

PLANNING FOR THE FUTURE



CAPACITY NEEDS IN A CHANGING HEALTH CARE SYSTEM

**Commission on Health Care Facilities
in the 21st Century**

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EXECUTIVE SUMMARY

The Commission on Health Care Facilities in the 21st Century is charged with conducting an independent review of health care capacity and resources in New York State. Established by Governor George Pataki and the New York State legislature, it will carefully examine the state's acute and long term care delivery systems. The Commission will make recommendations to reconfigure and right-size the supply of hospitals and nursing homes to meet regional needs.

The Commission's work is not occurring in a vacuum. In the past two decades, much has changed in healthcare, especially in the areas of financing, clinical care, information technology, and delivery mechanisms. Yet today, New York is struggling to maintain a 20th century institutional structure in the face of mounting costs, excess capacity, and unmet need for community based alternatives. The existing institutional infrastructure is neither affordable nor flexible. The fiscal instability facing New York's health care providers threatens the availability of important safety-net and public good functions.

Today's reality demands a realignment of resources and a reinvestment strategy. Because thoughtful redesign requires consideration of the factors that will affect *future* need for hospital and nursing home beds, this White Paper identifies three "megatrends" – demographics, clinical innovation and changes in healthcare organization that both have, and will continue to impact need for beds and services. While national megatrends play out somewhat differently across the country because of differences in state reimbursement and regulatory structures, their likely impact in New York indicates that:

- While trends vary somewhat by region, the overall population of New York State will experience only marginal growth over the next 30 years.
- The impact of an aging population will be felt gradually.
- Disability rates are slowly declining among older adults.
- Consumers increasingly express a strong preference for non-institutional alternatives to nursing home care.
- The Olmstead Decision and other imperatives require more community-integrated care.
- While progress has been made, the benefits of improving health status and increasing longevity have not been experienced equally by all sectors of the population. There are continuing disparities in access and outcomes by race, ethnicity and income.
- Emerging clinical advances have combined with other factors to facilitate migration of care out of the hospital and into less intensive settings. A significant share of services has already made this transition, and the trend is continuing.
- The nursing home of the future may primarily serve two distinct types of residents: those needing restorative short-term care and those needing longer-stay complex care.
- The institutional provider of the future is likely to be more integrated with other components of the delivery system, more "wired," and have more flexible facilities.

- The complexity of the delivery system increasingly requires “integrative” solutions to ensure quality and access.

However, taken together, the overall direction of these megatrends supports the need to restructure and right-size the delivery system. The dominant direction of change affirms the need for a health care system that is more flexible and less costly than one that is heavily based on physical infrastructure requiring massive capital investment. In the future:

- Health care delivery is likely to shift further out of large institutions and into ambulatory, community, and home-based settings.
- Hospitals and nursing homes are likely to serve increasingly acutely-ill patients while an evolving continuum of care will meet the needs of others.

Predicting the future is difficult. Future scenarios contain uncertainties and some trends can be inter-related or contradictory. The difficulties inherent in forecasting, and the possibility that unexpected needs will emerge, underscore the need for a system that is nimble enough to respond to shifting demands. A restructured system also must work to ensure that all New Yorkers have access to essential health services. As New York realigns its health care system for the 21st century, flexibility is required to deal with a changing healthcare landscape.

HEALTHCARE MEGATRENDS

Government policies, reimbursement trends, insurance changes, and the economy all affect the healthcare delivery system. For at least the past two decades, there has been widespread concern with rising healthcare costs and lack of universal access to insurance.

- Total and inflation-adjusted national health expenditures rose steadily between 1980 and 2003, as did per capita national health expenditures, and expenditures as a percentage of gross domestic product.¹
- The nationwide number of Medicaid enrollees nearly doubled between 1990 and 2003, increasing burdens for state and local governments.²
- The annual percent change in cost of health insurance premiums has risen yearly since 1998 and has been in the double digits since 2001.³
- More than 45 million Americans lacked health insurance coverage in 2004, 6 million more than in 2000.⁴

As a result, cost containment has been a major focus for federal, state and private payers. Strategies have included efforts to reduce use rates, particularly of high intensity, high cost services, channel patients to lower cost “preferred” providers, and reduce reimbursement.

In addition to these underlying financial factors, three “megatrends” that began in previous decades will continue to affect healthcare use rates in the foreseeable future:

- Changes in Demographics
- Advances in Clinical Technology
- Changes in Health Care Organization and Delivery.

CHANGES IN DEMOGRAPHICS

Population size and composition are important starting points in projecting use rates and demand for health care capacity. Recent history and projected trends indicate that New York State’s population is growing modestly and unevenly. Specifically, New York City is growing due to a surge of immigration while other regions demonstrate stable or declining populations.

Population and Immigration Trends 1990 – 2000 - In the 1990s, New York State’s total population grew from 17,990,455 to 18,976,457, an increase of 5.5%. In contrast, the total population of the United States grew by more than twice that rate, increasing 13.2% over the same period.⁵ New York experienced the smallest rate of growth among the five most populous states in the nation. (Figure 1)

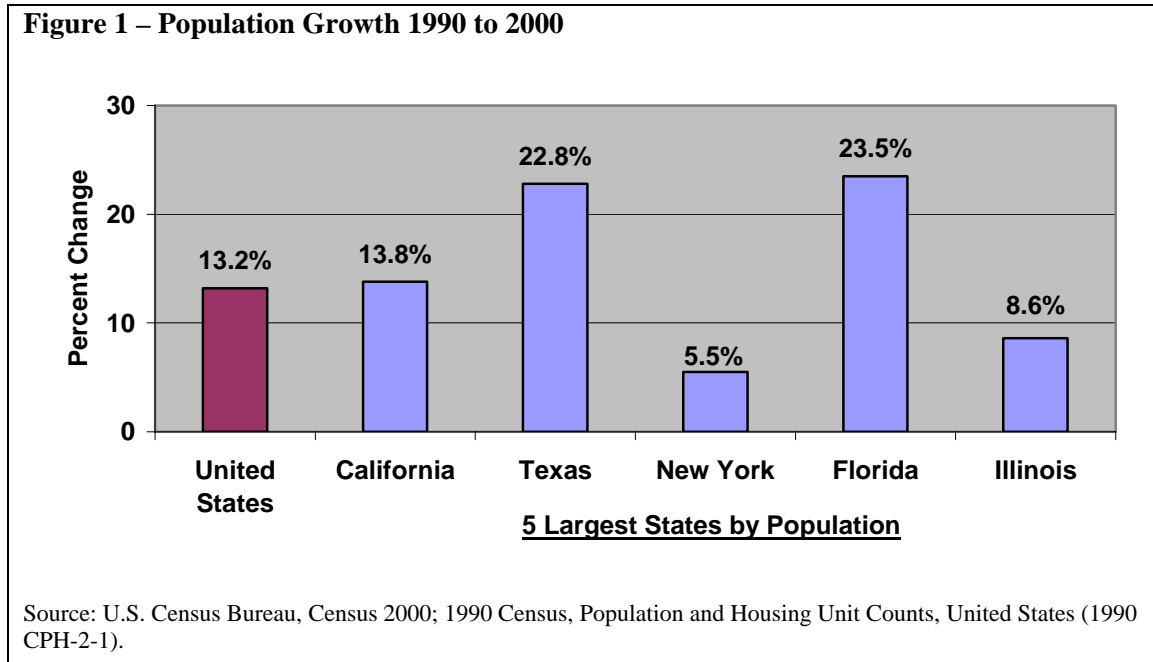
¹ Centers for Medicare & Medicaid Services, Office of the Actuary.

² Centers for Medicare & Medicaid Services; 2002 data, CBO March 2003 Baseline; 2003 data, CBO March 2004 Baseline.

³ Centers for Medicare & Medicaid Services; 2002 data, CBO March 2003 Baseline; 2003 data, CBO March 2004 Baseline.

⁴ Kaiser Family Foundation, State Health Facts, www.kff.org

⁵ Demographic Projections to 2025, New York State Office for the Aging.



During the 1990s, some NY regions grew while others declined. Fully 69.5% of the state's growth occurred in New York City whose population increased 9.4%. There was also greater than average growth in the Hudson Valley. Populations declined in the southern tier counties of Chautauqua, Cattaraugus, Allegany, Steuben, Chemung, Tioga and Broome. Upstate counties and cities including Clinton (Plattsburg), Erie (Buffalo), Onondaga (Syracuse), Rensselaer (Troy), and Schenectady counties all showed declines.⁶ (Figures 2&3, Appendix Table 1)

The growth that occurred in the New York City metropolitan region is largely attributable to new immigrants who transformed what would have been a statewide population decline of more than a half million into an increase of nearly one million. According to the New York City Department of City Planning, New York City's 2000 foreign-born population of 2.87 million was an all-time high, and represented 36% of the city's population of 8 million. Overall, immigrants and their U.S. born offspring account for approximately 55% of the city's population.⁷ This growth is important because immigrants' health care needs affect the health care delivery system in several (sometimes contradictory) ways:

- Compared to the native-born population, immigrants tend to be disproportionately between the ages of 18 and 64. They include a large proportion of women of childbearing age. Foreign-born mothers now account for over one-half of all births in New York City.⁸
- Refugees and immigrants frequently come from developing countries where infectious diseases (tuberculosis, hepatitis, malaria, and various parasitic diseases) are prevalent, leading to concerns about local impact.⁹

⁶ "New Yorkers at the Millennium, Population Trends in New York State," The Public Policy Institute of New York State, Inc., March 2003.

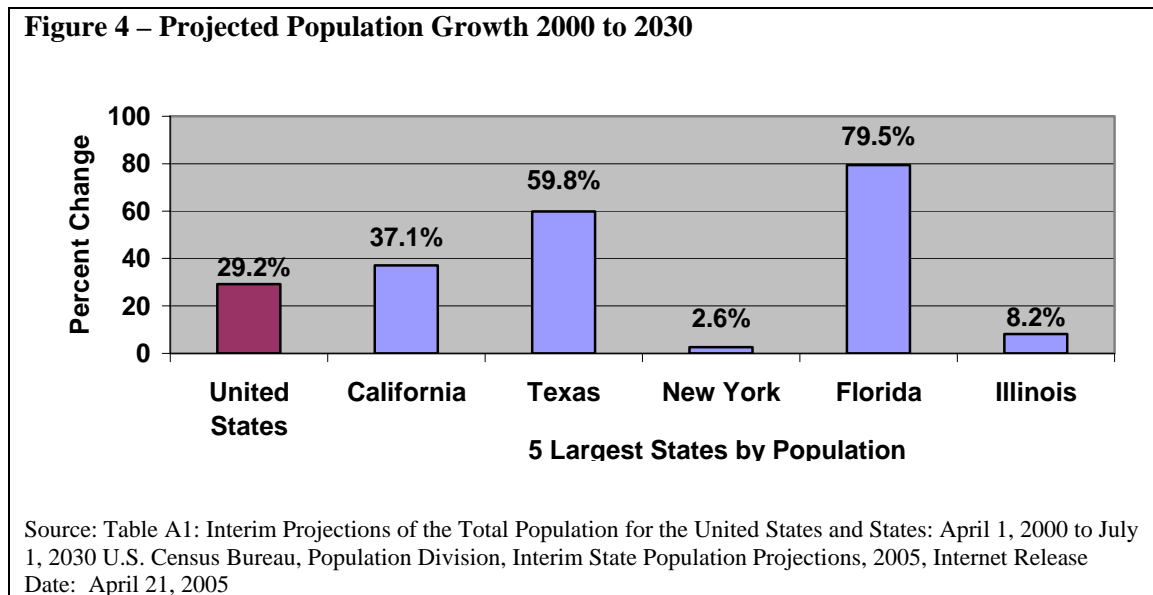
⁷ "The Newest New Yorkers 2000," New York City Department of City Planning Population Division, p35.

⁸ Ibid, p 31.

⁹ Cookson, Susan, et al, "Immigrant and Refugee Health," Emerging Infectious Diseases, Volume 4, Number 3, 1998, Center for Disease Control, p 1.

- However, there is a well-documented and countervailing “healthy immigrant phenomenon.” Not only do immigrants tend to be young, but studies have found more favorable self-reported health status for first generation immigrants than for native-born Americans, particularly in the early years after immigration.¹⁰
- Immigrants are more than twice as likely to be uninsured than U.S. citizens. While legal immigrants may gain access to health insurance over time, undocumented immigrants, who are estimated to be about 16% of all foreign-born in New York State, may be barred from government insurance programs. Without access to a regular source of primary care, New York City’s uninsured population constitutes a substantial and uncompensated burden on hospital emergency rooms and acute care resources.¹¹

Projected Population and Immigration Trends - How will *future* population and immigration trends impact need for healthcare capacity? The state’s population is projected to grow marginally from 18.9 million in 2000 to 19.4 million in 2030; a growth of only 2.6% over 30 years.¹² New York’s projected growth rate is the 46th lowest among the 50 states and the District of Columbia. Because of this, the state’s population is expected to drop from 3rd largest in the country in 1995 to 4th largest by 2015. (Figure 4)



Though the state’s total population will remain essentially stable, there will be continued streams of in and out migration. If past migration patterns continue, New York will lose 5 million people through out-migration to other states by 2025, the largest such loss in the nation. But this loss will be offset by a gain of an expected 3.9 million immigrants, the 2nd largest such gain in the country.¹³ Despite speculation that immigration would slow after September 11, the overall level

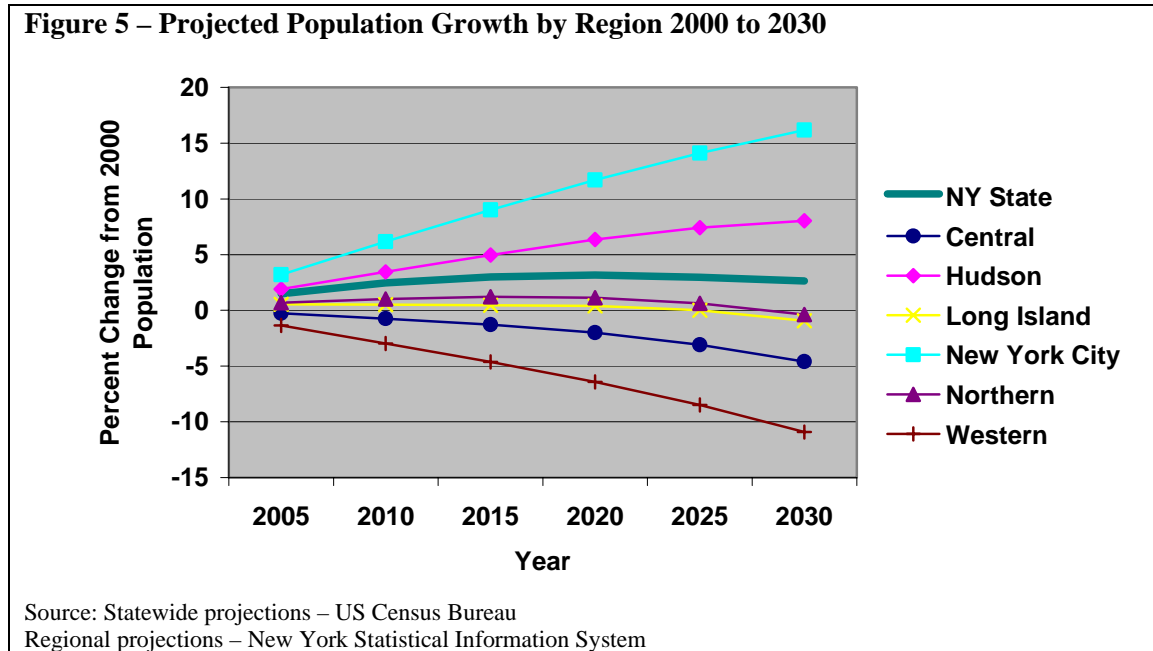
¹⁰ Avis, Thomas, J., et al, “Latino Risk-adjusted Mortality in the Men Screened for the Multiple Risk Factor Intervention Trial,” *American Journal of Epidemiology*, Vol. 162, No. 6, p 573.

¹¹ “Health Insurance Coverage of the Foreign Born in the United States: Numbers and Trends,” in *Immigration Facts*, Migration Policy Institute, No. 8, June 2004, pp 1-2.

¹² Table A1: Interim Projections of the Total Population for the United States and States: April 1, 2000 to July 1, 2030 U.S. Census Bureau, Population Division, Interim State Population Projections, 2005, Release Date: April 21, 2005

¹³ *Demographic Projections to 2025*, New York State Office for the Aging, May 1999, Summary, p. i.

of immigration has remained steady.¹⁴ Because family members already present in the United States attract additional family members to immigrate, there is expected to be a high degree of stability in the future. As in the past, regional population patterns will vary across the state. It is expected that populations in New York City and the Hudson Valley regions will grow, the Long Island and Northern regions will be stable, and the Central and Western regions will lose population.¹⁵ (Figure 5, Appendix Table 2)



Aging of the Population - Trends in total population suggest that statewide need for inpatient capacity will remain flat for the foreseeable future, with some differences at the regional level. Composition of the population by age cohort will also affect future demand to some degree. Historically, older adults, particularly the frail elderly, have had higher use rates for hospital and long term care. Trends indicate, however, that patterns of use are changing due to a healthier older population with strong preferences for home and community-based alternatives to institutional care.

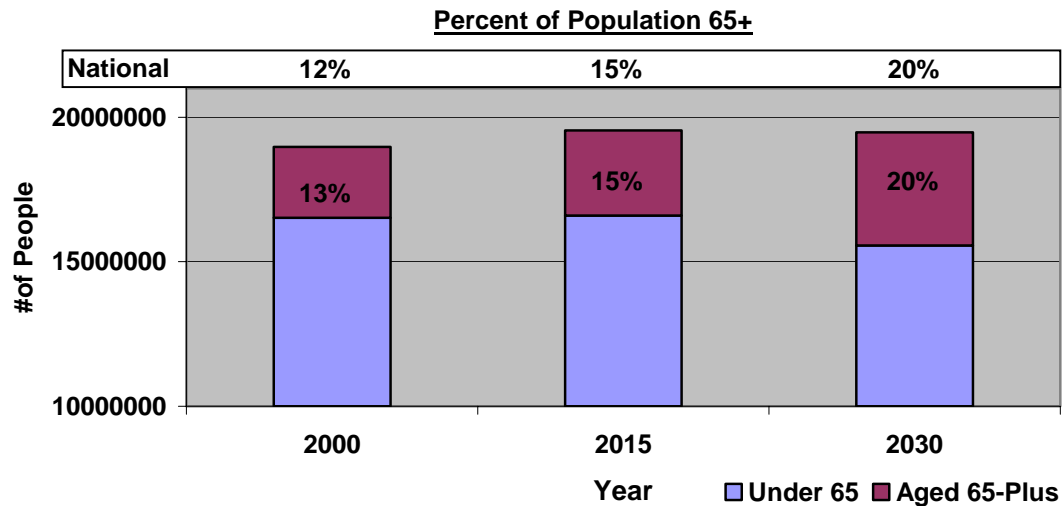
The expected changes in New York State’s population by age cohort will roughly mirror national trends. The aging of the “baby boom” generation and increases in life expectancy will lead to a higher proportion of elderly in the population than today.¹⁶ Adults ages 65 and older comprise 13 percent of New York’s population; this will slowly rise to 20 percent by 2030. (Figure 6)

¹⁴ “Coming to America Two Years After September 11, 2001,” Migration Policy Institute, www.migrationpolicy.org.

¹⁵ Population projections to 2030 differ significantly depending on the source of population projections. Census Bureau projections tend to show lower levels of growth and are more recent, but are not available at the county level. Projections reported are based on the most recent estimates available at each level of analysis.

¹⁶ Demographic Projections to 2025, New York State Office for the Aging, May 1999.

Figure 6 – Projected NYS Population Growth Overall and Among 65+ Population 2000 to 2030



Source: U.S. Census Bureau, Population Division, Interim State Population Projections, 2005, Internet Release
Date: April 21, 2005

Aging baby boomers (born 1946 -1964) create significant growth for each age cohort they join. In New York, “the 60+ population is projected to remain at 3.1 to 3.2 million until it increases to 3.4 million in 2010 from the first influx of baby boomers. It will then grow to 4.4 million in 2025 when all baby boomers will be 60-to-79 years old - an increase of 40 percent over 30 years.”¹⁷ (Figure 7)

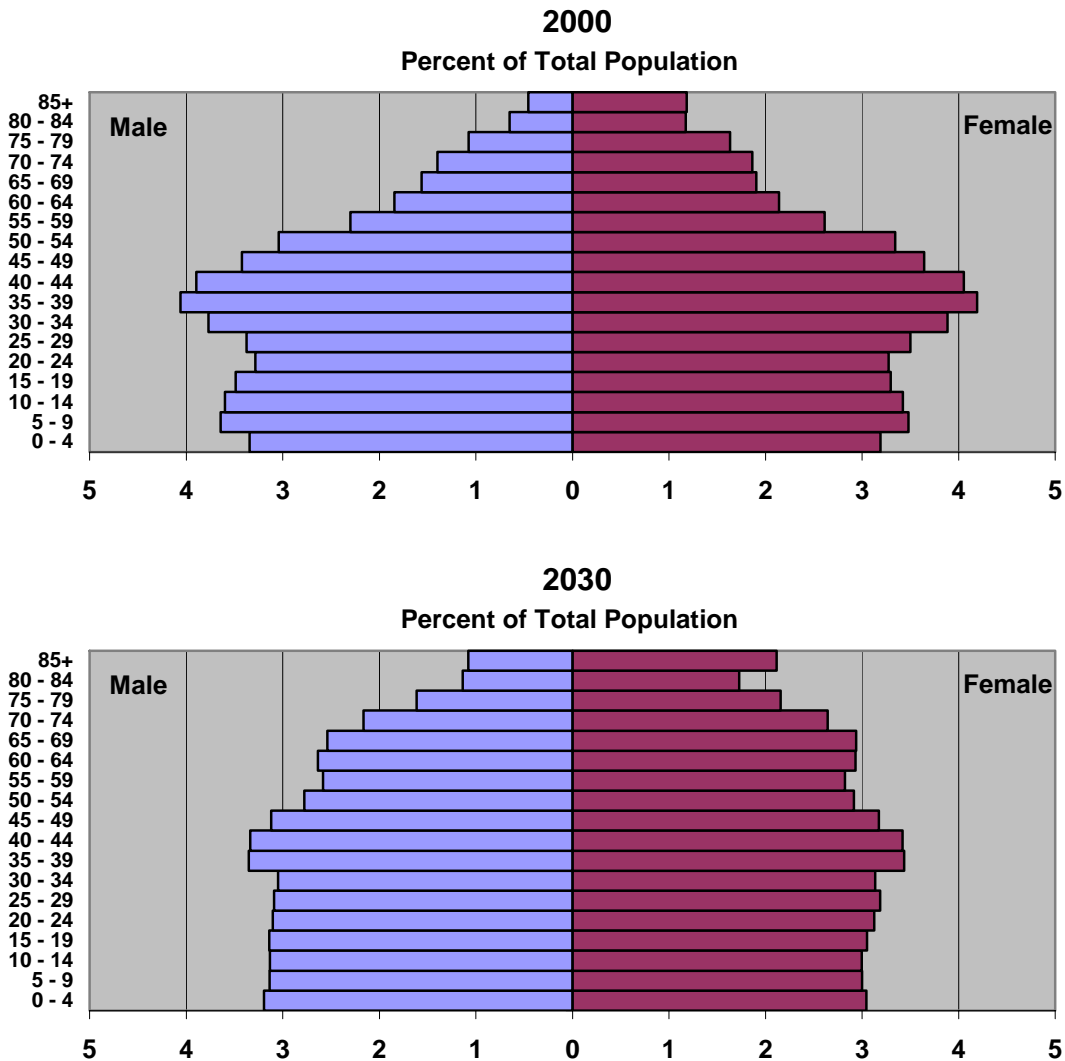
The New York State Office for the Aging projects that the number of people 75+ will grow from 1.07 million in 1995 to 1.15 million in 2005 and to 1.4 million in 2025, a 30-year increase of 32%. The aging of baby boomers will continue to impact this older cohort from 2025 through 2045. The number of people 85+ will grow steadily from approximately 275,000 in 1995 to over 390,000 in 2025, a 30-year increase of 41%. The aging of baby boomers will not impact this “old” old cohort until 2035 to 2055.

Two factors are fueling the growth of older age cohorts: gradual aging of the baby boomers, and increasing life expectancy. In general, New York State residents are living longer. “During the entire twentieth century, mortality among the old declined about 1% per year, and the whole period was a time of regular increase in life expectancy.... There is mixed opinion on the likelihood of continued long-term increase in life expectancy, but empirical evidence provides no sense that a limit to life expectancy, or old-age mortality decline, has been reached.” Certain “exemplar” nations like Japan experience higher levels of life expectancy; levels that the United States may reach in coming decades.¹⁸

¹⁷ Demographic Projections to 2025, New York State Office for the Aging, May 1999, Summary, p. iii.

¹⁸ Crimmins, Eileen, “Trends in Health of the Elderly,” American Review of Public Health, 2004, pp83-85.

Figure 7 – NYS Population by Age Cohort 2000 and 2030



Source: U.S. Census Bureau, Population Division, Interim State Population Projections, 2005, Internet Release Date: April 21, 2005

Impact of an Aging Population - Aging of the population will occur slowly, affecting demand only gradually. Growth in the 75+ cohort, which generates the largest demand for nursing home care, will be relatively flat over the next 20 years. The average baby boomer will be 55 in 2010, so the full impact of this generation will not be felt until the 2020s, when the baby boom generation first reaches their mid-70s.¹⁹

As with total population growth, the aging of the population will affect some areas of the state disproportionately. New York City and Hudson Valley will have a somewhat smaller proportion of elderly by 2030 than other regions of the state. (Table 1)

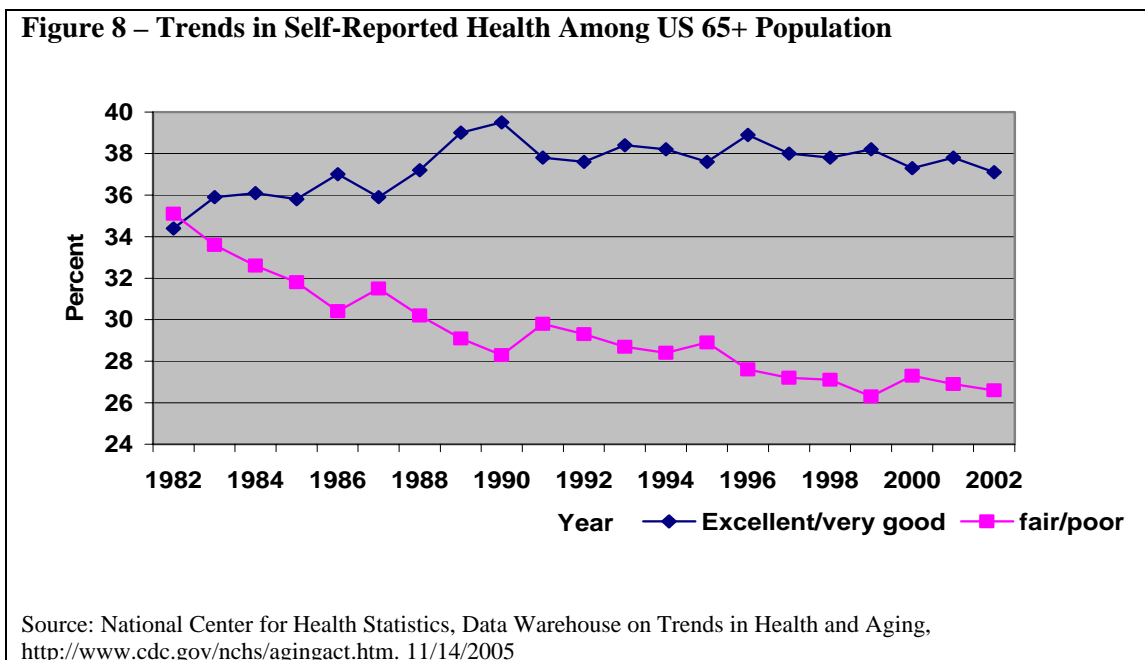
¹⁹ Right-sizing – Maintaining Viability in a Changing Environment, Loeb and Troper, 2004, p 5.

Region	2000 Total Population	Percent of Total Population 75+			
		2000	2010	2020	2030
NY State	18,976,457	6%	6%	7%	9%
Central	2,992,090	7%	7%	8%	10%
Hudson	2,227,244	6%	7%	7%	9%
Long Island	2,753,913	6%	7%	8%	10%
New York City	8,008,278	6%	5%	6%	7%
Northern	1,403,224	7%	7%	8%	11%
Western	1,591,708	8%	8%	8%	10%

Source: New York Statistical Information Service

Aging and increasing life expectancy will affect demand, but not in a straight-line projection from current use rates. Improved health status and a rise in “consumerism” mean that the healthcare needs of an increasingly older population will not automatically translate to a need for more beds.

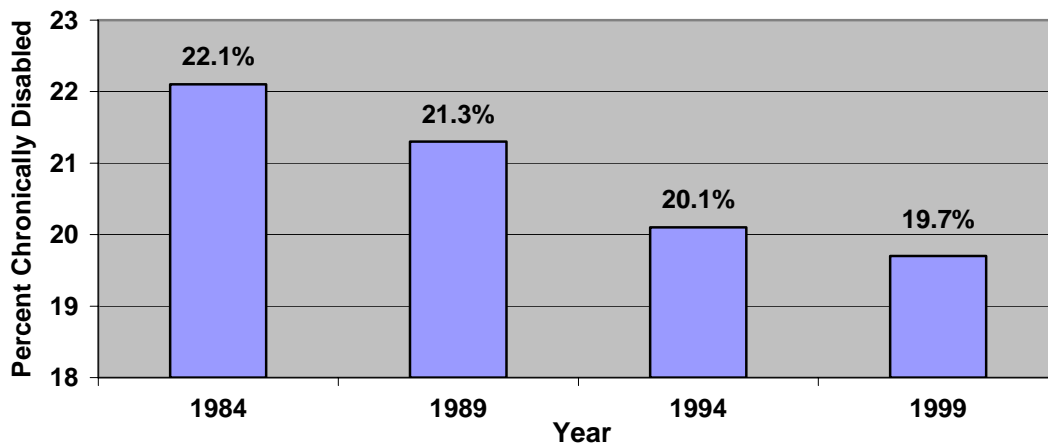
Health and Disability in Older Adults - Older people today are healthier than older people of decades ago. People live longer, retire later, have fewer disabilities, have less functional loss, and report themselves to be in better health.²⁰ (Figures 8 and 9) The National Academy of Sciences reports a statistically significant 3.6% decline in chronic disability prevalence rates in the elderly United States population, from 24.9% in 1982, to 21.3% in 1994.²¹ These trends, together with continuing advances in clinical “technology” and innovation may have contributed to the half-day decline in acute care length of stay for the 65+ population between 1998 and 2001.²² (Figure 10)



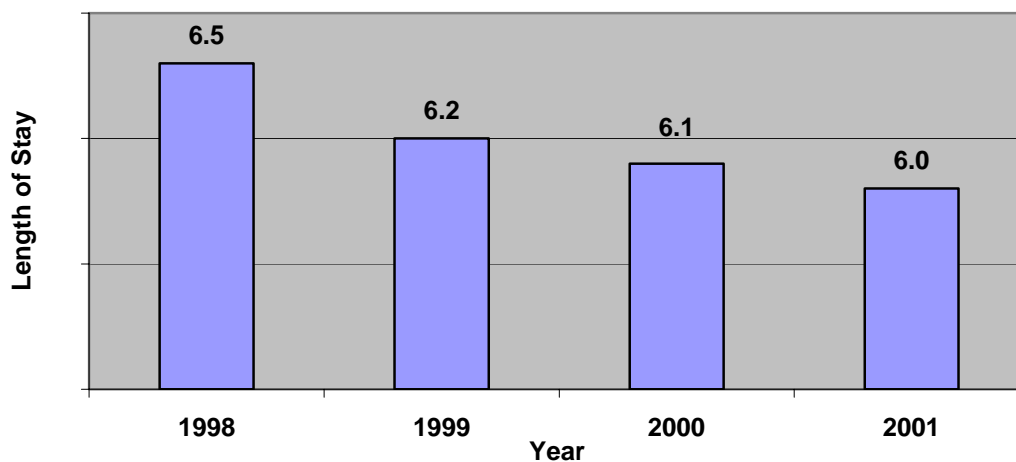
²⁰ Crimmins, Eileen, “Trends in the Health of the Elderly,” *American Review of Public Health*, 2004, p 93.

²¹ Manton, Kenneth G., et al, “Chronic Disability Trends in Elderly United States Populations: 1982-1994,” *Proceedings of the National Academy of Sciences of the United States*, Vol. 94, March 1997, p1.

²² *Toward the Health System of the Future, Disruptive Technologies and Market Opportunities in the Decade Ahead*, Health Care Advisory Board Innovations Center, 2003, p 56.

Figure 9 – Trends in Chronic Disability Among US 65+ Population 1984 to 1999

Source: U.S. Department of Health and Human Services, Changes in Elderly Disability Rates and the Implications for Health Care Utilization and Cost, Brenda C. Spillman, Urban Institute, February 3, 2003

Figure 10 – Average Length of Stay, 65+ Population

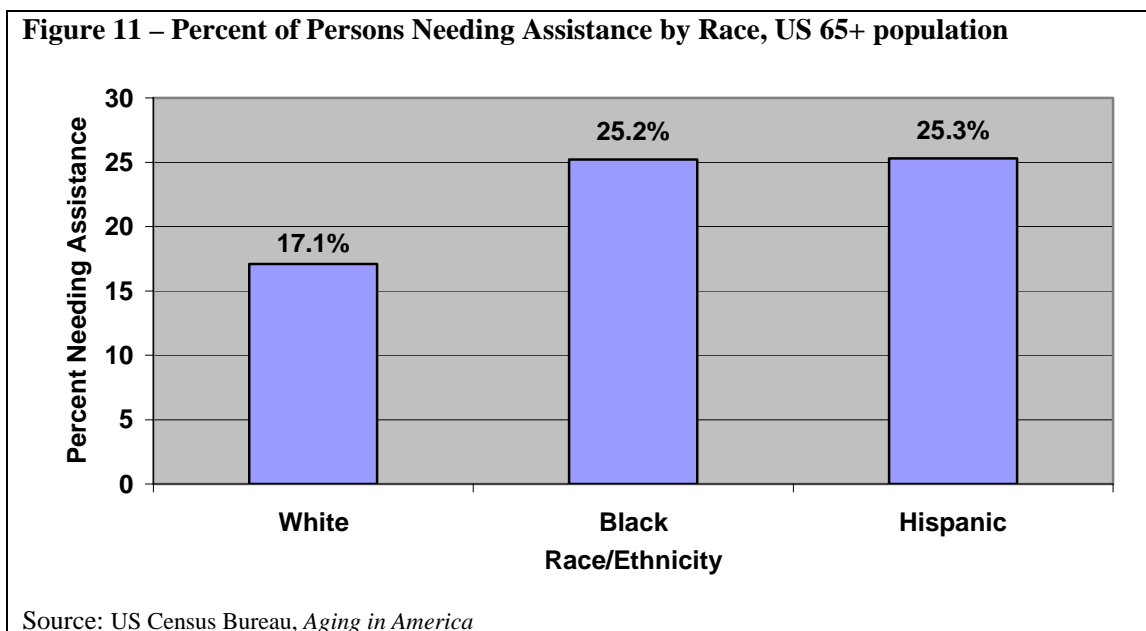
Source: The Comparative Performance of U.S. Hospitals: The Sourcebook, HCIA-Sachs; Centers for Medicare and Medicaid Services

While many indicators suggest improving health for older adults, projecting their potential future use of healthcare services is somewhat more complicated. Not all dimensions of health change in the same direction at the same time, and some emerging factors may moderate recent gains. For example, while the health of the elderly has been improving with a reduction in smoking risk and a lowering of cholesterol and triglyceride levels,²³ the rising prevalence in the incidence of obesity and diabetes may moderate this positive change. Older persons, like those of other ages,

²³ Crimmins, Eileen, "Trends in the Health of the Elderly," *American Review of Public Health*, 2004, p 90.

are more likely to be overweight and obese than in the past. Today, an estimated 66% of Americans are overweight or obese. A study released by the Center for Disease Control and Prevention shows that death due to poor diet and physical inactivity rose by 33% during the 1990s, and may soon overtake tobacco as the leading preventable cause of death.²⁴

Two other factors may eventually increase long-term care utilization: the changing racial mix among New York's elderly; and the greater numbers of "old-old" women living alone. Projections show that the proportion of minorities among older New Yorkers is growing dramatically. In the 2000 Census, 17% of those aged 75+ were minority; that will grow to 33% by 2025²⁵. Rates of disability are more pronounced for racial minorities²⁶, suggesting a possible increase in the number of functionally dependent seniors in the years to come. (Figure 11)



Similarly, as women 75+ and 85+ are the fastest-growing demographic segment in the State, and also as they require assistance in greater proportion to men²⁷ (Figure 12), we can expect a rise in the number of functionally-impaired seniors. Further exacerbating this trend is the fact that older adults who live alone—many of whom are women—are more likely to have serious health problems and functional impairment.²⁸ (Figure 12)

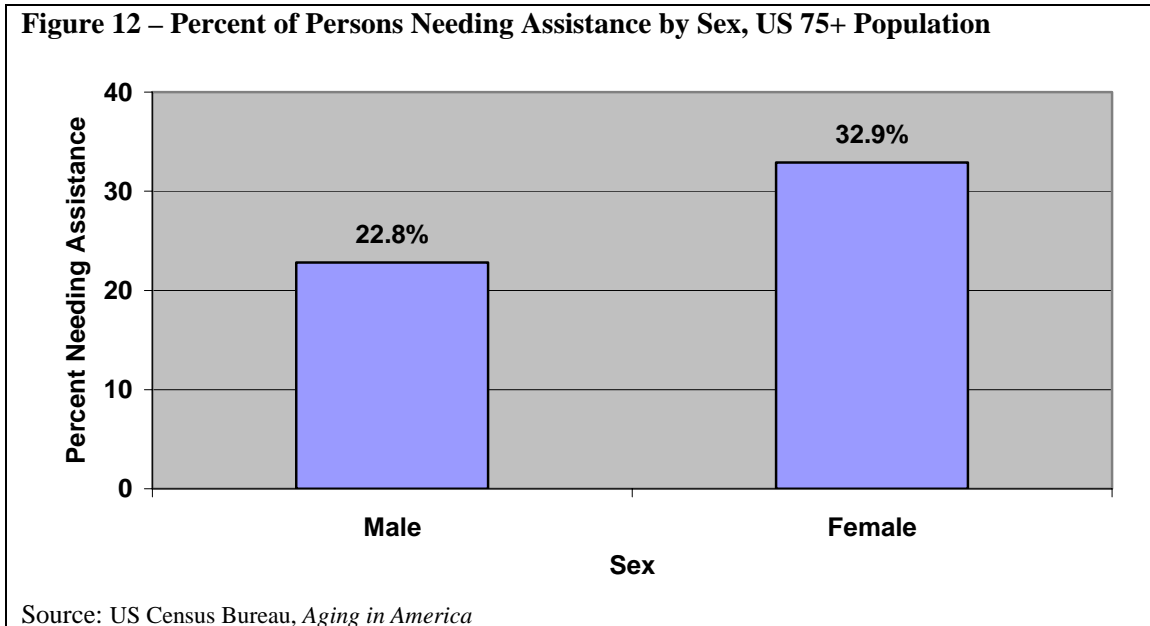
²⁴ 2005 AHA Environmental Assessment, www.AHA.org/AHA/Resource_Center, p 1.

²⁵ Demographic Projections to 2025, New York State Office for the Aging

²⁶ US Census Bureau, *Aging in America*, Chapter Three: Longevity and Health Characteristics

²⁷ *ibid*

²⁸ K. Davis, *The Unfinished Agenda: Improving the Well-Being of Elderly People Living Alone*, Commonwealth Fund (1993)



Generational Driven Change in Consumer Preferences - Consumer attitudes towards and preferences for health care services are changing. Patients are now more engaged in medical decision-making, participate as active partners in their care, value living independently, and shun institutional care arrangements. The impact of these shifting preferences is likely to be felt most strongly in the long term care continuum of services. The cultural characteristics of succeeding generational cohorts of the elderly are already affecting demand. According to Loeb and Troper,²⁹ healthcare providers are being challenged to respond to the needs and demands of three simultaneous yet culturally distinct generations:

- GI or Civic Generation (1901-1925) – Shaped by WWII and the Depression, this generation is characterized by trust in institutions and acceptance of the institutional model of nursing home care. Members of this generation constitute today's frail elderly.
- Silent Generation (1925-1944) – Compared with the GI generation, they are less willing to give up their homes and move into institutions; many seek alternatives and a broader mix of continuing care services, with more choices and greater flexibility. These seniors constitute the largest population of those cared for today.
- Baby Boomers (1945-1964) – Boomers are characterized by an emphasis on fitness and youth culture, active participation in medical decision-making, technological sophistication and rejection of institutional models of care. This generation plays a significant role as the adult child decision makers and caregivers for their parents. In the future they are likely to themselves become more demanding long term care consumers.

Demography and Health Disparities - The benefits of improved health and increased life expectancy as described in this Demographics discussion have not been experienced equally by all segments of the population. A 2002 report by the New York City Department of Health

²⁹ Rightsizing – Maintaining Viability in a Changing Environment, Loeb and Troper, 2004, p 6.

acknowledged that while much progress has been made in reducing health disparities, substantial inequalities remain among New Yorkers of different economic and racial/ethnic groups. Low income New Yorkers bear a disproportionate burden of illness and premature death. Poor health is concentrated in certain neighborhoods, and factors associated with poor health such as uneven access to medical care are more common among certain economic and racial/ethnic groups. In 2001, for example, life expectancy in New York City's poorest neighborhoods was 8 years shorter than in its wealthiest neighborhoods. For most causes of death, death rates were higher in low-income than high-income neighborhoods.³⁰

Health disparities also exist in rural areas. According to a report issued by The Kaiser Family Foundation, the chances of being uninsured among persons living in remote rural areas are much higher than for urban residents. Rural residents are uninsured for longer periods of time, are more likely to be earning low wages compared to urban workers, and experience barriers to health care, including physician and dentist shortages and lack of transportation. Almost 75% of rural counties in the United States, for example, have areas within them designated as Medically Underserved Areas.³¹

Trends in Demographics – Key Take-Aways

Demography is not destiny. While demographics will affect the future, it will not be determined solely by changes in population size and age.³²

- The total population of NYS is expected to be stable for the foreseeable future.
- The population is aging but its impact on demand for healthcare will be felt only gradually over several decades.
- There are improvements in the health status of today's elderly as compared to previous generations.
- Older adults increasingly express a strong preference for non-institutional alternatives to nursing home care.
- An aging population will require health services, but not necessarily more bed capacity.

ADVANCES IN CLINICAL TECHNOLOGY

While demographic shifts can be predicted with a relative measure of confidence, the rate and impact of clinical innovations are harder to forecast. Changes in technology, including procedures, pharmaceuticals, imaging, devices, and therapies, affect how much care is delivered and in what setting. Over the past decade, advances in clinical technology altered use rates for particular services, and supported an overall shift of patient care to less intensive settings.

A look at emerging clinical innovations suggests that they will continue both to increase and decrease use rates and to move the locus of care both into and out of the hospital. Even when the direction and quantitative potential of technology is known, forecasting the *pace* of change is

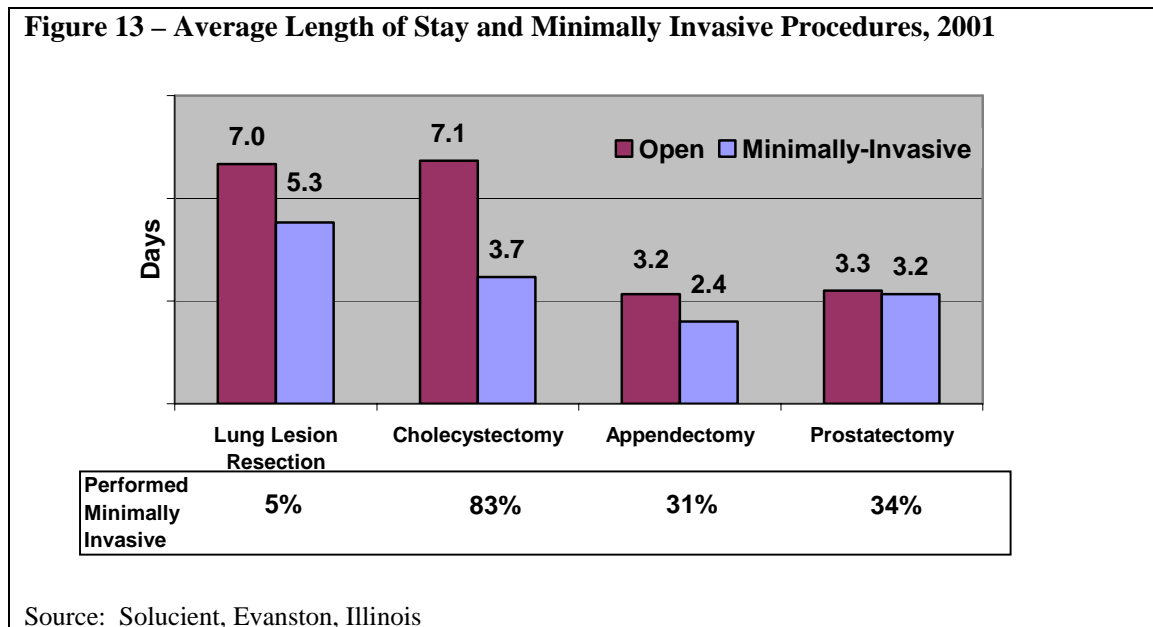
³⁰ "Health Disparities in New York City," A Report from the New York City Department of Health and Mental Hygiene, 2002, Key Findings.

³¹ "The Uninsured in Rural America," Kaiser Commission on Medicaid and the Uninsured, Key Facts, April 2003.

³² Friedland, Robert B., Ph.D. and Summer, Laura, MPH, "Demography Is Not Destiny, Revisited," The Commonwealth Fund, March 200, Overview p 1.

problematic. The adoption of new technologies can be stymied or slowed by economic factors and physician practice patterns. That said, the types of innovation that have and will continue to impact future demand for capacity include the following:^{33 34 35}

Minimally Invasive Approaches to Diagnosis and Treatment – Continuing development of “minimally” and/or less invasive approaches to surgical procedures (e.g., hip replacement, thoracic surgery, open-heart surgery) and diagnosis (Fast CT, PET) should extend the two decade-long trend towards early intervention, shorter stays and the shift of care from inpatient to outpatient setting, thereby reducing need for inpatient capacity. (Figure 13)



Replacement of Surgery with Medical and Pharmaceutical Intervention – Over the past decade, medical and pharmaceutical treatments have replaced some surgical interventions. Within cardiovascular care, for example, the widespread use of statin drugs together with the use of angioplasty and drug-eluting stents may eventually replace a substantial portion of open heart surgery. Further, recent research suggests that angioplasty, previously an inpatient procedure, may be performed safely on an outpatient basis. Coupled with declining incidence/prevalence of cardiovascular disease, these trends in treatment may substantially reduce inpatient demand. However, other developments in cardiac care such as implantable “heart pumps” for treating heart failure and transplanted muscle or stem cells for rejuvenating damaged heart tissue could increase inpatient demand.

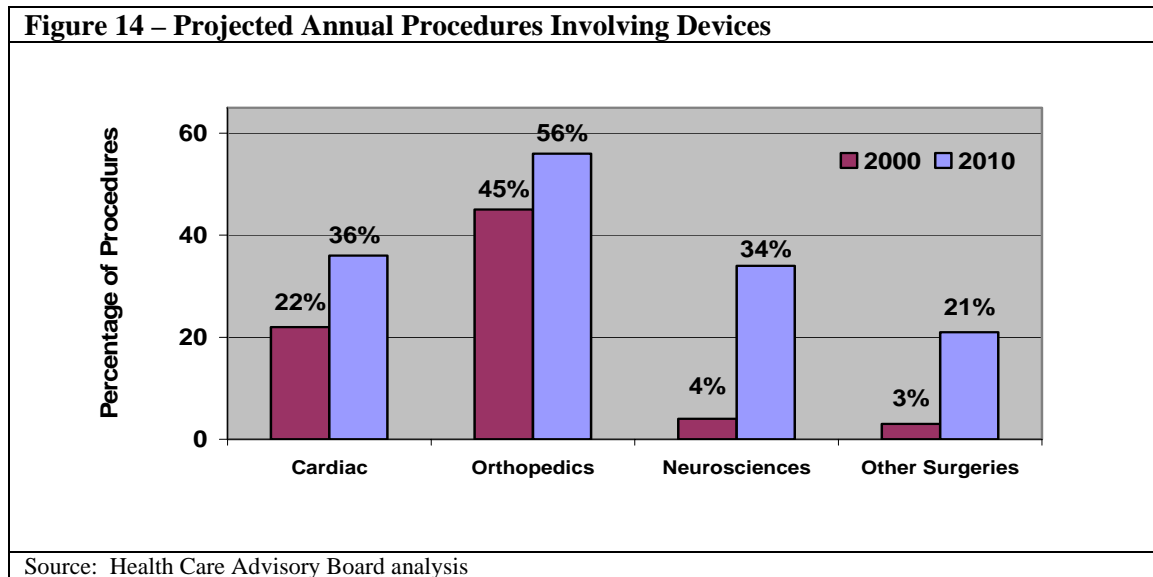
New Inpatient Surgical Procedures – Proliferation of Devices – There are a host of emerging implantable devices, including the ventricular assist devices referenced above, and others such as artificial hearts, spinal cages, artificial discs, vagus nerve stimulators, deep brain stimulators, retinal implants, insulin pumps and bio-artificial livers.

³³ Toward the Health System of the Future, Disruptive Technologies and Market Opportunities in the Decade Ahead, Health Care Advisory Board Innovations Center, 2003.

³⁴ Health and Health Care 2010, The Institute for the Future, Jossey-Bass, January 2003, pp 111-146.

³⁵ Profiting from Innovation, Health Care Advisory Board, 2003.

The Health Care Advisory Board estimates that the percentage of procedures involving implantation of a medical device will reach 35% by 2010, boosting intervention volumes and redressing the decline of inpatient surgery. However, devices that are implanted to provide close monitoring of high-risk chronically ill patients may also reduce hospitalizations by preventing crises that require acute care.³⁶ (Figure 14)



New Imaging Technologies - New imaging technologies, some of which, like virtual colonoscopy and CT heart scans, are more acceptable to patients by virtue of being less invasive, have the potential to dramatically increase the number of people screened and the volume of abnormalities identified and treated. It is not clear, however, how to assess the overall impact of this kind of innovation. How much of the pathology identified through screening is genuinely “new” demand versus demand at an earlier stage of morbidity? Does identification at an earlier stage obviate the need for later inpatient? Do false positives create demand for inpatient capacity?

Genomic and Biotech Therapies - Individually tailored drug therapies, tissue-engineered implants, gene therapy for inherited disorders, cellular transplants for the heart, and organ regeneration are the promise of genetics. One example will suffice to illustrate both the potential impact of this research, and how difficult it is to project a timeline for its implementation. Currently, it is estimated that 75% of nursing home residents suffer from cognitive impairment, and two-thirds of residents carry a diagnosis of Alzheimer’s disease. At the same time, tremendous effort and money is being directed to understanding Alzheimer’s and dementia, with an eye towards pharmacologically delaying and/or treating the symptoms that drive families towards institutionalization. Success in this area will have a direct impact on the demand and need for long-term care placement. However, current estimates suggest that marketable treatments are at least 10 years away.³⁷

³⁶ Profiting from Innovation, Health Care Advisory Board, 2003, p 53.

³⁷ Alzheimer’s Association Annual Meeting, “Current Trends in Research” April 2005

Advances in Clinical Innovation – Key Take-Aways

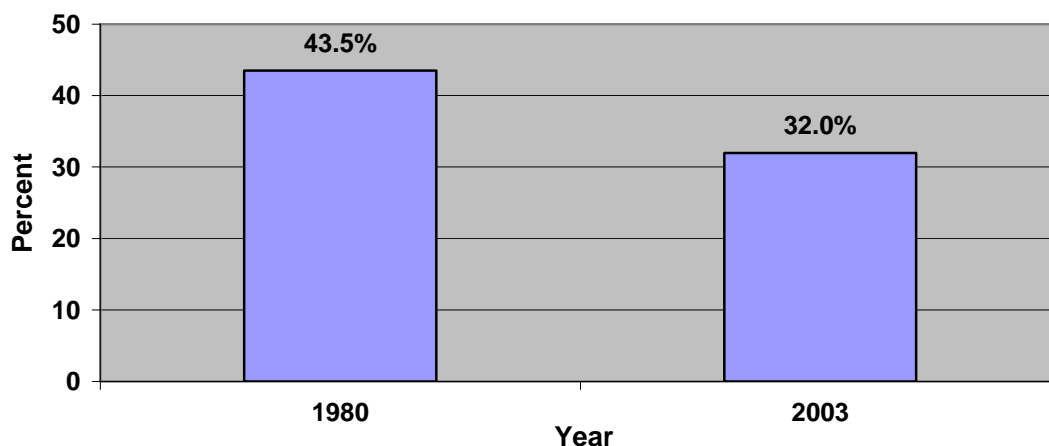
- Innovations in clinical care can both decrease and increase utilization of health services.
- Innovation alone does not determine utilization. Other forces, including reimbursement, regulation, demographics, morbidity, physicians' practice patterns, and access to capital, can combine with innovation to produce multiple change scenarios.
- The major directional change produced by innovation over the past two decades has been the movement of care to less intensive, outpatient settings. While some new discoveries will create inpatient demand, nothing on the horizon today suggests that this overall direction will be reversed.

CHANGES IN HEALTH CARE ORGANIZATION AND DELIVERY

Two major changes in the health care delivery system inform planning for future capacity: a continuing shift in the locus of care to less intensive settings, and the evolving nature of the hospital and the nursing home.

Shift in Locus of Acute Care - Driven by changing reimbursement incentives, clinical innovation, and consumer preferences, there has been a dramatic shift in the locus of care for many acute care services. As a result, hospital expenditures constitute a smaller portion of total national health expenditures; inpatient use rates and average length of stay have declined; and surgery is increasingly performed on an ambulatory basis. Cardiac catheterization, colonoscopy, radiation therapy, chemotherapy are now largely provided on an ambulatory basis. As a result, the seriously ill make up a greater proportion of hospital inpatients today than in the past. This shift in locus of care has had enormous impact both on hospital occupancy rates and revenue streams.³⁸ (Figures 15-18)

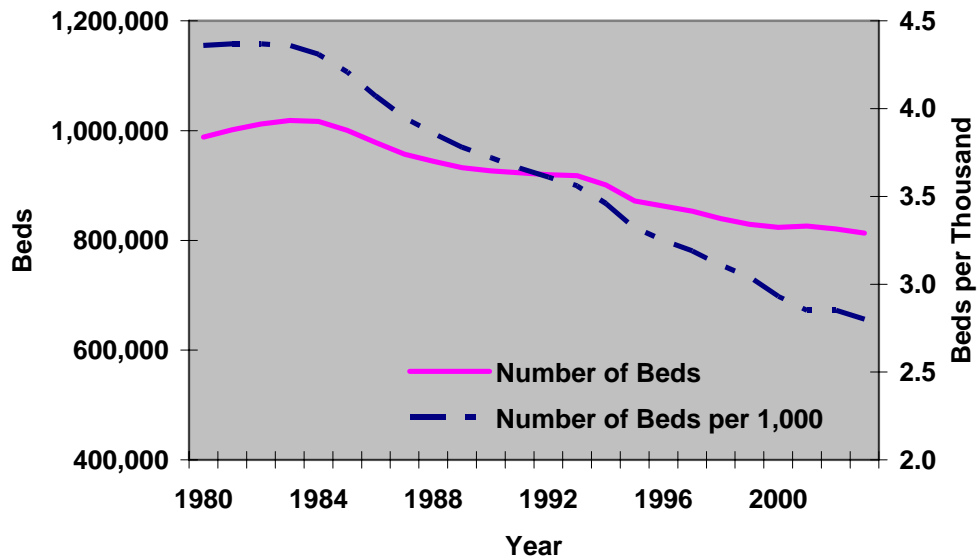
Figure 15 – Change in Hospital Share of Total U.S. Healthcare Expenditures



Source: Centers for Medicare & Medicaid Services, Office of the Actuary

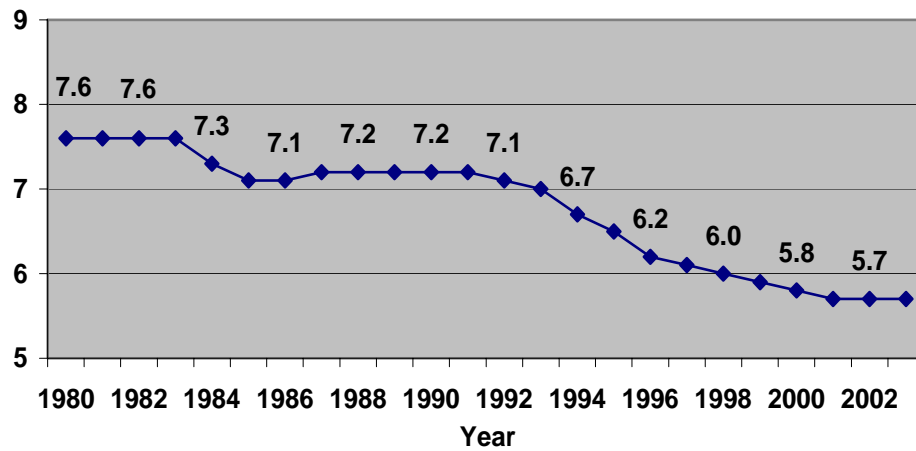
³⁸ [AHA Trendwatch Chartbook 2005, www.aha.org/aha/resource_center](http://www.aha.org/aha/resource_center).

Figure 16 – U.S. Number of Beds and Beds per 1,000 Persons 1980 to 2003



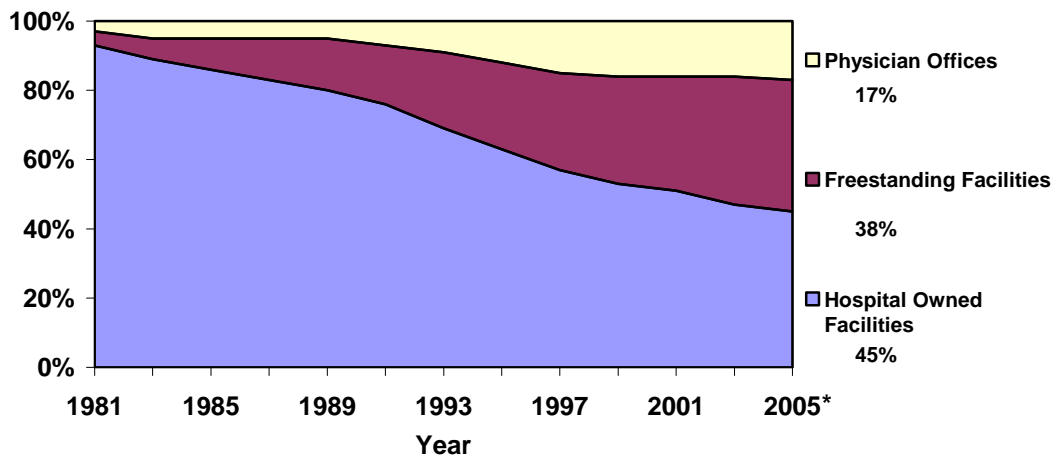
Source: The Lewin Group analysis of American Hospital Association Annual survey data, 1980-2003, for Community Hospitals

Figure 17 – Average Length of Stay in U.S. Community Hospitals 1980 to 2003



Source: The Lewin Group analysis of American Hospital Association Annual Survey data, 1980 - 2003, for Community Hospitals

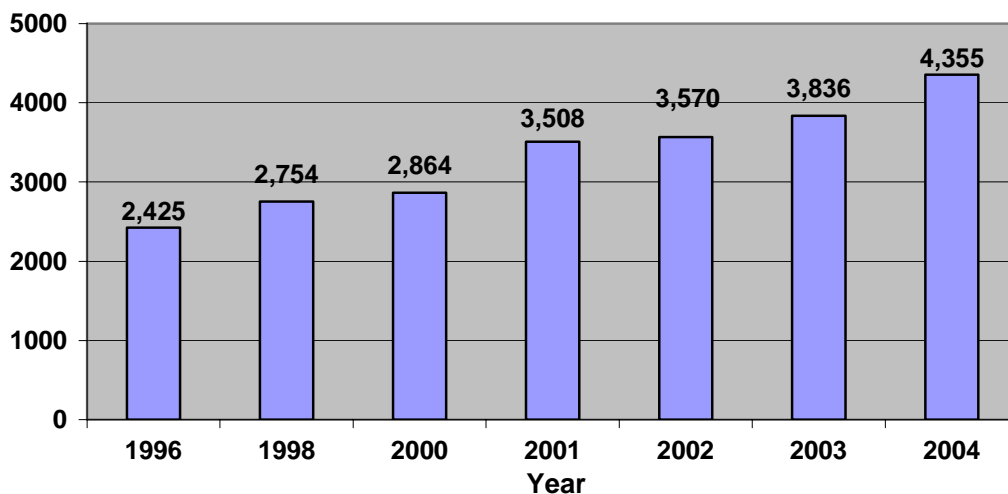
Figure 18 – U.S. Percent Outpatient Surgeries by Facility Type 1981 to 2005



Source: Verispan's Diagnostic Imaging Center Profiling Solution, 2004
 * 2005 values are estimated

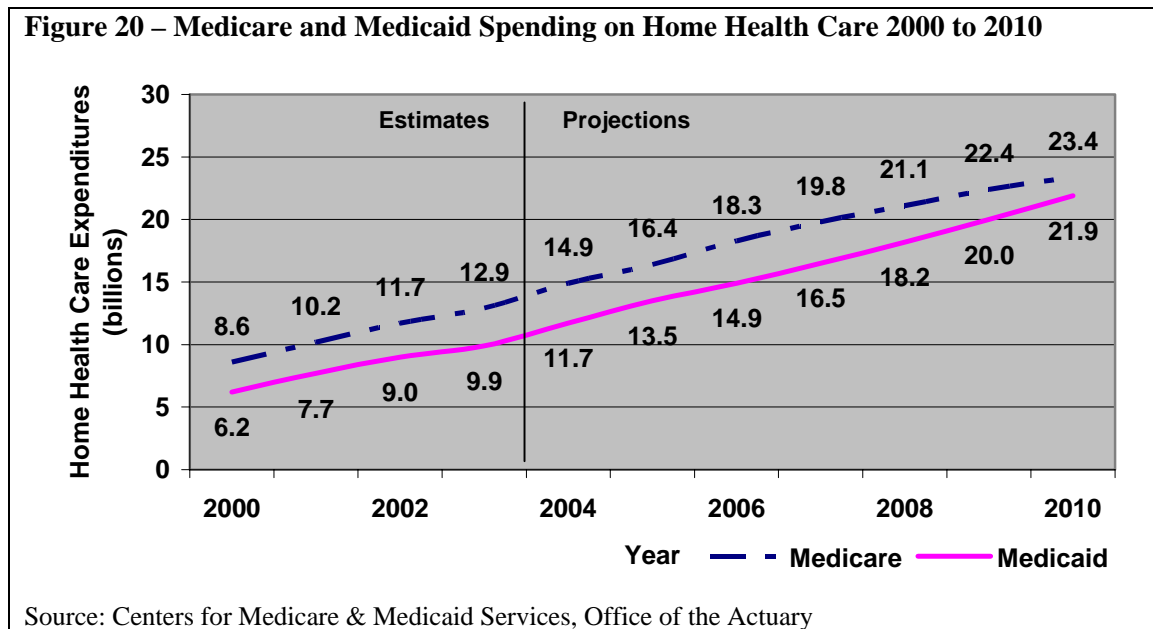
Due to pressure from public and private payers to contain costs, hospitals have been forced to reconfigure their models of care, and new providers and programs have emerged in order to meet the needs of the less critically ill who do not require inpatient care. Ambulatory surgery centers, outpatient cancer centers, and outpatient diagnostic centers are now commonplace parts of the delivery system. (Figure 19)

Figure 19 – Freestanding Ambulatory Care Surgery Centers in U.S. 1996 to 2004



Source: Verispan's Diagnostic Imaging Center Profiling Solution, 2004
 *2004 values through 3rd quarter

Not only is care shifting to outpatient settings, but it is also shifting towards home care. Home care continues to grow as a locus of care and spending³⁹: (Figure 20)



Hospital use also may be reduced through programs designed to manage patients with chronic diseases like asthma and diabetes.⁴⁰ Today, some insurers are implementing disease management programs in order to reduce use of expensive acute care services. The Institute for the Future speculates that interest in these programs may grow as evidence accumulates about their cost-benefit ratio.⁴¹ Federal efforts also may encourage adoption of disease management programs. Medicare is launching full-scale chronic care management contracts, (including one in New York City) called “Medicare Home Support”—to decrease utilization of high-cost services and inpatient admissions while simultaneously improving quality.

Shift in Locus of Long Term Care - Within the long term care system, the traditional focus on the custodial nursing home is diminishing. Recent decades have witnessed declining rates of nursing home occupancy, changes in the composition of residents, and the rise of community based alternatives. Between 1973 and 1999, the proportion of people over 75 in the population that resided in nursing homes declined by over 25%, despite a concurrent growth in the elderly population.⁴² (Table 2)

Table 2 - US Nursing Home Usage, 1973-1999	
Age Cohort	Percent
65 – 74	-12.2%
75 – 84	-25.5%
85+	-29.1%

Source: CDC, National Center for Health Statistics, National Nursing Home Surveys

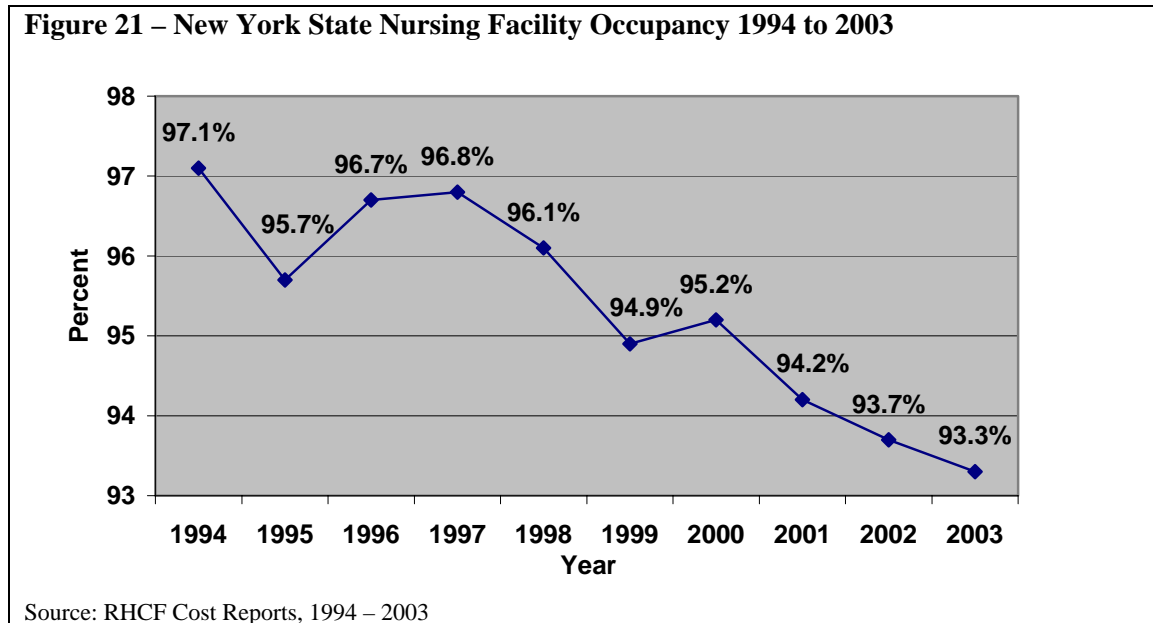
³⁹ National Association for Home Care and Hospice, *Basic Facts About Home Care*, 2004

⁴⁰ *Health and Health Care 2010*, The Institute for the Future, Jossey-Bass, January 2003

⁴¹ *Ibid.*, pp 55-56.

⁴² CDC, National Center for Health Statistics, National Nursing Home Surveys.

Nationwide, nursing home occupancy has declined steadily since 1993. Similarly, in New York State, average occupancy declined from 97% in 1994 to 93% in 2003.⁴³ (Figure 21)



Nursing homes themselves have changed. Declining occupancy, decreased hospital length of stay, and changing reimbursement incentives led many nursing homes to introduce post-hospital, short-stay care, and rehabilitation services. As a result, between 1995 and 2000, NYS nursing homes experienced more “churning” in their patient population than before. Average annual admissions per home nearly doubled, from 114.8 to 218.3; the proportion admitted from a hospital increased from 81.7% to 87.5%; and the proportion of residents discharged home nearly doubled, from 18.4% to 35.5%.⁴⁴

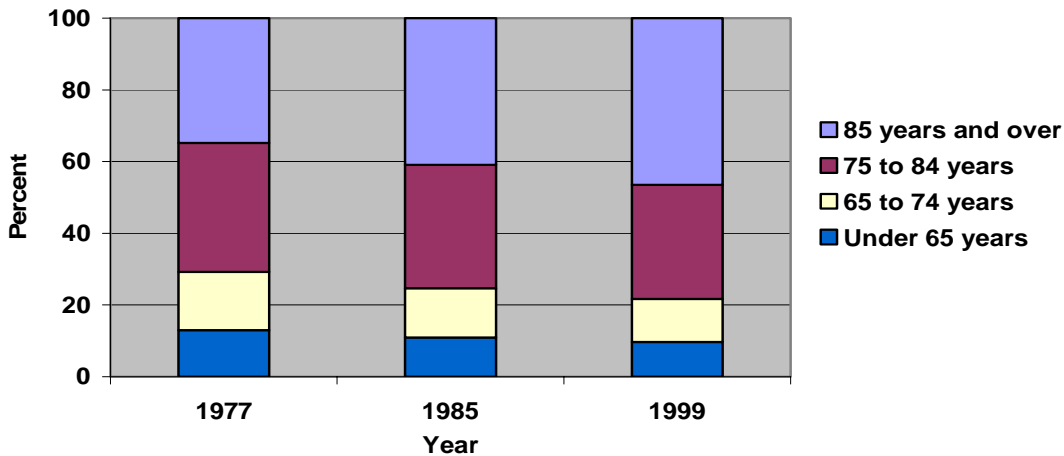
In addition, due to the rise of alternatives for those most able to remain in the community, the stable long-stay population of residents has become older and more in need of intensive assistance. According to the National Center for Health Statistics, in 1977, 13% of nursing home residents in the US were under 65 years of age and those 85 and over made up 35%. By 1999, less than 10% were under 65 years, and 47 percent were 85 years and over. In 1977, 30 percent of residents could dress without assistance, compared with only 13 percent in 1999.⁴⁵ Like hospitals, nursing homes are increasingly caring for a greater proportion of higher-intensity patients. (Figures 22 & 23)

⁴³ Facts and Trends: The Nursing Facility Source Book, American Healthcare Association, 2001.

⁴⁴ RHCF cost report data.

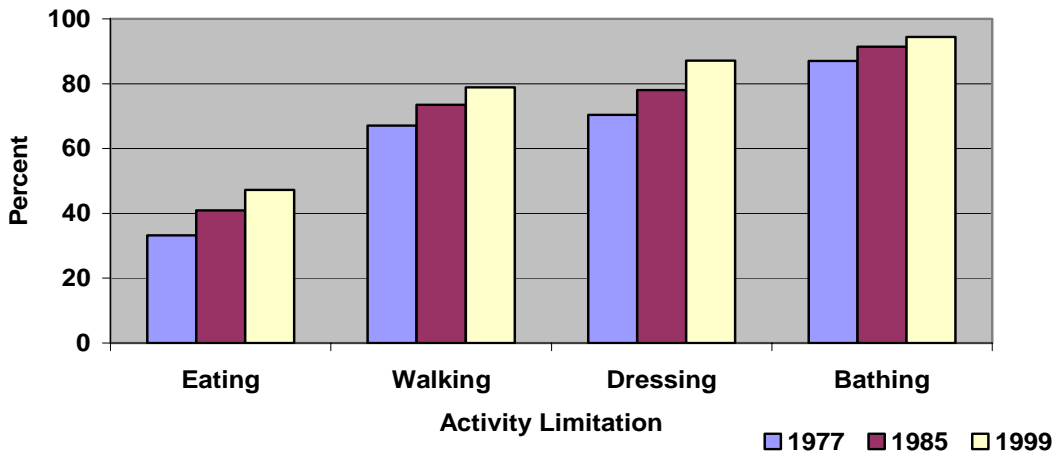
⁴⁵ Decker, Frederic H., “Nursing Homes, 1977-99: What Has Changed, What Has Not?” Facts from the National Nursing Home Surveys, National Center for Health Statistics, p 5.

Figure 22 – Proportions by Age Group in Nursing Home Populations



Source: Decker, Frederic H., “Nursing Homes, 1977-99: What Has Changed, What Has Not?” Facts from the National Nursing Home Surveys, National Center for Health Statistics.

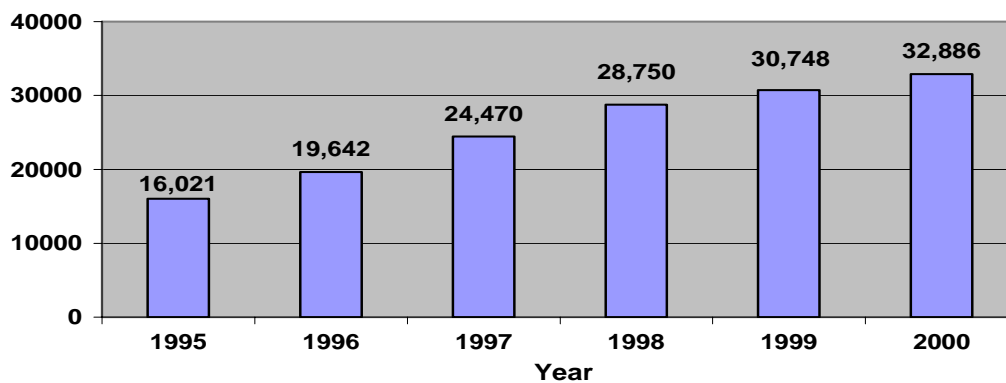
Figure 23 – Ability to Perform Activities of Daily Living



Source: Decker, Frederic H., “Nursing Homes, 1977-99: What Has Changed, What Has Not?” Facts from the National Nursing Home Surveys, National Center for Health Statistics.

The growth of attractive, supportive housing alternatives for seniors with the means to afford them helped drive these changes in nursing home occupancy rates and patient populations. These newer alternatives include a variety of residential senior housing and assisted living arrangements. In 2002, it was estimated that assisted living facilities in the United States housed 910,000 people.⁴⁶ (Figure 24)

⁴⁶ Mollica, Robert L., “State Assisted Living Policy 2002,” National Academy for State Health Policy, www.nashp.org, p i.

Figure 24 – Estimated Number of Assisted Living Facilities in US 1995 to 2000

Source: National Center for Assisted Living

Assisted living has grown rapidly as a supportive housing arrangement. However, because costs are high and public reimbursement scarce, older persons with modest means have had limited access to this option. This may be changing. While efforts are in their nascent stages, the AARP reports that there have been successful experiments in extending assisted living services to low income, frail elderly residents of subsidized housing.⁴⁷ Many states have advanced the growth of residential care through assisted living by providing for such facility care in their Medicaid Waiver programs. As a result, some states have seen an increase in ALP residents and a concomitant decrease in nursing home clients. (Table 3)

Table 3 – Number of Medicaid Waiver Clients in Residential Settings

State	2000	2002	2004
Arizona	1,240	2,300	3,067
Colorado	2,654	3,773	3,804
Florida	1,458	2,681	4,167
Georgia	2,262	2,759	2,851
Minnesota	397	2,895	4,144
New Jersey	699	1,500	2,195
Oregon	2,573	3,600	3,731
Washington	2,919	3,762	7,404

Source: Redfoot, Donald L., "In Brief: Adding Assisted Living Services to Subsidized Housing: Serving Frail Older Persons With Low Incomes," Research Report of the AARP Public Policy Institute, January 2002.

In addition to assisted living, growth has also occurred in home and community-based alternatives to institutional care. There are now more than 3,500 adult day centers operating in the US providing care for 150,000 seniors each day.⁴⁸

⁴⁷ Redfoot, Donald L., "In Brief: Adding Assisted Living Services to Subsidized Housing: Serving Frail Older Persons With Low Incomes," Research Report of the AARP Public Policy Institute, January 2002.

⁴⁸ "Aging Services, The Facts," American Association of Homes and Services for the Aging, www.aahsa.org.

Consumer preferences are not the only force driving a shift to non-institutionalized care settings. The movement has also gained steam from the July 1999 U.S. Supreme Court *Olmstead vs. L.C.* decision. The *Olmstead* decision interpreted Title II of the Americans with Disabilities Act (ADA) and its implementing regulation as requiring States to administer their services, programs, and activities "in the most integrated setting appropriate to the needs of qualified individuals with disabilities." In New York State, this is being implemented under the guidance of the "Most Integrated Setting Coordinating Council," which has now convened a Discharge Planning Workgroup that could have significant impact on skilled nursing facility utilization.

A successful attempt to shift long-term care out of institutions is the PACE Model—Program of All-Inclusive Care for the Elderly. PACE combines capitated Medicare and Medicaid payments to providers, who carefully plan and manage service delivery to keep nursing-home-eligible seniors out of hospitals and nursing homes. Program evaluations have shown a decrease in utilization among PACE participants, which is more powerful due to the fact that all participants have chronic conditions and disabilities. PACE expansion in New York has been slow, but there are some successful growing programs and the legislature recently approved the addition of four more "pre-PACE-like" (Medicaid capitation only) programs.

Despite this growth in services, their availability and accessibility is uniform neither geographically nor financially, with the result that approximately 70% of disabled elders today rely exclusively on help from family or other informal sources. According to The Institute for the Future, as the baby boom ages and the need for care-giving increases, the supply of family caregivers is projected to decline because of lower fertility rates in the next generation and smaller family networks that are more geographically dispersed. By 2030, the ratio of potential caregivers to elders will be reduced to 6 to 1.⁴⁹ This suggests that there will be an increasing need for accessible, affordable, and non-institutional services for disabled elders in the community.

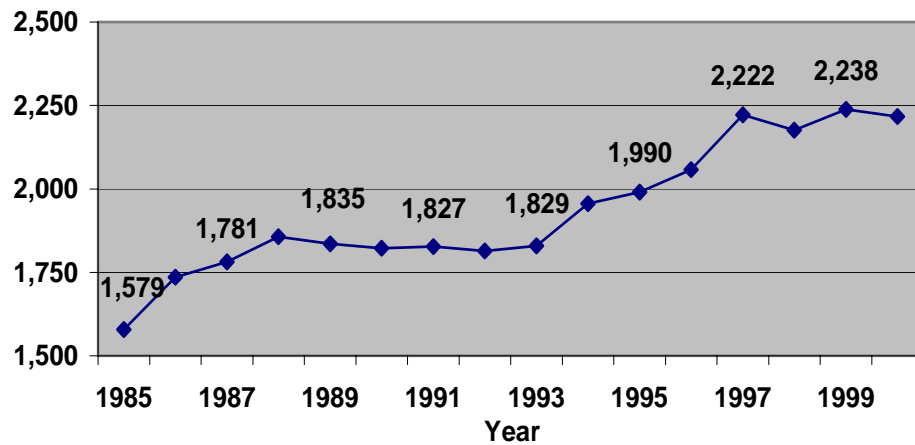
Hospitals and Nursing Homes of the Future

Acute Care Sector - Throughout much of the 20th century, hospitals were the highest expression of a community's ability to provide quality healthcare. While still critically necessary, hospitals now are one element of larger delivery systems comprising ambulatory surgery centers, outpatient facilities, diagnostic imaging centers, home care, hospice, physician offices, rehabilitation centers and linkages with skilled nursing facilities. During the 1990s, the hospital industry pursued a strategy of vertical and horizontal integration through mergers, acquisitions and consolidation. This was a "first pass" at assembling and integrating the components of a comprehensive delivery system. Industry restructuring was driven by the need to achieve economies of scale and to control resource consumption in anticipation of capitated managed care contracts that would require institutions to assume risk for the care of defined populations.⁵⁰ (Figure 25)

⁴⁹ Health and Health Care 2010, The Forecast, The Challenge, The Institute for the Future, Jossey-Bass, January 2003, p 269.

⁵⁰ Shortell, Stephen, et al, Remaking Healthcare in America: Building Organized Delivery Systems, Jossey-Bass 1996.

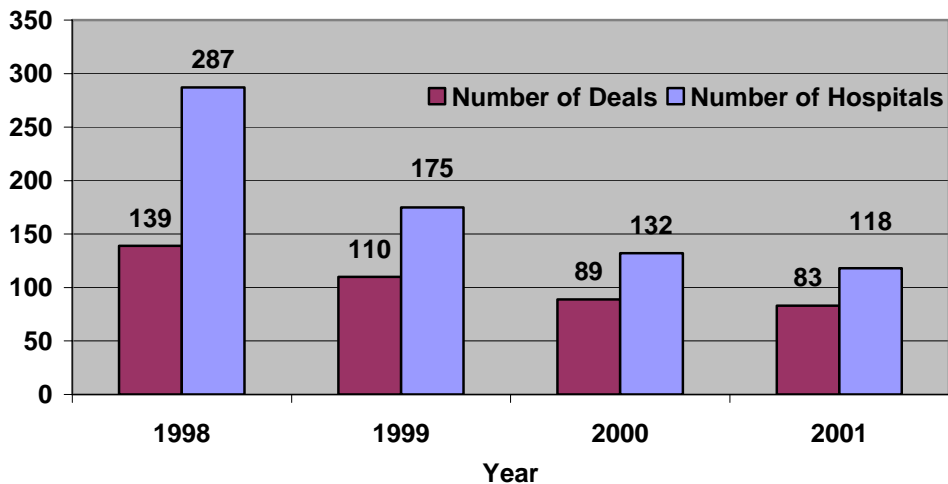
Figure 25 – Number of Hospitals in Health Systems 1985 to 2000



Source: The Lewin Group analysis of American Hospital Association Annual survey data, 1994-1998, for Community Hospitals

Not all of the expected developments actually occurred. Faced with a backlash, managed care companies shifted from capitated to restricted access models. Some healthcare organizations that tried to create integrated enterprises failed in their attempts. The number of announced mergers and acquisitions declined steadily between 1998 and 2003.⁵¹ (Figure 26)

Figure 26 – Announced Hospital Mergers and Acquisitions 1998 to 2003



Source: The Health Care Acquisition Report by Irving Levin Associates, Inc., Tenth Edition, 2004

⁵¹ The Health Care Acquisition Report, Irving Levin Associates, Inc., Tenth Edition, 2004.

Despite setbacks, the “hospital of the future” promises to be a further iteration of the 1990s vision of an integrated healthcare delivery system.⁵² “Integrative” aspects include:

- electronic medical records,
- clinical information systems,
- changes in medical group organization and professional practice patterns,
- implementation of care management tools based on evidence-based medicine applied coherently across the continuum of care,
- single points of guided access for consumers entering the long term care system, and
- a reconfiguration of resources – facilities and financial – to support more community based alternatives to in-hospital and nursing home care.

The preponderance of integrative elements based on information technology means that the “hospital of the future” will be fully “wired” with concomitant benefits to efficiency, quality and integration of care. According to the American Hospital Association, hospitals today fall along a spectrum of IT use from just getting started to running sophisticated systems. IT use varies with hospital size, teaching status, location, and financial condition. The capital and operating costs are substantial and the risk of failure great. The industry’s rate of IT investment lags behind that of other industries. Part of the reason may be that currently, hospitals bear almost all the costs of IT investment, while many of the financial benefits such as decreased need for repeat tests, lower readmission rates and shorter lengths of stay, accrue to those who pay for the care. The technology costs and complexity of cultural changes required to implement the IT agenda are daunting; yet this is a critical pathway to “the hospital of the future” in its largest sense. Accelerating the forward momentum towards achieving universal adoption will require a shared investment between government, providers, payers, and purchasers.⁵³

Increased use of health information technology and the sharing of information among appropriate parties in the continuum of care could help achieve quality improvement and cost objectives. Organizations like the Leap Frog Group for Patient Safety and the Hospital Quality Alliance, together with the Centers for Medicare and Medicaid Services (CMS), have been driving forces behind the clinical uses of information technology. Most quality improvement initiatives are characterized by better access to information, along with the reduction of medical errors. Cost savings are also a major goal, although one that has not been measured as well. Linking quality outcomes to financial incentives, commonly referred to as “pay for performance,” is the way many observers see these improvements developing. Both CMS and the New York State Medicaid program have implemented programs that incorporate pay for performance incentives for high-quality outcomes. It has been suggested that once well-developed, these tools may help to identify high-volume “centers of excellence” for different clinical conditions and provide guidance to policy makers in reshaping the delivery system.

There is also a more narrow sense in which we can consider “the hospital of the future,” – how will we design hospitals in order to accommodate high tech medicine, information technology, and the kinds of inpatients that hospitals will care for in the future? We can get a glimpse of “futures” thinking by looking at new building projects in areas of the country where there is capital to invest in facility replacement. These projects build in flexibility (particularly in procedure areas), enhance labor productivity, advance IT solutions, and appeal to a new healthcare consumer.

⁵² Goldsmith, Jeff, “Integrating Care: A Talk with Kaiser Permanente’s David Lawrence,” *Health Affairs*, Jan/Feb 2002.

⁵³ “Forward Momentum – Hospital Use of IT,” American Hospital Association, 2005.

The new Mayo Clinic Hospital in Jacksonville Florida, for example, provides a possible glimpse of the future.⁵⁴ When it opens in 2008, the new facility will have:

- Largely private patient rooms designed with the flexibility to bring equipment and services to the bedside as the patient's condition warrants
- Oversized operating rooms to accommodate intra-operative technology
- A critical care unit with built in flex capacity
- Computerized systems to speed the flow of decision-making information and improve the quality of care. The electronic medical record and film-less computerized radiology systems will provide up-to-the-minute information and fully integrate with electronic information in outpatient buildings.
- Pre-wiring to permit monitoring of vital signs at each patient's bedside, rather than only in a "monitored" unit
- Patient rooms on only one side of extra wide halls to make for quieter surroundings
- Strategically placed computer workstations next to each patient room.

Long Term Care Sector - Long term care encompasses a comprehensive continuum with home, community-based, and residential care alternatives. Unfortunately, this continuum is disjointed and difficult to understand and navigate. Integrative solutions are as critically needed here as in the acute care sector. New York State's Healthcare Reform Working Group laid out a vision – NY ANSWERS – that would create just such a coordinated, integrated system of long term care. As outlined in the Working Group's Interim Report, highlights of the NY ANSWERS vision include the following:

- A single point of entry into the long term care system that provides unbiased, comprehensive and accurate information to individuals and families
- Support for self-determination, personal responsibility, quality, efficiency and affordability
- Reducing the need for and delaying entry into more costly institutional care by encouraging the use of integrated settings, better coordinating care, recognizing informal supports in the home, and promoting non-medical alternatives
- Creation of a new nursing home model incorporating state-of-the-art nursing home construction and renovation
- Demonstration projects to develop enhanced home and community-based services.⁵⁵

Nursing homes are the most intensive settings of care within their sector of the healthcare system, and their facility designs are evolving to meet the needs and demands of the new generation. The renovation and right-sizing of nursing homes frequently includes new design trends that foster a homelike ambience and healing environment. New designs also foster patient centered care models incorporating greater choice, independence and responsiveness to residents' needs. Changes include: decentralized dining allowing for intimate alternatives to large central dining rooms, single rooms with private toilets for maximum privacy and independence, natural light, residential fixtures, incorporation of plants, flowers, artwork and pets, 24-hour accessible kitchens encouraging eating, socializing and normal home-like living, and "neighborhood" space configurations to encourage socialization while maintaining privacy.^{56 57}

⁵⁴ "Introducing...Mayo Clinic Hospital, The Hospital of the Future," www.mayoclinic.org.

⁵⁵ "Health Care Reform Working Group – Interim Report," January 2003, pp 7-28.

⁵⁶ Rightsizing – Maintaining Viability in a Changing Environment, Loeb and Troper, 2004, pp 8-21.

However, a more dramatic change is anticipated with “the nursing home of the future.” As more care shifts to alternative settings, the nursing home may evolve into a dual-purpose institution, with two distinct types of residents: short-stay restorative care and long-stay complex care. Restorative care will comprise:

- Average length-of-stay around 30 days
- Rehabilitation environments in resident rooms and neighborhood spaces
- More Nurse Practitioners and Therapists
- Outcomes-oriented care delivery

Complex care will entail:

- Average length-of-stay around nine months
- High levels of ADL-impairment, coupled with significant clinical needs
- Greater para-professional staffing ratios
- Greater R.N. presence, likely entailing specialization (eg, IV care, wound care, etc.)
- High levels of terminal care

Changes in HealthCare Delivery – Key Take-Aways

- Many acute care services have shifted out of the hospital. Surgeries and other procedures are now frequently performed on an outpatient basis.
- The proportion of health care dollars spent in hospitals, inpatient use rates, and average lengths of stay have all declined.
- Disease management programs may contribute to further declines in hospital utilization.
- The focus of long term care delivery is shifting out of the traditional nursing home. Nursing home use throughout the US is declining despite an aging population.
- Both hospitals and nursing homes increasingly care for more acutely ill patients while other patients have their needs met on an ambulatory basis.
- The nursing home of the future may primarily care for two populations, one needing short-term rehabilitation, and the other needing complex and end-of-life care.
- Changes in health care delivery suggest a declining need for inpatient beds.

Areas of Uncertainty – Need for Surge Capacity

The previous sections demonstrate some of the difficulties involved in forecasting future bed need. Even though trends in demographics, clinical innovation and changes in healthcare delivery offer a broad sense of future direction, they still contain areas of uncertainty. The need to plan for extraordinary surge capacity involves even more unknowns.

Historically, hospital disaster planning focused on a narrow range of potential incidents. Today, there is heightened and real concern over disease pandemics and mass casualty terrorist acts, and questions about the ability of hospitals and other first responders to meet these challenges. One example can serve to illustrate the difficulties involved. According to the CDC, the majority of terrorist attacks against Americans involve conventional weapons (bombs, rockets and missiles), and they can be expected to cause the following pattern of casualties: 1/3 of acute casualties are

⁵⁷ Decker, Frederic H., “Nursing Homes, 1977-99: What Has Changed, What Has Not?” Facts from the National Nursing Home Surveys, National Center for Health Statistics.

critical: dead on scene, die at hospital, require emergency surgery, or require hospitalization, while 2/3 of acute casualties are treated and released from the emergency department.⁵⁸ Importantly, the CDC identifies the number of available operating rooms and the capacity of the radiology department, *not the number of beds available*, as major factors in determining a hospital's capacity to care for critically injured casualties.

Pandemics and other mass casualty incidents by definition overwhelm the resources of individual hospitals and create sustained demand for health services rather than the short, intense peaks customary with smaller scale disasters.⁵⁹ According to the [HHS Pandemic Influenza Plan](#), an influenza pandemic will place a huge burden on the U.S. healthcare system. HHS estimates, based on extrapolation from the 1918 pandemic, suggest that demand for inpatient and ICU beds and assisted ventilation services could increase by more than 25%.⁶⁰ The New York City Department of Health Preparedness Program projects an 8 week outbreak affecting approximately 25% of the population. Under their scenario, by the outbreak's peak in week 5, there would be a 24% increase in daily admissions to hospital, and a need for 21% more acute care and 67% more intensive care beds than normal.⁶¹ (Table 4)

	# Related to Influenza Patients	% Capacity Increase due to Influenza Patients
Daily Admissions	806	24%
Weekly Admissions	5,173	18%
Bed Capacity	5,435	21%
ICU Capacity	1,141	67%
Vent. Capacity	570	24%
Deaths in hospital	555	32%

Source: CDC FluSurge 1.0, NYC Vital Statistics, 2003; DOHMH Hospital Survey 2001

Need for Surge Capacity – Key Take-Aways

- On a practical and financial basis, it is not possible to have the beds, staff and equipment in place at all times to meet the most extraordinary demands that are ever likely to face the system.
- Even should there be non-staffed beds available, underlying and disaster-related shortages of staff will limit the system's ability to respond.
- The New York City Department of Health suggests that use of alternate care locations (primary care centers, long term care facilities, hotels, schools, convention centers) will be necessary to ease the burden on hospitals during a major and sustained disaster.

⁵⁸ "Predicting Casualty Severity and Hospital Capacity," Centers for Disease Control and Prevention, www.bt.cdc.gov/masstrauma/capacity, p 2.

⁵⁹ "Hospital Preparedness for Mass Casualties," Summary of an Invitational Forum by the American Hospital Association, with support from the Office of Emergency Preparedness, US Department of Health and Human Services, 2000, p 2.

⁶⁰ "HHS Pandemic Influenza Plan," U. S. Department of Health and Human Services, www.hhs.gov.

⁶¹ Berg, Debra E., M.D., "Planning for Pandemic Influenza: Hospital Surge Capacity Issues," Bioterrorism Hospital Preparedness Program, NYC Department of Health and Mental Hygiene, presentation to GNYHA Pandemic Influenza Planning Meeting, June 2005.

SUMMARY

This White Paper has identified and reviewed three megatrends affecting the healthcare system and considered their potential impact on New York State. Trends in demographics, clinical innovation, and health care delivery show that:

- The overall population of NYS is expected to be stable for the foreseeable future.
- The population is aging, but the impact of this will be gradual.
- Growth and aging trends vary by region.
- Disability rates among older adults are slowly declining, but this positive trend is complicated by changes in morbidity and a growth in the numbers of minority elders and women living alone.
- Older people express a strong preference for non-institutional alternatives to nursing home care.
- While progress has been made, the benefits of improving health status and increasing longevity have not been experienced equally by all sectors of the population. There are continuing disparities according to race/ethnicity and income.
- The Olmstead Decision and other imperatives require more community-integrated care.
- Emerging clinical trends have combined with other factors to facilitate migration of care out of the hospital and nursing home into alternate settings.
- Health care delivery is likely to shift further out of large institutions and into ambulatory, community, and home-based settings.
- Hospitals and nursing homes are likely to serve increasingly acutely-ill patients while an evolving continuum of care will meet the needs of others.
- The provider of the future will be more integrated with other components of the delivery system, more “wired,” and have more flexible facilities.

The overall direction of these trends and New York State’s current over-capacity support prudent reconfiguration and right-sizing of its health care delivery system. New York State needs a health care system that is more flexible and less costly than one heavily based on institutional infrastructure requiring massive capital investment. New York State’s goal should be a reinvestment strategy ensuring all patients access to health care services, not necessarily to buildings. Given the difficulties inherent in forecasting the future, flexibility is required to deal with New York’s changing healthcare landscape.

Appendix Table 1 - New York State Population Changes 1990 to 2000					
Region	1990	1994	1998	2000	Estimated Percent Change 1990 to 2000
NY State	17,990,778	18,459,470	18,755,906	18,976,457	5.5%
Central	2,997,922	3,049,124	2,994,333	2,992,090	-0.2%
Broome	212,160	210,823	201,072	200,536	-5.5%
Cayuga	82,313	82,933	82,497	81,963	-0.4%
Chemung	95,195	94,132	91,791	91,070	-4.3%
Chenango	51,768	52,479	51,432	51,401	-0.7%
Cortland	48,963	49,502	48,755	48,599	-0.7%
Herkimer	65,809	67,038	64,909	64,427	-2.1%
Jefferson	110,943	116,932	112,546	111,738	0.7%
Lewis	26,796	27,319	27,072	26,944	0.6%
Livingston	62,372	64,015	63,948	64,328	3.1%
Madison	69,166	70,488	69,464	69,441	0.4%
Monroe	713,968	734,382	734,076	735,343	3.0%
Oneida	250,836	250,964	235,710	235,469	-6.1%
Onondaga	468,973	472,692	459,882	458,336	-2.3%
Ontario	95,101	98,509	99,603	100,224	5.4%
Oswego	121,785	124,319	122,153	122,377	0.5%
Saint Lawrence	111,974	114,495	112,261	111,931	0.0%
Schuyler	18,662	18,973	19,143	19,224	3.0%
Seneca	33,683	32,702	33,184	33,342	-1.0%
Steuben	99,088	100,634	98,657	98,726	-0.4%
Tioga	52,337	53,259	52,163	51,784	-1.1%
Tompkins	94,097	96,409	96,036	96,501	2.6%
Wayne	89,123	92,203	93,624	93,765	5.2%
Yates	22,810	23,922	24,355	24,621	7.9%
Hudson	2,073,324	2,135,884	2,189,014	2,227,244	7.4%
Delaware	47,352	48,526	47,999	48,055	1.5%
Dutchess	259,462	264,860	273,784	280,150	8.0%
Orange	307,571	320,744	332,199	341,367	11.0%
Putnam	83,941	88,964	93,301	95,745	14.1%
Rockland	265,475	274,855	282,044	286,753	8.0%
Sullivan	69,277	72,152	72,974	73,966	6.8%
Ulster	165,380	172,252	175,085	177,749	7.5%
Westchester	874,866	893,531	911,628	923,459	5.6%
Long Island	2,609,212	2,662,500	2,713,679	2,753,913	5.5%
Nassau	1,287,873	1,308,489	1,322,950	1,334,544	3.6%
Suffolk	1,321,339	1,354,011	1,390,729	1,419,369	7.4%
New York City	7,322,564	7,570,458	7,858,259	8,008,278	9.4%
Bronx	1,203,789	1,250,789	1,300,823	1,332,650	10.7%
Kings	2,300,664	2,361,668	2,422,434	2,465,326	7.2%
New York	1,487,536	1,503,909	1,531,067	1,537,195	3.3%
Queens	1,951,598	2,047,884	2,174,983	2,229,379	14.2%
Richmond	378,977	406,208	428,952	443,728	17.1%

Table 1 (continued) - New York State Population Changes 1990 to 2000					
Region	1990	1994	1998	2000	Estimated Percent Change 1990 to 2000
Northern	1,377,404	1,412,727	1,398,294	1,403,224	1.9%
Albany	292,812	300,262	295,097	294,565	0.6%
Clinton	85,969	86,444	79,926	79,894	-7.1%
Columbia	62,982	63,549	63,356	63,094	0.2%
Essex	37,152	38,243	38,506	38,851	4.6%
Franklin	46,540	49,712	49,620	51,134	9.9%
Fulton	54,191	55,232	54,971	55,073	1.6%
Greene	44,739	47,000	47,771	48,195	7.7%
Hamilton	5,279	5,279	5,296	5,379	1.9%
Montgomery	51,981	51,752	50,321	49,708	-4.4%
Otsego	60,390	61,916	61,379	61,676	2.1%
Rensselaer	154,429	155,520	153,085	152,538	-1.2%
Saratoga	181,276	191,966	196,513	200,635	10.7%
Schenectady	149,285	150,713	147,738	146,555	-1.8%
Schoharie	31,840	32,356	31,279	31,582	-0.8%
Warren	59,209	61,923	62,585	63,303	6.9%
Washington	59,330	60,860	60,851	61,042	2.9%
Western	1,610,352	1,628,777	1,602,327	1,591,708	-1.2%
Allegany	50,470	51,012	49,991	49,927	-1.1%
Cattaraugus	84,234	85,097	84,519	83,955	-0.3%
Chautauqua	141,895	143,041	140,784	139,750	-1.5%
Erie	968,584	977,079	956,578	950,265	-1.9%
Genesee	60,060	61,282	60,877	60,370	0.5%
Niagara	220,756	223,400	221,884	219,846	-0.4%
Orleans	41,846	44,345	44,167	44,171	5.6%
Wyoming	42,507	43,521	43,527	43,424	2.2%

Source: Table CO-EST2001-12-36 - Time Series of New York Intercensal Population Estimates by County: April 1, 1990 to April 1, 2000, Population Division, U.S. Census Bureau, Release Date: April 17, 2002

Appendix Table 2 - New York State Population Projections 2000 to 2030					
Region	2000	2010	2020	2030	Estimated Percent Change 2000 to 2030
NY State	18,976,457	19,443,672	19,576,920	19,477,429	2.6%
Central	2,992,090	2,969,903	2,931,910	2,854,652	-4.6%
Broome	200,536	202,174	205,520	207,359	3.4%
Cayuga	81,963	79,881	76,638	71,809	-12.4%
Chemung	91,070	85,773	79,571	72,505	-20.4%
Chenango	51,401	49,988	47,770	44,491	-13.4%
Cortland	48,599	48,507	48,131	47,191	-2.9%
Herkimer	64,427	61,616	58,054	53,289	-17.3%
Jefferson	111,738	111,524	111,837	111,725	0.0%
Lewis	26,944	26,585	25,762	24,388	-9.5%
Livingston	64,328	66,378	68,275	69,312	7.7%
Madison	69,441	69,342	69,442	68,895	-0.8%
Monroe	735,343	733,248	729,445	715,573	-2.7%
Oneida	235,469	233,761	231,681	226,702	-3.7%
Onondaga	458,336	442,531	423,235	398,596	-13.0%
Ontario	100,224	103,097	104,320	102,981	2.8%
Oswego	122,377	123,400	123,591	121,834	-0.4%
Saint Lawrence	111,931	114,167	115,746	116,348	3.9%
Schuyler	19,224	19,182	18,576	17,555	-8.7%
Seneca	33,342	32,099	30,059	27,411	-17.8%
Steuben	98,726	96,549	92,044	85,284	-13.6%
Tioga	51,784	49,134	45,673	41,476	-19.9%
Tompkins	96,501	98,429	100,405	102,121	5.8%
Wayne	93,765	96,285	98,321	98,734	5.3%
Yates	24,621	26,253	27,814	29,073	18.1%
Hudson	2,227,244	2,304,339	2,368,669	2,406,112	8.0%
Delaware	48,055	48,097	47,285	45,438	-5.4%
Dutchess	280,150	293,520	304,815	311,809	11.3%
Orange	341,367	370,521	401,414	429,580	25.8%
Putnam	95,745	103,786	110,891	116,428	21.6%
Rockland	286,753	291,706	290,732	284,768	-0.7%
Sullivan	73,966	79,522	85,512	91,092	23.2%
Ulster	177,749	190,389	203,871	215,719	21.4%
Westchester	923,459	926,798	924,149	911,278	-1.3%
Long Island	2,753,913	2,768,361	2,765,074	2,728,408	-0.9%
Nassau	1,334,544	1,312,166	1,290,328	1,260,336	-5.6%
Suffolk	1,419,369	1,456,195	1,474,746	1,468,072	3.4%
New York City	8,008,278	8,501,645	8,944,484	9,302,309	16.2%
Bronx	1,332,650	1,425,170	1,511,322	1,586,661	19.1%
Kings	2,465,326	2,531,424	2,571,602	2,580,903	4.7%
New York	1,537,195	1,587,098	1,606,718	1,595,353	3.8%
Queens	2,229,379	2,452,109	2,685,206	2,908,709	30.5%
Richmond	443,728	505,844	569,636	630,683	42.1%

Table 2 (continued) - New York State Population Projections 2000 to 2030					
Region	2000	2010	2020	2030	Estimated Percent Change 2000 to 2030
Northern	1,403,224	1,417,531	1,419,243	1,397,741	-0.4%
Albany	294,565	295,555	294,248	288,311	-2.1%
Clinton	79,894	84,751	89,496	93,623	17.2%
Columbia	63,094	61,254	58,034	53,329	-15.5%
Essex	38,851	40,142	40,961	41,018	5.6%
Franklin	51,134	55,723	60,135	63,770	24.7%
Fulton	55,073	54,536	53,091	50,234	-8.8%
Greene	48,195	50,806	52,675	53,377	10.8%
Hamilton	5,379	5,354	5,221	4,972	-7.6%
Montgomery	49,708	46,054	41,927	37,154	-25.3%
Otsego	61,676	63,609	65,881	67,678	9.7%
Rensselaer	152,538	147,930	142,314	134,787	-11.6%
Saratoga	200,635	213,283	223,274	228,732	14.0%
Schenectady	146,555	140,145	133,795	125,755	-14.2%
Schoharie	31,582	30,617	29,336	27,592	-12.6%
Warren	63,303	66,037	67,442	67,408	6.5%
Washington	61,042	61,735	61,413	60,001	-1.7%
Western	1,591,708	1,544,426	1,489,569	1,417,934	-10.9%
Allegany	49,927	53,585	57,546	61,346	22.9%
Cattaraugus	83,955	83,674	82,815	80,886	-3.7%
Chautauqua	139,750	137,318	134,345	130,052	-6.9%
Erie	950,265	906,480	861,388	809,044	-14.9%
Genesee	60,370	58,747	56,582	53,113	-12.0%
Niagara	219,846	213,695	204,690	192,045	-12.6%
Orleans	44,171	46,462	48,402	49,659	12.4%
Wyoming	43,424	44,465	43,801	41,789	-3.8%
Source: Statewide projections – US Census Bureau					
Regional and County projections – New York Statistical Information System					

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