964	81,064	33.92%	7,707	3.23%	16,750	7.01%	132,971	55.64%	78,778	32.97%	7,559	3.16%

Senate Alternative (*Revised February 12, 2012*)

Citizen Voting-Age Population from 2006-2010 American Community Survey Special Tabulation									
District	CVAP Total	CVAP NH_WHITE	% CVAP NH_WHITE	CVAP HISPANIC	% CVAP HISPANIC	CVAP_NH BLACK_ALL	% CVAP_NH BLACK_ALL	CVAP_NH ASIAN_ALL	% CVAP_NH ASIAN_ALL
01	219,932	191,454	87.05%	14,063	6.39%	10,554	4.80%	2,798	1.27%
02	223,626	194,740	87.08%	14,726	6.58%	4,712	2.11%	8,865	3.96%
03	222,404	194,705	87.55%	15,764	7.09%	7,320	3.29%	3,602	1.62%
04	190,858	103,504	54.23%	41,445	21.72%	40,361	21.15%	4,581	2.40%
05	219,857	190,460	86.63%	10,711	4.87%	6,601	3.00%	11,401	5.19%
06	230,960	196,743	85.18%	16,977	7.35%	3,873	1.68%	12,639	5.47%
07	215,566	175,248	81.30%	13,203	6.12%	6,097	2.83%	20,355	9.44%
08	189,021	69,979	37.02%	31,350	16.59%	75,634	40.01%	11,058	5.85%
09	225,841	193,601	85.72%	16,651	7.37%	8,137	3.60%	7,024	3.11%
10	199,024	44,507	22.36%	23,129	11.62%	113,771	57.16%	15,706	7.89%
11	178,395	22,723	12.74%	27,554	15.45%	101,568	56.93%	24,351	13.65%
12	210,395	127,193	60.45%	27,639	13.14%	9,667	4.59%	44,443	21.12%
13	178,082	78,422	44.04%	24,327	13.66%	5,564	3.12%	68,450	38.44%
14	122,631	21,879	17.84%	56,800	46.32%	14,058	11.46%	29,107	23.74%
15	177,489	91,561	51.59%	41,007	23.10%	9,918	5.59%	33,986	19.15%
16	182,324	92,554	50.76%	48,364	26.53%	11,863	6.51%	27,960	15.34%
17	159,763	31,262	19.57%	82,241	51.48%	35,530	22.24%	9,844	6.16%
18	201,209	56,922	28.29%	22,967	11.41%	114,900	57.10%	5,730	2.85%
19	174,860	41,708	23.85%	16,107	9.21%	108,627	62.12%	7,290	4.17%
20	178,313	48,423	27.16%	21,465	12.04%	98,699	55.35%	8,789	4.93%
21	197,911	43,494	21.98%	28,025	14.16%	118,262	59.76%	6,782	3.43%
22	183,863	150,028	81.60%	10,001	5.44%	4,282	2.33%	18,897	10.28%
23	154,307	70,532	45.71%	31,662	20.52%	4,350	2.82%	47,132	30.54%
24	199,614	115,961	58.09%	33,227	16.65%	31,831	15.95%	17,769	8.90%
25	224,681	185,527	82.57%	19,305	8.59%	4,913	2.19%	14,443	6.43%
26	202,584	136,482	67.37%	35,074	17.31%	15,268	7.54%	14,664	7.24%
27	229,866	131,475	57.20%	36,805	16.01%	13,639	5.93%	46,459	20.21%
28	234,805	179,623	76.50%	22,577	9.62%	10,918	4.65%	20,690	8.81%
29	233,346	193,827	83.06%	13,834	5.93%	6,540	2.80%	18,435	7.90%
30	206,613	54,018	26.14%	46,234	22.38%	96,548	46.73%	8,332	4.03%
31	186,760	61,727	33.05%	95,545	51.16%	22,776	12.20%	6,108	3.27%
32	165,120	10,798	6.54%	86,713	52.51%	62,772	38.02%	4,151	2.51%
33	153,205	20,233	13.21%	78,017	50.92%	48,223	31.48%	5,867	3.83%
34	157,676	28,599	18.14%	79,362	50.33%	43,641	27.68%	5,405	3.43%
35	183,334	37,110	20.24%	92,379	50.39%	46,040	25.11%	7,028	3.83%
36	197,196	61,515	31.19%	30,843	15.64%	99,464	50.44%	4,052	2.05%
37	196,656	122,253	62.17%	33,755	17.16%	28,629	14.56%	11,369	5.78%
38	190,410	143,765	75.50%	20,883	10.97%	17,059	8.96%	8,050	4.23%
39	191,195	140,955	73.72%	17,787	9.30%	20,330	10.63%	11,352	5.94%
40	213,925	182,730	85.42%	15,912	7.44%	9,880	4.62%	4,300	2.01%

Senate Alternative (*Revised February 12, 2012*)

Citizen Voting-Age Population from 2006-2010 American Community Survey Special Tabulatior									
District	CVAP Total	CVAP NH_WHITE	% CVAP NH_WHITE	CVAP HISPANIC	% CVAP HISPANIC	CVAP_NH BLACK_ALL	% CVAP_NH BLACK_ALL	CVAP_NH ASIAN_ALL	% CVAP_NH ASIAN_ALL
41	226,310	188,490	83.29%	12,551	5.55%	18,493	8.17%	5,360	2.37%
42	205,837	154,655	75.13%	23,931	11.63%	21,192	10.30%	4,749	2.31%
43	238,182	202,084	84.84%	16,749	7.03%	14,841	6.23%	2,549	1.07%
44	238,880	226,495	94.82%	5,052	2.11%	4,590	1.92%	1,285	0.54%
45	230,285	190,660	82.79%	7,712	3.35%	24,785	10.76%	6,045	2.63%
46	239,303	220,776	92.26%	5,339	2.23%	6,864	2.87%	3,570	1.49%
47	257,115	238,320	92.69%	5,122	1.99%	9,264	3.60%	1,228	0.48%
48	238,977	215,444	90.15%	8,205	3.43%	10,434	4.37%	3,174	1.33%
49	239,530	221,840	92.61%	6,275	2.62%	7,620	3.18%	1,741	0.73%
50	245,125	224,425	91.56%	6,101	2.49%	10,284	4.20%	2,810	1.15%
51	230,034	187,082	81.33%	7,221	3.14%	28,528	12.40%	4,323	1.88%
52	240,695	226,793	94.22%	3,221	1.34%	5,627	2.34%	2,716	1.13%
53	232,825	207,440	89.10%	6,471	2.78%	8,969	3.85%	8,093	3.48%
54	237,460	221,830	93.42%	5,195	2.19%	7,149	3.01%	1,872	0.79%
55	232,811	208,454	89.54%	6,209	2.67%	10,693	4.59%	6,595	2.83%
56	222,869	139,264	62.49%	20,548	9.22%	57,322	25.72%	4,012	1.80%
57	250,595	233,230	93.07%	4,062	1.62%	9,884	3.94%	1,580	0.63%
58	238,395	223,690	93.83%	3,784	1.59%	7,085	2.97%	1,291	0.54%
59	237,634	220,520	92.80%	3,795	1.60%	6,797	2.86%	5,548	2.33%
60	244,986	229,545	93.70%	6,296	2.57%	4,643	1.90%	1,239	0.51%
61	242,551	225,910	93.14%	5,193	2.14%	7,255	2.99%	1,811	0.75%
62	229,797	134,100	58.36%	13,714	5.97%	76,595	33.33%	2,820	1.23%

Senate Majority / LATFOR Proposal - January 26, 2012

District	Total Adjusted Population	Deviation from Mean Population	% Deviation
SD01	315,163	7,807	2.54%
SD02	315,164	7,808	2.54%
SD03	315,163	7,807	2.54%
SD04	315,163	7,807	2.54%
SD05	315,163	7,807	2.54%
SD06	315,163	7,807	2.54%
SD07	315,163	7,807	2.54%
SD08	315,163	7,807	2.54%
SD09	315,164	7,808	2.54%
SD10	319,116	11,760	3.83%
SD11	319,112	11,756	3.82%
SD12	319,113	11,757	3.83%
SD13	319,114	11,758	3.83%
SD14	319,114	11,758	3.83%
SD15	319,113	11,757	3.83%
SD16	319,114	11,758	3.83%
SD17	318,022	10,666	3.47%
SD18	318,022	10,666	3.47%
SD19	318,021	10,665	3.47%
SD20	318,021	10,665	3.47%
SD21	318,021	10,665	3.47%
SD22	318,022	10,666	3.47%
SD23	318,019	10,663	3.47%
SD24	318,021	10,665	3.47%
SD25	318,021	10,665	3.47%
SD26	318,021	10,665	3.47%
SD27	318,021	10,665	3.47%
SD28	318,021	10,665	3.47%
SD29	318,019	10,663	3.47%
SD30	318,021	10,665	3.47%
SD31	318,021	10,665	3.47%
SD32	318,021	10,665	3.47%
SD33	318,021	10,665	3.47%
SD34	318,021	10,665	3.47%
SD35	307,463	107	0.03%
SD36	318,021	10,665	3.47%
SD37	307,463	107	0.03%
SD38	296,208	-11,148	-3.63%
SD39	293,888	-13,468	-4.38%
SD40	302,408	-4,948	-1.61%

Senate Majority / LATFOR Proposal - January 26, 2012

District	Total Adjusted Population	Deviation from Mean Population	% Deviation
SD41	306,760	-596	-0.19%
SD42	292,531	-14,825	-4.82%
SD43	292,750	-14,606	-4.75%
SD44	292,749	-14,607	-4.75%
SD45	293,101	-14,255	-4.64%
SD46	292,750	-14,606	-4.75%
SD47	293,195	-14,161	-4.61%
SD48	292,870	-14,486	-4.71%
SD49	292,749	-14,607	-4.75%
SD50	292,445	-14,911	-4.85%
SD51	292,402	-14,954	-4.87%
SD52	292,497	-14,859	-4.83%
SD53	292,444	-14,912	-4.85%
SD54	292,445	-14,911	-4.85%
SD55	292,306	-15,050	-4.90%
SD56	292,307	-15,049	-4.90%
SD57	292,081	-15,275	-4.97%
SD58	292,933	-14,423	-4.69%
SD59	292,194	-15,162	-4.93%
SD60	292,661	-14,695	-4.78%
SD61	292,307	-15,049	-4.90%
SD62	292,166	-15,190	-4.94%
SD63	292,661	-14,695	-4.78%
Ideal Pop.	307,356		
Min	292,081	-15,275	-4.97%
Max	319,116	11,760	3.83%
Range		27,035	8.80%
Mean Dev.		11,284	3.67%
Std. Dev.		11,832	3.85%

Senate Majority / LATFOR Proposal - January 26, 2012

Voting-Age Population from Unadjused PL94-171 Data													
District	18+_Pop	18+ AP_Black	% 18+ AP_Black	18+ AP_Asian	% 18+ AP_Asian	18+ Hispanic	% 18+ Hispanic	NH18+ White	% NH18+ White	NH18+ AP_Black	% NH18+ AP_Black	NH18+ AP_Asian	% NH18+ AP_Asian
SD01	243,135	14,281	5.87%	5,565	2.29%	29,780	12.25%	192,962	79.36%	13,240	5.45%	5,422	2.23%
SD02	238,990	8,310	3.48%	14,371	6.01%	16,627	6.96%	199,544	83.49%	7,619	3.19%	14,217	5.95%
SD03	235,923	21,721	9.21%	7,590	3.22%	56,397	23.90%	152,014	64.43%	19,056	8.08%	7,296	3.09%
SD04	239,480	24,364	10.17%	8,311	3.47%	40,073	16.73%	168,125	70.20%	22,124	9.24%	8,080	3.37%
SD05	239,647	9,012	3.76%	19,347	8.07%	23,675	9.88%	187,808	78.37%	8,255	3.44%	19,153	7.99%
SD06	242,579	38,183	15.74%	13,787	5.68%	40,073	16.52%	151,966	62.65%	36,135	14.90%	13,529	5.58%
SD07	242,166	19,581	8.09%	35,798	14.78%	31,040	12.82%	155,816	64.34%	18,457	7.62%	35,551	14.68%
SD08	239,145	39,221	16.40%	6,894	2.88%	37,939	15.86%	156,818	65.57%	36,764	15.37%	6,642	2.78%
SD09	242,567	28,659	11.81%	14,293	5.89%	31,613	13.03%	168,759	69.57%	26,849	11.07%	14,003	5.77%
SD10	235,838	135,030	57.26%	34,008	14.42%	43,564	18.47%	22,057	9.35%	128,250	54.38%	33,374	14.15%
SD11	257,168	15,703	6.11%	89,733	34.89%	40,326	15.68%	111,005	43.16%	13,879	5.40%	89,052	34.63%
SD12	259,983	18,253	7.02%	53,003	20.39%	88,300	33.96%	102,609	39.47%	13,808	5.31%	52,223	20.09%
SD13	248,553	23,741	9.55%	44,063	17.73%	145,505	58.54%	40,548	16.31%	17,791	7.16%	43,185	17.37%
SD14	249,234	138,005	55.37%	38,557	15.47%	45,669	18.32%	28,668	11.50%	131,732	52.85%	37,982	15.24%
SD15	252,687	11,165	4.42%	38,967	15.42%	55,159	21.83%	148,135	58.62%	8,318	3.29%	38,425	15.21%
SD16	265,358	10,776	4.06%	141,343	53.27%	40,656	15.32%	74,069	27.91%	8,924	3.36%	140,641	53.00%
SD17	223,150	8,935	4.00%	45,552	20.41%	27,365	12.26%	142,102	63.68%	7,327	3.28%	45,211	20.26%
SD18	241,083	62,009	25.72%	16,313	6.77%	123,174	51.09%	50,508	20.95%	49,170	20.40%	15,570	6.46%
SD19	237,001	144,581	61.00%	18,241	7.70%	33,620	14.19%	48,269	20.37%	135,666	57.24%	17,979	7.59%
SD20	241,152	142,665	59.16%	25,066	10.39%	46,311	19.20%	35,487	14.72%	133,746	55.46%	24,645	10.22%
SD21	247,212	148,711	60.16%	17,592	7.12%	33,269	13.46%	54,820	22.18%	140,708	56.92%	17,195	6.96%
SD22	250,219	4,053	1.62%	57,369	22.93%	27,490	10.99%	161,553	64.56%	3,051	1.22%	57,045	22.80%
SD23	245,973	43,466	17.67%	31,200	12.68%	50,092	20.36%	125,255	50.92%	38,529	15.66%	30,753	12.50%
SD24	249,390	6,500	2.61%	19,091	7.66%	22,892	9.18%	201,047	80.62%	5,601	2.25%	18,827	7.55%
SD25	247,114	147,634	59.74%	12,227	4.95%	42,241	17.09%	53,274	21.56%	138,472	56.04%	11,804	4.78%
SD26	259,935	15,470	5.95%	63,032	24.25%	36,646	14.10%	147,176	56.62%	12,324	4.74%	62,441	24.02%
SD27	289,911	16,864	5.82%	43,935	15.15%	32,424	11.18%	198,062	68.32%	14,232	4.91%	43,391	14.97%
SD28	279,380	8,674	3.10%	30,479	10.91%	17,864	6.39%	222,435	79.62%	7,724	2.76%	30,141	10.79%
SD29	238,329	67,572	28.35%	12,799	5.37%	119,405	50.10%	54,829	23.01%	50,891	21.35%	11,945	5.01%
SD30	252,917	123,463	48.82%	15,570	6.16%	72,873	28.81%	54,462	21.53%	109,220	43.18%	14,944	5.91%
SD31	257,212	42,520	16.53%	15,059	5.85%	138,003	53.65%	80,114	31.15%	23,976	9.32%	13,848	5.38%
SD32	225,422	98,444	43.67%	8,149	3.61%	134,615	59.72%	4,712	2.09%	77,091	34.20%	7,217	3.20%
SD33	222,882	77,943	34.97%	9,402	4.22%	146,908	65.91%	9,219	4.14%	56,914	25.54%	8,354	3.75%
SD34	250,693	46,443	18.53%	17,953	7.16%	88,965	35.49%	105,567	42.11%	36,479	14.55%	17,142	6.84%
SD35	232,371	46,545	20.03%	18,297	7.87%	64,723	27.85%	107,297	46.17%	41,226	17.74%	17,845	7.68%
SD36	239,810	150,688	62.84%	8,482	3.54%	63,336	26.41%	26,073	10.87%	139,491	58.17%	8,022	3.35%
SD37	236,749	15,927	6.73%	13,963	5.90%	42,741	18.05%	165,187	69.77%	13,945	5.89%	13,684	5.78%
SD38	214,400	28,803	13.43%	15,882	7.41%	30,940	14.43%	140,007	65.30%	26,931	12.56%	15,652	7.30%
SD39	211,828	22,251	10.50%	6,821	3.22%	38,754	18.30%	145,598	68.73%	19,632	9.27%	6,562	3.10%
SD40	228,474	13,638	5.97%	8,728	3.82%	29,815	13.05%	177,195	77.56%	12,030	5.27%	8,486	3.71%

Senate Majority / LATFOR Proposal - January 26, 2012

Voting-Age Population from Unadjused PL94-171 Data													
District	18+_Pop	18+ AP_Black	% 18+ AP_Black	18+ AP_Asian	% 18+ AP_Asian	18+ Hispanic	% 18+ Hispanic	NH18+ White	% NH18+ White	NH18+ AP_Black	% NH18+ AP_Black	NH18+ AP_Asian	% NH18+ AP_Asian
SD41	240,954	22,825	9.47%	8,917	3.70%	22,089	9.17%	187,509	77.82%	21,091	8.75%	8,754	3.63%
SD42	230,283	22,569	9.80%	4,985	2.16%	29,349	12.74%	174,229	75.66%	20,014	8.69%	4,812	2.09%
SD43	229,917	6,221	2.71%	3,492	1.52%	4,861	2.11%	214,364	93.24%	5,861	2.55%	3,435	1.49%
SD44	234,030	33,835	14.46%	12,067	5.16%	11,182	4.78%	177,589	75.88%	31,897	13.63%	11,919	5.09%
SD45	242,860	9,768	4.02%	1,966	0.81%	5,638	2.32%	221,915	91.38%	8,897	3.66%	1,922	0.79%
SD46	233,190	9,893	4.24%	4,745	2.03%	11,147	4.78%	206,813	88.69%	8,990	3.86%	4,652	1.99%
SD47	231,494	11,820	5.11%	5,383	2.33%	7,380	3.19%	205,854	88.92%	11,007	4.75%	5,307	2.29%
SD48	225,544	7,472	3.31%	2,532	1.12%	6,373	2.83%	207,416	91.96%	6,874	3.05%	2,433	1.08%
SD49	224,474	12,633	5.63%	6,418	2.86%	7,178	3.20%	196,126	87.37%	11,672	5.20%	6,292	2.80%
SD50	227,367	8,543	3.76%	4,381	1.93%	4,372	1.92%	208,541	91.72%	8,057	3.54%	4,332	1.91%
SD51	233,130	4,792	2.06%	2,470	1.06%	5,359	2.30%	219,316	94.07%	4,342	1.86%	2,387	1.02%
SD52	230,298	8,273	3.59%	7,133	3.10%	5,213	2.26%	208,769	90.65%	7,625	3.31%	7,050	3.06%
SD53	225,205	31,654	14.06%	9,018	4.00%	8,966	3.98%	173,904	77.22%	30,034	13.34%	8,908	3.96%
SD54	227,202	7,115	3.13%	3,322	1.46%	6,211	2.73%	209,591	92.25%	6,649	2.93%	3,283	1.44%
SD55	225,668	22,652	10.04%	5,965	2.64%	12,555	5.56%	184,823	81.90%	21,243	9.41%	5,863	2.60%
SD56	221,400	37,896	17.12%	8,717	3.94%	16,933	7.65%	158,664	71.66%	35,801	16.17%	8,573	3.87%
SD57	227,093	4,437	1.95%	1,686	0.74%	6,630	2.92%	211,608	93.18%	3,976	1.75%	1,636	0.72%
SD58	233,524	9,481	4.06%	9,352	4.00%	5,360	2.30%	208,154	89.14%	8,963	3.84%	9,228	3.95%
SD59	240,388	10,023	4.17%	4,457	1.85%	5,311	2.21%	219,683	91.39%	9,469	3.94%	4,380	1.82%
SD60	228,818	12,709	5.55%	4,499	1.97%	10,152	4.44%	199,419	87.15%	11,778	5.15%	4,418	1.93%
SD61	228,446	23,378	10.23%	12,092	5.29%	4,910	2.15%	187,214	81.95%	22,706	9.94%	12,000	5.25%
SD62	230,585	14,432	6.26%	2,229	0.97%	4,614	2.00%	206,936	89.74%	13,989	6.07%	2,187	0.95%
SD63	226,243	70,070	30.97%	5,787	2.56%	11,755	5.20%	138,708	61.31%	68,421	30.24%	5,696	2.52%

Senate Majority / LATFOR Proposal - January 26, 2012

Citizen Voting-Age Population from 2006-2010 American Community Survey Special Tabulatior									
District	CVAP Total	CVAP NH_WHITE	% CVAP NH_WHITE	CVAP HISPANIC	% CVAP HISPANIC	CVAP_NH BLACK_ALL	% CVAP_NH BLACK_ALL	CVAP_NH ASIAN_ALL	% CVAP_NH ASIAN_ALL
SD01	219,078	189,730	86.60%	14,629	6.68%	10,788	4.92%	2,767	1.26%
SD02	224,185	195,345	87.14%	12,870	5.74%	6,029	2.69%	9,281	4.14%
SD03	202,044	150,244	74.36%	30,547	15.12%	15,962	7.90%	4,403	2.18%
SD04	217,733	164,890	75.73%	25,824	11.86%	21,219	9.75%	5,146	2.36%
SD05	217,406	186,833	85.94%	10,954	5.04%	6,109	2.81%	12,734	5.86%
SD06	213,309	150,798	70.69%	20,615	9.66%	32,379	15.18%	8,877	4.16%
SD07	210,145	153,405	73.00%	17,470	8.31%	15,453	7.35%	23,092	10.99%
SD08	212,524	152,152	71.59%	21,279	10.01%	33,091	15.57%	5,093	2.40%
SD09	221,640	167,036	75.36%	20,702	9.34%	22,259	10.04%	10,932	4.93%
SD10	179,379	24,735	13.79%	26,660	14.86%	105,209	58.65%	20,845	11.62%
SD11	207,481	110,400	53.21%	28,910	13.93%	10,968	5.29%	55,710	26.85%
SD12	177,717	85,346	48.02%	54,551	30.70%	10,692	6.02%	26,337	14.82%
SD13	136,523	36,694	26.88%	57,849	42.37%	14,534	10.65%	26,545	19.44%
SD14	195,914	28,449	14.52%	28,002	14.29%	112,484	57.42%	24,864	12.69%
SD15	210,175	136,764	65.07%	40,649	19.34%	5,966	2.84%	25,264	12.02%
SD16	174,271	70,473	40.44%	27,777	15.94%	7,311	4.20%	67,105	38.51%
SD17	167,113	120,770	72.27%	15,938	9.54%	6,744	4.04%	22,922	13.72%
SD18	175,007	40,589	23.19%	82,640	47.22%	42,599	24.34%	8,151	4.66%
SD19	198,356	48,614	24.51%	26,731	13.48%	111,349	56.14%	10,896	5.49%
SD20	174,851	31,584	18.06%	29,461	16.85%	102,692	58.73%	10,435	5.97%
SD21	197,577	55,317	28.00%	20,897	10.58%	110,221	55.79%	9,718	4.92%
SD22	200,829	143,590	71.50%	17,390	8.66%	2,093	1.04%	36,983	18.41%
SD23	188,126	104,939	55.78%	30,510	16.22%	33,525	17.82%	18,267	9.71%
SD24	233,387	194,324	83.26%	19,495	8.35%	4,653	1.99%	14,418	6.18%
SD25	204,645	45,435	22.20%	32,290	15.78%	118,092	57.71%	7,560	3.69%
SD26	212,738	126,185	59.31%	30,618	14.39%	11,551	5.43%	43,170	20.29%
SD27	243,097	178,910	73.60%	25,266	10.39%	10,846	4.46%	26,719	10.99%
SD28	241,866	203,407	84.10%	14,930	6.17%	5,511	2.28%	17,353	7.17%
SD29	175,025	49,556	28.31%	74,037	42.30%	43,267	24.72%	7,488	4.28%
SD30	212,919	49,813	23.40%	52,291	24.56%	100,971	47.42%	8,300	3.90%
SD31	190,630	73,454	38.53%	87,073	45.68%	22,278	11.69%	7,075	3.71%
SD32	162,850	3,898	2.39%	92,967	57.09%	61,215	37.59%	4,047	2.49%
SD33	146,767	8,650	5.89%	89,469	60.96%	43,758	29.81%	4,341	2.96%
SD34	217,164	103,135	47.49%	70,720	32.57%	31,846	14.66%	10,604	4.88%
SD35	184,021	104,083	56.56%	33,739	18.33%	35,082	19.06%	10,512	5.71%
SD36	193,534	24,401	12.61%	47,044	24.31%	115,691	59.78%	4,845	2.50%
SD37	201,359	156,087	77.52%	22,264	11.06%	14,477	7.19%	7,828	3.89%
SD38	182,205	135,625	74.44%	14,526	7.97%	19,922	10.93%	11,283	6.19%
SD39	190,823	143,270	75.08%	24,178	12.67%	18,172	9.52%	4,443	2.33%
SD40	203,340	171,015	84.10%	15,762	7.75%	9,872	4.85%	5,768	2.84%

Senate Majority / LATFOR Proposal - January 26, 2012

Citizen Voting-Age Population from 2006-2010 American Community Survey Special Tabulatior									
District	CVAP Total	CVAP NH_WHITE	% CVAP NH_WHITE	CVAP HISPANIC	% CVAP HISPANIC	CVAP_NH BLACK_ALL	% CVAP_NH BLACK_ALL	CVAP_NH ASIAN_ALL	% CVAP_NH ASIAN_ALL
SD41	222,120	183,950	82.82%	14,088	6.34%	17,460	7.86%	5,318	2.39%
SD42	215,391	172,423	80.05%	20,539	9.54%	17,432	8.09%	3,141	1.46%
SD43	223,279	210,605	94.32%	3,968	1.78%	4,560	2.04%	2,030	0.91%
SD44	219,553	175,378	79.88%	8,499	3.87%	27,690	12.61%	6,130	2.79%
SD45	235,780	217,792	92.37%	4,839	2.05%	8,930	3.79%	1,184	0.50%
SD46	224,072	204,561	91.29%	8,061	3.60%	7,868	3.51%	2,322	1.04%
SD47	222,113	201,528	90.73%	5,864	2.64%	10,605	4.77%	2,662	1.20%
SD48	220,012	203,896	92.67%	5,970	2.71%	6,724	3.06%	1,419	0.64%
SD49	214,470	193,641	90.29%	5,506	2.57%	9,926	4.63%	3,846	1.79%
SD50	220,331	204,645	92.88%	3,457	1.57%	7,053	3.20%	3,243	1.47%
SD51	227,424	215,922	94.94%	4,448	1.96%	4,128	1.82%	1,209	0.53%
SD52	224,079	207,252	92.49%	4,464	1.99%	6,434	2.87%	4,523	2.02%
SD53	212,036	171,589	80.92%	6,842	3.23%	26,759	12.62%	3,931	1.85%
SD54	218,883	204,625	93.49%	4,602	2.10%	6,322	2.89%	1,876	0.86%
SD55	215,544	180,833	83.90%	11,330	5.26%	18,123	8.41%	4,353	2.02%
SD56	210,036	158,524	75.47%	13,516	6.44%	31,932	15.20%	4,644	2.21%
SD57	224,590	211,355	94.11%	5,515	2.46%	3,712	1.65%	1,050	0.47%
SD58	222,452	203,912	91.67%	4,662	2.10%	7,731	3.48%	4,330	1.95%
SD59	233,095	215,470	92.44%	4,533	1.94%	8,929	3.83%	2,769	1.19%
SD60	221,529	197,477	89.14%	8,219	3.71%	11,033	4.98%	2,350	1.06%
SD61	214,720	181,926	84.73%	4,125	1.92%	21,489	10.01%	5,674	2.64%
SD62	223,580	202,235	90.45%	4,257	1.90%	13,384	5.99%	1,148	0.51%
SD63	220,971	139,803	63.27%	10,349	4.68%	66,633	30.15%	2,402	1.09%

Measures of Compactness

The following is based on the descriptions in the *Maptitude for Redistricting™ Version 4.5 User's Guide*.

Perimeter Test – computes the length of the perimeter of each district, and the sum of the perimeters of all the districts. The plan with the smallest perimeter sum is the most compact.

Schwartzberg Test – a perimeter-based measure that compares a simplified version of each district to a circle, which is considered to be the most compact shape possible. For each district, the Schwartzberg test computes the ratio of the perimeter of the simplified version of the district to the perimeter of a circle with the same area as the original district. The district is simplified to exclude complicated coastlines, by keeping only those shape points where three or more areas in the base layer come together. Water features and a neighboring state also count as base layer areas. This measure is usually greater than or equal to 1, with 1 being the most compact. Unfortunately, the simplification procedure can result in a polygon that is substantially smaller than the original district, which can yield a ratio less than 1 (e.g., an island has a 0 ratio). The Schwartzberg test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Roeck Test - an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Roeck test computes the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact. The Roeck test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Polsby-Popper Test – computes the ratio of the district area to the area of a circle with the same perimeter: $4\pi\text{Area}/(\text{Perimeter}^2)$. The measure is always between 0 and 1, with 1 being the most compact. The Polsby-Popper test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Population Polygon Test – computes the ratio of the district population to the approximate population of the convex hull of the district (the minimum convex polygon which completely contains the district). The population of the convex hull is approximated by overlaying it with a base layer, such as Census Blocks. The measure is always between 0 and 1, with 1 being the most compact. The Population Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Population Circle Test – computes the ratio of the district population to the approximate population of the minimum enclosing circle of the district. The population of the circle is approximated by overlaying it with a base layer, such as Census Blocks. The measure is always between 0 and 1, with 1 being the most compact. The Population Circle test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Ehrenburg Test – computes the ratio of the largest inscribed circle divided by the area of the district. The measure is always between 0 and 1, with 1 being the most compact. The Ehrenburg test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Measures of Compactness
Senate Alternative Revision (Feb. 12, 2012)

DISTRICT	Roeck	Schwartz-berg	Perimeter	Polsby-Popper	Population Polygon	Population Circle	Ehrenburg
01	0.40	1.36	194.30	0.53	0.74	0.60	0.36
02	0.60	1.39	68.87	0.50	0.86	0.59	0.47
03	0.30	1.53	108.26	0.42	0.61	0.26	0.34
04	0.28	1.88	54.92	0.27	0.80	0.50	0.31
05	0.57	1.51	82.04	0.43	0.83	0.52	0.55
06	0.29	1.84	58.66	0.29	0.75	0.34	0.30
07	0.51	1.63	64.82	0.36	0.71	0.45	0.58
08	0.32	2.55	55.52	0.14	0.59	0.38	0.15
09	0.50	1.73	73.43	0.31	0.63	0.33	0.33
10	0.21	2.10	72.66	0.22	0.30	0.05	0.23
11	0.57	1.63	20.49	0.37	0.74	0.63	0.30
12	0.33	2.67	47.48	0.14	0.35	0.23	0.13
13	0.48	1.43	21.03	0.46	0.91	0.59	0.42
14	0.54	1.34	11.91	0.55	0.94	0.82	0.43
15	0.39	1.80	20.74	0.30	0.60	0.34	0.37
16	0.23	2.20	30.30	0.20	0.55	0.14	0.14
17	0.34	1.57	15.82	0.40	0.81	0.35	0.32
18	0.63	1.32	24.58	0.57	0.76	0.46	0.71
19	0.31	1.82	16.18	0.30	0.77	0.39	0.32
20	0.46	1.71	16.22	0.34	0.63	0.42	0.33
21	0.34	1.70	14.86	0.35	0.72	0.35	0.30
22	0.27	1.79	20.44	0.31	0.67	0.28	0.37
23	0.26	1.91	19.15	0.27	0.68	0.40	0.25
24	0.24	1.84	38.21	0.29	0.59	0.24	0.26
25	0.63	1.24	41.09	0.63	0.86	0.74	0.60
26	0.29	1.98	26.95	0.23	0.46	0.20	0.28
27	0.41	1.53	13.45	0.43	0.74	0.50	0.36
28	0.27	1.95	18.07	0.26	0.58	0.30	0.32
29	0.31	1.73	12.39	0.33	0.91	0.50	0.34
30	0.33	1.80	14.46	0.31	0.74	0.44	0.33
31	0.26	1.69	19.78	0.35	0.82	0.24	0.33
32	0.33	2.09	21.92	0.22	0.56	0.28	0.23
33	0.30	1.94	17.41	0.26	0.72	0.41	0.34
34	0.36	1.70	16.27	0.34	0.70	0.34	0.34
35	0.39	1.37	25.31	0.52	0.85	0.27	0.30
36	0.35	1.70	29.13	0.33	0.81	0.49	0.36
37	0.32	1.48	50.70	0.43	0.91	0.41	0.36
38	0.30	2.12	95.40	0.21	0.65	0.34	0.29
39	0.44	1.27	64.14	0.61	0.98	0.65	0.59
40	0.33	1.68	171.64	0.35	0.66	0.34	0.34
41	0.22	1.73	210.16	0.33	0.83	0.42	0.29
42	0.52	1.38	125.06	0.50	0.85	0.69	0.54
43	0.60	1.34	247.31	0.49	0.79	0.42	0.50
44	0.37	1.62	425.52	0.35	0.65	0.19	0.42
45	0.43	1.25	103.35	0.63	0.87	0.50	0.68
46	0.42	1.63	190.82	0.36	0.55	0.37	0.33
47	0.34	1.57	480.29	0.37	0.82	0.41	0.41
48	0.53	1.45	230.82	0.46	0.83	0.56	0.36
49	0.38	1.96	610.95	0.25	0.70	0.26	0.26

Measures of Compactness
Senate Alternative Revision (Feb. 12, 2012)

DISTRICT	Roeck	Schwartz-berg	Perimeter	Polsby-Popper	Population Polygon	Population Circle	Ehrenburg
50	0.51	1.38	323.19	0.48	0.89	0.64	0.47
51	0.40	1.66	208.94	0.28	0.79	0.46	0.49
52	0.33	2.21	299.84	0.19	0.50	0.42	0.37
53	0.37	1.59	201.27	0.37	0.90	0.70	0.31
54	0.44	1.61	324.72	0.37	0.64	0.19	0.39
55	0.24	2.33	183.41	0.17	0.44	0.38	0.30
56	0.24	1.72	99.83	0.32	0.79	0.56	0.33
57	0.30	1.88	379.36	0.27	0.78	0.21	0.25
58	0.56	1.24	266.95	0.50	0.64	0.24	0.45
59	0.36	1.73	133.09	0.25	0.41	0.36	0.32
60	0.28	1.77	441.80	0.30	0.58	0.15	0.30
61	0.46	1.46	123.53	0.44	0.73	0.42	0.51
62	0.23	2.02	71.92	0.22	0.78	0.51	0.29
Sum	**N/A**	**N/A**	**7,471.13**	**N/A**	**N/A**	**N/A**	**N/A**
Min	**0.21**	**1.24**	**N/A**	**0.14**	**0.30**	**0.05**	**0.13**
Max	**0.63**	**2.67**	**N/A**	**0.63**	**0.98**	**0.82**	**0.71**
Mean	**0.38**	**1.71**	**N/A**	**0.36**	**0.71**	**0.41**	**0.36**
Std. Dev.	**0.11**	**0.31**	**N/A**	**0.12**	**0.15**	**0.16**	**0.12**

Measures of Compactness - Proposed Senate Districts
Senate Majority / LATFOR - January 26, 2012

DISTRICT	Roeck	Schwartz-berg	Perimeter	Polsby-Popper	Population Polygon	Population Circle	Ehrenburg
SD01	0.39	1.41	201.78	0.48	0.83	0.60	0.36
SD02	0.35	2.08	105.13	0.23	0.59	0.30	0.49
SD03	0.40	2.17	128.02	0.20	0.68	0.37	0.29
SD04	0.35	1.95	100.97	0.26	0.62	0.35	0.37
SD05	0.58	1.52	85.01	0.43	0.86	0.73	0.54
SD06	0.33	2.03	52.00	0.24	0.65	0.38	0.23
SD07	0.41	1.81	58.09	0.30	0.59	0.36	0.38
SD08	0.42	1.75	70.19	0.32	0.65	0.35	0.42
SD09	0.49	1.85	62.34	0.28	0.65	0.42	0.28
SD10	0.34	1.85	42.09	0.27	0.79	0.39	0.26
SD11	0.38	3.67	68.35	0.07	0.52	0.30	0.15
SD12	0.16	3.55	41.09	0.08	0.46	0.14	0.16
SD13	0.45	1.87	21.68	0.28	0.63	0.46	0.40
SD14	0.38	3.15	42.42	0.10	0.64	0.45	0.38
SD15	0.20	3.08	91.61	0.10	0.13	0.06	0.27
SD16	0.17	5.14	59.16	0.04	0.37	0.23	0.11
SD17	0.33	2.96	26.36	0.11	0.64	0.37	0.17
SD18	0.22	2.91	28.98	0.12	0.58	0.25	0.20
SD19	0.47	2.36	41.28	0.18	0.59	0.27	0.58
SD20	0.14	3.13	24.99	0.10	0.53	0.21	0.30
SD21	0.40	2.20	22.61	0.21	0.61	0.34	0.28
SD22	0.21	3.11	41.27	0.10	0.48	0.21	0.17
SD23	0.20	2.74	56.88	0.13	0.33	0.18	0.17
SD24	0.59	1.36	45.36	0.53	0.75	0.71	0.57
SD25	0.25	2.34	27.88	0.17	0.58	0.19	0.20
SD26	0.29	2.51	27.13	0.15	0.59	0.33	0.25
SD27	0.39	2.79	26.73	0.13	0.58	0.54	0.15
SD28	0.31	2.54	16.74	0.16	0.72	0.55	0.21
SD29	0.17	3.33	34.69	0.09	0.31	0.17	0.12
SD30	0.31	2.88	19.89	0.12	0.74	0.56	0.28
SD31	0.11	3.02	31.80	0.11	0.50	0.15	0.20
SD32	0.40	3.45	28.70	0.08	0.76	0.61	0.17
SD33	0.33	2.84	20.71	0.12	0.71	0.43	0.30
SD34	0.44	3.57	81.99	0.08	0.21	0.17	0.22
SD35	0.43	2.47	70.26	0.16	0.58	0.47	0.47
SD36	0.31	1.77	20.75	0.30	0.89	0.49	0.33
SD37	0.23	2.78	125.75	0.12	0.50	0.33	0.18
SD38	0.40	1.44	64.62	0.47	0.89	0.72	0.47
SD39	0.41	1.80	146.30	0.28	0.79	0.43	0.26
SD40	0.31	2.18	166.39	0.20	0.72	0.41	0.21
SD41	0.35	1.57	168.39	0.39	0.82	0.42	0.46
SD42	0.32	1.95	372.46	0.23	0.61	0.36	0.38
SD43	0.26	1.93	298.63	0.24	0.34	0.27	0.20
SD44	0.41	1.86	83.42	0.27	0.85	0.65	0.30
SD45	0.36	1.74	550.53	0.30	0.85	0.37	0.44
SD46	0.23	2.25	359.74	0.19	0.57	0.21	0.23
SD47	0.19	2.37	509.23	0.17	0.77	0.35	0.26
SD48	0.25	1.71	413.34	0.31	0.86	0.46	0.32
SD49	0.38	1.77	408.53	0.30	0.71	0.31	0.42

Measures of Compactness - Proposed Senate Districts
Senate Majority / LATFOR - January 26, 2012

DISTRICT	Roeck	Schwartz-berg	Perimeter	Polsby-Popper	Population Polygon	Population Circle	Ehrenburg
SD50	0.46	2.20	215.04	0.17	0.58	0.53	0.35
SD51	0.26	2.62	640.42	0.14	0.34	0.17	0.32
SD52	0.40	1.60	255.35	0.36	0.93	0.59	0.40
SD53	0.42	1.97	245.73	0.21	0.75	0.51	0.40
SD54	0.42	1.45	276.16	0.46	0.66	0.18	0.44
SD55	0.18	2.23	228.60	0.19	0.44	0.27	0.24
SD56	0.43	1.64	148.28	0.36	0.59	0.47	0.49
SD57	0.33	1.72	422.82	0.29	0.63	0.18	0.34
SD58	0.62	1.26	233.89	0.62	0.94	0.84	0.52
SD59	0.29	2.17	335.08	0.18	0.54	0.18	0.29
SD60	0.31	2.03	152.88	0.22	0.45	0.34	0.33
SD61	0.24	1.77	190.57	0.25	0.77	0.29	0.35
SD62	0.44	1.26	234.67	0.46	0.83	0.24	0.51
SD63	0.50	1.72	50.04	0.32	0.82	0.65	0.35
Sum	**N/A**	**N/A**	**9,221.79**	**N/A**	**N/A**	**N/A**	**N/A**
Min	**0.11**	**1.26**	**N/A**	**0.04**	**0.13**	**0.06**	**0.11**
Max	**0.62**	**5.14**	**N/A**	**0.62**	**0.94**	**0.84**	**0.58**
Mean	**0.34**	**2.29**	**N/A**	**0.23**	**0.63**	**0.38**	**0.32**
Std. Dev.	**0.11**	**0.73**	**N/A**	**0.13**	**0.18**	**0.17**	**0.12**