THE UNIVERSITY OF THE STATE OF NEW YORK
THE NEW YORK STATE EDUCATION DEPARTMENT
ALBANY, NY 12234

Projection of

High School Graduates

New York State
2007-08 to 2018-19

OFFICE OF HIGHER EDUCATION
RESEARCH AND INFORMATION SYSTEMS

THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of The University

ROBERT M. BENNETT, *Chancellor,* B.A., M.S.	Tonawanda
MERRYL H. TISCH, *Vice Chancellor,* B.A., M.A., Ed.D.	New York
SAUL B. COHEN, B.A., M.A., Ph.D.	New Rochelle
JAMES C. DAWSON, A.A., B.A., M.S., Ph.D.	Plattsburgh
ANTHONY S. BOTTAR, B.A., J.D.	Syracuse
GERALDINE D. CHAPEY, B.A., M.A., Ed.D.	Belle Harbor
ARNOLD B. GARDNER, B.A., LL.B.	Buffalo
HARRY PHILLIPS, 3rd, B.A., M.S.F.S.	Hartsdale
JOSEPH E. BOWMAN, JR., B.A., M.L.S., M.A., M.Ed., Ed.D.	Albany
JAMES R. TALLON, JR., B.A., M.A.	Binghamton
MILTON L. COFIELD, B.S., M.B.A., Ph.D.	Rochester
ROGER B. TILLES, B.A., J.D.	Great Neck
KAREN BROOKS HOPKINS, B.A., M.F.A.	Brooklyn
CHARLES R. BENDIT, B.A.	Manhattan
BETTY A. ROSA, B.A., M.S. in Ed., M.S. in Ed., M.Ed., Ed.D.	Bronx
LESTER W. YOUNG, JR., B.S., M.S., Ed. D	Oakland Gardens

President of The University and Commissioner of Education
RICHARD P. MILLS

Senior Deputy Commissioner of Education P-16
JOHANNA DUNCAN-POITIER

Associate Commissioner, Office of Higher Education
JOSEPH P. FREY

Coordinator, Office of Research and Information Systems
GLENWOOD L. ROWSE

TABLE of CONTENTS

Source: New York State Education Department
Office of Higher Education
Office of Research and Information Systems, March 2009
Phone: (518) 474-5091
E-mail: heds@mail.nysed.gov
http://www.highered.nysed.gov/oris/

Highlights

- Between 2008 and 2019, the number of high school graduates (public and private) in New York State is likely to decrease by 16.5% due to actual declines observed now by grade level in the State's schools. No changes were assumed in population migration patterns or in the rate at which students graduate from high school. This decrease mirrors the increase that occurred between 2000 and 2008. High school graduate numbers are expected to begin decreasing in 2010 in NYC and in 2009 for the rest of the State. These projected changes reflect progressively smaller classes now in the elementary grades which in turn reflect both the slump in birth rates after the baby boom and the net out-migration of population from the state which has been experienced for some time now.

- Greater decreases are projected for New York City (-19.8%) than for the rest of New York State (-14.9%). New York State's high school graduation rate has been increasing, and increasing at a greater rate in New York City (NYC) than in the rest of the State (ROS), but the NYC school-aged population has been experiencing net out-migration, whereas the rest of the State (ROS) is still experiencing net in-migration of school-aged children.

- Projections differ by race/ethnicity. Statewide, substantial decreases are projected for blacks and whites while increases are projected for Hispanics and Asians:
    - -28% NYS Blacks
    - -22% NYS Whites
    - +4% NYS Hispanics
    - +15% NYS Asians

- Racial/ethnic group projections look quite different when split by region of the state (NYC vs. ROS), primarily due to different population migration patterns and birth rates in each region. Net migration out of NYC for some racial/ethnic school-aged populations probably accounts for considerable in-migration by the same group into the rest of the State (ROS). The following groups are ranked from the greatest projected decreases to projected increases:
    - -37% NYC Blacks
    - -24% ROS Whites (Rest of the State)
    - -20% NYC Hispanics
    - -12% ROS Blacks
    - -10% NYC Whites
    - - 1% NYC Asians
    - +47% ROS Asians
    - +53% ROS Hispanics

    (American Indian counts were too low to provide statistically valid projections.)

- For NYS counties, projected percentage changes in the number of graduates between 2008 and 2019 also vary substantially, ranging from -39% for Orleans County to +6% for Schuyler County. Projections for some counties may not be reliable due to relatively small enrollment counts and more volatile economic conditions within individual counties. This results in less stable population migration in and out of the county and in turn less stable grade progression ratios. The assumption that grade projection ratios will remain stable, at their recent values, for the next eleven years is probably somewhat more valid at the State level than at the County level.

- Grade progression ratios have been increasing modestly upstate, and substantially in New York City. In the last five years, the product of all grade progression ratios between 1st grade and high school graduation increased from 79% to 82% outside NYC, and from 46% to 58% in NYC. These changes reflect recent increased high school graduation rates, and a recent decrease in out-migration relative to in-migration, especially in NYC. Recent grade progression ratios were used for making projections, and assume that students, within each population group, will continue to experience the same graduation rates and net-migration rates as have been experienced by that population over the past five years.

- As shown in Figure 4, 1st grade enrollment 11 years earlier has been a very good predictor of high school graduates and the number of high school graduates has been a very good predictor of full-time, first-time college enrollments the following fall.

- These statewide projections are similar to those published in March 2008 by the Western Interstate Commission on Higher Education (WICHE), but are based upon an additional two years of actual data. The WICHE report projects comparable percentage changes in numbers of graduates, but noticeably higher graduate counts, because WICHE uses a national data source for NYS private school graduates that systematically includes about 5,000 students who are likely duplicate counts of graduates reported by public schools.

- An Excel data file that provides projections, using each of five different methods, for every year between 2008 and 2019 by county and by race/ethnicity and gender for NYC and ROS regions is available from the website for this office at:
  http://www.highered.nysed.gov/oris/demographics/hsgprojections.htm
  Questions about the projections may be directed to Kathryn Evans (518) 474-5093.

Related Demographics from U.S. Census Bureau Data (see Appendix IV)

- New York has been losing more population than any other state from migration between the states. Net domestic migration between 2000 and 2008 was -1,575,864 residents or 8.3% of the 2000 population.
- During the same period, net domestic migration losses were partially offset by international immigration totaling 877,000 individuals (4.6%). This was second in the nation with only California experiencing more immigration from other nations.
- NYC experienced far higher international immigration than the rest of the State. NYC has increased its population 8.0% through international in-migration, compared to an increase of only 2.2% for the rest of the State between 2000 and 2008.
- Census 2000 revealed that more than one fourth of New Yorkers (27.5%) reported that they do not speak English at home. The vast majority of these spoke Spanish followed distantly by speakers of Chinese.
- Even with international immigration, NYC experienced much greater population losses than the rest of the state. Emigration out of the City was high for Hispanics and particularly Blacks while most of the populations losses upstate were among whites. Hispanic especially seem to have been moving upstate both from NYC and other states.
- In 2000, New York State had approximately equal numbers of residents under age 18 and over age 64. In 2030, New York State is projected to have about twice as many residents over age 64 as under age 18.
- Beginning in our high schools, females have much more educational success. This difference is amplified as an increasingly disproportionate percentage of females enroll in college, persist in college, and ultimately obtain a college degree or graduate degree.

Projections

Figure 1

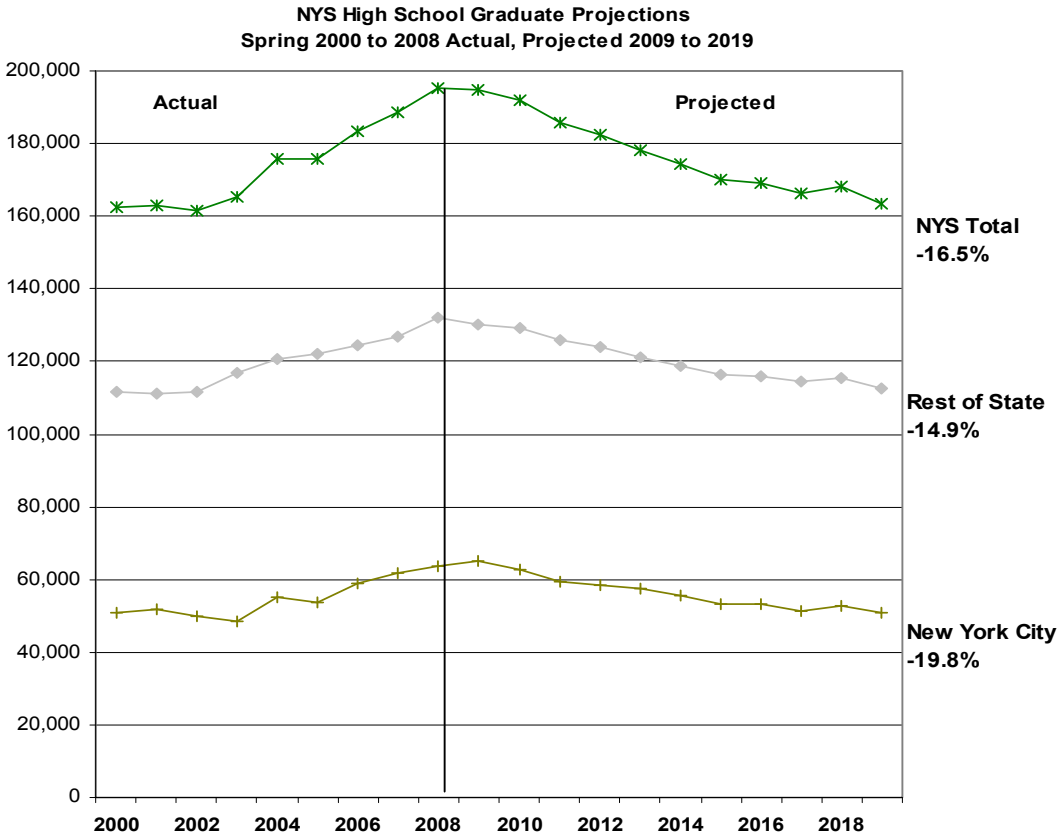


Table 1:
New York State High School Graduates
Actual 2007 & 2008, Projections 2009-2019

Year	NYS	NYC	ROS
2007	188,523	61,593	126,930
2008	195,454	63,465	131,989
Projection			
2009	194,885	64,848	130,037
2010	191,822	62,473	129,349
2011	185,536	59,418	126,118
2012	182,238	58,433	123,805
2013	178,323	57,270	121,053
2014	174,370	55,713	118,657
2015	169,883	53,414	116,469
2016	169,348	53,198	116,150
2017	166,094	51,542	114,552
2018	167,963	52,741	115,222
2019	163,274	50,916	112,358

For New York State (NYS), New York City (NYC), and the Rest of the State (ROS)

Source: NYSED, Office of Research and Information Systems

December 2008.

Figure 2

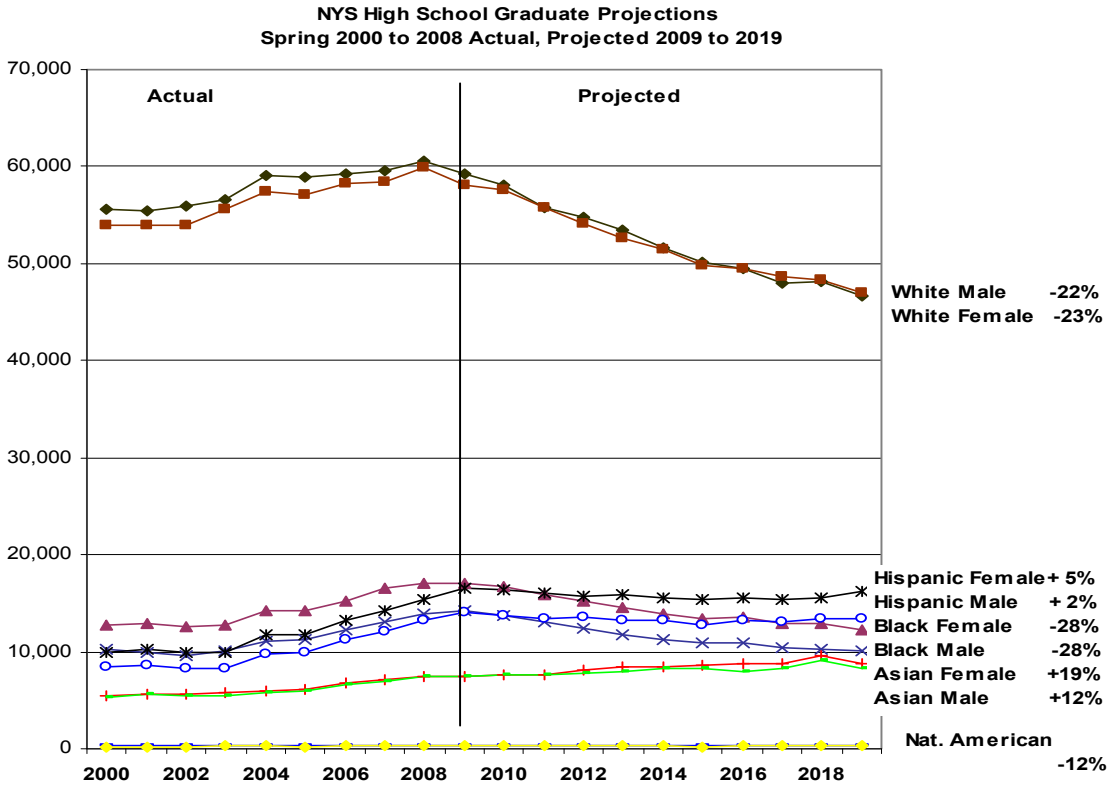


Figure 3

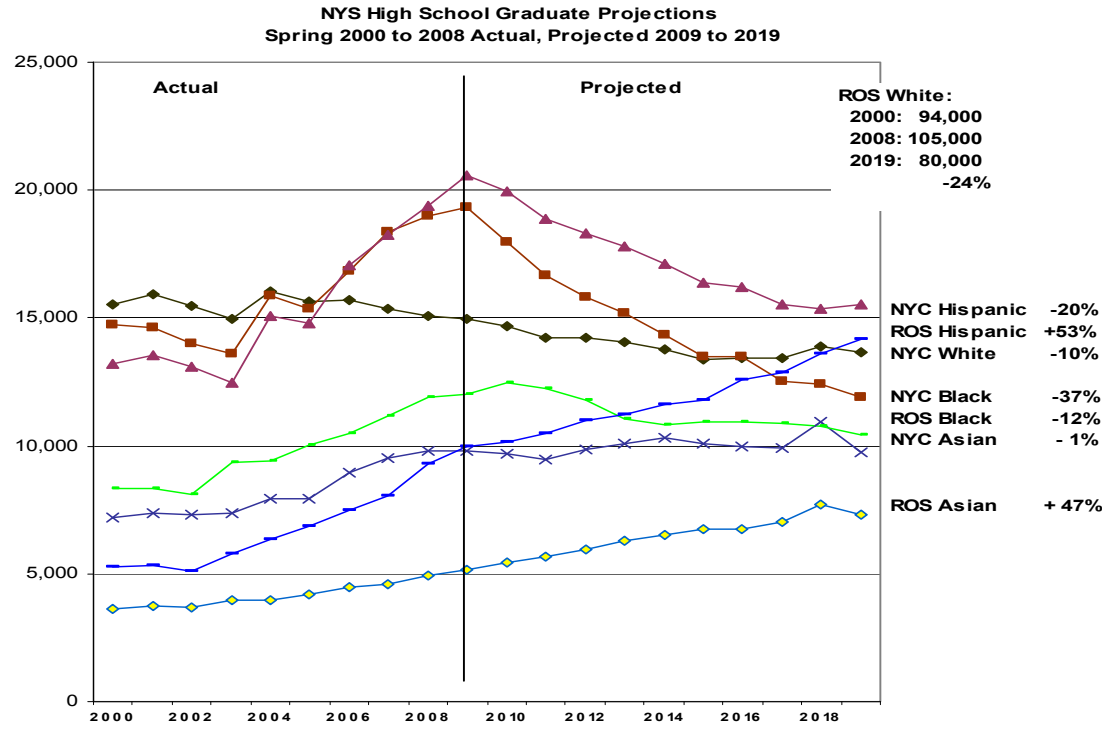


Table 2:

New York State High School Graduate Projections By Race/Ethnicity and Region, 2007-08 to 2018-19

		High School Graduates					"Seed Cohort" 1st Grade Enroll-ment	Race/Ethnic shares of Graduates	
Region ****	Race/ Ethnicity	2007*	2008*** Estimate	...	2019 Projec -tion	Chg '08 to '19	Chg '97 to '08	2008	2019
NYS	All Races	188,523	195,454	...	163274	-16.5%	-17.8%	100%	100%
NYC	All Races	61,593	63,465	...	50,916	-19.8%	-20.0%	100%	100%
ROS	All Races	126,930	131,989	...	112,358	-14.9%	-16.2%	100%	100%
NYS	White	117,975	120,499	...	93,568	-22.3%	-22.3%	61.7%	57.3%
NYS	Black	29,537	30,904	...	22,340	-27.7%	-24.3%	15.8%	13.7%
NYS	Hispanic	26,345	28,670	...	29,692	3.6%	-5.5%	14.7%	18.2%
NYS	Asian	14,101	14,785	...	17,081	15.5%	15.8%	7.6%	10.5%
NYS	Native American***	565	596	...	593	-0.5%	-12.5%	0.3%	0.4%
NYC	White	15,360	15,082	...	13,641	-9.6%	-13.7%	23.8%	26.8%
NYC	Black	18,346	19,015	...	11,907	-37.4%	-30.8%	30.0%	23.4%
NYC	Hispanic	18,280	19,394	...	15,506	-20.0%	-20.6%	30.6%	30.5%
NYC	Asian	9,497	9,825	...	9,766	-0.6%	5.2%	15.5%	19.2%
NYC	Native American***	110	149	...	96	-35.6%	-42.2%	0.2%	0.2%
ROS	White	102,615	105,417	...	79,927	-24.2%	-24.1%	79.9%	71.1%
ROS	Black	11,191	11,889	...	10,433	-12.2%	-11.5%	9.0%	9.3%
ROS	Hispanic	8,065	9,276	...	14,186	52.9%	53.6%	7.0%	12.6%
ROS	Asian	4,604	4,960	...	7,315	47.5%	45.5%	3.8%	6.5%
ROS	Native American***	455	447	...	497	11.2%	8.7%	0.3%	0.4%

*Graduate Counts 2007: Actual counts for NYS, NYC and ROS totals, subtotal counts for race/ethnic groups are estimated from known NCLB race/ethnic cohort distribution data for 2007 graduates.

**Graduate Estimates 2008: Based on 2008 12th grade enrollments, and average of prior three years 12th-to-grad GPRs.

***Native American Graduate Counts: Both State and region counts are too small and unstable to yield reliable projections.

****Regions: New York State (NYS), New York City (NYC), and Rest of the State (ROS)

Source: NYSED, Office of Research and Information Systems, December 2008.

Table 3:

New York State
High School Graduate Projections By Race/Ethnicity, Gender and Region
2007-08 to 2018-19

Region		Year:	2007	2008	…	2019	Projected Change '08 to '19	"Seed Cohort" Change '97 to '08	2008	2019
All NYS, NYC, ROS	Race/ Ethnicity	Gender	Graduate Counts*	Graduate Estimates**	…	Graduate Projections	Graduate Counts	1st Grade Enrollment	Percent of Region's Graduates	Percent of Region's Graduates
NYS	All Races	Female	97,688	100,796	…	84310	-16.4%	-17.4%	51.6%	51.6%
NYS	All Races	Male	90,835	94,658	…	78964	-16.6%	-18.2%	48.4%	48.4%
NYS	White	Female	59,493	60,640	…	46,618	-23.1%	-22.4%	31.0%	28.6%
NYS	White	Male	58,482	59,859	…	46,950	-21.6%	-22.2%	30.6%	28.8%
NYS	Black	Female	16,474	17,009	…	12,309	-27.6%	-24.2%	8.7%	7.5%
NYS	Black	Male	13,063	13,895	…	10,031	-27.8%	-24.3%	7.1%	6.1%
NYS	Hispanic	Female	14,275	15,454	…	16,233	5.0%	-4.3%	7.9%	9.9%
NYS	Hispanic	Male	12,070	13,216	…	13,459	1.8%	-6.8%	6.8%	8.2%
NYS	Asian	Female	7,137	7,378	…	8,824	19.6%	21.1%	3.8%	5.4%
NYS	Asian	Male	6,964	7,407	…	8,257	11.5%	10.9%	3.8%	5.1%
NYS	Native American***	Female	309	315	…	326	3.5%	-11.3%	0.2%	0.2%
NYS	Native American***	Male	256	281	…	267	-5.0%	-13.6%	0.1%	0.2%
NYC	All Races	Female	33,365	34,041	…	27,503	-19.2%	-19.2%	53.6%	54.0%
NYC	All Races	Male	28,228	29,424	…	23,413	-20.4%	-20.9%	46.4%	46.0%
NYC	White	Female	7,910	7,818	…	6,794	-13.1%	-14.6%	12.3%	13.3%
NYC	White	Male	7,450	7,264	…	6,847	-5.7%	-12.9%	11.4%	13.4%
NYC	Black	Female	10,515	10,575	…	6,863	-35.1%	-29.9%	16.7%	13.5%
NYC	Black	Male	7,831	8,440	…	5,044	-40.2%	-31.8%	13.3%	9.9%
NYC	Hispanic	Female	10,015	10,593	…	8,671	-18.1%	-19.1%	16.7%	17.0%
NYC	Hispanic	Male	8,265	8,801	…	6,835	-22.3%	-22.0%	13.9%	13.4%
NYC	Asian	Female	4,873	4,979	…	5,114	2.7%	8.4%	7.8%	10.0%
NYC	Asian	Male	4,624	4,846	…	4,652	-4.0%	2.3%	7.6%	9.1%
NYC	Native American***	Female	52	76	…	61	-19.7%	-35.3%	0.1%	0.1%
NYC	Native American***	Male	58	73	…	35	-52.1%	-48.3%	0.1%	0.1%
ROS	All Races	Female	64,323	66,755	…	56,807	-14.9%	-16.1%	50.6%	50.6%
ROS	All Races	Male	62,607	65,234	…	55,551	-14.8%	-16.3%	49.4%	49.4%
ROS	White	Female	51,583	52,822	…	39,824	-24.6%	-24.1%	40.0%	35.4%
ROS	White	Male	51,032	52,595	…	40,103	-23.8%	-24.1%	39.8%	35.7%
ROS	Black	Female	5,959	6,434	…	5,446	-15.4%	-13.3%	4.9%	4.8%
ROS	Black	Male	5,232	5,455	…	4,987	-8.6%	-9.8%	4.1%	4.4%
ROS	Hispanic	Female	4,260	4,861	…	7,562	55.6%	54.0%	3.7%	6.7%
ROS	Hispanic	Male	3,805	4,415	…	6,624	50.0%	53.2%	3.3%	5.9%
ROS	Asian	Female	2,264	2,399	…	3,710	54.6%	57.2%	1.8%	3.3%
ROS	Asian	Male	2,340	2,561	…	3,605	40.8%	35.0%	1.9%	3.2%
ROS	Native American***	Female	257	239	…	265	10.9%	5.0%	0.2%	0.2%
ROS	Native American***	Male	198	208	…	232	11.5%	12.4%	0.2%	0.2%

*Graduate Counts 2007: Actual counts for NYS, NYC and ROS totals, subtotal counts for race/gender groups are estimated from known NCLB race/ethnic cohort distribution data for 2007 graduates.

**Graduate Estimates 2008: Based on known 2008 12th grade enrollments, and average of prior three years 12th-to-grad GPRs.

***Native American Graduate Counts: Both State and region counts are too small and unstable to yield reliable projections.

Table 4

Projected Change in NYS High School Graduates

2008 to 2019, Rank Ordered

Change '08 to '19	County	Change '08 to '19	County
-39.2%	ORLEANS	-19.9%	ULSTER
-36.2%	OTSEGO	-19.8%	NYC counties
-33.8%	SENECA	-19.6%	LEWIS
-30.0%	DELAWARE	-19.2%	SCHOHARIE
-29.9%	GENESEE	-18.9%	ONONDAGA
-29.3%	CLINTON	-17.9%	MONTGOMERY
-28.1%	ESSEX	-17.7%	ERIE
-28.1%	GREENE	-16.4%	ALBANY
-28.0%	CATTARAUGUS	-16.2%	WASHINGTON
-27.5%	LIVINGSTON	-15.9%	YATES
-27.2%	CAYUGA	-15.0%	HERKIMER
-27.2%	WAYNE	-15.0%	PUTNAM
-26.0%	COLUMBIA	-14.6%	NASSAU
-24.8%	CHENANGO	-14.0%	ONTARIO
-23.0%	CORTLAND	-13.2%	ST. LAWRENCE
-23.0%	STEUBEN	-13.2%	DUTCHESS
-22.8%	WARREN	-12.8%	RENSSELAER
-22.5%	WYOMING	-12.7%	HAMILTON
-22.4%	MONROE	-12.4%	ALLEGANY
-21.3%	CHAUTAUQUA	-12.3%	SUFFOLK
-20.9%	NIAGARA	-9.0%	JEFFERSON
-20.9%	FRANKLIN	-8.5%	SARATOGA
-20.9%	TIOGA	-6.3%	FULTON
-20.8%	CHEMUNG	-5.4%	SCHENECTADY
-20.4%	BROOME	-4.0%	WESTCHESTER
-20.2%	TOMPKINS	-2.7%	SULLIVAN
-20.1%	OSWEGO	0.2%	ROCKLAND
-20.0%	ONEIDA	1.5%	ORANGE
-20.0%	MADISON	5.9%	SCHUYLER

Source: NYSED, Office of Research and Information Systems, December 2008.

Table 5:
New York State High School Graduate Projections By Region and County

	High School Graduates						"Seed Cohort" 1st Grade Enrollment	High School Graduates
Region**	**2007**	**2008* Estimate**	**2009 Projection**	**…**	**2019 Projection**	**Change '08 to '19**	**Change '97 to '08**	**Change '97 to '08**
NYS	188,523	195,454	194,885	…	163,274	**-16.5%**	-17.8%	22.7%
NYC	61,593	63,465	64,848	…	50,916	**-19.8%**	-20.0%	25.5%
ROS	126,930	131,989	130,037	…	112,358	**-14.9%**	-16.2%	21.4%
County***								
ALBANY	2,940	3,008	2,974	…	2,515	**-16.4%**	-15.9%	13.8%
ALLEGANY	570	561	614	…	491	**-12.4%**	-23.4%	2.5%
BROOME	2,193	2,253	2,176	…	1,794	**-20.4%**	-22.4%	13.7%
CATTARAUGUS	997	1,039	878	…	748	**-28.0%**	-24.9%	-2.1%
CAYUGA	705	709	709	…	516	**-27.2%**	-29.2%	-8.2%
CHAUTAUQUA	1,476	1,534	1,516	…	1,208	**-21.3%**	-22.3%	-0.7%
CHEMUNG	880	903	844	…	715	**-20.8%**	-22.5%	-4.3%
CHENANGO	680	693	700	…	521	**-24.8%**	-27.7%	10.6%
CLINTON	857	967	906	…	683	**-29.3%**	-32.9%	13.9%
COLUMBIA	600	619	614	…	458	**-26.0%**	-31.9%	19.7%
CORTLAND	463	473	450	…	364	**-23.0%**	-22.7%	2.8%
DELAWARE	569	526	530	…	368	**-30.0%**	-30.8%	0.8%
DUTCHESS	3,455	3,456	3,474	…	3,001	**-13.2%**	-9.8%	39.4%
ERIE	9,652	10,415	9,962	…	8,573	**-17.7%**	-21.9%	14.7%
ESSEX	337	314	331	…	226	**-28.1%**	-32.5%	-3.7%
FRANKLIN	518	530	475	…	419	**-20.9%**	-27.1%	-10.1%
FULTON	561	611	613	…	573	**-6.3%**	-14.2%	11.8%
GENESEE	737	817	766	…	572	**-29.9%**	-32.0%	16.0%
GREENE	479	481	508	…	346	**-28.1%**	-22.0%	17.5%
HAMILTON	37	34	33	…	29	**-12.7%**	4.4%	-28.5%
HERKIMER	662	723	742	…	615	**-15.0%**	-19.7%	-9.7%
JEFFERSON	1,142	1,126	1,163	…	1,024	**-9.0%**	-14.9%	-0.9%
LEWIS	332	306	325	…	246	**-19.6%**	-27.4%	-15.3%
LIVINGSTON	670	685	650	…	496	**-27.5%**	-27.6%	15.5%
MADISON	793	906	809	…	725	**-20.0%**	-26.2%	25.2%
MONROE	8,150	8,899	8,984	…	6,908	**-22.4%**	-25.1%	30.5%
MONTGOMERY	468	508	432	…	417	**-17.9%**	-15.1%	17.9%
NASSAU	17,676	18,489	18,093	…	15,794	**-14.6%**	-13.9%	30.4%
NIAGARA	2,350	2,370	2,351	…	1,875	**-20.9%**	-24.4%	5.4%
ONEIDA	2,574	2,491	2,509	…	1,992	**-20.0%**	-20.9%	7.4%

continued

*Graduate Estimates 2008: Based on known 2008 12th grade enrollments, and average of prior three years 12th-to-grad GPRs.
**Regions: New York State (NYS), New York City (NYC), and Rest of the State (ROS)
***Counties: All NYS counties except NYC counties, NYC data only available at regional level.
Source: NYSED, Office of Research and Information Systems, December 2008.

Table 5, ***continued*****:**

New York State High School Graduate Projections By Region and County 2008 - 2019

	High School Graduates						"Seed Cohort" 1st Grade Enrollment	High School Graduates
Region**	**2007**	**2008* Estimate**	**2009 Projection**	**…**	**2019 Projection**	**Change '08 to '19**	**Change '97 to '08**	**Change '97 to '08**
NYS	188,523	195,454	194,885	…	163,274	**-16.5%**	-17.8%	22.7%
NYC	61,593	63,465	64,848	…	50,916	**-19.8%**	-20.0%	25.5%
ROS	126,930	131,989	130,037	…	112,358	**-14.9%**	-16.2%	21.4%
County***								
ONONDAGA	5,114	4,973	4,648	…	4,032	**-18.9%**	-18.2%	14.9%
ONTARIO	1,268	1,318	1,318	…	1,134	**-14.0%**	-12.9%	27.5%
ORANGE	4,841	4,880	4,930	…	4,955	**1.5%**	-2.0%	43.5%
ORLEANS	516	591	509	…	359	**-39.2%**	-37.3%	14.5%
OSWEGO	1,455	1,478	1,499	…	1,181	**-20.1%**	-22.0%	-8.6%
OTSEGO	594	642	623	…	409	**-36.2%**	-34.0%	-0.6%
PUTNAM	1,235	1,267	1,322	…	1,077	**-15.0%**	-14.5%	55.1%
RENSSELAER	1,804	1,754	1,797	…	1,530	**-12.8%**	-18.4%	12.1%
ROCKLAND	3,342	3,462	3,354	…	3,469	**0.2%**	3.8%	17.1%
SARATOGA	2,358	2,562	2,377	…	2,343	**-8.5%**	-7.1%	26.8%
SCHENECTADY	1,495	1,515	1,541	…	1,433	**-5.4%**	-13.3%	28.0%
SCHOHARIE	312	317	336	…	256	**-19.2%**	-16.6%	-7.7%
SCHUYLER	142	128	135	…	135	**5.9%**	-11.9%	-23.6%
SENECA	320	349	352	…	231	**-33.8%**	-37.6%	-8.3%
ST. LAWRENCE	1,002	1,092	1,046	…	948	**-13.2%**	-18.7%	-10.5%
STEUBEN	1,220	1,274	1,286	…	981	**-23.0%**	-26.3%	5.5%
SUFFOLK	18,964	19,663	19,609	…	17,240	**-12.3%**	-9.4%	34.3%
SULLIVAN	653	692	713	…	673	**-2.7%**	-12.3%	6.4%
TIOGA	574	584	587	…	462	**-20.9%**	-18.7%	10.5%
TOMPKINS	807	883	819	…	704	**-20.2%**	-24.1%	21.2%
ULSTER	1,871	1,910	1,952	…	1,529	**-19.9%**	-25.0%	26.3%
WARREN	742	785	747	…	606	**-22.8%**	-20.2%	18.4%
WASHINGTON	658	687	690	…	575	**-16.2%**	-20.9%	6.8%
WAYNE	1,168	1,173	1,163	…	854	**-27.2%**	-30.3%	19.7%
WESTCHESTER	10,385	11,055	10,988	…	10,615	**-4.0%**	-5.7%	36.1%
WYOMING	374	311	364	…	241	**-22.5%**	-17.8%	-16.5%
YATES	193	202	200	…	170	**-15.9%**	-5.2%	-7.6%

*Graduate Estimates 2008: Based on known 2008 12th grade enrollments, and average of prior three years 12th-to-grad GPRs.
**Regions: New York State (NYS), New York City (NYC), and Rest of the State (ROS)
***Counties: All NYS counties except NYC counties, NYC data only available at regional level.
Source: NYSED, Office of Research and Information Systems, December 2008.

Related Factors

Figure 4

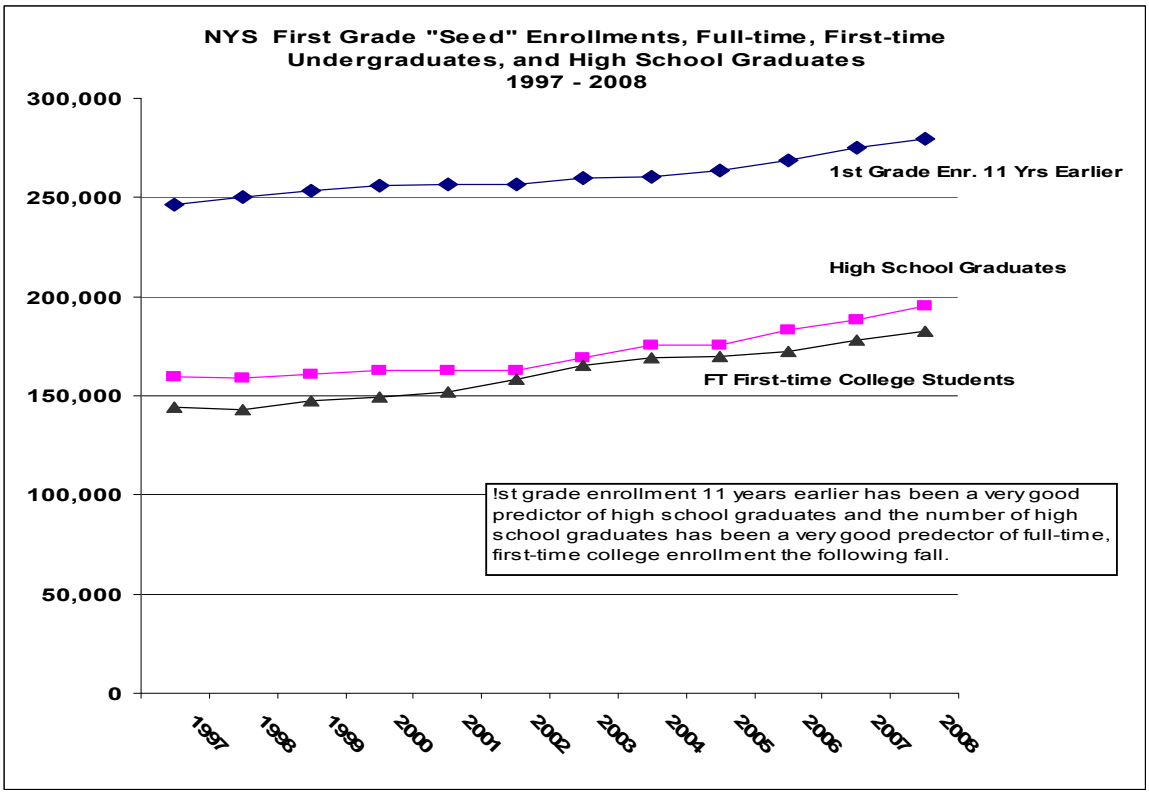


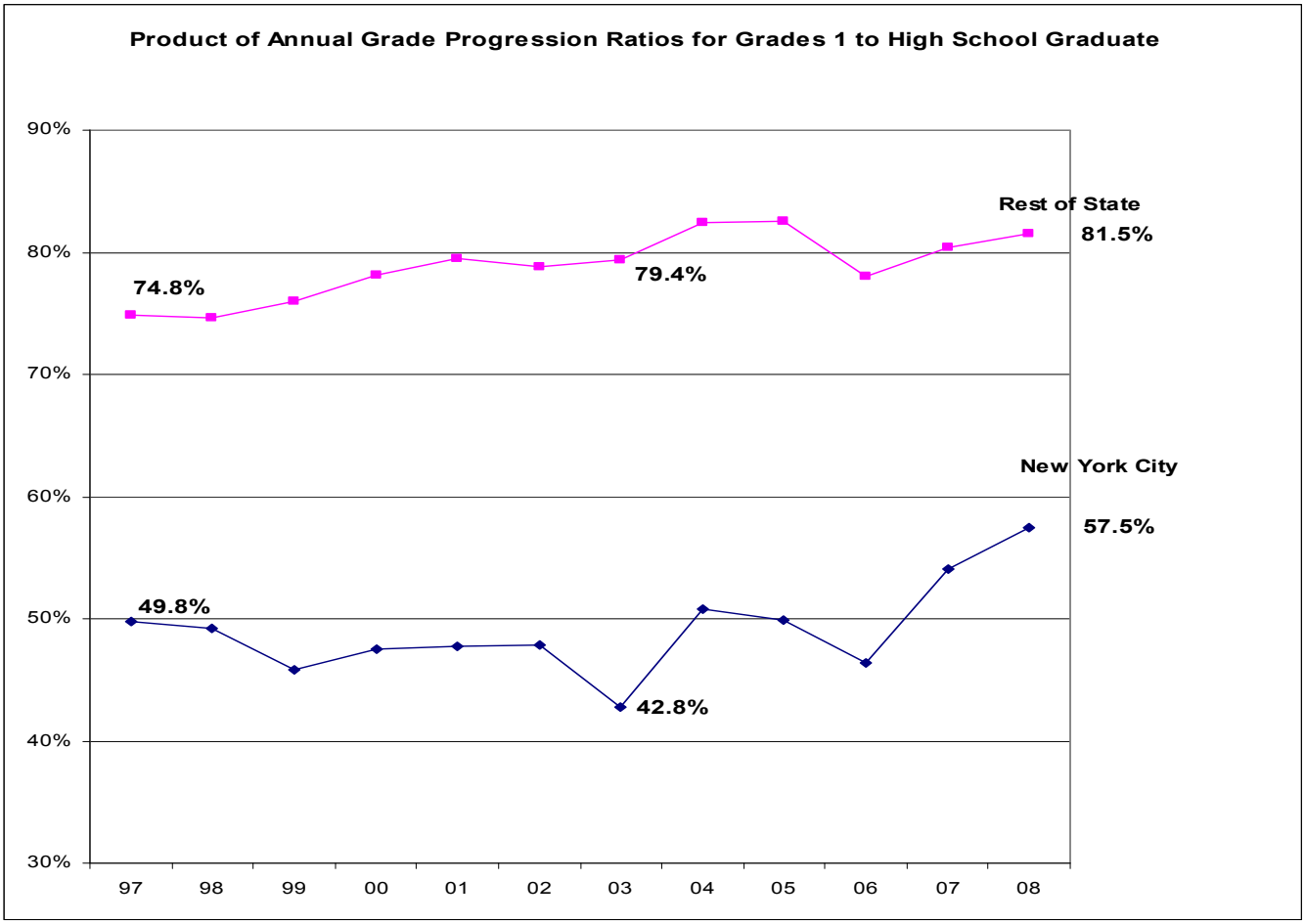
Table 6:

Eleven-Year Percent Changes in Graduate Counts and Corresponding Changes in Undergraduate Enrollment, 1997 to 2008

New York State (NYS), New York City (NYC), and Rest of State (ROS)

	Change 1997 to 2008				Proj. Change 2008 to 2019
		Undergraduates			
	High School Graduates	Full-Time First-Time	Full-Time	All	High School Graduates
NYS	22.7%	26.6%	25.7%	19.3%	-16.5%
NYC	25.5%	31.3%	28.1%	21.1%	-19.8%
ROS	21.4%	24.4%	23.9%	18.1%	-14.9%

Figure 5


Product of Annual Grade Progression Ratios for Grades 1 to High School Graduate
90%
80%
70%
60%
50%
40%
30%
97
98
99
00
01
02
03
04
05
06
07
08
Rest of State
81.5%
74.8%
79.4%
New York City
57.5%
49.8%
42.8%

APPENDIX I: High School Graduate Projection Methodology

Available HS Graduate Projection Tabulations:

1. All New York State (NYS)
2. NYS Race/Ethnicity Groups
3. NYS Race/Ethnicity by Gender (five race/ethnicity groups X two genders)
4. New York City (NYC) (aggregate projections for all five NYC Counties*)
5. Rest of State (ROS) (all NYS except NYC)
6. ROS Race/Ethnicity
7. ROS Race/Ethnicity by Gender
8. NYC Race/Ethnicity
9. NYC Race/Ethnicity by Gender
10. County Projections for 57 NYS Counties (not including five NYC Counties*)

**Note: NYC data for projections was only available in aggregate.*

What is Projected:

Counts of all students graduating from NYS schools, public and private, for each year beginning with Spring/Summer 2009 projected graduates through Spring/Summer 2019 projected graduates.

Overview of Model for Making Projections:

- The methodology known as *"Cohort Survival Ratio" (CSR)* provided the basis for each set of projections of numbers of high school graduates in NYS between 2009 and 2019. (This is essentially the same methodology referred to as "*Grade Progression Ratio*" (GPR) in the "Statewide Plan for Higher Education, 2004 - 2012).

- Definition of *Cohort Survival Ratio:* For a given year, a cohort survival ratio (CSR), for Grade X to Grade Y, is the ratio of the number of students enrolled in Grade Y to the number of students that were enrolled in Grade X (the preceding grade) the previous year. This study included the calculation of 11 types of grade progression CSR values, starting with the "1st-Grade-to-2nd-Grade Ratio" and progressing to the "11th-Grade-to-12th-Grade Ratio." A twelfth CSR was also calculated, the "12th-Grade-to-Graduation Ratio." That CSR is the ratio of the number of graduates for a given year to the number of students enrolled in 12th grade during the fall *of that same school year*.

- The *five most recent years of NYS enrollment data* for 1st grade through 12th grade (reported to NYS through the BEDS form reporting system), were used to calculate actual cohort survival ratios (CSRs) for each grade level, for each of four years (2004-05 through 2007-08 school years). The sets of four recent CSRs for each grade level were averaged (based on the assumption that the variation among them is random) and also subjected to a trend analysis (based on the assumption that the variation over the four years represents a trend) to obtain two different sets of "baseline CSRs estimates" to apply to each of the 2008 individual "seed" grade cohorts as the cohorts progress each year toward graduation. These basline estimates were held constant over all the projection years. (A third method for calculating baseline CSRs, an "8-Year Average Method," utilized the nine most recent years of enrollment data to average eight years of actual CSRs for each grade level to calculate the CSR estimates for projections. A fourth method extended the 4-Year-Trend method by building in the assumption that in future years two percent fewer students will drop out during each year of high school. See the section below under the heading "Four Different Assumptions Underlie Four Methods Used for Making Projections" for a detailed discussion of these four different methods and their underlying assumptions.)

- The single set of graduate projections shown in the main body of this report - including within the highlighted findings, and summary charts and tables – are a set of "summary" projections calculated by averaging the 4-Year-Trend method projection results and the 4-Year-Mean method results.

- The three most recent years (eight most recent years for the "8-Year Average Method") of NYS school-level graduate count data were used to calculate the 12th grade-to-graduation CSR values. (Graduate count data came from the STEP data collection system prior to 2006-07, then from SIRS Repository data system.) Because only 12th grade enrollment data was available for 2008, not actual graduate counts, 2008 graduate counts were estimated by applying the average of the past three years 12th-to-Graduate CSRs to the 2008 12th grade enrollments graduate counts for the groups of interest.

- The 2007/2008 Fall enrollment data for grades one through twelve provided the *"baseline" or "seed" grade enrollment* counts for making the enrollment and graduate count projections. The 2007/2008 grade enrollment

counts were each multiplied by the appropriate baseline CSR to project enrollment counts in the next-highest-grade for the next school year (2008/2009). Those enrollment projections are, likewise, multiplied by the set of baseline CSRs to project enrollments for the following year, and so on. Using this methodology, one less grade level of projected enrollments can be calculated for each successive year of projections, until for the 2018/2019 school year only grade 12 enrollment counts and graduate counts can be projected. In other words, the 2018/2019 graduate projections are based on the actual 2007/2008 1st grade enrollment data. (Projections are not made further into the future because CSR estimations below the "1st-to-2nd grade" level are not considered to be reliable.)

- Projections were run (using each of the four methods/assumptions) by *race and gender groups* for two regions of the State (NYC and Rest of State). County projections of high school graduate counts were also produced, but without breakdowns by race and gender, because inclusion of those splits resulted in such small cell sizes that the calculated ratios were not considered stable.

- Each of the four CSR-based methodologies used for making these projections:
    - Permits a 10-year projection based on actual current grade school enrollments
    - Reflects recent population migration patterns into and out of the State, and patterns of cohort retention from one grade level to the next.
    - Reflects differences in these patterns by gender, race/ethnicity and geographic region.
    - Does not anticipate any changes in migration patterns or retention of students over the projection period (with the exception of the 8.24 % across-the-board improvement in high school graduation rate anticipated by the "4-Year-Trend-Plus-8-Percent" Method; see description below.)

Four Different Assumptions Underlie Four Methods Used For Making Projections:

Four different methods were used to calculate four different sets of baseline CSRs for generating projections of high school graduate counts between 2009 and 2019. Each of the four methods reflects a different, reasonable underlying assumption for making projections. Each of the data tables listed at the top of this document includes four different sets of projections, one set for each method. Below, a detailed description is provided of each of the four methods, and the assumptions underlying the use of each method.

1) 4-Year-Trend Method

- Method Description: The Excel "TREND" function was applied to the four most recent yearly sets of CSRs (for school years 2004/2005, 2005/2006, 2006/2007 and 2007/2008), and the TREND function set to "predict" theoretical fourth year CSRs from the best fit trend lines to the four "real" CSR yearly data points for each grade level. The predicted, theoretical fourth-year CSRs are used as the baseline CSRs, and the that set of CSR values remains constant for generating each years grade enrollment and graduate projections. In other words, the trend analysis is used only to provide a "best estimate" of the most current CSR values (somewhat "smoothing" the random "noise" in the variation of the four recent CSR values, and so, hopefully, providing a better estimate of current conditions than would use of the single most recent year's CSR values). Any detected directional "trend" determined by this analysis is *not* projected into the future, only the best estimate of current conditions is projected to continue into the future.

- Underlying Assumption: Use of this method is based on the assumption that variation in the CSRs for each grade level over the past four consecutive years most likely reflects a genuine directional trend over that period of time, rather than variance due to random factors or events. For example, if over the most recent years of enrollment data collection, there has been a significant trend of a yearly increasing rate of migration out of an area, the CSR values for each grade level will tend to progressively decrease over each of the past four years. If this migration out of the area should continue at its higher fourth-year rate into the future because the increased rate represented a demographic and/or regional economic shift of lasting significance, the assumption that the 4th-year trend points would be the best estimate CSR values over the next eleven years was justified. If the increasing rate of net out-migration over the four years was due to a one-time event, such as the relocation of a particular factory facility out of the area, and that event does not represent a new increased level of ongoing factory closures and/or relocations, then the assumption that the variation in the four years of CSR values represents a "trend" rather than fluctuation due to random factors would not be correct.

2) 4-Year Average Method

- Method Description: For each grade level, an (unweighted) average was taken of the four most recent CSR values (for school years 2004/2005, 2005/2006, 2006/2007, and 2007/2008). The average CSR values for each grade level are used as the baseline CSRs for making projections. It is assumed that the CSR values will remain constant for all projected years.

- Underlying Assumption: Use of this method is based on the assumption that the variation between CSR values over the past four years probably more likely represents random variation than a sustainable trend. The method also assumes that the most recent four years of CSR values for a grade level better reflect what CSR values will be in the future, than would CSR values for that grade level from earlier years, so only four years of values should be included in the average to generate the baseline CSR value.

3) 8-Year Average Method

- Method Description: For each grade level, an (unweighted) average was taken of the eight most recent CSR values (for school years 2000/2001 through 2007/2008). The average CSR values for each grade level are used as the baseline CSRs for making projections.

- Underlying Assumption: Use of this method is based on the assumption that the variation between CSR values over the past eight years probably more likely represents random variation than a sustainable trend. For example, in recent years retention of students in ninth grade has been greatly reduced in NYC, probably resulting in a modest increase in annual CSR values at the High School level. If this apparent change in NYC retention practices represents a one-time non-sustainable event which increases the annual CSR product rather than a sustainable trend, then the "8-Year Average Method" might provide more accurate projections than either of the "4-Year" methods. On the other hand, recent Census data indicates that the NYC population in the past few years is undergoing demographic changes at an ever-increasing rate due to a growing trend for a net migration out of NYC by U.S. residents, countered somewhat by a slowly decelerating trend of net international migration into NYC. If these recent trends are sustained, than use of either of the two "4-Year" methods would better incorporate these trends into the calculation of the baseline CSRs than would the "8-Year-Average Method."

4) 4-Year-Trend-Plus-8-Percent Method

- Method Description: This method for calculating baseline CSRs is identical to the first method described (the "4-Year Trend Method"), but an additional two percent of each high school grade cohort is assumed to progress to the next grade level or graduation, so a value of 0.02 is added to each of the four high school level CSRs, i.e., a value of 0.02 is added to the "9^{th} – to – 10th Grade" CSR, to the "10^{th} – to – 11th Grade" CSR, to the "11^{th} – to – 12th Grade" CSR, and to the "12^{th} – to – Graduate " CSR. This iterative process ultimately results in an increase of 8.24% in the projected number of high school graduates. Projections using this method are shown only starting with the 2012 cohort of graduates, so that each of the projected graduate cohorts through 2019 will have experienced the same two percent increase in CSR for each of the four high school years. (The three earlier projected graduate cohorts would have had applied to them the two percent increase in CSR for only one, two and three years respectively. Also, such a significant increase in the rate of high school graduation would probably require at least a few years of prior effort to achieve.)

- Underlying Assumption: Use of this method would be based on the assumption that efforts to decrease the percentage of high school dropouts will be effective in the near future, even more than any such recent trend that may be reflected in the "4-Year Trend Method," such that each year from 9^{th} grade through graduation an

additional two percent of each grade cohort will continue to the next grade level (or to graduation) without dropping out.

- The "2004-2012 Statewide Plan for Higher Education" may have somewhat underestimated the number of graduates in recent years because the baseline CSRs used to make the projections did not anticipate a sudden , modest but significant, increases in high school level CSR values which may well be the result of the Regents' recent successful actions to decrease the rate of high school dropouts across New York State. The "4-Year Trend Plus Method" for calculating baseline CSRs was included in this study to provide projections of graduate counts that acknowledge the possibility that State as well as national and local efforts, by further decreasing the drop-out rate, could increase yearly CSRs at the high school level to values higher than those estimated by use of the three other, more traditional and conservative, methods described above. The assumption of an additional two percent of high school students retained per year is a somewhat arbitrary and "optimistic" assumption for projecting graduate counts, and may be either more or less appropriate for different parts of the State. In NYC, for example, the total number of graduates in a recent year is typically only about 65% of the total number of 8th graders enrolled four years earlier, an 8^{th}-to-Graduate CSR of 0.65. For the rest of the State (ROS) the size of the graduating class is typically around 80% of the size of the corresponding 8^{th} grade class four years earlier, an 8^{th}-to-Graduate CSR of 0.80. It may be more realistic to project that NYC could potentially increase its 8^{th}-to-Graduate CSR by eight percentage points, because there is so much room for improvement, than to project such an increase for the rest of the State. Also, as discussed below, the low CSR values for NYC at all grade levels are partly the result of net out-migration from NYC by school-aged children in recent years. If the rate of net-out migration should diminish, CSR values at all grade levels would increase.

Two Factors Account for Projected Changes in Graduate Counts Between 2008 and 2019 – 1) First Grade Enrollment Changes; and 2) Cohort Survival Ratio (CSR) Changes:

Two factors account for projected changes in graduate counts between 2008 and 2019. One factor is the change in size of the two first-grade cohort enrollments that ultimately become these two graduating cohorts. This change in the "seed" enrollment size can actually be calculated from "known" first grade enrollment values. The second factor is the change in cohort survival ratios (CSRs) experienced over 12 years by the cohort graduating in 2008 and the cohort graduating in 2019. The set of 11 CSRs which affected the progression of the cohort that graduated in 2008 are "known" values (For the 12^{th} CSR, 12^{th}-to-Graduation, only a reliable estimate is available, the average of the values for the past three years.) The set of 12 CSRs that will affect the progression of the 2008 first grade cohort until it becomes the 2019 graduating cohort cannot be known for certain, only prognosticated. To that end, each of the four projection methods (described above) uses the most recent CSR data available for each grade level to calculate a set of "estimated" baseline CSRs to apply to each of the 2008 "seed" grade enrollment cohorts to project 2009 enrollments and graduate counts. Then this same set of baseline CSRs is applied to the projected progressing grade cohorts over each successive year for which projections are made. Consequently, a limitation of all four projection methods is the inherent assumption that the set of CSRs affecting the progressing cohorts will not change over the 10-year period for which graduate projections are made. The only CSR "change," therefore, which these four methods allow to contribute to projected changes in graduate counts between 2008 and 2019, is the change between the set of CSRs experienced by the 2008 graduating cohort, and the set of estimated CSRs, based on recent data, used as the baseline for all projections. The high school level CSRs, in particular, are not likely to be very different between these two sets, because the most recent high school CSRs are also the CSRs that were experienced by the 2008 graduating cohort. It is not surprising, therefore, that most of the variance in these projections is accounted for by variance in the changing sizes of the first grade "seed" cohorts. (To some extent, the "4-Year-Trend-Plus-8-Percent Method" is an exception, because the broad assumption is made that, within the next four years, two percent fewer students will "drop out" each year from each high school grade cohort.)

1. **Percentage Change Between the First Grade Enrollment (1997) of the 2008 Graduate Cohort and the First Grade Enrollment (2008) of the Projected 2019 Graduate Cohort**

    - Each data table, providing five sets of graduate projections through 2019 (one set of projections for each of the four methods, and one set providing the average of the 4-Year Mean and 4-Year Trend methods), also lists five percentage change values (one percentage for each method) indicating the

projected percentage change in graduate counts between 2008 and 2019. The next column, in each of these tables, lists the "actual" percentage change in the corresponding first-grade "seed" cohort enrollments that contributed to the projected changes in size of the graduate cohorts. (The "First Grade Enrollment Percentage Change" value remains "constant" for each of the five projection methods, because it is based on past "known" data rather than projected values, so the value does not vary according to the projection method.) For example, the "4-Year Trend Method" projects a 15.1% decrease in the number of all NYS graduates between 2008 and 2019, and the "4-Year Average Method" projects a 17.8% decrease in the number of graduates between 2008 and 2019. But for both methods, the underlying change in the first grade seed cohort contributing to the projected graduate count change is a constant decrease, (hence negative percent value) of 17.8%.

- *Example:*

Method	Region	Change Grads 2008-2019	Change 1st-Grade Enrollment 1997-08
4-Year Trend	All NYS	-15.1%	-17.8%
4-Year Average	All NYS	-17.8%	-17.8%
Average (of 4-Yr Trend & 4-Yr Avg)	All NYS	-16.8	-17.8%
8-Year Average	All NYS	-18.9%	-17.8%
4-Year Trend Plus 8%	All NYS	-7.4%	-17.8%

Example Discussion:

The first four methods listed project a percentage change in the number of graduates between 2008 and 2019 that is fairly close to (within a couple percentage points of) the known change in the size of the first grade NYS 1st grade "seed" enrollment for the class of 2019. This correspondence indicates that the three sets of 12 calculated baseline CSRs for each of the first three projection methods do not differ markedly from the set of 12 CSRs experienced by the 2008 graduate cohort. (The 4-Year Trend projection method does, however, project somewhat higher graduate counts than the 4-Year Average or 8-Year Average methods because the last two years of data suggest a recent trend toward increased statewide graduation rates and slight decreased migration out of the State.) The fifth listed method, the "4-Year Trend Plus 8%" method, builds in the assumption that 2% more students will be retained in each grade cohort over each of the four years of high school, than is currently the case. Consequently, in this example, the 4-Year Trend Plus 8% method is the only method for which the projections are substantially affected by a projected change in CSR values, rather than just the change in first-grade seed enrollments for the graduating cohorts. (See below for examples where the difference between the first-to-graduate CSR values for the 2008 cohort and the projected 2019 graduate cohort is of sufficient magnitude to more substantially affect the projected graduate counts.)

Change in the size of the first-grade seed cohort has historically been an excellent predictor of the change in the size of the graduate cohort in New York State. *There is a surprisingly robust .944 correlation between the past 12 years of New York State total graduate counts, and the size of the 12 first grade seed cohorts* that progressed to become those graduate cohorts 12 years later (i.e., the NYS first grade enrollment counts from 1984-85 through 1996-1997). In other words, 89 % of the variance (fluctuation) in the counts of NYS high school graduates over the past 12 years is accounted for by the changing size of those graduating classes' first-grade seed cohorts.

2. Percentage Change Between the Product of All 2008 Graduate Cohort "Actual" CSRs and the Product of All 2019 Graduate Cohort "Projected" CSRs

- The second factor accounting for projected changes between the number of 2008 graduates and the number of 2019 graduates is the change in the product of all the CSRs experienced by each of the two graduating cohorts as they progressed from first grade to graduation.

- The product of all 12 of the CSRs experienced by a graduating cohort, starting with the "1st Grade – to - 2nd Grade" CSR and culminating with the "12th Grade -to-Graduate" CSR, is the percentage of the first grade enrollment count that ultimately graduates 12 years later (not in terms of individuals, but in terms of class counts). The product is therefore a condensed "First Grade – to – Graduate" CSR.

- The precise mathematical relationship between these two factors accounting for the projected change in the number of graduates (i.e., the change in first grade enrollment and the change in first-to-graduate CSR) is as follows:
  (Ratio of New to Old Graduate Counts) = (Ratio of New to Old First Grade Seed Enrollments) * (Ratio of New {Assumed} to Old {Actual} First-to-Graduate CSR)

- Based on this formula, if the baseline projection "assumed" CSR does not differ significantly from the first-to-graduate "actual" CSR for the 2008 graduating cohort, then the percentage change in the projected number of graduates will be nearly equal to the percentage change in the actual first grade "seed" enrollments for the two cohorts. (Conversely, if the projected change in the number of graduates between 2008 and 2019 does differ significantly from the "actual" change in first grade seed enrollments, in that case, the baseline "assumed" CSR must differ significantly from the "actual" CSR for the 2008 graduate cohort.)

- Each graduate projection data table, in addition to listing four sets of graduate projections (one set for each assumption/method) for each year from 2009 to 2019, also lists the percentage change in graduates projected between 2008 and 2019 and the percentage change in the size of the first grade "seed" cohorts (see section above). If those two listed percentages are close in value, then the current and projected cohorts are assumed to experience similar cohort survival ratios as they progress through the grades. If those two percentages differ significantly in value, then the baseline "assumed" CSRs used for projecting the count of the 2019 graduates differ significantly from the "real" CSRs that affected the progress of the cohort that graduated in 2008.

- If the first-grade enrollment percentage change for the two graduate cohorts is a number significantly lower in value than the graduate count percentage change from 2008 to 2019, then the 2019 graduate cohort is projected to have a greater percentage of its first grade enrollment "survive" to graduate than was the case for the 2008 graduate cohort. In other words, the "First-Grade to Graduation" projected CSR for the 2019 graduate cohort has a higher value than the "First-Grade-to-Graduation" "real" CSR for the 2008 graduate cohort. Such a finding would mean that in the past few years annual CSR values have been higher than they were when the 2008 graduate cohort progressed through school (starting in first grade in 1997). Reasons for higher CSR values in recent years might include a decreasing high school dropout rate, and/or increasing net migration into the area. These factors contributing to higher CSR values might well represent a sustainable trends that could reasonably be expected to continue into the future "projection" years. Other reasons for higher CSR values in recent years might reflect one-time, non-sustainable events, such as NYC suddenly decreasing the percentage of students required to repeat ninth and tenth grade each year, resulting in a surge in the number of graduates. If such one-time-only recent events inflate the "assumed" projection CSR values, then the projections will overestimate future graduate counts. Knowledge of local demographic patterns and events is often necessary to discern the reason for higher "assumed" than "actual" CSRs, and so determine if the resulting higher "assumed" CSRs provide a valid baseline for making projections. (Note: Both of the percentage changes listed in the projection tables - changes in graduate counts and changes in "seed" first grade enrollments - are usually negative numbers, so the "lower" value percentage change will be the higher magnitude negative number.)

- If the first-grade enrollment percentage change is a number greater in value than the graduate count percentage change, then the "assumed" baseline CSRs used for the projections anticipate that a smaller percentage of the 2008 first grade cohort will "survive" to graduate in 2019 than was the case for the 1997 cohort graduating in 2008. Possible reasons for lower CSR values are the opposite of those listed above for higher CSR values, and so might include an increasing drop-out rate, and/or increasing net migration out of the area.

- *Two Examples:*

The Effect of Changes in First Grade Enrollment and Cohort Survival Ratios (CSRs)
On Projected Changes in High School Graduates
For Selected Assumptions/Methods and Analysis Groups

Projection	Analysis	1st-Grade Enrollment			1st Grade to Graduate Cohort Survival Ratio			Projected Chg in Graduates
Method	Group	1997	2008	% Chg	Actual 2008	Proj. 2019	% Diff.	2008 to 2019
4-Year Mean	NYC Black Males	18,379	12,535	-31.8%	0.4592	0.3881	-15.5%	-42.4%
4-Year Trend	NYC Black Males	18,379	12,535	-31.8%	0.4592	0.4167	-9.3%	-38.1%
4-Year Mean	Schenectady	2,133	1,849	-13.3%	0.7101	0.7789	9.7%	-4.9%
4-Year Trend	Schenectady	2,133	1,849	-13.3%	0.7101	0.7708	8.5%	-5.9%

The precise mathematical relationship between the change in graduate counts (2008 to 2019) and the changes in the corresponding 1st-grade enrollments and 1st-to-Graduate CSRs for those two graduate cohorts is as follows:

(Ratio of Graduate Counts) = (Ratio of 1st-Grade Enrollments) * (Ratio of CSRs)

The percent change between the 2008 and 2019 graduate counts is therefore *approximated* by the sum of the percent change in 1st-grade enrollment and percent change in CSRs.

Example Discussion – NYC Black Males:

The first-grade enrollment of black males in NYC decreased by 31.8% between 1997 and 2008, compared to the average decrease of 20.0% in first-grade enrollment for all NYC students, and average decrease of 17.8% in first-grade enrollment for all NYS, during that same interval. The relatively greater decrease in first-grade enrollment for black males in NYC is apparently the result of a substantial rate of net migration out of NYC of black families with school-aged children during that interval. (In contrast, first-grade enrollment of black males decreased only 9.8% during this same interval throughout the rest of New York State (ROS), in comparison to the average decrease of 16.2% in first-grade enrollment for ROS. This "complementary" pattern suggests that many of the same black families with young children migrating out of NYC may be migrating into other parts of NYS.)

The 4-Year Mean method and the 4-Year Trend method respectively project decreases of 42.4 % and 38.1% in the number of black male high school graduates in NYC between 2008 and 2019. Both projections are decreases of much greater magnitude than would be predicted based on the 31.8% decrease in first-grade seed enrollment size alone. Projected changes in graduate counts are not just proportional to differences in first-grade "seed" enrollments, but also to differences in the 1st Grade-to-Graduate CSR values (i.e., differences between the1st-to-Graduate CSR value experienced by the 2008 graduating class, and the 1st-to-Graduate CSR value used for projecting 2019 graduates). The 1st Grade-to-Graduate CSR values calculated by the two projection methods, based on the past five years enrollment data, are both substantially lower in value than the 1st Grade-to-Graduate CSR value of 0.4592 experienced by the 1997 NYC class of black male first graders as it transformed into that group's 2008 graduating class. In other words, the number of NYC black male graduates was 45.9% of the number of 1997 NYC black male first graders, but the 4-Year Mean and 4-Year Trend methods project respectively that only 38.8% and 41.7% of the number of NYC black male first graders in 2008 will constitute the number of NYC black male graduates in 2019. (Class size from year to year is tracked and projected by these two methods, not the progress of individual students, who may repeat a grade level, move in or out of NYC, etc. The CSR definition of "class" or "cohort" is entirely different from the accountability definition of a "class" or "cohort" that is used to track individual students to calculate graduation rates.)

The fact that the two methods project an even smaller ratio of "graduates to seed enrollment" (i.e., 1st-to-Graduate CSR value) for the graduating class of 2019 than was the case for the class of 2008, cannot be attributed to an increased drop-out rate; in fact, the NYC black male high school graduation rate has increased substantially in recent years. Instead, analysis of each method's 12 component projection CSR values (i.e., 1st-to-2nd Grade CSR, 2nd-to-3rd Grade CSR, etc., the product of which is the 1st Grade-to-Graduate CSR value), compared to the 12 component CSR values experienced by the NYC 2008 graduating cohort of black males as the class moved from 1st grade to graduation, shows that the greatest magnitude decreases in percentages of students moving from one grade level to the next occur at the lower grade levels. Substantial recent decreases in CSR values at the lower grade levels (especially when the current value and earlier value are both significantly less than 1.00) are almost certainly an indication of an increased rate of migration out of the area, in this case NYC.

The large decrease in NYC black male 1st grade enrollment (31.8% decrease) between 1997 and 2008, especially relative both to other NYC groups and to ROS black males, indicates that there has been a substantial rate of net migration out of NYC by families of young black male students at least since 1997 (see discussion

above). But the decreases of 15.5% and 9.3% respectively of the 4-Year Mean and 4-Year Trend projection 1st Grade-to-Graduate CSR values compared to the same CSR value for the 2008 NYC black male graduating cohort, indicate that the rate of net migration out of NYC by families of young black male students has *increased* during the past five years compared to the rate during the seven preceding years. The relatively decreased projection CSR values "project" this recent increased rate of net out migration from NYC as continuing at this same high rate over the next 12 years.

The percent change between the 2008 and projected 2019 graduate counts (-42.4% using 4-Year Mean method) is *approximated* by the sum of the percent change in first grade enrollments (-31.8%) and the percent change in 1st-to-Graduate CSR values (-15.5% for the 4-Year Mean method). The precise mathematical relationship is computed using ratio values. The ratio of the 2019 projected graduate count to the 2008 graduate count is the product of the ratio of the 2008 1st grade enrollment to the 1997 first grade enrollment and the ratio of the projection 1st-to-Graduate CSR to the 2008 Cohort 1st-to-Graduate CSR. For the NYC Black Male 4-Year Mean graduate projection, the equation is as follows:

0.6820284 (1st grade enrollment ratio) * 0.845218 (CSR ratio) = 0.576463 (graduates '19 to '08 ratio)

Example Discussion – Schenectady County:

For Schenectady County, both methods project that the graduate count in 2019 will decrease compared to 2008, but in this case, the projected decrease is a lesser percentage than the percentage decrease in the size of the respective first-grade "seed" cohorts for those graduating classes. The situation for Schenectady County is just the opposite of that described for NYC black male students, above. The population of school-aged children in Schenectady County was still decreasing, due to out migration, during the early years of this decade, the years the 2008 graduating cohort was passing through the elementary grades, and so the class experienced relatively low CSR values passing from one grade to the next during those years. Only 92% of the 1st-grade seed class for the 2008 graduate class "survived" to 7th grade. In contrast, using the past five years of enrollment data, the 4-year mean method calculates baseline CSR values that project between 1st grade and 7th grade the cohort size will have increased to 106.7 % of its original size. The 4-year trend method projects an even greater increase in cohort size between 1st and 7th grade, expanding to 108.6% of its original size. In other words, Schenectady has changed from a county with a net out migration of school-aged children to a county with a net in migration of school-aged children in recent years, and both the 4-year mean and 4-year trend projection methods assume this net in migration will continue over the next 12 years. Because both methods assume that the class of 2019 will experience higher 1st-to-Graduate CSR values than did the class of 2008, the two projected decreases in graduates for Schenectady county between 2008 and 2019 are considerably smaller in magnitude than they would be if the projections were based on the 13.3% decrease in the size of the first-grade seed cohorts alone.

Summary Projections Used For Presentation of Findings

- **Average of Projections Generated by the 4-Year Trend Method and the 4-Year Average Method**
  For the purpose of presenting a summary of the findings of these different projection methods, only one set of "summary projections" are shown in the charts and tables in the "Major Findings" section, below. The summary projections shown are the average of the 4-Year Trend and the 4-Year Average projections. This average projection should combine the standard error reducing benefits of the 4-Year Average Method with the emphasis on the most current data of the 4-Year Trend Method. In other words, the results of using this average should be similar to the results of using a "weighted average" projection methodology, such as that used by Western Interstate Commission on Higher Education (WICHE). But by separately calculating the 4-Year Trend projections and 4-Year Average projections (and then averaging the results for summary presentation), the results of those two different methodologies can be compared (see Excel data file with results of all four projection methods, downloadable from ORIS website). When the results of those two methods are widely discrepant, it is an indication that the CSR's for that region or demographic group have recently been in flux, and the band of uncertainty around the averaged "summary projection" is wider. For those cases, the choice of the best set of graduate projections to rely upon would depend upon knowledge of local conditions, specifically whether the recent fluctuation in CSR values is more likely due to chance factors (in which case the 4-Year Mean projections may be more accurate) or to a recent "real" directional change in CSR values (in which case the 4-Year Trend projections may be more accurate. (See the discussion of assumptions underlying the use of each projection method, above.)

- **Sums of Part Projections**
  Research has demonstrated that the sum of the projections for different sub-populations (such as for different geographic regions or different demographic groups) often provides a more accurate projection for the entire population, than if the projection was generated from CSR data for the population as a whole. For the purpose of summary presentation, the projections shown for NYC are the summed projections for the demographic

groups within NYC, because data for each of those sub-populations yield very distinct sets of baseline CSRs. The projections shown for the rest of the State (ROS) are the summed projections for the 57 individual counties, once again because the individual county data yield very different baseline CSR values. The projections shown for NYS as a whole are the sum of the NYC (summed) projections and the ROS (summed) projections.

Caveats for the Interpretation of CSR Values and Projection Estimates:

- When *small groups* are the subject of the analysis, such as graduate projections for sparsely populated counties, or for small ethnic/gender groups, than there is more chance for random factors to be exaggerated in the estimation of baseline CSRs, particularly when the 4-Year-Trend Method is the basis for generating the baseline CSRs. For such small groups, if there is an unusually sizeable discrepancy between the "first grade enrollment count change" percentage and the "graduate count change" percentage, it should be taken into consideration that random events may have resulted in brief, unsustainable changes in recent CSR values for that small group such that those recent CSR values did not provide a reliable basis for estimating baseline CSR values for the projections.

- Enrollment counts for American Indians tended to be very low, both in NYC and ROS, and fluctuated widely and apparently erratically from one year to the next. Also, national data on ethnic self-identification indicates that people identifying themselves as "American Indian" are more likely than people identifying with other groups to change their ethnic identification from one year to the next, or to change their identification to "multi-racial" when given the opportunity to do so. For the years of enrollment data used for this analysis, the number of students identified as "multiracial" were very small, and were distributed proportionately between the racial groups for this analysis. For all racial groups beside the American Indian, the size of the redistributed multi-racial group was not large enough to potentially significantly affect the analysis. But if the multi-racial group included students who had formerly identified themselves as American Indians to a disproportionate extent compared to the proportion of students identified as American Indians in the school population, the size of this ethnic group among NYS students is so small that the results of proportionate assignment could have resulted in under-counts of American Indians during the 2006-07 and 2007-08 school years, when multi-racial self-identification became an option. For these reasons, only the results of the 4-year average analysis data are presented for the American Indian ethnic group, and even so the results for this group are no doubt less valid and reliable than for the other ethnic groups.

Source Data Used for Making Projections

Primary Sources (Available only by special request from IRTS Office):

- Grade Enrollment Count Data: Annual October BEDS Form data, collected by the Information and Reporting Services Office (IRTS), in the New York State Education Department (NYSED) Office of Elementary, Middle, Secondary and Continuing Education (EMSC).
- Graduate Count Data: NYS Department of Education Oracle files storing data collected by the online STEP data collection system, annual collection of high school graduate data from public and private schools in NYS through 2005-2006, and for private schools through 2006-07. The data source for the 2006-2007 public school graduate count data was a summary data report generated by contractors for the IRTS Office from NYS SIRS data.

Appendix II: Comparisons with the Western Interstate Commission for Higher Education (WICHE) March 2008 Projections

Overview and Summary:

The New York State Education Department (NYSED), Office of Higher Education (OHE) high school graduate projections included in this report are similar in many respects to the graduate projections published by the Western Interstate Commission for Higher Education (WICHE) in March 2008[1]. Not only are similar percentage declines in high school graduate counts projected over the next eleven years, but also both sets of projections were calculated using similar cohort survival ratio (CSR) methodologies. Furthermore, the same data sources for public and private school grade-level enrollments, and for public school graduation counts, provided the baseline data for calculating both the WICHE and OHE projection CSR values. In contrast with the WICHE projection report, however, this OHE projection report is based upon more up-to-date data, uses private school graduate count data collected annually by NYS (rather than the private school data collected biennially by the federal government used by WICHE) and includes racial/ethnic projections for all high school graduates (public and private combined), rather than racial/ethnic projections just for public school graduates (as in the WICHE report).

One of the most important differences between the two reports is the inclusion in this OHE report of much more regionally specific data. All of the WICHE projections pertain to NYS as a whole. This OHE report not only includes Statewide projections, but also projections for New York City (i.e., the five NYC counties combined) and for each NYS county in the rest of the State (ROS). In addition, the OHE report includes separate racial/ethnic projections for NYC and for the rest of the State (ROS), and those racial/ethnic projections are further broken down into separate projections for male and female students. Generating separate projections for NYC and ROS proved especially fruitful, with dramatically different percentage changes over time projected for the two regions, especially for specific racial/ethnic groups.

For example, both WICHE and OHE project substantial percentage declines statewide in the numbers of black and white graduates, over the next eleven years. Both reports project that the three other racial/ethnic groups (Hispanic, Asian, and American Indian) will either maintain or increase their numbers of graduates during that same interval. OHE projects a somewhat greater percentage decline in black graduates than does the WICHE report (perhaps because WICHE's racial/ethnic projections are just for public school graduates, see below). But more importantly, the OHE data breaks these projections down by both region and gender, and projects that NYC black male graduates will decline by 40.2 percent compared to an only 8.6 percent decline for ROS black male graduates. For female black graduates, the percentage declines projected over the next eleven years are 35.1 percent (NYC) and 15.4 percent (ROS). In other words, the OHE data pinpoints NYC as the locus of the greatest projected decline in black graduates. As explained in the main body of this report, OHE data projects the current increased graduation rate of black male students in NYC to continue into the future, but also incorporates and projects into the future the recent decreased CSR values for NYC black students in the lower grades. Those recent decreases in elementary-level CSR values indicate that black students (and their families) are migrating out of NYC at an increased rate, with many moving into other parts of NYS (ROS) at an increased rate (compared to migration rates of five to ten years ago). This appendix contains further presentation of the similarities and differences between the WICHE and OHE projections.

Comparison of Data Sources:

Table A2.1 below provides a comparison of the data sources used by WICHE and by OHE for private school and public school grade enrollment counts and graduate counts. The table also lists the recent academic years for which OHE had data available for use that was not available to WICHE.

[1] Western Interstate Commission for Higher Education. *Knocking at the College Door: Projections of High School Graduates by State, Income and Race/Ethnicity 1992-2022*. Boulder, CO: WICHE, 2008

Table A2.1 Comparison of OHE and WICHE Data - Sources and Academic Years

Data Type	OHE Data Sources	WICHE Data Sources	Recent Data - Available to OHE, Not Available to WICHE
Public School Enrollment	NYSED source files for CCD[1] data.	CCD[1] data	2006-07, 2007-08
Private School Enrollment	NYSED BEDS[2] data	NYSED BEDS[2] data	2004-05, 2005-06, 2006-07, 2007-08
Public School Graduate Count	NYSED source files for CCD[1] data.	CCD[1] data	2003-04[3], 2005-06, 2006-07
Private School Graduate Count	NYSED NSGDR[4] data	NCES PSS[5] data	2003-04, 2004-05, 2005-06, 2006-07

Notes:

1. The "Common Core of Data" (CCD) are data files submitted annually by each State to the National Center of Educational Statistics (NCES) and made available online to the public. Source files include BEDS[2] data, System for Tracking Educational Performance (STEP) data, and Student Information Repository System (SIRS) data.

2. "Basic Education Data System" (BEDS) data is collected by NYSED online each October from all NYS public and private schools and districts.

3. The NYS Public School Graduate Count data for 2003-04 was submitted to NCES/CCD simultaneously with the 2004/05 data, but the value was initially considered "suspect" because the two years' graduate counts differed by a total of only three graduates, and was not made public. The value was, in fact, correct, but WICHE interpolated a (very different) value for that year.

4. Nonpublic School Graduation and Dropout Report (NSGDR) data, collected annually by NYSED.

5. Private School Survey (PSS) data, collected biennially by the National Center for Educational Statistics (NCES)

Comparison of Graduate Count Data Used for Projections:

OHE had more recent public school and private school NYS enrollment data available for use in calculating CSR values for projections than did WICHE (see Table A2.1, above), but for those years for which both OHE and WICHE had data available, the data values used by each were basically identical, because the same source data were used. In contrast, the graduate count values used by WICHE and OHE differed substantially, owing to the use of different data sources.

Table A2.2 below, shows the differences in the graduate count data used by OHE and WICHE for 2000-2001 through 2004-05. (OHE used graduate count data through 2006-07, but WICHE did not have that data available.) For each year except 2003-04, the OHE and WICHE *public school* graduate count values are virtually identical, because the same source data were used. For the 2003-04 year, OHE had public school graduate count data available for use that was not available to WICHE. For that year, 2003-04, New York submitted its public school graduate count CCD data to NCES simultaneously with its 2004-05 data. But the total public school graduate count values submitted by NYS to NCES for those two years were remarkably close in value (differing by only three graduates), the validity of the data may have been considered suspect, and was not made publicly available by NCES at the time WICHE tried to obtain it, though the two graduate count values were ultimately verified. As a result, WICHE reports the data as “missing from the CCD” for 2003-04, and interpolated a public school graduate count value for that year that fell midway between the 2002-03 and 2004-05 values. In fact, the actual 2003-04 public school graduate count was virtually identical to the 2004-05 graduate count, and the OHE value for that year is the correct value.

Table A2.2 High School Graduate Counts:
OHE and WICHE Counts Used for Projections,
2001 - 2005

Year	Sector	WICHE Count	OHE Count	Difference
2000-2001	*Public*	141,884	141,886	-2
	Nonpublic	26,601	20,945	5,656
	Total	168,485	162,831	5,654
2001-2002	*Public*	140,139	140,178	-39
	Nonpublic	27,326	21,544	5,782
	Total	167,465	161,722	5,743
2002-2003	*Public*	143,818	143,820	-2
	Nonpublic	28,050	21,580	6,470
	Total	171,868	165,400	6,468
2003-2004	*Public*	148,511	153,209	-4,698
	Nonpublic	27,669	22,344	5,325
	Total	176,180	175,553	627
2004-2005	*Public*	153,203	153,206	-3
	Nonpublic	28,185	22,566	5,619
	Total	181,388	175,772	5,616

Table A2.2 above also shows a systematic difference between the OHE and WICHE *private school* graduate count data for each year from 2000-01 to 2004-05, stemming from the use of different data sources. Each year, the WICHE private school graduate count for NYS is consistently higher, by more than 5,000 graduates, than the OHE private school graduate count. OHE used the data collected annually by NYS for the Nonpublic School Graduation and Dropout Report. WICHE used the data collected biennially by NCES as part of its Private School Survey (PSS). It is not known why the total NYS private school graduate count values reported to PSS are consistently more than 5,000 graduates higher than the private school graduate counts reported directly to the New York State Education Department by private schools each year. No doubt one contributing factor is the stipulation that private schools reporting graduate counts to NYS should not include those graduates that public school districts have already included in their own counts, because the public school districts paid the students' tuition at the private school, and is responsible for the students' graduation. NYS includes this stipulation to avoid duplicate counts of graduates, but private schools reporting their graduate counts to NCES would not be limited by this stipulation. To the extent that the PSS survey, and thus the WICHE data, included these duplicate counts, the NYS total count of graduates for each year is more accurate. It is unlikely, though, that these duplicate graduate counts could account for more than one or two thousand graduates, and the source of the remainder of this discrepancy has not yet been determined.

As a consequence of the difference in private school graduate count data described above, the total NYS graduate count values used by WICHE to calculate their projections were consistently more than 5,000 graduates higher than the total NYS graduate count values used for calculating the OHE projections. Because WICHE's projections start with the assumption of 5,000+ NYS high school graduates per year, the 12th grade-to-graduation CSR values used by WICHE incorporate the expectation that a substantially higher proportion of NYS 12th graders will graduate each year, and as a result their projections include 5,000+ additional graduates not projected by OHE. But because this difference in the total NYS graduate count used by WICHE and OHE is systematic and consistent in nature, it affects primarily the projected graduate count absolute values rather than the projected percentage changes in graduate counts over time. Consequently, the WICHE projected counts are consistently higher than the OHE projected counts, but both OHE and WICHE

project similar percentage declines in graduate counts between 2007-08 and 2018-19, as shown in Table A2.3, below.

Comparison of OHE and WICHE Projections for 2018-19:

In spite of the differences in their source data described above, the OHE and WICHE projected percentage declines in the count of NYS high school graduates from 2007-08 to 2018-19 are remarkably close in value. OHE projects an overall decline in NYS high school graduates of 16.5 percent, and WICHE projects a decline 15.4 percent. Table A2.3 below shows the OHE and WICHE graduate count values for 2006-07, 2007-08 and 2018-19. The OHE graduate counts, public and private school, for 2006-07 are "real" data values, while the WICHE graduate counts are projected values. The OHE total count for 2007-08 is an "estimated" count based on "real" 12th-grade enrollment data. The WICHE count is a projection. Both the OHE and WICHE graduate counts for 2018-19 are, needless to say, projection values.

Table A2.3

OHE and WICHE Projections Compared:

NYS Recent HS Graduate Counts (2006-07 & 2007-08), Projected Counts (2018-19) and Percentage Changes

Projection Report	*Year*	Data Type	NYS Total	Public	Private*
OHE	2006-07	Actual Count	188,523	165,910	22,613
WICHE	2006-07	Projection	188,982	159,701	29,281
OHE	2007-08	Estimation**	195,454		
WICHE	2007-08	Projection	191,615		
OHE	2018-19	Projection	163,274		
WICHE	2018-19	Projection	162,025		
OHE	Projected Change '08 to '19		-16.5%		
WICHE	Projected Change '08 to '19		-15.4%		

* Note: WICHE 2006-07 projections carry forward an additional 5,000+ private school graduates from PSS data source (compared to NYSED data source), and also under-project public school graduates by more than 5,000.

* *Estimate rather than projection, based on known 12th Grade Fall Enrollment

The WICHE *private school* graduate count projection for 2006-07 exceeds the NYSED/OHE "real" private school graduate count value for that same year by more than 6,000 graduates, in large part because WICHE used the NCES Private School Survey (PSS) data to make its private school graduate projections, and that Survey consistently reports five to six thousand more private school graduates in NYS than are reported by private schools to NYSED each year (see discussion above). But the WICHE projection of *public school* graduates for that same year is more than 6,000 graduates *less* than the "real" public school graduate count data reported to NYSED and used by OHE for projections. Consequently, the *total* (public and private school) number of NYS high school graduates projected by WICHE for 2006-07 is very close to the actual total NYSED count of graduates, used by OHE for these projections.

By 2007-08, the same factor that resulted in WICHE under-projecting public school graduates for 2006-07 results in WICHE under-projecting the total number of NYS graduates by almost 4,000 graduates, compared to the OHE estimate based on the actual known 12th-grade public school enrollment. WICHE did not have available the two most recent years of NYS enrollment and graduate count data (see table A2.1

above), during which interval the high school level CSR values increased significantly. The WICHE projections are based on a weighted average of the lower high school CSR values of earlier years, resulting in the under-projection of 2007-08 graduates. OHE was able to incorporate the more recent increased high school CSR values into its projections, extending these values forward to 2018-19.

But over the long haul, OHE and WICHE project graduate counts for 2018-19 that differ by less than one percent. Although OHE had more recent, higher-value CSR data available for the high school grade levels, OHE also had available more recent enrollment data and CSR values for the lower grades, and those CSR values are slightly lower than the values of earlier years that WICHE used for its projections (perhaps reflecting in- and out- migration pattern changes). Also, OHE had available the actual 2007-08 NYS first grade enrollment data as the "seed class" for the 2018-19 projected graduate count. WICHE had to rely on a projected 1st grade enrollment count for 2007-08, (using NYS birth count data of six years earlier, then multiplying by an estimated birth-to-1st grade CSR value). So the net impact of all these little differences between the WICHE and OHE source data was, apparently, very nearly to cancel each other out, resulting in very similar projections by the year 2018-19.

Comparison of OHE and WICHE Racial/Ethnic Group Graduate Projections

Both OHE and WICHE calculated projections of NYS high school graduates for different ethnic/racial groups. WICHE did not use the same data source as NYS for private school graduates (see above) and so did not have available racial/ethnic group data for private school graduates. Consequently, a major difference between the OHE and WICHE projections for different racial/ethnic groups is that the OHE projections are for all NYS graduates, from both public and private schools, and the *WICHE racial/ethnic group projections are only for public school high school graduates*. What is more, OHE further analyzed the racial/ethnic group data to provide more detailed breakdowns of the projections by region (NYC vs. ROS) and gender. Dramatic differences in the projections for racial/ethnic groups in NYC compared to the rest of the State emerged from these analyses. WICHE only produced statewide projections. Table A2.5, below, allows comparison of the OHE and WICHE statewide high school graduate projections for five racial/ethnic groups for the year 2018-19, and the projected percentage changes between 2007-08 and 2018-19. (The OHE projections are for all NYS high school students and the WICHE are for public school students, only.)

In spite of the fact that the WICHE racial/ethnic group projections are restricted to include only public school high school graduates, both OHE and WICHE project similar magnitude percentage changes in high school graduate counts statewide for the different ethnic/racial groups between 2007-08 and 2018-19. The glaring exceptions are the projected percentage changes for American Indian high school graduates. OHE projects essentially no change (-0.5%) and WICHE projects an increase in graduates of 36.8%. But the numbers of students identifying themselves as "American Indian" are so small, and fluctuates so erratically from year to year, that projections for this group are most likely not statistically meaningful, as has been warned repeatedly throughout this report. In addition, OHE had available two additional years of enrollment and graduate data not available to WICHE, and during those years NYC students were allowed to change their self-identification from any one race to "multi-racial." Nationwide research has demonstrated that individuals previously identifying themselves as "American Indian" are more likely to change their racial/ethnic self-identification to "multi-racial" than are individuals who had self-identified with other racial/ethnic groups. The apparent sharp decrease in American Indian enrollment in NYC schools over the past two years is very likely an artifact of this phenomenon. (The number of NYC students that chose to self-identify using the new "multi-racial" designation for the 2007-08 school year was only 6,225, which is only about ½ of one percent of the total NYC enrollment for that year. OHE distributed this count proportionally among the five racial/ethnic groups according to their proportionate distribution in the NYC student population. For the other four ethnic/racial groups, this redistribution of the students that self-identified as "multi-racial" changed their total grade level and graduate counts by less than one percent. But the enrollment and graduate counts of self-identified American Indians were so low, that if this proportionate redistribution of the "multi-racial" students under-estimated the percentage of these students that had previously identified themselves as "American Indian," the effect on this particular group may have been an apparent significant drop in the American Indian population in NYC, for that year only. This may very well have been the case, making the OHE projections for this racial/ethnic group even less reliable than if the new

"multi-racial" category had not been recently introduced for use in NYC. Projections for the other racial/ethnic groups, however, should not have been significantly affected.)

Table A2.5

OHE and WICHE Racial/Ethnic Group Projections:

Recent High School Graduate Counts (2006-07 & 2007-08), Future Counts (2018-19) and Projected Percentage Changes

Projection Report	*Year*	Data Type	Sector	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Asian	American Indian
OHE	2006-07	Actual Count	Public & Private	117,975	29,537	26,345	14,101	565
WICHE	2006-07	Projection	Public, only	101,326	24,061	20,875	12,449	648
OHE	2007-08	Estimation*	Public & Private	120,499	30,904	28,670	14,785	596
WICHE	2007-08	Projection	Public, only	101,818	24,189	21,446	12,551	641
OHE	2018-19	Projection	Public & Private	93,568	22,340	29,692	17,081	593
WICHE	2018-19	Projection	Public, only	80,143	19,655	21,825	15,536	877
OHE	Projected Change '08 to '19	Projection	Public & Private	-22.3%	-27.7%	3.6%	15.5%	-0.5%
WICHE	Projected Change '08 to '19	Projection	Public, only	-21.3%	-18.7%	1.8%	23.8%	36.8%

* Estimate rather than projection, based on known 12th Grade Fall Enrollment

The OHE and WICHE percentage change projections between 2007-08 and 2018-19 for white, non-Hispanic graduates (projected decreases of 22.3 percent and 21.3 percent, respectively) and for Hispanic graduates (projected increases of 3.6 percent and 1.8 percent, respectively) are virtually identical. OHE projects a greater percentage decrease in the number of black, non-Hispanic high school graduates than does the WICHE report (a 27.7 percent decrease compared to an 18.7 percent decrease), but OHE had available more recent data indicating a recent increased rate of migration of black students out of NYS, particularly out of NYC (see discussion above and in the main body of this report). Also, as stated above, OHE data includes both public and private school students, whereas the WICHE racial/ethnic group data only included public school students. These same differences in both the recency and completeness of the data used probably account for one more difference between the WICHE and OHE projections. Both reports project a substantial percentage increase in the number of Asian high school graduates in NYS over the next eleven years, but OHE projects a smaller increase (15.5 percent) than WICHE (23.8 percent).

Comparison of OHE and WICHE Methods for Calculating Projection CSR Values:

Both OHE and WICHE used very similar methodologies, based on cohort survival ratios (CSRs), for making their NYS graduate count projections. Both used the most recent NYS grade enrollment and graduate count data available to them to calculate the four (OHE) or five (WICHE) most recent years' CSR values for each grade level and for 12^{th}-grade-to-graduation. Both used the equivalent of a weighted average of those values, applied to the most recent grade enrollment data available to them, to make projections of graduate counts into future years.

OHE produced four different sets of graduate projections, each based on a different assumption (see the discussion on assumptions underlying use of different methodologies in the main report). The projections produced using the 4-year-average method and the 4-year-trend method were then averaged to produce

values for summary presentation, because the assumptions underlying those two methods seemed the most likely to be valid. For the 4-year-average set of projections, OHE used the average of the four most recent years' CSR values, and for the 4-year-trend set of projections, OHE used the fourth point on a four point trend line calculated on those same four CSR values. Averaging corresponding projections within the two sets produced projection values was very similar to the results achieved by using a weighted average of the four recent CSR values. By independently calculating the two sets of values however, and then averaging them, OHE was able to examine the range of the projected values resulting from the use of different assumptions. But for each method used by OHE, once a set of baseline CSR values was calculated, that same set of CSR values was used for each year of projections. The 12th-to-graduate CSR value used to calculate the 2008-09 projected graduate count, was the same 12^{th}-to-graduate CSR value used to calculate the 2018-19 graduate count.

WICHE used a weighted average of the five most recent years' CSR values to make projections, but in contrast with OHE, WICHE used a formula which gradually shifted the weights applied to the five most recent CSR values over time, so the more recent years' CSR values have more weight in the later projection years. The 12^{th}-to-graduate CSR value used for 2008-09 projections was therefore slightly different than the 12^{th}-to-graduate CSR value used for the 2018-19 projections. The formula used by WICHE to calculate the CSR values for each succeeding year of projections appears below:

$$Y_{pt} = wY_{p(t-1)} + (1-w)\left(\sum_{i=2}^{5} Y_{p(t-i)}\right) / 4$$

WICHE states that they used a value of 0.40 for "w," the initial weighting of the most recent year CSR value available to WICHE for use in projections (e.g., 2005-06 for public school grade-level CSR values). In their equation, "Y" is the CSR value calculated for the projection point "p" in time "t," with "t=1" representing the first year of projections. The value of "Y" when t = 1, i.e., the first year of projections, is 0.40 of the CSR value for the most recent "real" data year" plus 0.60 of the average of the four preceding years of "real" CSR data values. This translates into a weighted average of the five most recent years' CSR values of 0.40 for the most recent year (t = 0), and 0.15 for the four preceding years (t = -1, t = -2, t = -3 and t = -4). This same formula is then used to recalculate the projection CSR values for each succeeding year of projections, with the value calculated for Y_{pt} for one projection year, becoming the value of $Y_{p(t-1)}$ for the next projection year, and so on.

The net effect of the successive application of this formula to the five years of "real" data CSR values to calculate CSR values used for generating projections, is to slightly reweight the five data values each year and compute a new weighted average. The last year of "real" data always has the highest weight. Its weight drops from 0.40 for the first year of projections to a weight of 0.32 for the second year of projections, but then gradually climbs thereafter, with the most recent data values gaining increasing weight each year. Table A2.4 below shows the shift in weights over the first three years of projections when the WICHE formula is applied to their five most recent years of public school grade-level CSR values (2001-02 through 2005-06) to compute projection CSR values.

Table A2.4

WICHE Shifting Weighting of Five Input CSR Values for Computing Projection CSR Values over Successive Years

Projection Year	2005/06 CSR	2004/05 CSR	2003/04 CSR	2002/01 CSR	2001/02 CSR
2006/07	40.0%	15.0%	15.0%	15.0%	15.0%
2007/08	31.0%	21.0%	21.0%	21.0%	6.0%
2008/09	32.1%	26.5%	26.5%	8.4%	3.1%
2010/11 +	More recent years' weights increase, earlier years' decrease.				

For all its complexity, the WICHE formula for calculating CSR values will only yield CSR values that fall somewhere between (or at least very close to) the 4-year mean values and 4-year trend values calculated by OHE (assuming the same input CSR values were used). So it is not surprising that ultimately the OHE and WICHE methods resulted in similar projected percentage changes in the total NYS counts of high school graduates between 2007-08 and 2018-19.

Appendix III: Comparison of 2008 OHE High School Graduate Projections with 2003 OHE High School Graduate Projections for NYS

Overview and Summary:

The New York State Education Department (NYSED), Office of Higher Education (OHE) in January 2003 produced high school graduate projections extending from 2001-02 to 2012-13 as part of the process of preparing *The Board of Regents Statewide Plan for Higher Education, 2004 – 2012*. These projections were based on NYSED enrollment and graduate count data for the academic years 1997-08 through 2000-01, using the same NYSED source data files that were used to generate these 2008 projections (and which are also the source files for Common Core of Data (CCD) data submissions to the National Center for Educational Statistics (NCES). The projection methodology used by OHE in 2003 was identical to the 4-Year-Trend methodology used to produce one of the four sets of projections calculated for this 2008 OHE report. (See discussion of the four projection methods and underlying assumptions in the methodology section of this report (Appendix I). The "summary 2008 projections," shown below and throughout in this report, are the average of the 4-Year-Trend and 4-Year-Mean projections. Complete sets of projections generated by each of the four methods are available for download as text files or Excel files from the OHE Office of Research and Information Systems website at: http://www.highered.nysed.gov/oris/statreports.htm)

This appendix presents a summary of the 2003 OHE projections compared to actual NYSED graduate counts for the years 2001-02 through 2006-07, and also compared to this report's 2008 OHE projections for 2008-09 through 2012-13. These comparisons are followed by a presentation of recent changes in Cohort Survival Ratio (CSR) values, especially at the secondary level, and especially in NYC schools, and then a discussion of how these CSR changes help explain the divergence of 2003 projections from actual graduate counts through 2006-07, and also the divergence of 2003 projected counts from 2008 projected counts for 2008-09 through 2012-13. The increased CSR values in NYC at the secondary level may be at least partially attributable to successful Regents actions to increase NYC graduation rates in recent years.

Comparison of 2003 OHE Projections to Actual HS Graduate Counts, 2001-02 through 2006-07:

Table A3.1 below shows the OHE 2003 projections of high school graduate counts for the academic years 2001-02 through 2006-07 and the actual graduate count data collected by NYSED for the same years. Graduate counts, projected and actual, are shown for all New York State (NYS), New York City (NYC) and the rest of the State (ROS).

Table A3.1
Comparison of OHE 2003 Projections with Actual Graduate Counts:
For NYS, NYC and ROS and for Years 2001-02 through 2006-07

Type of Data	State or Region	Grad Count 2001-02	Grad Count 2002-03	Grad Count 2003-04	Grad Count 2004-05	Grad Count 2005-06	Grad Count 2006-07	% Difference 2003 Projection from Actual Grad Count 2006-07
Projection	NYS	162,618	167,051	169,023	166,243	170,062	176,108	-6.6%
Actual	NYS	161,683	165,400	175,553	175,772	183,370	188,523	
Projection	NYC	51,740	53,367	52,485	48,676	50,687	53,066	-13.8%
Actual	NYC	49,990	48,539	55,055	53,879	58,676	61,593	
Projection	ROS	110,878	113,684	116,538	117,567	119,375	123,042	-3.1%
Actual	ROS	111,693	116,861	120,498	121,893	124,694	126,930	

The last column of Table A3.1 shows the percentage difference between the 2003 projected graduate count for 2006-07 and the actual count for 2006-07 for NYS, NYC and ROS. In each case, the 2003 projections underestimate the actual number of graduates, but the discrepancy between the projected graduate count and actual count is much greater for NYC than for ROS. The 2003 projections were

generated by multiplying actual known 2001-02 "seed class" enrollment values by the projection CSR values. The only reason the projected graduate count can differ from the actual graduate count is because the 2000-01 "seed cohort" experienced a different set of CSR values than the CSR values used for the projections. The CSR values used for the 2003 projections were based on the actual CSR values for 1998 through 2001, especially the 2001 values. The "seed cohort" 6th grade enrollment of 2000-01 was multiplied by the projection secondary-level CSR values (typical for 2001) to project the 2006-07 graduate count. That means the combined secondary-level CSR values typical of 2001 (i.e., the product of the 6th-to-7th value through 12th-to-graduation CSR value) must have been lower than the combined secondary-level CSR values actually experienced by the 6th grade class of 2000-01 as it progressed through the secondary grades to graduation in 2006-07. In other words, between 2001-02 and 2006-07, on average, a greater percentage of secondary students progressed from one grade level to the next each year than was the case for grade progression during the 2000-01 school year.

Recent Increases of Secondary Level CSR Values Account for Higher Graduate Counts Than Projected:

Chart A3.1 below shows how CSR values Statewide were relatively stable at the elementary level between 1998 and 2008, (and consistently very close to 1.0). In contrast, Chart A3.2 shows how CSR values at the secondary level exhibited substantial fluctuation, and overall have steadily increased from 2001 to 2008. The 7th grade-to-graduation CSR value for 2001 was 69.1 percent, but climbed to 75.6 percent for 2008. This increase of an additional 6.5 percent of 7th graders anticipated to progress to graduation, based on 2008 CSR values compared to 2001 CSR values, accounts for the 6.6 percent underestimate of Statewide graduates for 2007, that was projected in 2003.

Chart A3.1

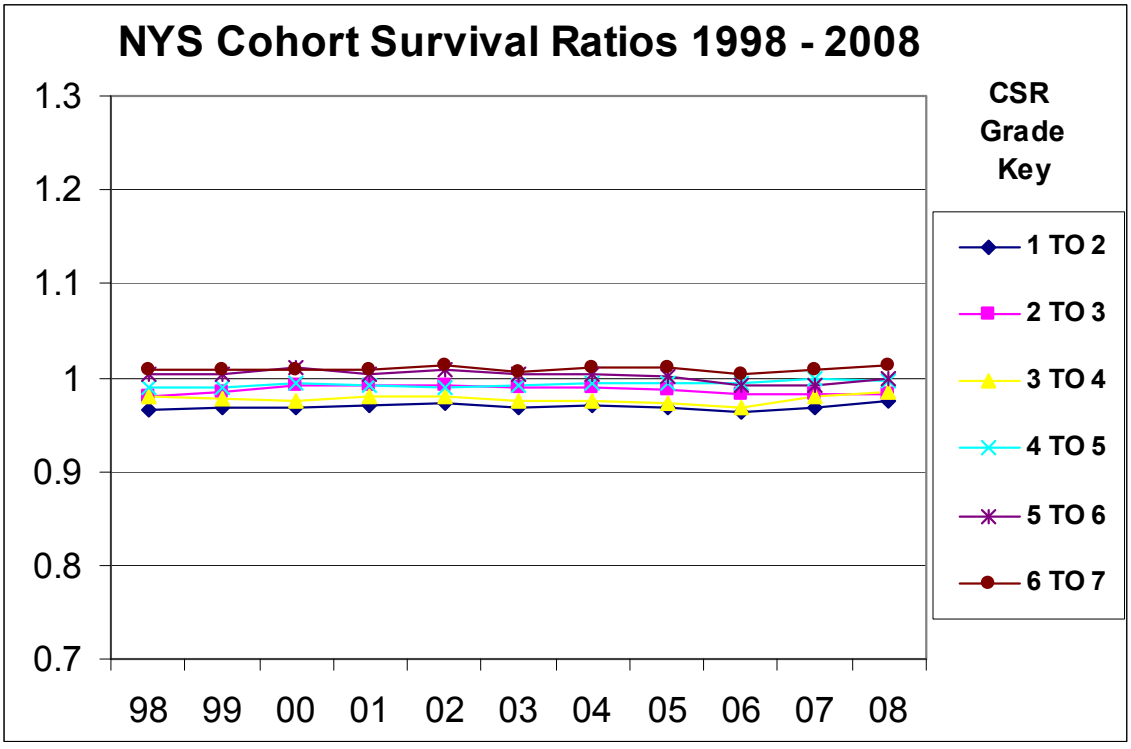
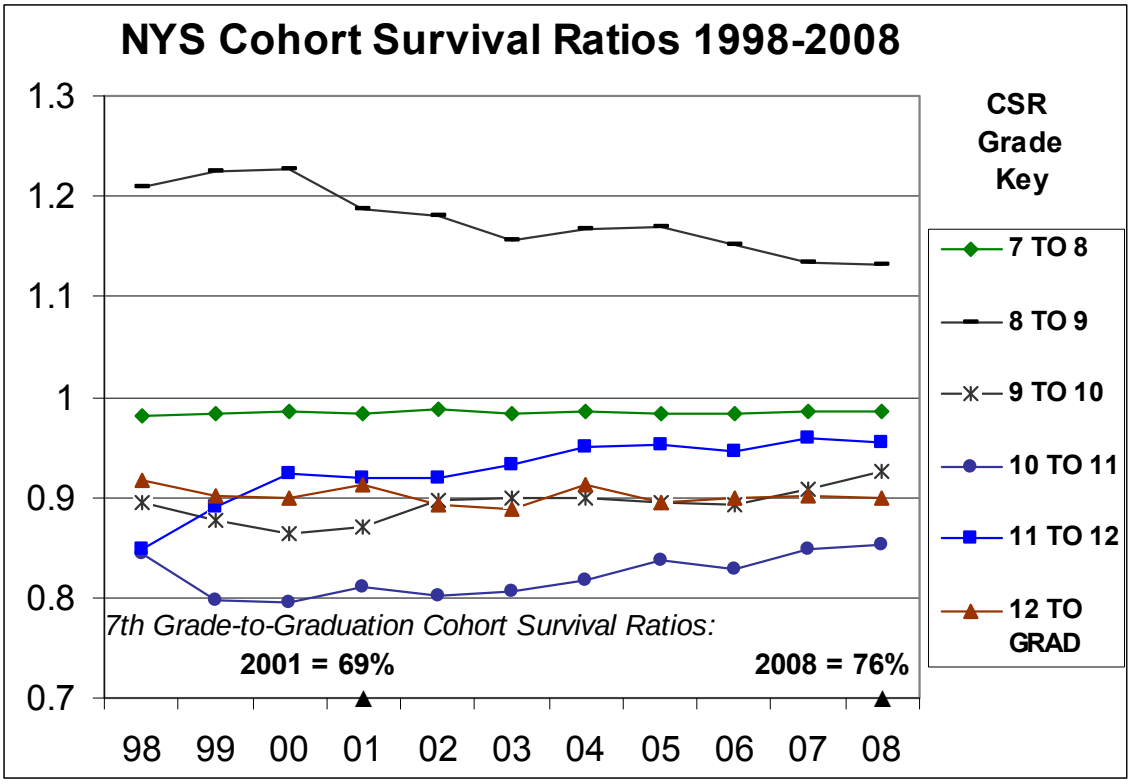


Chart A3.2



The trend line tracking the 7th-to-8th Grade CSR value in Chart A3.2 indicates that over the ten year interval the number of 8th graders each year was just slightly less than the number of 7th graders the year before. In other words, the 7th-to-8th Grade CSR value is very close to 1.0 and very stable, just like the elementary level CSR values for the same ten year interval. In striking contrast, the 8th-to-9th Grade CSR values for each year indicate that the number of 9th graders for one year is somewhere between 13 percent to 23 percent greater than the number of 8th graders the year before. The positions of the 9th-to-10th Grade and 10th-to-11th Grade CSR value trend lines are somewhat complementary in shape to the 8th-to-9th line, with values substantially less than "1.0," but increasing toward 1.0 over time as the 8th-to-9th line decreases toward that value. Experienced researchers with this type of CSR data assert that this pattern reflects the typically very high retention rate of New York State students in 9th grade, compared to the retention rate for other grades. Because students are retained in 9th grade with roughly 15 to 20 percent greater frequency than they are retained in 8th grade, the size of the 9th grade "class" Statewide contains roughly 15 to 20 percent more students than the size of the 8th grade class. The retention rate in 10th grade is substantial, but half the 9th grade rate. Consequently, the 8th-to-9th Grade CSR value is considerably greater than 1.0, and the 9th-to-10th Grade CSR value is considerably less (but not as much less) than 1.0. The Statewide CSR trend line with the lowest values is, not surprisingly, the 10th-to-11th Grade CSR trend line, because the highest drop-out rate is among 10th grade students reaching the age of 16 and failing to progress to 11th grade.

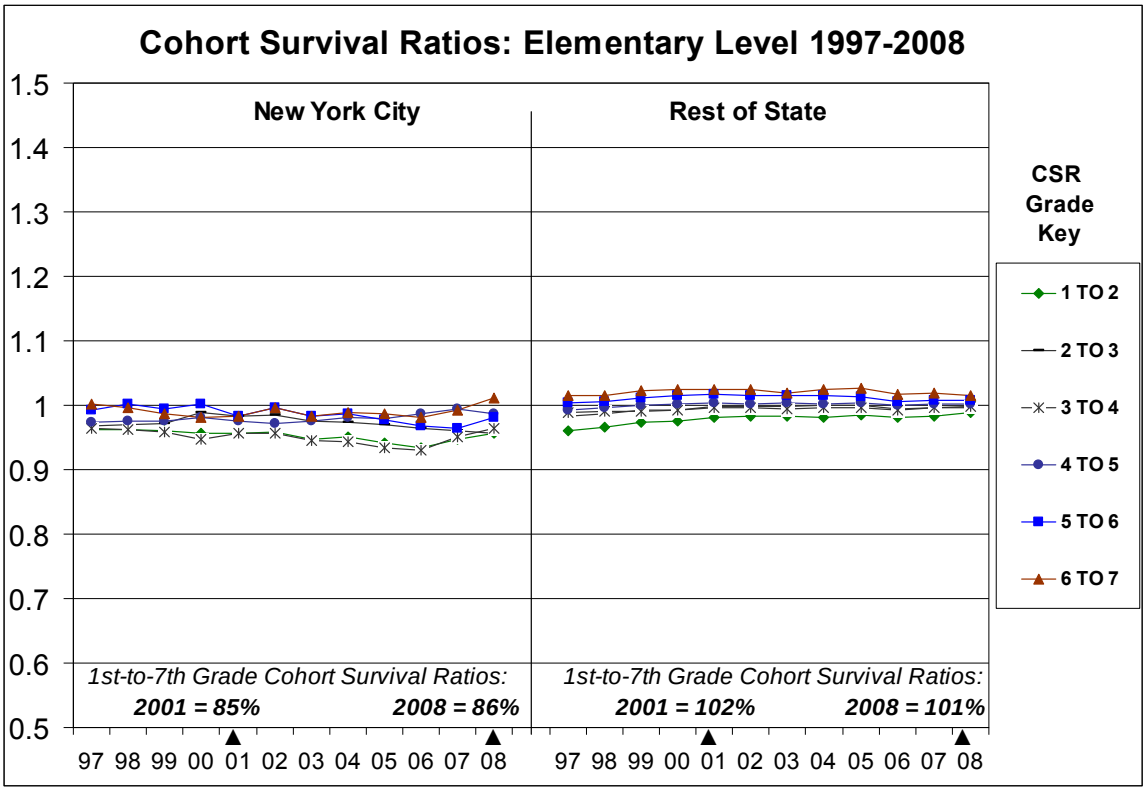
The slope of the 8th-to-9th Grade CSR trend line in Chart A3.2 above indicates that the percentage of students retained in 9th grade has been steadily decreasing since 2000 (at least relative to the 8th grade retention rate), from roughly 23 percent to 13 percent of students. The large number of students retained in 9th grade had created a sort of constant "bulge" in the pipeline toward graduation, and the recent reduction in the 9th grade retention rate may have had the effect of moving this bulge forward through the system, and so may have briefly artificially increased the counts of high school graduates over what they would have been without the reduced level of 9th grade retention. Also, reduced retention in 9th grade may have encouraged, and may continue to encourage, more students to persist in school to graduation. (Note that algebraic modeling of the effects of changing retention rates on CSR values demonstrates that the impact of changing retention rates on the accuracy of projections over a number of years should not be great.)

The increase in the product of all the secondary CSR values between 2001 (69 percent) and 2008 (76 percent) is also probably a reflection of an improved Statewide graduation rate, and corresponds to the findings presented in the Commissioner's press release in August 2008 of improved high school graduation rates Statewide. These current (2008) OHE projections, as well as the 2003 projections, are based on the assumption that CSR values will remain stable into the future. But recognizing the possibility that secondary-level CSR values could continue to increase if graduation rates continue to increase, the current 2008 projections include a "best-case-scenario" set of projections, based on the the "4-Year-Trend-Plus-8-Percent" method described in Appendix I. That method incorporates the assumption that each of the four high school level CSR values, starting with the 9th-to-10th value, will increase by "plus .02" within the next four years. In other words, starting with 9th graders in 2009, two percent more students will progress from each high school grade to the next, and from 12th grade to graduation, than is currently the case.

Comparison of NYC and Rest of State CSR Values and Change over Time:

Chart A3.3 below compares elementary-level CSR values for NYC and the rest of the State (ROS) from the 1996-97 school year through the 2007-08 school year. For both NYC and ROS, these elementary-level CSR values are fairly stable over time and fairly close to 1.0, indicating that each class cohort has stayed roughly the same size as it has progressed from one grade to the next.

Chart A3.3



Nevertheless, in Chart A3.3, the NYC elementary-level CSR values are somewhat lower than the ROS values. One major reason for the lower NYC CSR values is no doubt because, during the years prior to high school, more NYC students are moved from the graded education system to the ungraded system than in ROS (Seven to nine percent of NYC enrolled students are classified as "ungraded" compared to two to three percent of ROS students. Students with disabilities are classified as "ungraded" when it is determined that their disability is sufficiently severe as to prevent the student from attaining a regular high school diploma. Whenever students at one elementary grade level are classified as "ungraded," those students are not counted among the graded enrollment the following year, and so the CSR value for that grade transition is decreased by a percentage corresponding to the percentage of students within the cohort transitioning to the ungraded system.)

A second reason for the lower NYC values compared to ROS values may be an apparently higher rate of net migration out of NYC by families with school-aged children compared to the rate of net migration out of the rest of the State by families with school-aged children. (Appendix IV provides demographic data from the U.S. Census to put this CSR and projection data in context, both with broader NYS, NYC and ROS demographic data and U.S. data for comparison. NYC annually increases its population significantly through a very high rate of net international migration into the city, a rate which is considerably higher than net international migration into the U.S. and into the rest of the State. On the other hand, NYC loses population through net migration out to other states at a rate that is considerably higher than the net domestic out-migration for the rest of the State. It is likely that the domestic migration out of NYC involves more families with school-aged children than the international migration into the city, helping to account for a recent significant decline in NYC elementary and secondary total enrollment, particularly among black and white students.)

Chart A3.4

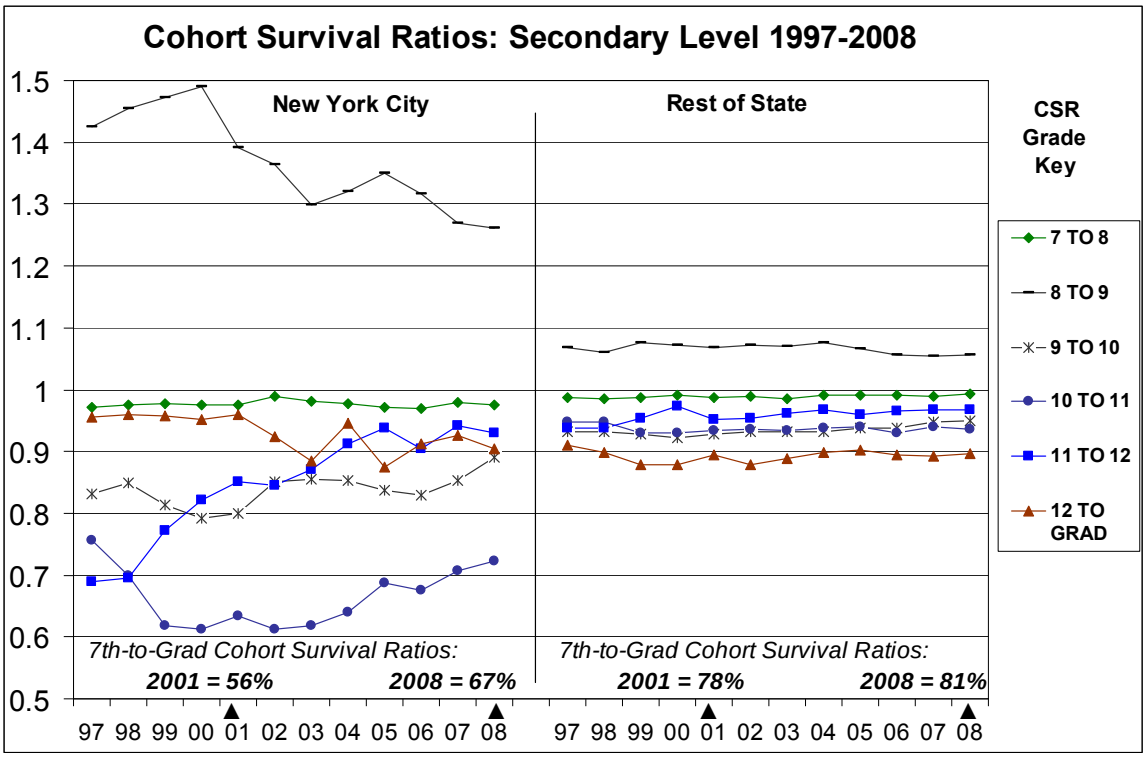


Chart A3.4, above, compares secondary-level CSR values for NYC and the rest of the State (ROS) from the 1996-97 school year through the 2007-08 school year. This chart demonstrates that the State-wide variations and fluctuations among secondary-level CSR values, described and discussed above, are greatly magnified in NYC compared to ROS. For example, the fluctuating 8th-to-9th Grade CSR values indicate that the 9th grade retention rate in NYC may have reached a peak value of nearly 50 percent of ninth graders retained during the 1999-00 school year, then dropped to roughly 25 percent by 2007-08. The rising 9th-to-10th Grade CSR values are partly just a complementary reflection of the decreasing 9th grade retention rate (see discussion above), but the sharply rising trend lines for the 10th to 11th Grade CSR values and the 11th-to-12 Grade CSR values very likely reflect real progress in decreasing the drop-out rate, and increasing the graduation rate among NYC high school students in recent years. These trend lines support the findings reported in a press release by the Commissioner in August 2008 regarding increased NYS NCLB cohort graduation rates, particularly among NYC students.

The data in Chart A3.4 indicates that the combined product of NYC secondary-level CSR values increased from 56 percent to 67 percent between 2000-01 and 2007-08. In other words, by 2007-08, CSR

values anticipated that an additional 11 percent of the 7th grade cohort was likely to progress to graduation than was the case in 2000-01. This unanticipated change in CSR secondary-level values in NYC accounts for the OHE 2003 projections underestimating the number of NYC graduates in 2007 by 13.8 percent (see Table A3.1, above). In contrast, the relatively stable secondary-level CSR values for the rest of the State increased by only 3 percent during the same interval, helping to explain why the 2003 OHE projections for the rest of the State were so much more accurate than for NYC, and only underestimated the 2007 graduate count by 3.1 percent.

Comparison of OHE 2003 Projections and OHE 2008 Projections through 2012-13:

Table A3.2, below, compares the 2003 OHE projections to the 2008 OHE projections for the years 2008-09 through 2012-13, for NYS, NYC and the rest of NYS. The percentage differences between the two sets of projections for the 2012-13 graduating class counts, are very similar to the percentage differences between the 2003 projections and actual graduate count data for the 2007-08 graduating cohort, shown in Table A3.1, above.

Table A3.2
Comparison of OHE 2003 Projections with OHE 2008 Projections:
For NYS, NYC and ROS and for Years 2007-08* through 2012-13

OHE Projection Report Year	State or Region	Grad Count/ Proj. 2007-08	Graduate Proj. 2008-09	Grad Proj. 2009-10	Grad Proj. 2010-11	Grad Proj. 2011-12	Grad Proj. 2012-13	% Difference 2003 Projection from 2008 Projection for 2012-13 HS Graduate Count
2003	NYS	180,301	184,931	183,259	180,888	179,021	175,653	-1.5%
2008	NYS	195,454	194,885	191,822	185,536	182,238	178,323	
2003	NYC	53,659	53,830	54,519	52,870	52,288	51,467	-10.1%
2008	NYC	63,465	64,848	62,473	59,418	58,433	57,270	
2003	ROS	126,642	131,101	128,740	128,018	126,733	124,186	2.6%
2008	ROS	131,989	130,037	129,349	126,118	123,805	121,053	

*Note: In the OHE 2008 projection report, 2007-08 graduate counts are "estimates" based on known 12th grade enrollments, rather than projections based on previous year's 11th grade enrollments.

The similarities of the percentage discrepancies shown in Table A3.1 (comparing 2003 OHE projections to actual graduate counts) and shown in Table A3.2 (comparing 2003 OHE projections to 2008 OHE projections) are explained by the fact that both sets of projections, as well as the actual graduate counts for 2007-08, are based on the same "seed cohort" class counts, and only the CSR values differ among the three data sets (two projection sets, and the "actual" graduate count data). But the CSR values used for the 2008 projections are very similar to the values actually experienced by the 2007-08 graduating cohort. Consequently, the 2008 OHE projections necessarily differ from the 2003 projections by the same percentage values that the actual graduate count values differed from the 2003 projections. The percentage differences are slightly less in magnitude because the 2008 OHE projection CSR values represent a sort of "weighted average" of the past four years of CSR values, and so are slightly closer in value to the 2003 OHE projection CSR values than were the CSR values actually experienced by the 2007-08 graduating cohort.

The "new" 2008 OHE projections assume that the most recent, higher-value, NYC CSR values for the secondary grade levels will remain stable over the next 11 years. Those CSR values changed considerably over the past seven years, so that is not necessarily an accurate assumption. The apparent recent "trend" of increasing secondary-level CSR values in NYC could continue into the future, if further efforts to increase NYC high school graduation rates show continued success. If that is the case, the "summary" projections shown in the summary tables of this report (an average of the 4-year-trend and 4-year-average methods) will turn out to be less accurate than our "best-case-scenario" 4-year-trend-plus-8-percent method

set of projections, available for download from the Office of Research and Information Systems website (see above). On the other hand, in light of the current economic crisis, it is conceivable that NYC CSR values might regress toward their former levels, which would result in lower graduate counts than we have projected. Other wild cards are the rapidly fluctuating rates of net domestic and net international migration for NYC and ROS. If there is an increase in the net rate of migration of school-aged children out of the State during the next eleven years, these projections will overestimate the actual graduate counts. Appendix IV provides some of the latest U.S. Census data available for the reader to use to place these projections in a broader demographic context.

Appendix IV: Demographic Data Providing Context for Interpretation of High School Graduate Projections - U.S. Census Bureau Data and NYS Education Department Enrollment Data

Sources:

http://www.census.gov/popest/estimates.php

Source: U.S. Census Bureau, Population Division
Population Estimates Program, December 26th, 2008

Enrollment Data from NYS Education Department BEDS (Basic Educational Data System) annual data collection, collected by the P-16 Office, Information and Reporting Services (IRTS) Office.

Tables and Charts Providing Demographic Context for Enrollment Projections:

Tables A4.1 and A4.2 below summarize projected changes in the age-distribution of New York residents by Census 2000. New York's population of school-aged children is projected to continuously decline through the year 2030 with the maximum decrease between 2000 and 2010 (corresponding to maximum decrease in high school graduates projected to occur over the years from (2009 to 2019).

The school-aged population for the entire U.S. is projected to increase very slightly between 2000 and 2010, then increase substantially between 2010 and 2030, while the NY population is still decreasing. This data indicates that after 2019 the rest of the U.S. can expect a substantial increase in high school graduates, but such an increase cannot be expected in NYS.

The South and Southwest are projected to continuously experience a surge in the population of children under age 18, between now and 2030. Though not shown in these charts, the Hispanic population, in particular, is expected to surge because of particularly high birth rates and rates of international migration into the U.S.

In contrast with the decreasing size of the <18 age group, Census 2000 projected that between 2000 and 2030 the size of the >64 age group would increase by 60% in NY State (104% for the U.S.). According to this Census data, in the year 2000 the number of New Yorkers under age 18 was roughly twice the number older than 64 years of age. But in 2030, the number in both age groups should be roughly equal, meaning that *the ratio of young to old will change from 2:1 to 1:1* over the 30-year time interval. The entire U.S. will experience a similar shift.

Table A4.1

U.S. Census NYS Population Projections < 18 Years of Age	Census 2000	Projected 2010	Projected 2030	Projected Change 2000-2010	Projected Change 2010-30	Projected Change 2000-2030
Population <18 Yrs	4690107	4420876	4325477	-269231	-95399	-364630
Percent < 18 Yrs	24.7	22.7	22.2	-5.74%	-2.16%	-7.77%
All U.S. Comparison						
Population <18 Yrs	72293812	74431511	85707297	2137699	11275786	13413485
Percent < 18 Yrs	25.7	24.1	23.6	2.96%	15.15%	18.55%
Texas Compariosn						
Population <18 Yrs	5,886,759	6,785,408	8,990,095	898649	2204687	3103336
Percent < 18 Yrs	28.2	27.5	27.0	15.27%	32.49%	52.72%

Table A4.2

NY Census Projections > 64 Years of Age Population	Census 2000	Projected 2010	Projected 2030	Projected Increase 2000-2010	Projected Increase 2010-2030	Projected Increase 2000-2030
Population > 64 Yrs	2448352	2651655	3916891	203303	1265236	1468539
Percent > 64 Years	12.9%	13.6%	20.1%	8.3%	47.7%	60.0%
All U.S. Comparison						
Population > 64 Yrs	34991753	40243713	71453471	5251960	31209758	36461718
Percent > 64 Years	12.4%	13.0%	19.7%	15.0%	77.6%	104.2%
Texas Compariosn						
Population > 64 Yrs	2072532	2587383	5186185	514851	2598802	3113653
Percent > 64 Years	9.9%	10.5%	15.6%	24.8%	100.4%	150.2%

The latest Community Population Survey data released by U.S. Census December 22, 2008, providing annual population changes, and components of change, for the U.S. and individual states and regions, is shown in Table A4.3, below. This data (shown as rate per 1000) indicates that New York (and the Northeast) grew slightly in total population last year, but did not grow as fast as the rest of the U.S. population. The Northeast and the Midwest lost population through migration to other states, and the South and West grew a corresponding amount through migration from other states. The rate of net domestic (interstate) migration out of New York State was higher (6.5 per thousand population) than the rate for the Northeast (4.4 per thousand.) However, New York State continues to have a higher rate of net international in-migration than the average for any region of the U.S.

The bottom section of Table A4.3 shows these same annualized population change, and components of population change, data for the interval from 2000 to 2004 (specifically, July 1st, 2000 to July 1st 2004), and 2004 to 2007 (July to July). This data indicates that during this decade New York's rate of "natural increase" (births minus deaths) has been stable (average of 5.0 per thousand per year), but that the rate of net international migration into New York has been decreasing (from 6.5 per thousand to 4.9 per thousand), and the rate of net domestic migration out of New York rose from 9.8 per thousand to 11.6 per thousand by the middle of the decade, but that the most current year of data (2007-08) shows a significant drop in the rate of net domestic migration out of New York to only 6.8 per thousand (but this figure is based on just one year of data).

Table A4.3

Estimates of the Annual Rates* (Rate/1000/Year) of the Components of Resident Population Change for the United States, Regions, States, and Puerto Rico: July 1, 2007 to July 1, 2008

Geographic Area	Total Population Change**	Natural Increase	Vital Events		Net Migration		
		Total	Births	Deaths	Total	Inter-national***	Domestic
United States	**9.1**	**6.2**	**14.3**	**8.1**	**2.9**	**2.9**	**(X)**
Northeast	3.0	4.0	12.5	8.5	-0.9	3.5	-4.4
New York	***3.1***	***5.0***	***12.9***	***7.9***	***-1.6***	***4.9***	***-6.5***
Midwest	3.7	5.4	13.9	8.5	-1.7	1.7	-3.4
South	12.5	6.2	14.7	8.4	6.2	2.6	3.6
West	13.8	8.7	15.5	6.8	5.2	4.1	1.0
Comparison of the 2007-08 NY Population Rate Changes with NY Rate Change since 2000:							
NY 07-08 Rate/1000/Yr	3.1	5.0	12.9	7.9	-1.6	4.9	-6.5
NY 04-07 Rate/1000/Yr	0.7	4.9	12.9	7.9	-5.8	5.8	-11.6
NY 00-04 Rate/1000/Yr	3.5	5.1	13.4	8.3	-3.3	6.5	-9.8

*Rates per 1,000 average population

**Total population change includes a residual. This residual represents the change in population that cannot be attributed to any specific demographic component. See State and County Terms and Definitions at http://www.census.gov/popest/topics/terms/states.html

***Net international migration includes the international migration of both native and foreign-born populations. Specifically, it includes: (a) the net international migration of the foreign born, (b) the net migration between the United States and Puerto Rico, (c) the net migration of natives to and from the United States, and (d) the net movement of the Armed Forces population between the United States and overseas.

Note: (X) Not applicable. See Geographic Terms and Definitions at http://www.census.gov/popest/geographic/ for a list of the states that are included in each region.

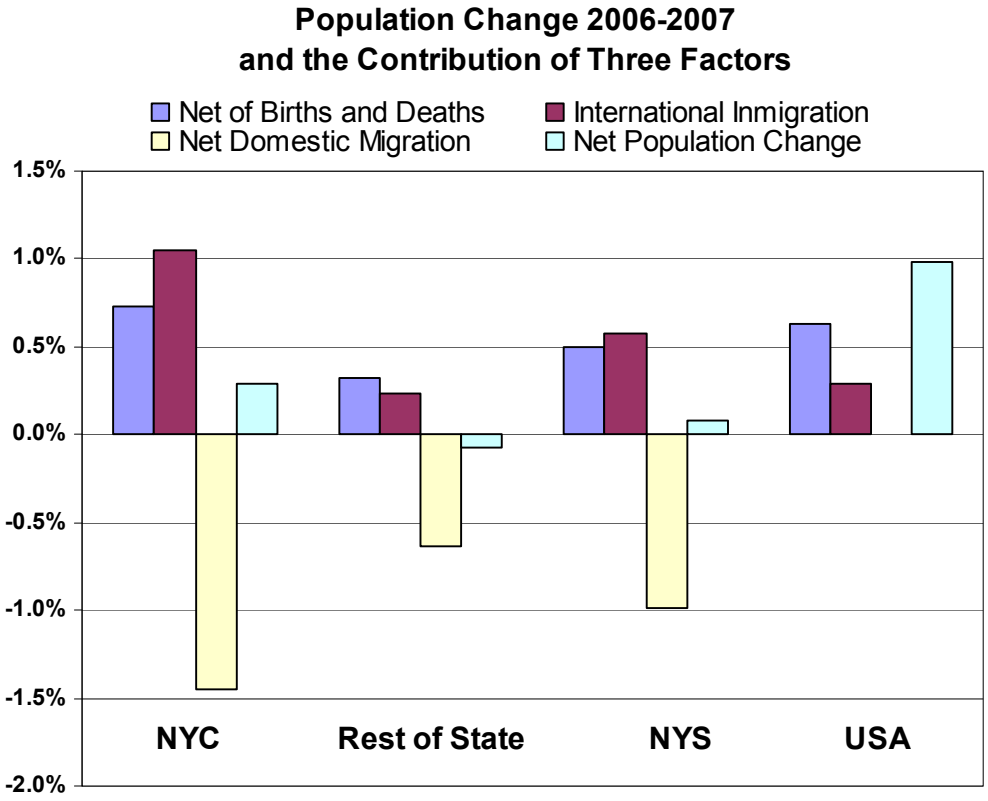
Suggested Citation:
Table 6: Estimates of the Annual Rates* of the Components of Resident Population Change for the United States, Regions, States, and Puerto Rico: July 1, 2007 to July 1, 2008 (NST-EST2008-06)

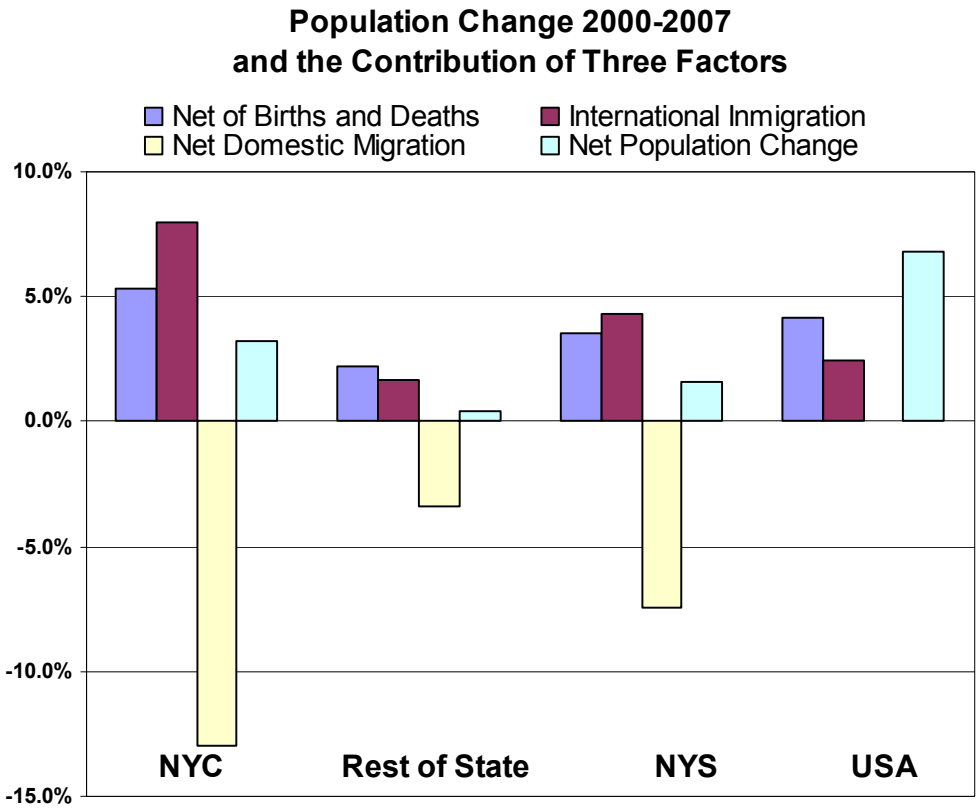
Source: Population Division, U.S. Census Bureau
Release Date: December 22, 2008

Source: Population Division, U.S. Census Bureau
Release Date: December 22, 2008

Charts A4.1 and A4.2, below, summarize the components of population change discussed above, comparing NYC, Rest of State (ROS), NYS and USA for the year 2006-07, and for the interval 2000 to 2007. Note that the overall pattern for NYC and ROS is similar, but that all components of change for NYC indicate a significantly higher rate of change than for ROS. The rate of international migration into NYC is much greater than for ROS, but the rate of domestic migration out is also much greater for NYC. The rate of birth's exceeding deaths is also greater for NYC than for ROS. For 2006-07 (not 2007-08, see above), only the population of NYC grew, contributing to a small net increase in the State's population, the ROS population actually decreased slightly that year. Both NYC and ROS experienced substantial net domestic out-migration, but NYC's continuing high rate of international in migration, both compared to ROS and to the United States, allowed the NYC to nevertheless experience net population growth.

Charts A4.1 and A4.2:





The following Charts, A4.3 through A4.9, provides the data summarized above in bar chart fomat, with individual bars representing population counts for individual years during the current decade, either for NYS, the U.S., NYC, or the rest of NY State (ROS). There is not room to provide

detailed interpretation for the reader, but note the higher than average rates of net international in migration and net domestic out migration for NYC compared to ROS, and for NYS compared to the USA.

Chart A4.3

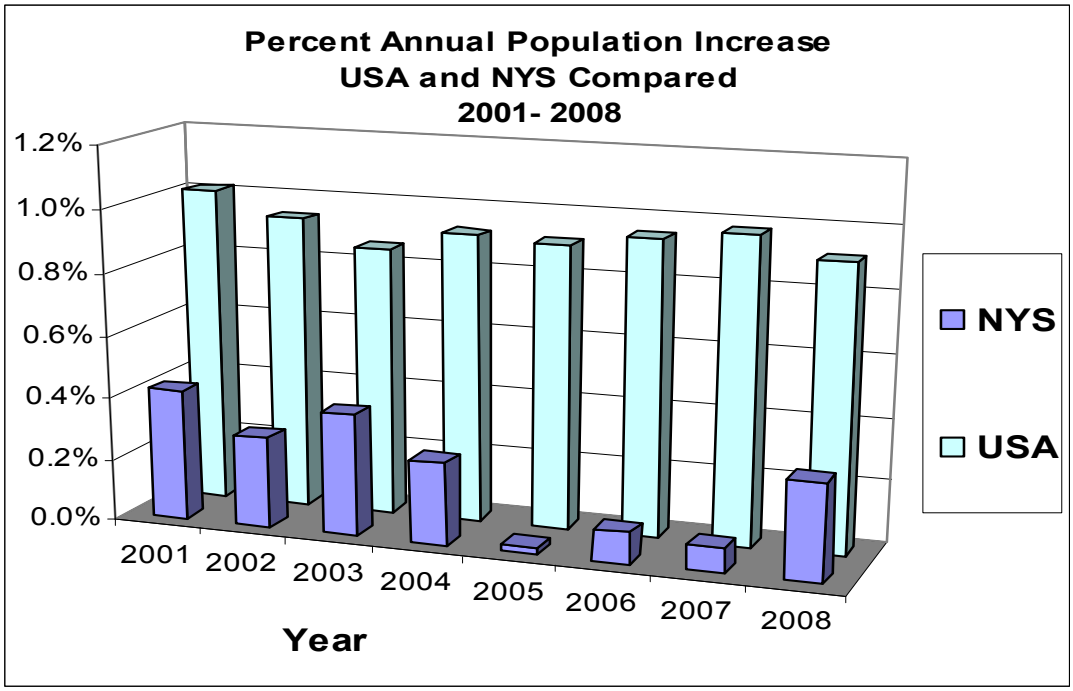


Chart A4.4

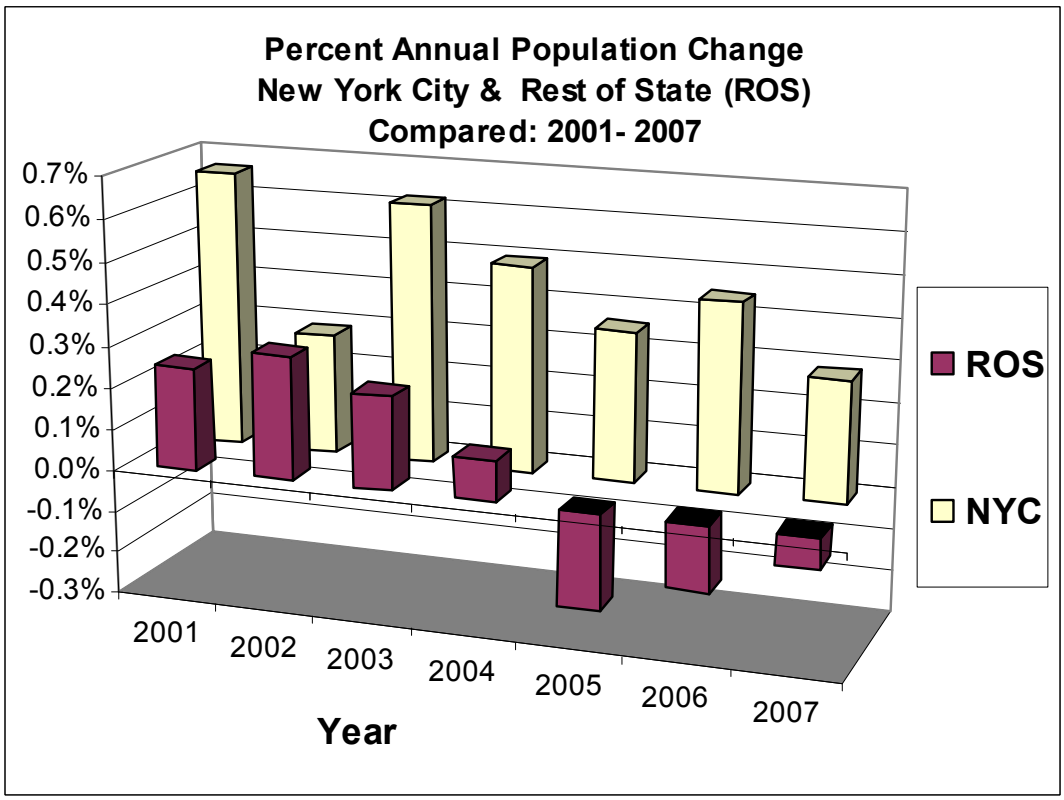


Chart A4.5

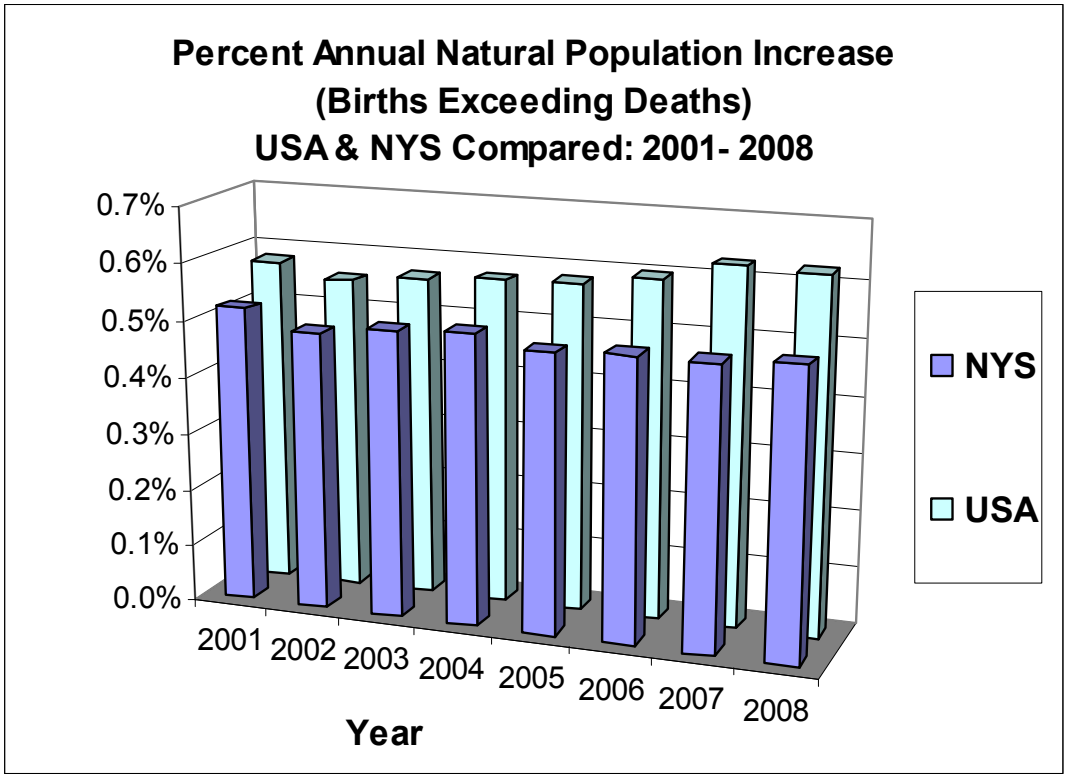


Chart A4.6

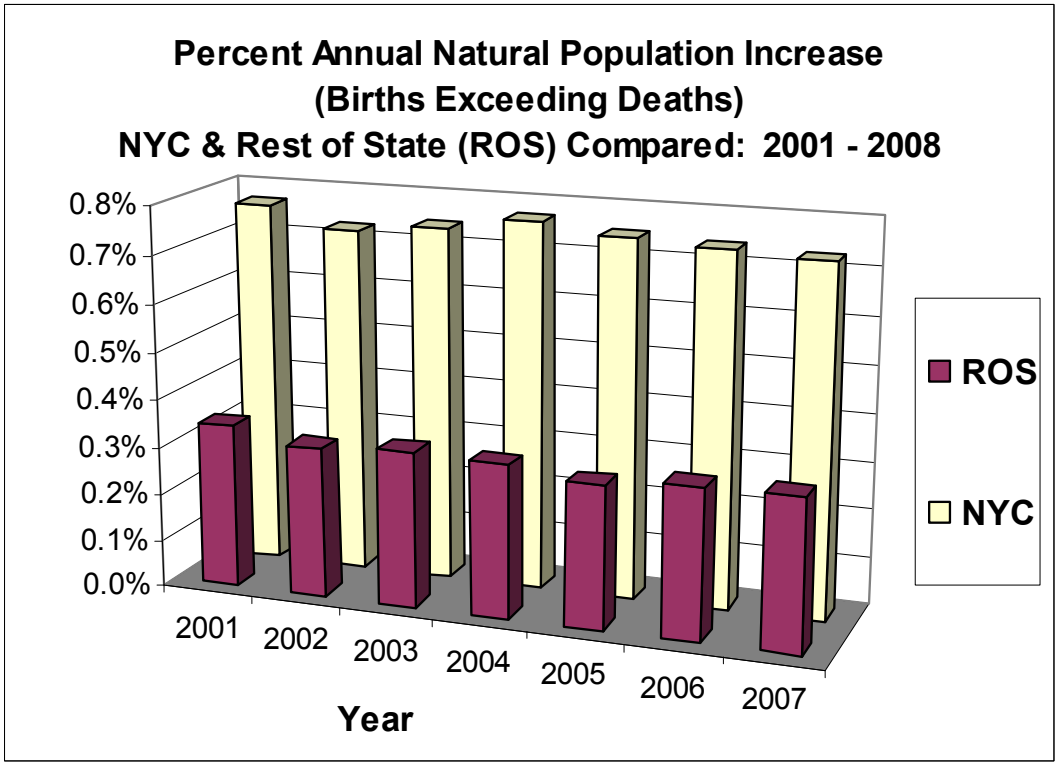


Chart A4.7

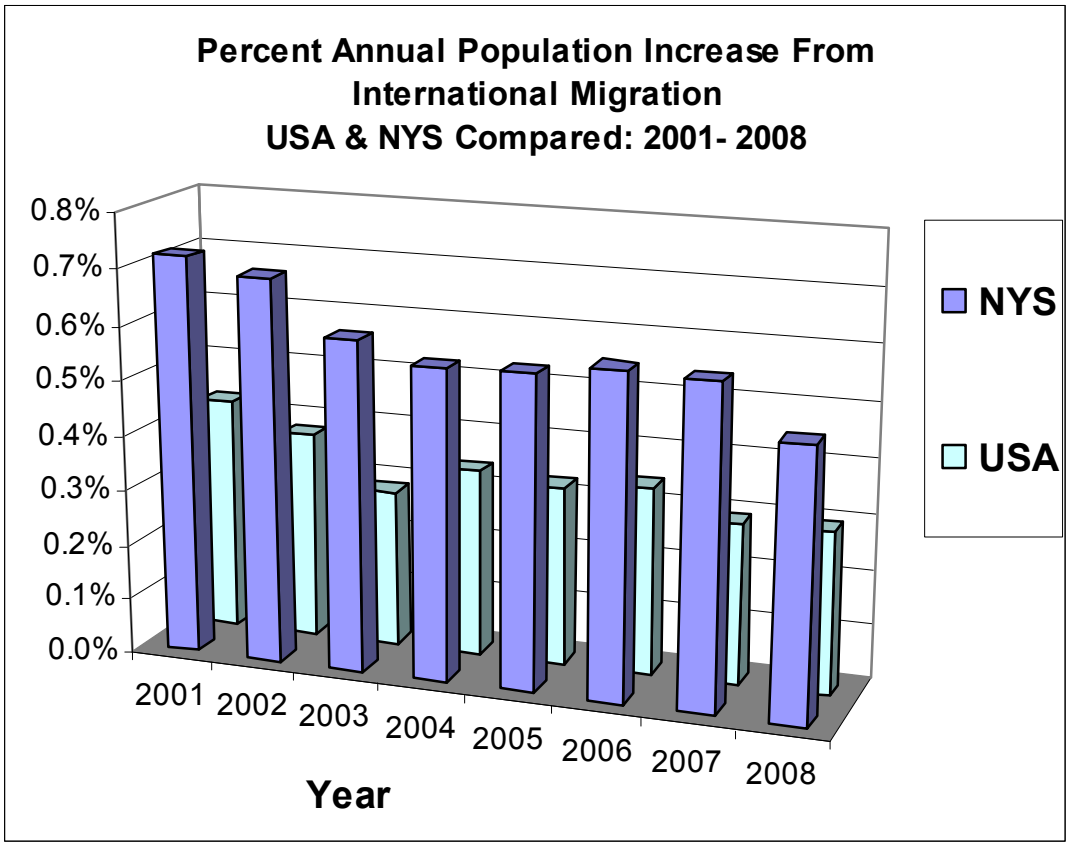


Chart A4.8

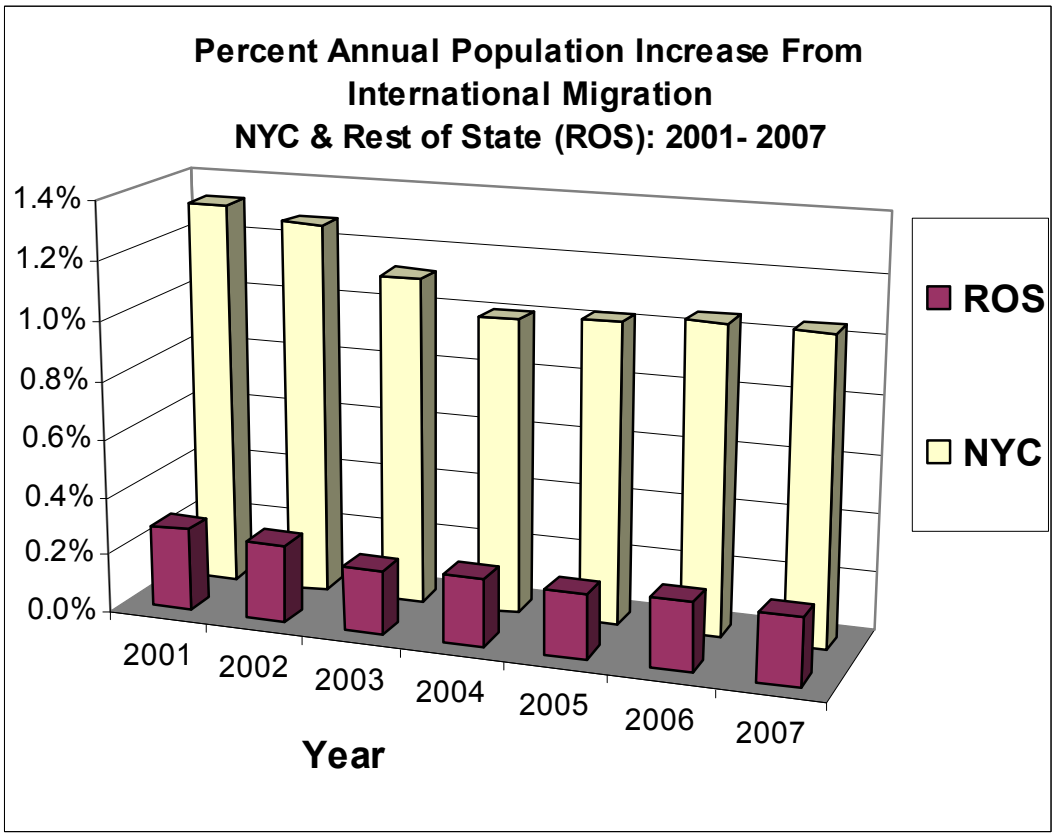
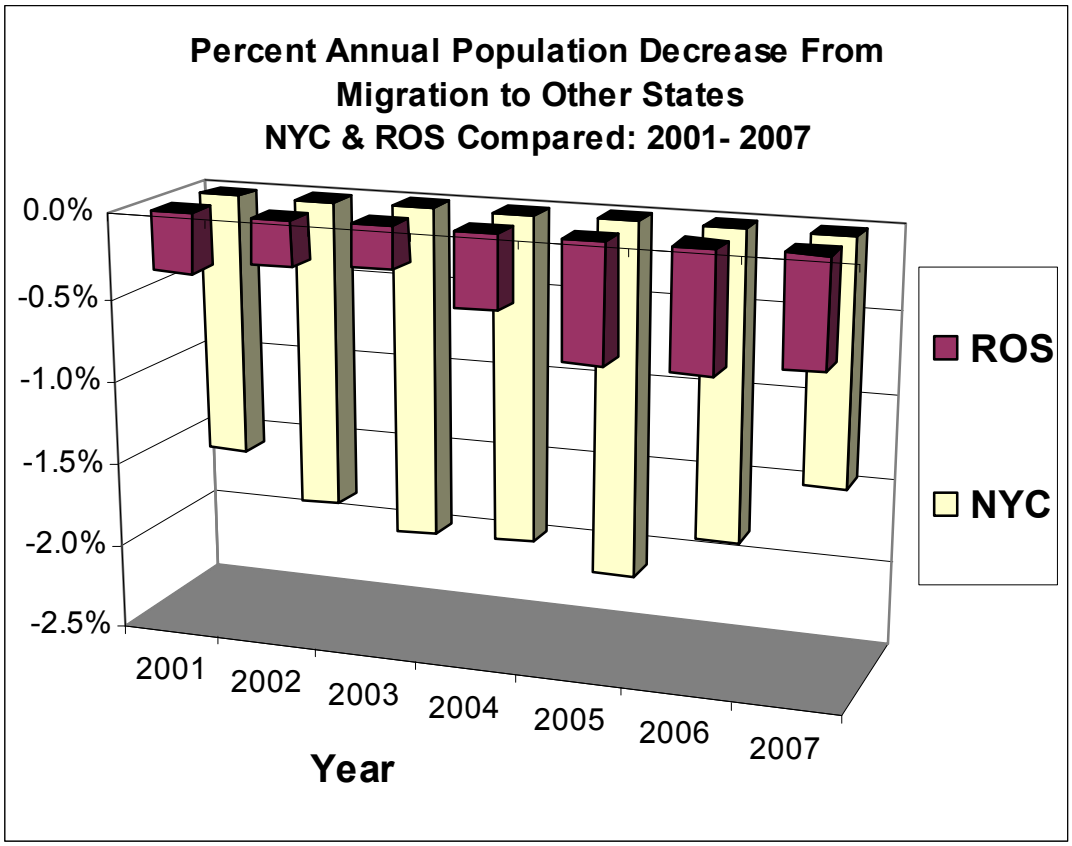


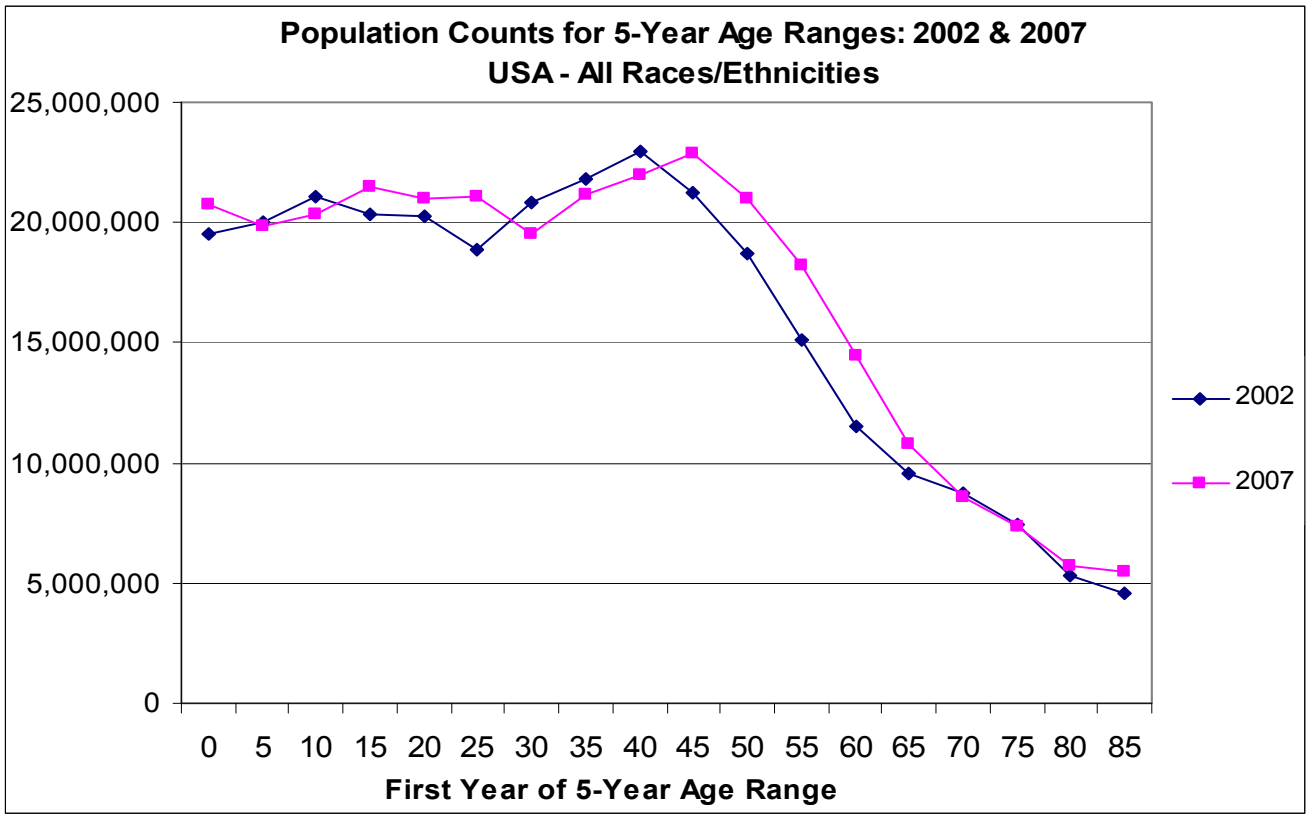
Chart A4.9

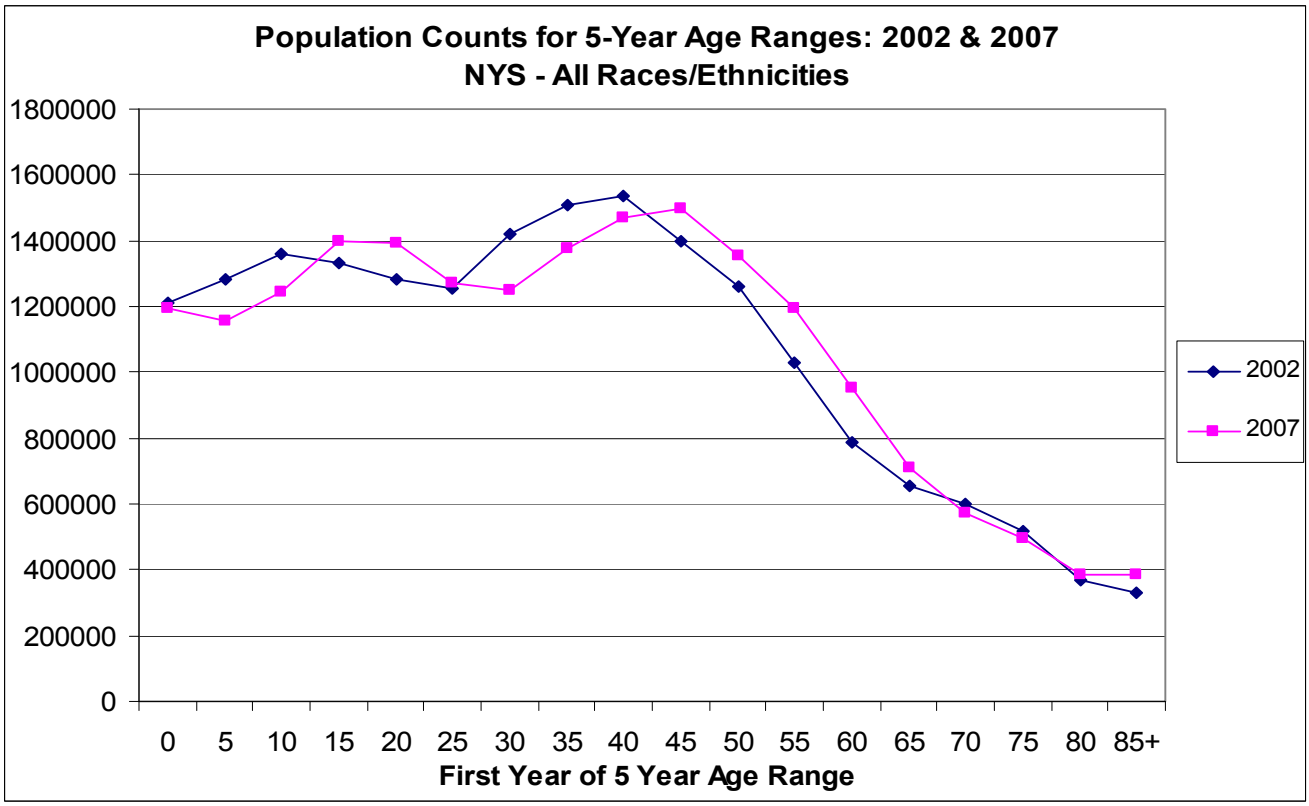


Charts A4.10 to A4.31, below, illustrate how the age distribution in the U.S., NYS, NYC, and the rest of NYS (ROS), has shifted between 2002 and 2007. The charts also provide this data broken down by race and gender. Each point in the graphs represents the population count for a five-year age span, starting with the age of the bar label. The age category "0" represents ages from birth to age 4, the age category "5" represents ages from 5 to 9, etc. The final bar, 85+, represents the count of the entire population aged 85 and over. Because the final point represents an indefinite span of ages, and many more years than a 5-year age group (probably more like a 20-year age group), the line graphs often slope upwards or level out at the end, but this change in slope at the end of the graphed line should not be interpreted as a population bulge among the elderly.

One line on each of the graphs represents the 2002 population counts for each age group, and one line represents the 2007 population counts for each group. Because the points on the lines represent total population for five-year age ranges, and because the two lines represent the same data separated by a five-year time interval, each point on the 2002 graphed line would be expected to progress directly to the right (by one age interval) to become the corresponding point on the 2007 graphed line, if no population change factors, such as migration and births and deaths, affected the population during the five year interval. An increased birth rate only affects the first point on the line, accounting for the 2007 zero points usually having a greater value than the 2002 zero points, and deaths mostly affect the points on the graphed lines for ages over 55. So from age 5 to age 50, any unexpected "movement" of a 2002 graphed point that is not exactly horizontal to become the corresponding 2007 graphed point representing the same population cohort group, can only be explained by net migration by the age group represented by the 2002 graphed point, during the five-year interval between 2002 and 2007, either into or out of the region (i.e., NYC, ROS or NYS).

Charts A4.10 (top) and A4.11 (bottom):

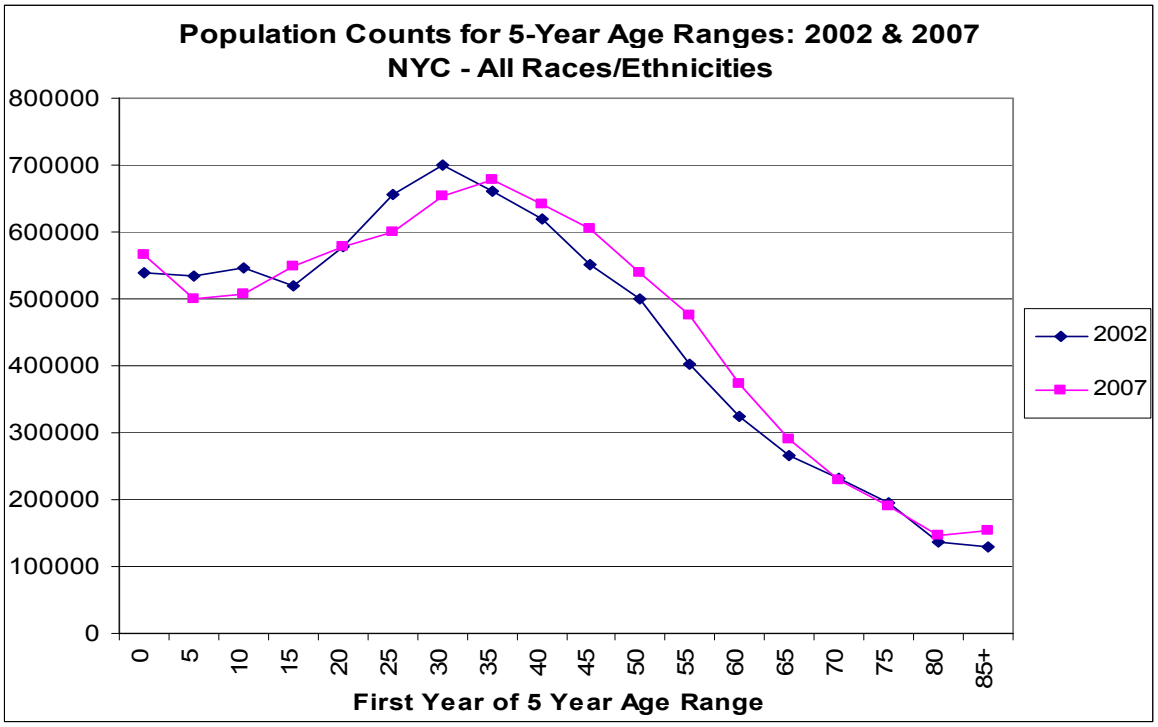


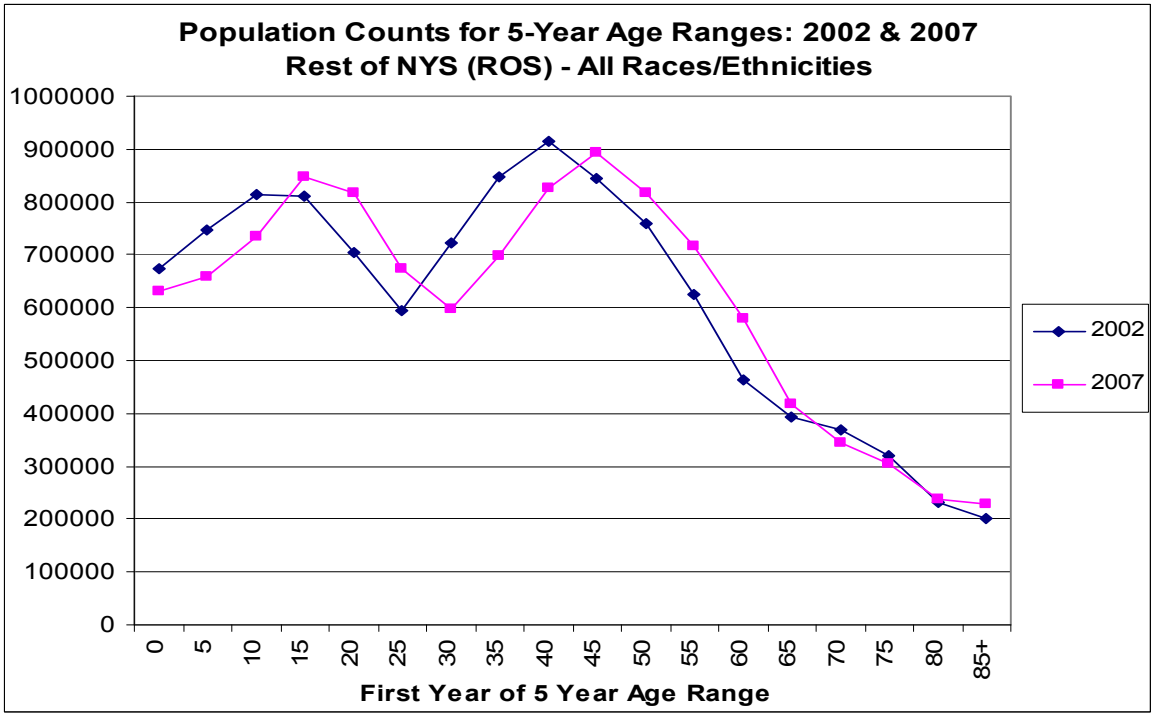


Careful analyses of the graphs below can provide fascinating insights into population movement of different racial groups, within different age groups, into and out of NYS, NYC and

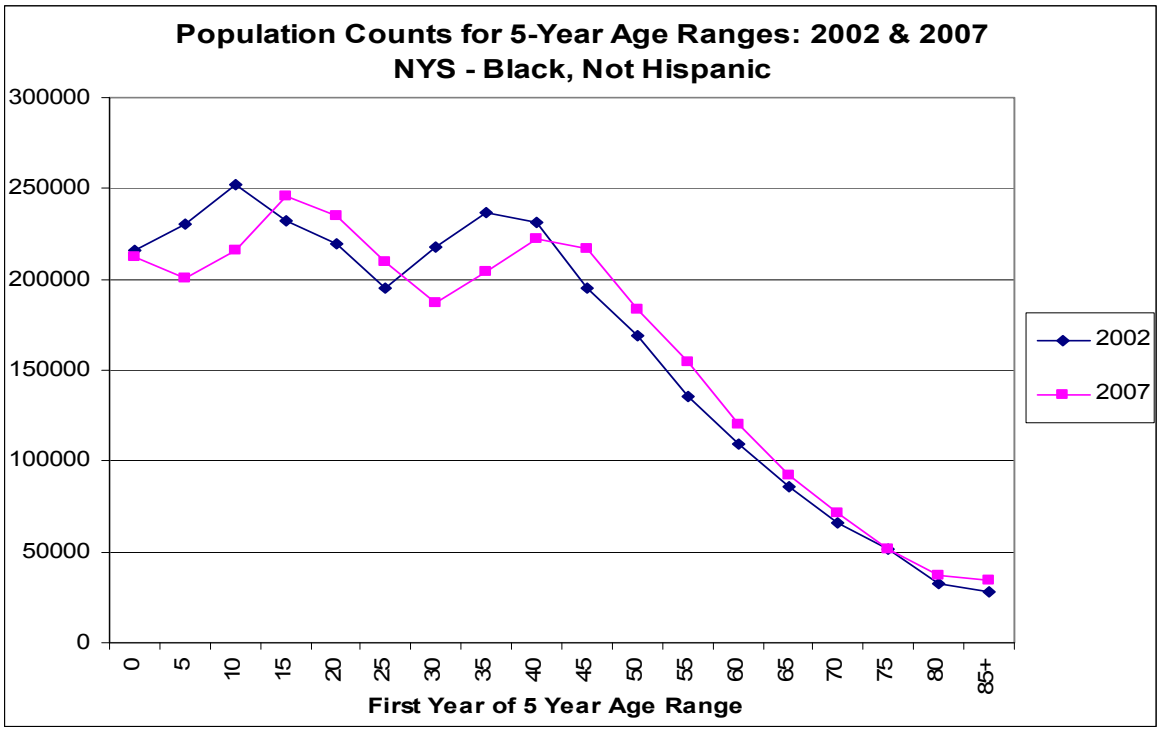
ROS. Analysis of Black, Non Hispanic, Hispanic, and Asian population groups at different age intervals migrating into and out of NYC and ROS is especially illuminating. Also note most of the age distribution graphs are bimodal, and the left-side smaller hump corresponds with the number of H.S. graduates peaking in 2008, and then declining.

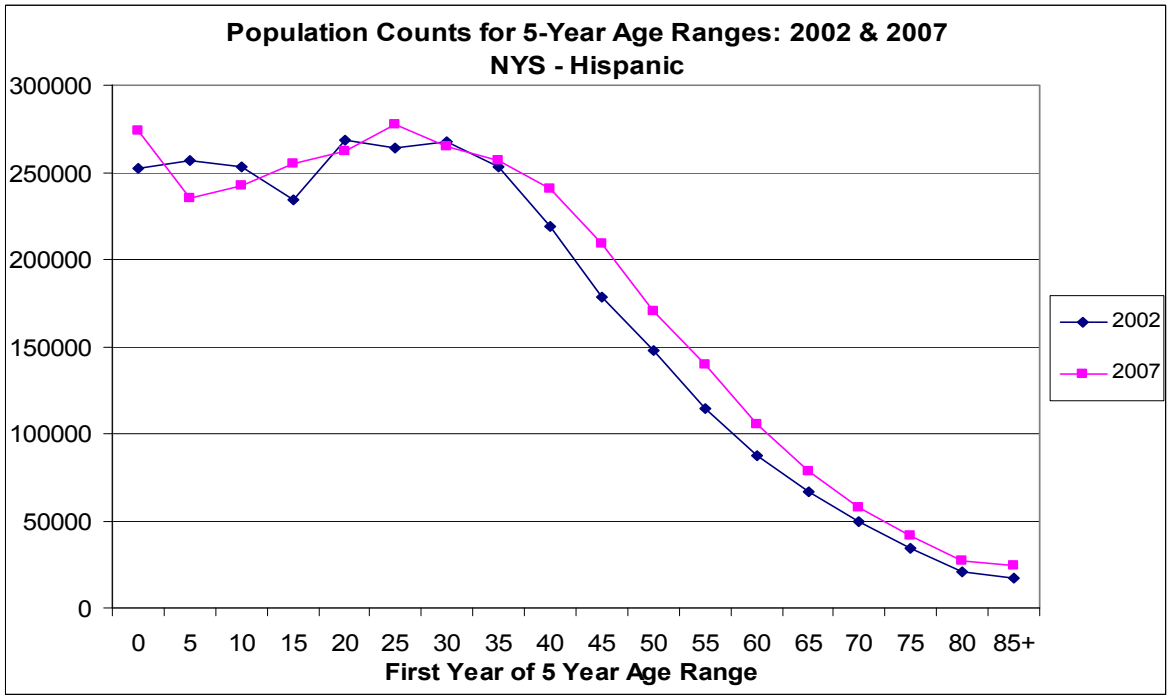
Charts A4.12 (top) and A4.13 (bottom):



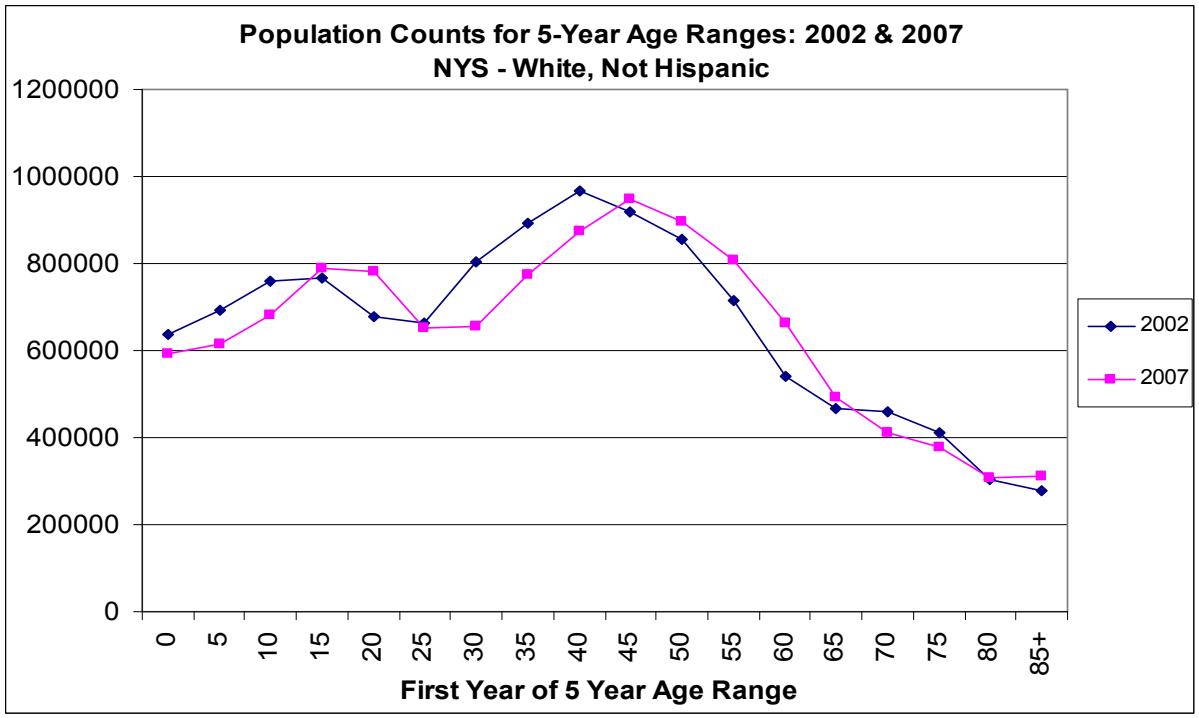


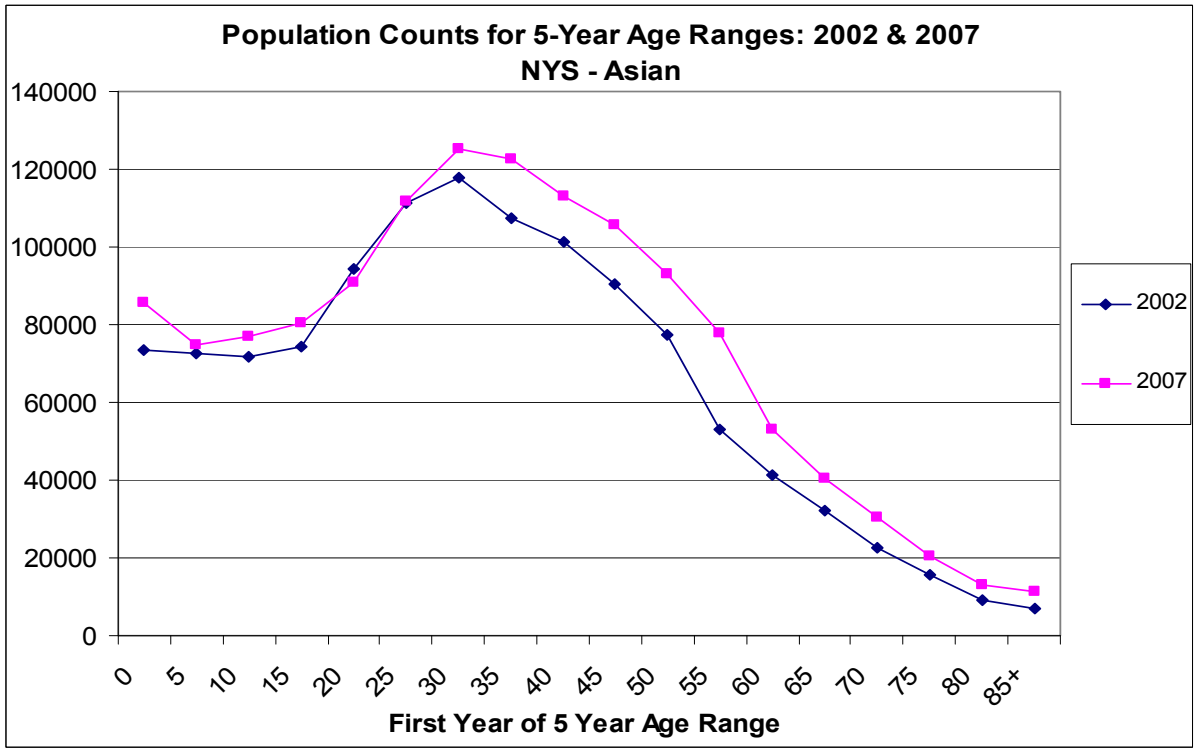
Charts A4.14 (top) and A4.15 (bottom):



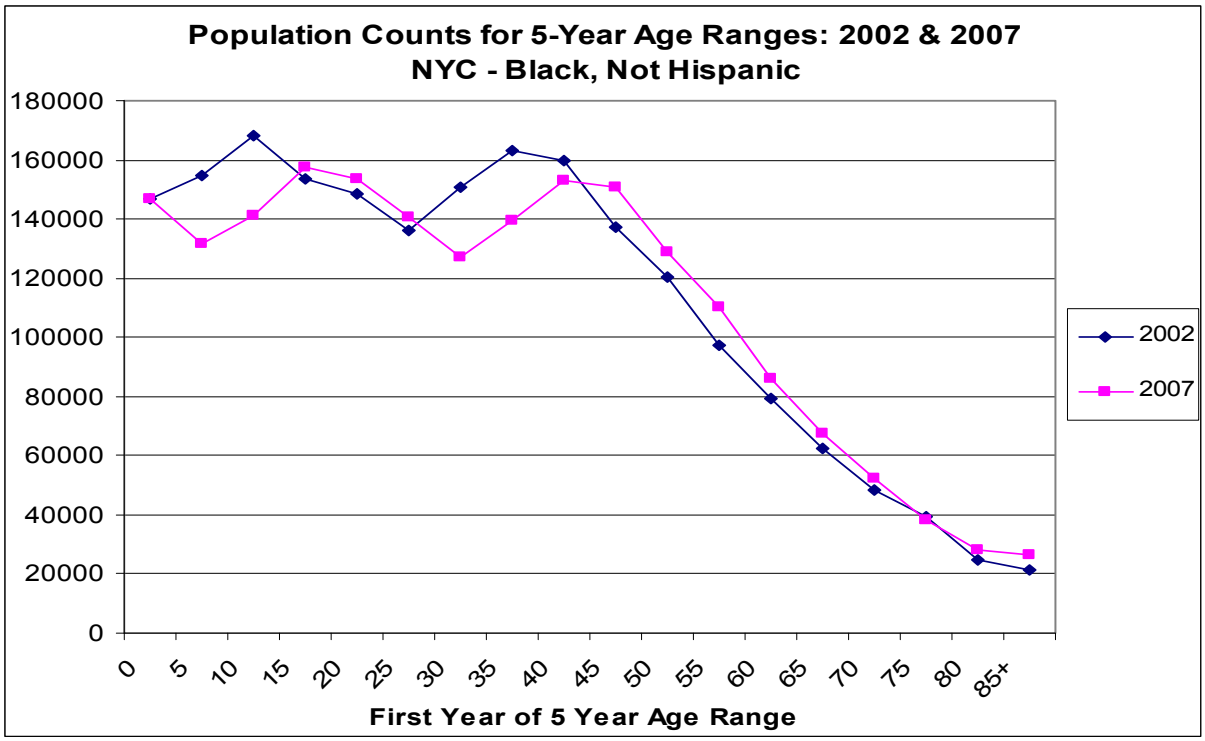


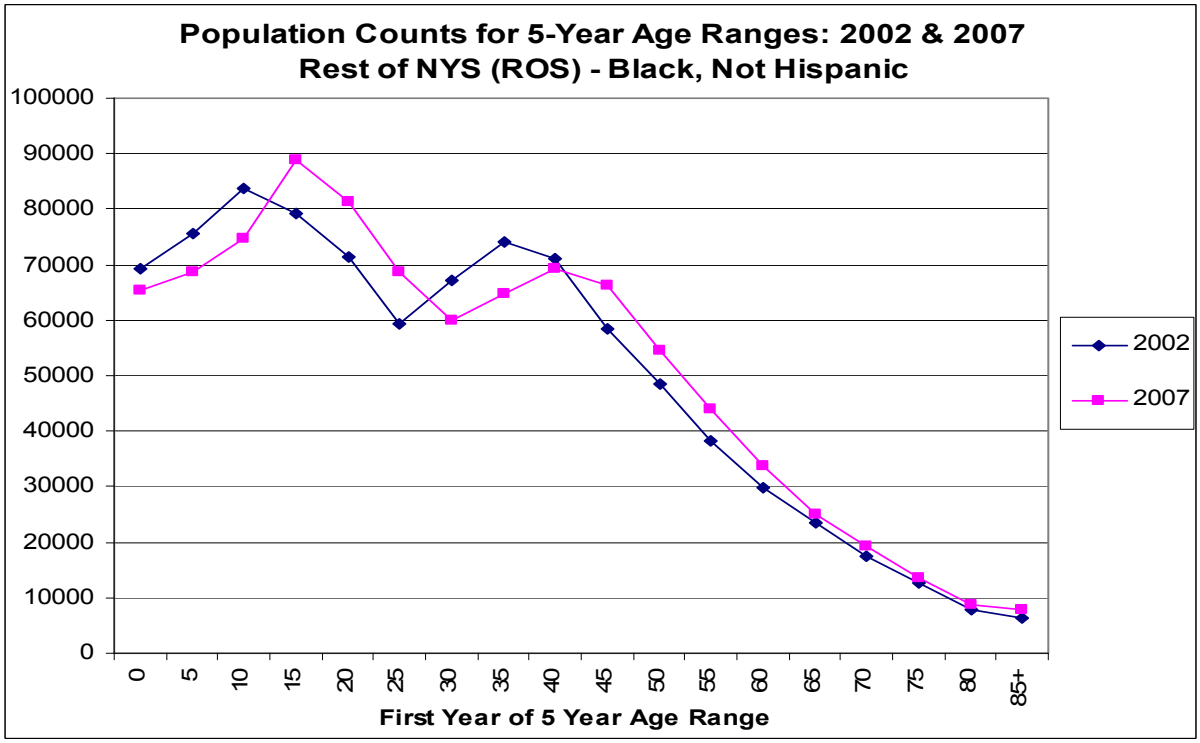
Charts A4.16 (top) and A4.17 (bottom):



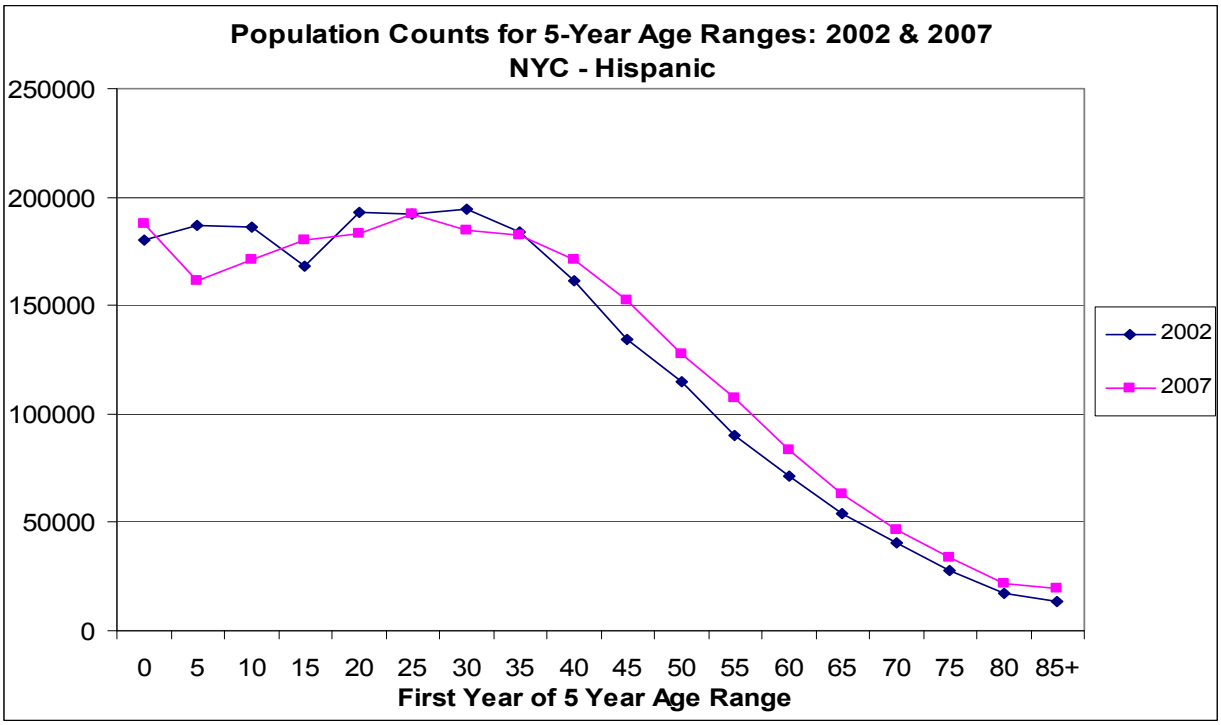


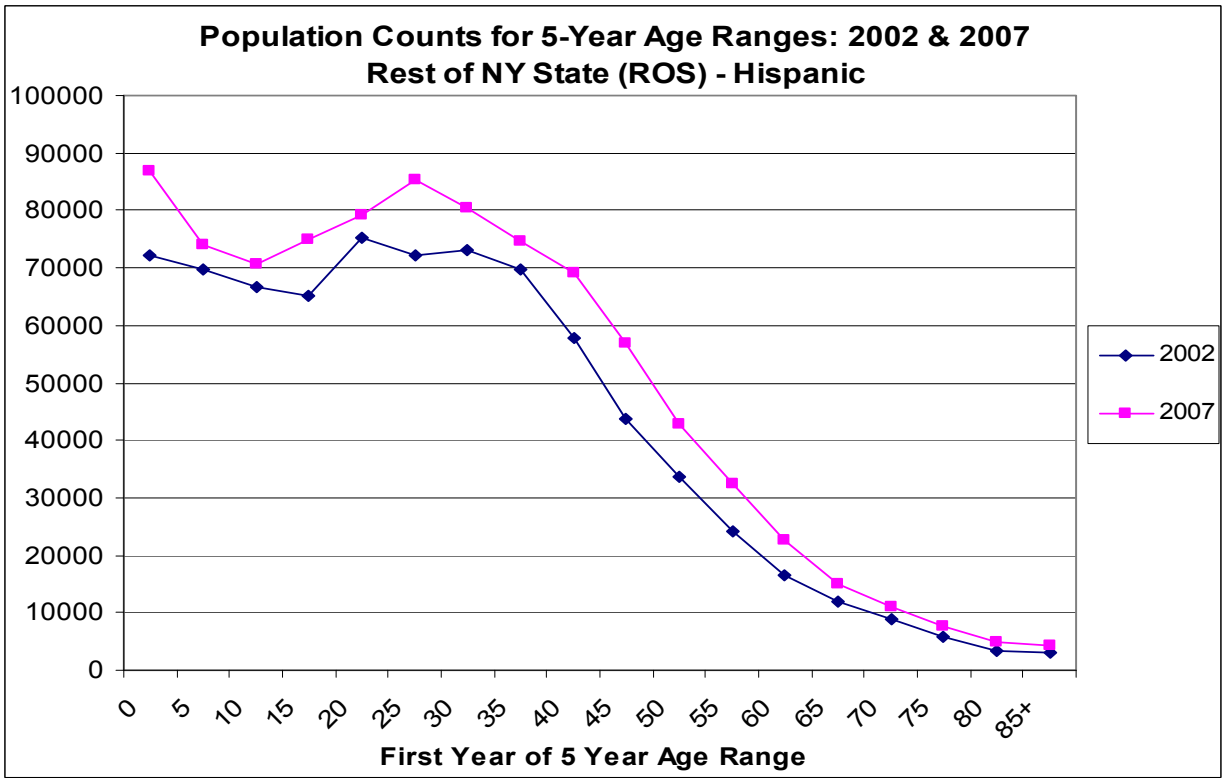
Charts A4.18 (top) and A4.19 (bottom):



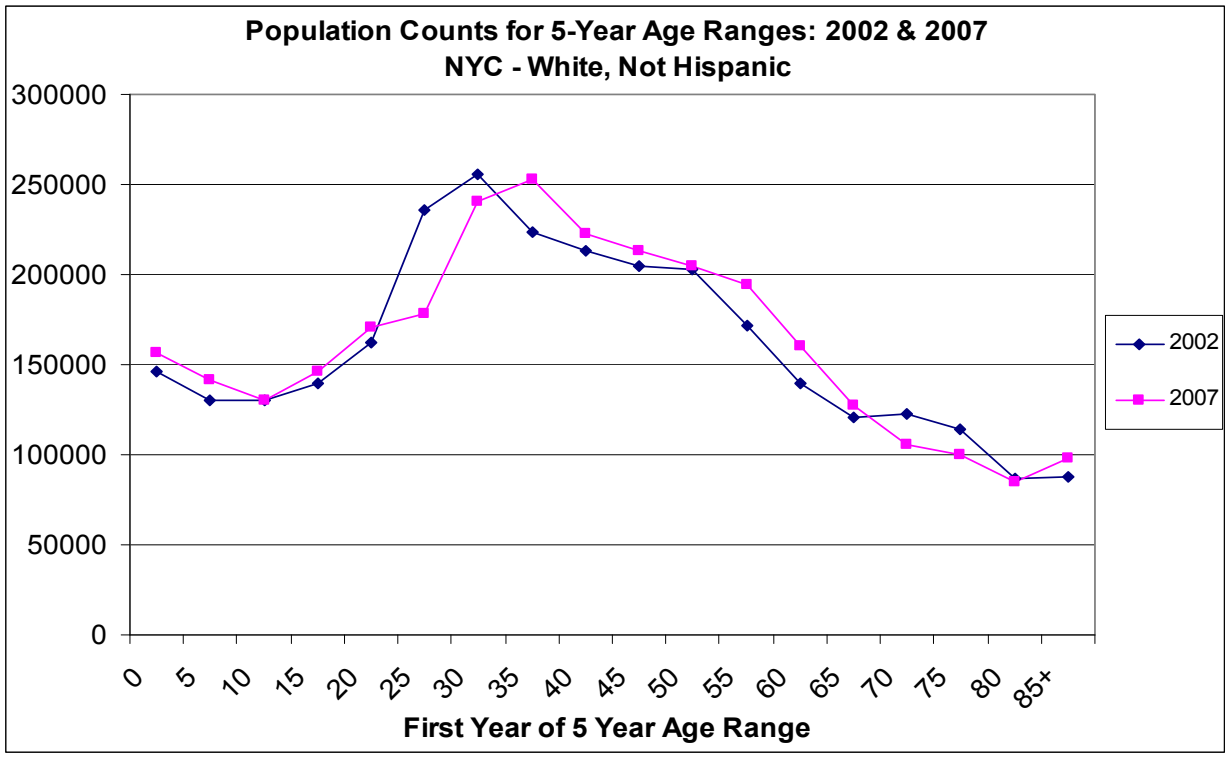


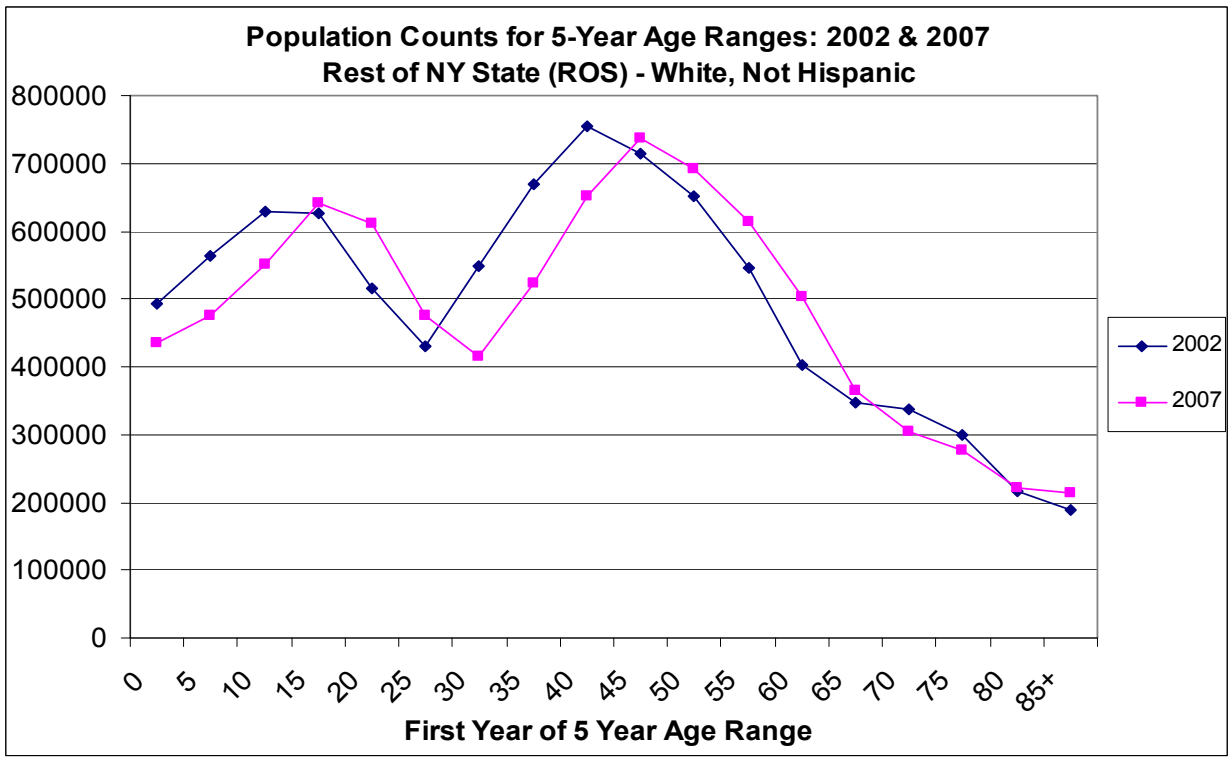
Charts A4.20 (top) and A4.21 (bottom):



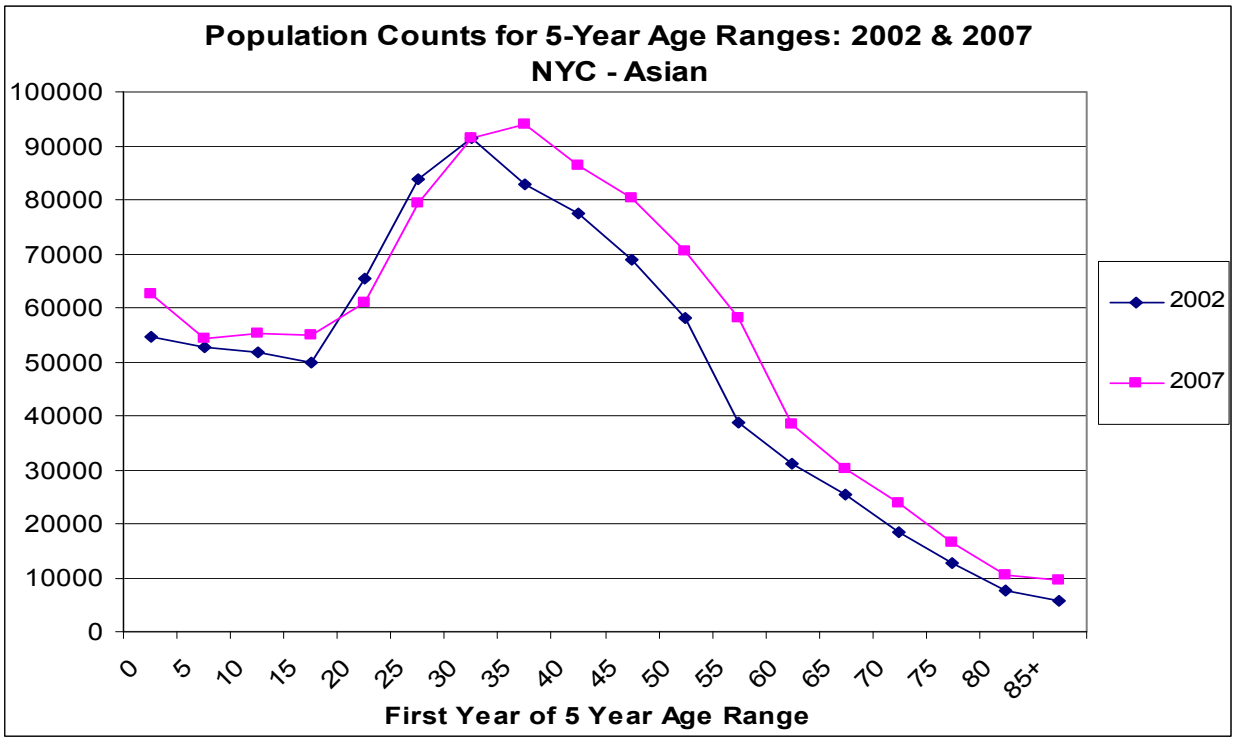


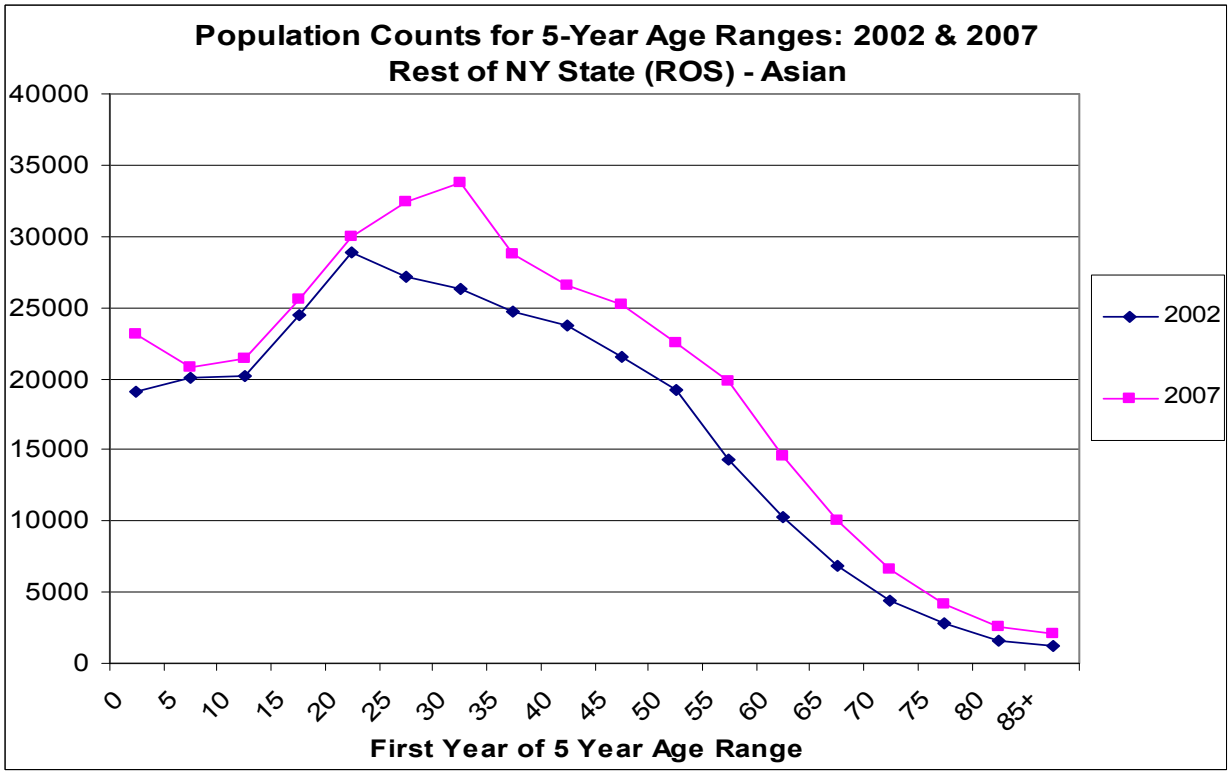
Charts A4.22 (top) and A4.23 (bottom):



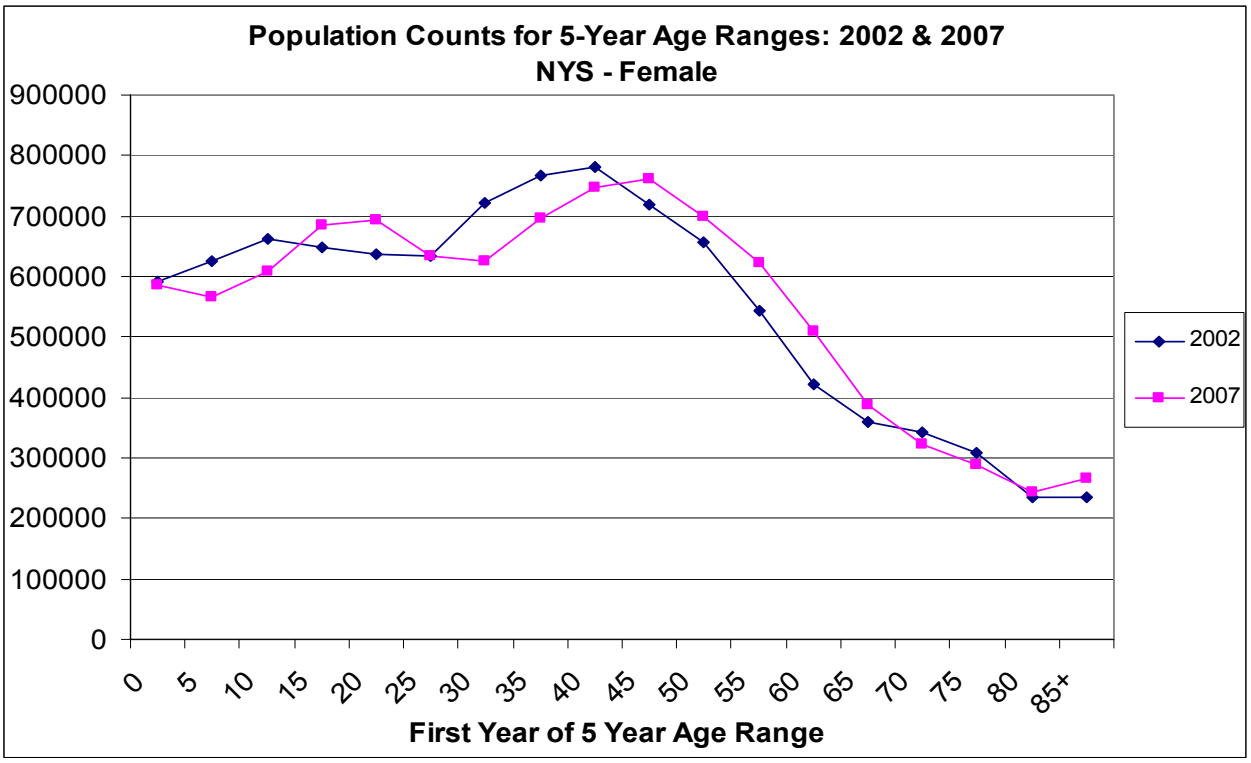


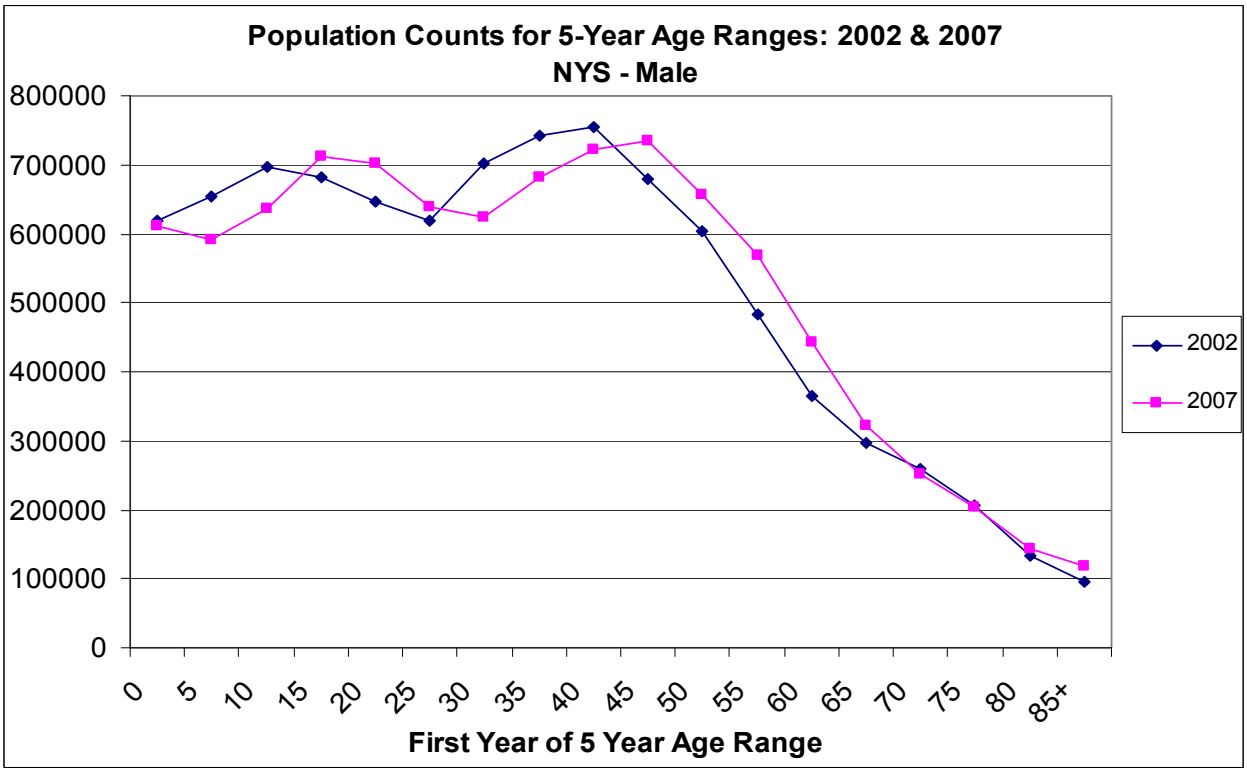
Charts A4.24 (top) and A4.25 (bottom):



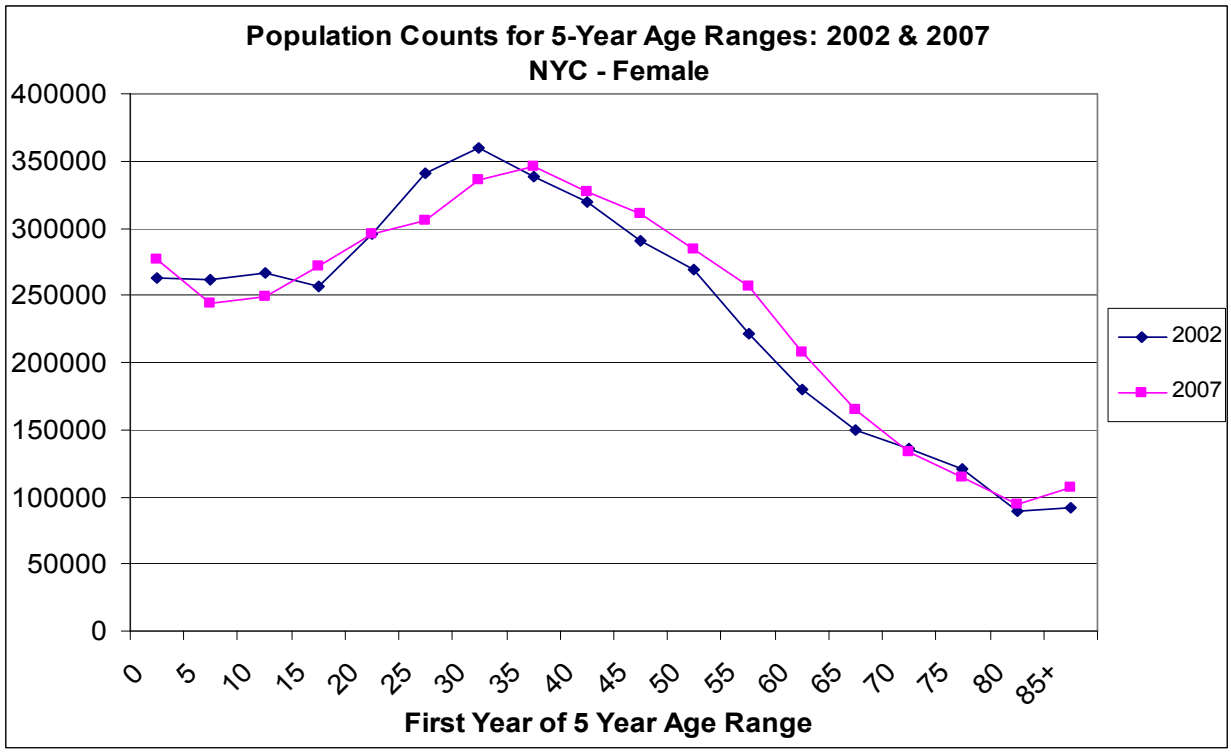


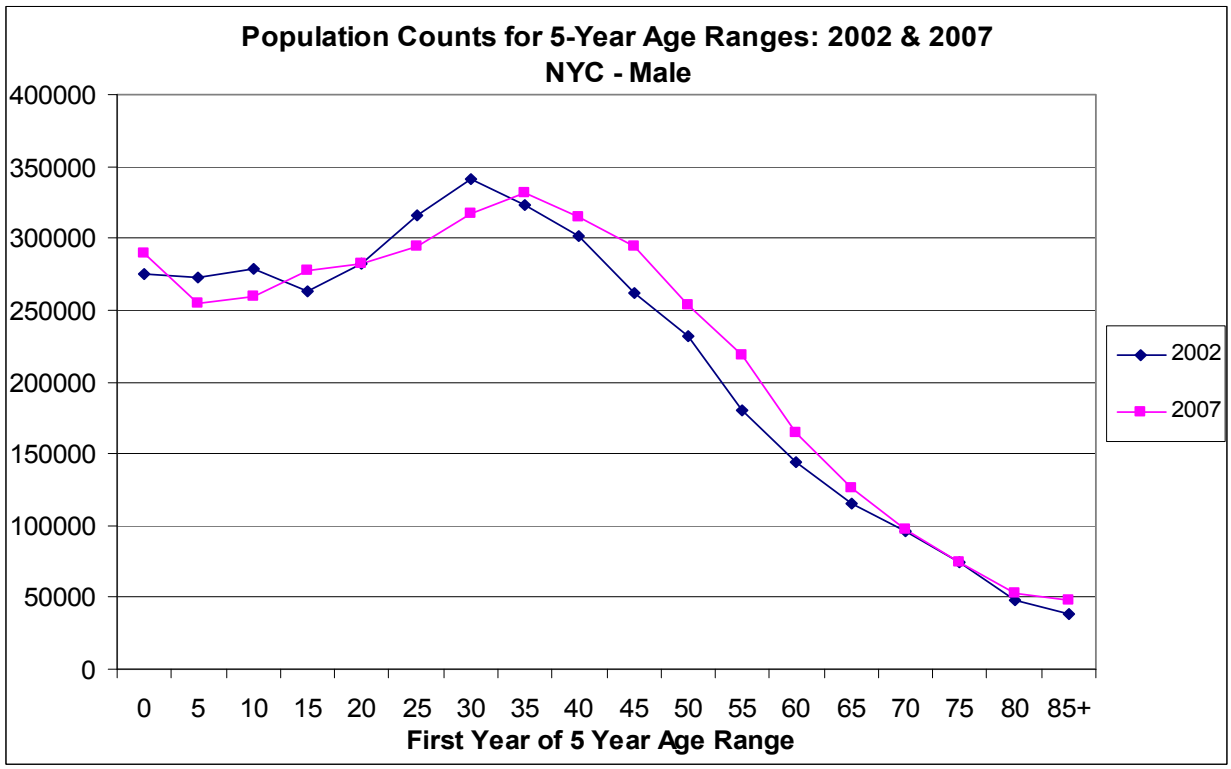
Charts A4.26 (top) and A4.27 (bottom):



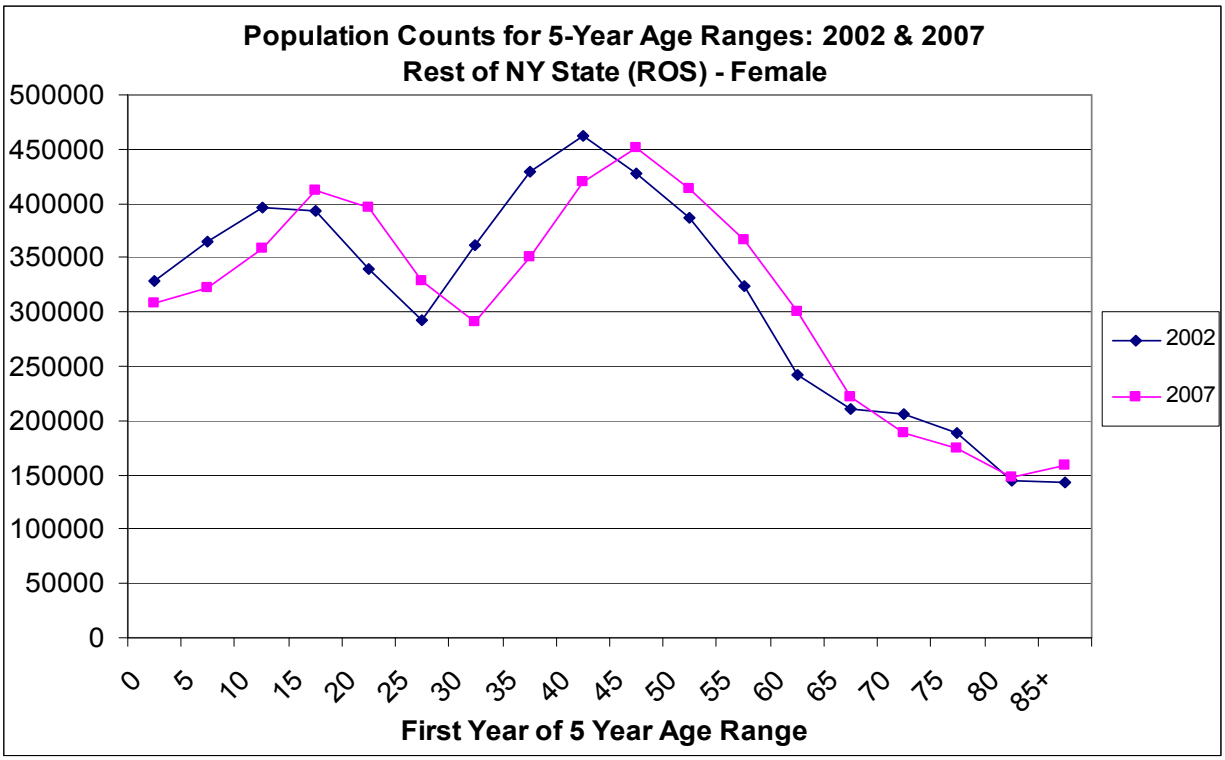


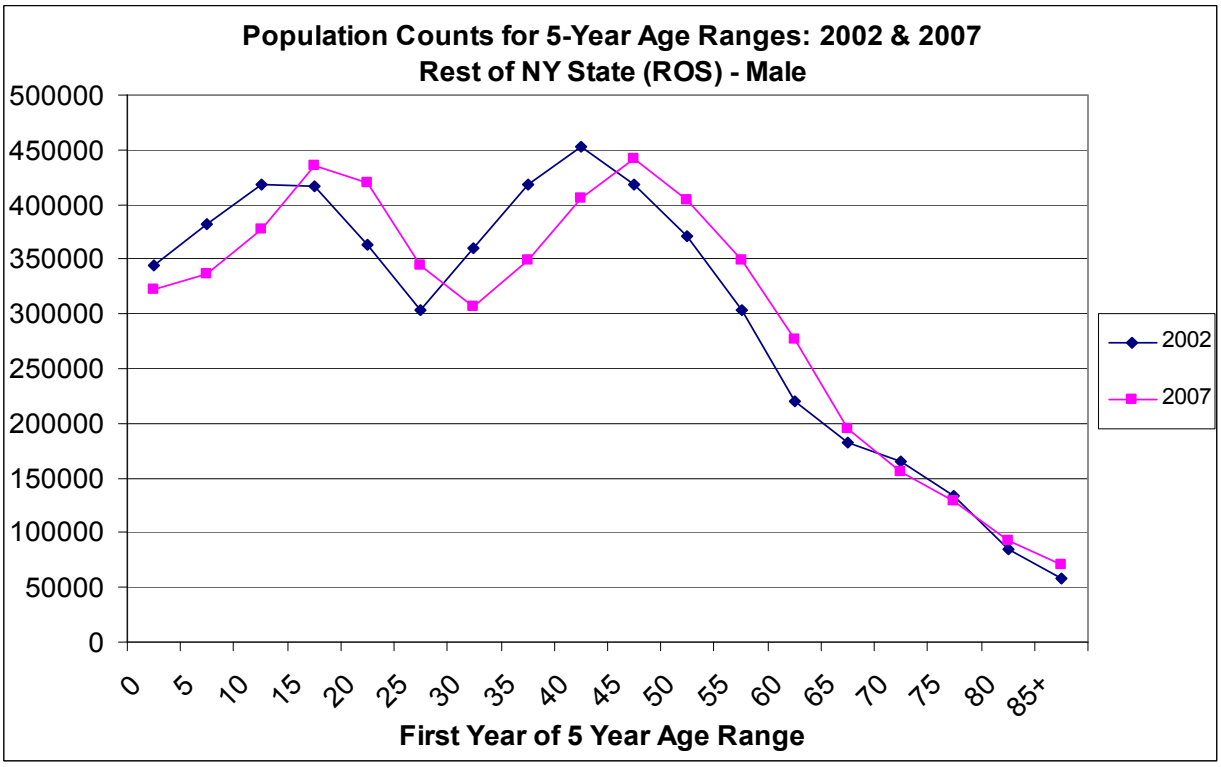
Charts A4.28 (top) and A4.29 (bottom):





Charts A4.30 (top) and A4.31 (bottom):





The above Charts showing age distribution in NYS, NYC and ROS by gender, show very slight differences, apart from the greater longevity of females than males. But the close similarity of the charts for males and females provides greater confidence that the disparities in the age distribution charts by race and region can be trusted as more than statistical "noise."

The next set of charts, Chart A4.32 through Chart A4.33, are derived from New York State Education Department enrollment data (1st grade through 12th grade student counts, including ungraded elementary and secondary counts) collected through BEDS forms by the Information and Reporting Services (IRS) Office each fall from both public and private schools.

The first Chart, Chart A4.32, shows how each racial/ethnic regional population group has either increased slightly in size between Fall 1995 and Fall 2007 or stayed about the same, except for three groups which have significantly decreased in size: ROS white students, NYC white Students, and NYC black students.

Chart A4.32

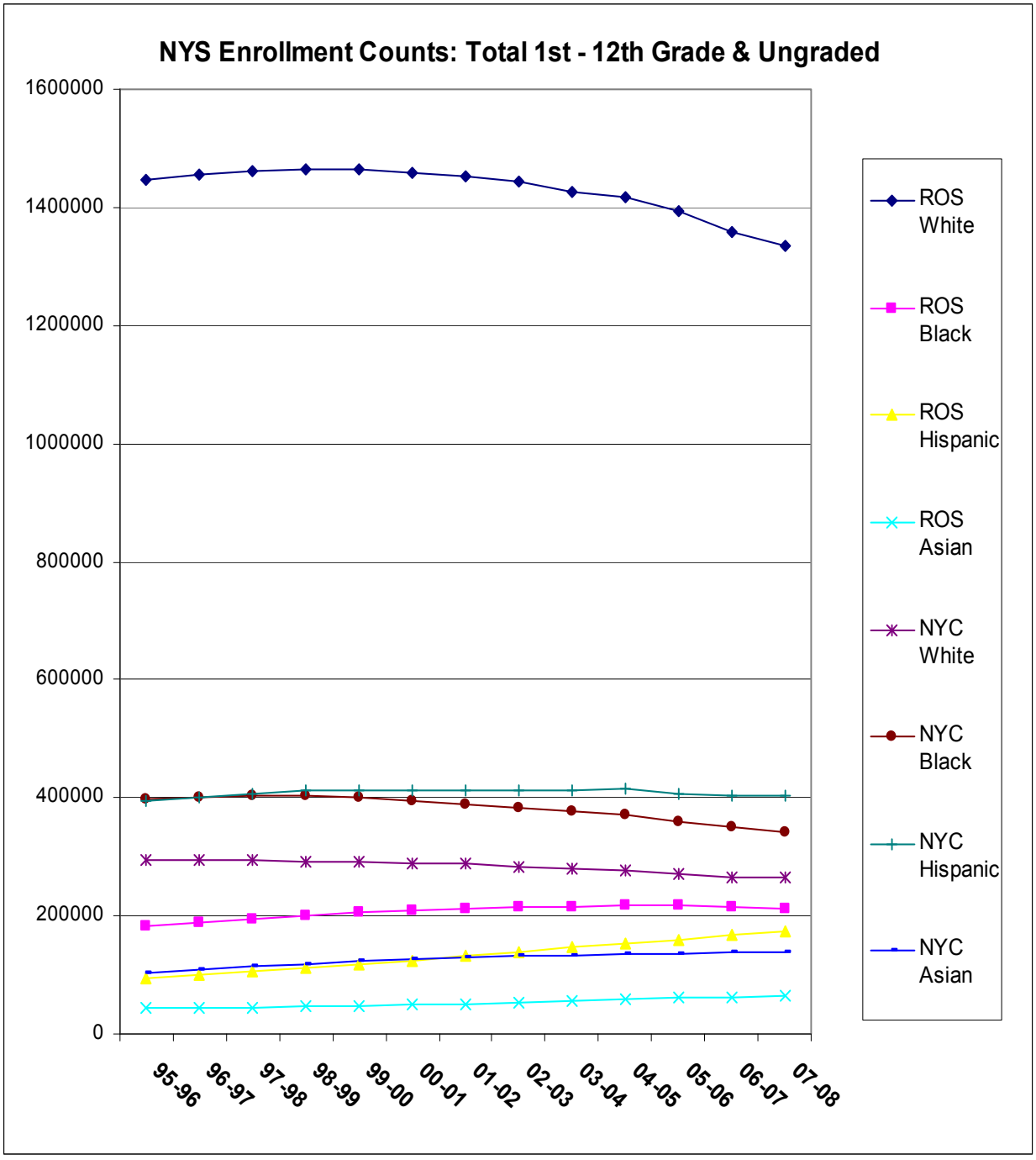
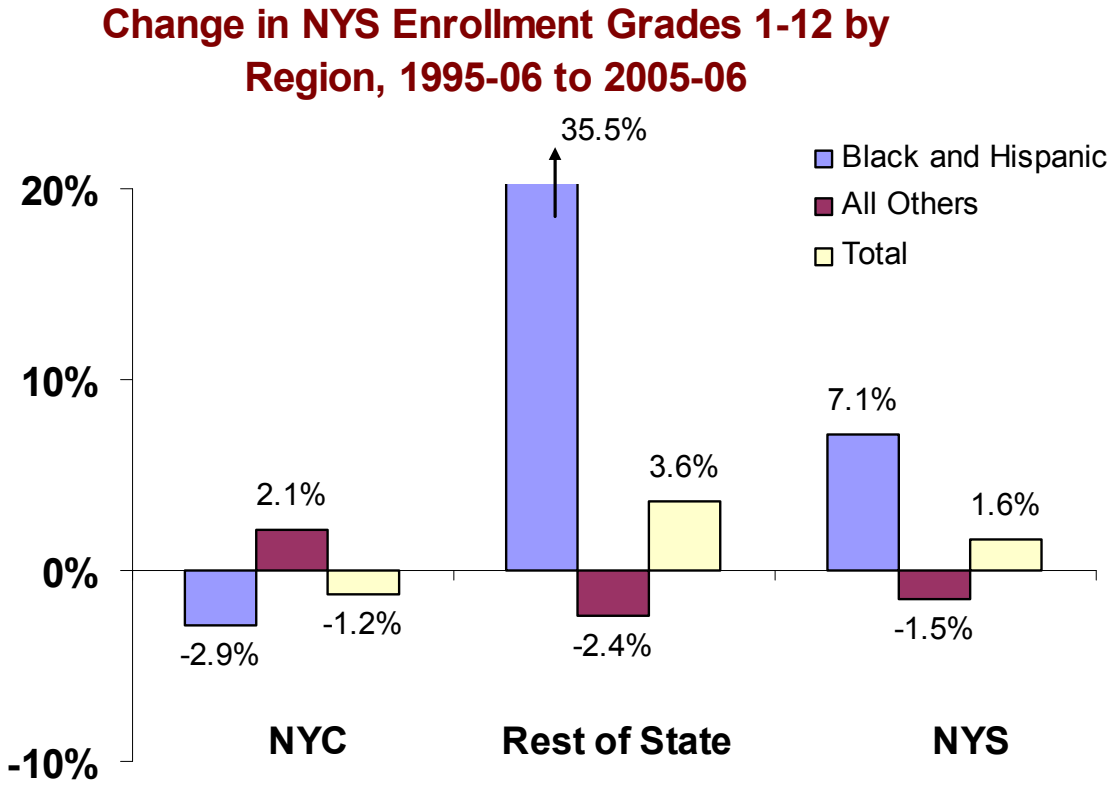


Chart A4.33, below, summarizes some of the percentage changes among racial/ethnic/regional NYS student groups shown in Chart A4.32, above, between Fall 1995 and Fall 2005. During that ten year interval, the greatest population changes were among the combined black and Hispanic population. This population grew in NYS outside of NYC (i.e., ROS) by 35.5%, but decreased in NYC by 2.9 %. Conversely, the white and Asian population shrank outside NYC by 2.4% and grew in NYC by 2.1%. (But note discussion above regarding differences in the white population compared to the Asian. Growth in NYC by Asian and white combined is the result of a rapidly increasing Asian population compensating for a slowly decreasing white population.)

Chart A4.33:



The next chart, Chart A4.34, shows, for the school years ending in 2005, 2006 and 2007, the disproportionate percentage of NYS High School Graduates that are female for every racial/ethnic group inside or outside of NYC, except for Asian high school graduates outside of NYC (i.e., ROS) among whom a slightly higher percentage are male than are female.

Then Chart A4.35 follows, showing how a higher proportion of female than male high school graduates in New York State translates into and is amplified as high school graduates pursue higher education. A higher proportion of female students enroll as undergraduates than male students, and an even higher yet proportion actually obtain higher education degrees, compared to males.

Chart A4.34:

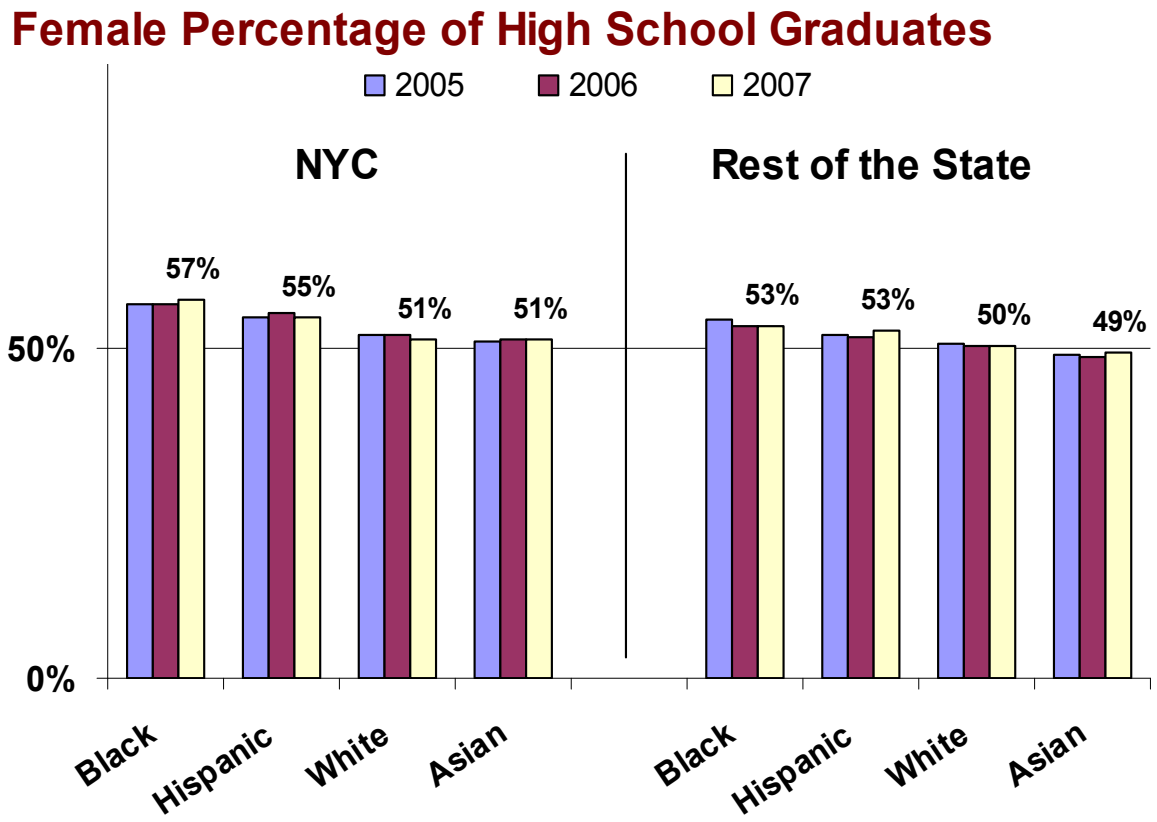


Chart A4.35: