



## **Target Workforce State Report for the NYU Lutheran PPS**

**Delivery System Reform Incentive Payment Program  
Workforce Strategy**

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## Executive Summary

The goal of the Delivery System Reform Incentive Payment (“DSRIP”) program is to reduce avoidable hospitalizations and Emergency Department (“ED”) visits by the New York State (“NYS”) Medicaid population by 25%. The DSRIP program aims to transform and redesign the existing health care system through the creation of integrated delivery systems across the care continuum, implement a value-based payment system, and facilitate workforce realignment and training to support system transformation, among other goals.

NYU Hospitals Center (“NYUHC”) engaged BDO Consulting (“BDO”), in collaboration with IHS, Inc. (“IHS”), as its workforce vendor and on behalf of the NYU Lutheran Performing Provider System (“NYU Lutheran PPS” or “the PPS”) to define the PPS’s target workforce state. To achieve goals of the DSRIP program as well as to facilitate workforce planning needs, information on the PPS’s target workforce state including the demand for health care services and professionals, was projected to identify workforce needs and ultimately inform the PPS’s overall DSRIP program planning and project implementation.

The Target Workforce State report identifies the PPS’s projected workforce needs by the end of the DSRIP program in 2020 and will be leveraged by the PPS to identify gaps between the reported current workforce state and the projected target workforce state to inform the development of a workforce transition roadmap. The transition roadmap will be used by the PPS to inform workforce planning and training to address any identified workforce gaps as a result of the DSRIP program.

Development of the NYU Lutheran PPS’s target workforce state was conducted in collaboration with key PPS stakeholders as well as Workforce Consortium members (OneCity Health PPS, Community Care of Brooklyn PPS, NYU Lutheran PPS, and Bronx Partners for Healthy Communities PPS) to ensure that workforce needs and impacts of the DSRIP projects were being evaluated consistently across the PPSs in order to develop a comprehensive analysis of each PPS’s target workforce state in its corresponding service area. NYU Lutheran PPS stakeholders, including DSRIP Project Managers and Clinical Workgroup Members, provided significant input into the DSRIP project impacts and assumptions made to inform the projection of the PPS’s target workforce state. Further, data from external databases including local, state and national surveys; medical claims databases; published literature; and IHS’s Health Care Demand Microsimulation Model (HDMM) were leveraged to inform the target workforce state projections.

The NYU Lutheran PPS plans to implement nine DSRIP projects to inform the development of an Integrated Delivery System (“IDS”) through the coordination of high quality primary, specialty, behavioral, long-term and post-acute care services. These nine projects were selected by the PPS based on findings from the PPS-sponsored Community Needs Assessment (“CNA”) and included the selection of four system transformation projects (“Domain 2 Projects”), three clinical improvement projects (“Domain 3 Projects”), and two population-wide prevention projects (“Domain 4 Projects”).

In order to model and project the estimated workforce impacts of the DSRIP projects on the PPS's current workforce, the following primary research questions were considered:

1. How many patients will be affected by this intervention?
2. What are the current health care utilization patterns of affected patients, and how will this initiative change care utilization patterns?
3. What mix of providers will be used to implement the intervention and meet future patient demand for services?
4. Will the project, as designed, materially impact the region's healthcare delivery workforce?

### Target Workforce State Summary Findings

As the DSRIP program progresses over the five years, the demand for health care workforce within the NYU Lutheran PPS's network will continue to evolve as DSRIP projects are implemented, impacts of those projects are realized, and as external factors, such as demographic changes, outside of the DSRIP program evolve. As a result, it is worth noting that although this analysis was conducted using best efforts and project implementation assumptions to model workforce impacts over the DSRIP program, the target workforce state described within this report is a projection of the target workforce state to inform the PPS's workforce planning, and workforce needs will be continually reevaluated as project impacts are realized over time.

As detailed in *Exhibit ES 1*, the table summarizes the PPS's estimated target workforce state staffing impacts by 2020 taking into account the anticipated results of the DSRIP program as well as anticipated demographic and health care coverage changes independent of DSRIP across the PPS's care settings and key job categories. The following provides summaries of projected impacts to the PPS's workforce based on projected modeling outputs:

- By 2020, due to the combined impacts of a growing and aging population, expanded medical insurance coverage under Affordable Care Act ("ACA"), and DSRIP-related impacts, the PPS's workforce may potentially realize an increase in demand for health care providers and support staff by approximately 311 FTEs. While it is estimated that overall workforce demands, independent of the DSRIP program, are projected to grow by approximately 103 FTEs overall, the projected impact of DSRIP implementation alone is estimated to increase the demand for health providers in the PPS's network by approximately 208 FTEs (with three fourths of this increase associated with increased demand for community health workers and others providing care coordination or health coach/educator services).
- DSRIP and non-DSRIP factors will shift demand for Registered Nurses ("RNs") resulting in a net increase of about 35 FTE RNs. Both DSRIP and non-DSRIP (population growth and aging in Brooklyn) are projected to increase demand for RNs in community-based settings. DSRIP is projected to decrease demand for RNs in hospital inpatient and

emergency settings, but this decline is largely offset by increased demand for services in hospital settings associated with a growing and aging population that will receive care from PPS network providers. In addition, demand for nurses in hospital settings could increase at NYULMC as patients are redirected to NYULMC for care due to the planned closing of Mount Sinai Beth Israel. Furthermore, as described in the Current Workforce State Report, PPS Partners have reported a high number of FTE vacancies across nursing positions in the PPS's network. Thus, the model's projected decrease in RN FTEs in hospital settings resulting from DSRIP initiatives may have minimal impact on the PPS's nursing workforce as a result of ongoing market changes.

- DSRIP-related demand for Care Coordinators / Navigators is projected to rise by approximately 166 FTEs (with most of this increase for Community Health Workers). This workforce impact is largely anticipated due to the estimated staffing needs associated with the PPS's implementation of a Patient Navigation Center ("PNC") as a result of planned implementation of Project 2.c.i to develop community-based health navigation services.
- An additional 38 FTEs for Administrative Support and 36 FTEs for Medical Assistants may be required to staff primary care and other outpatient settings to address DSRIP-related needs, population growth, an aging population, and expanded medical insurance coverage as a result of the ACA.
- The projected workforce impacts as a result of the DSRIP program vary across the DSRIP projects that will be implemented by the PPS. For example, the workforce impact developing community-based health navigation services has the highest estimated workforce demands of the selected DSRIP projects because of the large number of community health workers and RN coordinator leaders that will be required as nearly one-in-four of the PPS's attributed lives are anticipated to be engaged in this DSRIP project.

For comparison purposes of the projected target workforce staffing impacts, *Exhibit ES 2* has been provided, and details the reported current workforce state for the PPS pertaining to the job titles and categories being reported within *Exhibit ES 1* and throughout this report. However, the numbers being reported do not include the PPS's total reported workforce for all job titles. For reference, the PPS's current workforce state report provides further details around the reported current workforce with a reported workforce of 46,237 (by headcount) or 27,730 FTEs.

**Exhibit ES-1: NYU Lutheran PPS Summary of Projected DSRIP Staffing Impacts**

<u>Setting and Job Category</u>	<u>Non-DSRIP Impacts</u>	<u>DSRIP-related Impacts</u>	<u>Total Impacts</u>
<b>Primary and Community-Based Settings</b>			
Primary Care Providers	11	10	21
Cardiologists	2	-	2
Endocrinologists	0.5	0.5	1
Psychiatrists / Psychiatric Nurses	1.5	1	2.5
Psychologists	4.5	-	4.5
Clinical Social Workers	-	9.5	9.5
Registered Nurses	6	5.5	11.5
Medical Assistants	19.5	17	36.5
Administrative Support Staff	18.5	19.5	38
<b>Emergency Department</b>			
Emergency Physicians	-	-3	-3
Nurse Practitioners/Physician Assistants	-	-0.5	-0.5
Registered Nurses	1.5	-11	-9.5
<b>Hospital Inpatient</b>			
Hospitalists	0.5	-0.5	-
Registered Nurses	27.5	-9	18.5
Licensed Practical Nurses	3.5	-0.5	-3
Nurse Aides / Assistants	6.5	-2.5	4
<b>Care Managers / Coordinators / Navigators / Coaches</b>			
Nurse Coordinator Leaders	-	15	15
Non-Nursing (CHWs)	-	151	151
Diabetes Educators	-	1.5	1.5
Asthma Educators	-	4.5	4.5
<b>Total FTEs</b>	<b>103</b>	<b>208</b>	<b>311</b>

**Exhibit ES-2: NYU Lutheran PPS Current State Reported Workforce**

<u>Job Category</u>	<u>Reported Workforce (FTEs)</u>
<b>Primary and Community-Based Settings</b>	
Primary Care Providers	61.1
Cardiologists	1.1
Endocrinologists	0.2
Psychiatrists / Psychiatric Nurses	70.5
Psychologists	36.3
Clinical Social Workers	784.6
Registered Nurses	1,595.3
Medical Assistants	209.5
Administrative Support Staff	2,137.4
<b>Hospital Inpatient &amp; ED</b>	
Emergency Physicians	-
Primary Care Physicians	0.5
Specialists (except Psych)	-
Residents and Fellows	143.1
Physician Assistants	33.3
Registered Nurses	675
Licensed Practical Nurses	1
Nurse Aides	225.1
Nurse Practitioners	2.2
<b>Care Managers / Coordinators / Navigators / Coaches</b>	
Nurse Coordinator Leaders	48.9
RN Care Coordinators	250.8
Care Coordinators (non-RN)	568.9
Diabetes Educators	3
Asthma Educators	3
<b>Nursing Homes / SNFs</b>	
Primary Care Physicians	20.7
Specialists (except Psych)	1
Physician Assistants	6.6
Registered Nurses	346.6
Licensed Practical Nurses	350
Nurse Aides	1,014.7
Nurse Practitioners	2
<b>Total FTEs</b>	<b>8,592.4</b>

## Target Workforce State Summary Conclusions

As previously described, the purpose of the Target Workforce Report is to analyze and project the PPS's anticipated future workforce needs as a result of system transformation through the DSRIP program in addition to non-DSRIP related impacts.

While this report serves to provide a projection of the PPS's target workforce state by the end of the DSRIP program to assist the PPS in the planning and implementation of DSRIP projects, the demand for health care services and providers within the PPS's network will continue to evolve and are likely to change over time, independent of DSRIP impacts. It is anticipated that the demand for Physicians in Brooklyn as well as in the NYU Lutheran PPS's service area will likely continue to grow due to general population growth. As a result, the workforce projections stated within this report suggest that any DSRIP-related changes in workforce demand should be taken into account and factor in the context of broader trends affecting the demand for health care services and providers within the PPS's service area.

As a result of the DSRIP program, an increase in the demand for Care Managers, Licensed Educators, and Care Coordinators / Navigators, which reflects the enhanced demand for these professions as a result of a transformed delivery system, is projected for the PPS. Further, as a result of the PPS's plans to transition care away from the hospital and ED setting to outpatient and community-based settings, there is likely an opportunity for the PPS to redeploy and retrain hospital nursing as well as other staff to these settings where demand is projected to grow.

While the estimated workforce impacts for several of the PPS's DSRIP projects are not projected to have a large impact on the workforce, the projections do indicate how DSRIP program goals, including reductions in inappropriate care use, might be achieved through counseling, improved access to primary and behavioral health services, and better care management for patients with chronic conditions.

Thus, based on the available data as well as DSRIP project inputs and assumptions provided by key PPS stakeholders, the project workforce impacts modeled suggest that the impacts of the DSRIP program over the five years are unlikely to materially and negatively impact the PPS's network and healthcare delivery workforce, especially when evaluated alongside the projected workforce impacts of trends external to the program.

## I. Background & Purpose

The NYU Lutheran PPS is comprised of a robust partnership network of health care organizations and community based organizations (“CBOs”) geographically located within the PPS’s service area in Brooklyn. The PPS’s Lead Entity, NYU Lutheran Medical Center (“NYULMC”), serves as the overall driver and coordinator of the PPS’s DSRIP program and projects.

The NYU Lutheran PPS is comprised of 195 PPS Partners and was formed to produce meaningful results as part of the DSRIP program goals through a collaborative network of providers. The PPS Partner network includes the following healthcare providers: one Home Health Provider, two hospitals, five Long Term Home Health Care Providers, six Physician-led Organizations, six Assisted Living Facilities, eight Diagnostic and Treatment Centers, nine Federally Qualified Health Centers, 11 Mental Health Providers, 14 Certified Home Health Agencies, 20 Developmental Disability Providers, 23 Substance Abuse Providers, 32 Skilled Nursing Facilities, and 57 other additional partners.

NYUHC engaged BDO, in collaboration with IHS, as its workforce vendor and on behalf of the PPS, to define the PPS’s target workforce state through the analysis of workforce impacts as a result of system transformation and implementation of clinically integrated programs. The PPS’s target workforce state was created in collaboration with key PPS stakeholders and incorporated input from Project Managers and Clinical Workgroups leads around project implementation and anticipated project impacts.

The target workforce state for the NYU Lutheran PPS, as defined within this report, has been developed to align with DSRIP program goals. It takes into consideration the current state of the workforce as well as the demand for health care services and providers in the PPS’s Brooklyn service area as a result of general population growth and aging over the next five years. NYU Lutheran PPS’s target workforce state will be used to develop a detailed gap analysis between the PPS’s identified current and target workforce state and help inform the development and implementation of the workforce transition roadmap. The approach used to define the PPS’s target workforce state as well as summary findings, observations, and considerations are detailed within the body of this report and within the *Appendix*.

The results of the target workforce are estimations that are based on a combination of inputs, including the PPS’s assumptions around potential staffing needs and anticipated project impacts, PPS patient population demographics and health care service utilization, as well as data points from the literature and published outcomes from similar demonstrations. Several DSRIP projects, however, are innovative and there is limited information on their possible effects. In such instances, assumptions around potential impacts were made in collaboration with PPS stakeholders and were based on project implementation assumptions and best information currently available. As such, the estimates in this report are based on assumptions that will most likely change or evolve over time, as they are dependent on successful project implementation, funding, and budget considerations as well as evolving

population and demographic demands. Additionally, although the use of workforce models has been prevalent in estimating workforce planning impacts, models have several limitations, one of which is that results are based on data that doesn't reflect the real time environment of the scenarios in which are being projected. Further, when the complexity and changing needs of the Brooklyn market is taken into consideration, it must be understood that the findings of this report are simply projections and are subject to change.

## II. Overview of Target Workforce State Modeling Approach

Modeling the projected target workforce state for the NYU Lutheran PPS as a result of DSRIP-related system transformation and other external trends was conducted by applying a combination of existing workforce modeling tools, original data analysis, findings from published literature and clinical studies, information on the population being served including current health care use patterns in New York State and the PPS's service area, and input and project implementation assumptions from key PPS stakeholders and the modeling team. The analysis required modeling the likely workforce impact of each DSRIP project individually as well as jointly because many DSRIP projects overlap in terms of services being provided, participating patients and providers, and health utilization goals. The modeling tools and analyses were adapted to reflect the characteristics of the DSRIP target population and the intended impacts of each DSRIP project.

Four key dimensions for modeling the potential future workforce needs required under the target state include:

1. **Health care service providers and support staff.** The right mix of health care providers and support staff is needed to ensure that patients have access to services and the efficient delivery of such services. Hence, modeling efforts require understanding the types of services that patients will require and the ideal staffing patterns for care delivery. The occupation categories modeled are defined by the U.S. Department of Labor's Standard Occupational Classification system.
2. **Care delivery settings.** The level of services used and staffing by care delivery settings helps inform where providers and support staff are needed to meet patient service needs and help control health care costs. Key settings include hospital inpatient, emergency, and outpatient / clinic care; ambulatory care at provider offices; and home-based care.
3. **Geography.** The geographic location of providers should be consistent with patient needs to ensure access to care. For the NYU Lutheran PPS, the relevant geographic area covers the population living in Brooklyn (with other PPS networks also providing services to the Medicaid population in Brooklyn).
4. **Evolving needs.** Workforce needs will evolve over time throughout the DSRIP program as a result of general population growth and aging. Identifying how these needs will evolve helps to inform the appropriate timing for transitioning from the PPS's current state to the target workforce state.

While the PPS's performance metrics are measured on services provided to the Medicaid population, the PPS Partner network serves a broader patient population that encompasses Medicaid, Medicare, commercially insured, and uninsured / self-pay patients. Likewise, some DSRIP initiatives will impact both Medicaid and non-Medicaid patients as systematic changes

in care delivery are implemented. Therefore, modeling future workforce needs requires understanding how both DSRIP and non-DSRIP trends may affect the entire patient population.

The target workforce state modeling effort was conducted in collaboration with the PPS's Lead Entity including PPS Leadership, Project Managers, and Clinical Workgroups and also included the review of supporting PPS documentation including the PPS's DSRIP Project and Organizational Applications, Community Needs Assessment ("CNA"), and Quarterly Implementation Reports. Through the synthesis and application of all collected data inputs, the target workforce state was modeled to project potential DSRIP impacts on the current workforce and identify future state workforce needs to reflect proposed PPS system transformation initiatives and projects under the DSRIP program. Preliminary results were shared with PPS stakeholders and refined based upon informed feedback.

The complexity of this modeling effort required the use of data from multiple sources and modeling tools. Data used in the analysis comes from local, state and national surveys (e.g., Behavioral Risk Factor Surveillance System ("BRFSS"), medical claims databases (e.g., New York's Statewide Planning and Research Cooperative System ("SPARCS")), published literature, and IHS's Health Care Demand Microsimulation Model ("HDMM"). An overview of the HDMM and key data sources is provided below, with additional detail on modeling individual DSRIP projects discussed in the *Appendix*.

### A. Health Care Demand Microsimulation Model

The workforce model described within this subsection is unique in its approach, breadth and complexity. Health workforce projection models have been used to assist with workforce planning and to assess whether the current workforce was sufficient to meet current and projected future demand (or need) at the local, regional, state, and national levels. The model described applies a microsimulation approach where individual patients are the unit of analysis. This model is used by the Federal Bureau of Health Workforce to model Physicians, Advanced Practice Nurses, Physician Assistants, Nurses, Behavioral Health Providers, and other health occupations at the national and state level.<sup>1</sup> The model has been used by New York and other states to assess the adequacy of provider supply at the state, regional, and county level.<sup>2,3</sup>

The model has also been used by professional associations and other organizations to analyze trends and policies with workforce implications.<sup>4</sup> In addition, the model has been used at the

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<sup>1</sup> See various reports published at <http://bhpr.hrsa.gov/healthworkforce/supplydemand/index.html>

<sup>2</sup> See, for example, *Florida Statewide and Regional Physician Workforce A: Estimating Current and Forecasting Future Supply and Demand*. Prepared for the Safety Net Hospital Alliance of Florida. 2015. <http://safetynetsflorida.org/wp-content/uploads/Jan-28-IHS-Report-PDF.pdf>

<sup>3</sup> Ongoing multi-year workforce study for NYS Department of Health (DOH).

<sup>4</sup> Examples include: *The Complexities of Physician Supply and Demand: Projections from 2014 to 2025*. Prepared for the Association of American Medical Colleges. Washington, DC: Association of American Medical Colleges; 2016.

local level to assist hospitals and health systems with market assessment and workforce planning.

The HDMM models demand for health care services and providers. Demand is defined as the health care services and workforce that are likely to be used based on population characteristics, care utilization, and delivery patterns. The logic model describing the HDMM and a summary description of its major components are depicted below in *Exhibit 2*. Further, the HDMM is comprised of three major components:

1. A population database with demographic, socioeconomic, and information regarding health risks and disease prevalence for each person in a representative sample of the population being modeled (e.g., the population in Brooklyn, NY).
2. Health care utilization patterns that reflect the relationship between patient characteristics and health care utilization.
3. Staffing patterns that convert estimates of health care service demand to estimates of provider demand.

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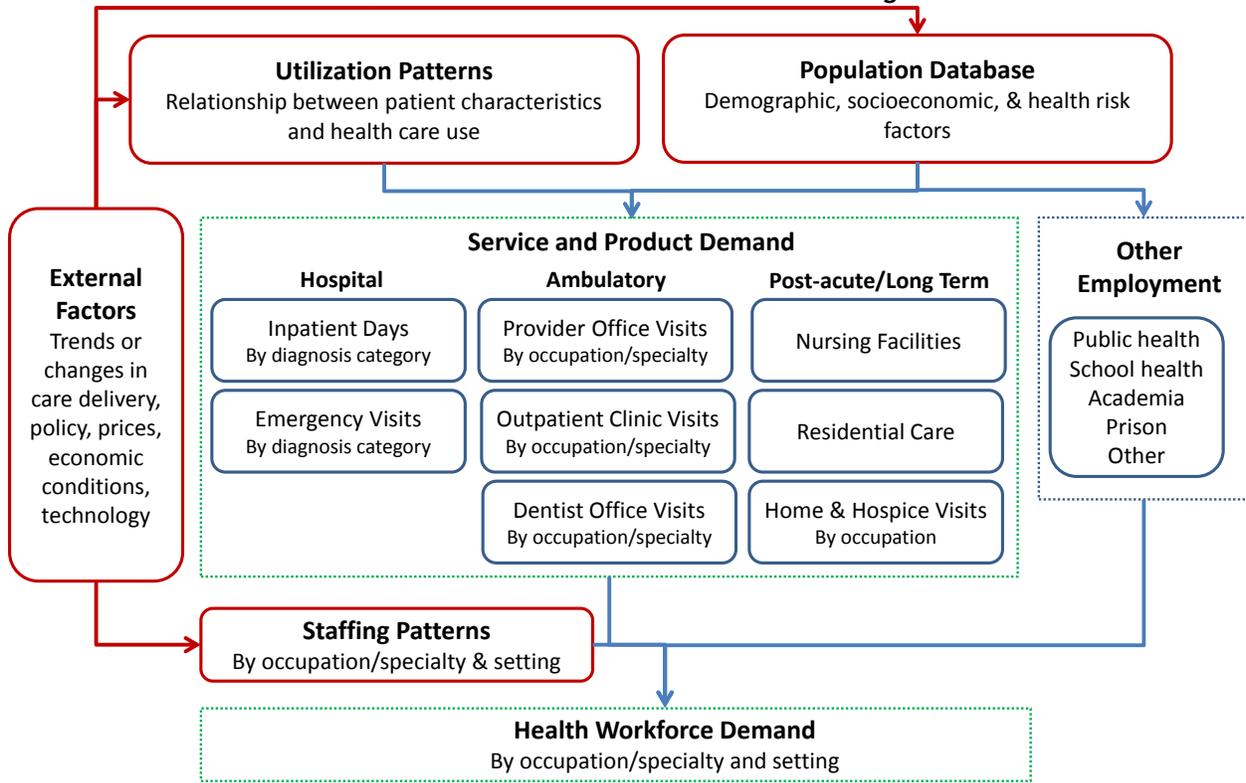
[https://www.aamc.org/download/458082/data/2016\\_complexities\\_of\\_supply\\_and\\_demand\\_projections.pdf](https://www.aamc.org/download/458082/data/2016_complexities_of_supply_and_demand_projections.pdf)

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Dall TM, Storm MV, and Chakrabarti R. Supply and demand analysis of the current and future US neurology workforce. *Neurology*. 2013; 81(5): 470-478.

**Exhibit 2: Health Care Demand Microsimulation Logic Model**



1. **Preparing the population database.** The database prepared for the HDMM contains a representative sample of the population in Brooklyn. The population profile in this representative sample is comprehensive of all insurance types (Medicare, Medicaid, commercial, and uninsured); population demographics (age, sex, race, and ethnicity); household income level; health risk factors including body weight status (normal, overweight, and obese); current smoker status; presence of chronic disease (hypertension, coronary heart disease, diabetes, arthritis, and asthma); and history of adverse health events (heart attack, stroke, and cancer). For modeling purposes, estimates for the Medicaid population were scaled to the 104,415 Medicaid beneficiaries attributed to the NYU Lutheran PPS. Estimates for the Medicare, commercially insured, and uninsured populations were scaled using estimates of the PPS’s market share for each payer type based on published SPARCS data.

Information to create and validate this database comes from both New York-specific sources such as EpiQuery: NYC Interactive Health Data, New York’s Department of Health, and national sources such as the Center for Disease Control and Prevention’s Behavioral Risk Factor Surveillance System (“BRFSS”)<sup>5</sup> and the Census Bureau’s

<sup>5</sup> <http://www.cdc.gov/brfss/>

American Community Survey (“ACS”).<sup>6</sup> Summary prevalence statistics of health risk factors for the created population file were compared to published sources to ensure the sample is representative of the population in Brooklyn. Population projections (by county) through 2020 are from the Cornell Program on Applied Demographics.<sup>7</sup>

- 2. Developing health care utilization forecasting equations.** Patterns of health care services utilization behavior reflect patterns for people with similar demographics, insurance status, and health risk factors in the pooled 2009-2013 files of the Agency for Health Care Research and Quality’s Medical Expenditure Panel Survey (“MEPS”). MEPS is nationally representative of the U.S. non-institutionalized population. Several hundred prediction equations are built into the simulation model. Each prediction equation was estimated using regression analysis<sup>8</sup>, with separate prediction equations for each combination of care delivery setting, medical specialty, and children versus adults. The dependent variables in the regressions reflect annual use of health care services, while the explanatory variables consist of the demographic characteristics, health risk factors, medical conditions, and socioeconomic factors described. Applying these prediction equations to the population in Brooklyn produces estimates of the current and projected future demand for health care services by care delivery setting, given the characteristics and health risk factors among the community modeled.

Aggregating these estimates across individuals provides an estimate of the level of health care services that would be used by a national peer group of the population in Brooklyn. Estimates of health care utilization from this national peer group were compared to actual health care use statistics to calibrate the model (reflecting that health care use patterns of people in Brooklyn can differ from national patterns, controlling for demographics, disease prevalence, and other health risk factors). Also, given Brooklyn’s close proximity to other New York City boroughs, it is assumed that the population in Brooklyn might receive some care outside of Brooklyn, and likewise, some health care providers in Brooklyn provide care to patients who reside outside of Brooklyn.

- 3. Modeling full time equivalent (“FTE”) staffing to meet demand for health care services.** The number and mix of health care professionals required to provide the level of health care services demanded is influenced by how the care system is organized, how care is reimbursed, provider scope of practice requirements, economic constraints, and technology as well as other factors. The HDMM applies staffing patterns measured in terms of provider-to-workload measures (e.g., FTE Family

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<sup>6</sup> <https://www.census.gov/programs-surveys/acs/>

<sup>7</sup> <https://pad.human.cornell.edu/counties/projections.cfm>

<sup>8</sup> Poisson regression was used to model annual numbers of physician office and outpatient visits with a particular provider type, inpatient days per hospitalization and annual home health/hospice visits. Logistic regression was used to model annual probability of hospitalization and emergency department use for approximately 24 diagnosis categories defined by primary diagnosis code (e.g., hospitalization for a cardiovascular condition).

Physicians per 1,000 office visits, or FTE Emergency Physicians per 1,000 ED visits). The model was further adapted to New York State by calibrating (scaling) demand projections by physician specialty to equal the state average level of care in 2014. Hence, the baseline demand projections best reflect the level and mix of services in each county if that county’s population had care use and delivery patterns consistent with the average across New York State for a similar patient mix. Staffing level assumptions associated with individual DSRIP projects, described within the report, came from published literature as well as PPS input, documents, and assumptions.

## B. Common Modeling Inputs and Assumptions across DSRIP Projects

While each DSRIP project has unique modeling assumptions and data inputs, common modeling assumptions and inputs apply across some projects. These include parameters for identifying the PPS’s market share of service utilization and provider staffing patterns and productivity.

Parts of the target state analysis were modeled at the borough / county level due to availability of data on the population and prevalence of disease and other health risk factors. The NYU Lutheran PPS’s market share was calculated by payer type (Medicaid, Medicare, and other) in Brooklyn using inpatient discharge data from SPARCS. *Exhibit 3* summarizes the PPS Lead’s, NYULMC, market-share of Brooklyn based on inpatient discharges in 2014. In lieu of information specific to utilization patterns in other care settings, a working assumption was made that a similar market share can be applied to other care delivery settings (e.g., emergency and ambulatory care).<sup>9</sup>

**Exhibit 3: Estimated PPS Inpatient Market Share in Brooklyn (2014)**

Payer Category	Estimated Market Share (%)
Medicaid	11%
Medicare	10%
Other	11%
<b>Total</b>	<b>11%</b>

*Exhibit 4* summarizes information regarding the anticipated staffing patterns and provider productivity used for modeling these impacts across DSRIP projects. Input from PPS stakeholders and PPS provided data were the primary sources used to model the potential workforce implications of various DSRIP projects. When PPS-specific data was unavailable, other data sources were leveraged including the National Ambulatory Medical Care Survey (“NAMCS”, national data), the National Hospital Ambulatory Medical Care Survey (“NHAMCS”, national data), and the Medical Group Management Association (“MGMA”).

<sup>9</sup> During internal discussion amongst the Workforce Consortium, it was agreed that the inpatient market shares are most likely not applicable to other settings but is currently the best available information to inform market share assumptions.

**Exhibit 4: Model Inputs: Estimated PPS Provider Staffing Patterns and Productivity**

<u>Modeling Input</u>	<u>Parameter</u>	<u>Source</u>
<b>Proportion of primary care office visits seen by:</b>		
Primary care doctor	97.1%	1
Nurse practitioner	3.1%	1
Physician assistant	4.6%	1
<b>Proportion of emergency department visits seen by:</b>		
Emergency physician	92.4%	2
Nurse practitioner	3.5%	2
Physician assistant	4.6%	2
<b>Annual patient visits per FTE provider (productivity):</b>		
Primary care doctor	3,741 (2,993*)	3
Primary care nurse practitioner	3,185 (2,548*)	3
Primary care physician assistant	3,670 (2,936*)	3
Emergency physician	1,973	3
ED-based nurse practitioner	2,572	3
ED-based physician assistant	1,910	3
Hospitalist (assume 1 patient encounter/day)	2,008	3
Licensed clinical social worker	150	6
<b>Annual ratio of total patient visits/days per FTE provider:</b>		
Note: not all patients will necessarily see this provider during their visit/stay.		
Office-based visits per FTE registered nurse	4,469	4
ED visits per FTE registered nurse	612	4
Inpatient days per FTE registered nurse	168	4
Inpatient days per FTE licensed practical nurse	2,939	4
Inpatient days per FTE nurse aide	667	4
<b>Support staff:</b>		
Direct medical support	1.75 x PCP	5
Direct admin support	1.25 x PCP + 0.75 x BHP	5
<b>Care coordinators and health coaches/educators (annual patients served per year):</b>		
Asthma educator	540 patients/year	6
Diabetes educator	3,640 patients/year	6
Community navigators	3,900 patients/year	6

Notes: Behavioral Health Provider (“BHP”).

Sources: <sup>1</sup> 2012 National Ambulatory Medical Care Survey; <sup>2</sup> 2011 National Hospital Ambulatory Medical Care Survey; <sup>3</sup> 2014 Medical Group Management Association median visits/FTE provider (with \* indicating the number was scaled to an average desired panel size of 1500). <sup>4</sup> National health care use (visits, days) ÷ FTE providers in that setting, 2013. <sup>5</sup> Cherokee Health Systems.

[http://c.ymcdn.com/sites/www.tnpc.org/resource/resmgr/Leadership\\_Conference\\_2014/IntegrationofBehavioralHealth.pdf](http://c.ymcdn.com/sites/www.tnpc.org/resource/resmgr/Leadership_Conference_2014/IntegrationofBehavioralHealth.pdf) <sup>6</sup> Based on estimates from the PPS that asthma educators will work with 45 patients at a time ; community diabetes educators will work with 14 patients per day and assuming 260 working days per year; one community health worker navigators for 15 patients at any given time, and assuming the CHW spends approximately 30 minutes (28 minutes/patient) = 15 patients per day, assuming a 7 hour work day.

Based on analysis of the NAMCS, patients who visit a PCP are seen by a Physician in 97.1% of visits, by a NP in 3.1% of visits, and by a Physician Assistant (“PA”) in 4.6% of visits. Note that the sum of these percentages exceeds 100%, reflecting that some patients will be seen by multiple providers during a visit. Analysis of the NHAMCS provides estimates of the providers seen by a patient during each ED visit.

The MGMA reports that median patient encounters per year by one Family Medicine Physician providing ambulatory services in the Eastern Region of the U.S. is 3,741. This number suggests that every 3,741 office visits equates to approximately one Physician FTE.<sup>10</sup> Note that a General Pediatrician in the Eastern Region has a similar number of annual patient encounters of 3,725 per year. Likewise, MGMA data suggest that the median number of patient encounters per Emergency Physician in the Eastern Region is 1,973 patient encounters per year. Estimates for NPs and PAs in primary care settings are based on MGMA estimates in the Eastern Region, while NP and PA productivity in emergency care settings are based on national medians as the sample size was too small to obtain estimates for the Eastern Region.

Feedback from PPS leadership found that the MGMA data overstates the number of patient encounters that a PCP in the PPS’s network is likely to see. Patients cared for by PPS Partners might be higher acuity than the typical patient panel of providers covered by the MGMA survey. Also, the recommended patient panel size for the typical MGMA PCP is 1,900-2,000, whereas for PPS providers under a patient-centered medical home model the recommended panel size is 1,500-1,800. Hence, for modeling purposes the MGMA productivity numbers for PCPs were scaled by 80%. For the NYU Lutheran PPS a patient panel size of 1,500 was applied in order to project a more accurate representation of the workforce.<sup>11</sup>

When project staffing ratios for workforce were not provided by the PPS, national staffing ratios were applied to estimate staffing levels. For example, dividing total national office visits by estimates of FTE RNs practicing in an office setting suggests that one Nurse FTE is required for every 4,469 visits (reflecting that not every patient visit will involve a Nurse). Similar national ratios were estimated for staffing levels of nurses in hospital settings, however it is understood that these staffing ratios may be conservative and may not always reflect the staffing ratios that will be used by the PPS following project implementation.

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<sup>10</sup> Provider compensation: 2014 report based on 2013 data. Data extracted from MGMA DataDive.

<sup>11</sup> From internal planning discussions with the Workforce Consortium.

### III. Impact of External non-DSRIP Related Factors on Workforce

The demand for health care services and providers within the PPS's network will change over time independent of the anticipated DSRIP program impacts. A growing and aging population will likely impact health care utilization and care delivery and influence how the PPS provides care to patients within the network.

Leveraging the HDMM, the projected change in demand for physician specialties and other health occupations in four New York City boroughs was simulated based on projected population characteristics independent of DSRIP across all patients regardless of insurance status. These projections were then scaled to be NYU Lutheran PPS specific based on the estimated market share of Brooklyn utilization by payer (*Exhibit 5* and *Exhibit 6*). The calculated percentage growth indicated is primarily driven by the growing and aging Medicare population, which is not captured as part of the DSRIP program as it addresses the Medicaid population. The projections illustrate that Physician demand across Brooklyn's payer mix is projected to grow approximately 4% between 2015 and 2020, independent of the effects of DSRIP (or by approximately 304 FTEs). Demand for PCPs across Brooklyn's payer mix is projected to grow approximately 5% between 2015 and 2020, independent of the effects of DSRIP (or by approximately 90 FTEs). The NYU Lutheran PPS's estimated share of total Physician growth may be approximately 30-31 FTEs of whom 9 FTEs are anticipated to be PCPs. Based on these projections, any DSRIP-related changes in workforce demand need to be understood in the context of broader trends affecting the demand for health care services and providers.

An ongoing change occurring throughout DY2 that will have an impact to the PPS's overall calculated market share is due to the planned closing of Mount Sinai Beth Israel. The PPS's market share in Brooklyn, which projects estimations of both the DSRIP and non-DSRIP related impacts to the PPS's workforce was calculated to be 11% based on 2014 SPARCS data. However, as a result of the planned closure, NYULMC is anticipating that providers including PPS Partner ODA Primary Health Care Network will redirect patients, including obstetrics patients, to NYULMC. By redirecting these patients, NYULMC anticipates an increase in overall inpatient utilization and thus an increase in overall demand anticipated for inpatient staff including nurses.

**Exhibit 5: Projected Impact of Changing Demographics on Physician Demand**

	Brooklyn Total Growth		PPS Impact		
	Specialty	FTE Growth	% Growth	FTE Growth	
Primary Care	Total primary care	89.7	5%	9	
	Family medicine	25.7	5%	2.5	
	Internal medicine	54.4	6%	5.5	
	Pediatrics	8.6	1%	1	
	Geriatrics	1	4%	-	
	Hospitalists (primary care trained)	7.3	3%	0.5	
Medical Specialties	Allergy & immunology	3.5	8%	0.5	
	Cardiology	19.8	6%	2	
	Critical care/pulmonology	4.2	3%	0.5	
	Dermatology	6.1	6%	0.5	
	Endocrinology	5.6	6%	0.5	
	Gastroenterology	9.4	6%	1	
	Infectious disease	1.5	2%	-	
	Hematology & oncology	9	6%	1	
	Nephrology	8.7	7%	1	
	Pediatric subspecialty	0.2	0%	-	
	Rheumatology	3	6%	0.5	
	Surgery	General surgery	8.8	6%	1
		Colorectal surgery	0.2	2%	-
		Neurological surgery	2.5	5%	-
Ophthalmology		11.6	6%	1	
Orthopedic surgery		10.5	6%	1	
Otolaryngology		5.4	6%	0.5	
Plastic surgery		3.3	5%	0.5	
Thoracic surgery		2.4	6%	-	
Urology		5.8	6%	0.5	
Vascular surgery		1.5	5%	-	
Other	Obstetrics & gynecology	7.2	2%	1	
	Anesthesiology	11.7	4%	1	
	Emergency medicine	1.9	1%	-	
	Neurology	7.5	5%	1	
	Other medical specialties	9.7	4%	1	
	Pathology	(0.1)	0%	-	
	Physical med & rehab.	5.5	4%	0.5	
	Psychiatry	14.8	3%	1.5	
	Radiology	26	8%	2.5	
	<b>Total</b>	<b>304.2</b>	<b>4%</b>	<b>30.5</b>	

*Exhibit 6* summarizes projected growth in Brooklyn’s FTE demand between 2015 and 2020 for select health professions, as well as the projected growth in demand for providers within the NYU Lutheran PPS’s network. Similar to the approach applied for developing PPS-specific

Physician FTE demand projections, the data was also scaled based on the PPS’s market share.<sup>12</sup> Detailed information for Brooklyn by care setting is provided in the *Appendix*.

Independent of the effects of DSRIP, demand for RNs in Brooklyn is projected to be strong, with estimations of growth by about 423 FTEs between 2015 and 2020. Applying the PPS’s market share to applicable settings, it is estimated that RN demand may grow by approximately 38-39 FTEs. The growth in demand for Nurses and other providers working in hospital settings may potentially be offset due to a reduced demand as anticipated by DSRIP impacts to reduce avoidable hospital utilization.

**Exhibit 6: Projected Growth in Demand for Select Health Workers Between 2015 to 2020 Based on Changing Demographics and Expanded Insurance Coverage**

Health Profession	Brooklyn		NYU Lutheran PPS Network			
	Total	Inpatient	Emergency	Ambulatory	Health Home	Total*
Registered Nurse	423.4	27.5	1.5	6	3.5	38.5
Licensed Practical Nurse	84.4	3.5	-	2	1	6.5
Nurse Aide	136.6	6.5	-	2	1	9
Home Health Aide	96.2	-	-	0	10	10
Pharmacist	27.8	-	0.5	2.5	-	3
Pharmacy Technician	35.9	-	0.5	3.5	-	3.5
Pharmacy Aide	4.7	-	-	0.5	-	0.5
Psychologist	44.9	-	-	4.5	-	4.5
Chiropractor	7.7	-	-	1	-	1
Podiatrist	3.3	-	-	0.5	-	0.5
Dietitian	9	0.5	-	0	-	0.5
Optician	4.5	-	-	0.5	-	0.5
Optometrist	3	-	-	0.5	-	0.5
Occupational Therapist	99	7	-	3	-	10
Occupational Therapist Aide	16.7	1	-	0.5	-	1.5
Occupational Therapy Assistant	28.3	1	-	1.5	-	3
Radiation Therapist	4	0.5	-	-	-	0.5
Radiological Technologist	15.2	0	-	1.5	-	1.5
Respiratory Therapist	10.3	0.5	-	0.5	-	1
Respiratory Therapy Technician	1.3	-	-	-	-	-
Medical Clinical Technician	26	2	-	0.5	-	3
Medical Clinical Lab Technologist	26.4	2	-	0.5	-	2.5
Medical Sonographer	9.6	0.5	-	0.5	-	1
Nuclear Medicine Technologist	4.8	0.5	2.5	-	-	3

Note: \*The sum across settings might not equal to the Total column due to rounding.

<sup>12</sup> Inpatient market share was used as a proxy for the total market share, as the PPS’s outpatient and ED market share of borough-wide utilization were unavailable.

## IV. Anticipated PPS Workforce Impacts by DSRIP Project

The NYU Lutheran PPS plans to implement nine DSRIP projects to inform the development of an Integrated Delivery System (“IDS”) through the coordination of high quality primary, specialty, behavioral, long-term and post-acute care services. These nine projects were selected by the PPS to address findings from the PPS-sponsored CNA and included the selection of four system transformation projects (“Domain 2 Projects”), three clinical improvement projects (“Domain 3 Projects”), and two population-wide prevention projects (“Domain 4 Projects”).

### A. Project 2.a.i: Creation of an Integrated Delivery System

In an effort to serve Brooklyn’s racially, ethnically, and linguistically diverse population through cultural sensitive, evidence-based coordinated care, the NYU Lutheran PPS has committed to implementing an Integrated Delivery System (“IDS”) and transforming healthcare delivery through an organized and collaborative network of primary, behavioral, specialty, long-term and post-acute care providers as well as through social service and community-based providers. In addition to contracting with Brooklyn health homes and ACOs to ensure patients receive appropriate healthcare and community support, the PPS plans to develop and train clinical staff on IDS protocols in order to establish PPS-wide clinical pathways and facilitate coordination of care through the PNC. In addition to developing IDS training for clinical support staff, the PPS also plans to engage Community Health Workers to facilitate patient outreach and navigation activities to ensure that Medicaid patients are effectively engaged.<sup>13</sup>

A review of literature on this topic suggests that better health care integration can allow some services performed by Specialists to instead be performed by Generalists, some services currently performed by Physicians to be performed by Non-physicians, and thus reduced duplication of tests.<sup>14</sup> For purposes of projecting target workforce needs, it was assumed that that better integration of the delivery system does not have an independent effect on health workforce needs (other than the addition of Health Information Technology personnel to implement network integration). However, the IDS is necessary for the PPS’s other DSRIP projects to be successful in identifying and risk stratifying patients to provide interventions and coordinate and manage care for these patients.

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<sup>13</sup> The Community Health Worker position that is being leveraged for this and other DSRIP projects including the PNC was developed by NYU Lutheran Family Health Centers in collaboration with 1199SEIU as a pilot project and as the overall model for NYS. Utilizing Medicaid waiver funding, training for the position includes cultural diversity training and will be provided to all Community Health Workers involved in the DSRIP program.

<sup>14</sup> Weiner, JP, Blumenthal, D, Yeh, S. The Impact of Health Information Technology and e-Health on the Future Demand for Physician Services. Health Affairs. November 2013. 32:11  
[http://www.michigan.gov/documents/mdch/The\\_Impact\\_of\\_Health\\_Information\\_Technology\\_and\\_e-Health\\_on\\_the\\_Future\\_Demand\\_for\\_Physician\\_Services\\_441001\\_7.pdf](http://www.michigan.gov/documents/mdch/The_Impact_of_Health_Information_Technology_and_e-Health_on_the_Future_Demand_for_Physician_Services_441001_7.pdf)

## B. Domain 4 Projects - Project 4.b.i and Project 4.c.ii

The PPS has observed high smoking rates as well as high rates of medical assistance with smoking cessation within many of the Brooklyn communities that it serves and has plans to implement a Tobacco Cessation Program (Project 4.b.i) to promote tobacco use cessation and reduce the risk of smoking-related illness.

As part of program implementation, the PPS has plans to develop a standardized clinician training program aimed at promoting tobacco cessation services including but not limited to guidance, prescribed nicotine replacement therapy, and appropriate referrals. In addition to training for clinicians, the PPS may also require staffing resources including a Tobacco Cessation Educator.

Additionally, in collaboration with seven New York City PPSs, the NYU Lutheran PPS has plans to implement a program focused on developing common approaches and resources to address identified gaps in HIV care spanning the New York City boroughs (Project 4.c.ii). The PPSs' HIV Collaborative will seek to address care gaps in terms of promoting wide-spread screening, early intervention measures, patient engagement and education, and culturally competent care.

Several of the identified measures and care protocols include implementing a viral load suppression initiative to achieve and sustain suppression of HIV viral loads to undetectable levels, integrative HIV screening and improved relationships between PCPs and CBOs to promote screening, and implementation of support groups to achieve improved self-management.

The analysis within this report does not model the two population-wide prevention projects described separately. While the development of a Tobacco Cessation Program is not explicitly modeled, other transformation projects including diabetes management and asthma management have been modeled in the section below and incorporate counseling for smoking cessation among patients (or parents of child patients).

The analysis does not separately model the workforce implications of increased access to and retention in HIV care as part of Project 4.c.ii. Although the Domain 4 projects are likely to have some workforce impact, there is not enough information at this time to make informed assumptions about the population-wide projects' potential impacts on the PPS's workforce as a result of implementing this project independent of the impacts of the other projects modeled.

Subsequent sections within Section IV describe the modeling approach and assumptions used to project the workforce impacts of the PPS's remaining six system transformation and clinical improvement projects. The *Appendix* also provides additional details regarding the data and assumptions leveraged to model workforce impacts. However, to inform the approach in modeling the PPS's target workforce state, the following primary research

questions were leveraged to guide the modeling of the PPS's projected workforce impacts for each DSRIP project:

1. How many patients will be affected by this intervention?
2. What are the current health care utilization patterns of affected patients, and how will this initiative change care utilization patterns?
3. What mix of providers will be used to implement the intervention and meet patient demand for services?

Within each section the projected workforce impacts for each DSRIP project are calculated and summarized based on the utilization of health care services by the anticipated actively engaged patients likely to be impacted by each intervention as well as the level of anticipated changes in how future care delivery will be staffed to meet patient care needs.

The results presented in this report have been calculated based upon project impact assumptions that the projects will be implemented in line with the PPS's submitted project implementation plans. As such, any deviation from the plan will likely produce results different from those shared within this report. Additionally, although literature and clinical studies were leveraged to inform DSRIP project assumptions pertaining to the projected workforce impact, it is necessary to note that the published outcomes from these studies are not entirely in line with the project requirements within the DSRIP projects that the PPS's has chosen to implement. Therefore the workforce impacts described throughout this report are estimations and leveraged to simulate estimated workforce needs within the PPS's network, and so, it is possible that the DSRIP projects may have minimal to no impact on the workforce despite the projections stated.

### C. Project 2.b.iii: ED Care Triage for At-Risk Populations

As part of the PPS's plans to actively engage a diverse population of Medicaid beneficiaries who access the NYULMC and NYU Langone Cobble Hill EDs for non-emergent care, the PPS will implement an ED Triage program that provides evidence-based care coordination and transitional care to link patients to a PCP and support patient self-management of health conditions. The PPS plans to ensure care coordination with community care providers by connecting PPS Partners to the PPS's RHIO / SHIN-NY.

The ED Triage project will primarily focus on increasing PCP and PCMH capacity which will require an increase in hours of operation, on-site service offerings, and convenient access points for patients in lower-cost care settings. In doing so, the PPS anticipates an increased need in workforce staffing including PCPs, Nurse Practitioners, and Physician Assistants. As part of project plans, the PPS plans to develop and implement triage protocols focusing on the identification and redirection of non-emergent patients in the ED and anticipates increasing staffing as well as training in protocols for ED Care Managers located at both of the PPS's ED sites to ensure adherence to triage protocols, as well as additional ED Nurses and Case Managers to staff the ED Discharge Unit.

As previously mentioned, many patients who visit the ED have non-urgent conditions which could have been treated in less expensive care settings. Implementation goals for this project include identifying ED patients who may be better served by a PCP for the provision of care continuity, linking patients without a primary source of care to a PCP, and educating patients on the appropriate use of ED services. Further, and in line with the statewide goal to reduce avoidable ED use among the Medicaid population by 25% within five years, the NYU Lutheran PPS will build its ED Triage Program to specifically target and reduce potentially preventable visits (PPVs).

The target patient population for this project can be described as patients with one or more ED visit having ambulatory sensitive chronic conditions or at-risk patients requiring more intensive ED care management services post discharge.

To model the target workforce state for this project, the following model inputs and assumptions were applied:

- The PPS's actively engaged or target number of Medicaid attributed lives that the PPS has identified as being impacted by the ED Triage project in 2020.
- The assumption that approximately 50% of the diverted ED visits patients are redirected to PCPs which results in a primary care visit.<sup>15</sup>
- The assumption that the PPS's workforce impacts for Care Managers / Care Coordinators involved in this DSRIP project are modeled under impacts for Project 2.c.i, the development of community-based health navigation services.

*Exhibit 7* details the projected workforce impacts by FTEs based on overall project goals of impacting the reduction of avoidable ED visits within the PPS's network by 25% by targeting the PPS's identified high utilizers. Upon completion of the DSRIP program in 2020, the following projected workforce impact estimates have been calculated based on the PPS's attributed Medicaid lives:

- ED visits may decrease by approximately 6,100 visits.
- Working under the assumption that half of these avoided visits will be redirected to a primary care setting by 2020, an additional 3,000 visits to PCPs are estimated to occur within the PPS's network.

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<sup>15</sup> This assumption was identified based on the PPS's project implementation plans as a conservative estimation of project impacts.

**Exhibit 7: DSRIP ED Triage: Projected FTE Workforce Implications of Achieving 25% Reduction in PPV**

<u>Project Impact Assumptions</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
1. Actively Engaged patients are successfully and appropriately redirected to PCMH after triage	2,120	3,030	6,060	6,060
2. Anticipated PPV ED visits for the PPS's Medicaid population absent the DSRIP program	8,500	12,100	24,200	24,200
3. Assumed effectively avoided PPV visits (achieving DSRIP goals with project implementation phase-in)	-2,100	-3,000	-6,100	-6,100
4. Estimated increase in primary care visits	1,000	1,500	3,000	3,000
<b>Workforce Impacts (by FTE)</b>	<b><u>2017</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>
<i>Office/Outpatient</i>				
Primary Care Providers	0.5	0.5	1.5	1.5
Direct Medical Support	1	1	2.5	2.5
Direct Administrative Support	0.5	1	1.5	1.5
Staff Registered Nurses	-	0.5	0.5	0.5
<i>Emergency Department</i>				
Emergency Physicians	-1	-1.5	-2.5	-2.5
Nurse Practitioners	-	-	-	-
Physician Assistants	-	-	-0.5	-0.5
Staff Registered Nurses	-3.5	-5	-10	-10

Examining the workforce impacts reflected in *Exhibit 7* by setting and changes in utilization, the following workforce impacts are projected for this project:

- *PPS workforce in the ED setting may be reduced by approximately 2-3 ED Physician FTEs and 10 Staff RN FTEs. Further, there is likely to be minimal staffing impacts on NPs and PAs.*
- *PPS workforce in primary care settings may be increased by approximately 1-2 additional PCP FTEs. Further, there may be minimal staffing impacts on the demand for other Office or Administrative Staff.*

Based on the current projected workforce analysis described, following implementation of the ED Triage Program, the NYU Lutheran PPS may experience a slight decrease in the number of FTEs associated with NPs, PAs, Staff RNs, and ED Physicians in the ED setting as a result of project impacts. However, as a result of patients potentially being redirected to NYULMC's ED as a result of Mount Sinai Beth Israel's closure, the demand for ED staff including RNs is likely to increase and offset the projected workforce reductions. Conversely, under project impact assumptions, patients who seek alternative care in primary care settings may drive a slight demand in FTEs for providers within primary care settings. However, based on projected modeling outputs, the overall impact of this project on the PPS's workforce is expected to be minimal.

## D. Project 2.b.ix: Implementation of Hospital Observational Programs

In an effort to reduce the hospital's Preventable Quality Indicator ("PQI") rates, the PPS plans to implement a 10-bed Observational Unit ("OU") adjacent to the NYULMC ED. By locating the OU adjacent to the ED, the PPS anticipates better facilitation of patient transfers for medically appropriate patients from the ED to OU as well as more effective oversight and management by ED Physicians to ensure patient-centric operations and thus ultimately reducing the likelihood of potentially preventable readmissions ("PPR").

As part of the PPS's plans to develop and staff the OU, the PPS will implement evidence-based observation protocols to be carried out by OU staff on patients deemed eligible for observation. As this is a new unit, the OU will require sufficient staffing in order to ensure that operations are carried out efficiently including timely discharge and coordination of post-discharge services to home care, specialty and physician care. The PPS anticipates staffing the OU with a dedicated team for interim observation beds and in the permanent OU which includes but is not limited to training Physicians, ED Care Managers, OU Case / Care Managers, and other staff at each hospital's ED.

Based on the PPS's anticipated actively engaged targets, by Demonstration Year ("DY") 3 and assuming that the OU is fully implemented, 523 or 0.5% of the PPS's Medicaid attributed lives will be utilizing the OU. For purposes of modeling project impacts, because this is a new unit that did not exist prior to the DSRIP program, the following OU staffing options were considered for the purposes of this analysis. It is possible, the PPS's OU might be staffed leveraging an ED-run staffing model with Emergency Physicians, Nurse Practitioners / Physician Assistants and ED-based Nurses, or the OU might be staffed using a Hospitalist-run staffing model with Hospitalists, Nurse Practitioners / Physician Assistants and Nurses.

To model the target workforce state for this project, the following model inputs and assumptions were applied:

- It is assumed that 22% of the patients utilizing the OU are admitted to the hospital and the remaining 78% are discharged.<sup>16</sup>
- The average length of stay for patients in an OU is approximately 16 hours.<sup>17</sup> Assuming that each hospitalization prevented by the OU would have been 24 hours or less, it is possible to estimate that at the most, a prevented admission to the OU would presumably shorten a patient's time in the hospital by about 8 hours or one third of an inpatient day.
- Hospitalists will primarily staff the OU instead of Emergency Physicians.

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<sup>16</sup> Estimate is based on national claims data for Medicare patients in 2009.

[http://www.aarp.org/content/dam/aarp/research/public\\_policy\\_institute/health/2013/rapid-growth-in-medicare-hospital-observation-services-AARP-ppi-health.pdf](http://www.aarp.org/content/dam/aarp/research/public_policy_institute/health/2013/rapid-growth-in-medicare-hospital-observation-services-AARP-ppi-health.pdf)

<sup>17</sup> <http://www.cepamerica.com/news-resources/perspectives-on-the-acute-care-continuum/november-2013/the-unintended-consequences-of-observation-units>

Due to the small number of Medicaid patients expected to be actively engaged by this project, the projected workforce impacts are likely to be minimal. Modeling outputs suggest the following workforce impacts:

- *Based on ED and hospital staffing models, OU staffing impacts at most will be observed by a reduced demand for RNs by approximately 0.8 FTE, Nurse Aides / Assistants might be reduced by 0.2 FTE, and Hospitalists might be reduced by 0.1 FTE (assuming that Hospitalists are staffing the OU versus Emergency Physicians).*

Due to minor anticipated workforce implications and lack of data to model OU impact, the above workforce implications have not been included in the summary workforce impact tables presented within this report.

### E. Project 2.c.i: Community-Based Health Navigation Service

As previously discussed the NYU Lutheran PPS plans to implement a PNC in order to reduce avoidable ED visits and connect Medicaid patients to appropriate health and social services within the PPS's network. The PPS plans to establish the PNC within the Brooklyn community in order facilitate care coordination and navigation services that are culturally competent and have multilingual capabilities. As part of the PNC's services, Patient Navigators will deliver services telephonically or in-person to facilitate patient activation, patient education, health coaching, and transition planning, as well as PCMH enrollment and linking patients to PCPs.

To model potential health care utilization and workforce needs for this project, the literature and published results of similar demonstrations or programs with similar elements were leveraged to inform modeling inputs and assumptions.

One such program is the University of Pennsylvania's (UPenn) IMPaCT model, where community health workers provide support to over 3,000 high risk patients, helping them achieve their individual health goals. The community health workers in the IMPaCT model have three main goals:

- Identify patient specific barriers to compliance with treatment plan
- Establish short term goals to connect patient with needed post ED visit or inpatient care
- Follow patient for 30 days and connect with non-medical services to address psychosocial, health education, and other needs on a longitudinal basis.

Upon full implementation of the PPS's PNC, an estimated 27,148 patients or 26% of the PPS attributed Medicaid patients will be engaged in and leveraging this program (*Exhibit 8*). It is anticipated that the PPS's Medicaid participants engaged in this program will likely reflect the high chronic over utilizers of health care services within the PPS's network. However, if the NYU Lutheran PPS intends to provide PNC services to approximately a quarter of its

attributed Medicaid population, then the average level of patient acuity may be lower than the patient acuity levels experienced by other similar programs.<sup>18,19</sup>

To model project impacts for the NYU Lutheran PPS, the reported results were extrapolated from UPenn’s IMPaCT model.<sup>20</sup> Additionally, the following model inputs and assumptions were applied:

- As part of project plan, the NYU Lutheran PPS anticipates a 1:15 ratio of Community Health Workers, leveraging the NYU Lutheran Family Health Centers’ model, to patients at any given time for this project.<sup>21</sup> A community health worker would see approximately 15 patients per month, for a ratio of approximately 1:180 patients annually. We assume 1 RN care coordinator leader for every 10 community health workers.
- Using UPenn’s IMPaCT results that the intervention had no statistically significant impact on hospital readmissions, we assume that this intervention will have no impact on hospital inpatient or emergency care use.<sup>20</sup>

Applying the described modeling inputs and assumptions to the PPS targeted actively engaged population, the results of the analysis are detailed in Exhibit 8. The projected workforce impacts suggest that on a yearly basis, this intervention could increase primary care visits by approximately 13,000 (or about 0.5 visits per patient who receives navigation services).

**Exhibit 8: Development of Community-based Health Navigation Services Projected Impact**

<u>Project Impact Assumptions</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Number of Actively Engaged Patients	2,715	10,859	21,718	27,148
Percent of Attributed Medicaid Patients Engaged	3%	10%	21%	26%
<b>DSRIP Impacts on Utilization</b>				
Primary Care Visits	1,300	5,200	10,400	13,000
<b>Workforce Impacts (by FTE)</b>				
<u>Community Health Workers (Patient Navigators)</u>	<u>15</u>	<u>60.5</u>	<u>120.5</u>	<u>151</u>
Nurse Coordinator Leaders	1.5	6	12	15
<i>Primary Care Providers</i>	0.5	2.5	4.5	6

<sup>18</sup> The CareOregon Community Care Program reports that navigation services are provided to “super-utilizers” defined as Medicaid recipients who meet the following criteria: (1) at least one non-obstetric hospital admission and/or six or more emergency visits during the past year, and (2) already receiving primary care or specialty care in the network. These patients have high prevalence of chronic conditions, mental illness or substance abuse disorders, social barriers, and other risk factors for high use of hospital services.

<sup>19</sup> <https://www.medicaid.gov/Federal-Policy-Guidance/Downloads/CIB-07-24-2013.pdf>

<sup>20</sup> <http://chw.upenn.edu/impact>: 12% increase in Primary Care Access, 1.4% increase in any readmissions (but this estimate was not statistically significant), 3.2% reduction in multiple readmissions and 24.8% reduction in multiple readmissions among readmitted patients

<sup>21</sup> The PPS has indicated that one community health worker cares for 15 patients per month

**Exhibit 8: Development of Community-based Health Navigation Services Projected Impact**

<u>Project Impact Assumptions</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Direct Medical Support	1	4	8	10.5
Direct Admin Support	0.5	3	6	7.5
Registered Nurses	0.5	1	2.5	3

Due to the PPS’s anticipated actively engaged numbers for 2020, to meet the PNC staffing demands to care for approximately 26% of the PPS’s attributed Medicaid lives, the anticipated increase in health care utilization for this project may have significant FTE implications. By 2020, assuming the PNC is fully implemented as planned; the analysis described in *Exhibit 8* suggests the following:

- *Approximately 151 Community Health Worker or Patient Navigation FTEs may be required to meet the demand of providing navigation services to over 27,000 Medicaid patients, with an estimated 30 FTE RN coordinator leaders.*
- *Within the primary care setting, approximately 6 additional PCP FTEs may be required to meet the increased demand of an estimated 13,000 additional outpatient visits due to the PNC’s provision of navigation services.*

The workforce impact results presented for this project are contingent upon full project implementation, and rely on the project impact assumption that the NYU Lutheran PPS will achieve outcomes similar to those reported by the UPenn IMPaCT study.

**F. Project 3.a.i: Integration of Primary Care & Behavioral Health Services**

To address the identified gaps in care between PCPs and Behavioral Health providers in Brooklyn, the PPS plans to develop and implement two integrated care models to address behavioral health related community needs through the co-location of behavioral health services at PPS Partner primary care sites and, where co-location is not feasible, implement the IMPACT model.

In addition to the PPS’s identified need to increase PCP access and staffing in order to facilitate increased operating hours and specialty services, the PPS’s eight Diagnostic and Treatment Centers, nine Federally Qualified Health Centers, and primary care sites will also plan to integrate behavioral health services through PCMH and IMPACT models to improve the delivery of care to underserved communities.

To model the target workforce state for this project, the following model inputs and assumptions were applied:

- It is assumed that approximately 10% of the Medicaid population has unmet behavioral health needs (i.e. are not receiving specialty mental health services) and that these unmet needs largely consist of mild-to-moderate depressive / anxiety disorders or substance abuse.<sup>22</sup>
- It is assumed that 80% of the Medicaid population with unmet behavioral health needs visits a PCP annually.<sup>23</sup>
- Absent the DSRIP program, approximately 50% of patients with unmet behavioral health needs would have been successfully diagnosed by a PCP and referred to a behavioral health provider.<sup>24</sup> As a result of DSRIP project impacts, PCPs will receive additional training and it is assumed that 80% of patients with unmet behavioral health needs will be diagnosed and referred.
- Absent the DSRIP program, 25% of referred patients will complete the referral.<sup>25</sup> As a result of the DSRIP program, it is assumed that referral completion rates will double to 50%.<sup>26</sup>
- It is assumed that behavioral health services will be provided by a Licensed Clinical Social Worker and that each provider will manage approximately 75 active patients for approximately 6 months (or approximately 150 patients annually).<sup>27</sup>
- It is assumed that any care coordination services required by this population are included within services provided by the PNC.

Project impacts in terms of health care utilization as a result of project implementation may include the following impacts by the end of the DSRIP program:

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<sup>22</sup> For modeling purposes, an estimated percentage of the Medicaid population may have unmet behavioral health needs was required. Data from the literature around this metric is scarce, but indicates that 10% may be conservative, as some estimate that 60% to 70% of patients with behavioral health issues leave medical settings without receiving behavioral health treatment <http://www.commonwealthfund.org/publications/newsletters/quality-matters/2014/august-september/in-focus#/#4>. Thus, 10% was chosen in order to avoid overestimating the effects of the DSRIP program.

<sup>23</sup> Nationwide, 86.5% of adult and 93.5% of child Medicaid beneficiaries had contact with a health care professional in the past year. This information is used to guide the assumption that 80% of the Medicaid population with unmet behavioral health needs will visit a PCP.

[http://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/NHIS/SHS/2014\\_SHS\\_Table\\_A-18.pdf](http://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2014_SHS_Table_A-18.pdf)

<sup>24</sup> Montano CB. Recognition and treatment of depression in a primary care setting.

Journal of Clinical Psychiatry, Vol 55(12, Suppl), Dec 1994, 18-34.

<sup>25</sup> Becker AL. In some primary care offices: The social worker will see you now, Sep 8, 2015.

<http://ctmirror.org/2015/09/08/in-some-primary-care-offices-the-social-worker-will-see-you-now/>

<sup>26</sup> Modeling assumption of PPS behavioral health referral completion targets. New York State added 320,000 beneficiaries to Medicaid in 2014, and an estimated 48,000 (15%) had behavioral health issues (though the portion of these beneficiaries with issues were undiagnosed and unmet need is not known).

<sup>27</sup> Source indicates caseloads of 100 - 150 patients. For modeling, the higher caseload was used as the project focuses on population without serious mental health issues, and in that case, presumably, providers are able to see more patients. <https://aims.uw.edu/collaborative-care/team-structure/care-manager>

- *It is estimated that behavioral health-related ED visits may decrease by approximately 130 visits annually.*
- *It is projected that behavioral health-related inpatient days may be reduced by 0.14 days per person that receive behavioral health services as a result of project impacts. Thus, for 10 actively engaged patients, it can be assumed that the PPS will realize a 1.4 day reduction in inpatient days for a total reduction of approximately 210 days annually.<sup>28</sup>*

Based on the PPS's implementation plans, this project will be phased-in over two years beginning in DY2 and aims to have 100% of patients actively engaged by DY3 Q4. By 2020, the net projected workforce impacts associated as a result of this DSRIP initiative may realize the projected workforce impacts provided below as well as in *Exhibit 9*:

- *It is anticipated that in the behavioral health setting that there will be a projected increase in demand for approximately 9-10 Behavioral Health Care Managers or Licensed Clinical Social Worker FTEs as well as an estimated 8 Administrative Support FTEs and 1 Psychiatric Consult FTE.*
- *Within the ED setting there are no anticipated workforce impacts on those staffed in the ED.*
- *Further, within the inpatient setting, the projected workforce impact on hospital inpatient care staff is very minimal.*

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<sup>28</sup> Co-location and navigator services have helped the Genesee Health System health center and Hope Network achieve drops in psychiatric inpatient admissions (pre intervention average: 1.95 per person, post intervention average: 0.48 per person) <http://kff.org/report-section/integrating-physical-and-behavioral-health-care-promising-medicaid-models-issue-brief/>

<b>Exhibit 9: Integration of Behavioral Health into Primary Care Projected Impacts</b>				
<b>Project Impact Assumptions</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Medicaid Population being Modeled	69,850	69,910	69,970	70,030
Population with unmet Behavioral Health needs	6,990	6,990	7,000	7,000
Population with unmet Behavioral Health needs visiting PCPs	5,590	5,590	5,600	5,600
Population screening positive for Behavioral Health needs absent DSRIP	2,790	2,800	2,800	2,800
Population screening positive for Behavioral Health needs with DSRIP	4,470	4,470	4,480	4,480
Screened population completing Behavioral Health referral absent DSRIP	700	700	700	700
Screened population completing Behavioral Health referral with DSRIP	2,240	2,240	2,240	2,240
Change in population receiving Behavioral Health counseling	310	770	1,540	1,540
Implementation Phase-In Assumptions	20%	50%	100%	100%
<b>Health Care Utilization Impact of DSRIP</b>				
Encounters with Behavioral Health Care Manager	860	2,150	4,310	4,310
Primary Care Visits	100	260	520	520
Behavioral Health Related ED Visits	-30	-60	-130	-130
Behavioral Health Related Inpatient Days	-40	-100	-210	-210
<b>Workforce Impacts (by FTE)</b>				
<b>Office Setting</b>				
Licensed Clinical Social Worker	2	5	9.5	9.5
Psychiatrists / Psychiatric Nurses	-	0.5	1	1
Primary Care Providers	-	-	-	-
Direct Medical Support	-	-	0.5	0.5
Direct Admin Support	1.5	4	8	8
Staff Registered Nurses	-	-	0.5	0.5
<b>Emergency Department</b>				
Emergency Physicians	-	-	-	-
Nurse Practitioners or Physician Assistants	-	-	-	-
Staff Registered Nurses	-	-	-	-
<b>Inpatient</b>				
Hospitalists	-	-	-	-
Staff Registered Nurses	-	-0.5	-1	-1
Licensed Practical Nurses	-	-	-	-
Nurse Aides/Assistants	-	-	-0.5	-0.5

The goals of this project are to increase access to behavioral health services and as a result, there will be an anticipated increase in the number of behavioral health providers and associated support staff needed to meet demands. Moreover, the projected workforce impacts suggests a slight reduction of estimated workforce FTEs in the ED and inpatient settings, due primarily to the modest increase in anticipated numbers of patients who receive behavioral health counseling following project implementation, but are likely to be offset as a result of patients being redirected to NYULMC due to the closure of Mount Sinai Beth Israel.

## G. Project 3.c.i: Evidence-based Strategies to Improve Management of Diabetes

The PPS has identified that some of the Medicaid communities served by the PPS have the highest combined utilization of diabetic services in Brooklyn. In an effort to address gaps in care to reduce diabetes-related preventable hospitalizations and overuse of diabetic services in Brooklyn, the PPS plans to implement diabetes self-management education and care protocols across its PPS Partners.

To achieve these goals, the PPS plans to implement evidence-based clinical guidelines for diabetes management at the PPS's primary care sites as well as develop and deploy care coordination teams at primary care and specialists sites alongside Certified Diabetes Educators, Nutritionists, Nursing staff, Behavioral Health clinicians, and Care Managers. In addition to engaging this workforce as well as increasing PCP capacity to engage patients in diabetes self-management, the PPS also plans to engage Pharmacists within the community to further facilitate medication adherence and symptom management.

The following modeling inputs and assumptions are leveraged to produce the following analysis of project impacts:

- The NYU Lutheran PPS has provided a ratio of 1:14, Certified Diabetes Educators (“CDEs”) to patients per day. Thus, assuming 260 working days per year, the assumed provider-to-patient ratio is approximately 1:3,640 per year<sup>29</sup>
- It is assumed that a patient’s participation in diabetes self-management programs may reduce total ED visits per participant by 14.3% regardless of the reason for visit. This estimate is based on a study of 27,188 participants in a diabetes management program by CIGNA Healthcare.<sup>30</sup> Participants who completed the diabetes management program experienced a greater reduction in ED use (22.8%). This finding is based on an intervention where patients with diabetes received repeated telephone outreach by trained nurses, dietitians, or health educators, web-based education, remote monitoring devices, and reminders and educational mailings throughout the year. For additional comparison, another study reported a 51% reduction in diabetes-related ED visits based on patient outcomes in a year following participation in a nurse-directed diabetes care program among a minority population.<sup>31</sup> Also for comparison, an evaluation of Geisinger’s diabetes care implemented in routine primary care settings found that total inpatient costs were reduced by 29% following care management—

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<sup>29</sup> NYU Lutheran PPS provided the following information for project planning / implementation around patient panels for CDEs, one CDE sees a patient for 30 minutes/visit. Thus, assuming 7 hours per day, a CDE will see 14 patients in a day.

<sup>30</sup> Villagra VG, Ahmed T. Effectiveness of A Disease Management Program For Patients With Diabetes. *Health Affairs*, July 2004, vol 23(4):255-266.

<sup>31</sup> Davidson MB, Snsari A, and Karlan VJ. Effect of a Nurse-Directed Diabetes Disease Management Program on Urgent Care/Emergency Room Visits and Hospitalizations in a Minority Population. *Diabetes Care*, 2007, vol 30(2): 224-227. <http://care.diabetesjournals.org/content/30/2/224.long>

with an average reduction of 29-41% in years 2-3 following intervention.<sup>32</sup> Hence, the assumption of 14.3% reduction in ED visits being leveraged for this study is conservative and may have a greater impact similar to the other studies described.

- It is assumed that diabetes self-management may reduce total inpatient days per participant by 11.6%.<sup>30</sup> This assumption is based on the CIGNA HealthCare evaluation program for all participants in diabetes management were a reduction of 21.7% for patients who fully participated in the care management program was observed. The assumption of an 11.6% reduction in bed days reflects a 23.8% reduction in admissions but a 16% longer average length of stay.
- It is estimated that diabetes self-management may reduce total office visits by 5.3%.<sup>30</sup> This assumption is based on findings from the CIGNA HealthCare evaluation program for all participants in diabetes management.
- It is assumed that participation in diabetes self-management will result in one extra primary care visit per year and an extra visit to an endocrinologist every fourth year. This assumption's rationale is that diabetes management programs place a focus on the provision of preventive care for diabetes and common comorbidities (e.g., hypertension, hypercholesterolemia, and heart disease).<sup>32</sup>
- Modeling analysis for this project focused on the short-to-midterm impact of diabetes self-management on health care utilization. Numerous studies reported improvements in patient biometrics including reduced hemoglobin A1c levels, blood pressure, and cholesterol levels, and improvements in screening and testing for neuropathy, retinopathy, and other potential complications of diabetes.<sup>33</sup> These improvements in biometrics and early screening and treatment likely have benefits that extend beyond the year 2020 analysis period used for DSRIP evaluation.
- Medicaid beneficiaries with diabetes in Brooklyn currently average 2.19 inpatient days, 11 emergency visits, and 95 ambulatory visits (office plus outpatient) annually. These estimates are based on the HDMM given the characteristics and prevalence of health risk factors (e.g., obesity and smoking prevalence demographics) of the Medicaid population in Brooklyn. Care utilization rates average 2-2.5 times higher than rates for the commercially insured population with diabetes.
- Any care coordination services required by this population are being modeled under the community-based health navigation services being provided by the PNC.

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<sup>32</sup> Maeng et al. Value of Primary Care Diabetes Management: Long-Term Cost Impacts. American Journal of Managed Care. See more at: <http://www.ajmc.com/journals/issue/2016/2016-vol22-n3/value-of-primary-care-diabetes-management-long-term-cost-impacts/P-3#sthash.9sB3VT7I.dpuf>

<sup>33</sup> See, for example, Piatt GA, Anderson RM, Brooks MM, Songer T, Siminerio LM, Korytkowski MM, et al. 3-year follow-up of clinical and behavioral improvements following a multifaceted diabetes care intervention: results of a randomized controlled trial. *Diabetes Educ* 2010;36(2):301-9.

Stroebe RJ, Gloor B, Freytag S, Riegert-Johnson D, Smith SA, Huschka T, et al. Adapting the chronic care model to treat chronic illness at a free medical clinic. *J Health Care Poor Underserved* 2005;16(2):286-96.

Liebman J, Heffernan D, Sarvela P. Establishing diabetes self-management in a community health center serving low-income Latinos. *Diabetes Educ* 2007;33(Suppl 6):132S-8S.

As a result of anticipated project impacts, by 2020 the projected annual health care utilization associated with this initiative for the PPS may include the following estimates (*Exhibit 10*):

- *It is estimated that there will be approximately 730 fewer ED visits (relative to no change in care use patterns), which is calculated to approximately 0.14 ED visits less per actively engaged individual by 2020.*
- *It is estimated that there will be approximately 0.25 fewer inpatient days per actively engaged individual by 2020.*
- *It is estimated that there will be an increase of approximately 5,080 additional primary care visits as a result of the PPS's diabetes self-management program.*
- *Further, it is estimated that there will an increase of approximately 1,270 additional visits to an endocrinologist as a result of the project following full implementation. Additionally, as a result of project impacts, there may be increases in visits to cardiologists or other specialists including nephrologists or neurologists.*

Additionally, as a result of full project implementation, the following projected workforce impacts may include:

- *A projected increase in demand of approximately 2 Certified Diabetes Educator FTEs.*
- *Within the primary care settings, there is a projected increase in demand of approximately 2-3 additional PCP FTEs, 4 Direct Medical Support Staff FTEs, and 3 Administrative Staff FTEs.*
- *Within the ED setting, there is a slight projected decrease in ED staff.*
- *Within the inpatient settings, there is a project decrease in the demand for hospital inpatient staff including approximately 7-8 RN FTEs as well as estimated minimal impacts for other staff in this setting.*

<b>Exhibit 10: Diabetes Self-Management Projected Workforce Impacts by Care Settings</b>				
<u>Health Care Utilization Impact of DSRIP</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Actively Engaged Numbers	2,540	3,550	5,080	5,080
<b>Projected DSRIP Impacts</b>				
Emergency Visits	-370	-510	-730	-730
Inpatient Days	-640	-900	-1,290	-1,290
Visits to Primary Care Provider	2,540	3,550	5,080	5,080
Visits to Endocrinologist	640	890	1,270	1,270
<b>Workforce Impacts (by FTE)</b>				
<u>Office / Outpatient</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Primary Care Providers	1	1.5	2.5	2.5
Direct Medical Support	2	3	4	4
Direct Admin Support	1.5	2	3	3
Staff Registered Nurses	0.5	1	1.5	1.5
Endocrinologist	-	0.5	0.5	0.5
<b>Emergency Department</b>				
Emergency Physicians	-	-	-0.5	-0.5
Nurse Practitioners and Physician Assistants	-	-	-	-
Staff Registered Nurses	-0.5	-1	-1	-1
<b>Inpatient</b>				
Hospitalists	-0.5	-0.5	-0.5	-0.5
Staff Registered Nurses	-4	-5.5	-7.5	-7.5
Licensed Practical Nurses	-	-0.5	-0.5	-0.5
Nurse Aides / Assistants	-1	-1.5	-2	-2
<b>Diabetes Educators</b>	0.5	1	1.5	1.5

Based on the projected workforce implications for this project and as detailed in the table above, the overall impact of the diabetes self-management project on the PPS's workforce is minimal. There may be slight impacts in primary care settings, while the ED may experience even smaller impacts, and some providers in this setting may not be affected at all.

Based on the analysis, the diabetes self-management program appears to have the greatest impact on providers in the inpatient setting, with an estimated potential decrease in the number of FTEs associated with Staff RNs. However, as described throughout this report, the PPS expects that inpatient utilization will increase due to the closure of Mount Sinai Beth Israel and patients being redirected to NYULMC. Thus, while this project's goals aim to reduce ED and inpatient utilization, the increase in patients as a result of the closure is likely to offset the projected decrease in demand for inpatient staff and rather drive an increase in demand for additional workforce. Further, successful participation of the PPS's actively engaged patients in the self-management program will also have an impact in this setting in the short-to-midterm and likely differ from the projected workforce impacts indicated above.

## H. Project 3.d.ii: Expansion of Asthma Home-based Self-management Program

The PPS identified a high number of asthma-related ED visits which can be attributed to high rates of smoking as well as primary care access issues across the borough. In order to mitigate risk and decrease asthma rates, the PPS has plans to implement an asthma self-management program and implement evidence-based best practices to control asthma-related symptoms and educate patients on asthma triggering factors.

Similar to diabetes self-management, the PPS plans to implement evidence-based clinical guidelines for asthma management at each PCMH site, increase PCP capacity, and deploy care coordination teams at PPS Partner sites alongside Certified Asthma Educators, PCPs, Nutritionists, Behavioral Health clinicians, and Community Health Workers.

The following modeling inputs and assumptions are leveraged to produce the following analysis of project impacts:

- As part of project planning, the NYU Lutheran PPS estimates a 1:45 ratio of Certified Asthma Educators to patients at any given time.<sup>34</sup> Thus, assuming this ratio represents the number of patients seen per month, an annual ratio of 1:540 patients was calculated.
- It is assumed that asthma self-management will decrease asthma-related emergency visits by approximately 18%.<sup>35</sup>
- It is assumed that asthma self-management will decrease asthma-related hospitalizations by approximately 34%.<sup>36</sup>
- It is assumed that asthma self-management will decrease urgent primary care visits (i.e. unscheduled visits to a PCP) by approximately 5% or 1.8 visits per year.<sup>37</sup>
- Leveraging SPARCS data for Brooklyn, it is estimated that a child with asthma averages 0.14 asthma-related emergency visits and 0.3 hospitalizations annually. Also, based on SPARCS data, it is estimated that the average length of stay for Medicaid beneficiaries hospitalized for an asthma-related reasons is approximately 2.3 days.
- Any care coordination services required by this population are modeled under the PPS's PNC for the provision of community-based health navigation services.

Please note that findings from published studies focused on programs providing asthma self-management programs to children and were leveraged to estimate project impact projections

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<sup>34</sup> PPS has indicated that one asthma educator cares for 15 patients at any given time. For the purposes of modeling this project it is assumed that an asthma educators spends approximately 30 minutes (28 minutes/patient) with 15 patients per day, assuming a 7 hour work day.

<sup>35</sup> Population: children between 2 - 12 who met the criteria

<http://www.ncbi.nlm.nih.gov/pubmed/16740859>

<sup>36</sup> Population: enrollees under age 21

<http://www.nga.org/files/live/sites/NGA/files/pdf/031403DISEASEMGMT.pdf>

<sup>37</sup> Population: children between 2 - 12 who met the criteria

<http://www.ncbi.nlm.nih.gov/pubmed/16740859>

for the PPS. Thus the outputs discussed within this section are estimated projections and may not fully and accurately reflect the impacts realized following full project implementation by the PPS.

*Exhibit 11* summarizes modeling results and the projected target state impacts of this project. Assuming full project implementation, it estimated that project impacts will realize an estimated decline of 90 ED visits, approximately 70 less inpatient days, and a reduction in approximately 420 urgent primary care visits.

Additionally, as a result of full project implementation, the following projected workforce impacts may include:

- *An estimated increase in demand for 4-5 Certified Asthma Educator FTEs.*
- *Within the primary care settings a very minimal change in demand where there is a projected slight decrease in the number of FTEs associated with providers in this setting.*
- *Within the ED setting there is virtually no change observed in demand for ED staff.*
- *Within the inpatient setting, a very minimal decline in the demand for PCP and hospital inpatient staff was estimated.*

**Exhibit 11: Asthma Self-Management Projected Workforce Impacts by Care Setting**

<u>Health Care Utilization Impact of DSRIP</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Actively Engaged Numbers	230	820	1,640	2,340
<b>Projected DSRIP Impacts</b>				
Emergency Visits	-10	-30	-60	-90
Inpatient Days	-10	-20	-50	-70
Urgent Office Visit to PCPs	-40	-150	-300	-420
<b>Workforce Impacts (by FTE)</b>				
<u>Office/Outpatient</u>				
Primary Care Providers	-	-	-	-
Direct Medical Support	-	-	-	-0.5
Direct Admin Support	-	-	-	-0.5
Staff Registered Nurses	-	-	-	-
<u>Emergency Department</u>				
Emergency Physicians	-	-	-	-
Nurse Practitioners & Physician Assistants	-	-	-	-
Staff Registered Nurses	-	-	-	-
<u>Inpatient</u>				
Hospitalists	-	-	-	-
Staff Registered Nurses	-	-	-0.5	-0.5
Licensed Practical Nurses	-	-	-	-
Nurse Aides/Assistants	-	-	-	-
<i>Asthma Health Coaches</i>	0.5	1.5	3	4.5

The results of the analysis suggest that this DSRIP initiative will have very minimal effects on the workforce providing direct medical care to the PPS's asthma population.

## I. Licensed Care Coordination Job Requirements

As part of NYU Lutheran PPS's workforce strategy deliverable approach including the development of the PPS's current workforce state assessment and compensation and benefits analysis, a survey was issued to PPS Partners to collect data pertaining to minimum years of experience and degree requirements for Licensed Care Coordination job titles falling under DOH Job Categories including Clinical Support, Nursing Care Managers / Coordinators, Social Worker Case Management / Care Management, Emerging Titles, and Patient Education to assist with workforce planning. Full details of the PPS Partners total reported workforce minimum years of experience and minimum degree requirements pertaining to each job title are included within the PPS's Compensation and Benefits Report and are summarized below.

PPS Partners reported that at least some level of experience was required for most job titles, with many positions requiring as little as 0 to 2 years of experience, including Certified Asthma Educators, Medical Assistants, RN Care Coordinators / Case Managers, LPN Care Coordinators / Case Managers, Patient or Care Navigators, Peer Support Workers, and "Other" Emerging Titles. This suggests educational programs that train and certify these individuals could be a significant resource for providing needed employees to fill vacant positions.

Certain job titles, however, falling within the Social Worker Case Management / Care Management and Patient Education categories were reported requiring more experience. Licensed Clinical Social Workers, for example, were reported by approximately 7% of the PPS Partners as having more than 15 years of experience and only 47% of providers indicated 0-2 years of experience for the position. Additionally, Certified Diabetes Educators were reported by 50% of PPS Partners as having 3-5 years of experience.

Further, PPS Partner's also reported degree requirements for the corresponding job titles. For the Clinical Support category, approximately 66% of PPS Partners reported requiring a minimum of an Associate's Degree for Medical Assistants, while within the Nursing Care Managers / Coordinators category nearly half of the PPS Partners reported requiring an Associate's Degree while the other half reported requiring a Bachelor's Degree.

Within the Social Worker Case Management / Care Management category, Social Worker Care Coordinators / Case Managers were reported primarily requiring a Bachelor's Degree (63% of survey respondents) with 36% of the PPS Partners reporting a Master's Degree requirement for this position.

Degree requirements falling within the Emerging Titles category varied among each position. The Care Manager / Coordinator and Peer Support Worker titles reported a Bachelor's Degree requirement of approximately 90% by PPS Partners while other job titles within this category were more evenly split between the requirement to have an Associate or Bachelor's Degree.

Additionally, the PPS's hospital, NYULMC provided job descriptions for emerging or new positions as a result of the DSRIP program which include details pertaining to minimum degree, education, and licensure requirements. Full job description details are included within the Compensation and Benefits Report and are summarized below. For a Patient Navigator position, NYULMC requires that a candidate have a Bachelor's Degree or is in the process of obtaining a Bachelor's degree with a minimum requirement of 6 months to a year of health care / human services experience. For a Case Manager, NYULMC requires that a candidate have a Bachelor's Degree with at least five years of relevant clinical experience. For a Triage Nurse, NYULMC requires that a candidate be a RN. Further, the PPS has indicated that minimum degree, education, and licensure requirements for all job titles will align with the DOH provided job descriptions and definitions. These job descriptions and definitions are included within the *Appendix* for additional reference.

## V. Summary of Projected DSRIP and Non-DSRIP Related Workforce Impacts

As acknowledged throughout this report, the demand for health care services and workforce within the NYU Lutheran PPS will continue to change and fluctuate throughout the five year DSRIP program as individual projects are implemented and trends external to the DSRIP program, such as changing demographics, evolve.

Further, the combined impact of a growing and aging population in Brooklyn and expanded medical insurance coverage under the ACA will likely also drive an increased demand for health providers by approximately 3-6% for Brooklyn's population. Additionally, while the DSRIP program is specifically targeted towards Medicaid patients in New York State, it is likely that many of the Partners involved within the NYU Lutheran PPS's network also provide services to the Medicare and commercially insured populations who will also likely benefit from the clinical programs being implemented as part of the program.

As observed throughout this report's analysis, the DSRIP program is projected to drive a potential increase in demand for certain provider types, for example Primary Care and Behavioral Health providers, as well as an increase in demand for Licensed / Unlicensed Care Coordinators, Social Workers, Patient Navigators, and Certified Health Educators. Also observed, the DSRIP program is projected to drive a potential decrease in other provider types, in particular hospital-based providers. However, the workforce demands described within this report are projections and the true workforce impacts of the DSRIP program will emerge over time as projects are implemented and their impacts are realized.

The following sections summarize the projected impacts of the PPS's workforce as a result of DSRIP-related activities. Following the summary of DSRIP-related workforce impacts, workforce impacts of both DSRIP and non-DSRIP related factors are combined to provide an estimation of overall workforce impacts based on the demand for health care services by the PPS's Attributed Medicaid lives at the end of the DSRIP program in 2020.

## A. DSRIP Support Staffing

*Exhibit 12* documents the NYU Lutheran PPS’s Project Management Office (“PMO”) staff and anticipated new hires throughout the DSRIP program in order to provide DSRIP-related administrative and project implementation support for the PPS. Currently, the PPS’s PMO is staffed by the PPS’s Executive Director and Project Managers.

The “New Hire Position Title” column indicates the titles for staff currently hired or plan to be hired by the PPS to provide support throughout the DSRIP program. The “Current Number” column indicates the total number of staff (by headcount) currently hired by the PPS for each corresponding title. The “Target Number” column indicates the total number of staff that the PPS anticipates hiring by the end of the DSRIP program (by headcount).

Further, the “Total New Hires”, “Total Redeployed”, and “Total Retrained” columns indicate (by headcount) whether the PPS’s PMO staff will either be new hires, redeployed, or retrained staff.

**Exhibit 12: Summary of PPS DSRIP Support Staffing (by Headcount)**

<u>New Hire Position Title</u>	<u>Current Number</u>	<u>Target Number</u>	<u>Total New Hires</u>	<u>Total Redeployed</u>	<u>Total Retrained</u>
Executive Director	1	-	-	1	-
Project Manager(s)	3	4	-	3	-
Administrative Support	-	1	-	-	-
<b>Total DSRIP-Related Positions</b>	<b>4</b>	<b>5</b>	<b>-</b>	<b>4</b>	<b>-</b>

As detailed within *Exhibit 13*, the total estimated PPS workforce impacts are summarized below and include all anticipated DSRIP project impacts across various care settings and health care professions.<sup>38</sup>

Based on the model’s projection, the anticipated greatest staffing impacts are estimated to be observed across non-RN care coordinators (e.g., community health workers), administrative and clinical support staff, RN coordinator leaders, and primary care providers. By the end of the DSRIP program the net impact on RN demand is virtually unchanged, with reductions in demand for hospital-based RNs offset by increases demand for RNs in community-based settings and coordinator leader roles. However, as described throughout this report, the PPS anticipates that the projected decline in demand for FTEs in the ED and inpatient settings, specifically for nursing positions, are likely to be offset by the anticipated increase in care utilization as a result of patients being redirected to NYULMC due to Mount Sinai Beth Israel’s planned closure during DY2. Brooklyn providers, including the PPS’s ODA Primary Health Care Network, are anticipated to redirect patients such as obstetrics patients to NYULMC. Thus, due to the anticipated increase in utilization, the demand for ED and inpatient workforce is likely to offset the anticipated reduction in utilization. Additionally,

<sup>38</sup> The table excludes the ED triage goal associated with a decline in avoidable ED visits as to avoid double counting overlapping services.

due to overall population growth, the demand for RNs is projected to increase by approximately 5-6 FTEs in outpatient settings and increase by approximately 15 FTEs for Nurse Care Coordinators / Managers. Further, based on the current state data reported, PPS Partners reported very high FTE vacancy rates in nursing positions across the PPS's workforce. By addressing the high reported vacancy rate in these positions, the model's projected net decrease in demand for RN FTEs may have very little impact on the PPS's nursing workforce.

The analysis also projected a potential increase in demand for non-RN Care Managers including Community Health Workers and Social Workers as well as Licensed Health Educators, reflecting the importance of these health care professions in a transformed health care environment.

The analysis projected an increase in demand for PCPs by approximately 10 FTEs and a decrease in demand for Hospitalists and Emergency Physicians by approximately 10 FTEs and 3 FTEs, respectively, as focus on the provision of care moves away from the hospital / inpatient setting and towards outpatient and primary care settings. Projected impacts in demand among other health professions are estimated to be minimal.

The projected results of *Exhibit 13* have been estimated under the assumption that the DSRIP projects are fully implemented and that project implementation assumptions described throughout this report do not change. However, it is reasonable to assume, that as the PPS continues to implement projects throughout the DSRIP program that some of the model's inputs and assumptions will likely be updated. The FTE staffing impacts represented below are cumulative.

**Exhibit 13: Total Estimated DSRIP-related Workforce Impacts for the NYU Lutheran PPS (by FTE)**

<u>Cumulative Workforce Impacts across Care Settings &amp; Professions</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Primary Care Providers	2	4.5	8.5	10
Specialist Physicians				
Emergency Physicians	-1	-1.5	-3	-3
Hospitalists	-0.5	-0.5	-0.5	-0.5
Cardiologists	-	-	-	-
Endocrinologists	-	0.5	0.5	0.5
Nurse Practitioners and Physician Assistants				
Emergency Department	-	-	-0.5	-0.5
Nursing				
Staff Registered Nurses	-5.5	-3.5	-3	0.5
RN Care Coordinators	1.5	6	12	15
Hospital Inpatient	-4	-6	-9	-9
Emergency	-4	-6	-11	-11
Office / Clinic	1	2.5	5	5.5
Licensed Practical Nurses				
Hospital Inpatient	-	-0.5	-0.5	-0.5
Nurse Aides / Assistants				
Hospital Inpatient	-1	-1.5	-2.5	-2.5
Clinical Support				
Medical Assistants	4	8	15	17
Administrative Support Staff	4	10	18.5	19.5
Behavioral Health				
Psychiatrists / Psychiatric Nurse Practitioners	-	0.5	1	1
Psychologists				
Licensed Clinical Social Workers	2	5	9.5	9.5
Care Managers / Coordinators / Navigators / Coaches				
RN Coordinator Leaders	1.5	6	12	15
Care Coordinators (community health workers)	15	61	121	151
Diabetes Educators	0.5	1.5	3	4.5
Asthma Educators	0.5	1	1.5	1.5
<b>Total Net FTEs</b>	<b>20</b>	<b>84</b>	<b>168</b>	<b>208</b>

**B. DSRIP Target State Workforce Staffing Impact Analysis**

*Exhibit 14* describes the combined effects of both the DSRIP program and other non-DSRIP related factors that may impact the NYU Lutheran PPS’s workforce. Further, it was observed that in some cases, non-DSRIP related impacts, such as market changes, changing demographics, and expanded insurance coverage under the ACA may in some cases offset or complement some of the workforce impacts there are viewed as being a direct result of the DSRIP program.

For example, according to the model’s projections, it was estimated that the NYU Lutheran PPS’s network may require an addition 21 PCP FTEs which would theoretically address an addition demand of 11 FTEs to meet care needs external to the DSRIP program (demographic

and insurance trends) as well as a potential additional demand for approximately 10 FTEs due to DSRIP program impacts. Further, an estimated additional increase of approximately 38 FTE Administrative Support and 36 Medical Assistant FTEs may also be required to address both DSRIP impacts and general and population growth. Additionally, and as described throughout this report, changes to the health care market and overall changes in use of health care services due to Mount Sinai Beth Israel's planned closure during DY2 is likely to drive utilization of NYULMC's ED and inpatient services thus offsetting the projected decline in nursing workforce as a result of anticipated DSRIP project impacts.

**Exhibit 14: Total Estimated Workforce Impacts for the NYU Lutheran PPS (by FTE)**

<u>Cumulative Workforce Impacts across Care Settings &amp; Professions</u>	<u>Non-DSRIP Impacts</u>	<u>DSRIP Impacts</u>	<u>Total Impacts</u>
Primary Care Providers	11	10	21
Specialist Physicians			
Emergency Physicians	-	-3	-3
Hospitalists	0.5	-0.5	-
Cardiologists	2	-	2
Endocrinologists	0.5	0.5	1
Nurse Practitioners and Physician Assistants			
Emergency Department	-	-0.5	-0.5
Nursing			
Staff Registered Nurses	35	0.5	35.5
RN Care Coordinators and Managers	-	15	15
Hospital Inpatient	27.5	-9	18.5
Emergency	1.5	-11	-9.5
Office / Clinic	6	5.5	11.5
Licensed Practical Nurses (Hospital Inpatient)	3.5	-0.5	3
Nurse Aides/Assistants (Hospital Inpatient)	6.5	-2.5	4
Clinical Support			
Medical Assistants	19.5	17	36.5
Administrative Support Staff	18.5	19.5	38
Behavioral Health			
Psychiatrist / Psychiatric Nurse	1.5	1	2.5
Psychologists	4.5	-	4.5
Licensed Clinical Social Workers	-	9.5	9.5
Care Managers/Coordinators/Navigators/Coaches			
RN Coordinator Leaders	-	15	15
Care Coordinators (Non-RN)	-	151	151
Diabetes Educators	-	4.5	4.5
Asthma Educators	-	1.5	1.5
<b>Total Net FTEs</b>	<b>103</b>	<b>208</b>	<b>311</b>

## VI. Conclusions and Implications of Target Workforce State Findings

The approach used to model the NYU Lutheran PPS's target workforce state to project workforce impacts following the implementation of the PPS's selected DSRIP projects is a complex analytics exercise involving project implementation input from key PPS stakeholders, the review of data, literature, and published studies, and evaluation of the PPS's actively engaged targets. However, in projecting workforce impacts over the five year program, there are various factors that may impact the successful implementation of the DSRIP projects, including limited time to realize project impacts given realistic project implementation phase-in assumptions, uncertainty in existing and future capacity, budget constraints, and availability of data to evaluate results.

The findings presented throughout this report have been calculated as conservative projections based on outcomes and findings from literature that may not entirely represent the NYU Lutheran PPS's Medicaid population demographics, along with the understanding that project assumptions may change and are contingent upon project implementation proceeding as planned. Therefore, the findings of this report must be examined keeping in mind these influencing factors as well as the uncertainty in the evolving needs and the PPS's population.

Based on the analysis described, workforce impacts independent of the DSRIP program are estimated to occur by an increased demand in Physicians in Brooklyn by approximately 4% from 2015 to 2020 (or by approximately 304 FTEs). Further, based on the PPS's market share in Brooklyn, this estimated growth in demand for Physician FTEs is projected to be approximately 30 FTEs, of which 9 FTEs are estimated to be PCPs. Additionally, due to anticipated population growth and an aging population, a projected increase in demand for mid-level PCPs is approximately 2 FTEs, for a net increase of 11 PCP FTEs. Based on the described projections, any DSRIP-related impacts in terms of demand should be understood in the context of broader health care utilization trends affecting the demand for health care services and providers.

The projected increase in the demand for Care Managers, Licensed Health Educators, and Care Coordinators / Navigators reflects the enhanced roles of these professions under the DSRIP program. As a result, there may potentially be opportunities to redeploy staff from inpatient settings where service demand is projected to decline to assume these new roles.

Assuming full DSRIP project implementation the projected decline in demand for hospital-based RNs is about 9 inpatient-based RNs and 11 ED-based RNs. However, to address the needs of a growing and aging population an estimated 29 hospital-based RNs will be needed (more than offsetting the decline in demand for inpatient-based RNs). The planned Mount Sinai Beth Israel closure will likely increase demand for nurses and other hospital-based staff at NYULMC as patients are redirected to NYULMC for ED and inpatient services.

In conclusion, based on the best available modeling inputs and assumptions, these modeling results suggest that implementing DSRIP projects as planned may have minimal impact overall on the NYU Lutheran PPS network and healthcare delivery workforce, especially when

combined with the projected impacts of demographic shifts and expanded health insurance coverage, as well as existing capacity shortfalls.

The information detailed within this report will be used to inform the PPS's workforce planning through the development of a workforce transition roadmap to achieve the NYU Lutheran PPS's desired future state.

## Appendix

### A. Healthcare Demand Microsimulation Model

This appendix provides technical documentation of the Health Care Demand Microsimulation Model (“HDMM”) developed by IHS Inc. with contributions to the model development from the Center for Health Workforce Studies (“CHWS”) at SUNY-Albany and the various organizations for which studies have been conducted using this model. This model was used for several parts of the DSRIP analysis including estimation of the growing demand for health workers by occupation and medical specialty in the PPS service area independent of DSRIP (e.g., in response to population growth and aging population across payer types) to help inform a gap analysis and forthcoming workforce transition roadmap. The model also provided information on average length of stay, average patient use of health care services by setting, and measures of provider productivity (e.g., provider-to-service use ratios) when data from the PPS providers was unavailable. This DSRIP analysis relied on a combination of the HDMM, information from the PPS regarding the number and characteristics of the Medicaid lives attributed to the PPS, and the health care use patterns of this population, published findings in the literature, and data from external sources such as SPARCS.

This section provides background information and an overview of the workforce model and documents the data, methods, assumptions, and inputs for the three main components of the demand model: the population file, the health care use equations, and the provider staffing parameters. The final section describes work to validate the model and model strengths and limitations. Additional documentation of the model is available online.<sup>39</sup>

This model is the primary source of workforce projections for the federal Bureau of Health Workforce for physicians, nurses, behavioral health providers, allied health providers, and other health occupations.<sup>40</sup> The model has also been adapted to make supply projections for many states (including ongoing work with the New York Department of Health in collaboration with CHWS), health plans and hospital systems, and professional associations.<sup>41</sup>

#### Overview

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<sup>39</sup> The most detailed information on the model is available at <https://cdn.ihs.com/www/pdf/IHS-HDMM-DocumentationApr2016.pdf>.

<sup>40</sup> <http://bhpr.hrsa.gov/healthworkforce/supplydemand/simulationmodeldocumentation.pdf>

<sup>41</sup> An example of a recent application of the model is physician workforce projections for the Association of American Medical Colleges. [https://www.aamc.org/download/458082/data/2016\\_complexities\\_of\\_supply\\_and\\_demand\\_projections.pdf](https://www.aamc.org/download/458082/data/2016_complexities_of_supply_and_demand_projections.pdf)

The HDMM, as its name implies, models demand for health care services and providers. Demand is defined as the level and mix of health care services (and providers) that are likely to be used based on population characteristics and economic considerations, such as price of services and people’s ability and willingness to pay for services. The HDMM was designed to also run a limited set of scenarios around “need” for services. Need is defined as the health care services (and providers) required to provide a specified level of care given the prevalence of disease and other health risk factors. Need is defined in the absence of economic considerations or cultural considerations that might prevent someone from using available services.

The HDMM has three major components: (1) a population database with information for each person in a representative sample of the population being modeled, (2) health care use patterns that reflect the relationship between patient characteristics and health care use, and (3) staffing patterns that convert estimates of health care demand to estimates of provider demand. Demand for services is modeled by employment setting. Demand is also modeled by (a) diagnosis category for hospital inpatient care and emergency department visits and (b) health care occupation or medical specialty for office and outpatient visits. The services demand projections are workload measures, and demand for each health profession is tied to one or more of these workload measures. For example, current and future demand for primary care providers is tied to demand for primary care visits, demand for dentists is tied to projected demand for dental visits, etc. external factors such as trends or changes in care delivery—can influence all three major components of HDMM.

### Population Input Files

The population files contain person-level data for a representative sample of the population of interest. As adapted for modeling DSRIP, we created a population file for each New York borough where for each person we identify their insurance type, demographics, and health risk factors. Creation of the population files starts with merging the following publicly available data:

- **Population files** for each county in New York and population projections through 2020 as obtained from the Cornell Program on Applied Demographics in Ithaca, NY.<sup>42</sup>
- **American Community Survey (“ACS”).**<sup>43</sup> Each year the Census Bureau collects information on approximately three million individuals grouped into approximately one million households. For each person, information collected includes: demographics, household income, medical insurance status, geographic location (e.g., state and sub-state [for multi-year files]), and type of residency

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<sup>42</sup> <https://pad.human.cornell.edu/counties/projections.cfm>

<sup>43</sup> <https://www.census.gov/programs-surveys/acs/>

(e.g., community-based residence or nursing home). Each year HDMM is updated with the latest available file, and HDMM was updated with the 2014 ACS (n=3,132,610 observations) in November 2015. We used ACS data for the population in New York State.

- **Behavioral Risk Factor Surveillance System (“BRFSS”).**<sup>44</sup> The Centers for Disease Control and Prevention (“CDC”) annually collects data on a sample of over 500,000 individuals. This survey is conducted in concert with each state’s Department of Health. Similar to the ACS, the BRFSS includes demographics, household income, and medical insurance status for a stratified random sample of households in each state. The BRFSS, however, also collects detailed information on presence of chronic conditions (e.g., diabetes, hypertension) and other health risk factors (e.g., overweight/obese, smoking). One limitation of BRFSS is that as a telephone-based survey it excludes people in institutionalized settings (e.g., nursing homes) who do not have their own telephone. We combined the two latest BRFSS files (2013 and 2014) to create a joint file with close to one million individuals. HDMM was updated with the BRFSS files in November 2015. We used BRFSS data for the population in New York State.
- **National Nursing Home Survey (“NNHS”).** The CDC collected data on a national sample of 16,505 nursing home residents in 2004 (the latest year for which individual data were collected). In addition to demographics, the NNHS collects information on chronic conditions and health risk factors of this population. Use of data on nursing home residents is important because this institutionalized population has much poorer health and different health care use patterns compared to their peers living in the community. The statistical match process that combines NNHS with the institutionalized population in ACS, as well as model calibration using current estimates of the size of the nursing home population helps ensure demographic representativeness of the current nursing home population.
- **EpiQuery: NYC Interactive Health Data.** EpiQuery is a web-based tool that provides access to health data collected by New York’s Department of Health and other organizations. One of these sources is the New York City Community Health Survey—a telephone survey conducted annually by the DOHMH, Division of Epidemiology, Bureau of Epidemiology Services. This source provides data on the health and health risk factors of New Yorkers by borough. This information was used to calibrate the disease prevalence and health risk factor prevalence rates used in the HDMM.

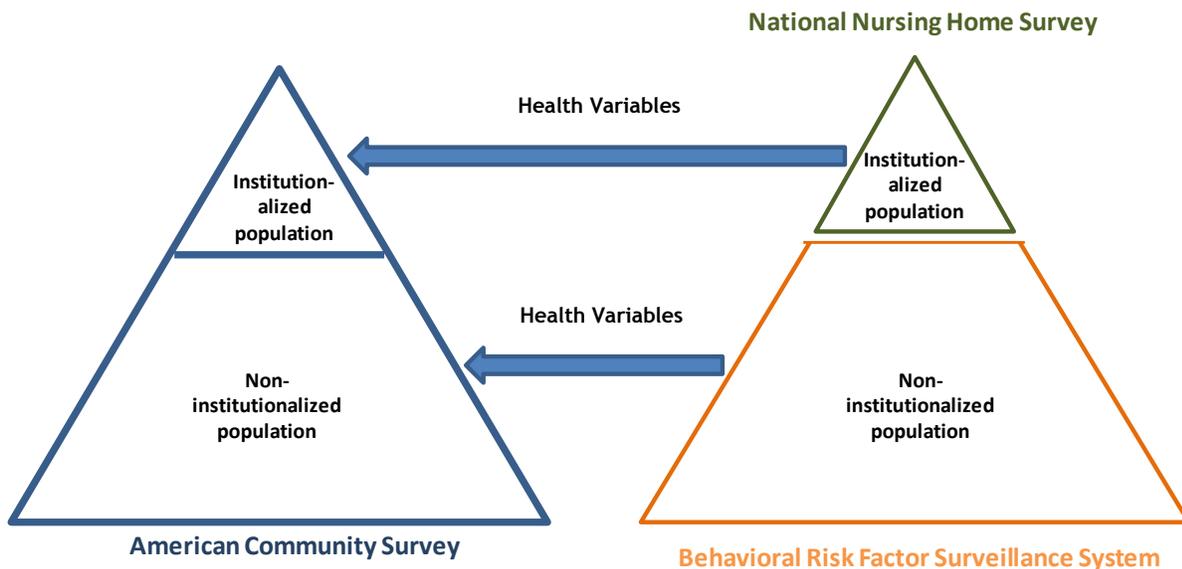
The HWSM population database merges information from these sources using a statistical matching process that combines patient health information from the BRFSS and NNHS with the larger ACS file that has a representative population in New York. Using information on residence type, we stratified the ACS population into those residing in

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<sup>44</sup> <http://www.cdc.gov/brfss/>

nursing facilities to be matched to people in the NNHS, and those not residing in nursing facilities to be matched to people in BRFSS (*Exhibit A-1*). For the non-institutionalized population, we statistically matched each individual in the ACS with someone in the BRFSS from New York from the same gender, age group (15 groups), race/ethnicity, insured/uninsured status, and household income level (8 levels). Individuals categorized as residing in a nursing home were randomly matched to a person in the NNHS in the same gender, age group, and race-ethnicity strata. Under this approach, some BRFSS or NNHS individuals might be matched multiple times to similar people in the ACS, while some BRFSS or NNHS individuals might not be matched. The metropolitan and non-metropolitan subsamples from this New York database were then combined with population data for each county based on demographics. Statistics for each county were generated for prevalence of chronic disease and behavioral risk factors, and compared to New York data (from EpiQuery) for model calibration.

**Exhibit A-1: Population Database Mapping Algorithm**



*Exhibit A-2* summarizes the population characteristics in the final population database created for each county. This detailed information for each person captures systematic geographic variation in demographics, socioeconomic characteristics, and health risk factors (e.g., obesity, smoking, diabetes and cardiovascular disease prevalence).

**Exhibit A-2: Summary of Population Characteristics**

<b>Race-Ethnicity:</b> Hispanic, Non-Hispanic black, Non-Hispanic white, Non-Hispanic other race
Gender
<b>Age Group:</b> 0-2, 3-5, 6-12, 13-17, 18-34, 35-44, 45-64, 65-74, 75+ years
Current smoker
Diagnosed with or history of:
Arthritis
Asthma
Coronary heart disease
Diabetes
History of cancer
History of heart attack
History of stroke
Hypertension
Insured (from any source)
Medicaid (insured through Medicaid)
Managed care (insurance plan type)
<b>Family Income:</b> <\$10,000, \$10,000 to <\$15,000, \$15,000 to < \$20,000, \$20,000 to < \$25,000, \$25,000 to < \$35,000, \$35,000 to < \$50,000, \$50,000 to < \$75,000, \$75,000 or higher
<b>Body Weight:</b> Normal, Overweight, Obese
Metro area

**Health Care Use**

Projected future use of health care services, based on population characteristics and patterns of health-seeking behavior, produce workload measures used to project future demand for health care providers. HDMM uses prediction equations for health care use based on recent patterns of care use, but also can model scenarios where health care use patterns change in response to emerging care delivery models or other factors.

**Demand Determinants and Prediction Equations**

Health seeking behavior is generated from econometrically estimated equations using data from approximately 170,000 participants in the pooled 2009-2013 files of the Medical Expenditure Panel Survey (“MEPS”). The study pooled multiple years of data to provide a sufficient sample size for regression analysis for smaller health professions and diagnosis categories. Over time, as a new year of data becomes available and is added to the analytic file the oldest year in the analysis file is dropped. We used the 2013 Nationwide Inpatient Sample (“NIS”), with approximately 8 million discharge records, to

model the relationship between patient characteristics and length of hospitalization by primary diagnosis category.

Poisson regression was used to model annual office visits, annual outpatient visits, annual home health/hospice visits and inpatient days per hospitalization. These regressions were estimated separately for children versus adults. Separate regressions were estimated by physician specialty or non-physician occupations e.g. dentists, physical therapists, psychologists for office-based care. Likewise, separate regressions were estimated for occupations providing home health care. The dependent variable was annual visits (for office, outpatient, and home health) and inpatient days per hospitalization (for hospitalizations). The explanatory variables were the patient characteristics available in both MEPS or NIS for hospital length of stay and the constructed population file.

Exhibit A-3 is provided as an example of the regression specifications, with this example showing how patient characteristics are correlated with use of cardiology-related health care services by care delivery setting. The numbers in this table reflect rate ratios (for office and outpatient visits, or inpatient days) or odds ratios (for ED visits and hospitalizations). For all types of cardiology-related care there is a strong correlation with patient age (controlling for other patient characteristics modeled) and being in Medicaid. Having any medical insurance is associated with much greater use of ambulatory care, and if the insurance is Medicaid then there is even greater use of cardiology services across all care delivery settings. For example, compared to their commercially insured counterparts with similar demographics and health risk factors, patients with Medicaid average 35% more office visits to a cardiologist annually, 42% more cardiology-related outpatient visits, have 64% higher odds of a cardiology-related emergency visit, and have 71% higher odds of a cardiology-related hospitalization. These estimates for the Medicaid population are statistically different from 1 (where a ratio of 1 would indicate no statistical difference with the comparison category).

Obesity increases use of cardiology-related services. Smoking is associated with fewer office and outpatient visits to a cardiologist but higher rates of ED visits (likely reflecting correlation rather than causality in the case of ambulatory care, as smoking is a risk factor for heart disease but could be correlated with aversion to visit a doctor). Lower income is associated with less use of ambulatory care and more use of ED visits and hospitalization. The presence of chronic medical conditions—and especially heart disease, hypertension, and history of heart attack—are associated with much greater use of cardiology services across care delivery settings. When modeling the Medicaid population in each county the HDMM takes into consideration that the Medicaid population often has much greater prevalence of a host of chronic conditions and risk factors relative to their non-Medicaid peer group.

**Exhibit A-3: Sample Regressions: Adult Use of Cardiology Services**

	Parameter	Office Visits	Outpatient Visits	Emergency Visits	Hospitalization
Race-Ethnicity	Hispanic	0.81**	0.73**	1.03	0.87**
	Non-Hispanic Black	0.78**	0.98	1.45**	1.41**
	Non-Hispanic White	1.0	1.0	1.0	1.0
	Non-Hispanic Other race	0.92**	0.82**	1.09	1.06
	Male	1.11**	1.48**	0.97*	1.07
Age	18-34 years	0.12**	0.13**	0.63**	0.37**
	35-44 years	0.23**	0.52**	0.98	0.80**
	45-64 years	0.52**	0.74**	1.10	1.14*
	65-74 years	0.87**	0.95*	1.12	1.57**
	75+ years	1.0	1.0	1.0	1.0
	Smoker	0.74**	0.75**	1.11	1.06
Diagnosed with	Hypertension	1.56**	1.15**	3.85**	2.71**
	Coronary heart disease	8.54**	9.60**	2.93**	3.96**
	History of heart attack	1.69**	1.63**	2.41**	2.59**
	History of stroke	1.11**	1.18**	3.11**	2.97**
	Diabetes	1.11**	1.37**	1.01	1.16**
	Arthritis	1.09**	1.23**	1.02	0.99
	Asthma	1.08**	1.10**	0.95	18
	History of cancer	1.08**	0.98	0.99	0.93
	Insured	2.48**	1.88**	0.89	1.02
	Medicaid	1.35**	1.42**	1.64**	1.71**
	Managed Care	0.97**	1.06**	1.01	0.99
Household Income	<\$10,000	0.84**	15	1.20**	1.16**
	\$10,000 to <\$15,000	0.89**	0.72**	1.10	1.11
	\$15,000 to <\$20,000	0.90**	1.06	0.86	1.02
	\$20,000 to <\$25,000	0.84**	0.72**	1.15	1.09
	\$25,000 to <\$35,000	0.89**	1.08**	1.18**	1.05
	\$35,000 to <\$50,000	0.89**	0.96**	0.92	0.94
	\$50,000 to <\$75,000	0.93**	1.24**	0.89	0.82**
	\$75,000 or higher	1.0	1.0	1.0	1.0
Body Weight	Normal	1.0	1.0	1.0	1.0
	Overweight	1.06**	1.02	1.16**	1.22**
	Obese	1.11**	1.08**	1.13**	1.26**
	Metro Area	1.31**	1.02	1.04	0.89

Note: Estimates for office and outpatient visits reflect rate ratios from Poisson regression. Emergency and hospitalization reflect odds ratios from logistic regression. \*\* indicates statistically different from 1 at the 01 level, and \* indicates statistically significant at the 05 level.

Logistic regression was used to model annual probability of hospitalization and annual probability of an emergency department visit for approximately two dozen categories of care defined by primary diagnosis code. The dependent variable for each regression is whether the patient had a hospitalization (or ED visit) during the year for each of the condition categories.

### **Estimating Health Care Use by Care Setting**

As noted above, the HDMM generates health seeking behavior from econometrically estimated equations in the pooled 2008-2013 files of the Medical Expenditure Panel Survey. Forecasting equations for healthcare use are then applied to produce estimates of numbers of patient visits and hospitalizations by specialty, occupation and diagnosis by care setting. For example, when modeling demand for psychiatrists the HDMM projects current and future office and outpatient visits to a psychiatrist and emergency visits and hospitalizations for patients with ICD-9 primary diagnosis codes in the 290-319; and 94.1-.59 range under Major Diagnostic Category 19: Mental Diseases and Disorders.

These health care service demand projections, when combined with provider staffing and productivity estimates, provide the basis for estimating current and projecting future demand for FTE behavioral health and other health occupations modeled. To illustrate, below are presented information on methods, workload drivers and data sources for modeling hospital inpatient service demand.

### **Hospital Inpatient Service Demand**

The 2008-2013 MEPS and the 2012 Nationwide Inpatient Sample (“NIS”) are used to model demand for hospital inpatient services in short-term general acute care hospitals as well as specialty hospitals. Logistic regression quantifies the probability of a person with given characteristics experiencing hospitalization during the year for a wide range of medical conditions, including mental health and substance abuse conditions based on ICD-9 primary diagnosis code groupings (*Exhibit A-4*).

To model inpatient length of stay the 2012 NIS discharge records were analyzed. Because of the large sample size (over 8 million hospital stays) estimates derived from the NIS are stable. Estimated Poisson regressions generated the expected number of days spent in the hospital conditional on a hospitalization. Explanatory variables consisted of patient age group, sex, race/ethnicity, insurance type, presence of chronic diseases and risk factors among the diagnosis codes, and residence in a metropolitan area. Separate regressions were estimated for each of the mental health and substance abuse condition categories. Combining information on condition specific hospitalization risk and length of stay per hospitalization, HDMM computed each person’s expected number of inpatient days during the year for different types of medical conditions.

**Exhibit A-4: Hospital Inpatient Demand Drivers by Condition Code and Profession**

Medical condition codes (ICD-9 CM)		Specialty/NPC Profession
Allergy & immunology	001-139, 477, 995.3	Allergy & immunology
Diseases of the circulatory system	390-459; 745-747; 785	Cardiology
Diseases of the circulatory system	426, 427, 780, 785; 3726 <= pr02 <=3734	Clinical Cardiac Electrophysiology
Diseases of the circulatory system	pr02 IN (0060, 3600, 3950)	Interventional Cardiology
Colon & rectal surgery	17.31-17.36, 17.39, 453, 45.26, 45.41, 45.49, 45.52, 45.71-45.76, 45.79, 45.81-45.83, 45.92-45.95, 463, 464, 46.10, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.76, 46.94, 153-154	Colon & rectal surgery
Diseases of the skin and subcutaneous tissue	680-709; 757; 782	Dermatology
Endocrine, nutritional and metabolic diseases, and immunity disorders	240-279; 783	Endocrinology
Diseases of the digestive system	520-538; 555-579; 751; 787; 42-54	Gastroenterology
General surgery	860-869; 870-904; 925-939; 958-959; 996-999	General surgery
Neoplasms, diseases of the blood and blood-forming organs	140-239, 280-289; 790	Hematology & oncology
Neoplasms, diseases of the blood and blood-forming organs	195.2, 188.9, 174.9, 156, 164.1, 209.24, 155, 162.9, 183; 92.2 ( <a href="http://www.donself.com/documents/ICD-10-for-Radiation-Oncology.pdf">http://www.donself.com/documents/ICD-10-for-Radiation-Oncology.pdf</a> )	Radiation Oncology
Infectious and parasitic diseases	001-139, 477, 40.11, 40.3, 40.9	Infectious diseases
Nephrology	580-589; 55.2-55.8	Nephrology
Conditions originating in perinatal period	760-779	Neonatal-perinatal medicine
Neurological surgery	850-854; 950-957; 01-05; 89.13	Neurological surgery
Diseases of the nervous system and sense organs	320-359; 742; 781; 784; 800-804	Neurology
Complications of pregnancy, childbirth, and the puerperium	614-679, V22,V23,V24, 72-75	Obstetrics & gynecology
Ophthalmology	360-379; 8-16; 95-95.4	Ophthalmology
Diseases of the musculoskeletal system and connective tissue; injury and poisoning	710-719; 720-724; 730-739; 805-848; 754-756; 76-84	Orthopedic surgery
Otolaryngology	380-389; 744; 18-29	Otolaryngology
Plastic surgery	904-949; 749; 18.7, 21.8, 25.59, 26.49, 27.5, 27.69, 29.4, 31.7, 33.4, 46.4, 64.4, 78.4, 81-81.99, 82.7, 82.8, 83.8, 85.8, 86.84	Plastic surgery
Mental disorders	290-319; 94.1-.59	Psychiatry

Medical condition codes (ICD-9 CM)		Specialty/NPC Profession
Diseases of the respiratory system	460-519; 748; 786; 35-39	Pulmonology
Diseases of the musculoskeletal system and connective tissue	725-729	Rheumatology
Thoracic surgery	426, 427, 780, 785); 32.6, 34.9, 40.6, 90.4, 35-37	Thoracic surgery
Diseases of the genitourinary system	590-608; 753; 788; 789; 791; 55-64	Urology
Vascular surgery	440-448; 0.4-00.5, 17.5, 35-39	Vascular surgery
Physical Medicine/Rehabilitation	0.4-00.5, 17.5, 35-39; 93	Physical Medicine/Rehabilitation

### Health Care Use Calibration

MEPS is a representative sample of the non-institutionalized population, and although the health care use prediction equations are applied to a representative sample of the entire U.S. population parts of the model require calibration to ensure that the predicted health care use equals actual use. Applying the prediction equations to the population for 2011 through 2013 creates predicted values of health care use in those years (e.g., total hospitalizations, inpatient days, and ED visits by specialty category, and total office visits by physician specialty). For model calibration, we compared predicted national totals to estimates of national total hospitalizations and inpatient days, by diagnosis category, derived from the 2013 NIS. National ED visits and office visits came from the 2011 NHAMCS and 2012 NAMCS, respectively. Multiplicative scalars were created by dividing national estimates by predicted estimates. For example, if the model under-predicted ED visits for a particular diagnosis category by 10% then a scalar of 1.1 was added to the prediction equation for that diagnosis category. Applying this approach to diagnosis/specialty categories, the model's predicted health care use was consistent with national totals for most settings. Setting/category combinations where the model predicted less accurately (and therefore required larger scalars) tended to cluster around diagnosis categories in the ED characterized by lower frequency of visits likely due to a combination of small sample size in both MEPS and NHANES.

For DSRIP modeling, the health care use patterns were further calibrated to the populations in each New York county modeled (using SPARCS data or data from the PPS where available) to reflect that patients in New York can have care use patterns that differ from national peer group.

### Health Workforce Staffing Patterns

This section discusses the assumptions and methods used to convert demand for services into demand for health care workers. Demand for health care workers is derived from the demand for health care services. Services provided (e.g., visits, hospitalizations, procedures, or prescriptions written) or demand drivers for services for which there are no survey data (e.g., total population, population over age 75, and school aged children) in each setting were compared with the number of providers working in that setting. For professions that provide services across a wide array of setting (e.g., nurses and

therapists), information on the employment distribution of the care providers in the base year from the BLS was used to determine the number of individuals working in each setting.

Assuming that the base year demand for services in each setting was fully met by the available professionals in that setting, the base year staffing ratio was calculated by dividing the volume of service used by the number of health care professionals employed in each setting. For professions that provide services in a single setting, base year utilization was divided by the base year supply to derive the staffing ratio for that profession. The staffing ratio was then applied to the projected volume of services to obtain the projected demand for providers in every year after the base year.

The baseline scenarios in HDMM (used for modeling how care use in each New York county would change over time in the absence of DSRIP) assumed that care delivery patterns remained unchanged over time given the demand for health care services. However, the number and mix of health professionals required to provide the level of health care services demanded is influenced by how the care system is organized and care is reimbursed, provider scope of practice requirements, economic constraints, technology, and other factors. Emerging health care delivery models and advances in technology may alter future health care delivery, changing the relationship between patient characteristics and the probability of receiving care in a particular setting. The DSRIP modeling used information from the published literature and from the PPS's internal planning documents) to identify how care delivery and staffing will change with implementation of individual DSRIP projects.

## HDMM VALIDATION, STRENGTHS, AND LIMITATIONS

Model validation activities continue on an ongoing basis as a long term process evaluating the accuracy of the model and making refinements as needed. For each of four primary types of validation deployed, key short term and long term activities include the following:

- **Conceptual validation:** Through reports, presentations at professional conferences, and submission of peer-reviewed manuscripts, the model described here continues to undergo a peer-review evaluation of its theoretical framework. Contributors to these models include health economists, statisticians, and others with substantial modeling experience; physicians, nurses, behavioral health providers, and other clinicians; health policy experts; and professionals in management positions with health systems. Conceptual validation requires transparency of the data and methods to allow health workforce researchers and modelers to critique the model. This report is an attempt to increase the transparency of these complex workforce projection models where work is ongoing to improve the theoretical underpinnings, methods, assumptions, and other model inputs.
- **Internal validation:** The model runs using SAS software. As new capabilities are added to the model and data sources updated, substantial effort is made to

ensure the integrity of the programming code. Internal validation activities include generating results for comparison to published statistics used to generate the model (e.g., ensuring that population statistics for the input files are consistent with published statistics).

- **External validation:** Presenting findings to subject matter experts for their critique is one approach to externally validate the model. Intermediate outputs from the model also can be validated. For example, the HDMM has been used to project demand for health care services for comparison to external sources not used to generate model inputs. Results of such comparisons across geographic areas indicate that more geographic variation in use of health care services occurs than is reflected geographic variation in demographics, presence of chronic disease, and health risk factors such as obesity and smoking.
- **Data validation:** Extensive analyses and quality review have been conducted to ensure data accuracy as model data inputs were prepared. Most of the model inputs come from publically available sources (e.g., MEPS, BRFSS, and ACS).

### HDMM Strengths and Limitations

The main strengths of the HDMM includes use of recent data sources and a sophisticated microsimulation approach that has substantial flexibility for modeling changes in care use and delivery by individuals or by the health care system. Compared to population-based modeling approaches used historically, this microsimulation model takes into account more detailed information on population characteristics and health risk factors when making national and state-level demand projections. For example, rates of disease prevalence and health related risk factors and household income can vary significantly by geographic area. Such additional population data can provide more precise estimates of service demand at State and county levels compared to models that assume all people within a demographic group use the same level of services.

HDMM simulates care use patterns by delivery setting. Certain populations have disproportionately high use of specific care delivery settings (e.g. emergency care) and lower use of other settings. Setting-specific information on patient characteristics and use rates provides insights for informing policies that influence the way care is delivered. Because the microsimulation approach uses individuals as the unit of analysis, the HDMM can simulate demand for health care services and providers to care for populations in low income categories, populations in select underserved areas, or populations with certain chronic conditions. Using individuals as the unit of analysis creates flexibility for incorporating evidence-based research on the implications of changes in technology and care delivery models that disproportionately affect subsets of the population with certain chronic conditions or health-related behaviors and risk factors. This information also leads to more accurate projections at state and local levels. The microsimulation approach also provides added flexibility for modeling the

workforce implications of changes in policy and emerging care delivery models under ACA, important areas of ongoing research.

Limitations of the workforce model largely stem from current data limitations. For example, one limitation of the BRFSS as a data source for modeling demand is that as a telephone-based survey it tends to exclude people in institutionalized settings who typically do not own telephones. Hence, when creating the population files that underlie the demand projections BRFSS data is combined with National Nursing Home Data. Other current data limitations associated with these models include:

- Information on the influence of provider and payer networks on consumer service demand and migration patterns.
- Information on how care delivery patterns might change over time in response to emerging market factors.

## B. DOH Job Categories by Job Title, Definition and Educational/Training Requirements

DSRIP WORKFORCE CATEGORIES			
Job Titles	Definitions	Educational/Training Requirements	Additional Information
<b>Physicians</b>			
<b>Primary Care</b>	Physicians who diagnose, treat, and help prevent diseases and injuries that commonly occur in the general population. May refer patients to specialists when needed for further diagnosis or treatment.	4 years of undergraduate school, 4 years of medical school, and, depending on specialty, 3-to-8 years in internship and residency programs. State physicians licensure is required; board specialty is optional.	Primary care is considered family practice, general practice, and general internal medicine. Physicians include M.D.s and D.O.s. May be certified by the American Board of Family Medicine, American Board of General Practice, or American Board of Internal Medicine.
<b>Primary Care (HIV)</b>	To be considered a primary care (HIV) physician, at least half of the visits to said physician must come from HIV-positive patients.		May be certified by the American Board of Internal Medicine with a subspecialty in Infectious Disease.
<b>Cardiologists</b>	Physicians who specialize in diagnosing and treating diseases/conditions of the heart and blood vessels.		Cardiologists include Physicians specializing in: Pediatric Cardiology, Cardiovascular Disease, Interventional Cardiology, and Clinical Cardiac Electrophysiology. May be certified by the American Board of Internal Medicine with a subspecialty in Cardiovascular Disease Management.
<b>Emergency Medicine</b>	Physicians who specialize in the prevention, diagnosis, and management of acute and urgent aspects of illness and injury.		May be certified by American Board of Emergency Medicine.
<b>Endocrinologists</b>	Physicians who specialize in diagnosing diseases that affect glands of the endocrine system, and treating frequently complex conditions involving several systems within the human body.		May be certified by American Board of Internal Medicine, with a subspecialty certificate in Endocrinology, Diabetes, and Metabolism.
<b>Obstetricians/Gynecologists</b>	Physicians who specialize in providing care related to pregnancy, childbirth, and the female reproductive system. This includes preventive care, prenatal care, detection of sexually transmitted diseases, pap screening, family planning, and diagnosis and treatment of the female reproductive system.		Can serve as a primary care physician and/or serve as consultants to other physicians. May specialize in behavioral problems, infertility, urinary tract infections, operative gynecology, etc. May be certified by the American Board of Obstetrics and Gynecology.
<b>Pediatrician (General)</b>	Physicians who diagnose, treat, and help prevent children's and adolescent's diseases and injuries.		May be certified by American Board of Pediatrics.
<b>Other Specialties (Except Psychiatrists)</b>	Treat injuries or illnesses. Physicians examine patients; take medical histories; prescribe medications; and order, perform, and interpret diagnostic tests. They counsel patients on diet, hygiene, and preventive healthcare. Surgeons operate on patients to treat injuries, such as broken bones; diseases, such as cancerous tumors; and deformities, such as cleft palates.		
<b>Residents</b>	A resident physician is a medical school graduate participating in a GME program and training in a specialized area of medicine. Acts as both a student and a health care provider, working in concert with other members of the health care team to provide direct medical care to patients.	All Residents must have a final medical diploma (MD, DO, MBBS, etc.).	
<b>Fellows</b>	A recent residency graduate participating in a fellowship to specialize in one particular field.	Physician residency graduate undergoing continued specialty training, usually ranging from 1-to-3 years.	
<b>Physician Assistants</b>			
<b>Primary Care</b>	Provide healthcare services typically performed by a physician, under the supervision of a physician. Conduct complete physicals, provide treatment, and counsel patients. May prescribe medication.	Must complete an accredited educational program. These programs usually lead to a master's degree. All states require physician assistants to be licensed. Must graduate from an accredited educational program for physician assistants.	In many cases, the specialty of the PA is defined by the setting s/he practices in or the specialty of the supervising physician.
<b>Other Specialties</b>			

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<b>Nurse Practitioners</b>			
<b>Primary Care</b>	Diagnose/treat acute, episodic, or chronic illness, independently or as part of a healthcare team. May focus on health promotion and disease prevention. May order, perform, or interpret diagnostic tests such as lab work and x-rays. May prescribe medication.	At least a master's degree in one of the APRN roles. Must also be licensed in their state and pass a national certification exam. NPs must be a licensed RN and certified in at least 1 of 15 specialties in NYS.	In many cases, the specialty of the NP is defined by the setting s/he practices in or the specialty of the collaborating physician.
<b>Other Specialties (Except Psychiatric NPs)</b>			
<b>Midwifery</b>			
<b>Midwives</b>	Diagnose/coordinate all aspects of the birthing process, either independently or as part of a healthcare team. May provide well-woman gynecological care.	Master's degree in one of the APRN roles. Must also be licensed in their state and pass a national certification exam. Must have specialized, graduate nursing education.	
<b>Nursing</b>			
<b>Nurse Managers/Supervisors</b>	Manages the functions of the nursing floor. Responsible for the nurse activity on the floor and they oversee unit policies. They may or may not perform direct patient care.  Administers an assigned nursing program or organizational unit with responsibility for planning, selecting and/or devising the methods and policies/procedures to be used and for directing nursing supervisors and/or other personnel in the accomplishment of designated goals. Negotiates interdepartmental resources, and communicates and plans with managers of staff in other departments to ensure effective level of service to the unit/program.	One of three education paths: a bachelor's degree in nursing, an associate's degree in nursing, or a diploma from an approved nursing program. Registered nurses must also be licensed.	May have an additional degree in management, business, or another field.
<b>Staff Registered Nurses</b>	Registered nurses (RNs) provide and coordinate patient care, educate patients and the public about various health conditions, and provide advice and emotional support to patients and their family members.		
<b>Other Registered Nurses (Utilization Review, Staff Development, etc.)</b>	RN with responsibility outside of direct care that may involve reviewing charts or developing educational programs.		Additional experience or training may be required, such as in education.
<b>Licensed Practical Nurses</b>	Care for ill, injured, or convalescing patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.	Licensed practical and licensed vocational nurses must complete a state-approved educational program, which typically takes about 1 year to complete. They must also be licensed.	
<b>Clinical Support</b>			
<b>Medical Assistants</b>	Perform administrative and certain clinical duties under the direction of a physician. Administrative duties may include scheduling appointments, maintaining medical records, billing, and coding information for insurance purposes. Clinical duties may include taking and recording vital signs and medical histories, and preparing patients for examination as directed by physician.	Postsecondary education such as a certificate. Others enter the occupation with a high school diploma and learn through on-the-job training.	
<b>Nurse Aides/Assistants (CNAs)</b>	Provide basic patient care under direction of nursing staff. Perform duties such as feed, bathe, dress, groom, or move patients, or change linens. May transfer or transport patients. Includes nursing care attendants, nursing aides, and nursing attendants.	In New York State, nurse aides do not need certification to work in hospitals, though many hospitals prefer at least a high school diploma or additional certification in skills such as phlebotomy. In nursing homes, CNAs must complete a state-approved education program and must pass their state's competency exam to become certified.	
<b>Patient Care Techs (Associates)</b>	Provide basic patient care under direction of nursing staff. Perform duties such as feed, bathe, dress, groom, or move patients, or change linens. May transfer or transport patients. Includes nursing care attendants, nursing aides, and nursing attendants.	Many times PCTs/PCAs receive classroom and hands-on training through the hospital or facility that will employ them. Training and education requirements for PCTs/PCAs who work in hospitals or physician offices vary by institution. In some instances, employers may require a high school diploma or an associate degree and will provide on-the-job training. Others may require prior nursing aide experience as an LPN or CNA certificate.	

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<b>Oral Health</b>			
<b>Dentists</b>	Provide basic diagnoses and treatment of the teeth, gums, and mouth-related issues. Clinical duties include providing advice and instruction to patients on proper care of the teeth and gums.	Licensed practice, required through the state.	
<b>Dental Hygienists</b>	A licensed dental professional working under the supervision of a dentist to meet the oral health needs of patients. Often provides patient care through clinical service and dental health counseling.	Dental hygienists need to be licensed in NYS, which includes either an associate or bachelor's degree.	
<b>Dental Assistants</b>	A <u>licensed certified</u> dental professional working under the supervision of a dentist to meet the oral health needs of patients. Duties often include taking impressions, selecting and prefitting orthodontic pieces, and removing stitches.  <u>Unlicensed</u> dental assistants act as an extra pair of hands for the dentist, providing supportive services with a dentist who is personally performing the service or procedure.	To become a licensed certified dental assistant, must possess a high school diploma (or equivalent), complete a program in dental assisting registered by the NYS Education Dept., and pass the CDA licensing exam.	In NYS, dental assistant licensure is preferred but not required.
<b>Behavioral Health (Except Social Workers providing Case/Care Management, etc.)</b>			
<b>Psychiatrists</b>	Physicians who diagnose, treat, and help prevent disorders of the mind.	4 years of undergraduate school, 4 years of medical school, and, depending on their specialty, 3 to 8 years in internship and residency programs.	
<b>Psychologists</b>	Diagnose and treat mental disorders; learning disabilities; and cognitive, behavioral, and emotional problems, using individual, child, family, and group therapies. May design and implement behavior modification programs.	Need a doctoral degree or specialist degree in psychology, a master's degree is sufficient for some positions. Practicing psychologists also need a license or certification.	
<b>Psychiatric Nurse Practitioners</b>	Diagnose/treat acute, episodic, or chronic illness, independently or as part of a healthcare team. May focus on health promotion and disease prevention. May order, perform, or interpret diagnostic tests such as lab work and x-rays. May prescribe medication.	At least a master's degree in one of the APRN roles. Must also be licensed in their state and pass a national certification exam. NPs must be a licensed RN and certified in at least 1 of 15 specialties in NYS. For this role, NPs usually have their certificate in behavioral health.	
<b>Licensed Masters Social Workers</b>	Assess and treat individuals with mental, emotional, or substance abuse problems, including abuse of alcohol, tobacco, and/or other drugs. Activities may include individual and group therapy, crisis intervention, case management, client advocacy, prevention, and education.	Clinical social workers must have a master's degree and two years of post-master experience in a supervised clinical setting. Clinical social workers must also be licensed in the state in which they practice.	
<b>Licensed Clinical Social Workers</b>			
<b>Substance Abuse and Behavioral Disorder Counselors</b>	Counsel and advise individuals with alcohol, tobacco, drug, or other problems, such as gambling and eating disorders. May counsel individuals, families, or groups or engage in prevention programs. Excludes social workers, psychologists, and mental health counselors providing these services.	High school diploma to a master's degree, depending on the setting, type of work, state regulations, and level of responsibility. Workers with a high school diploma typically go through a period of on-the-job training.	
<b>Other Mental Health/Substance Abuse Titles Requiring Certification</b>	Any mental health provided not defined above that required a license or certification such as a marriage and family therapist or certified behavior analyst.	Level of education will vary depending on the title and the state's licensure and certification requirements.	
<b>Social and Human Service Assistants</b>	Social and human service assistants provide client services, including support for families, in a wide variety of fields, such as psychology, rehabilitation, and social work. They assist other workers, such as social workers, and they help clients find benefits or community services.	Requirements for social and human service assistants vary, although they typically have at least a high school diploma and must complete a brief period of on-the-job training. Some employers prefer to hire workers who have additional education such as an associate degree or experience.	

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Psychiatric Aides/Techs	Assist mentally impaired or emotionally disturbed patients, working under direction of nursing and medical staff. May assist with daily living activities, lead patients in educational and recreational activities, or accompany patients to and from examinations and treatments. May restrain violent patients. Includes psychiatric orderlies.	Psychiatric technicians typically need postsecondary education, and aides need at least a high school diploma. Both technicians and aides get on-the-job training.	
Nursing Care Managers/ Coordinators/Navigators/Coaches			
RN Care Coordinators/Case Managers/Care Transitions	While there is no standard definition for care/case managers/coordinators, care coordinator/managers will coordinate the needs of assigned patients across multiple providers; develop comprehensive plans to manage care delivery across a continuum of care. Assist in utilization of resources, clinical care, and promote clear communication among care team including treating physicians by ensuring awareness regarding patient care plans. Facilitate patient health education and support patient self-management of disease and behavior modification interventions. Manage high-risk patient care including management of patients with multiple co-morbidities or those at high risk of hospital readmission. Facilitate patient treatment adherence based on protocol and providers' orders. Participate as part of team for health outcomes reporting, programmatic evaluation, data collection and clinical audits.		Some agencies/facilities may require an RN degree to fill this role.
LPN Care Coordinators/Case Managers			Some agencies/facilities may require an LPN to fill this role.
Social Worker Case Management/ Care Management			
Bachelors Social Workers	Interviews patients and relatives to obtain social history relevant to medical problems and planning. Assists patients with environmental difficulties that interfere with obtaining maximum benefits from medical care. Serves as liaison between medical and nursing staffs, patients, relatives and appropriate outside agencies. Interprets and assists in resolving social problems that relate to medical condition and/or hospitalization. Requires a Bachelor's degree in Social Work or equivalent.	Bachelor's degree in social work.	
Licensed Masters Social Workers	Supervises or performs a variety of services, such as advising on social problems, arranging for discharge or postoperative care at home or in institutions, placement of children in foster homes or adults in nursing homes, financial assistance to patients or families during illnesses and alleviation of anxieties or fears concerning permanent disabilities, disfiguring illnesses or uncertainty about the future.	Social workers are licensed in NYS as either Licensed Clinical Social Workers or Licensed Masters Social Workers. Clinical social workers must have a master's degree and three years of post-master's experience in a supervised clinical setting. Only Licensed Clinical Social Workers can bill for psychotherapy services. Licensed Masters Social Workers do not need post-master's experience to practice.	
Licensed Clinical Social Workers			
Social Worker Care Coordinators/Case Managers/Care Transition	While there is no standard definition for care/case managers/coordinators, care coordinator/managers will coordinate the needs of assigned patients across multiple providers; develop comprehensive plans to manage care delivery across a continuum of care. Assist in utilization of resources, clinical care, and promote clear communication among care team including treating physicians by ensuring awareness regarding patient care plans. Facilitate patient health education and support patient self-management of disease and behavior modification interventions. Manage high-risk patient care including management of patients with multiple co-morbidities or those at high risk of hospital readmission. Facilitate patient treatment adherence based on protocol and providers' orders. Participate as part of team for health outcomes reporting, programmatic evaluation, data collection and clinical audits.		Some agencies/facilities may require a social worker to fill this role.

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<p><b>Emerging Titles: Non-licensed Care Coordination / Case Management/Care Management / Patient Navigators / Community Health Workers (Except RNs, LPNs, and Social Workers)</b></p>			
<p><b>Care Manager/Coordinator</b></p>	<p>While there is no standard definition for care/case managers/coordinators, care coordinator/managers will coordinate the needs of assigned patients across multiple providers; develop comprehensive plans to manage care delivery across a continuum of care. Assist in utilization of resources, clinical care, and promote clear communication among care team including treating physicians by ensuring awareness regarding patient care plans. Facilitate patient health education and support patient self-management of disease and behavior modification interventions. Manage high-risk patient care including management of patients with multiple co-morbidities or those at high risk of hospital readmission. Facilitate patient treatment adherence based on protocol and providers' orders. Participate as part of team for health outcomes reporting, programmatic evaluation, data collection and clinical audits.</p>	<p>Unless the organization requires a specific degree such as social worker, RN, and LPN, current training and education requirements vary greatly, though typically a high school is required.</p>	
<p><b>Patient or Care Navigator</b></p>	<p>Coordinates the care needs of assigned patients and develops comprehensive plans to manage care delivery across the patient care continuum. Partners with patients and their primary physicians to develop customized care plans based on their individual needs and preferences. Collaborates with physicians, nurses, allied health professionals, social work, and others to ensure appropriate tests and treatments are delivered in a timely fashion. Advocates for the patient. Balances care needs and financial considerations to ensure efficient and effective treatments are achieved.</p>	<p>Unless the organization requires a specific degree such as social worker, RN, and LPN, current training and education requirements vary greatly, though typically a high school is required.</p>	
<p><b>Community Health Worker</b></p>	<p>Community health workers collect data and discuss health concerns with members of specific populations or communities.</p>	<p>Typically have at least a high school diploma and must complete a brief period of on-the-job training. Some states have certification programs for community health workers.</p>	
<p><b>Peer Support Worker</b></p>	<p>Typically, a peer support worker has had a significant life altering experience and works to assist individuals encountering similar hurdles. Also referred to as a Peer Worker, Recovery Support, Recovery Coach, Peer Mentor, or Peer Support Specialist. Job duties include recovery coaching, emotional support, advocacy, mentoring, outreach support, and organizing/attending alcohol-and-drug-free recreational activities.</p>	<p>No educational requirements, but a high school diploma or GED is preferred. Some facilities may require some training in counseling.</p>	
<p><b>Patient Education</b></p>			
<p><b>Certified Asthma Educators</b></p>	<p>A currently certified health care provider whose primary responsibility is the provision of asthma coordination and counseling services. An asthma educator is an expert in educating individuals with asthma and their families on the knowledge and skills necessary to minimize the impact of asthma on their quality of life.</p>	<p>Must be currently licensed or credentialed Physician (MD, DO), Physician Assistant (PA-C), Nurse (RN, LPN, NP), Respiratory Therapist (RRT, CRT), Pulmonology Function Technologists (CPFT, RPFT), Pharmacist (RPh), Social Worker (CSW), Health Educator (CHES), Physical Therapist (PT), or Occupational Therapist (OT) or must have provided a minimum of 1000 hours of direct patient asthma education, counseling, or coordinating services. Must also pass exam by the National Asthma Educator Certification Board, Inc.</p>	<p>Certification is voluntary and not required by law for employment in the field.</p>

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<b>Certified Diabetes Educators</b>	Provide and manage health education programs that help individuals, families, and their communities maximize and maintain healthy lifestyles. Collect and analyze data to identify community needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies, and environments. May serve as resource to assist individuals, other health professionals, or the community, and may administer fiscal resources for health education programs.	A certified diabetes educator is a professional that meets certain licensure requirements, such as an RN, registered dietitian, or other health care professional who have national CDE certification.	
<b>Health Coach</b>	Empower patients to make behavior and lifestyle changes through physical fitness and nutrition counseling in order to manage/prevent chronic diseases.	Education/training requirements vary widely by industry. Health Coaches are often Certified Personal Trainers. Most positions/settings will provide on-the-job training, but some prefer employee to have Health Coach Certification.	If a HHA or otherwise also functions as a Health Coach, please only count primary role. May also be called Wellness Coaches.
<b>Health Educators</b>	Health educators teach people about behaviors that promote wellness. They develop and implement strategies to improve the health of individuals and communities. Community health workers collect data and discuss health concerns with members of specific populations or communities.	Bachelor's degree. Many employers require the Certified Health Education Specialist (CHES) credential.	Some positions/settings may require master's degree.
<b>Administrative Staff -- All Titles</b>			
<b>Executive Staff</b>	Devise strategies and policies to ensure that an organization meets its goals. They plan, direct, and coordinate operational activities of companies and organizations.	Education/training requirements vary widely by position and industry, many have at least a bachelor's degree and a considerable amount of work experience.	
<b>Financial</b>	Financial managers are responsible for the financial health of an organization. They produce financial reports, direct investment activities, and develop strategies and plans for the long-term financial goals of their organization.	Bachelor's degree and 5 years or more of experience in another business or financial occupation, such as loan officer, accountant, auditor, securities sales agent, or financial analyst.	
<b>Human Resources</b>	Human resources managers plan, direct, and coordinate the administrative functions of an organization. They oversee the recruiting, interviewing, and hiring of new staff; consult with top executives on strategic planning; and serve as a link between an organization's management and its employees.	Combination of education and several years of related work experience to become a human resources manager. Although a bachelor's degree is sufficient for most positions, some jobs require a master's degree. Candidates should have strong interpersonal skills.	
<b>Administrative Support -- All Titles</b>			
<b>Office Clerks</b>	General office clerks perform a variety of administrative tasks, including answering telephones, typing or word processing, making copies of documents, and maintaining records.	High school diploma or equivalent. Most learn their skills on the job.	
<b>Secretaries and Administrative Assistants</b>	Secretaries and administrative assistants perform routine clerical and administrative duties. They organize files, draft messages, schedule appointments, and support other staff.	High school graduates with basic office and computer skills usually qualify for entry-level positions. Most secretaries learn their job in several weeks, many legal and medical secretaries require several months of training to learn industry-specific terminology. Executive secretaries usually need several years of related work experience.	
<b>Coders/Billers</b>	<i>Bill and account collectors</i> , sometimes called <i>collectors</i> , try to recover payment on overdue bills. They negotiate repayment plans with debtors and help them find solutions to make paying their overdue bills easier. <i>Medical coder</i> , commonly referred to as <i>health information technicians</i> , organize and manage health information data. They ensure that the information maintains its quality, accuracy, accessibility, and security in both paper files and electronic systems. They use various classification systems to code and categorize patient information for insurance reimbursement purposes, for databases and registries, and to maintain patients' medical and treatment histories.	High school diploma. A few months of on-the-job training is common. May also include formal education.	
<b>Dietary/Food Service</b>	Daily operation of restaurants and other establishments that prepare and serve food and beverages. They direct staff to ensure that customers are satisfied with their dining experience and the business is profitable.	High school diploma and long-term work experience in the food service industry. However, some receive training at a community college, technical or vocational school, culinary school, or a 4-year college.	

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<b>Financial Service Representatives</b>	Securities, commodities, and financial services sales agents connect buyers and sellers in financial markets. They sell securities to individuals, advise companies in search of investors, and conduct trades.	Bachelor's degree may be required for entry-level jobs, and a master's degree in business administration (MBA) is useful for advancement.	
<b>Housekeeping</b>	Maids and housekeeping cleaners perform general cleaning tasks, including making beds and vacuuming halls, in private homes and commercial establishments.	No formal training or education is required. Most workers learn on the job.	
<b>Medical Interpreters</b>	Convert information from one language into another language. Interpreters work in spoken or sign language; translators work in written language.	May require a bachelor's degree, native-level fluency in English and at least one other language. Many complete job-specific training programs. Some organizations may require national certification.	
<b>Patient Service Representatives</b>	Patient service representatives work with patients in different health care settings to assist with complaints or issues or to provide information on the services being offered.	Patient service representatives typically need a high school diploma and are trained on the job. They should be good at communicating with people and have some experience using computers. Some organizations may require additional education or training.	
<b>Transportation</b>	Drive ambulance or assist ambulance driver in transporting sick, injured, or convalescent persons. Assist in lifting patients. Emergency medical technicians (EMTs) and paramedics care for the sick or injured in emergency medical settings. People's lives often depend on their quick reaction and competent care. EMTs and paramedics respond to emergency calls, performing medical services and transporting patients to medical facilities.	High school diploma. All emergency medical technicians (EMTs) and paramedics must complete a postsecondary educational program. All states require EMTs and paramedics to be licensed; requirements vary by state.	
<b>Janitors and cleaners</b>			
<b>Janitors and cleaners</b>	Janitors and building cleaners keep many types of buildings clean, orderly, and in good condition.	Janitors and building cleaners do not need any formal educational credential, though some organizations may require a high school education. However, high school courses in shop can be helpful for jobs involving repair work.	
<b>Health Information Technology</b>			
<b>Health Information Technology Managers</b>	Computer and information systems managers, often called information technology (IT) managers or IT project managers, plan, coordinate, and direct computer-related activities in an organization. They help determine the information technology goals of an organization and are responsible for implementing computer systems to meet those goals.	Bachelor's degree in computer or information science, plus related work experience, is required. Many computer and information systems managers also have a graduate degree.	
<b>Hardware Maintenance</b>	Computer, ATM, and office machine repairers install, fix, and maintain many of the machines that businesses, households, and other consumers use.	Knowledge of electronics is essential. Most workers take some postsecondary classes, although some who can demonstrate knowledge may be hired with a high school diploma. Strong communication and customer-service skills are important because these workers often interact with customers to figure out what needs to be repaired.	
<b>Software Programmers</b>	Software developers are the creative minds behind computer programs. Some develop the applications that allow people to do specific tasks on a computer or other device. Others develop the underlying systems that run the devices or control networks.	Bachelor's degree in computer science and strong computer programming skills.	
<b>Technical Support</b>	Computer support specialists provide help and advice to people and organizations using computer software or equipment. Some, called computer network support specialists, support information technology (IT) employees within their organization. Others, called computer user support specialists, assist non-IT users who are having computer problems.	Bachelor's degree is required for some computer support specialist positions, but an associate's degree or postsecondary classes may be enough for others.	
<b>Home Health Care</b>			
<b>Certified Home Health Aides</b>	Home health aides help people who are disabled, chronically ill, or cognitively impaired. They often help older adults who need assistance. In some states, home health aides may be able to give a client medication or check the client's vital signs under the direction of a nurse or other healthcare practitioner.	No formal education requirements for home health aides, but most aides have a high school diploma. Home health aides working in certified home health or hospice agencies must get formal training and pass a standardized test.	

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<p><b>Personal Care Aides (Level I)</b></p>	<p>Personal care services are assistance from a personal care aide with nutritional, environmental support, and personal care functions. Such services must be essential to the maintenance of the patient's health and safety in his or her own home, ordered by the attending physician, and based on an assessment of the patient's needs and of the appropriateness and cost-effectiveness of services.</p> <p>HOUSEKEEPING or "Level 1" - for those who because of disability need assistance with housekeeping, cleaning, and meal preparation, grocery shopping, and laundry, but they do not need help with "personal care" tasks such as bathing or dressing. Services are limited by state law to 8 hours per week.</p> <p>Note: Adults who have Medicare, who would otherwise be required to enroll in a Managed Long Term Care Plan, but who only need Housekeeping services, may NOT enroll in MLTC. They obtain Housekeeping services by applying at the local district/HRA.</p>	<p>Trained on the job. There are no formal education requirements for personal care aides, but most aides have a high school diploma.</p>	
<p><b>Personal Care Aides (Level II)</b></p>	<p>Personal care services are assistance from a personal care aide with nutritional, environmental support, and personal care functions. Such services must be essential to the maintenance of the patient's health and safety in his or her own home, ordered by the attending physician, and based on an assessment of the patient's needs and of the appropriateness and cost-effectiveness of services.</p> <p>PERSONAL CARE or "Level 2" - includes all of the Housekeeping (Level 1) tasks plus assistance with personal needs: bathing, dressing, grooming, toileting, walking, feeding, assisting with administering medications, preparing meals with special diets, and routine skin care. In amendments of December 2015, "turning and positioning" was specifically added as a task, as needed by bedbound individuals who cannot turn themselves, putting them at risk of bedsores.</p>	<p>Trained on the job. There are no formal education requirements for personal care aides, but most aides have a high school diploma.</p>	
<p><b>Other Allied Health</b></p>			
<p><b>Clinical Laboratory Technologists and Technicians</b></p>	<p>Collect samples and perform tests to analyze body fluids, tissue, and other substances.</p>	<p>Technologists need a bachelor's degree. Technicians usually need an associate's degree or a postsecondary certificate. Clinical laboratory technologists and technicians must be licensed in NYS.</p>	<p>Technologists may also supervise technicians.</p>
<p><b>Nutritionists/Dieticians</b></p>	<p>Evaluate the health of their clients and advise clients on which foods to eat and avoid to improve their health.</p>	<p>Bachelor's degree is required. Most have advanced degrees. Nutritionists may earn the Certified Nutrition Specialist (CNS) credential through a Master's or Doctoral degree and an exam. Dieticians may earn the Registered Dietitian Nutritionist (RDN) credential through a Bachelor's degree and an exam.</p>	<p>May choose to specialize as a clinical, community, or management dietician/nutritionist.</p>
<p><b>Occupational Therapists</b></p>	<p>Occupational therapists treat injured, ill, or disabled patients through the therapeutic use of everyday activities. They help these patients develop, recover, and improve the skills needed for daily living and working.</p>	<p>Master's degree in occupational therapy. All states require occupational therapists to be licensed or registered.</p>	
<p><b>Occupational Therapy Assistants/Aides</b></p>	<p>Help patients develop, recover, and improve the skills needed for daily living and working. Occupational therapy assistants are directly involved in providing therapy to patients, while occupational therapy aides typically perform support activities. Both assistants and aides work under the direction of occupational therapists.</p>	<p>Associate's degree from an accredited occupational therapy assistant program. In most states, occupational therapy assistants must be licensed. Occupational therapy aides typically have a high school diploma or equivalent.</p>	
<p><b>Optometrists</b></p>	<p>Healthcare professionals who provide primary vision care, ranging from sight testing and correction to the diagnosis, treatment, and management of vision changes.</p>	<p>Doctor of Optometry (OD), a 4-year program. All states require optometrist to be licensed.</p>	<p>May complete a 1-yr residency program to get advanced clinical training in the area in which they choose to specialize.</p>
<p><b>Pharmacists</b></p>	<p>Pharmacists dispense prescription medications to patients and offer expertise in the safe use of prescriptions. They also may provide advice on how to lead a healthy lifestyle, conduct health and wellness screenings, provide immunizations, and oversee the medications given to patients.</p>	<p>Doctor of Pharmacy (Pharm.D.), a 5- or 6-year professional degree. They also must be licensed, which requires passing two exams. Additional education is required in New York to provide immunizations.</p>	

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<b>Pharmacy Technicians</b>	Help licensed pharmacists dispense prescription medication to customers or health professionals.	High school diploma or the equivalent. Learn through on-the-job training, or they may complete a postsecondary education program. Most states regulate pharmacy technicians, which is a process that may require passing an exam or completing a formal education or training program.	
<b>Physical Therapists</b>	Help injured or ill people improve their movement and manage their pain. These therapists are often an important part of rehabilitation and treatment of patients with chronic conditions or injuries.	Need a Doctor of Physical Therapy (DPT) degree. All states require physical therapists to be licensed.	
<b>Physical Therapy Assistants/Aides</b>	Physical therapist assistants (sometimes called PTAs) and physical therapist aides work under the direction and supervision of physical therapists. They help patients who are recovering from injuries and illnesses regain movement and manage pain.	Associate's degree from an accredited physical therapist assistant program. Physical therapist aides generally have a high school diploma and receive on-the-job training.	
<b>Respiratory Therapists</b>	Care for patients who have trouble breathing—for example, from a chronic respiratory disease, such as asthma or emphysema. Their patients range from premature infants with undeveloped lungs to elderly patients who have diseased lungs. They also provide emergency care to patients suffering from heart attacks, drowning, or shock.	Typically need an associate's degree, but some have bachelor's degrees. Respiratory therapists are licensed in all states except Alaska; requirements vary by state.	
<b>Speech Language Pathologists</b>	Speech-language pathologists (sometimes called speech therapists) assess, diagnose, treat, and help to prevent communication and swallowing disorders in patients. Speech, language, and swallowing disorders result from a variety of causes, such as a stroke, brain injury, hearing loss, developmental delay, a cleft palate, cerebral palsy, or emotional problems.	Master's degree. They must be licensed in most states; requirements vary by state.	