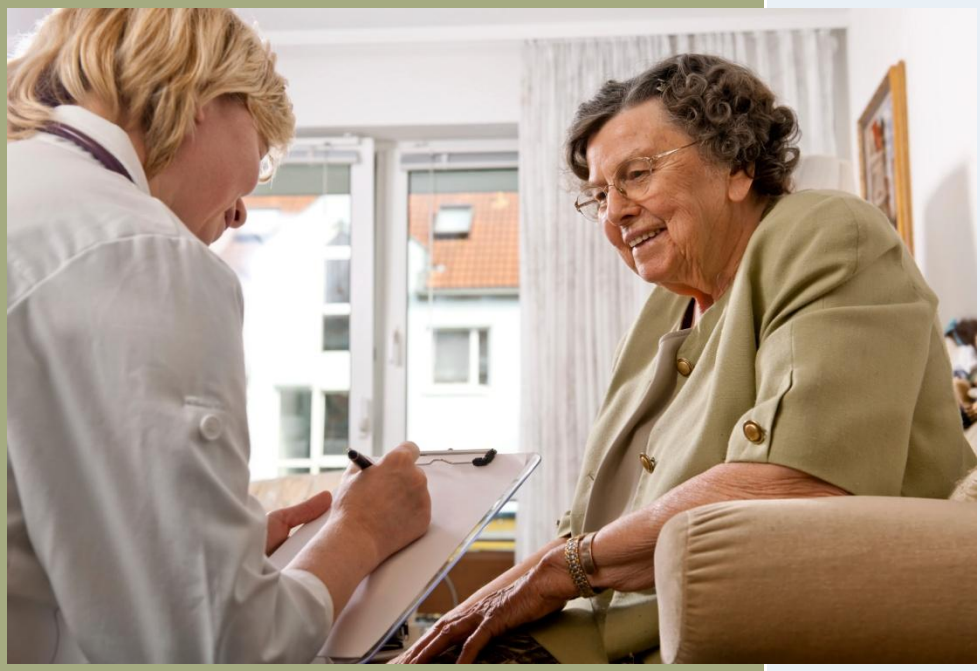
HUDSON VALLEY **PATTERN** *for* **PROGRESS**



Aging in the Hudson Valley

2014

Is the Healthcare System Ready?

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FOREWORD

In 2012, Hudson Valley Pattern for Progress embarked on a series of white papers to analyze the impact of the baby boom generation on the Hudson Valley as its members reach their 60s, 70s, 80s and beyond.

The first research effort focused on housing opportunities and new approaches that present themselves as this age group changes their needs and desires over the next 30 years. We learned that some communities in the region are prepared, while others are not.

The second white paper brought us to a better understanding of the employment opportunities that are available as more boomers stay in the workforce as well as the new service industries that could be created or expanded to meet their demands.

With this report, we release the third in our series by looking at the healthcare needs of this generation and ask whether we, as a region, are prepared to assist them. As an organization, Pattern for Progress is indebted to the work of the staff and to the report's Lead Advisor and multi-faceted Advisory Panel.

The debate over healthcare has been particularly acrimonious over the past decade as stakeholders seek to ensure their interests and needs are both met and protected. During the course of our research we found ourselves in sync with Governor Andrew Cuomo as, in his 2014 State of the State address, he called for the creation of Regional Health Improvement Collaboratives (RHICs) throughout New York state and with the federal government, which has sought to create regional consortia to address the delivery of Medicaid needs.

Pattern for Progress is no stranger to regional healthcare planning. In 1967, Pattern facilitated the creation of the Hudson Valley Health Systems Agency or HSA. Today, through this research effort, we have confirmed how little has been done in the Hudson Valley to create a truly unified healthcare delivery system. It is our contention that the integration and regionalization of healthcare services is critical to meeting the needs of the baby boomers in the most cost efficient and effective manner possible. While some will argue that the uniqueness of their silo within the healthcare sector or the regulations of New York State prevent a unified approach, we urge that these aspects be viewed as impediments to be overcome and not barriers to moving forward. Indeed, we found powerful examples of regional healthcare systems in other parts of the United States in which the providers make a profit and the consumers are very satisfied with the service they receive.

One other introductory comment that bears mentioning is how we view the region's hospitals. While our job is to inspire change, to reach for greater opportunities to improve the quality of life, we recognize that our region's

hospitals find themselves in a very difficult position to join this effort. This is not for a lack of desire but that they exist in a competitive environment, one that is highly regulated by the State of New York. So much so that while we point out other systems to emulate that could be useful for New York residents, we must also be cognizant of the world that the hospitals live in that includes a very strong union presence which makes reform challenging. For Pattern, this is no different than when we talk reforming the multi-layers of government or public education. Further exacerbating this is a regional economy that often finds hospitals as the largest employer in each county. Some efficiencies might mean reduction in employment which presents its own challenge. So, while we encourage each of the stakeholders to chart a different path toward greater collaboration, we do not do so out of ignorance of the difficult position they find themselves in today.

So in this, our third installment exploring whether the Hudson Valley is prepared to meet the demands of its aging population, our goal is to inspire a debate which we hope will lead to lasting changes that will improve the quality of life for so many of the region's residents. We recognize that we have not touched on every aspect of the region's healthcare industry, nor everything that might impact the boomers and that even for those areas we did reflect upon there is more that could be added. The healthcare industry is in flux, so we are not surprised to find a healthy debate to be full of different opinions. We therefore invite and encourage you to join in and help set a course to improve the future of the Hudson Valley.

Jonathan Drapkin

President and CEO, July 2014

EXECUTIVE SUMMARY

IS THE HUDSON VALLEY'S HEALTHCARE DELIVERY SYSTEM READY TO MEET THE NEEDS OF THE AGING POPULATION?

The aging of the baby boomer generation will impact the healthcare system in terms of numbers, longevity and expectations. Is the Hudson Valley prepared? With financial support from the Dyson Foundation, and under the guidance of a healthcare professional Advisory Panel, Hudson Valley Pattern for Progress sought to answer this question as part of a continuing series of research into the region's preparedness for the aging population. This Project evaluated hospitals, skilled nursing facilities, home healthcare, hospice, behavioral health (including Alzheimer's disease), associated workforce needs and regional health planning opportunities.

Cost, quality and access must be considered when evaluating the region's current healthcare system. The goal is to keep seniors healthy and enhance their quality of life, while also controlling healthcare costs in part by reducing hospitalizations and nursing home admissions in order to save limited financial resources. The Hudson Valley, defined here as Columbia, Dutchess, Greene, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester Counties, has 37 hospitals, 95 nursing homes, 174 home healthcare agencies, 10 Federally Qualified Health Centers, seven hospice agencies, hundreds of behavioral health providers, and over 7,000 licensed physicians. Models of increased consolidation and integration in other parts of the country, which result in better outcomes and lower costs, provide valuable lessons in the Hudson Valley's pursuit of better healthcare.

HOSPITALS - Hudson Valley hospitals in aggregate have occupancy rates and quality measures lower than optimal, and many hospitals face severe fiscal challenges. As more services move to the outpatient setting, no further expansion of bed numbers will be needed to absorb aging seniors. The region has at least 1,700 excess hospital beds as projected through 2040, and maybe more. The Hudson Valley must make a regional coordinated effort to consolidate the total number of acute care hospital beds by converting acute care hospital beds and services to other types of needed beds, including skilled nursing beds, transitional beds, swing beds, hospice beds, outpatient facilities, and specialized nursing units. The latter will serve to improve medical expertise and therefore outcomes. Also the region must protect rural critical access capacity. An in-depth analysis of those factors driving hospital admissions of seniors, their length of stay and the charges involved is necessary to properly plan for the future.

NURSING HOMES - Declining admissions, consumer preference and efforts to avoid nursing home admissions will only limit the need for new skilled nursing facility (SNF) beds to a degree. Even with substantial reductions of 30% in nursing home admission rates, the Hudson Valley still must prepare for more than 1,200 projected additional SNF beds by 2040. Without continued reductions in admissions rates, the projected SNF bed need could be much higher. Finding new SNF capacity will entail conversion of excess hospital beds where financially feasible and new development with the possible creation of specialized memory units, continuing care facilities and other housing alternatives that allow aging in place.

HOME HEALTHCARE - As providers and patients seek to avoid nursing home admissions, the Hudson Valley will require substantially more long-term home healthcare capacity. Even without reductions in nursing home admission rates, the Hudson Valley lacks home healthcare capacity. Additionally, home healthcare is projected to have the highest rate of growth in the healthcare sector for employment opportunity. The region should consider incentives to increase home healthcare capacity. Finally, innovation and consolidation efforts must be taken to make home healthcare more efficient and cost effective.

HOSPICE AND END-OF-LIFE CARE - By starting a community conversation about end-of-life care, Hudson Valley seniors can avoid hospitalizations and expensive intensive care unit bed days. Hudson Valley healthcare providers should create a regional, consistent approach to seek end-of-life directives at an early age from a high proportion of patients. The region should increase home-based hospice care as well as take the innovative step to establish hospice beds in institutional settings enabling reduced-cost hospice care in non-home settings.

BEHAVIORAL HEALTH - Additional supportive housing must be created in light of institutional downsizing. The regional health planning effort should also seek to integrate behavioral health into traditional healthcare services. A robust regional health planning effort should evaluate behavioral health data to make predictions of future need based on better data collection by New York State Office of Mental Health (OMH) certified and non-certified providers. Finally the Hudson Valley has a need for more behavioral health professionals specializing in geriatric needs and trained to address depression, suicide prevention, prescription drug and other substance abuse.

ALZHEIMER'S DISEASE - The healthcare planning effort should seek to quantify the incidence of Alzheimer's disease and dementia as well as build capacity to manage the projected increases. Healthcare providers educated on the potential increases and programs to train family members and caregivers will enable patients to avoid hospitalizations, live at home longer or comfortably at a healthcare setting, thereby improving quality of life and limiting costs of care.

Specialized facilities such as memory units and other housing options must be explored, as well as efforts to integrate Alzheimer's into traditional geriatric care.

WORKFORCE DEVELOPMENT - The Hudson Valley workforce development system must prepare for the healthcare industry needs. The healthcare sector is projected to provide 36% of all Hudson Valley job creation through 2020. Large numbers of home health aides, personal care aides, and nurses will be needed. The region will experience growth in new occupations such as care coordinators and the need for more professionals working in occupations that extend patients' ability to remain in non-institutionalized settings. In addition, the Hudson Valley must begin a health professional recruitment program, particularly in those specialties such as behavioral health, where the current workforce is aging and no replacement appears imminent. Healthcare workforce development must be done collaboratively with educators, public health agencies, workforce development agencies and providers.

REGIONAL PLANNING - The Hudson Valley should begin its regional health planning effort in earnest. Regional health planning data must be centralized and consensus among providers reached, to ensure limited duplication of services as well as care coordination between the various institutions comprising the continuum of care. Further consolidation of these various components into integrated delivery systems as seen in high performance innovative systems will facilitate this effort**.**

INTEGRATION - All providers should seek to join the existing regional electronic health records (EHR) effort making regional interoperability a priority. In addition, providers should coalesce to establish metrics for comparisons at the physician level. The region can use the benchmarks set by the Center for Medicare and Medicaid Services (CMS) for hospitals, by New York State Department of Health (DOH) for SNFs, National Committee on Quality Assurance's Healthcare Effectiveness Data and Information Set measures for ambulatory practices and clinics and CMS's Physician Quality Reporting System for physicians. This data should be collected, formatted and made public on an annual or biannual basis. The large investment would be facilitated by large scale system integration.

WHY EXAMINE THIS QUESTION

As the largest age cohort in American history, the baby boomers have had tremendous impact on American systems and culture, from the Vietnam War protests to the number of women in the workforce. As baby boomers age, new questions arise about what services they will need during their golden years. Because the baby boomer age cohort is the largest since World War II, existing systems and resources may not have the appropriate capacity to handle their needs. Further, as the boomers reach the next decade, technology, other demographic changes and expectations continue to change. Housing, workforce training, employment, and healthcare must adapt to address the aging of the boomers. In order to begin the dialogue on how the aging population would impact the healthcare delivery system in the Hudson Valley, the Dyson Foundation provided grant support to Hudson Valley Pattern for Progress (Pattern) to examine the question of whether the healthcare system of the Hudson Valley is prepared for the aging baby boomers.

There are four main reasons to examine the impact of a growing senior population on the healthcare system.

- The quality of healthcare and the health outcomes impact the quality of life of the residents of the region.
- Ensuring that adequate and appropriate services are in place requires evaluation of the projected needs of the system.
- Appropriate planning will allow reduction in overall costs to the healthcare delivery system and its impact on the overall economy of the region.
- Healthcare is and will continue to be a major economic driver in the region.

This report is the third area of work upon which Pattern has embarked in order to ascertain the impact that an aging population will have on systems and resources in the Hudson Valley. In *Housing the Hudson Valley: Unlocking the Opportunities,* Pattern examined senior housing availability and need. In *The Aging Population and Employment Opportunity*, with the support of the Orange County Industrial Development Agency, Pattern examined the economic opportunities that may occur as a result of the aging population, including job creation in medical and non-medical services and senior entrepreneurship. The report concluded that the approach to planning and economic development should be tailored to absorb the aging cohort to benefit the region by training for growing occupations and business planning for the changing demographics.

The Affordable Care Act, advancements in technology and evidence-based medicine as well as other factors have created an environment where rapid changes in healthcare delivery and policy are occurring. The Hudson Valley is a microcosm of these national changes. Communication of these rapid changes from providers and policymakers to patients and communities at large is now more critically important than ever. Why is my local hospital eliminating a particular service? Why did my doctor join a large practice group? Which insurance plan should I choose? Why should I not pursue every possible treatment for my ailing parent? These questions and many more are some of what providers and policymakers face every day. This work is meant to assist in some of those communications, and yet, the Project must acknowledge that there is much more data to be analyzed, other healthcare delivery models to discuss, other healthcare institutions and structures to examine. This work is but a step in the process of what we call regional health planning.

Acute hospitalization is the most expensive daily care possible. Almost 40% of the national healthcare expenditure of $2.8 trillion is spent in hospital services.[1] In the Hudson Valley, the average charge[2] of hospitalization in 2012 for those over 70 years of age was $7,247 per day.[3]

The cost of residential care is dependent on the degree of medical need. The median annual cost of residence in a skilled nursing facility is 150% of the median cost of home health aide services or assisted living facility residence. The cost of residential care is even more important in the Hudson Valley where the costs exceed state and national costs. Median New York state and Hudson Valley costs exceed national median costs by 35% for skilled nursing facility residence, 13% for assisted living and 12% for home healthcare.

[1] Centers for Medicare and Medicaid Services (2012). *National Expenditures 2012 Highlights.* P. 1.
[2] The project recognizes the limitations of using "charges" rather than costs for analytical purposes. Charges are higher than costs for a variety of reasons including that public payers pay less for services than private payers. A thorough analysis of charges versus costs is not the focus of this work but suffice it to say that charges exceed cost at most hospitals to offset the reduced rates paid by public payers (Medicare and Medicaid) and the costs of treating the uninsured whom hospitals in New York cannot turn away.
[3] Calculated by Pattern from the 2012 Statewide Planning and Research Cooperative Service Discharge data.

Shown in the following chart are average daily costs for long-term care options.

Table 1. Median Daily Costs for Long-Term Care

	National	NYS	Dutchess/ Orange	Ulster	Putnam, Rockland, and Westchester[4]
SNF (avg. of semi-private room, and private room)	$219	$ 338	$401	$ 358	$405
Home Health Aide Services (Licensed)[5]	$122	$138	$ 144	$144	$147
Assisted Living Facility	$115	$130	$115	$118	$182

Source: Genworth (2013). *Cost of Care Survey: Home Care Providers, Adult Day Health Care Facilities, Assisted Living Facilities and Nursing Homes*

Skilled nursing facility costs are substantially higher than those of home healthcare.[6] Efforts should be made to reduce SNF days when appropriate.

In addition to keeping seniors in less acute medical settings, the region must ask why its costs exceed statewide averages. Is it a result of proximity to the New York Metropolitan region? Could a regional healthcare delivery system be more effective? And what does the Hudson Valley need to move towards a system with better outcomes at lower cost?

Reimbursement rates from both public and private payers differ starkly among the counties of the region. Some for good reason: one cannot expect the costs of Greene or Sullivan Counties to be on par with Westchester, but arbitrary reimbursement boundaries can lead to unintended consequences, including provider recruitment difficulties and patient outmigration (meaning residents are seeking healthcare outside of their community).[7] In addition to billing rates differing throughout the region, the cost of professional insurance premiums also have wide variation. According to the SUNY New Paltz Center for Research, Regional Education and Outreach, Orange County physicians could pay as much

[4] Pike County of PA is included in these metro-New York counties in Genworth Survey.

[5] The costs for home health aide services are calculated from surveys of home healthcare services that do not require a skilled nurse to be present. The rates are based on 44 hours of care per week.

[6] There are other types of residential care that are non-medical which save the system money while providing a more homelike experience. For example, the Hudson Valley has 81 adult care facilities; these are non-medical residences for seniors.

[7] Kirby, P. (2012, May 10). Better reimbursement rates for Kingston, Benedictine hospitals seem unlikely. *Daily Freeman*. Retrieved from http://www.dailyfreeman.com/general-news/20120510/better-reimbursement-rates-for-kingston-benedictine-hospitals-seem-unlikely. "Ulster County is part of the Poughkeepsie MSA, but Dutchess County -- and, by extension, its hospitals -- are in the more financially beneficial New York City MSA, as is Orange County. For example, HealthAlliance receives $3,000 less in government healthcare reimbursement for a knee replacement than do hospitals in Dutchess and Orange counties." *Id.*

as $10,000 more per year for malpractice insurance than their neighbors in Dutchess or Ulster counties.[8]

Good health has a substantial impact on quality of life for seniors. Access to health services affect personal, societal, cultural, economic, and environmental facets of their everyday lives.[9] Poor health, and especially chronic disease, which is the leading cause of death in people aged 65 and older, will have a serious effect on a person's mental and/or functional capabilities. Not only does good health allow seniors to remain in the workforce and sustain mobility, it also enables them to remain in non-medical settings. Preventative care is necessary to ensure the health of populations. For seniors, in particular, preventative care will impact not just their quality of life, but healthcare costs and those of housing as well.

Uncontrolled healthcare costs threaten municipal and corporate budgets. In 2012, US healthcare costs represented 17.2% of GDP[10] and are expected to grow at an average annual rate of 5.8% through 2022.[11] In 2009, New York state healthcare costs were estimated at $163 billion or 15.1% of Gross State Product[12] and total healthcare spending in New York state is projected to rise by 7.6% annually from 2013 to 2020.[13] Efforts to curb these growing costs have resulted in new emphasis from federal payers on cost-reduction measures.

The recent federal approval of New York's Medicaid Waiver Amendment will enable the state to allocate $8 billion savings realized through its Medicaid Redesign Team (MRT) to programs to ensure access to quality care for Medicaid members while reducing costs.[14] The Medicaid Waiver Amendment allocates $6.42 billion of the Waiver to the Delivery Service Reform Incentive Payment (DSRIP) program designed to promote community-level reform collaborations to achieve a 25 percent reduction in avoidable hospital use over five years through

[8] Reed, K. (2010). *Is there a Doctor in the House? Physician Recruitment and Retention in the Hudson Valley*. Center for Research, Regional Education and Outreach (CRREO). New Paltz, NY. Retrieved from https://www.newpaltz.edu/crreo/discussion-brief-3-is-there-a-doctor-in-the-house.pdf.

[9] United States Center for Disease Control and Prevention. (2013). *The State of Aging and Health in America 2013*. Washington, DC. Retrieved from http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf.

[10] Centers for Medicare and Medicaid Services. (2012). *National Health Expenditures 2012 Highlights*. Retrieved fromhttp://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/downloads/highlights.pdf.

[11] Fleming, C. (2013, September 18). US Health Spending Growth Projected To Average 5.8 Percent Annually Through 2022. *Health Affairs*. Retrieved from http://healthaffairs.org/blog/2013/09/18/us-health-spending-growth-projected-to-average-5-8-percent-annually-through-2022/.

[12] Personal Health Care expenditures (the total amount spent to treat individuals with specific medical conditions, CMS Expenditure Tables.

[13] New York State Health Foundation. (2014, February). *Health Care Costs and Spending in New York State*. Retrieved from http://nyshealthfoundation.org/resources-and-reports/resource/health-care-costs-and-spending-in-new-york-state.

[14] Governor Andrew Cuomo. (2014, April 14). Governor Cuomo Announces Final Approval of $8 Billion MRT Waiver to Protect and Transform New York's Health Care System. Retrieved from http://www.governor.ny.gov/press/04142014-mrt-waiver.

projects focusing on system transformation, clinical improvement, population health improvement and addressing behavioral health needs.[15]

These changes combined with other changes to the healthcare payer system make health planning a shifting landscape. Because the Hudson Valley anticipates growth in its aging population, it must embrace policies to tailor structures and "right size" capacity to ensure quality of life at an economically sustainable cost. For all these reasons, Pattern, with the help of the Advisory Panel, has undertaken this work.

[15] New York State Department of Health (2014). Delivery System Reform Incentive Payments (DSRIP) Program. Retrieved from http://www.health.ny.gov/health_care/medicaid/redesign/delivery_system_reform_incentive_payment_program.htm.

METHODOLOGY

ADVISORS TO THE PROJECT

Hudson Valley Pattern for Progress, in collaboration with Lead Project Advisor, Dr. Daniel Aronzon, former CEO of Vassar Brothers Medical Center, assembled an Advisory Panel of experts to guide the project. Pattern convened the Advisory Panel on several occasions to identify potentially relevant data, to analyze data, and to assess data for the purpose of drawing conclusions.

The Advisory Panel requested specific data, and asked the staff to project future need, using sensitivity analysis to ensure the study takes into account more than just population projections when ascertaining future service needs. In particular, the Advisory Panel identified that changes in payment methods from transactional to outcome-based payment, increased adoption of evidence-based medicine, scientific advancement, technological progress and better care coordination could result in fewer hospital and nursing home admissions for the growing 65+ population.

The Advisory Panel determined early in the Project that comparisons between the Hudson Valley and the rest of New York state, or even other regions of the state, would not provide sufficient benchmarks for the purposes of quality improvement and reduced costs, because New York state lags behind many U.S. regions in these areas. By examining more innovative healthcare delivery systems and institutions, the Advisory Panel felt that that the Project would be able to identify structures and processes with the potential to achieve better healthcare outcomes.[16] The Panel identified a number of innovative healthcare delivery systems to examine for this purpose. The selected systems and institutions were Cleveland Clinic, Dean Health System, Everett Clinic, Geisinger Health System, Gundersen Health System, Intermountain Health, Kaiser Permanente, Mayo Clinic, and ThedaCare. Cleveland Clinic and Mayo Clinic are considered top tier specialty institutions not likely to serve as service delivery models for the Hudson Valley but they still provide useful lessons and examples. Furthermore, the Project recognizes that all of the innovative systems included serve regions that lack direct comparability to the Hudson Valley. Nonetheless, in planning for the future, evaluation of systems with the most favorable outcomes in the country provides value.

[16] The project reviewed innovative systems using the Donabedian Model, a framework for examining health services and evaluating quality of care in structure, process and outcomes. Donabedian, A. (1988). The Quality of Care: How Can It be Assessed? 1988. *Archives of Pathology & Laboratory Medicine*. P. 1145-1150.

DATA SOURCES AND ANALYSIS

For demographic data, the Project used the Cornell Program on Applied Demographics data.[17] For healthcare related data, the Project sought out information provided through government regulatory agencies including the Center for Medicare and Medicaid Services (CMS), the Centers for Disease Control and Prevention (CDC), the New York State Department of Health (DOH), New York State Department of Labor (NYSDOL) and the New York State Office of Mental Health (OMH). DOH hospital discharge records provide a rich source of data through the Statewide Planning and Research Cooperative Service (SPARCS). All of these data sets have limitations which are described below in the context of their usage. In the event no federal or state agency data was available, the Project looked to non-governmental sources such as the American Hospital Association and the Northern Metropolitan Hospital Association.

The various data sets were evaluated differently and posed unique analytical challenges. While SPARCS provides a rich data source, it offers only a snapshot of a single year of hospital discharges. Findings were tested against other years' SPARCS data and were found to be consistent. Many of the questions posed by the Project could be framed around a comparison either by county within the Hudson Valley, or a comparison of the Hudson Valley with New York state or other innovative healthcare systems. Hudson Valley tallies by county do not provide a granular level of detail that identifies individual institutions. Some of the data that required review of individual institutions is provided for each institution in the Appendices.

In addition to using the data to answer certain questions, the Project also sought to make projections of future capacity needs. Existing data was used to calculate current rates per 10,000 in population. Those rates were applied to future population projections. The Advisory Panel also urged that the Project build in the ability to conduct sensitivity analyses that would allow for projections with improved outcomes. Data analyses and projections were presented to the Advisory Panel on several occasions for further refinement.

[17] Although there are other population projections available, Pattern for Progress consistently uses the Cornell projections. The Cornell Program's projections are independent and are typically more conservative than other projections, particularly for the more northern portions of the region. Further, the State of New York also relies on Cornell's projections for various analyses.

DEMOGRAPHIC CHANGES IN THE HUDSON VALLEY

According to the Cornell Program on Applied Demographics, the total New York state population is projected to remain flat through 2040. While overall population stagnates, New York state is projected to see an increase in aging residents. New York state as a whole will grow only 1.3% by 2040, but the population 80+ will grow by 42.2%. The growth of older cohorts is expected to have the most impact upstate, outside of Metro-NYC, and the Hudson Valley is part of this growth trend. In the Hudson Valley, total population is anticipated to grow by 5.9% by 2040, yet the 80+ population is anticipated to grow by 54.6%.

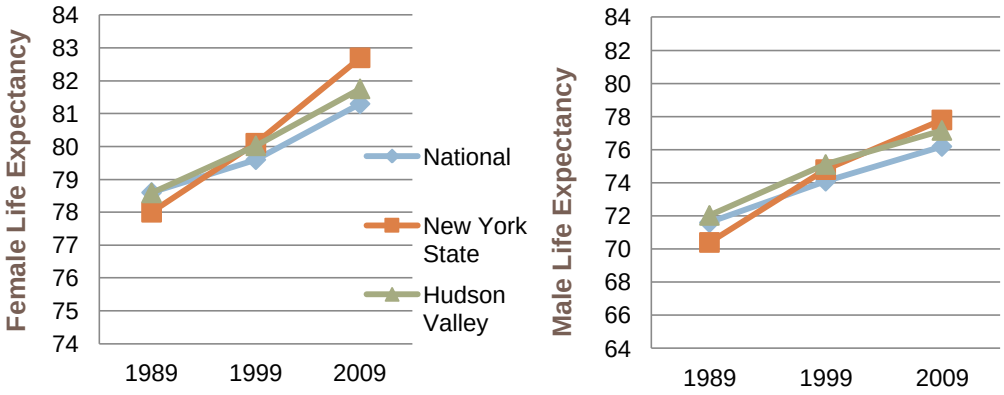
The Hudson Valley has great diversity among its counties. Westchester, Rockland, Orange and Putnam are within the NYC metropolitan statistical region. At nearly 1 million people, Westchester makes up approximately 40% of the Hudson Valley's population, whereas Sullivan makes up only 3.2% at 77,000 residents and Greene County only 1.8% at 44,000. Hence, it is no surprise that the counties of the Hudson Valley anticipate different population changes. In certain Hudson Valley counties, the aging phenomenon is particularly pronounced. For example, in Orange County, of the overall population growth of 19.2%, the 80+ population is anticipated to increase by 98.3% by 2040. In Columbia County, population is projected to decline by 20.1% by 2040; nevertheless, the 80+ population will grow by 65%. (See Appendix A for further demographic detail.)

BABY BOOMER IMPACTS: NUMBERS, LONGEVITY & EXPECTATIONS

As baby boomers age, older cohorts will make up a greater proportion of the total Hudson Valley population with the 65 and over set growing from 13.8% of the Hudson Valley population in 2010 to 18.8% in 2040. But, in addition to the number, boomers will also come to their golden years with different expectations. From life expectancy, to quality of care, to housing preferences, baby boomers will challenge and change the healthcare system.

Boomers can expect to live longer than their parents. According to data drawn from the Institute for Health Metrics and Evaluation, Hudson Valley male life expectancy has gone from 72 to 77.2 years between 1989 and 2009. Hudson Valley female life expectancy has gone from 78.6 to 81.8 in the same period, approximately a 5-year increase in life expectancy over 20 years.

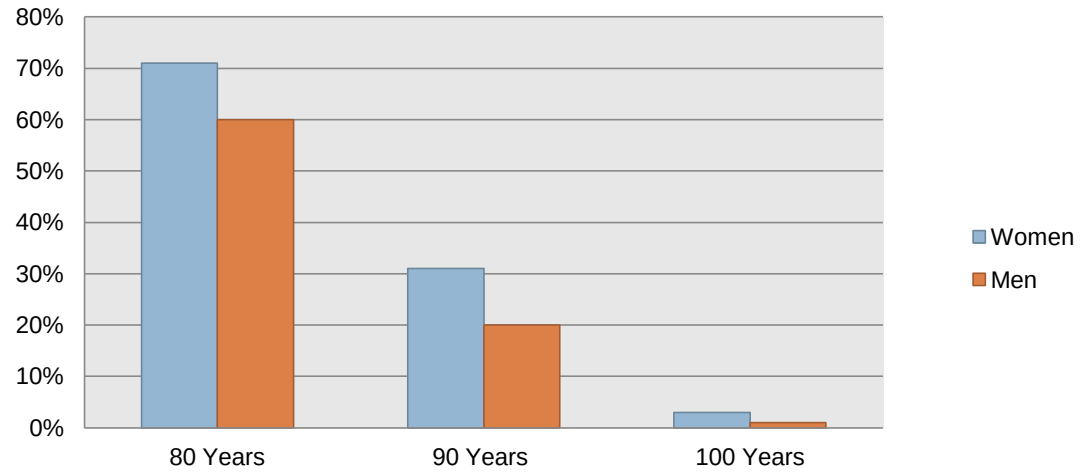
Figure 1. Average Life Expectancy



Source: *"US Health Map," Institute for Health Metrics and Evaluation, County Profiles*

As a result of these life expectancy changes, the region can expect to see greater numbers of those 80, 90 and 100 years old, as confirmed by the long-range population projections described above. As will be seen in the analysis below, it is these oldest seniors of the region that make up current skilled nursing facility residents and represent the more costly hospitalizations. Extended life expectancy must be factored into overall healthcare system planning.

Figure 2. Probability of a 65-Year-Old Living to 80, 90 and 100 as of 2011



Source: Society of Actuaries, (June 2012). Key Findings and Issues, Longevity, *2011 Risks and Process of Retirement Survey Report*. P. 5.

In a survey of boomers turning 65 years old in 2011, AARP found that financial security and health are the top concerns of the generation.[18] The biggest difference between the boomer generation and their parents' generation is that the boomers expect to work after retirement.[19] AARP also found that 25% of people aged 46-64 report that they have no retirement savings, and 26% have no personal savings.[20] With financial concerns and the need for many boomers to work past their retirement, having good health and mobility is essential to their livelihoods.

Baby boomers are more racially and ethnically diverse than previous generations.[21] This implies that they will demand services that are mindful of cultural differences, and how those differences affect care. Boomers are more educated. They will therefore be more involved in their care, and will seek options including alternative and complementary medicine.[22] Furthermore, medical advances will allow boomers to live more actively, with less disability, and as a result baby boomers will want services that allow them to remain independent. Hence, the increased numbers, longevity and expectations of the boomers impact this analysis of the current healthcare system of the Hudson Valley.

[18] Fleck, C. (2011, February 3). Boomers Report No Savings At All. AARP Bulletin. Retrieved from http://www.aarp.org/work/retirement-planning/info-02-2011/many_boomers_report_no_savings_at_all.html.
[19] Love, J. (2010). Approaching 65: A Survey of Boomers Turning 65 Years Old. Washington, DC. AARP. Retrieved from http://assets.aarp.org/rgcenter/general/approaching-65.pdf.
[20] Fleck, C. (2011, February 3). Boomers Report No Savings At All. AARP Bulletin. Retrieved from http://www.aarp.org/work/retirement-planning/info-02-2011/many_boomers_report_no_savings_at_all.html
[21] Pruchno, R. (2012). Not Your Mother's Old Age: Baby Boomers At Age 65. *The Gerontologist*. Retrieved from http://gerontologist.oxfordjournals.org/content/52/2/149.full.
[22] American Hospital Association (2007). *When I'm 64: How Boomers Will Change Healthcare*. Retrieved from http://www.aha.org/content/00-10/070508-boomerreport.pdf.

CURRENT STATUS OF HEALTHCARE SYSTEM IN THE HUDSON VALLEY

The Hudson Valley is diverse in its geography, terrain, and population. Its fragmented healthcare system reflects these differences. The region is served by 37 hospitals, 95 skilled nursing facilities, 23 long-term home healthcare agencies, 152 certified and licensed home healthcare agencies, seven hospice agencies, 10 Federally Qualified Health Centers (FQHCs),[23] 7,840 physicians, hundreds of behavioral health providers and thousands of ambulatory care offices, clinics and practices. Of the Hudson Valley's physician count in 2009, 31.6% are in primary care, and 46.2% are over the age of 55. (For more detailed information on physician distribution and age, refer to Appendix B).[24] The Hudson Valley has seen the evolution of several large multi-specialty groups: Crystal Run Healthcare, Mid-Hudson Medical, Mount Kisco Medical Group and WESTMED Medical Group. The Hudson Valley has two Veterans Affairs hospitals (Castle Point and Montrose) as well as seven VA clinics throughout the region.[25]

While the focus of this Project is the healthcare and its impact on the baby boomers, it would be remiss if the issue of physician supply and demand were not discussed. Extensive work on physician supply in the Hudson Valley was published in 2010 by SUNY New Paltz's Center for Research, Regional Education and Outreach. The study concluded that the region is experiencing a shortage of doctors, particularly in primary care.[26] By 2020 the national supply of

[23] FQHC boards are composed of 51% or more health center patients representing the population served. They emphasize the coordination and comprehensiveness of care, managing patients with multiple health care needs, and the use of key quality improvement practices, including health information technology. Health Resources and Services Administration. (2012). *The Affordable Care Act and Health Centers*. U.S. Department of Health and Human Services. Retrieved from http://bphc.hrsa.gov/about/healthcenterfactsheet.pdf. The Hudson Valley has 10 FQHCs with 72 facilities total that served 409,000 patients in 2012, with 6% of patients over the age of 65 and 6.5% of patients seeking behavioral health services. The average total cost per patient in the Hudson Valley was $725.55. The Mount Vernon Neighborhood Health Center, Inc. in Westchester, with 8 facilities, accounted for 23.6% of the total Hudson Valley patients, had the lowest total cost per patient at $287.19, and the highest percent of their cost coming from federal grants at 24.7%, compared to the aggregated Hudson Valley totals of $725.55 per patient, and 9.7% of total cost. Compiled by Pattern from Health Resources and Services Administration. (2012). *Primary Care: The Health Center Program Databank*. U.S. Department of Health and Human Services. Data Retrieved from http://bphc.hrsa.gov/uds/datacenter.aspx?q=d&state=NY#glist.

[24] These NYSDOH physician profile numbers cited in Appendix B differ substantially from other sources such as the Robert Wood Johnson County Health Rankings. Neither source makes clear whether a physician's county of origin is where they reside or practice, whether they are actively practicing, whether they are part of a larger physicians' group. The lack of a comprehensive roadmap of primary care in the Hudson Valley will present a barrier moving forward to providing coordination of care, sharing of electronic health records, integration and affiliation with potential partners. A regional health planning effort should seek to identify and categorize primary care physicians.

[25] Although outside the scope of this work, given the current national discussion with regard to the quality of VA care, further evaluation of the quality of care received by veterans in the Hudson Valley is merited and care for veterans should be integrated into any future regional health planning efforts.

[26] Reed, K. (2010). *Is there a Doctor in the House? Physician Recruitment and Retention in the Hudson Valley*. Center for Research, Regional Education and Outreach (CRREO). New Paltz, NY. Retrieved from https://www.newpaltz.edu/crreo/discussion-brief-3-is-there-a-doctor-in-the-house.pdf.

physician graduates will be outstripped by retiring and deceased physicians.[27] Furthermore, the CRREO work documented substantial medically underserved rural portions of the region, with a specific lack of primary care physicians.[28] Some of the need for physicians has been addressed through the increased use of physician extenders (such as physician assistants and nurse practitioners).[29] As discussed below future regional healthcare planning must address physician and physician extender supply through training and recruitment.

The Hudson Valley healthcare system is fragmented. Most providers have relationships with many other providers. A patient may see a dozen different providers who are not formally connected. Communication and care coordination among them are inconsistent and not in a standardized format. Changes to the provider landscape are rapid and constant. For example, on May 9, 2014, Westchester Medical Center took over St. Francis Hospital, bringing it under the Westchester County Health Care Corporation parent as the new Mid-Hudson Regional Hospital.[30] DOH is urging hospitals to seek affiliates with other institutions. Several examples of this recent affiliation effort include the New York Presbyterian takeover of Lawrence Hospital Center.[31] Montefiore Health System also recently announced its alliance with White Plains Hospital,[32] and Nyack Hospital.[33] Montefiore already operates what was Sound Shore Health System in Mount Vernon. HealthAlliance recently reported that it is in affiliation discussions with up to six potential regional partners.[34] Northern Westchester Hospital recently is exploring affiliation with North Shore-Long Island Jewish Health System.[35] These affiliations may not necessarily mirror the DSRIP collaboratives now being formed, thus Hudson Valley healthcare has numerous provider partners testing relationships with other potential partners. There is an opportunity to structure these alliances for benefit to the region.

[27] *Id.* The CRREO study covered 8 of the 9 counties covered by this Project, but excluded Westchester.
[28] *Id.*
[29] Elliott, V. (2011, September 27). Number of Physician Assistants Doubles Over Past Decade. *American Medical News*. Retrieved from http://www.amednews.com/article/20110927/business/309279997/8/ .
[30] C. Wolf. (2014, May 9). Saint Francis Hospital Changes: What You Need to Know. *Poughkeepsie Journal*. Retrieved from http://www.poughkeepsiejournal.com/story/news/local/2014/05/07/saint-francis-westchester-medical/8829849/.
[31] B. Herman. (2014, January 13). New York-Presbyterian Seeks Takeover of Lawrence Hospital Center. *Becker's Hospital Review*. Retrieved from http://www.beckershospitalreview.com/hospital-transactions-and-valuation/newyork-presbyterian-seeks-takeover-of-lawrence-hospital-center.html.
[32] Montefiore Health System. (2014, February 6). White Plains Hospital and Montefiore Health System Announce Plans for New Alliance. Retrieved from http://www.wphospital.org/About-Us/News-Events/Press-Releases/White-Plains-Hospital-and--Montefiore-Health-System.
[33] Mid Hudson News. (2014, June 27). Nyack Hospital to Joint Montefiore Health System retrieved from http://www.midhudsonnews.com/News/2014/June/27/Nyack_Hosp_Montefiore-27Jun14.html.
[34] P. Kirby. (2014, May 21). HealthAlliance Working Hard to Find Corporate Partner, CEO David Scarpino Says. *Daily Freeman*. Retrieved from http://www.dailyfreeman.com/general-news/20140521/healthalliance-working-hard-to-find-corporate-partner-ceo-david-scarpino-says.
[35] Golden, J. (2014, June 16). Another Westchester Hospital Looks to Long Island for Partner. *Westchester Business Journal*.

DSRIP will have immediate impact by incenting collaboration among Hudson Valley providers. New York State's $8 billion Medicaid waiver program allocates $6.42 billion for DSRIP including DSRIP Planning Grants, DSRIP Provider Incentive Payments and DSRIP Administrative Costs. Another $1.08 billion is set aside for other Medicaid redesign purposes to support health home development, investments in long-term care, workforce and behavioral health. DSRIP has created a variety of proposed regional DSRIP partnerships varying in size and scope. For example, Westchester Medical Center's proposal contained nearly 100 partners. HealthAlliance's DSRIP proposal contained 15 geographically proximate partners. DSRIP non-binding statements of interest were due to NYSDOH on May 15, 2014, applications for planning funds are due June 17, 2014, and final DSRIP project plans are due in December 2014, with DSRIP implementation expected to begin in April 2015.[36] It is not yet known how DSRIP will affect the regional healthcare system, but it is just one example of the rapidly changing healthcare environment.

While the Hudson Valley is home to a large number of healthcare facilities, institutions and workers, its health metrics lag in comparison to other areas of the country with higher levels of integration.[37] One bright spot is that the Hudson Valley region has been recognized for quality and efficiency on the primary care side of the healthcare system.[38]

It is also well understood that many of the hospitals and nursing homes in the region are in a distressed financial position. Waves of hospital bankruptcies, closures and mergers, as well as nursing home funding problems, all discussed below, have dominated the last five years of healthcare service delivery news in the region. Meanwhile, many parts of the region see outmigration of residents seeking a better quality of care (whether perceived or real) downstate to Westchester or New York City, upstate to the Albany region, or out of state. In specialized care, providers anecdotally believe that there could be an outmigration rate as high as 51%.[39]

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[36] New York State Department of Health. (2014). FAQ: New York's MRT Waiver Amendment Delivery System Reform Incentive Payment (DSRIP) Plan. P. 7. Retrieved from https://www.health.ny.gov/health_care/medicaid/redesign/docs/dsrip_faq.pdf.

[37] Indeed, the Hudson Valley may be a microcosm of a larger issue in that the United States lags other countries in quality and efficiency of healthcare. How Health Care Systems Stack Up. (2014, June 17). *New York Times*. P. A24.

[38] The impact of the Hudson Valley Patient Centered Medical Home project has been highlighted in the Journal of General Internal Medicine and by the National Committee on Quality Assurance. http://m.healthcareitnews.com/news/ncqa-recognizes-51-sites-top-patient-centered-medical-home-status http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3208472/. The Hudson Valley is one of only seven communities across the United States for participation in Medicare's Comprehensive Primary Care. http://innovation.cms.gov/initiatives/Comprehensive-Primary-Care-Initiative/.

[39] Reed, K. (2010). *Is there a Doctor in the House? Physician Recruitment and Retention in the Hudson Valley*. Center for Research, Regional Education and Outreach. New Paltz, NY. Retrieved from https://www.newpaltz.edu/crreo/discussion-brief-3-is-there-a-doctor-in-the-house.pdf.

The ongoing competition between hospitals and large physician practices to capture the more lucrative outpatient business contributes to the problems of higher cost, suboptimal outcomes and lack of universal access. Since physicians can direct patient flow, they will self-refer to their own outpatient facilities, especially in large multi-or single-specialty groups. The current fee-for-service system can lead some large groups to internally "churn" (order more testing, consultations and procedures) in those cases for which well-established evidence-based guidelines are lacking. Hospitals which depend on outpatient revenues, [40] need to maintain the same outpatient facilities but are often left with a patient population that either lacks insurance or is underinsured because the large private practices are able to "cherry pick" the better paying patients. This duplication of ambulatory services is costly, and the lack of coordination between hospital ambulatory care and care in a physician's office contributes to poor outcomes. In contrast to private practices, hospitals must accept all comers.

The issues of high cost, poor outcomes and lack of universal access can only be overcome if hospitals and physician practices can become "aligned" in integrated delivery systems as seen in some of the "model" health systems in other parts of the country.[41]

The overall structure of the comparison to "model" innovative systems and institutions involved a wide range of locations, services delivered, and patient populations served, and are listed in Appendix C. The selection of these models began without any preference as to geographic location. Some of these health systems are not geographically analogous to the Hudson Valley but still inform the healthcare improvement discussion. For example, west coast-based Kaiser Permanente serves over 9 million people in a multi-state region. Three of the innovative systems identified for further study by the Project Advisory Panel are located in Wisconsin: Gundersen, Dean and ThedaCare. This comparison led to an examination of processes and particularly what elements in Wisconsin, whether legislative, social, economic, or other, may have given rise to a grouping of these successful systems. Yet these systems serve a much more homogeneous population and geographic region. The Geisinger Health System is more closely matched to the Hudson Valley region in that it covers a multi-county region within a single state with a rural population and a similar number of people (2.6 million versus the Hudson Valley's 2.4 million).

[40] B. Kutscher. (2012, August 4). Outpatient Care Takes The Inside Track. *Modern Healthcare*. Retrieved from http://www.modernhealthcare.com/article/20120804/MAGAZINE/308049929.

[41] For example, the Physician Hospital Collaboration Demonstration Project which seeks to align physician and hospital financial incentives to enhance the quality and efficiency of care across entire systems. Center for Medicare and Medicaid Services. (2014). Retrieved from http://innovation.cms.gov/initiatives/Physician-Hospital-Collaboration/.

All of the innovative systems studied are composed of physician practices and hospitals. Many of the systems have additional components such as an insurance entity either with a shared owner or as a longstanding partner.[42] Adding insurance products has allowed these providers to negotiate directly with employers and the government for premiums. In addition, some are integrated with skilled nursing facilities, home health services, hospice, behavioral health, pharmacies, and ambulance services, providing efficiencies so that multiple components of the system can set aligned goals and track patients to reduce costs and achieve better outcomes. The healthcare institutions of the Hudson Valley lack the scale of the integrated delivery system and hence many tools used by them.

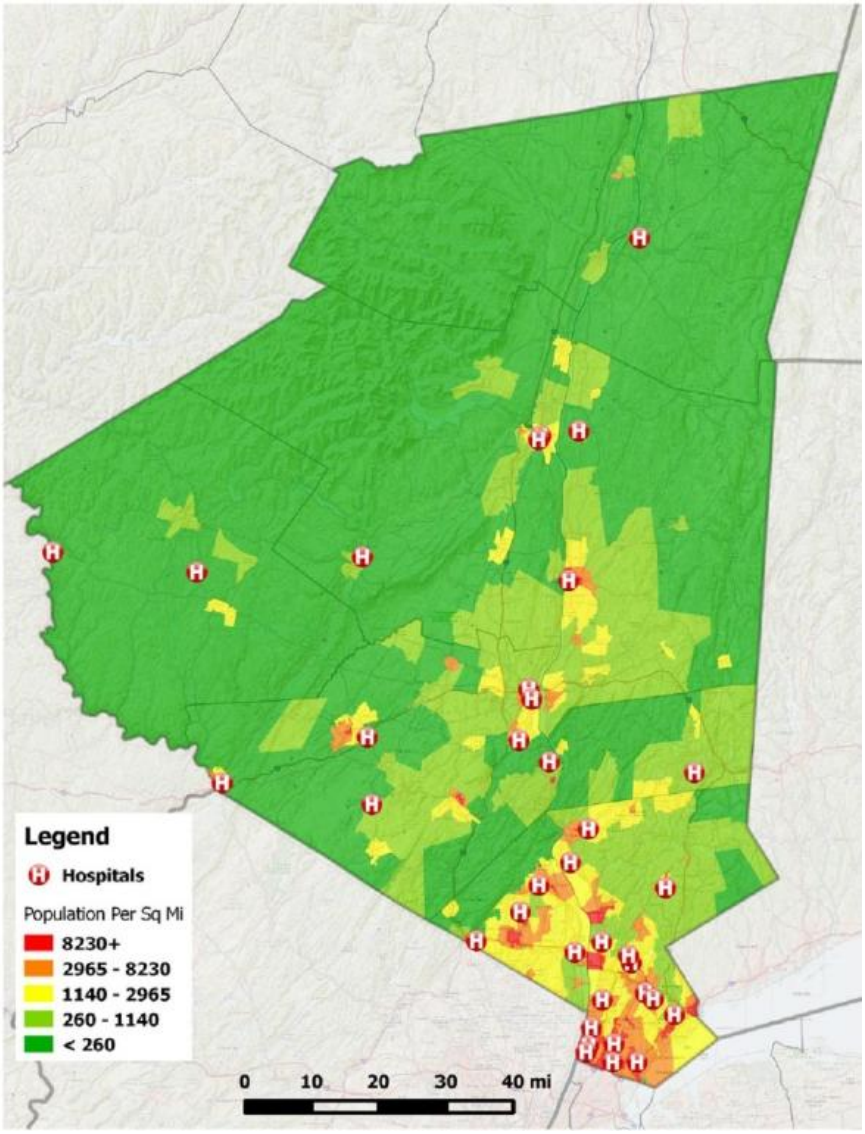
Several of the innovative systems have implemented performance improvement and engineering tools borrowed from industry to drive performance. Their financial success has enabled them to make the substantial capital investment required to purchase, implement and hardwire these systems. ThedaCare implemented "Lean" strategy to approach their disease registries. The strategy, which allows the system to track patients, benchmark them against other patients as well as state and national averages, assign a nurse case manager and target services to patients based on their characteristics.[43] Patient tracking is an essential mechanism for coordinated care between different types of care providers. Geisinger Health System built what they call an "innovation architecture" that engages provider stakeholders within the system to continuously examine and consider redesign of the system.[44] Gundersen has used both "Lean" and another engineering approach, "Six Sigma" (a tool for process improvement designed by Motorola).[45]

HOSPITALS

As of March 2014, there are 37 hospitals in the Hudson Valley. This includes 35 acute care hospitals (several of which are owned and operated by a single combined entity) and two critical access facilities. Nine of these are specialty hospitals. Greene County, the least populated in the study area, is the only county in the region with no hospital. Their patients access services in Columbia County and the Capital Region. Westchester has 17 hospitals and is home to nearly 40% of the region's population.

[42] For example, ThedaCare partners with insurer Bellin Health on a variety of programs despite separate ownership whereas Kaiser Permanente has an insurance component as well as primary and acute care.
[43] Toussaint, J., Berry, L. (2013, January). The Promise of "Lean" in Health Care. *Mayo Clinic Proceedings.*
[44] Paulus, R., Davis, K., Steele, G. (2008, September). Continuous Innovation in Health Care: Implications of the Geisinger Experience. *Health Affairs*, 27(1235-1245). Doi 10.1377/hlthaff.27.5.1235. Retrieved from http://content.healthaffairs.org/content/27/5/1235.long.
[45] Energizing Healthcare at Gundersen Lutheran. Retrieved from http://www.ncdhhs.gov/dhsr/mfp/pdf/2010/fees/0708_gundersen.pdf.

Figure 3. Hudson Valley Hospital Map



Source: Mapped by Pattern using NYSDOH Hospital Profiles and 2010 Census data

OUTCOMES: READMISSION RATES AND PATIENT SATISFACTION

Hudson Valley hospitals rate below national averages in typical measures of hospital quality.[46] (See Appendix D for outcome details on Hudson Valley hospitals.) For example, Hudson Valley hospitals exceed the national rates in hospital-wide readmissions, heart failure readmissions, heart attack readmissions

[46] Quality metrics are well developed for hospitals as government payers and regulators have established meaningful objective measures. The study speaks to the aggregate poor performance of hospitals only because hospitals represent the only sector for which meaningful quality data is readily available. There is data for nursing homes but national comparability is limited. Data for home healthcare and behavioral health is not available.

and pneumonia readmissions. Furthermore, the Affordable Care Act created a penalty for hospitals with readmissions rates that exceed the national readmissions rate. The Hospital Readmissions Reduction Program carries a potential penalty of up to 3% of a hospital's Medicare revenues and includes readmission indicators for heart failure, heart attack and pneumonia with additional indicators to be added in the future. Reducing admissions along with government pay for performance programs will continue to impact hospital revenues.

The Project used CMS Medicare Compare indicators to compare the Hudson Valley outcomes to those of innovative systems. A detailed summary can be found in Appendices D and E.[47] The outcomes evaluated include readmissions (hospital-wide, heart failure, heart attack, pneumonia and knee/hip surgery), mortality rates (heart failure, heart attack and pneumonia), percentage of patients that would recommend the hospital, door to balloon time,[48] the average time patients spent in the ER prior to admission, and the percentage of patients that report being given instructions for recovery at home.

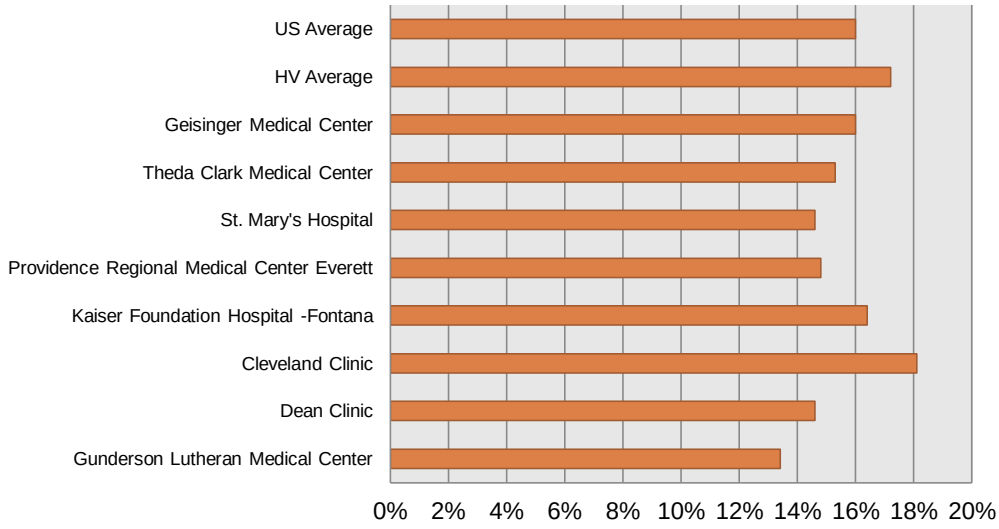
Although the innovative systems outperform national averages on patient experience they may fall below on some indicators due to the severity of patient condition.[49] (See Appendix E for a summary of outcomes for the model systems compared to the Hudson Valley.) For all hospitals nationwide, 71% of patients would recommend their hospital to a friend or relative. The Hudson Valley does not fare well in this category of outcome, with an average of 66.4%, as calculated from Medicare Compare. On wait time for an admission from the ER, the Hudson Valley hospitals exceed the national wait time of 275 minutes by 33% with an average wait time of 366 minutes. The Hudson Valley hospitals also exceed the national average and several innovative institutions for hospital-wide readmissions.

[47] Appendix D data aggregated from Medicare Compare, http://www.medicare.gov/hospitalcompare/search.html.

[48] Door to Balloon time is presented as a percentage of heart attack patients that were given a PCI within 90 minutes.

[49] Certain facilities such as Cleveland Clinic and Mayo attract the sickest patients from all over the world because of their experience and reputation in addressing complex health problems. Thus they are really acting as specialized facilities.

Figure 4. Hospital-Wide Readmission Rates of Innovative Institutions



Source: Medicare Compare and Hudson Valley Average Calculated by Pattern

A review of outcomes from innovative institutions makes clear that the Hudson Valley hospitals could do better. However, hospitals do not act in a vacuum. They may have no control over who comes to the hospital. The neediest populations without appropriate preventative primary care often wind up as emergency room (ER) admissions. The difficulties in regional behavioral healthcare delivery discussed below have impacted hospitals and emergency departments in that this very challenging population has significant medical co-morbidities.

Financial Footing and Occupancy Rates

As stated previously, Medicare has implemented a Readmissions Penalty Program. If Hudson Valley hospital quality metrics cannot be improved, the Medicare readmission penalties will impact the hospitals financially. Hospitals that perform below average will be penalized on their Medicare reimbursements. Financially, Hudson Valley hospitals have been adversely affected by poor operating and bottom line margins. The Northern Metropolitan Region (which includes all Hudson Valley hospitals except Columbia Memorial), had a 2011 operating margin of .6% and a 2011 bottom line margin of -1.3%. Compare these margins to areas of the state that have seen widespread consolidation such as Rochester (operating margin 3.3%, bottom line margin 1.3%). A review of the margins for NorMet region hospitals indicates a wide disparity in financial health within the region (See Appendix F). Yet the Hudson Valley hospitals are on par with New York state hospital margins overall (operating margin .73%, bottom line margin -1.9%). Considering that most industry experts feel that a

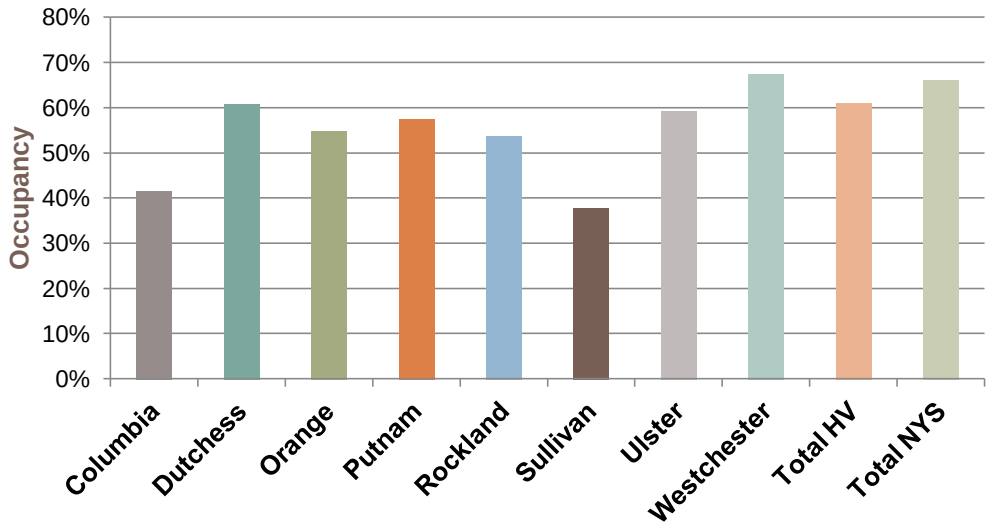
financially healthy hospital must achieve a 3-4% operating margin, the fiscal plight of Hudson Valley and New York hospitals becomes even more acute.

Hospital occupancy rates are considered a leading indicator of hospital facility financial viability and efficiency. Nationally, overall hospital occupancy rates dropped to 66% as of 2010.[50] Hudson Valley hospitals are no exception to this trend with an average occupancy rate of 61%. Even innovative systems have seen hospital occupancy rates decline.[51] Even empty beds draw facility resources. Yet occupancies that are too high can create a greater likelihood of hospital acquired infection, and may mean that needy patients will be turned away for lack of a bed. Queuing theory and hospital acquired infection data point to an optimal maximum occupancy rate between 82 and 85%[52] with more need-specific analysis by institution.[53]

Hudson Valley hospital occupancy rates were calculated by taking the number of staffed beds and assuming that each bed had 365 potential patient days per year to calculate total potential patient days (number of staffed beds multiplied by 365 potential patient days each), and then comparing that to the actual number of occupied patient bed days using 2012 SPARCS data. Hudson Valley hospitals on average have a slightly lower (61%) occupancy rate than New York state hospitals averaged (66%). Hospitals in the most rural counties (Columbia and Sullivan) suffer the lowest occupancy rates.

[50] Medicare Payment Advisory Commission. (2010) Report to the Congress: Medicare Payment Policy, Chapter 3: Hospital Inpatient and Outpatient Services: Assessing Payment Adequacy and Updating Payments. P. 52.
[51] The Milwaukee area has seen occupancy rates plummet to less than 50% for many of the areas hospitals as more procedures are done outpatient. Hess, C. (2012, January 20). Hospital Occupancy Rates Drop Sharply. *Milwaukee Business Journal*. Retrieved from http://www.bizjournals.com/milwaukee/print-edition/2012/01/20/hospital-occupancy-rates-drop-sharply.html?page=all.
[52] Jones. R. (2011). Hospital Bed Occupancy Demystified. *British Journal of Healthcare Management*. 17(6): 242-248.
[53] Bain, C., Taylor, P., McDonnell, G., Georgiou, A. (2010). Myths of Ideal Hospital Occupancy. *Medical Journal of Australia*. 192(1): 42-3.

Figure 5. Hudson Valley Hospital Occupancy Rates by County



Source: Calculated by Pattern from 2012 SPARCS Discharge Data

Use of SPARCS data to calculate occupancy rates based on the number of staffed beds does not properly account for observation days or partial-day bed occupancies. Individual institutions have internal data that will enable them to provide more accurate occupancy numbers. Observation status is just one of many reimbursement issues having a large impact on hospital operations. With recent changes in Medicare reimbursement, hospitals are only reimbursed on an outpatient basis if it is determined that a patient should not have been admitted.[54] A patient may be kept for up to three days without an admission. Those patients' stays do not result in an admission or a discharge record and yet they are taking up beds, staffing and facility resources. Observation status and changes to payment rules for observation status will have continuing impacts on occupancies, length of stay and other hospital metrics.[55]

[54] Medicare has issued the Two Midnight Rule which directs providers to admit patients if the patient's hospital stay is expected to exceed two midnights. New rules also address previous financial disincentive for inpatient admission by allowing hospitals to rebill an outpatient visit as an admission if later determined to be appropriate. E. Fontana. (2013, October 15). The Two Midnight Rule: What You Need to Know. *Cardiovascular Rounds*. Retrieved from http://www.advisory.com/research/cardiovascular-roundtable/cardiovascular-rounds/2013/10/q-a-the-two-midnight-rule. Medicare patients kept as observation patients only and never admitted find themselves shouldering a much larger portion of the hospital bill because the patient's costs are treated as outpatient. Furthermore, without an admission and a three night stay the patient will not find admission to a SNF for rehabilitation covered by Medicare. A. Tergesen. (2013, October 19). Beware Medicare's 'Observation' Status: It Can Mean Surprise Out of Pocket Expenses. *Wall Street Journal*. Retrieved from http://online.wsj.com/news/articles/ SB10001424052702303376904579135732284488114.

[55] The project was unable to obtain observation day numbers for Hudson Valley hospitals but the number of observation days nationally has increased 69% in the five years prior to 2011. S. Jaffe. (2013, September 14). FAQ: Hospital Observation Days Can Be Poorly Understood and Costly to Medicare Beneficiaries. *Kaiser Health News*. Retrieved from http://www.kaiserhealthnews.org/stories/2013/september/04/observation-care-faq.aspx.

For the region's most economically disadvantaged, the ongoing lack of access to qualified primary and behavioral healthcare will continue to strain hospital emergency departments[56].

It is important to note that Critical Access Hospitals (such as Catskill Regional Medical Center G. Hermann site in Sullivan County, Ellenville Regional Hospital in Ulster County and HealthAlliance's Margaretville Hospital in neighboring Delaware County), are required to have an average annual length of stay of 96 hours or less per patient. This excludes swing bed and specialized care units.[57] Thus, Critical Access Hospital bed need should not be based solely on occupancy rates.

Analysis showed the average length of stay for all SPARCS 2012 discharges in New York state and the Hudson Valley was 5.2 days. However, patients 70 and over stay one full day more on average than the population as a whole. The average length of stay for patients over 70 in Hudson Valley hospitals was 6.2 days. In all New York state hospitals, the average length of stay for patients over 70 was 6.4 days.

Definitions and Methods for Hospital Calculations

In terms of hospitalizations of seniors, the Project evaluated 2012 SPARCS data for patients over 70 years of age.[58] SPARCS is a New York State collected data set of every hospital discharge in New York in a given year. It provides detailed information on diagnoses, charges per patient,[59] length of stay and disposition (where the patient went upon discharge). The term "discharges" is used throughout the study as a proxy for admissions. This data provides the ability to not only compare hospitals within the region but to determine what diagnoses are driving the costs of hospitalizations in the Hudson Valley.

An evaluation of diagnoses can assist in determining various health conditions and the resources associated with their treatment. Diagnosis codes provide some value for analysis purposes but they have two flaws which must be considered when analyzing data. First, patients, particularly older ones, may have coexisting conditions, presenting two or more health conditions, yet SPARCS limits categorization of a discharge. Second, diagnosing physicians

[56] Eliott, V. (2012, June 5). Most Emergency Department Patients Lack Access to Other Sources of Care. *American Medical News*. Retrieved from http://www.amednews.com/article/20120605/business/306059997/8/.
[57] U.S. Department of Health and Human Services, Center for Medicaid and Medicare Services. (2013, December). Critical Access Hospital Fact Sheet (ICN 0064100). Retrieved from http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/CritAccessHospfctsht.pdf.
[58] One drawback of SPARCS data is that it does not provide the actual age of a discharged patient but rather an age cohort and as older Americans begin to have greater impact on the healthcare system it would assist in policy analysis if discharges were either provided by age smaller age cohorts.
[59] The project recognizes that evaluating charges rather than costs provides limited value. Future work should seek to ascertain actual costs, both for individual diagnoses as well as comparisons of hospital to nursing home and home healthcare.

and facilities have a choice of diagnosis code and where multiple codes could be used, the code selected may be that which optimizes payment. Thus, diagnosis codes alone may not provide a true picture of healthcare conditions.

HOSPITAL ADMISSIONS OF SENIORS

Merely quantifying numbers of hospitals, their bed types and financial status does not provide sufficient information regarding underlying use of hospital beds by the aging population or what diagnoses for senior citizens cost the healthcare system overall. Using the 2012 SPARCS data, the Project was able to evaluate hospital discharges including disposition, length of stay, diagnoses and charges per discharge.

The findings were that Hudson Valley hospitals are discharging patients to skilled nursing facilities more often than the rest of New York state hospitals. In 2012, 29% of Hudson Valley hospital discharges were to skilled nursing facilities versus only 25% for all New York state hospitals.[60] The difference is accounted for by home care. Hudson Valley hospitals are discharging to home care less often (17%) than New York state hospitals as a whole (22%). Many patients remain in the hospital because there is a lack of a supportive environment to allow safe discharge. As skilled nursing care is nearly double the cost of homecare, the Hudson Valley healthcare system is seeing more expensive post-acute care than the rest of the state.

Length-of-stay drives costs to the healthcare system.[61] Lack of a supportive environment to allow safe discharge may result in longer lengths of stay. A system of appropriate and quality level post-acute care is needed to reduce hospital stays. Examining patients' diagnoses assists in determining the need for post-acute care. The Project looked at the most common diagnosis codes for discharges of patients over 70 in the Hudson Valley. In 2012, septicemia was the most common diagnosis with 6,699 discharges[62]; congestive heart failure (CHF) comes in next with 4,400 discharges. The top eleven diagnoses are listed below and account for approximately 42% of all discharges of patients over 70. The other 58% of discharges are divided among 413 other diagnosis codes. Rehabilitation is listed as a common diagnosis. A single Westchester County rehabilitation facility, Winifred Masterson Burke Rehabilitation Hospital, accounts for 52% of all Hudson Valley rehab discharges.

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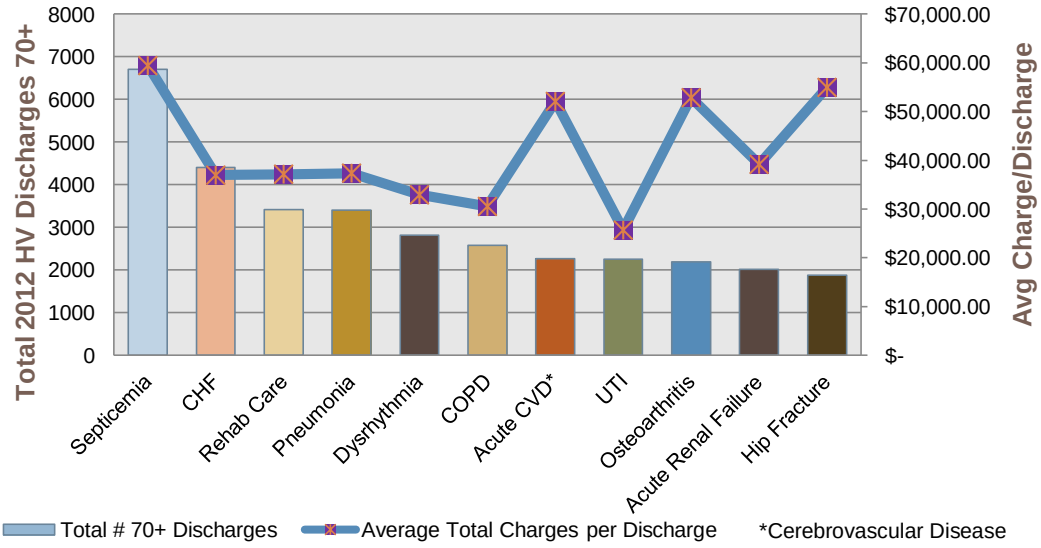
[60] 2012 was not an outlier as SPARCS data showed similar discharge disparities for other years.

[61] Some insurers including Medicare and Medicaid pay based on diagnosis or DRG codes, but other insurers do pay per diem. Regardless, length of stay influences overall cost to the healthcare system.

[62] Septicemia as the top diagnoses for discharges over 70 is supported by data presented by the United States Department of Health and Human Services in 2012, which lists septicemia as the number one diagnosis in hospital discharges over 65 nationally as well. U.S. Department of Health and Human Services. (2012). *Health, United States, 2012: With Special Feature on Emergency Care.* Retrieved from http://www.cdc.gov/nchs/data/hus/hus12.pdf.

Figure 6. Hudson Valley Average Charge per Discharge for Most Common Diagnoses for Patients 70+



Source: Calculated by Pattern from SPARCS 2012 Discharge Data

There are three major ways to reduce hospital costs to the healthcare delivery system: reduce the number of patients admitted, reduce the length of stay, or reduce the cost of treatment. For example, rehabilitation admissions for people over 70 in the Hudson Valley have an average length of stay of 12.4 days, but the average charges for each of those days is only $2,994. On the other hand, osteoarthritis has a very high average charge per day of over $13,525[63] but a limited average 3.9 day length of stay. (See Appendix G for further discussion of individual diagnoses, associated charges per patient and length of stay.)

If hospitals cannot contain costs and reduce their acute care bed numbers or consolidate to achieve more optimal occupancy rates while improving outcomes, they will not be financially viable and will not be able to serve the needs of the baby boomers or the rest of the residents of the Hudson Valley. What is needed going forward is for healthcare providers to examine the data for their base of patients and catchment areas. Then working with physicians, ambulatory care, home healthcare, and skilled nursing facility partners, as well as insurers, the system can be modified to provide better coordination of care and specific efforts can be undertaken to improve specific outcomes. Some of this will begin to occur through DSRIP collaborations. By incorporating claims data and individual electronic health records, with appropriate privacy protections, providers could identify the true drivers of cost in the system and create a roadmap for improvement.

[63] Osteoarthritis high daily charges are likely driven by the costs associated with joint replacements. To reiterate, charges, while available through SPARCS, serve as a proxy for cost but are not a true representation of cost.

RECOMMENDATION: Regional healthcare planning must make further efforts using SPARCS as well as claims data to analyze patient data for seniors. Ideally, that analysis will be able to analyze the actual age of patients and provide finer gradation of senior age cohorts than SPARCS now allows. By reducing the length of stay and the number of admissions for particular diagnoses, providers will improve the lives of seniors and reduce overall costs.

FUTURE BED NEED

The Hudson Valley has slightly fewer hospital beds per 10,000 than New York state (29.07 versus 30.48 beds per 10,000).[64] While the number of beds per 10,000 may be similar to the state as a whole, the types of beds differ in several notable ways. The Hudson Valley has a higher proportion of physical rehabilitation, psychiatric and chemical dependence beds than the rest of New York state and fewer pediatric, pediatric ICU and general medical surgical beds. (See Appendix H for a comparison of Hudson Valley and New York state bed types.) These differences are to the same extent driven by specialty facilities in the region. In addition, the Hudson Valley and New York state lack certain types of beds altogether (such as hospice, transitional and swing[65] beds) where innovative systems discussed below include these beds in their mixes.

This mix raises the question of whether the Hudson Valley's number and type of hospital beds is appropriate for the region and optimal results. For example, is the chronic obstructive pulmonary disease (COPD) patient better off in a medical/surgical bed 15 minutes from home or in a respiratory care unit 45 minutes from home where all patients are cared for by nurses trained to deal with their specialized needs as well as by physicians with pulmonary expertise? Would this type of specialized care reduce length of stay, improve outcomes, reduce readmissions and reduce cost?

An examination of Hudson Valley hospital quality measures, financial footing, bed mix and current usage by patients over 70 years old drives the question of whether the region will have the appropriate hospital resources to address the needs of the baby boomers as they age. Using population projections through 2040 this study undertook to evaluate whether additional hospital beds will be needed in the Hudson Valley.

In order to predict future bed usage based on population demographic changes, the Project calculated the current hospital admissions rate per 10,000 for Hudson Valley residents. The Project used SPARCS discharges as a proxy for admissions.

[64] As calculated by Pattern using hospital profiles and U.S. Census data.
[65] Swing beds can be converted from one type to another, for example from general medical/surgical to SNF.

Table 2. Hudson Valley Hospital Admissions Rates and Projections

Age	0 to 69	70 and older	Total
Total 2012 Discharges	185,713	81,525	267,238
% of Total Discharges	69.50	30.50	100
Total Pop[66]	2,170,637	232,531	2,403,168
Admissions Rate	0.086	0.351	0.111
Admissions / 10,000	856	3,506	1,112
Projected 2020 Discharges	188,305	95,903	284,208
Projected 2030 Discharges	187,523	117,977	305,500
Projected 2040 Discharges	186,594	127,407	314,001
% Change 2012 to 2040	0.47%	56.28%	17.50%

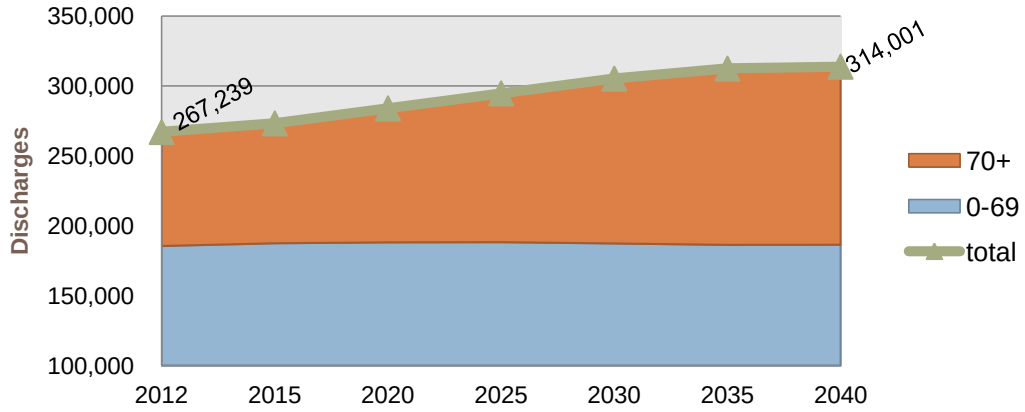
Source: calculated by Pattern from 2012 SPARCS discharge data, 2010 U.S. Census data and Cornell Program on Applied Demographics population projections data.

Applying current admissions rates to projected future populations, it is anticipated that there will be no growth in hospital admissions for the age 0-69 cohorts. However, since growth is projected for the 70 and over age cohort, we project an increase in hospital admissions numbers through 2040. We project resulting 2040 admissions increases from 267,238 to 314,001 (an increase of 45,763 admissions), driven almost completely by an additional 45,882 hospital admissions for those 70 and over.

Will these new admissions require additional hospital beds? The Hudson Valley currently has 6,987 certified hospital beds. Taking a full year of potential usage for each bed, Hudson Valley hospitals have a potential 2,550,255 possible patient days. Hudson Valley hospital records via 2012 SPARCS data indicates a total number of actual 2012 patient hospital days of 1,556,321, leaving 993,934 unoccupied patient days. With a total additional 46,762 admissions projected and an average length of stay of 5.2 days, we project an additional 243,162 more patient bed days by 2040, or a resulting use of 667 more of the existing hospital beds in the region, an amount easily absorbed by existing capacity.

[66] The project used 2010 census data because the census data provided appropriate age cohorts and the 2012 American Community Survey data does not. According to ACS the 2012 population for the 9 county region was 2,420,624, or .07% more than 2010 US Census data. Using ACS data for all age cohorts, the total Hudson Valley admissions rate for all age cohorts was 1,104 admissions per 10,000. Hence, using the slightly larger admissions rate of 1,112 to predict future admissions will conservatively predict slightly more admissions.

Figure 7. Predicted Hudson Valley Hospital Discharges Through 2040



Source: Calculated by Pattern using SPARCS admission rates and Cornell Program on Applied Demographics population projections data.

With 993,934 patient bed days available, and a projected increase of 243,162 days, increased admissions will not require additional Hudson Valley hospital beds. Even if we assume that ideal capacity for access and optimal outcomes is 85%, current capacity will more than satisfy the relatively minor growth in demand. Low occupancy rates, reduced admission rates, and overall declines in lengths of stay and occupancy over time mean that available patient bed days in the Hudson Valley hospital system are more than sufficient.

Indeed, increases in outpatient services, better care coordination, adoption of evidence-based medicine, technological changes and better preventative care will likely result in further declines in admissions rates and length of stay. Fewer hospitalizations and fewer days per hospitalization will be beneficial for patient quality of life and healthcare costs overall. The Hudson Valley could effectively reduce the current number of hospital beds without negatively impacting the quality of care. If we apply a current average length of stay to the predicted discharges in 2040, we obtain a total number of patient bed days. Using total patient bed days divided by 365 to give us a daily bed usage number in the Hudson Valley, we predict on average there will be 4,473 beds used daily in the Hudson Valley region. If hospital systems of the Hudson Valley were to have an ideal occupancy rate of 85%, then the region would have a total need in 2040 of 5,263 beds or 1,724 fewer than exist today.

Table 3. Total Hudson Valley Hospital Bed Need in 2040

Predicted annual discharges	314,001
Current average length of stay	5.2
Total predicted patient bed days	1,632,805
Beds needed (bed days/365)	4,473
Total beds needed to achieve 85% occupancy	5,263
Existing beds	6,987
Surplus beds	1,724

Source: Calculated by Pattern applying admissions rates and lengths of stay drawn from 2012 SPARCS data and applied to Cornell Program on Applied Demographics population projections data.

These numbers are extremely conservative when it is taken into consideration that hospital admissions rates have dropped 4.5% between 1995 and 2010 and are continuing to drop. (See Appendix I for admissions rates over time). Furthermore, average length of stay is declining. Indeed, although the 2010 national average length of stay was 4.8 days,[67] this study used the Hudson Valley average of 5.2 days and as length of stay continues to decline, so will hospital bed need.

To generate a more liberal number, we projected admissions rate declines of 25% through 2040 based on the current goals of DSRIP, outcome-based payment models, use of evidence-based medicine and other factors. Then, applying a shorter length of stay based on current national length of stay of 4.8 days, we find that the number of excess beds could exceed 3,343 which would support a projected 235,500 discharges annually and still provide an 85% occupancy rate. How the need for bed reduction is communicated will be a critical factor if it is to be successfully implemented. Communication to all stakeholders (patients, employees, governing bodies, medical staff, community members, chambers of commerce, organized labor and so forth), must be transparent, proactive and very clear. It must stress that all future bed reductions will actually improve care by targeting scarce resources to current needs such as the investment in systems, facilities and technologies to improve outcomes, patient experience and access. Special consideration must be given, however, when evaluating occupancy rates for hospital bed reduction purposes, to make patient access a primary consideration. Several of the hospitals with the lowest occupancy rates are considered critical access hospitals; without these facilities patients would experience lengthy transports for basic hospital healthcare.

The region must protect access for disadvantaged and rural populations. It is not practical to look at just the numbers such as occupancy rate and determine that

[67] Centers for Disease Control and Prevention. (2014). FastStats: Hospital Utilization. Retrieved from http://www.cdc.gov/nchs/fastats/hospital.htm.

facilities should be closed or downsized. Maintaining rural critical access hospitals, imperative for the quality of life in the region requires taking travel time and access into account. Conversion of hospital beds to other types of beds to accommodate observation status patients, patients with need for step-down care, outpatient services and transitional care as well as skilled nursing care will require substantial analysis and policy change. Plans to convert existing hospital beds into SNF beds (or other uses) must take into account the need to maintain higher SNF occupancy rates and financial health of existing SNF facilities. CON requirements tightly regulate nursing home beds, as discussed below, thus conversion of hospital beds to SNF beds will require state policy adjustments and guidance.[68] Furthermore, the physical and staffing differences between hospital beds and SNF beds may encumber a transition from one to another. Hence, the recommendations for the transition of beds merits further research and analysis and a regional strategy must be developed based on those requirements.[69] Where the conversion of hospital beds to SNF beds exceeds the cost of building new SNF beds, conversion will not be warranted. However, by bringing scale to the conversion needs throughout the Hudson Valley, those conversion costs may be mitigated.

RECOMMENDATION: The region has at least 1,700 excess hospital beds as projected through 2040, and maybe more. A coordinated effort must be made to consolidate the total number of acute care hospital beds in the Hudson Valley by converting acute care hospital beds to other types of needed beds including skilled nursing beds, transitional beds, swing beds, hospice beds, specialized condition-specific nursing units and outpatient facilities. This will serve to improve expertise and therefore outcomes. Critical access capacity must also be maintained.

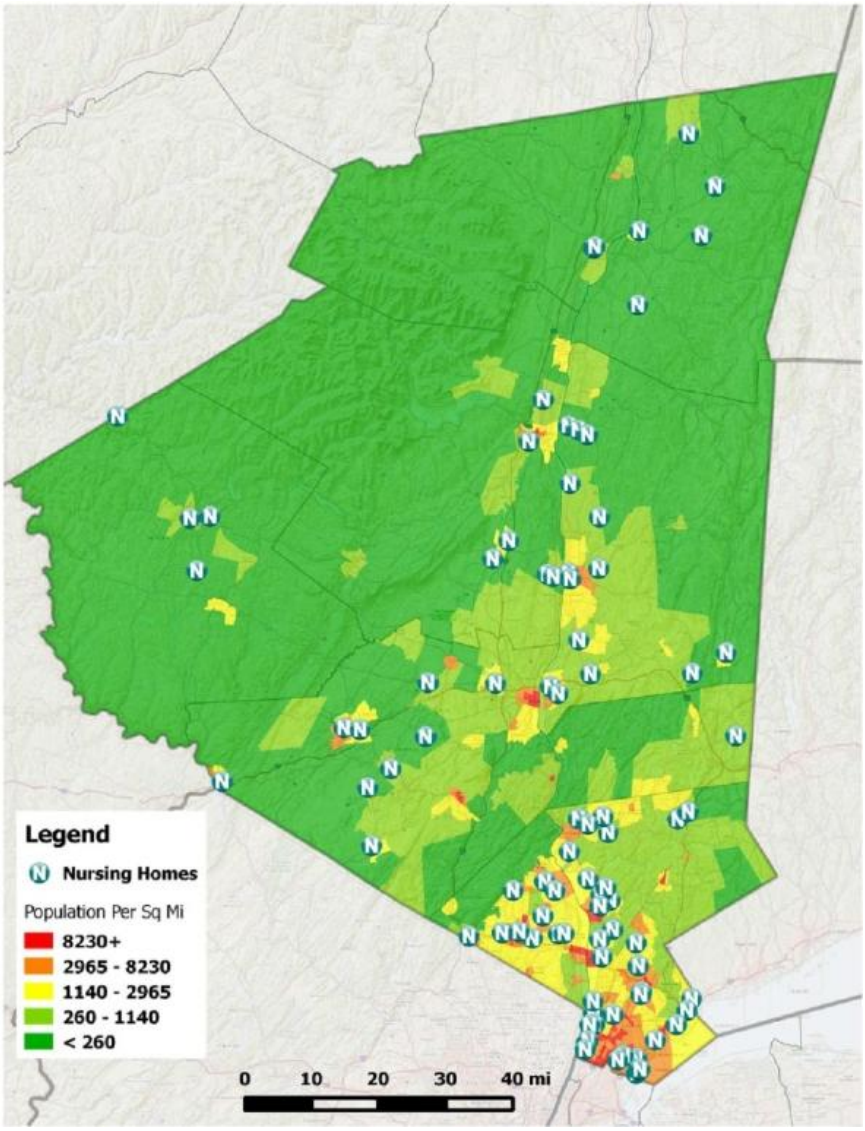
SKILLED NURSING FACILITIES (SNFs)

The Hudson Valley is home to 95 nursing homes, otherwise known as SNFs. The SNFs are primarily privately owned and operated, but there are several county-owned facilities as well. The Project obtained quality measures on Hudson Valley SNFs. Hudson Valley SNFs compare better than New York state and national averages on some measure but worse on others. (See Appendix J for a summary of Hudson Valley SNF outcome data aggregated by county).

[68] New models of care are requiring better collaboration among partners and yet regulatory barriers may slow these efforts. However, some hospitals are incorporating SNF beds into their facilities. Barr, P. (2014, June). Ready, Set, Grow. *Health & Hospitals Network Magazine*.

[69] The Mid-Hudson Regional Economic Development Council has identified the need for transition of existing healthcare facilities into continuum of care housing for seniors as a regional priority. Mid-Hudson Regional Economic Development Council. (2011). *Strategic Plan*. Strategy II (10).

Figure 8. Hudson Valley Skilled Nursing Facilities Map



Source: Mapped by Pattern using NYSDOH Nursing Home Profiles and 2010 U.S. Census data

FINANCIAL FOOTING

Not a week goes by in the Hudson Valley without a news article on the plight of public nursing homes. In the past, when there were few private nursing homes operating, county governments stepped in to fill the void and provide this much needed service. Over time, a variety of factors have made public operation of nursing homes more financially difficult. In 2010, 92% of county-run nursing homes in New York state lost money.[70] Additionally, the changing Medicare and

[70] Center for Governmental Research. (2013, August). *The Future of Nursing Homes in New York State*. p. i. Ninety-two percent of the state's county homes lost money in 2010, "with median losses per resident day

Medicaid reimbursement rates have been damaging to public facilities. In 2011, Medicare Part A reduced their reimbursement rates to all nursing homes by 11%, and in 2013, an additional 2%. County-run facilities serve more patients covered by Medicaid, and Medicaid rates fall short of actual costs in upstate New York of somewhere in the range of $42.50 to $100 per day.[71] As a result of these factors, the Hudson Valley has seen a shift from public to private providers which have been able to demonstrate profitability. (For a discussion and summary of public nursing home status, see Appendix K.)

FUTURE BED NEED

Nursing homes are residential medical care facilities that typically provide a mix of long-term and rehabilitation services. SNFs are regulated by New York State Department of Health (DOH) and operate under a CON, which dictates the number of beds and services available at each facility. CON determinations by DOH take into account the number of other SNF beds available in a geographic area and the anticipated need of new beds. Every five years, DOH takes a comprehensive look at SNF bed need for the region and issues predicted SNF bed need. Here is current DOH predicted bed need for the region which includes existing publicly run and privately run facilities.[72]

Table 4. Hudson Valley Skilled Nursing Facility 2016 Predicted Bed Need By County

County	2016 Bed Need	2011 SNF Beds	Unmet Bed Need	2011 Occ.
Columbia	667	667	0	92.80%
Dutchess	1,903	1,926	-23	94.30%
Greene	408	256	152	94.80%
Orange	2,122	1,438	684	94.20%
Putnam	446	320	126	89.20%
Rockland	1,635	1,654	-19	89.90%
Sullivan	515	435	80	93.10%
Ulster	1,078	999	79	94.20%
Westchester	6,716	6,673	43	95.40%
Hudson Valley Total	15,490	14,368	1,122	93.10%

Source: NYSDOH, Residential Health Care Facility Bed Need -2016

doubling since 2006 and quadrupling since 2001." The median cost per resident day in a county facility 73% higher than that in a for-profit facility in upstate New York. A primary underlying cause of this disparity is that median employee benefit costs per resident day in county-owned homes rose 181% between 2001 and 2010, as opposed to those in for-profit facilities, which rose only 74%, and non-profit facilities, which rose 87%. *Id.* at 18.

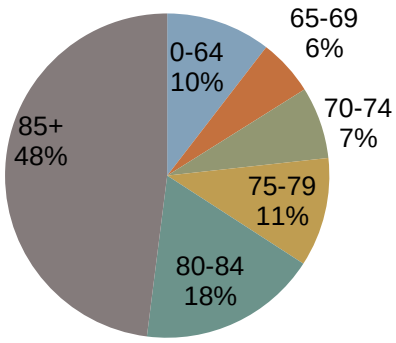
[71] *Id.* at 20.

[72] Bed need calculation methodology, set in state law and regulation, is updated periodically based on a variety of factors including demographics, current facilities, disabled population, etc. Current calculation methodology can be obtained from draft regulation 10 NYCRR 703.9.

According to DOH's calculations, Orange County's more rapidly aging population is having a significant impact on skilled nursing facility bed need, as DOH anticipates a need of 684 new beds by 2016, and that is assuming that the Valley View facility remains open at current capacity, whether in public or private hands.

Health Data NY issues the annual Nursing Home Cost Reports for each Nursing Home (called Residential Healthcare Facilities, or RHCFs, and are referred to here as SNFs), which includes census data. The SNFs provide an age breakdown of residents in SNF facilities on the day of the census. According to 2011 nursing home census data taken from RHCF Cost Reports, 48% of the SNF population in the Hudson Valley is over 85 years of age and 77% of the population is over 75 years of age. (Individual Hudson Valley nursing home census data is shown in Appendix L.)

Figure 9. Hudson Valley 2013 Skilled Nursing Facility Population by Age



Source: Calculated by Pattern from NYSDOH, RHCF Cost Reports, December 2011.

Using SNF census data and current population age cohort data, the Project was able to calculate a nursing home admissions rate by age cohort. For Hudson Valley residents over 85 years of age, the admissions rate of nursing home admissions is 1,221 per 10,000. Nearly half of skilled nursing facility residents are over 85, and those Hudson Valley residents who are over 85 have a much higher likelihood of being in a SNF compared to other age cohorts.

The Project used 2011 nursing home admissions to project the future. Using current rates of admission by age and population projections, we were able to determine that without other changes in admission rate, total nursing home bed need in the nine-county Hudson Valley region could increase from 12,406 to a need of 19,403 by 2040.

Table 5. Hudson Valley Aggregated Skilled Nursing Facility Bed Need Projections through 2040

Age Cohorts	2011 Census	Admissions/ 10,000	2020	2030	2040
0-64	1,297	4	966	956	963
65-69	698	49	662	729	598
70-74	891	85	945	1,097	995
75-79	1,349	156	1,188	1,527	1,672
80-84	2,216	314	1522	2,179	2542
85+	5,955	855	4,646	5,177	6,869
Total	12,406	1,462	9,929	11,666	13,639

Source: Calculated by Pattern applying admissions rates from NYSDOH Weekly Nursing Home Bed Census to Cornell Program on Applied Demographics Population data

However, given declining admissions rates[73] and changes in consumer preference, a more conservative increase is likely. If admissions to skilled nursing facilities can be reduced overall by 30% in all age cohorts, there will be a need by 2040 for an additional 1,233 beds in the Hudson Valley.

The Project assumed that 90% of all potential diversions of patients from admission to a skilled nursing facility would require long-term home healthcare. Reductions in SNF admissions will drive the need for expanded home healthcare capacity. Thus an examination of home healthcare capacity is in order.

RECOMMENDATION: Declining admissions, consumer preference and efforts to avoid nursing home admissions will only limit the need for new SNF beds to a degree. Even with substantial reductions of 30% in nursing home admission rates, the Hudson Valley still must prepare for more than 1,200 projected additional SNF beds by 2040. Without continued reductions in admissions rates, the projected SNF bed need could be much higher. Finding new SNF capacity will entail conversion of excess hospital beds where financially feasible and new development with the possible creation of specialized memory units, continuing care facilities and other housing alternatives that allow aging in place.

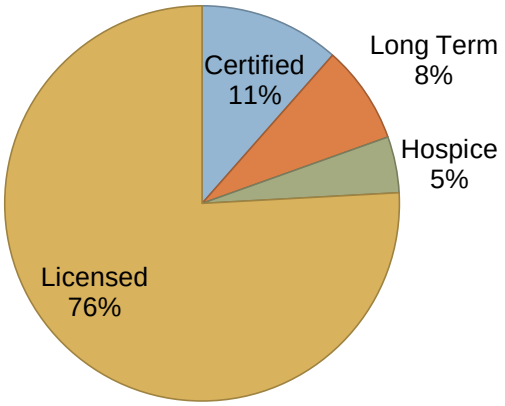
[73] National nursing home admissions rates have declined 18% between 2000 and 2010. The rates for national population over 65 declined 21.53% between 1995 and 2010. See Appendix I. Assuming a SNF admissions rate decline of 30% between 2010 and 2040 seems conservative given consumer preference for aging in place and changes in payment models to favor nonadmissions.

HOME HEALTHCARE

There are multiple types of home healthcare agencies in New York state licensed by DOH including licensed home healthcare agencies, certified home healthcare agencies, long-term home healthcare agencies, hospital based home healthcare, and hospice. In addition, there is a significant unlicensed, and in some cases undocumented,[74] home care and home healthcare service community for which data is hard to capture, but is meeting a business need and will likely see even more activity as the baby boomers seek to age in place.

There are 174 home healthcare agencies based in the nine-county Hudson Valley region. In addition, there are 114 home healthcare agencies located outside of the region that serve patients in the Hudson Valley. Certified home healthcare agencies provided over 1.1 million visits to patients in the Hudson Valley in 2008, the latest year in which data was available. But DOH does not provide age and health condition census data for patients served by home healthcare agencies. (For a detailed explanation of home healthcare agency types see Appendix M.)

Figure 10. Hudson Valley Based Home Healthcare Agencies by Type



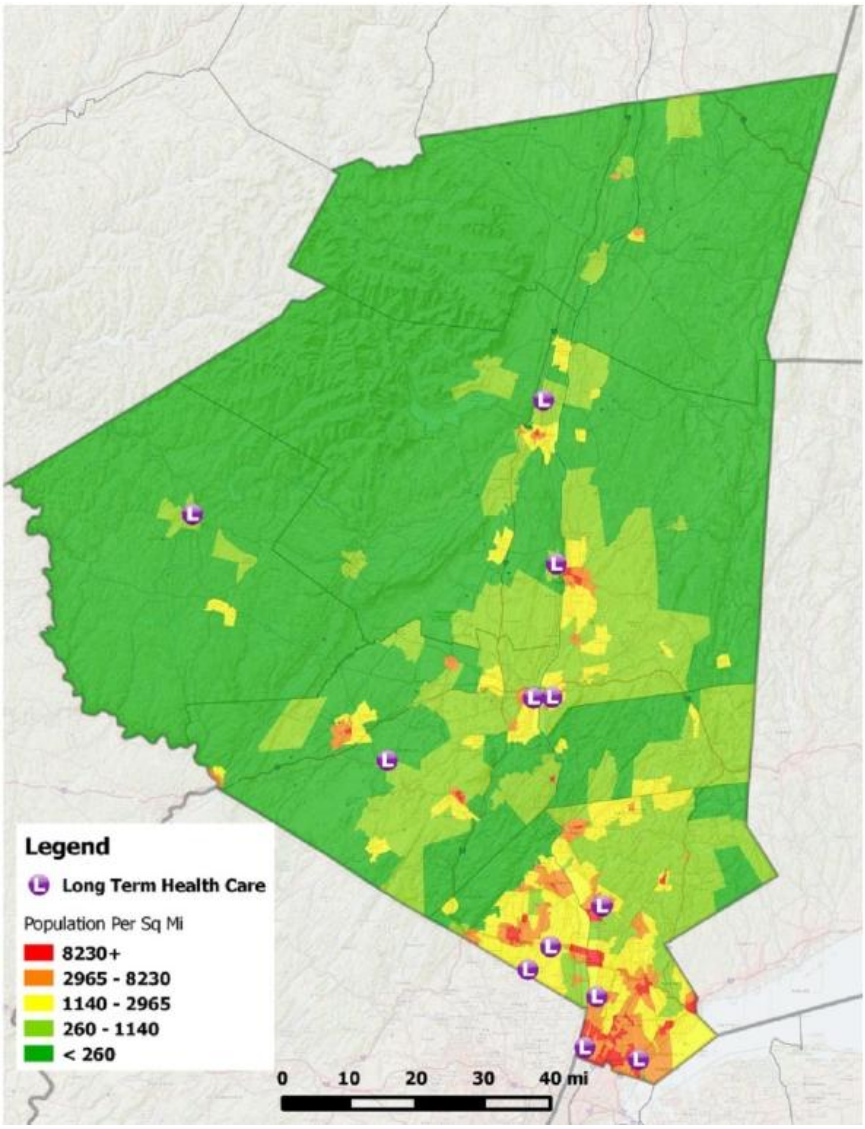
Source: NYSDOH, Home Health and Hospice Profiles

Long-term home healthcare can be an alternative to nursing home residence in certain cases. Not only is long-term home healthcare less expensive than skilled

[74] For a personal story about this see Steen, J. (2014, April 12). My Mother's Keepers. *The New York Times.* Retrieved at http://www.nytimes.com/2014/04/13/opinion/sunday/my-mothers-keepers.html?hpw&_r=0. A disproportionate number of Caribbean foreign-born healthcare workers serve in the long-term home healthcare capacity. McCabe, K. (2012, June 27). Foreign-born Health Care Workers in the United States. The Online Journal of the Migration Policy Institute. Retrieved at http://www.migrationpolicy.org/print/4254#.U0v83cac_WE.

nursing facility residence, but for many it may offer a better quality of life, as most individuals, including the baby boomers, would prefer to live at home.

Figure 11. Hudson Valley Long-term Home Healthcare Agencies Map



Source: Mapped by Pattern using NYSDOH Home Care Profiles and 2010 Census data

For the purposes of the Project, we chose to examine long-term home healthcare agencies, which address those patients with long-term home healthcare needs that can be otherwise met by a nursing home. In the 2008 data provided by DOH, some agencies report number of homecare visits and some agencies

report the agency's capacity (that is, the number of patients the agency can serve at any one time).[75]

The result demonstrates that as of 2008, the Hudson Valley lags behind New York state both in possible capacity of long-term home healthcare patients and in number of visits per patient. The differences in the availability of home healthcare were stark in certain counties such as Putnam, Dutchess, Rockland and Ulster.

Table 6. Hudson Valley Long-term Home Healthcare Agencies

County	Total # Visits	Available Patient Capacity	Patient Capacity per 10,000 Population
Columbia	15,200	100	16
Dutchess	36,435	240	8
Greene	9,120	60	12
Orange	63,805	453	12
Putnam	11,400	75	8
Rockland	48,608	295	9
Sullivan	21,594	142	18
Ulster	31,008	204	11
Westchester	371,398	2,295	24
Hudson Valley	608,568	3,864	16
New York State	7,296,809	36,219	19

Source: NYSDOH, Home Health and Hospice Profiles, and Pattern calculations

Based on population increases alone, the aging Hudson Valley will drive the need for expanded long-term home healthcare capacity. Specifically, even without changes to admissions rates for long-term home healthcare, Hudson Valley long-term home care patients will increase from 3,864 in 2008 to 5,709 patients by 2040, or a needed capacity increase of 1,845 patients. The change in reimbursement from transactional fee for service to outcome-based payment methodologies will drive the need for better care coordination. This will reduce hospital admissions and length of stay thereby increasing home healthcare utilization.[76] And with reductions in SNF admissions rates of 30%, the utilization of long-term home healthcare could increase radically to a potential 10,897 homecare capacity need over the current available capacity of 3,864, or a 282% increase.

[75] Not all agencies report capacity and visits. The project used those agencies that do report both to calculate average number of visits per patient of 187.2. We then used 187.2 visits per patient to calculate missing data of either number of visits or capacity for all agencies in New York.

[76] Agency for Healthcare Research and Quality. (2010). *The Roles of Patient-Centered Medical Homes and Accountable Care Organizations in Coordinating Patient Care*. P.5. Social Work Leadership Institute. (2008). *Towards the Development of Care Coordination Standards: An Analysis of Care Coordination in Programs for Older Adults*. New York Academy of Medicine. P. 20.

The Advisory Panel recommended an assumption that 90% of patients that avoid nursing home admissions will require long-term home healthcare. Regardless of whether the Hudson Valley healthcare delivery system is able to divert patients from nursing home admissions to long-term home healthcare, the long-term home healthcare system must increase capacity either through the creation of new agencies or by adding capacity at existing agencies to meet expected demand from demographic changes. Failing to meet this demand means lapses in care, more hospitalizations, and greater numbers of SNF admissions impacting both the region's quality of life and healthcare costs.

With changes in consumer preference and outcome-based payments, home healthcare utilization will grow. A strategy for rural home healthcare delivery is needed. There will be a business opportunity for growth in the home healthcare market in the Hudson Valley over the next several decades.[77] Not only should the region seek to address inefficiencies in the system, it should also address over-regulation of the services provided. For example, long-range planning and business development might seek to avoid having multiple providers making long commutes to visit single clients and instead consolidate services to rural areas through one or a few larger providers. In addition, services provided should be monitored to ensure that skills match needs so that licensed and extensively trained personnel are not deployed to address needs that can be met by employees with less training at a lower cost.

The creation of more independent and continuing care communities catering to the entire economic spectrum may make the provision of home healthcare agencies more efficient and less costly than the current systems.[78]

A universal assumption from the Advisory Panel was that the boomers in general would prefer home healthcare over care in SNFs. Some boomers will prefer to stay at home, others in residential communities with easy access to home healthcare services. The figures above, based on a 30% reduction of SNF admissions, may be too conservative. If so, home healthcare services in the Hudson Valley will need to increase capacity further.

[77] As noted recently in Hudson Valley Economic Development Corporation's annual review of BioHud Valley there are likely multiple healthcare related business growth areas. HVEDC. (2013). *NY BioHud Valley 2013 Annual Review.*

[78] The region does not have an abundance of such continuing care facilities at the present time. The HealthAlliance of the Hudson Valley operates Woodland Pond, a continuing care facility in New Paltz, but occupancies at Woodland Pond have been slower to ramp up due to a weak housing market where continuing care patients may not be able to sell homes and move. Furthermore, that model is income and asset dependent and does not cater to lower income seniors with few assets. Other possibilities of continuing care, senior housing with a healthcare component, naturally occurring retirement communities (NORCs) and other senior housing options are needed and require additional research outside the scope of this project.

RECOMMENDATION: As providers and patients seek to avoid nursing home admissions, the Hudson Valley will require substantially more long-term home healthcare capacity. Even without reductions in nursing home admission rates, the Hudson Valley lacks home healthcare capacity. Additionally, home healthcare is projected to have the highest rate of growth in the healthcare sector for employment opportunity. The region should consider incentives to increase home healthcare capacity. Finally, innovation and consolidation efforts must be taken to make home healthcare more efficient and cost effective.

HOSPICE

The Hudson Valley is served by seven hospice[79] agencies that provide care in a variety of settings including hospitals, skilled nursing facilities and in patients' homes.[80] Most hospice care is provided at home with 97.4% of Hudson Valley hospice patients receiving routine home care, and 2.4% receiving inpatient care. In 2008, the most recent year from which data was available, over 4,000 patients were served.[81] The average length of care for Hudson Valley hospice patients was 59 days in 2008 and the average cost of hospice care per patient was $12,727 or $216 per day for care, far below traditional hospital care or skilled nursing facility daily costs.[82] Moreover, although 97.4% of hospice patients receive home care, only 60.7% of those who die in hospice die at home. That means a significant number of hospice patients are sent to hospitals in their last days of life.

An evaluation of hospital bed types for the region shows that there are no hospice hospital beds in the Hudson Valley, and only one hospital, Phelps Memorial Hospital of Westchester, provides outpatient hospice services. (See Appendix H for a list of hospital bed types in the Hudson Valley.) In other regions of the country, hospitals incorporate hospice into their bed mix. All of the innovative systems examined in this study provide home hospice services. Providence Hospice and Home Care, provided by Everett Clinic, states that their "Partners in Palliative Care" program "decreases unnecessary or unwanted hospitalizations and emergency room visits, while providing the highest quality care and connecting patients with valuable community resources."[83] Everett's

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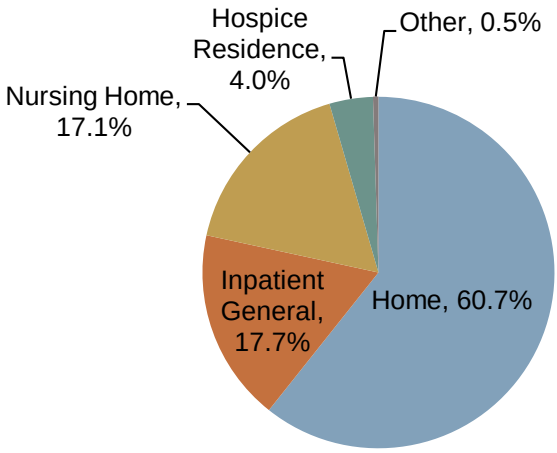
[79] Hospice is a model for providing palliative end-of-life care for people facing a life-limiting illness or injury involving a team-oriented approach to expert medical care, pain management, and emotional and spiritual support expressly tailored to the patient's needs and wishes and support of the family.
[80] New York State Department of Health. *Hospice and Home Health Profile*. Retrieved from http://homecare.nyhealth.gov/.
[81] New York State Department of Health. Office of Long-Term Care. (2008). Hospice Utilization and Cost Data. P. 9, 16. Retrieved from http://www.health.ny.gov/statistics/facilities/hospice/utilization_and_cost/2008/. This hospice utilization study did not include Columbia and Greene Counties within the Hudson Valley.
[82] *Id.*
[83] Everett Clinic, http://www.everettclinic.com/About_Us/partnerships/providence-hospice-and-homecare-snohomish-county.ashx?p=4109.

program proved successful when, in 2010, it was recognized by the American Hospital Association, and awarded the Circle of Life Award, "recognizing innovation that improves the care of patients near the end of life or with life-threatening conditions."[84] Gundersen spearheaded an effort to obtain end-of-life directives from patients. Gundersen's Respecting Choices effort reduced end-of-life care costs by obtaining end-of-life directives from 96% of patients which has resulted in huge cost savings by reducing the number of terminal hospital admissions and extremely high cost intensive care unit care and elimination of unwanted tests and interventions.[85] This is particularly noteworthy considering the location at death of hospice patients in the Hudson Valley.

Figure 12. Location of Death for Hudson Valley Hospice Patients



Source: NYSDOH, 2008 Hospice Utilization and Cost Data

While most hospice patients die at home, 17.7% of hospice patient deaths take place in hospitals. These cases are transfers from home to the hospital in the final days or weeks of life. The cost of hospitalization exceeds the cost of nursing home care. In 2009, the Hudson Valley had about 10% of New York state total admissions to hospice, roughly on par given that the Hudson Valley is 12% of state population. If the Hudson Valley can accommodate hospice transfers to a hospital-like setting without incurring hospital costs, it will save the healthcare system substantial costs while providing patients and caregivers a better experience. In addition to transitioning some beds into less expensive hospice beds, hospitals might do well to provide home hospice services, like those provided in Everett Clinic, Dean Clinic, Gundersen, Intermountain, and the other innovative institutions. This need should be considered in decisions about

[84] *Id.*
[85] Joffe-Walt, C. (2014, March 5). The Town Where Everyone Talks About Death. *Morning Edition*. Washington, DC: National Public Radio.

overall hospital bed type mix in the region whether by DOH, a regional planning entity, or by individual institutions.

RECOMMENDATION: By starting a community conversation about end-of-life care, Hudson Valley seniors can avoid hospitalizations and expensive intensive care unit bed days. Hudson Valley healthcare providers should create a regional, consistent approach to seek end-of-life directives at an early age from a high proportion of patients. The region should increase home-based hospice care as well as take the innovative step to establish hospice beds in institutional settings enabling reduced-cost hospice care in non-home settings.

BEHAVIORAL HEALTHCARE DELIVERY

One in four adults, approximately 61.5 million Americans, experience mental illness in a year and one in 17, about 13.6 million, live with a serious mental illness such as schizophrenia, major depression, or bipolar disorder.[86] An aging population will present different challenges to the behavioral health system. Fourteen percent of New Yorkers over age 60 show moderate to severe depression and if mild depression is factored in, 32% of New Yorkers over age 60 have depression.[87] Suicide is more common in older adults than in any other age group with the population over 65 accounting for more than 25% of the nation's suicides.[88] People with serious mental illness die 15-25 years earlier on average than the rest of the population but typically from chronic, co-occurring physical illnesses.[89]

New York's behavioral health system, which provides specialty care and treatment for mental health and substance use disorders, is large and fragmented. Behavioral health is not well integrated or effectively coordinated with physical healthcare at the clinical level or at regulatory and financial levels. Research has shown that integrating behavioral health into traditional healthcare can improve outcomes through the use of preventative care and thereby reduce costs.[90]

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[86] National Institutes of Health, National Institute of Mental Health. (2013, March 5). Statistics: Any Disorder among Adults. Retrieved March 5, 2013 from www.nimh.nih.gov/statistics.

[87] New York State Office of Mental Health. (2012). Annual *Report to the Governor and Legislature of New York State on Geriatric Mental Health & Chemical Dependence*.

[88] Geriatric Mental Health Foundation. Depression in Late Life: Not A Natural Part Of Aging: Initiative on Depression in Late Life. Retrieved May 16, 2014 from http://www.gmhfonline.org/gmhf/consumer/factsheets/depression_latelife.html.

[89] Colton, C. and Manderscheid, R. (2006, April). Congruencies in Increased Mortality Rates, Years of Potential Life Lost, and Causes of Death Among Public Mental Health Clients in Eight States. *Preventing Chronic Disease*, 3(2).

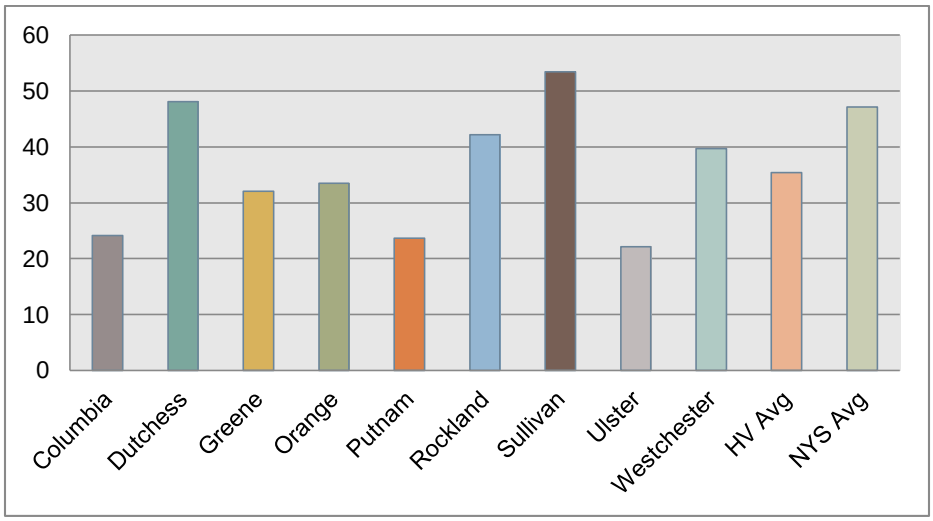
[90] American Hospital Association. (2012, January). Bringing Behavioral Health into the Care Continuum: Opportunities to Improve Quality, Costs and Outcomes. *Trendwatch*.

The publicly funded system in New York state alone serves approximately 330,000 unduplicated individuals with mental illness and an additional unduplicated 254,000 adults for substance use disorders accounting for $5.8 billion and $1.7 billion respectively in annual expenditures,[91] approximately 50% of which is for non-behavioral health services.[92] There has been an effort to decentralize behavioral healthcare, reduce institutional care,[93] and instead provide community-based treatment. There is still a reliance on state psychiatric hospitals, despite a large reduction in beds. As state facilities are downsized and counties seek to reduce costs, more behavioral health patients are seeking services from community hospitals that are overwhelmed with the demand and the cost of providing these services.[94] Limited behavioral health data is available especially as it relates to the aging population. The New York State Office of Mental Health only provides behavioral health services data for state operated services and OMH funded and/or certified providers. Data is segmented between adults and children with little or no specific data provided on the geriatric or aging population. Thus, data on individuals seeking behavioral health treatment through private sources are not captured and behavioral health services usage rates are understated.

Even with the limited data available for those over 65 years old in 2011, Hudson Valley use of behavioral health services by people over 65 is 35.4 served per 10,000, versus 47.2 served per 10,000 for New York state, or 25% fewer served. There is a wide variation among the counties.[95] Ulster County has the lowest usage in the region with 22.1 visits per 10,000 while Sullivan County has the highest with 53.5 visits per 10,000, yet Sullivan has 11 service programs listed, and Ulster has 23. The two counties' occupancies are roughly equal and it is unclear whether the data captures readmissions.[96]

[91] New York State Office of Mental Health. (2012). Medicaid All Services Utilization. Retrieved from http://bi.omh.ny.gov/cmhp/all-services.
[92] *Id.*
[93] New York State's Regional Centers of Excellence Plan will reduce the number of state inpatient facilities. Counties and local providers have urged the state to use savings from those closures to provide both financial and technical assistance support for local services. The community mental health investments of $3.2m in the Hudson Valley as a result of the 2014-2015 budget include 50 new supported housing units as well as an array of other yet to be decided programs.
[94] J. Creswell. (2013, December 25). ER Costs for Mentally Ill Soar, and Hospitals Seek a Better Way. *New York Times*. Retrieved from http://www.nytimes.com/2013/12/26/health/er-costs-for-mentally-ill-soar-and-hospitals-seek-better-way.html?pagewanted=1&_r=0.
[95] New York State Office of Mental Health. (2013). County Profiles: Community Characteristics. Retrieved from http://bi.omh.ny.gov/cmhp/index.
[96] Sullivan County inpatient psychiatric patients had the highest rate of readmission (23.9%) in 2011 than Ulster, which is the second lowest in the Hudson Valley at 16.1% (Westchester is the lowest). The Hudson Valley average is 16.9%, and the New York State average is 16.1%. New York State Office of Mental Health. (2012). *Residential Program Indicator Report*. Retrieved from http://bi.omh.ny.gov/adult_housing/reports?p=rpi.

Figure 13. Hudson Valley Rate of Mental Health Service per 10,000 for Population 65+



Source: New York State Office of Mental Health. (2011). *County Profiles: Community Characteristics.* Retrieved from http://bi.omh.ny.gov/cmhp/dashboard.

The OMH Residential Program Indicator Report (2012) presents information about adult residential programs funded through OMH but excludes residential programs provided by private agencies, which are still governed by DOH regulations.

A total of 3,095 adult residential housing units through OMH programs exist in the Hudson Valley nine county region, including 14 New York state Congregate Geriatric Treatment beds.[97] No data is readily available regarding the aging population living in the 1,802 supported housing beds. The majority of the residents access primary care, emergency care, inpatient care and home care from community providers with support or assistance from residential staff. Residents may also access nursing home or hospice care as needed.

Of those seeking behavioral health services that are captured through OMH reporting, the majority are seeking outpatient services. Given the high numbers of outpatient behavioral health services through OMH certified providers, it is even more likely that much behavioral healthcare treatment is not captured in current data collection numbers. Hence, projections of future behavioral health services needs are very difficult to calculate.

[97] *Id.*

Table 7. Hudson Valley Patients 18+ Receiving OMH Certified Mental Health Services 2011

Type	Emergency	Inpatient	Outpatient	Residential	Support
Number	7	140	743	157	331

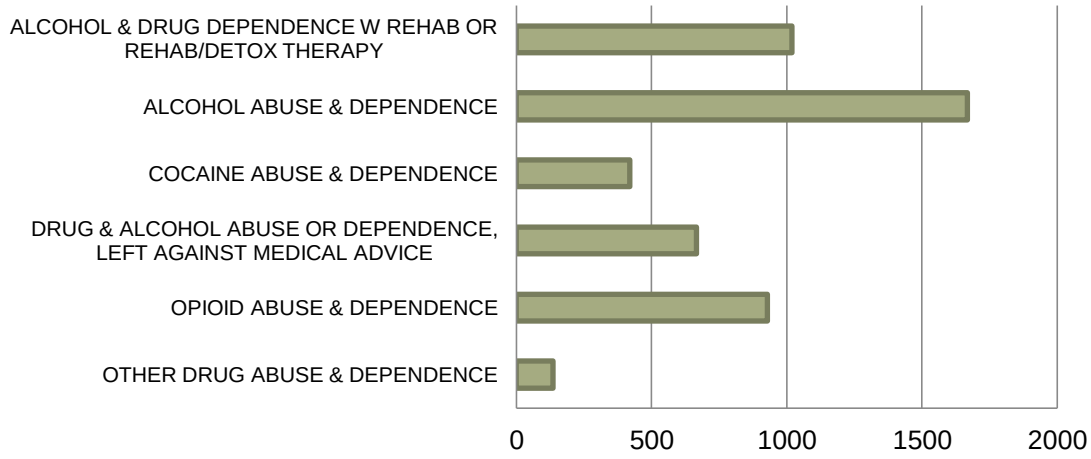
Source: New York State Office of Mental Health. (2011). *County Profiles: Mental Health Service Use.* Retrieved from http://bi.omh.ny.gov/cmhp/dashboard#tab2.

The outpatient publicly funded behavioral health system evolved through the local county governments. A large variety of services, based on local need assessments spread over several decades, is included in the service numbers. OMH has embarked on expanded data collection through the Child and Adult Integrated Reporting System (CAIRS), the Psychiatric Services and Clinical Knowledge Enhancement System (PSYCKES), and Patient Characteristic Surveys (PCS). In future regional health planning efforts, these sources may provide additional data for analysis. With more analysis, future efforts may be able to determine whether there exists a need for geriatric psychiatric beds in the acute care setting.

In addition to depression and mental health conditions, the Advisory Panel felt that the aging baby boomer cohort may present unique problems regarding substance abuse and this was confirmed by national trends. A quick snapshot of SPARCS substance abuse discharges for those over 65 years of age show that the majority of substance abuse hospital admissions are alcohol related (some in combination with other drugs) but as baby boomers age, prescription drug abuse may rise as a behavioral health crisis. Illicit drug use is more prevalent among the baby boomers, resulting in estimates that the number of older adults with a substance use disorder will double by 2020.[98] Additionally, the National Survey on Drug Use found that between 2007 and 2009, 1.2% of people over 60 reported non-medical uses of prescription-type drugs, which accounts for more than half of the 2.3% of the 60+ population reported to have used any illicit drug.[99]

[98] Han, B., Gfroerer, J., Colliver, J. Penne, M. (2009, January). Substance Use Disorder Among Older Adults in the United States in 2020. *Addiction*, 104(1), 88-96. Doi 10.1111/j.1360-0443.2008.02411.x.
[99] The National Survey on Drug Use and Health. (2011, September 1). *Illicit Drug Use among Older Adults*. P. 2, 4. Retrieved from http://www.alz.org/downloads/facts_figures_2013.pdf.

Figure 14. Hudson Valley 2012 Substance Abuse Hospital Discharges for Patients 70+



Source: SPARCS 2012 discharge data

Response to substance abuse issues in the aging population and the large number of private-pay behavioral health patients will alter the needs for behavioral health professionals in the region. It is important to note that general psychiatrists are the oldest health professionals in the region with an average age of 59 years. (See Appendix N for a healthcare workforce median age breakdown.) Furthermore, several of the top 30 jobs in healthcare with the highest projected growth are behavioral health related; they are social workers, mental health counselors, clinical, and counseling psychologists, mental health and substance abuse social workers, and substance use and behavioral disorder counselors. Thus, the aging of the Hudson Valley will increase demand for behavioral health services at the same time that the behavioral health service workforce itself is aging.

RECOMMENDATION: Additional supportive housing must be created in light of institutional downsizing. The regional health planning effort should also seek to integrate behavioral health into traditional healthcare services. A robust regional health planning effort should evaluate behavioral health data to make predictions of future need based on better data collection by New York State Office of Mental Health (OMH) certified and non-certified providers. Finally the Hudson Valley has a need for more behavioral health professionals specializing in geriatric needs and trained to address depression, suicide prevention, prescription drug and other substance abuse.

ALZHEIMER'S DISEASE AND DEMENTIA

While not considered behavioral health per se, care for Alzheimer's disease and dementia patients also presents special demands as they show an alarming increase in prevalence. As the population of the Hudson Valley ages, the incidence of Alzheimer's disease will increase. Despite the lack of readily available Hudson Valley specific Alzheimer's disease and dementia statistics, the overall national and state numbers give pause. Alzheimer's disease is the sixth leading cause of death in the U.S. and the fifth leading cause in people 65 and older.[100] New York state's Alzheimer's disease population is expected to increase 6% by 2025.[101]

Many people with Alzheimer's disease have coexisting medical conditions. As the healthcare system will be addressing these other conditions, awareness of Alzheimer's needs and impacts is warranted.

Table 8. Coexisting Medical Conditions of Patients 65+ with Alzheimer's Disease and Other Dementias Nationally, 2013

Coexisting Condition	% of Alzheimer's and Dementia Patients with Coexisting Medical Conditions
Coronary Heart Disease	30%
Diabetes	29%
Congestive Heart Failure	22%
Chronic Kidney Disease	17%
Chronic Obstructive Pulmonary Disease	17%
Stroke	14%
Cancer	9%

Source: Alzheimer's Association, Alzheimer's Facts and Figures 2013.

Caregiving for Alzheimer's patients creates special burdens. Much Alzheimer's caregiving is done by family members resulting in $14 billion worth of voluntary care nationally. Data required to project incidence of Alzheimer's in the Hudson Valley in the future is lacking. It is therefore not feasible to determine whether appropriate services are or will be available, either for patients and caregivers. However, trends in Alzheimer's incidence indicate that there will be a growing need to acknowledge and address the special needs of these patients and their caregivers. These patient needs can be addressed with additional resources and specialization, such as the creation of memory care units in SNFs and other appropriate long-term housing options for Alzheimer's and other behavioral

[100] Alzheimer's Association. (2013). Alzheimer's Facts and Figures. Retrieved from http://www.alz.org/downloads/facts_figures_2013.pdf.
[101] *Id.*

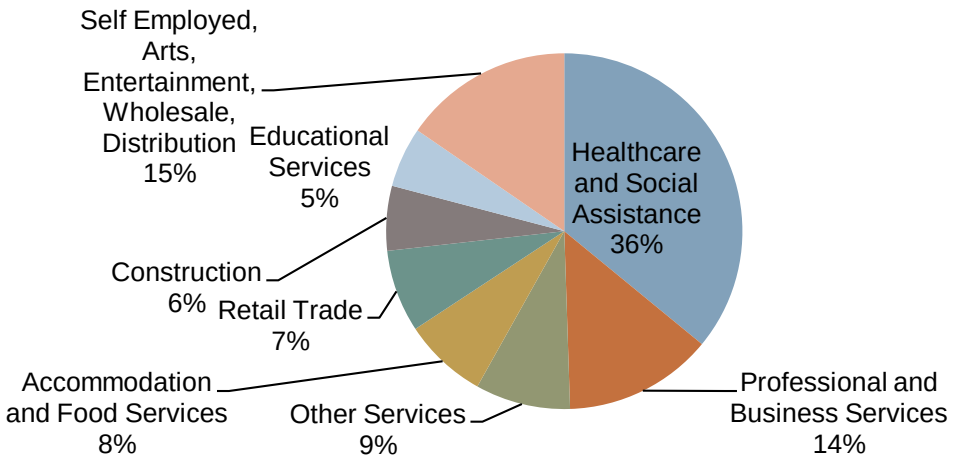
health need patients. These requirements need to be addressed with better integration, coordination, and provision of those special services.

RECOMMENDATION: The healthcare planning effort should seek to quantify the incidence of Alzheimer's disease and dementia as well as build capacity to manage the projected increases. Healthcare providers educated on the potential increases and programs to train family members and caregivers will enable patients to avoid hospitalizations, live at home longer or comfortably at a healthcare setting, thereby improving quality of life and limiting costs of care. Specialized facilities such as memory units and other housing options must be explored, as well as efforts to integrate Alzheimer's into traditional geriatric care.

HEALTHCARE WORKFORCE

The Hudson Valley region, (as defined by New York State Department of Labor),[102] had approximately 100,000 individuals working in healthcare-related occupations as of 2010. (See Appendix O.) Adding to the existing workforce, the Hudson Valley anticipates 83,140 new jobs to be created by 2020, 36% of which will be healthcare-related.[103]

Figure 15. Hudson Valley Projected Industry Sector Job Creation Through 2020



Source: NYSDOL, Long-Term Industry Projections, Hudson Valley region

[102] The New York State Department of Labor excludes Columbia and Greene Counties from the Hudson Valley regional data.
[103] New York State Department of Labor. (2010). Long-*Term Industry Projections, Hudson Valley Region*. Retrieved from https://labor.ny.gov/stats/lsproj.shtm.

Home health aides, personal care aides, and registered nurses are the sectors predicted to see the most job creation. In some occupations, such as registered nurses, the replacement jobs will equal the new jobs. (See Appendix O for specific workforce occupation projections.)

These projections have implications for workforce training and career path choice. As noted in Pattern's 2013 report, *The Aging Population and Employment Opportunity* there will be a range of job opportunities associated with the aging population.

A changing healthcare environment, primarily driven by payment for outcomes over transactions, will give rise to a series of new professions. For example, the healthcare exchange marketplace under the Affordable Care Act has created a new role for healthcare navigators. Going forward, care coordinator, a title not currently listed as an occupational code within the NYSDOL projections, is likely to become a fast-growing occupation. Care coordination has many definitions but can be considered the deliberate organization of patient care activities between two or more participants (including the patient) to facilitate the appropriate delivery of integrated healthcare service to improve the quality and efficiency of healthcare.[104] Many of the innovative systems examined have implemented care coordination.[105] As the healthcare model shifts to more outpatient care, less hospitalization, and to keeping people at home as long as possible, the region will see a growing need for certain healthcare occupations such as physical therapy, care coordinators, medical navigators, speech-language pathologists and others.

In addition to preparing for new job creation, the workforce must be cultivated to replace aging healthcare practitioners. An examination of the number of current practicing professionals and current mean age of those professionals for a number of healthcare occupations shows that nearly all healthcare occupations listed have mean ages of 45 and above. (See Appendix N for healthcare occupational ages.) As discussed earlier, 46% percent of physicians practicing in the Hudson Valley are aged 55 and older versus 41% for New York state as a whole. (See Appendix B.) The Mid-Hudson Family Practice Residency Program was created 30 years ago to address a Hudson Valley shortage of primary care

[104] Agency of Healthcare Research and Quality. (2010). *The Roles of Patient-Centered Medical Homes and Accountable Care Organizations I Coordinating Patient Care*. P. 1.

[105] For example, Geisinger's Care Management Program assigns social workers and registered nurses to facilitate communication between patient, family and the healthcare team, provide counseling and support as well as assist in planning for the return to home or next level of care. Geisinger Health System Care Management. Retrieved from http://www.geisinger.org/services/care_mgt/index.html. Dean Clinic is participating in Medicare's Shared Savings Program for Accountable Care Organizations to achieve savings through improving care coordination. Retrieved from http://www.deancare.com/about-dean/news/2012/dean-clinic--st-marys-hospital-aco-to-participate-as-a-medicare-/.

physicians, and may well have prevented a significant access gap in primary care for most of the region. Evaluation of the ratio of primary care providers to specialists merits further examination to ensure universal access.

Healthcare jobs *will* grow, but *not* in hospitals. Jobs will be in occupations associated with long-term care, care coordination and keeping people healthier such as physical therapy. The Hudson Valley must develop a strategy for regional health occupation training and recruitment for all of the anticipated growth occupations. This work will require collaboration with training partners at all levels such as New York Medical College, Touro Medical College, residency and fellowship programs, the region's four-year colleges and community colleges as well as BOCES and public education systems. In addition, this work must be undertaken in concert with the public health agencies, Workforce Investment Boards in the Hudson Valley and with the guidance of New York State Department of Labor. Here again the issue of scale, allowing training and workforce needs to be aggregated, can assist in guiding workforce development. Whether through larger integrated systems or through better planned regional coordination, the Hudson Valley must work to identify workforce needs and then train and recruit talent to fill those needs.

RECOMMENDATION: The Hudson Valley workforce development system must prepare for the healthcare industry needs. The healthcare sector is projected to provide 36% of all Hudson Valley job creation through 2020. Large numbers of home health aides, personal care aides, and nurses will be needed. The region will experience growth in new occupations such as care coordinators and the need for more professionals working in occupations that extend patients' ability to remain in non-institutionalized settings. In addition, the Hudson Valley must begin a health professional recruitment program, particularly in those specialties such as behavioral health, where the current workforce is aging and no replacement appears imminent. Healthcare workforce development must be done collaboratively with educators, public health agencies, workforce development agencies and providers.

REGIONAL HEALTH PLANNING

Review of the healthcare delivery system must be an ongoing and iterative process. As Hudson Valley healthcare costs rise and its outcomes stagnate, a coordinated regional planning effort must evolve. In 2005, the Commission on Healthcare Facilities in the 21st Century, otherwise known as the Berger Commission, was formed to review New York's healthcare resources and capacity. It was intended to "ensure that the regional and local supply of hospital and nursing home facilities is best configured to appropriately respond to community needs for high-quality, affordable, and accessible care, with meaningful efficiencies in delivery and financing that promote infrastructure stability."[106] In other words, the Commission was to promote "rightsizing," or properly shaping the healthcare services and resources to the demographic needs of the region. Rightsizing can include consolidation, closure, conversion, restructuring, and reallocation. The Commission caused a few hospitals to alter their bed configurations, and eliminated almost 3,000 SNF beds.[107] In the Hudson Valley region, the Berger Commission had a significant impact in Ulster County by recommending that Benedictine Hospital (a Catholic hospital) and Kingston Hospital (a secular hospital) align to reduce bed numbers and reduce the high rate of outmigration. As a result, HealthAlliance of the Hudson Valley was formed, merged the two hospitals functionally and is now facing the decision of whether to further consolidate operations into a single campus. Despite the Berger Commission's effort, regional outcomes have not improved and costs have continued to escalate.

While no regional health planning organizations currently exist in the Hudson Valley, we would be remiss if we did not highlight two regional entities that not only seek to improve the regional healthcare delivery system, but assisted us in the preparation of this work by providing data and insight. The Northern Metropolitan Hospital Association (NorMet) is a nonprofit hospital membership regional organization which acts as an information clearinghouse, pursues governmental relations activities and advocacy, and acts as liaison with regulatory and health-related agencies. The Taconic Health Information Network and Community (THINC) is a nonprofit organization that seeks to improve the quality, safety and efficiency of Hudson Valley healthcare primarily through its emphasis on the adoption and integration of information technology.

[106] Commission on Health Care Facilities in the 21st Century. Retrieved from http://www.nyhealthcarecommission.org/.
[107] New York State Department of Health. (2009). Report *on Implementation of the Report of the Commission on Health Care Facilities in the Twenty-First Century*. P.1.

In 2012, Governor Andrew Cuomo charged the New York State Public Health and Health Planning Council (PHHPC) with evaluating the CON process. The PHHPC sought to pursue the "Triple Aim" of better care, better health and lower per capita costs. They evaluated other states that use a different process for licensing facilities as well as states that do not have a CON process at all. One result of the work of the PHHPC was a call for regional health planning.

The PHHPC defined regional health planning as a three part process:

1) Create multi-stakeholder collaboratives to pursue the Triple Aim

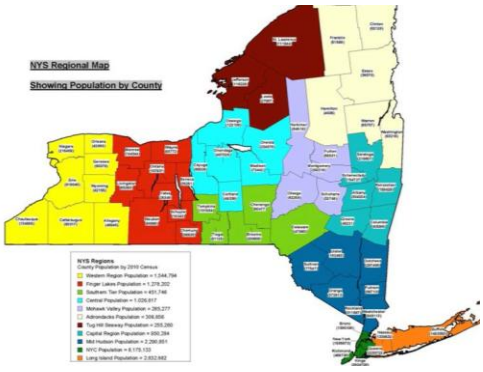
2) Analyze and display data in an objective manner

3) Provide recommendations to the PHHPC on CON determinations

New York state has two Health Service Agencies that currently do regional health planning and weigh in on CON decision-making.[108] The Hudson Valley had a Hudson Valley Health Services Agency operating as late as 1988 but it has since been disbanded.[109] In his 2014 State of the State address the Governor discussed creating 11 Regional Health Improvement Collaboratives (RHICs). Healthcare delivery system and public health planning would be improved through the formation of a RHIC or some other regional health planning effort and the associated work of such an entity.

The PHHPC's recommendations included maps for potential health planning regions. The proposed Hudson Valley region included seven of the nine counties included in this Project.

Figure 16. PHHPC's Health Planning Regions



Source: Report of the Public Health and Health Planning Council on Redesigning Certificate of Need and Health Planning

[108] The Finger Lakes and Central New York have well funded and staffed HSAs that serve as RHICs. The Finger Lakes HSA and HealtheConnections.
[109] Pattern for Progress played a role convening and facilitating efforts to that resulted in the creation of the Hudson Valley HSA in 1978.

There are several types of data available from New York State that define the Hudson Valley as the seven-county region and group Greene and Columbia Counties with the Albany region. Governor Cuomo's Mid-Hudson Regional Economic Development Council (MHREDC) also defines the Hudson Valley as a seven-county region.[110]

The purpose of this report was to analyze the impact of the aging population on the region's healthcare system. Although the work of this Project did not start out with the goal of regional health planning, the Project did engage a multi-stakeholder group to analyze data in an objective manner. It is the hope of the Project and the Advisory Panel, that this work sets the stage for additional regional health planning.

It is our belief that the evaluation of service availability provides great value in planning for the Hudson Valley's collective future not just in terms of DOH licensure of SNF and hospital beds but in planning bed types, investments in building capacity to provide certain types of services, and needed workforce training and recruitment. Ultimately the cost and quality of care in the region will depend on such an effort.

Future regional health planning will require substantial sustained investment in organizational capacity. While THINC covers the Hudson Valley region as defined by the Governor's proposed regional health planning structure and undertakes projects related to health systems change, it does not currently have the staffing capacity to conduct this work without additional resources. While Pattern for Progress was able to conduct this work through funding generously provided by the Dyson Foundation, continued work of this nature would require new funding sources. It is possible that an entirely new entity or collaboration among existing entities would be best poised to conduct regional health planning going forward. Since New York State's regional health planning effort may be enhanced through funding opportunities later this year or next, it is beneficial that the region has begun this discussion now.

RECOMMENDATION: The Hudson Valley should begin its regional health planning effort in earnest. Regional health planning data must be centralized and consensus among providers reached, to ensure limited duplication of services as well as care coordination between the various institutions comprising the continuum of care. Further consolidation of these various components into integrated delivery systems as seen in the high performance innovative systems will facilitate this effort.

[110] When the Regional Council process was created, a new more flexible pool of economic development funding became available, and for the first time, healthcare-related institutions became eligible for economic development funding. Indeed, the MHREDC has prioritized and since funded multiple healthcare-related projects over the last three funding cycles. One criticism of this has been that the economic development stakeholders are not equipped to determine the need for expanded or new healthcare delivery facilities.

INTEGRATION

The model innovative healthcare systems achieved continuous improvements through the analysis of health data. These improvements required the establishment of uniform metrics to make both physician-level and institution-level comparisons. The improvements also required investment in robust electronic health records (EHR) systems and a cultural shift to embrace change based on data analysis.

Three of the innovative systems examined were in Wisconsin. It should be noted that New York State regulates healthcare differently than Wisconsin in many ways. For example, New York disallows private equity in healthcare and passes Medicaid on to the counties. Also, Wisconsin is a more homogenous state and that may have facilitated the integration of health systems in Wisconsin.

The State of Wisconsin implemented a substantive public health data information sharing initiative to spur improvements. In 2003, chief executives from Wisconsin's healthcare provider entities formed the Wisconsin Collaborative for Healthcare Quality (WCHQ).[111] The Collaborative, which grew to encompass physician groups, hospitals, employers, labor groups and health plans, developed a common set of reportable metrics that collects and publishes physician-level comparative information on a variety of conditions and quality. This voluntary reporting created a unique set of ambulatory care measures that enable medical groups to collect and report data on all patients in their practice. In addition to the WCHQ, Wisconsin is home to the Wisconsin Health Information Organization (WHIO) Health Analytics Exchange, which has integrated the nation's largest repository of multi-payer claims data with analytical query tools.[112] The transparency achieved in Wisconsin's collaboration and public information exchange has made it a top region in the country for healthcare outcomes.[113]

The Centers for Medicare and Medicaid Services (CMS) has also pressed to make health outcomes data public. The Project drew information on hospital outcomes from the Medicare Compare portal, and CMS will be adding even more indicators over the next several years. While there is debate in the health policy literature about whether information such as readmissions rates really provide a window into quality of care, making this data public at least begins the discussion. The ability to make data public requires the data to be available in the first instance. Better data management is needed for analysis both within individual healthcare organizations and within the region.

[111] The Wisconsin Collaborative for Healthcare Quality, http://www.wchq.org/about/.
[112] Wisconsin Health Information Organization, http://www.wisconsinhealthinfo.org/link_main.php.
[113] The Commonwealth Fund. (2009). *Aiming Higher for Health System Performance*. P. 9.

Robust electronic health records systems allow the innovative health institutions to track expensive conditions, share patient data among providers, track areas of larger spending and focus on specific areas for improvement. The region must determine the best ways to make larger, more comprehensive investments in these systems, whether through improved collaboration or the creation of integrated systems. Current Hudson Valley efforts to implement electronic health record systems may have created billing efficiencies and improved documentation, but did so at the expense of provider productivity, measurable improvement in quality outcomes and interoperability.

Further large scale investments are needed if EHR are to be used to improve care, increase provider productivity and allow regional analysis. The many-to-many relationships among providers complicate information sharing. Furthermore, large investments in newer robust EHRs are limited by the persistence of many smaller one- or two-person private medical practices that simply cannot afford them. Larger integrated systems are able to make the necessary investments in electronic health records infrastructure. For example, between 1998 and 2008 Gundersen invested over $100 million in improvements to its EHR systems.[114] The Everett Clinic budgeted $18 million over three years to update its EHR system.[115] These investments allow sharing of data among providers, whether or not they are in a single system. In addition, EHR can result in substantial savings and better care. For example, Gundersen saw an impressive reduction in laboratory tests of 16%, largely as a result of eliminating duplicate testing.[116] In addition, EHR is being used in innovative ways to implement preventative public health measures such as directing patient smokers to smoking cessation programs and medications.[117] ThedaCare uses disease registries as part of the EHR system that allow tracking of patients, benchmarking them against other patients as well as state and national averages. Data analysis also allows health providers to look directly at costs. For example, the Dean Clinic found that only 6% of its spending was for direct costs of providing primary care, yet 80% of their total patient costs were driven by primary care physicians through their ordering of tests, procedures, medications and referrals.[118]

Healthcare data in the Hudson Valley is largely fractured and inefficient. The Hudson Valley has an EHR effort involving multiple providers now underway.

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[114] Klein, S. and McCarthy, D. (2009). *Gundersen Lutheran Health System: Performance Improvement through Partnership*. Commonwealth Fund (pub 1307). Vol. 28. P. 4.
[115] Healthcare Financial Management Association. (2010*). Leadership: Collaborating for Results, Developing Meaningful EHR*.
[116] *Id.*
[117] C. Lindholm, et al. (2010, December). A Demonstration Project for Using the Electronic Health Record to Identify and Treat Tobacco Users. *WMJ*. 109(6): 335–340. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3587763/.
[118] Molpus, J. (2013, April 22). How Dean Clinic Redesigned Primary Care. *Health Leaders Media*. Retrieved from http://www.healthleadersmedia.com/print/LED-291352/How-Dean-Clinic-Redesigned-Primary-Care.

The EHR effort, spearheaded by THINC, seeks to share records among providers and a separate Health Information Exchange which incorporates records from ambulatory practices and hospital discharges. Although this effort has been funded with an initial $5 million grant, this investment is dwarfed by the large investments that the innovative systems have made in information technology and EHR.

The tremendous potential of "intelligent" information technology systems which improve outcomes through sets of evidence-based guidelines, alerts, warnings and care coordination can only be realized if regional interoperability becomes a reality.

RECOMMENDATION: All providers should seek to join the existing regional electronic health records (EHR) effort making regional interoperability a priority. In addition, providers should coalesce to establish metrics for comparisons at the physician level. The region can use the benchmarks set by the CMS for hospitals, by DOH for SNFs, National Committee on Quality Assurance's Healthcare Effectiveness Data and Information Set measures for ambulatory practices and clinics, and CMS's Physician Quality Reporting System for physicians. This data should be collected, formatted and made public on an annual or biannual basis. The large investment would be facilitated by large scale system integration.

CONCLUSIONS AND NEXT STEPS

The region must continue its conversation about improvements to the regional healthcare delivery system so that it is ready to meet the needs of the baby boomers. This report can be a starting point for a coalescing of stakeholders for regional health planning so that the region can be unified and articulate in pursuing potential funding for regional health planning. Even without substantial state or federal funding for regional health planning in the short term, by following suit of what Wisconsin did, albeit at a regional level, the Hudson Valley should seek to continue to make the most of publicly available, improved healthcare data by publishing public health data, information about providers and outcome data of hospitals and other institutions where available. Hudson Valley major providers can collaborate on a standard set of metrics for quality measurement and reporting similar to Wisconsin. In short, the Hudson Valley region should conduct regional health planning starting with improved information. In the absence of a fully formed RHIC, continued public information will drive improvements.

It appears that the region will continue to see further consolidation and integration in the industry. For example, during the course of this project, the bankruptcy court approved the sale of the financially strapped St. Francis hospital in Dutchess County to Westchester Regional Medical Center; while HealthQuest has continued to integrate private physician practices into the organization.

Concerns regarding integration are consistently raised in the region. For example, when HealthQuest expressed interest in purchasing St. Francis Hospital, objections were made that the sale would create a HealthQuest "monopoly" in Dutchess County.[119] The fear is that such a monopoly would increase costs, reduce patient access and eliminate individual choice, yet the innovative integrated systems do not demonstrate these problems.

The Hudson Valley healthcare landscape is characterized by changing relationships such as the affiliation of Kingston and Benedictine Hospitals into HealthAlliance of the Hudson Valley and the alignment of Catskill Regional Medical Center with Orange Regional Medical Center. These changes, along with the economics of hospital finance and the difficulty in coordinating care across providers, demonstrate the growing need to think regionally and structurally when it comes to healthcare planning in the Hudson Valley.

[119] Wolf, C. (2014, February 2). Saint Francis Former CEO Warns of Monopoly if HealthQuest Takes Over. *Poughkeepsie Journal*. Retrieved from http://www.poughkeepsiejournal.com/article/20140202/BUSINESS/302020062/Saint-Francis-former-CEO-warns-monopoly-Health-Quest-takes-over.

Competition[120] exists among providers in New York state and the Hudson Valley, and yet this competition has not resulted in stellar health outcomes or cost efficiencies for the Hudson Valley. The innovative model healthcare systems that were examined do not operate as monopolies. They are able to align the mission of all providers, conduct far-reaching data analysis efforts, reward providers for performance and not transactions, and create environments for continuous quality improvements, all of which allow them to offer cost-efficient and top-quality care. Wisconsin healthcare integration has not resulted in patient dissatisfaction caused by lack of competition. In point of fact, its patient experience scores surpass those of New York.

A higher degree of integration allows for greater economies of scale, better financial margins, more sustained investments in information technology, quality improvement systems, care coordination and healthcare that has measurably better objective outcomes, better patient experience measures, and all at a much lower cost. Getting to scale will enable hospitals to do better financially and be able to afford the programs that they need to provide quality, efficient care for seniors.

Whether the region or New York state eventually sees the creation of large integrated delivery systems or not, the regional providers must work together to contain costs and address service delivery needs. This means that continued emphasis on EHR adoption and data sharing is imperative. THINC's EHR effort should be expanded significantly. If Hudson Valley healthcare providers do not become integrated, there must be an effort made to improve care coordination and incorporate processes used by the innovative systems.[121] Primary care doctors, hospitals, nursing homes and home healthcare agencies that are communicating about their patients and sharing data can improve efficiency, outcomes and patient experience.

The region must strive to plan for and create the appropriate allocation of services and providers. This is easy to say and hard to do. Nonetheless, it is clear that recruitment and workforce development is necessary to meet demand in certain areas such as long-term home healthcare and behavioral health. Specific occupations, such as home health aides and general psychiatry, require the attention of the region if the Hudson Valley is to meet demand in the future. Strategies may differ for targeting these occupations: for example, attracting psychiatrists might involve recruiting newly graduated psychiatrists to the region,

[120] An affiliation between Saint Francis and Vassar Brothers though the creation of a third entity, Mid-Hudson Health, was found to be anti-competitive and an anti-trust violation because the activities of Mid-Hudson Health were found to "thwart the State's policy of promoting competition for hospital services." *New York ex rel. Spitzer v. St. Francis Hospital*, 94 F. Supp. 2d 399, 411 (S.D.N.Y. 2000). Clear intent by New York State to bypass competition in an effort to gain efficiencies at lower cost may be needed to allow the creation of more integrated delivery systems.

[121] For example, Panel Member Dr. Teitelbaum indicated that Crystal Run already provides doctors with information on their own performance to improve outcomes.

whereas home health aides may be recruited by training local residents through existing programs. Workforce development will require partnership with the existing New York Medical College, and the new Touro College facility slated to as well as local four-year and two-year colleges, vocational programs and Workforce Investment Boards which allocate federal workforce training dollars.

In order to better allocate services and providers, the region must examine hospital bed and nursing home bed need. The Hudson Valley does not need more hospital beds to address the aging population. Instead it should be looking to right-size existing facilities, either through consolidations, eliminations or transitions of beds to the appropriate bed distribution. DOH CON approvals must take these needs into account and individual institutions should seek to convert beds to address the need for hospice beds, transitional beds, swing beds and SNF beds for long-term care.

Hospitals must begin the hard work of evaluating regional needs when considering building new services. Specialization among institutions is critical to improving care in the region. Not every hospital should have a tertiary cancer or cardiac program. The quality and cost of care will be improved if expert specialized care is available regionally. Outmigration will be reduced and more dollars will flow in to the regional economy.

ACRONYMS

CAIRS	Child and Adult Integrated Reporting System
CDC	Centers for Disease Control and Prevention
CMS	Center for Medicare and Medicaid Services
CON	Certificate of Need
COPD	Chronic Obstructive Pulmonary Disease
CVD	Cerebrovascular Disease
DOH	New York State Department of Health
DOL	New York State Department of Labor
DSRIP	Delivery Service Reform Incentive Payment
EHR	Electronic Health Record
ER	Emergency Room
FQHC	Federally Qualified Health Centers
ICU	Intensive Care Unit
MRT	Medicaid Redesign Team
NORC	Naturally Occurring Retirement Communities
OMH	New York State Office of Mental Health
PCS	Patient Characteristic Surveys
PHHPC	Public Health and Health Planning Council
PSYCKES	Psychiatric Services and Clinical Knowledge Enhancement System
RHCF	Residential Healthcare Facility
RHIC	Regional Health Improvement Collaborative
SNF	Skilled Nursing Facility
SPARCS	Statewide Planning & Research Cooperative Service
WCHQ	Wisconsin Collaborative for Healthcare Quality
WHIO	Wisconsin Health Information Organization

APPENDIX A: POPULATION PROJECTIONS

HUDSON VALLEY										
Age Cohort	**1990**	**2000**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**% change 2010 to 2040**
0 - 19	569,565	649,083	650,639	630,551	632,417	638,339	643,881	647,019	647,225	-0.5%
20-54	1,093,418	1,133,964	1,121,726	1,120,398	1,102,619	1,101,959	1,115,680	1,127,410	1,127,964	0.6%
55-64	199,353	214,400	297,658	321,399	337,585	321,854	290,888	277,892	289,829	-2.6%
65-69	85,083	81,016	100,614	120,973	128,302	140,390	141,322	127,483	115,904	15.2%
70-74	66,590	74,574	73,644	87,150	104,967	111,555	121,866	122,430	110,483	50.0%
75-79	53,530	59,462	60,643	60,739	71,777	86,623	92,270	100,657	101,030	66.6%
80-84	36,593	39,956	49,479	45,282	45,666	53,965	65,390	69,932	76,285	54.2%
85+	29,561	38,023	48,765	51,489	51,130	51,703	56,977	66,806	75,600	55.0%
Total	2,133,693	2,290,478	2,403,168	2,437,981	2,474,463	2,506,388	2,528,274	2,539,629	2,544,320	5.9%

PROJECTED % CHANGE BY AGE COHORT 2010 to 2040											
Age Cohort	**NYS**	**HV**	**Columbia**	**Dutchess**	**Greene**	**Orange**	**Putnam**	**Rockland**	**Sullivan**	**Ulster**	**Westchester**
0 - 19	**-1.3%**	-0.5%	**-33.3%**	2.7%	-13.9%	9.2%	-5.4%	9.4%	-10.9%	-18.5%	-2.9%
20-54	-5.2%	0.6%	-34.5%	5.4%	-8.2%	12.5%	0.6%	10.7%	-13.0%	-13.1%	-2.5%
55-64	-6.4%	-2.6%	-29.8%	-3.9%	-12.5%	12.0%	-1.4%	5.0%	-3.4%	-19.3%	-3.4%
65-79	33.9%	39.4%	29.1%	45.3%	28.6%	77.4%	45.4%	30.2%	54.5%	34.2%	29.2%
80+	42.2%	54.6%	65.0%	65.8%	52.0%	98.3%	70.0%	81.2%	72.6%	68.6%	28.7%
Total	1.3%	5.9%	-20.1%	9.7%	-2.7%	19.2%	5.1%	14.2%	-0.5%	-6.8%	1.9%

Source: Cornell University. (2010). *Program on Applied Demographics.* Retrieved from http://pad.human.cornell.edu/index.cfm.

APPENDIX B: PHYSICIANS IN THE HUDSON VALLEY AND NEW YORK STATE

PHYSICIANS IN THE HUDSON VALLEY								
County	HV Primary and Non-Primary Care Doctors, 2009			% Distribution of Principal Practice Setting of Total Active Patient Care Physicians				% Aged 55+
	Total Active Patient Care	Number of Primary Care	% Primary Care	Solo	Group	Hospital	Other	
Columbia	123	52	42.28%	24.0%	48.0%	17.0%	11.0%	53.0%
Dutchess	815	260	31.90%	24.0%	41.0%	18.0%	17.0%	47.0%
Greene	39	23	58.97%	30.0%	19.0%	19.0%	32.0%	48.0%
Orange	814	290	35.63%	26.0%	50.0%	14.0%	11.0%	43.0%
Putnam	230	82	35.65%	27.0%	54.0%	10.0%	8.0%	35.0%
Rockland	1,005	320	31.84%	31.0%	44.0%	16.0%	9.0%	45.0%
Sullivan	123	59	47.97%	30.0%	24.0%	24.0%	21.0%	53.0%
Ulster	375	158	42.13%	30.0%	43.0%	11.0%	16.0%	47.0%
Westchester	4,316	1,237	28.66%	30.0%	39.0%	20.0%	10.0%	45.0%
HV	7,840	2,481	31.65%	28.0%	40.2%	16.6%	15.0%	46.2%
NYS	65,936	20,278	30.75%	26.0%	34.0%	30.0%	10.0%	41.0%

Source: The Center for Health Workforce Studies. The School of Public Health, SUNY Albany. (2010). *The Annual New York Physician Workforce Profile.* Retrieved from http://chws.albany.edu/archive/uploads/2012/07/nyphysprofile2010.pdf.

APPENDIX C: INNOVATIVE INSTITUTIONS AND SYSTEMS STRUCTURE

INNOVATIVE INSTITUTIONS AND SYSTEMS STRUCTURE							
Name	**Location**	**Patient Population**	**Hospitals**	**Medical Offices**	**Physicians**	**Total Employees**	**Degree of Integration**
Dean Health Systems	Madison, WI	2.5m patients served	33	60	500	4,000	Insurance, Pharmacies, Eye Care, Hospitals, Clinics
Gundersen Health System	Western WI , IA, MN	550,000 patients	6	48	488	5,546	Hospitals, Clinics, Behavioral Health Svcs, Ambulances, Pharmacies, Nursing Homes, etc
ThedaCare	WI (9 counties)	150,000	5	22	230	6,100	Hospitals, Clinics, Senior Living Residences, Hospitals, Clinics Partnered with Bellin Health
Kaiser Permanente	CA, HI, DC,	9.1m	38	611	16,000	174,000	Hospitals, Clinics, Pharmacies
Geisinger Health System	Central Northern PA (44 counties)	2.6m in region	3	40	961 (includes scientists)	14,000	Clinics, Hospitals, Life Flight Ambulance Service
Cleveland Clinic	OH	5.1m clinic visits, 157k admissions	10+	75	3,000 (includes scientists)	36,000	Clinics, Hospitals
Everett Clinic (Providence Health and Services)	WA, OR, ID, AK, CA, MT	391k plan members	35	400	2,900	65,000	Hospitals, Physicians, Clinics, Care Centers, Hospice and Home Health Programs
Mayo Clinic	MN, AZ, FL	1,165,000	4	–	4100 (includes scientists)	61,100	Hospitals, Physicians, Clinics, Care Centers, Hospice and Home Health Programs
Intermountain Health System	UT	140,000 acute admissions, 260,000 clinic visits	22	185	800	33,000	Hospitals, Clinics, Physicians and Caregivers, Select Health (Insurer)
Hudson Valley*	**Hudson Valley, NY**	**2.4m Population**	**35**	**Unknown**	**12,000**	**59,000 Health Practitioners and Technical Occupations (29-0000)**	**Almost None**

*Compiled by Pattern for Progress.

APPENDIX D: HUDSON VALLEY HOSPITAL BEDS, OCCUPANCY RATES, OUTCOMES AND PENALTIES

HOSPITAL BEDS, OCCUPANCY RATES, READMISSION RATES AND PENALTIES																
County	Hospital Name	City	Beds	Occ. Rate	Patient Would Recommend	Readmissions Rates					Penalties			Total Revenue (Audited Financial Statements) (millions)	Net Income (loss) (millions)
						Hospital-wide	Heart Failure	Heart Attack	Pneumonia	Hip/Knee Surgery	2013	2014	% Change		
Columbia	Columbia Memorial Hospital	Hudson	192	41.6%	51.0%	17.1%	24.1%	18.0%	19.3%	5.20%	0.10%	0.48%	0.38%	128.9	-2.8
Dutchess	Northern Dutchess Hospital	Rhinebeck	68	65.9%	81.0%	15.8%	22.0%	18.2%	18.1%	5.60%	0.15%	0.05%	-0.10%	65.0	5.0
Dutchess	St. Francis Hospital	Poughkeepsie	333	46.9%	63.0%	17.6%	26.7%	19.0%	21.3%	6.00%	0.58%	0.64%	0.06%	128.6	2.3
Dutchess	Vassar Bros. Medical Center	Poughkeepsie	365	73.0%	75.0%	17.7%	25.1%	18.0%	20.4%	5.10%	1%	0.79%	-0.21%	376.4	20.8
Orange	Bon Secours Community Hospital	Port Jervis	137	50.2%	62.0%	16.5%	21.5%	19.0%	17.4%	no data	0.08%	0.04%	-0.04%	75.9	-0.6
Orange	Keller Army Community Hospital *	West Point	No data	No data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
Orange	Orange Regional Medical Center	Middletown	383	72.0%	71.0%	18.7%	26.5%	20.6%	22.7%	5.90%	1%	1.62%	0.62%	335.7	12.7
Orange	St. Anthony Community Hospital	Warwick	73	44.3%	67.0%	16.6%	23.7%	18.3%	18.4%	5.40%	0.03%	0.33%	0.30%	52.3	-2.0
Orange	St. Luke's Cornwall Hospital	Newburgh	242	56.9%	61.0%	16.5%	25.5%	19.2%	19.0%	6.10%	0.94%	0.79%	-0.15%	174.2	13.8
Orange	St. Luke's Cornwall Hospital	Cornwall	103	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

APPENDIX D: HUDSON VALLEY HOSPITAL BEDS, OCCUPANCY RATES, OUTCOMES AND PENALTIES

County	Hospital Name	City	Beds	Occ. Rate	Patient Would Recommend	Readmissions Rates					Penalties			Total Revenue (Audited Financial Statements) (millions)	Net Income (loss) (millions)
						Hospital-wide	Heart Failure	Heart Attack	Pneumonia	Hip/Knee Surgery	2013	2014	% Change		
Putnam	Putnam Hospital Center	Carmel	164	57.5%	81.0%	16.2%	26.2%	20.7%	16.4%	5.10%	1%	0.65%	-0.35%	153.7	9.7
Rockland	Good Samaritan Hospital of Suffern	Suffern	340	55.6%	60.0%	17.5%	23.9%	20.2%	18.5%	4.90%	0.65%	0.79%	0.14%	275.7	-4.5
Rockland	Helen Hayes Hospital *	West Haverstraw	130	55.7%	No Data	No Data	No Data	No Data	No Data	No Data	0%	0%	0%	56.4	-11.2
Rockland	Nyack Hospital	Nyack	375	51.4%	60.0%	18.4%	25.1%	19.6%	19.8%	5.80%	0.45%	0.68%	0.23%	197.7	3.4
Rockland	Summit Park Hospital Rockland Co *	Pomona	108	53.0%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	87.3	-25.4
Sullivan	Catskill Regional Medical Center	Harris	166	39.3%	49.0%	18.0%	22.4%	18.6%	19.4%	5.60%	0.54%	0.38%	-0.16%	105.7	0.5
Sullivan	Catskill Regional Medical Center *	Callicoon	15	20.4%	No Data	16.1%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	105.7	2.3
Ulster	Ellenville Regional Hospital	Ellenville	25	11.0%	66.0%	16.6%	23.4%	No Data	17.4%	No Data	No Data	No Data	No Data	14.6	0.6
Ulster	HealthAlliance Hospital Broadway	Kingston	150	75.2%	50.0%	17.4%	25.8%	19.1%	19.2%	5.70%	0.73%	0.75%	0.02%	No Data	No Data
Ulster	HealthAlliance Hospital Mary's Av	Kingston	150	51.4%	79.0%	15.7%	24.9%	no data	18.2%	5.20%	0.67%	0.25%	-0.42%	73.3	-7.5
Westchester	Blythedale Children's Hospital *	Valhalla	86	75.6%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	59.0	19.9

APPENDIX D: HUDSON VALLEY HOSPITAL BEDS, OCCUPANCY RATES, OUTCOMES AND PENALTIES

County	Hospital Name	City	Beds	Occ. Rate	Patient Would Recommend	Readmissions Rates					Penalties			Total Revenue (Audited Financial Statements) (millions)	Net Income (loss) (millions)
						Hospital-wide	Heart Failure	Heart Attack	Pneumonia	Hip/Knee Surgery	2013	2014	% Change		
Westchester	Hudson Valley Hospital Center	Cortlandt Manor	128	80.7%	77.0%	17.3%	23.7%	20.3%	18.8%	5.60%	0.85%	0.59%	-0.26%	128.6	9.0
Westchester	Lawrence Hospital Center	Bronxville	291	54.5%	70.0%	17.5%	22.8%	18.9%	18.0%	5.80%	0.23%	0.10%	-0.13%	209.1	4.2
Westchester	Mount Vernon Hospital	Mount Vernon	176	33.9%	49.0%	16.8%	23.8%	17.4%	19.1%	No Data	0.12%	0.29%	0.17%	93.1	-0.9
Westchester	New York Presbyterian Hospital *	White Plains	270	76.2%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Westchester	Northern Westchester Hospital	Mount Kisco	233	57.3%	82.0%	17.3%	24.5%	19.6%	21.1%	5.70%	0.93%	0.88%	-0.05%	209.1	9.1
Westchester	Phelps Memorial Hospital Assn.	Sleepy Hollow	238	59.2%	81.0%	15.5%	21.7%	18.8%	15.1%	4.40%	0%	0.03%	0.03%	189.2	5.5
Westchester	SJRH - Andrus Pavilion	Yonkers	225	75.2%	71.0%	18.5%	25.9%	19.5%	20.4%	5.60%	0.97%	0.92%	-0.05%	242.3	5.7
Westchester	SJRH - Dobbs Ferry Pavilion *	Dobbs Ferry	12	91.9%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Westchester	SJRH - Park Care Pavilion	Yonkers	141	83.5%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Westchester	Sound Shore Medical	New Rochelle	242	46.8%	59.0%	18.0%	26.6%	18.1%	19.7%	5.70%	0.95%	0.75%	-0.20%	189.7	12.6
Westchester	St. Joseph's MC-St. Vincent's *	Harrison	138	95.5%	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Westchester	St. Joseph's Medical Center	Yonkers	194	58.5%	58.0%	19.8%	25.9%	18.0%	18.9%	5.30%	0.75%	0.52%	-0.23%	174.3	3.6

APPENDIX D: HUDSON VALLEY HOSPITAL BEDS, OCCUPANCY RATES, OUTCOMES AND PENALTIES

County	Hospital Name	City	Beds	Occ. Rate	Patient Would Recommend	Readmissions Rates					Penalties			Total Revenue (Audited Financial Statements) (millions)	Total Revenue (Audited Financial Statements) (millions)
						Hospital-wide	Heart Failure	Heart Attack	Pneumonia	Hip/Knee Surgery	2013	2014	% Change		
Westchester	VA Hudson Valley Healthcare	Montrose	No data	No data	no data	no data	23.8%	no data	17.7%	no data	no data	no data	no data	no data	no data
Westchester	Westchester Medical Center	Valhalla	652	74.9%	55.0%	17.5%	23.1%	20.5%	17.6%	4.80%	1%	0.82%	-0.18%	915.7	15.9
Westchester	White Plains Hospital Center	White Plains	292	73.9%	81.0%	16.8%	24.8%	18.9%	20.6%	5.10%	0.45%	0.90%	0.45%	291.8	9.2
Westchester	Winifred Masterson Burke Rehab *	White Plains	150	72.4%	No Data	No Data	No Data	No Data	No Data	No Data	0%	0%	0%	73.6	7.8
HV Average				**61.0%**		**17.2%**	**24.4%**	**19.1%**	**18.9%**	**5.4%**	**0.5%**	**0.5%**	**0%**	**178.7**	**4.1**

* Hospitals that are specialty facilities or reported as part of a larger system may not have reportable data

Source: Compiled by Pattern for Progress with the following sources:

Hospital outcomes including patient satisfaction from Centers for Medicare and Medicaid Services. (2012). *Hospital Compare Database*. Retrieved from http://www.medicare.gov/hospitalcompare/search.html.

Financial data from New York State Department of Health. (2010). *Hospital Cost Report Edited Data.* Retrieved from https://health.data.ny.gov/Health/Hospital-Cost-Report-Edited-Data-2010/fjur-9b7f.

Occupancy calculated using New York State Department of Health. (2012). *Statewide Planning and Research Cooperative System.* Retrieved from https://health.data.ny.gov/Health/Hospital-Inpatient-Discharges-SPARCS-De-Identified/u4ud-w55t.

Penalties from Rau, J. (2013, August 12). Armed With Bigger Fines, Medicare To Punish 2,225 Hospitals For Excess Readmissions. *Kaiser Health News.* Retrieved from http://www.kaiserhealthnews.org/Stories/2013/August/02/readmission-penalties-medicare-hospitals-year-two.aspx.

HUDSON VALLEY PATTERN for PROGRESS

APPENDIX E: INNOVATIVE SYSTEMS OUTCOMES

System	Sample Hospital Name	Location	Readmission Rates					Mortality Rates			Patient Would Recommend	Door to Balloon Time	Avg. Time (min) patients spent in ER before admitted as inpatient	Patients who reported they were given info about what to do during recovery at home
			Hospital -wide	Heart Failure	Heart Attack	Pneumonia	Hip/Knee Surgery	Heart Failure	Heart Attack	Pneumonia				
Dean Health Systems	St. Mary's Hospital	Madison, WI	14.6%	21.5%	15.8%	16.1%	6.2%	10.7%	13.2%	9.0%	83.0%	98.0%	180	89.0%
Gundersen Health System	Gundersen Lutheran Medical Center	Western WI IA, MN	13.4%	20.8%	16.8%	15.0%	4.1%	12.7%	16.4%	14.1%	81.0%	97.0%	189	90.0%
ThedaCare	Theda Clark Medical Center	WI (9 counties)	15.3%	21.8%	18.9%	18.7%	4.8%	15.9%	15.9%	11.5%	79.0%	100.0%	174	88.0%
Kaiser Permanente	Kaiser Permanente Foundation Hospital - Fontana	CA, HI, DC,	16.4%	21.5%		17.1%		12.2%		10.3%	77.0%		340	87.0%
Geisinger Health System	Geisinger Medical Center (Danville)	Central Northern PA (44 counties)	16.0%	21.1%	18.4%	16.4%	5.4%	14.6%	16.0%	11.4%	77.0%	100.0%	349	89.0%
Cleveland Clinic	Cleveland Clinic	OH	18.1%	24.5%	20.1%	21.5%	6.1%	9.7%	14.9%	12.4%	86.0%	92.0%	312	90.0%
Everett Clinic (Providence Health & Services)	Providence Regional Methodist Hospital - Everett	WA, OR, ID, AK, CA, MT	14.8%	20.0%	18.9%	16.8%	4.5%	13.1%	15.6%	13.5%	78.0%	92.0%	326	87.0%
Mayo Clinic	Mayo Clinic - St. Mary's Hospital	MN, AZ, FL	15.5%	21.5%	16.4%	16.1%	5.0%	10.6%	13.5%	10.2%	88.0%	94.0%	230	89.0%
Intermountain Health System	Intermountain Medical Center	Utah	14.0%	18.1%	15.7%	15.8%	4.6%	11.9%	13.4%	13.6%	81.0%	100.0%	274	90.0%
AGGREGATED SYSTEMS AVERAGES														
Hudson Valley Avg.			17.2%	24.4%	19.1%	18.9%	5.4%	11.2%	14.2%	11.5%	66.4%	99.0%	355	82.8%
Innovative Systems Avg.			15.3%	21.2%	17.6%	17.1%	5.1%	12.4%	14.9%	11.8%	81.1%	96.6%	264	88.8%
National Avg.			16.0%	23.0%	18.3%	17.6%	5.4%	11.7%	15.2%	11.9%	71.0%	95.0%	275	85.0%

Source: Centers for Medicare and Medicaid Services. (2012). *Hospital Compare Database*. Retrieved from http://www.medicare.gov/hospitalcompare/search.html.

HUDSON VALLEY PATTERN for PROGRESS

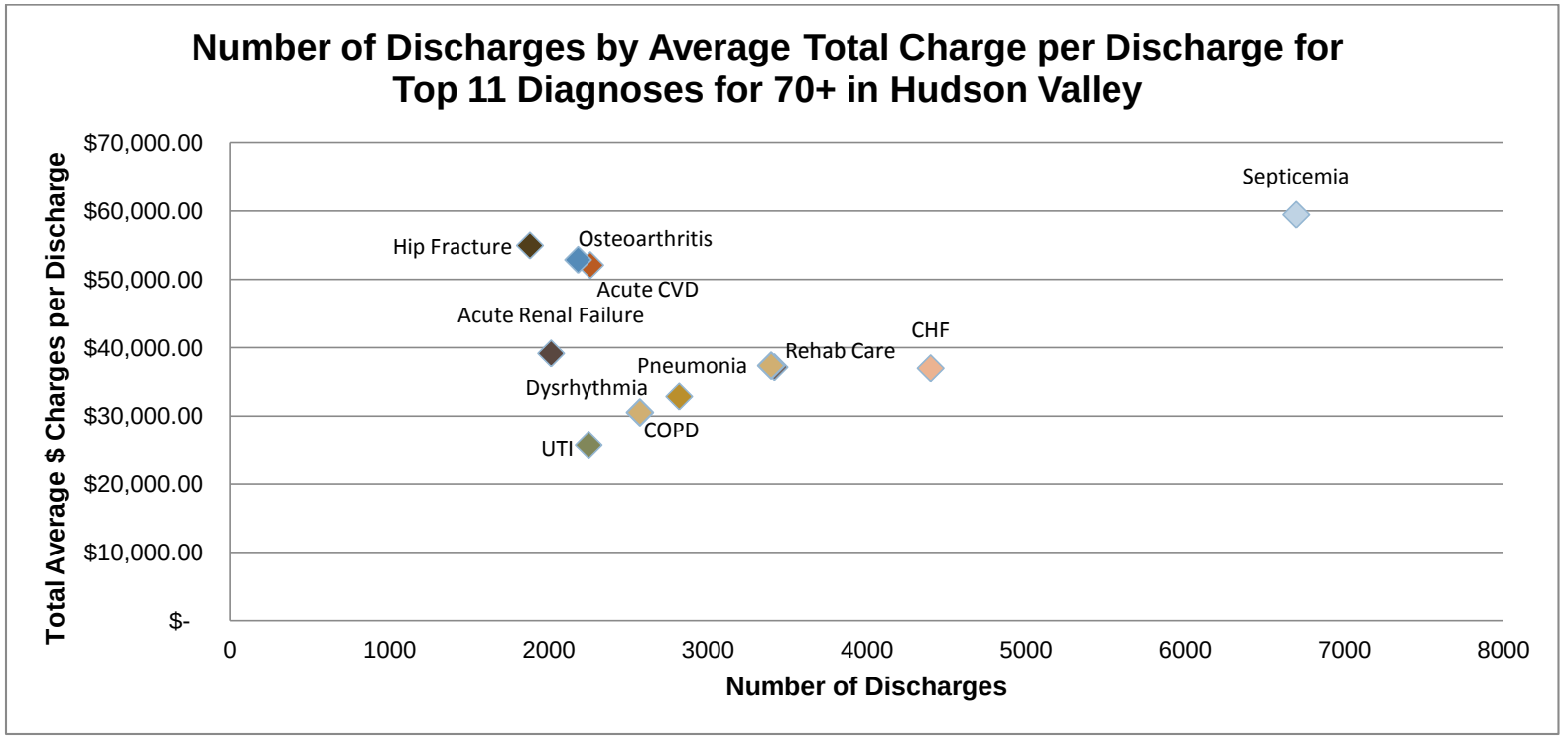
APPENDIX F: HOSPITAL MARGINS

		2011 AUDITED FINANCIAL STATEMENT SUMMARY ($ Million)							
		Operating Margin				Bottom Line Margin			
		2010		2011		2010		2011	
HANYS Regions	# of Facilities	Profit/ (Loss)	Margin	Profit/ (Loss)	Margin	Profit/ (Loss)	Margin	Profit/(Loss)	Margin
Nassau, Suffolk	23	$233.9	3.0%	$132.8	1.6%	$395.7	5.0%	($151.3)	-1.9%
New York City	59	($100.9)	-0.3%	$108.2	0.3%	$555.1	1.8%	($323.9)	-1.0%
Northern Metropolitan	32	$59.3	1.2%	$44.1	0.9%	$150.9	3.0%	($96.0)	-1.9%
DOWNSTATE TOTAL	**114**	**$192.3**	**0.5%**	**$285.1**	**0.6%**	**$1,101.7**	**2.5%**	**($571.2)**	**-1.3%**
Iroquois - Northeastern	28	$90.5	2.4%	$78.3	2.0%	$165.6	4.3%	$67.2	1.8%
Iroquois - Central	28	($16.6)	-0.4%	($20.3)	-0.5%	$89.3	2.2%	($66.4)	-1.6%
Rochester	18	$107.8	3.2%	$116.8	3.3%	$109.9	3.2%	$44.1	1.3%
Western	26	$17.0	0.5%	($27.6)	-0.8%	$64.3	1.8%	($170.3)	-5.0%
UPSTATE TOTAL	100	$198.8	1.4%	$147.1	1.0%	$429.2	2.9%	($125.4)	-0.8%
STATEWIDE	214	$391.0	0.68%	$432.2	0.73%	$1,530.9	2.62%	($696.6)	-1.19%

Source: Hospital Association of New York State. Excludes the following facilities that were included in 2010: North General Hospital (closed 2011), Peninsula Hospital (closed 2012), and Sheehan Memorial Hospital (closed 2012).

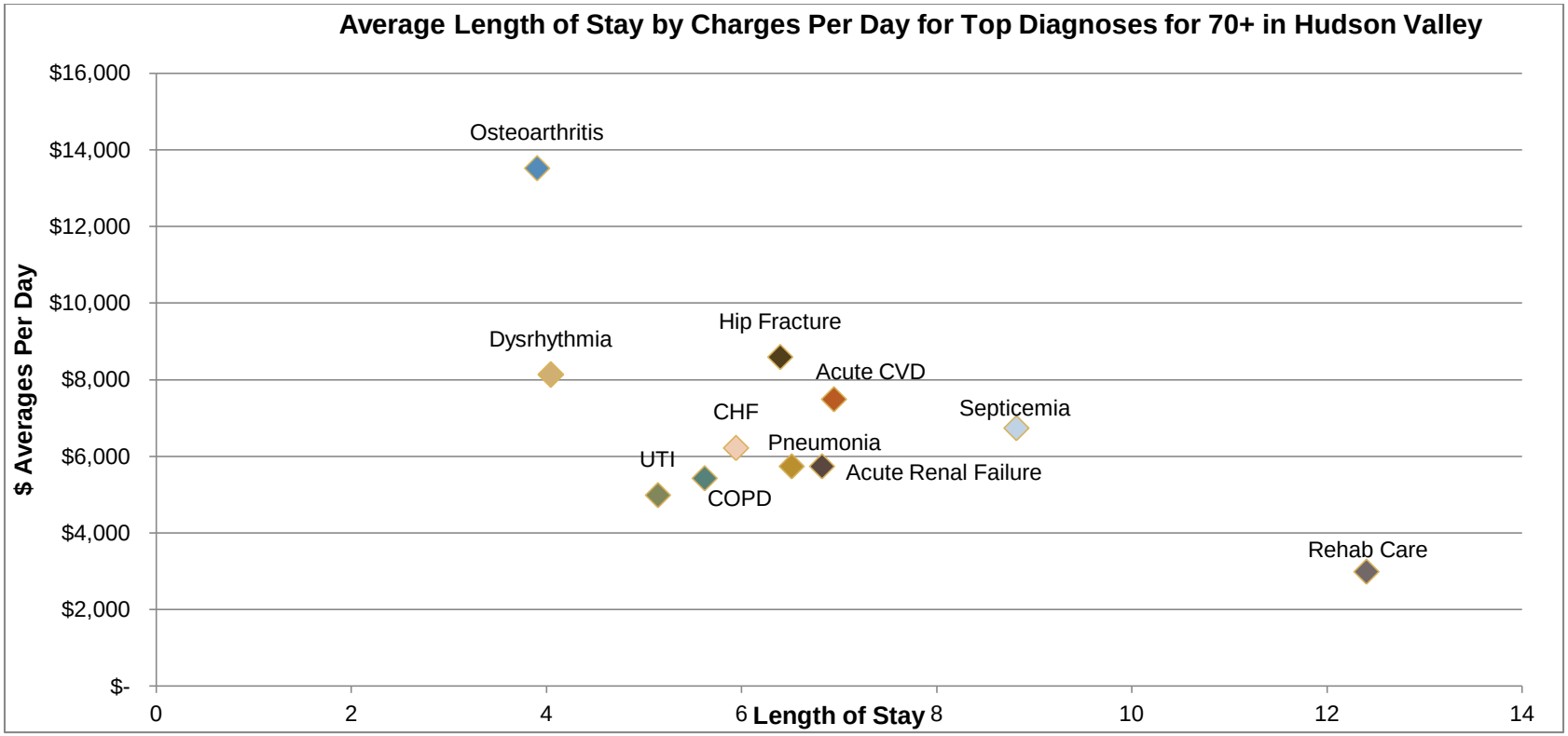
APPENDIX G: DISCHARGE AND LENGTH-OF-STAY ANALYSIS FOR TOP DIAGNOSES OF PATIENTS 70+

Only when one takes into account the total number of discharges for a particular diagnosis can one anticipate whether efforts to reduce costs for the diagnosis would have significant impact on overall healthcare costs. Septicemia again presents an opportunity for cost reduction as it presents the largest number of discharges (6,699) for patients over 70 in the Hudson Valley in 2012 and septicemia, hospital stays also result in the largest average charges ($59,430) per stay out of any diagnosis. Given the 8.8 day length of stay on average for patients over 70 and the high daily charges ($6,700) for septicemia possible interventions to reduce costs would involve reducing the length of stay for septicemia patients, reducing the charges by examining resources involved in septicemia treatment as well as reducing overall numbers of septicemia admissions.



Source: Compiled by Pattern for Progress from: New York State Department of Health. (2012). *Statewide Planning and Research Cooperative System.* Retrieved from https://health.data.ny.gov/Health/Hospital-Inpatient-Discharges-SPARCS-De-Identified/u4ud-w55t.

APPENDIX G: DISCHARGE AND LENGTH-OF-STAY ANALYSIS FOR TOP DIAGNOSES OF PATIENTS 70+



Source: Compiled by Pattern for Progress from: New York State Department of Health. (2012). *Statewide Planning and Research Cooperative System.* Retrieved from https://health.data.ny.gov/Health/Hospital-Inpatient-Discharges-SPARCS-De-Identified/u4ud-w55t.

Enhancing SPARCS data collection to enable multiple diagnosis codes would improve health policy decision-making. Furthermore, an evaluation of SPARCS diagnoses and the ways in which hospital institutions code for maximum reimbursement would enlighten health policy. SPARCS provides a CCS Diagnosis Code (CCS=Clinical Classification Software), a CCS Procedure Code, an APR DRG Code, which is a classification code, and APR MDC Code (All Patient Refined Major Diagnostic category) – a secondary category to the classification code. There is no secondary diagnosis provided, but there is a series of diagnostic codes to classify and name the procedure – as well as other codes such as APR severity of illness code, APR risk of mortality code, and APR Medical Surgical Description.

APPENDIX H: NEW YORK STATE VERSUS HUDSON VALLEY HOSPITAL BED TYPES

Hospital Bed Types				
Type	**HV**	**% of Total**	**NYS**	**% of Total**
AIDS	31	0.4%	488	0.9%
Bone Marrow Transplant	4	0.1%	71	0.1%
Burns Care	10	0.1%	113	0.2%
Chemical Dependence - Detox.	149	2.1%	810	1.4%
Chemical Dependence - Rehab.	255	3.7%	876	1.6%
Coma Recovery	9	0.1%	46	0.1%
Coronary Care	151	2.2%	1158	2.1%
Intensive Care	321	4.6%	2891	5.2%
Maternity	376	5.4%	3339	6.0%
Medical/Surgical	3,980	57.0%	33313	59.5%
Neonatal Continuing Care	10	0.1%	348	0.6%
Neonatal Intensive Care	55	0.8%	607	1.1%
Neonatal Intermediate Care	91	1.3%	734	1.3%
Pediatric	243	3.5%	2326	4.2%
Pediatric ICU	18	0.3%	342	0.6%
Physical Medicine/Rehab.	387	5.5%	2165	3.9%
Prisoner	14	0.2%	93	0.2%
Psychiatric	795	11.4%	5554	9.9%
Respiratory	0	0.0%	74	0.1%
Transitional Care	0	0.0%	91	0.2%
Traumatic Brain Injury	41	0.6%	221	0.4%
Special Use	40	0.6%	323	0.6%
Total	6,980	100.0%	55983	100.0%

Source: New York State Department of Health. (Accessed in 2014). *New York State Hospital Profile.* Retrieved from http://hospitals.nyhealth.gov/.

APPENDIX I: NATIONAL HOSPITAL AND NURSING HOME ADMISSIONS RATES OVER TIME

NATIONAL HOSPITAL ADMISSIONS RATES OVER TIME					
United States	**1995**	**2000**	**2010**	**% change 1995-2010**	**% change 2000-2010**
# Hospitals	6,291	5,810	5,754	-8.5%	-1%
# Beds	1,080,601	983,628	941,995	-12.8%	-4%
Occupancy Rate	65.7%	66.1%	66.6%	1.4%	1%
Beds/Hospital	171.8	169.3	163.7	-4.7%	-3%
Admissions	33,282,000	34,891,000	36,915,000	10.92%	6%
US Population	266,278,393	282,162,411	309,326,295	16.17%	10%
%Admits/Pop	12.50%	12.37%	11.93%	-4.52%	-3%

Source: U.S. Department of Health and Human Services. (2012). Health, United States, 2012: With Special Feature on Emergency Care. Table 108. Retrieved from http://www.cdc.gov/nchs/data/hus/hus12.pdf.

NATIONAL SNF ADMISSIONS RATES OVER TIME					
United States	**1995**	**2000**	**2010**	**% change 1995-2010**	**% change 2000-2010**
# Nursing Homes	16,389	16,886	15,690	-4.27%	-7%
# Beds	1,751,302	1,795,388	1,703,398	-2.74%	-5%
Residents	1,479,550	1,480,076	1,396,473	-5.62%	-6%
Occupancy Rate	84.50%	82.40%	82.00%	-2.96%	0%
Beds/Home	106.86	106.32	108.57	1.60%	2%
Population	266,278,393	282,162,411	309,326,295	16.17%	10%
Population 65+	33,619,000	35,069,568	40,437,581	20.28%	15%
% of Residents/Pop 65+	4.40%	4.22%	3.45%	-21.53%	-18%

Source: U.S. Department of Health and Human Services. (2012). Health, United States, 2012: With Special Feature on Emergency Care. Table 109. Retrieved from http://www.cdc.gov/nchs/data/hus/hus12.pdf.

HUDSON VALLEY PATTERN for PROGRESS

APPENDIX J: SKILLED NURSING FACILITY OUTCOME MEASURES BY COUNTY

County	Ratings (Out of 5)				Quality Measures: % of Long-Stay Residents			Inspection	Staffing Measures (per resident per day)		
	Overall Rating	Health Inspection	Staffing	Quality Measures	With One or More Falls With Major Injury	With UTI	With Depressive Symptoms	Total # Health Deficiencies	RN min	CNA hrs	PT min
Columbia	1.8	1.0	3.3	3.0	3.5%	5.1%	6.0%	10.25	36.75	2.28	5.25
Dutchess	2.5	2.2	2.8	4.0	2.7%	6.2%	5.5%	6.08	36.23	2.22	6.23
Greene	1.0	1.0	2.5	3.5	2.8%	6.3%	4.3%	8.00	39.50	2.26	6.00
Orange	3.0	2.7	2.7	3.9	2.6%	8.6%	5.7%	5.78	41.78	2.27	5.89
Putnam	2.0	2.5	2.5	2.5	6.3%	8.1%	26.3%	5.50	31.50	2.27	6.00
Rockland	3.4	2.8	3.5	3.6	1.8%	9.3%	19.2%	3.10	65.90	2.93	10.80
Sullivan	3.8	3.0	3.5	3.8	3.7%	5.1%	1.4%	3.00	41.75	2.65	6.00
Ulster	3.4	3.0	2.9	4.0	2.8%	5.8%	3.5%	4.71	38.86	2.23	5.57
Westchester	4.0	3.3	2.8	4.7	2.2%	5.0%	12.7%	3.85	57.18	2.45	8.54
HV AVG.	2.8	2.4	2.9	3.7	3.1%	6.6%	9.4%	5.59	43.27	2.40	6.70
NYS AVG.	-	-	-	-	2.7%	5.9%	11.7%	5.40	43.00	2.38	6.00
NATIONAL AVG.	-	-	-	-	3.2%	6.4%	6.4%	6.80	48.00	2.47	6.00

Source: Centers for Medicare and Medicaid Services. (2012). *Nursing Home Compare Database*. Retrieved from http://www.medicare.gov/nursinghomecompare/search.html.

APPENDIX K: PUBLIC NURSING HOME SUMMARY

In the Hudson Valley, county governments have scrambled to leave the nursing home business over the last decade, seeking to transition their facilities to private ownership. In Ulster County this was successfully achieved in 2013 when Golden Hill Health Care Center was sold to a private owner through a unique Local Development Corporation model. Orange County is now pursuing a similar path to sell Valley View nursing home. While the County still owns this facility, taxpayer funding for it has been committed in fits and starts. Additionally, Rockland County's Summit Park (Hospital and) Nursing Care Center is for sale by the county because of its overwhelming deficit and has attracted private sector interest.

COUNTY NURSING HOMES IN THE HUDSON VALLEY

County	Nursing Home	Status	Beds	Occupancy Rate
Columbia	Pine Haven Home	Still county owned	120	87.5%
Dutchess	Dutchess County Infirmary	Closed 1998	_	_
Greene	No county nursing home	n/a	_	_
Orange	The Valley View Center for Nursing Care and Rehabilitation	Still county owned	360	92.20%
Putnam	No county nursing home	n/a	_	_
Rockland	Summit Park Nursing Care Center	Still county owned but for sale	321	66.40%
Sullivan	Sullivan County Adult Care Center	Still county owned	160	93.10%
Ulster	Golden Hill Nursing and Rehabilitation Center	Sold 2012	280	87.50%
Westchester	Taylor Care Center	Sold 2009	_	_

Source: Compiled by Pattern for Progress.

APPENDIX L: NURSING HOME 2011 ANNUAL CENSUS DATA

SKILLED NURSING FACILITY DATA AGGREGATED BY COUNTY					
County	**# SNFs**	**Beds**	**Patients**	**Average Length of Stay**	**Patients per Bed per Year**
Columbia	5	596	1,789	125.1	3.0
Dutchess	13	1,972	6,950	110.3	3.5
Greene	2	256	1,157	86.0	4.5
Orange	10	1,438	4,669	110.7	3.2
Putnam	2	320	835	159.5	2.6
Rockland	10	1,716	6,375	107.3	3.7
Sullivan	4	451	1,471	124.3	3.3
Ulster	7	1,220	3,545	127.4	2.9
Westchester	42	5,989	20,599	116.8	3.4
Total HV	**95**	**13958**	**47390**	**118.6**	**3.4**

Source: Compiled by Pattern for Progress from New York State Department of Health. (2011) Nursing Home Cost Reports (RHCF). Retrieved from http://www.healthdata.gov/data/dataset/nursing-home-cost-report-rhcf-2011.

APPENDIX L: NURSING HOME 2011 ANNUAL CENSUS DATA

NURSING HOME 2011 ANNUAL CENSUS DATA					
County	**Facility Name**	**City**	**Total Beds Set up and Staffed or Use**	**Total Patients Under Care During Report Period (1 yr)**	**Average LOS (days)**
Columbia	Barnwell Nursing & Rehabilitation Center	Valatie	236	681	126.5
Columbia	Livingston Hills Nursing & Rehabilitation Center, LLC	Livingston	120	404	108.4
Columbia	Pine Haven Home	Philmont	120	264	165.9
Columbia	Whittier Rehabilitation & Skilled Nursing Center	Ghent	120	440	99.5
Columbia	FASNY Firemen's Home	Hudson	no data		
Dutchess	River Valley Care Center, Inc.	Poughkeepsie	160	542	107.7
Dutchess	Lutheran Center at Poughkeepsie, Inc.	Poughkeepsie	160	704	83.0
Dutchess	Ferncliff Nursing Home Co., Inc.	Rhinebeck	328	883	135.6
Dutchess	The Baptist Home at Brookmeade	Rhinebeck	120	233	188.0
Dutchess	Elant at Wappingers Falls	Wappingers Falls	62	218	103.8
Dutchess	Wingate at Beacon	Beacon	160	752	77.7
Dutchess	The Pines at Poughkeepsie Center for Nursing & Rehabilitation	Poughkeepsie	200	908	80.4
Dutchess	Wingate of Dutchess	Fishkill	160	642	91.0
Dutchess	Northern Dutchess Res Health Care Facility, Inc.	Rhinebeck	100	425	85.9
Dutchess	Quaker Hill Manor	Hyde Park	120	356	123.0
Dutchess	Elant at Fishkill, Inc.	Beacon	160	488	119.7
Dutchess	Dutchess Center for Rehabilitation and Healthcare	Pawling	122	508	87.7
Dutchess	Renaissance Rehabilitation and Nursing Care Center	Staatsburg	120	291	150.5
Greene	Kaaterskill Care: Skilled Nursing and Rehab	Catskill	120	418	104.8
Greene	The Pines at Catskill Center for Nursing & Rehabilitation	Catskill	136	739	67.2
Orange	Schervier Pavilion	Warwick	120	353	124.1
Orange	Elant at Newburgh, Inc.	Newburgh	190	611	113.5
Orange	Elant at Goshen, Inc.	Goshen	120	526	83.3

APPENDIX L: NURSING HOME 2011 ANNUAL CENSUS DATA

County	Facility Name	City	Total Beds Set up and Staffed or Use	Total Patients Under Care During Report Period (1 yr)	Average LOS (days)
Orange	Highland Rehabilitation and Nursing Center	Middletown	98	258	138.6
Orange	Campbell Hall Rehabilitation Center, Inc.	Campbell Hall	134	501	97.6
Orange	Montgomery Nursing and Rehabilitation Center	Montgomery	100	342	106.7
Orange	The Valley View Center for Nursing Care and Rehabilitation	Goshen	360	970	135.5
Orange	Glen Arden, Inc.	Goshen	40	126	115.9
Orange	St. Josephs Place	Port Jervis	46	198	84.8
Orange	Middletown Park Rehabilitation & Health Care Center	Middletown	230	784	107.1
Putnam	Putnam Nursing & Rehabilitation Center	Holmes	160	271	215.5
Putnam	Putnam Ridge	Brewster	160	564	103.5
Rockland	Northern Manor Geriatric Center, Inc.	Nanuet	231	960	87.8
Rockland	Friedwald Center for Rehabilitation and Nursing, LLC	New City	180	922	71.3
Rockland	Northern Metropolitan Residential Health Care Facility, Inc.	Monsey	120	457	95.8
Rockland	Summit Park Nursing Care Center	Pomona	321	464	252.5
Rockland	Nyack Manor Nursing Home	Valley Cottage	160	492	118.7
Rockland	Ramapo Manor Center for Rehabilitation & Nursing	Suffern	203	753	98.4
Rockland	Pine Valley Center for Rehabilitation and Nursing	Spring Valley	200	754	96.8
Rockland	Northern Riverview Health Care Center, Inc.	Haverstraw	180	620	106.0
Rockland	Helen Hayes Hospital RHCF	West Haverstraw	25	689	13.2
Rockland	Tolstoy Foundation Rehabilitation and Nursing Center	Valley Cottage	96	264	132.7
Sullivan	Sullivan County Adult Care Center	Liberty	160	512	114.1
Sullivan	Roscoe Regional Rehabilitation & Residential Health Care Facility	Roscoe	87	158	201.0
Sullivan	Catskill Regional Medical Center	Harris	64	276	84.6
Sullivan	Achieve Rehab and Nursing Facility	Liberty	140	525	97.3
Ulster	Ten Broeck Commons	Lake Katrine	258	565	166.7

APPENDIX L: NURSING HOME 2011 ANNUAL CENSUS DATA

County	Facility Name	City	Total Beds Set up and Staffed or Use	Total Patients Under Care During Report Period (1 yr)	Average LOS (days)
Ulster	Northeast Center for Special Care	Lake Katrine	280	958	106.7
Ulster	Golden Hill Nursing and Rehabilitation Center	Kingston	280	529	193.2
Ulster	The Mountain View Nursing & Rehabilitation Centre	New Paltz	79	278	103.7
Ulster	Hudson Valley Rehabilitation & Extended Care Center	Highland	203	610	121.5
Ulster	Wingate of Ulster	Highland	120	605	72.4
Ulster	Woodland Pond at New Paltz	New Paltz	no data		
Westchester	Andrus On Hudson	Hastings-On-Hudson	197	594	121.1
Westchester	Bayberry Nursing Home	New Rochelle	60	130	168.5
Westchester	Bethel Nursing & Rehabilitation Center	Croton-On-Hudson	200	774	94.3
Westchester	Bethel Nursing Home Company, Inc.	Ossining	78	325	87.6
Westchester	Cedar Manor Nursing & Rehabilitation Center	Ossining	153	510	109.5
Westchester	Cortlandt Healthcare LLC	Peekskill	120	636	68.9
Westchester	Dumont Center for Rehabilitation and Nursing Care	New Rochelle	196	601	119.0
Westchester	Elant at Brandywine, Inc.	Briarcliff Manor	no data		
Westchester	Elizabeth Seton Pediatric Center	Yonkers	136	225	220.6
Westchester	Field Home-Holy Comforter	Cortlandt Manor	202	776	95.0
Westchester	Glen Island Center for Nursing and Rehabilitation	New Rochelle	182	450	147.6
Westchester	Hebrew Hospital Home of Westchester, Inc.	Valhalla	160	609	95.9
Westchester	Helen and Michael Schaffer Extended Care Center	New Rochelle	no data		
Westchester	Jewish Home Lifecare, Sarah Neuman Center, Westchester	Mamaroneck	301	1049	104.7
Westchester	Kendal On Hudson	Sleepy Hollow	no data		
Westchester	King Street Home, Inc.	Port Chester	120	664	66.0
Westchester	Michael Malotz Skilled Nursing Pavilion	Yonkers	120	535	81.9
Westchester	New York State Veterans Home at Montrose	Montrose	no data		

APPENDIX L: NURSING HOME 2011 ANNUAL CENSUS DATA

County	Facility Name	City	Total Beds Set up and Staffed or Use	Total Patients Under Care During Report Period (1 yr)	Average LOS (days)
Westchester	North Westchester Restorative Therapy and Nursing Center	Mohegan Lake	120	675	64.9
Westchester	Port Chester Nursing & Rehab Centre	Port Chester	160	487	119.9
Westchester	Regency Extended Care Center	Yonkers	315	747	153.9
Westchester	Rosary Hill Home	Hawthorne	no data		
Westchester	Salem Hills Rehabilitation and Nursing Center	Purdys	126	228	201.7
Westchester	Sans Souci Rehabilitation and Nursing Center	Yonkers	120	437	100.2
Westchester	Schnurmacher Center for Rehabilitation and Nursing	White Plains	225	755	108.8
Westchester	Sky View Rehabilitation and Health Care Center, LLC	Croton On Hudson	192	597	117.4
Westchester	Somers Manor Nursing Home Inc	Somers	300	895	122.3
Westchester	Sprain Brook Manor Rehab	Scarsdale	121	745	59.3
Westchester	St Cabrini Nursing Home	Dobbs Ferry	306	930	120.1
Westchester	St Josephs Hospital Nursing Home of Yonkers NY, Inc.	Yonkers	200	693	105.3
Westchester	Sunshine Children's Home and Rehab Center	Ossining	50	86	212.2
Westchester	Sutton Park Center for Nursing and Rehabilitation	New Rochelle	160	612	95.4
Westchester	Tarrytown Hall Care Center	Tarrytown	120	364	120.3
Westchester	The Osborn	Rye	84	538	57.0
Westchester	The Wartburg Home	Mount Vernon	242	796	111.0
Westchester	United Hebrew Geriatric Center	New Rochelle	296	981	110.1
Westchester	Victoria Home	Ossining	49	87	205.6
Westchester	Waterview Hills Rehabilitation and Nursing Center	Purdys	130	572	83.0
Westchester	West Ledge Rehabilitation and Nursing Center	Peekskill	100	247	147.8
Westchester	Westchester Center for Rehabilitation & Nursing	Mount Vernon	240	856	102.3
Westchester	Westchester Meadows	Valhalla	20	57	128.1
Westchester	White Plains Center for Nursing Care, LLC	White Plains	88	336	95.6

Source: New York State Department of Health. (2011). *Nursing Home Cost Reports (RHCFs).* Retrieved from https://health.data.ny.gov/Health/Nursing-Home-Cost-Report-RHCF-2011/k84q-yeaf.

APPENDIX M: HOME HEALTHCARE AGENCY TYPES

- **Licensed Home Health Care Agencie**s offer services to clients who pay privately or with private insurance. Licensed Agencies operate freely within a framework of rules and regulations, and are surveyed and investigated periodically by NYSDOH.
- **Certified Home Health Agencies** generally provide short-term, part-time care and support to clients in need of "intermediate and skilled health care." In addition to short term health services, a certified agency can act as a blanket agency that can "help determine the level of care" a patient needs, as well as arrange other, more specific home health services, such as physical therapy, social work, and medical supply. NYSDOH is responsible for monitoring the care provided by Certified Agencies.
- **Long-Term Home Health Care** is considered an alternative to institutionalized long-term care, or SNF. Long-Term Home Health Care is defined by DOH as "a coordinated plan of medical, nursing, and rehabilitative care provided at home to persons with disabilities that are medically eligible for placement in a nursing home." NYSDOH is responsible for monitoring Long-Term Home Health Care.
- **Hospital based Home Health Care** is considered a temporary home care service, but provided by a hospital upon discharge of a patient.
- **Hospice** is home care that focuses on easing the symptoms of a patient, rather than treating them. NYSDOH states that the emphasis of hospice is to "help individuals remain at home as long as possible." NYSDOH is responsible for monitoring hospice.

Source: New York State Department of Health. (Accessed in 2014). *New York State Home Health and Hospice Profile.* Retrieved from http://homecare.nyhealth.gov/.

APPENDIX N: HEALTHCARE OCCUPATIONS PER 100,000 AND MEAN AGE

2011 HUDSON VALLEY OCCUPATIONS IN THE HEALTH SECTOR					
Health Occupation	**# Per 100,000**	**Mean Age**	**Health Occupation**	**# Per 100,000**	**Mean Age**
All Physicians	341	53	Audiologists	7	58
Primary Care/Physicians	120	53	Clinical Lab Technologists	62	46
Family General Practice	25	54	Dental Hygienist	50	45
Internal Medicine/General	94	54	Dieticians/Nutritionists	31	46
Pediatrics (General)	28	51	Licensed Practical Nurses	339	46
Obstetrics/Gynecology	13	49	Mental Health Counselors	25	42
Other Specialists	221	54	Occupational Therapists	62	45
IM Subspecialists	39	52	Occupational Therapy Assistant	33	42
General Surgeons	8	56	Optometrists	16	52
Surgery Subspecialists	37	53	Pharmacists	88	47
General Psychiatrists	47	59	Physical Therapists	102	41
Other	90	52	Physical Therapy Assistants	22	40
Chiropractors	32	50	Psychologists	77	53
Dentists	92	55	Registered Nurses	1,390	49
Podiatrists	13	54	Respiratory Therapists	28	47
Physician Assistants	37	47	Social Workers	323	47
Nurse Practitioners/Midwives	92	48	Speech Language Pathologists	88	45

Source: The Center for Health Workforce Studies. The School of Public Health, SUNY Albany. (2013). *The New York State Health Workforce Planning Data Guide.* Retrieved from http://chws.albany.edu/archive/uploads/2013/09/nys_health_workforce_planning_data_guide_2013.pdf.

HUDSON VALLEY PATTERN for PROGRESS

APPENDIX O: HUDSON VALLEY HEALTHCARE WORKFORCE PROJECTIONS THROUGH 2020

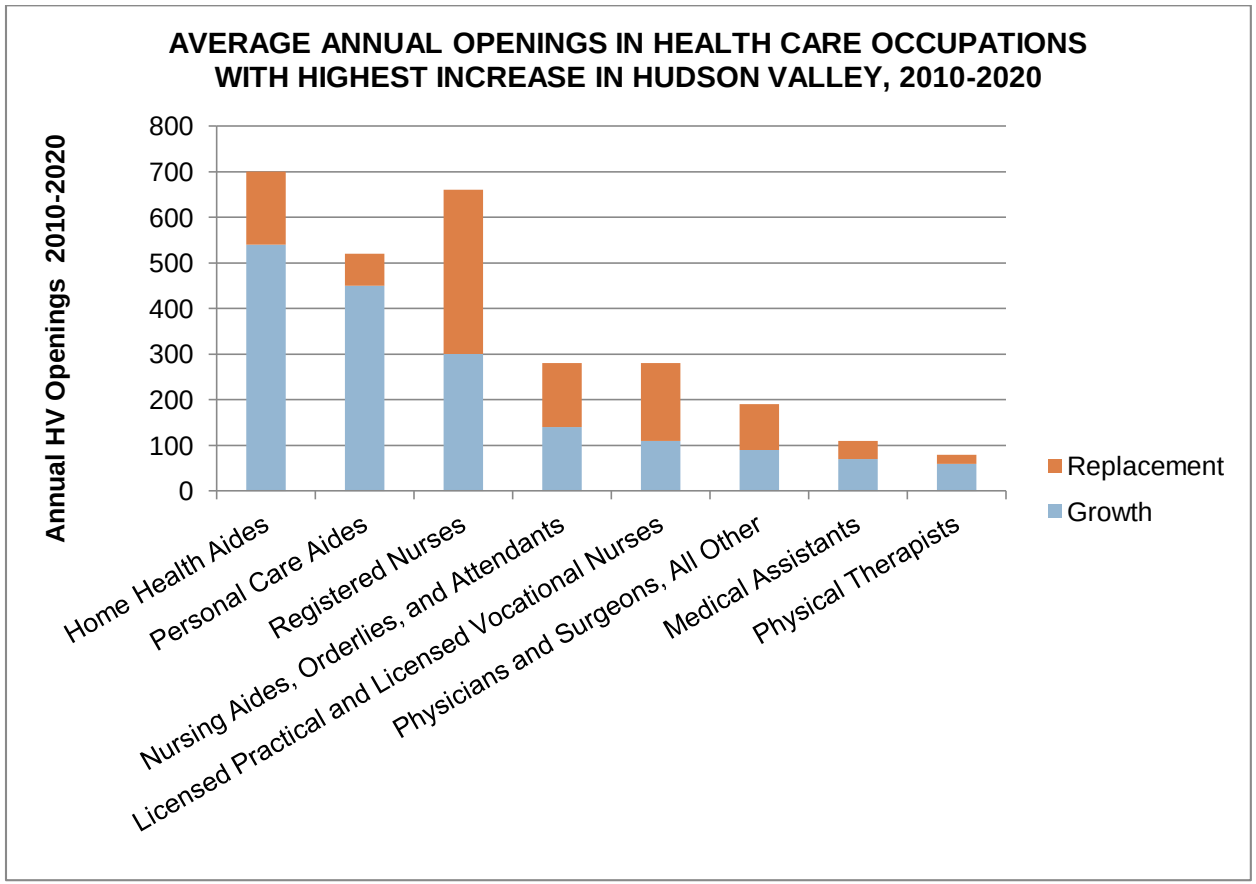
TOP 30 HEALTHCARE OCCUPATIONS WITH THE HIGHEST NET CHANGE IN EMPLOYMENT, 2010-2020 IN THE HUDSON VALLEY								
Soc Code	Title	Employment				Annual Average Openings		
		2010	Projected 2020	Net Change	% Growth	Total	Growth	Replacement
31-1011	Home Health Aides	12,660	18,060	5,400	42.7%	700	540	160
39-9021	Personal Care Aides	8,940	13,420	4,480	50.1%	520	450	70
29-1111	Registered Nurses	19,760	22,780	3,020	15.3%	660	300	360
31-1012	Nursing Aides, Orderlies, and Attendants	11,010	12,420	1,410	12.8%	280	140	140
29-2061	Licensed Practical and Licensed Vocational Nurses	6,270	7,390	1,120	17.9%	280	110	170
29-1069	Physicians and Surgeons, All Other	4,860	5,810	950	19.5%	190	90	100
31-9092	Medical Assistants	2,810	3,540	730	26.0%	110	70	40
29-1123	Physical Therapists	1,900	2,550	650	34.2%	80	60	20
31-9091	Dental Assistants	2,120	2,580	460	21.7%	90	50	40
29-2041	Emergency Medical Technicians and Paramedics	1,630	2,090	460	28.2%	80	50	30
43-6013	Medical Secretaries	1,410	1,850	440	31.2%	60	40	20
21-1022	Healthcare Social Workers	1,460	1,870	410	28.1%	80	40	40
29-2021	Dental Hygienists	1,490	1,900	410	27.5%	70	40	30
11-9111	Medical and Health Services Managers	3,020	3,330	310	10.3%	100	30	70
29-2052	Pharmacy Technicians	1,250	1,560	310	24.8%	50	30	20
21-1015	Rehabilitation Counselors	1,670	1,950	280	16.8%	70	30	40
29-1127	Speech-Language Pathologists	1,470	1,730	260	17.7%	60	30	30
29-1122	Occupational Therapists	1,230	1,490	260	21.1%	50	30	20
29-2037	Radiologic Technologists and Technicians	1,510	1,770	260	17.2%	50	30	20
29-1051	Pharmacists	1,570	1,820	250	15.9%	70	30	40
21-1014	Mental Health Counselors	910	1,160	250	27.5%	40	20	20
19-1042	Medical Scientists, Except Epidemiologists	810	1,040	230	28.4%	30	20	10
21-1021	Child, Family, and School Social Workers	2,050	2,270	220	10.7%	70	20	50

APPENDIX O: HUDSON VALLEY HEALTHCARE WORKFORCE PROJECTIONS THROUGH 2020

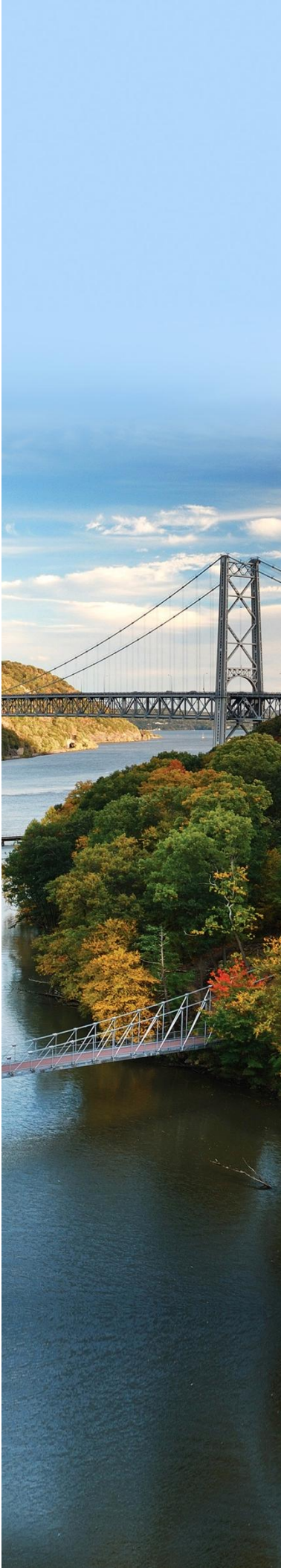
Soc Code	Title	Employment				Annual Average Openings		
		2010	Projected 2020	Net Change	% Growth	Total	Growth	Replacement
29-1071	**Physician Assistants**	810	1,020	210	25.9%	40	20	20
19-3031	**Clinical, Counseling, and School Psychologists**	1,830	2,020	190	10.4%	80	20	60
21-1023	**Mental Health and Substance Abuse Social Workers**	1,070	1,260	190	17.8%	50	20	30
31-9799	**Healthcare Support Workers, All Other**	1,660	1,820	160	9.6%	50	20	30
21-1011	**Substance Abuse and Behavioral Disorder Counselors**	820	980	160	19.5%	40	20	20
29-2032	**Diagnostic Medical Sonographers**	520	680	160	30.8%	30	20	10
29-1061	**Anesthesiologists**	570	720	150	26.3%	30	20	10

Source: New York State Department of Labor. (2010). Long-*Term Occupational Employment Projections, 2010-2020*. Retrieved from https://www.labor.ny.gov/stats/lsproj.shtm.

APPENDIX P: REPLACEMENT VS. NEW FOR TOP HUDSON VALLEY HEALTHCARE JOBS THROUGH 2020



Source: New York State Department of Labor. (2010). Long-*Term Occupational Employment Projections, 2010-2020*. Retrieved from https://www.labor.ny.gov/stats/lsproj.shtm.



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