State of New Jersey
Health Care Facilities Financing Authority

Hudson County Hospital Services Consolidation/Regionalization Assessment

Report

July 27, 2011

NAVIGANT

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Executive Summary

In March 2010, the New Jersey Health Care Facilities Financing Authority (NJHCFFA) engaged Navigant Consulting, Inc. to inventory the health care services available in the primary service areas of Christ Hospital, Hoboken University Medical Center (HUMC) and Jersey City Medical Center (JCMC) to determine whether duplication of services or unused capacity exists in this area of Hudson County, and if so, propose recommendations to the Commissioner of the New Jersey Department of Health and Senior Services (DHSS) for consolidation or regionalization of services. All three hospitals have received stabilization grants from the New Jersey DHSS intended to help financially troubled hospitals improve their operating and financial performance. As a condition of receiving the stabilization grant funding, the three hospitals agreed to an independent, objective assessment of opportunities for consolidation or regionalization of hospital services in Hudson County.

Subsequent to being engaged and prior to our report being issued, Hoboken Municipal Hospital Authority (HMHA) issued a request for proposals seeking proposals from parties interested in acquiring Hoboken University Medical Center and continuing to operate it as an acute care hospital. After considering several proposals, HMHA recently selected the proposal submitted by HUMC HOLDCO, LLC, and HUMC OPCO, LLC. Following its selection, HOLDCO submitted a Certificate of Need to DHSS requesting approval of the transfer of ownership of HUMC.

In light of this development, DHSS and NJHCFFA expanded Navigant Consulting's original project scope to include an assessment of the impact of the HUMC HOLDCO, LLC, and HUMC OPCO, LLC proposal on the opportunities for consolidation or regionalization of hospital services in Hudson County. This document presents Navigant Consulting Inc.'s original findings (based on data available at the time of our initial analysis (i.e., March – July 2010) and proposed recommendations along with an assessment of the impact of the HUMC HOLDCO, LLC, and HUMC OPCO, LLC proposal on the opportunities for consolidation and regionalization of services.

The scope of our assessment included the following components:

- Assess the current inventory of hospital services, including inpatient, emergency department, outpatient clinics and community services in the service areas of Christ Hospital, Jersey City Medical Center and Hoboken University Medical Center;

- Identify duplicative services and/or unused capacity in the service areas or at the three hospitals;

- Propose recommendations to address any duplication or excess capacity identified; and

- Assess the impact of the HUMC HOLDCO, LLC, and HUMC OPCO, LLC proposal on the opportunities for consolidation and regionalization of services.

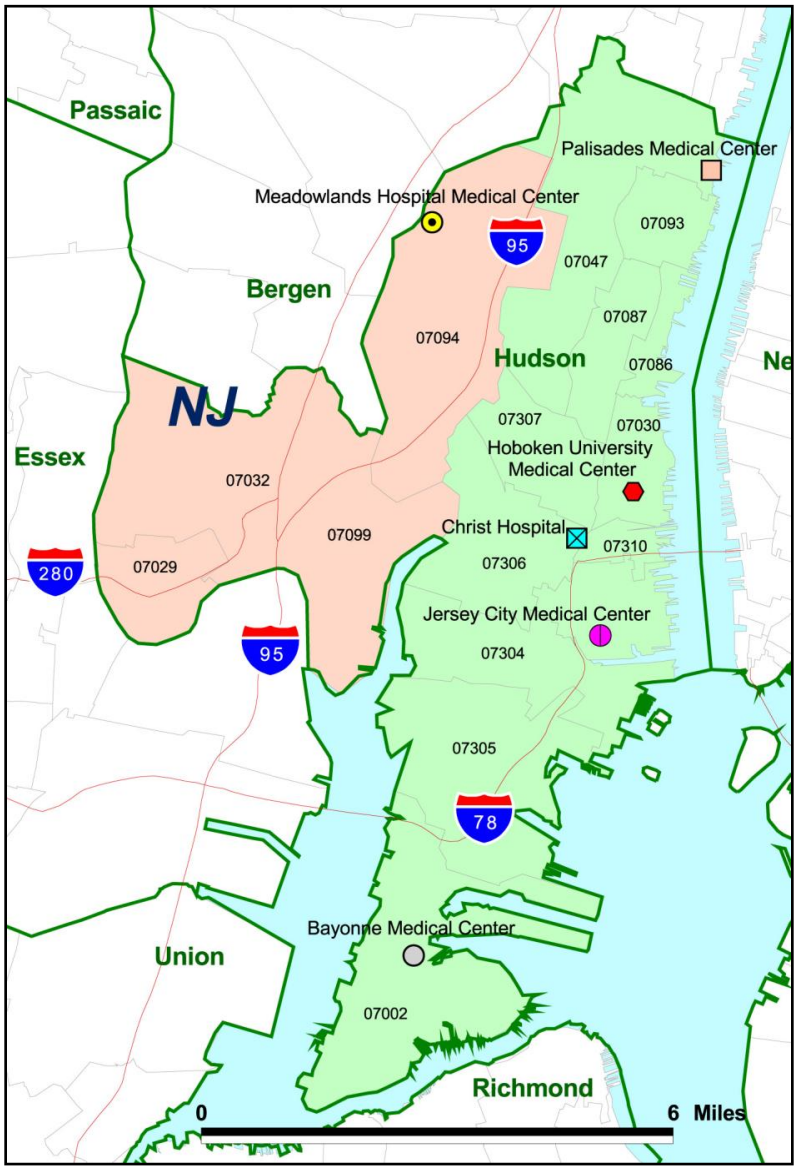
Key Market Area Findings

The key market area findings presented below are based on analysis of data available during the March 2010 — July 2010 time period. The scope of our engagement excluded updating any analyses using data that became available after July 2010.

Christ Hospital, HUMC and Jersey City Medical Center (JCMC) all serve well-defined, relatively compact geographic markets, with their "core service areas" (defined as those zip codes that contribute a significant percentage of the hospital's discharges **and** in which the hospital is a major provider of care as measured by market share) consisting of a relatively small number of zip codes. The local orientation of all three hospitals is further reflected by the fact that none of the three draw more than 8 percent of their patients from outside of Hudson County.

Based on our assessment of patient origin and market share data along with in- and out-migration of patients, we identified 12 zip codes that comprised the combined market area of the three hospitals. The vast majority of each hospital's patients reside in these 12 zip codes—92 percent of Christ Hospital's, 91 percent of HUMC's, and 93 percent of JCMC's. The map below illustrates the combined market area for the three hospitals.

Map of the Market Area



Note: Area shaded in green is the defined market area. Area shaded in pink is the portion of Hudson County that is not the defined market area.

The key findings about the market area in which the three hospitals operate and the market area's demand for and supply of health care services are summarized below.

- Christ Hospital, HUMC, and JCMC all serve as local community providers (versus regional referral centers), as evidenced by the fact that they draw relatively few (less than 8 percent) of their patients from outside of Hudson County.

- Christ Hospital, HUMC, and JCMC have a combined market area consisting of 12 zip codes, which together account for over 90 percent of the inpatient discharges and outpatient emergency department visits for the three hospitals. This market area represents a well-defined, densely populated, and relatively compact geography, encompassing an area approximately 14 miles long and 4 miles wide.

- The market area has a population of approximately 527,000 residents and projections show a decrease over the next 10 years to slightly less than 525,000. This means that changes in total population will not, in and of themselves, drive increased demand for health care services in the market area. And although the population is projected to age, it will remain younger than the State and the U.S. population. In addition, the pediatric age population (0-17) is expected to decline by approximately 6 percent and the obstetric age population (females 18-44) is expected to drop by nearly 18 percent, which will likely further reduce the demand for these services.

- Nearly 30 percent of market area residents leave the area for inpatient hospital care, with 23 percent going to other parts of New Jersey and 6 percent going to New York. The payer mix of the market area residents who leave the area for inpatient care has a much higher percentage of commercially insured patients than for residents who stay in the market area (72 percent of the residents who go to New York have commercial insurance and 45 percent of the market area residents who go to other parts of New Jersey are commercially insured versus 28 percent for residents who are hospitalized in the market area). An interesting note is that the rate of outmigration in the market area to New York hospitals is highest in the two zip codes with the highest average household incomes. This pattern of patient migration is similar to those found in other major metropolitan areas with a substantial number of well-regarded tertiary, specialty, and academic medical center hospitals. This pattern is unlikely to change in the future, and in fact, the outmigration of better insured patients may increase as portions of the market area re-gentrify and attract more affluent residents and businesses, including those formerly located in New York. It should be noted, however, that even if outmigration to New York hospitals could be reduced by 20 percent, such a change would fill only 10 beds on an average daily basis. A 20 percent reduction in market area residents' outmigration to other parts of New Jersey would fill only 47 beds on an average daily basis.

- State Medicaid agencies typically require that the managed care organizations with which they contract maintain provider networks that meet specific standards for

providing their members geographic access to care. These geographic access standards are expressed in terms of travel times to providers; for hospital care, 30 minutes is the typical standard in urban areas. This 30 minute travel time standard is also common in the commercial managed care industry. State planning agencies typically suggest a standard of 30 minutes travel time in urban areas and 45-60 minutes in rural areas. By these standards, travel times between most market area zip codes and hospital locations are reasonable and public transit is readily available and serves the Christ Hospital, HUMC and JCMC campuses. Except for the two zip codes at the southern and northern ends of the market area, driving times in the market area between all the other zip codes and hospital locations are, with few exceptions, less than 30 minutes. Moreover, every zip code is within 30 minutes driving time of at least two hospitals. Travel times in the market area to hospital locations are longer on public transit than by private vehicle, but with the exception of one zip code (07047 North Bergen) all zip codes are within 30 minutes on public transit of at least one market area hospital. In most zip codes where travel time on public transit to the second nearest hospital exceeds 30 minutes, travel time is less than 40 minutes. For example, travel time on public transit from Hoboken, zip code 07030, to market area hospitals other than HUMC, ranges from 36 to 38 minutes to JCMC, Christ Hospital and Palisades Medical Center. Thus, access to all three of the hospital campuses is relatively convenient and achievable in reasonable travel times for market area residents.

- In addition to Christ Hospital, HUMC, and JCMC, the market area is also home to two other hospitals: Palisades Medical Center (with 180 maintained beds) and Bayonne Medical Center (with 201 maintained beds). In total, the market area has 1,144 maintained beds. Inpatient utilization in the market area has decreased over the last few years, and given the relatively stable population base in the market area, is unlikely to increase to any significant extent for the foreseeable future. The current and projected demand for inpatient hospital services indicates there is a substantial surplus of maintained beds (264) which is projected to increase modestly by 2014 to a surplus of 268 to 290 beds.

- All three hospitals offer essentially the same complement of general acute care services and have occupancy rates well below recommended targets: the three hospitals combined have an occupancy rate of 43 percent in pediatrics (compared to the target level of 65%), 55 percent in obstetrics (compared to the target of 75 percent), and 75 percent in medical/surgical services (compared to the target level of 85 percent). These figures indicate that there is substantial duplication of services in

the market area, especially in services like obstetrics and pediatrics. Current trends in pediatrics reflect a strong preference among physicians and families to utilize larger facilities with specialized capabilities. Similarly, obstetrical patients generally prefer facilities with the ability to handle all types of obstetrical and newborn cases which requires sufficient volumes to justify providing specialized services from a financial and quality perspective. With Christ Hospital, HUMC, and JCMC all providing pediatric and obstetrics, the ability of any one of them achieving a critical mass of patient volumes in these services is highly limited, a situation made even more difficult by the fact that both Palisades Medical Center and Bayonne Medical Center provide pediatrics and Palisades Medical Center offers obstetrics. Specifically, the total number of current and projected market area pediatric patients of 19 to 20 per day represents the equivalent of one patient unit at a pediatric hospital. Divided among three to four hospitals, this volume of pediatric patients does not represent an economically or clinically viable patient base. Similarly, the current and projected market area obstetric average daily census of 48 could be most appropriately accommodated in a single facility (versus being distributed over four facilities, none of which would have sufficient critical mass to justify or support the required specialized services demanded by obstetric patients from a financial or clinical quality perspective).

- In addition to the five hospitals, the market area includes a large number of other health care facility resources. There are 10 Federally Qualified Health Centers (FQHCs) which serve as important sources of primary care for uninsured and Medicaid patients. There are also seven hospital-based or affiliated ambulatory centers, including HUMC's Center for Family Health which houses the Family Medicine residency clinic, JCMC's two Family Health Centers and its Ambulatory Care Center, and two centers operated by the Mount Carmel Guild organization, which provides substance abuse services. In addition, the market area includes 17 free-standing imaging centers and 5 ambulatory surgery centers. All these ambulatory care facilities represent alternative sources of care to many services provided in market area hospitals' outpatient departments.

- Christ Hospital, HUMC and JCMC are single entity providers and are not part of a multi-hospital system or network. As unaligned, general acute care community hospitals with limited geographic reach and very similar (and largely undifferentiated) service complements, each of the three hospitals must compete in a rapidly consolidating and increasingly resource constrained marketplace. In the last several years, there has been a trend towards consolidation among health care

providers in the United States, with the percentage of hospitals in systems increasing from less than 40 percent in 1990 to more than 60 percent today. One effect of this industry consolidation has been a growing gap between high performing organizations and financially stressed facilities, with the high performing organizations tending to be larger systems. And the general consensus is that federal health care reform will accelerate consolidation among hospitals and further exacerbate the gap between high performing and financially stressed providers.

Key Facility Profile Findings

Key findings regarding analysis of the three hospitals' bed complement, occupancy trends, physical plants, medical staff complement, financial performance, and quality metrics are outlined below.

- The three hospitals have a combined total of 763 maintained beds and offer essentially the same set of services (medical/surgical, obstetrics, pediatrics, and psychiatry) with roughly equivalent bed complements. Christ Hospital and HUMC fall well short of target occupancy rates in all services and JCMC falls short in pediatrics and obstetrics. The low occupancy levels indicate there is substantial excess bed capacity and unnecessary duplication of services within the market area.

- JCMC's physical plant is clearly the most functional of the three hospitals and its campus has the most potential for future expansion. The physical plants of both Christ Hospital and HUMC have significant functional and operational limitations and deficiencies resulting from their age and design, and both have limited expansion/redevelopment options. With the exception of the new ED, HUMC's buildings are 40+ years old, suffer from deferred maintenance, and are nearing the end of their useful lives. At Christ Hospital, while the 1978 9-story Tower building has been upgraded on some floors and has useful remaining service life, the other inpatient units were designed and built 62 and 82 years ago and do not support contemporary practices and have mechanical and electrical systems that are at the end of their serviceable lives. The estimated remaining useful life of Christ Hospital is between five and ten years, given the current annual routine maintenance budget, while HUMC requires an increase over the routine capital budget currently in place to extend its useful life beyond five years.

- All three hospitals have older medical staffs, with average ages well above New Jersey and U.S. levels. The U.S. average is 48 years, Christ Hospital's medical staff

has an average age of 56, HUMC's is 53, and JCMC's is 52. Both Christ Hospital and HUMC have particularly high percentages of physicians age 55+ and these physicians account for 58 percent of Christ Hospital's admissions and 45 percent of HUMC's admissions. The high average ages and heavy concentration of and reliance on older physicians indicate a significant need for succession planning and physician recruitment. However, the physician age profile at all three hospitals indicates that they have likely had difficulty in recruiting new/younger physicians, a difficulty that will almost certainly increase in the future as newly trained physicians opt to practice at newer, financially more stable hospitals. In addition, over the past decade there has been an increasing trend in hospital ownership of physician practices. According to data from the Medical Group Management Association (MGMA), the percentage of physician owned practices in the United States declined from almost 70 percent in 2002 to less than 50 percent in 2008. This trend is driven by environmental factors affecting both physicians and hospitals. Physicians' interest in seeking hospital employment is due to stagnant or downward pressure on third-party payments, curbs on ancillary revenue, rising practice expenses, a greater need for practice scale with expectations for adoption and use of electronic medical records and significant shifts in the generational and gender composition of physicians in this country. Hospitals are interested in owning physician practices because of the benefits it provides them in assuring access to specialists that are in short supply and aligning physician and hospital incentives to improve quality and reduce costs. In fact, there are a number of provisions in the recently enacted Patient Protection and Affordable Care Act of 2010 that are likely to further accelerate this trend, including bundled payments, development of Accountable Care Organizations (ACOs), and value-based purchasing initiatives. However, none of the three hospitals has a particularly large or well-developed physician enterprise and, with more physicians choosing to practice in large groups or be employed by a hospital, the absence of such a physician enterprise will make physician recruitment and retention even more difficult. As a result, all three hospitals appear to have major physician replenishment challenges.

- All three hospitals are, and have been, heavily reliant on State funding and subsidies to remain financially solvent. Each hospital received a $7 million stabilization grant in State Fiscal Year 2010 in addition to other State subsidies. The $21 million in combined stabilization grants to these three hospitals was more than half of the total stabilization grant funding available that year. The three hospitals' performance on key financial indicators (operating margin, days cash on hand, and debt to capitalization ratio) in 2009 was worse than Standard and Poor's 2009 medians for

hospitals with bond ratings below BBB- (which is considered a speculative rating), except JCMC for operating margin. All three hospitals also performed worse than New Jersey hospital medians for these three indicators, except JCMC for operating margin. The 2010 budgets for all three hospitals reflect major improvement in financial performance, (particularly at Christ Hospital which has a budgeted improvement of $23 million and at HUMC, which has budgeted a $16 million improvement); however, the track record of the hospitals in 2007, 2008, and 2009 (as well as the year-to-date results for Christ Hospital and HUMC) suggest that the 2010 budgets may be optimistic, especially for Christ Hospital and HUMC.

- While all three hospitals showed improvement in their overall quality score between 2007 and 2009, only JCMC consistently scored above the New Jersey average and none of the hospitals scored among the top 10 percent nationally. In patient satisfaction, none of the three hospitals scored close to the national average and were anywhere from 24 to 30 percentage points lower than the top 10 percent nationally. These results indicate that none of the hospitals are particularly strong performers in quality or patient satisfaction. This, combined with their cost positions, which are slightly below the New Jersey state average, indicates that none of the three hospitals could be classified as a "value" provider (e.g., high quality and low cost).

Guiding Principles

Based on our analysis of the market area, the population's needs, and the financial, operational, and physical condition of the three hospitals, Navigant developed a set of objectives that we recommend be used to guide decisions regarding how to most appropriately address the current health care delivery situation in the market area. While these objectives (or Guiding Principles) relate specifically to the three hospitals that serve as the focus of this project, they also take into consideration the context of the overall market area (including neighboring areas of New Jersey and New York).

The Guiding Principles address both the public policy issues of providing market area residents with adequate access to high quality, affordable health care services and the need to mitigate the significant expenditure by the State of New Jersey in stabilizing the provider organizations delivering those services. The Guiding Principles include the following:

1. Align the supply of beds with the current and future need of the market area population for beds.

2. Improve the clinical quality, operational efficiency, and financial performance of services provided.

3. Enhance the ability to recruit and retain an appropriate complement of high quality physicians, clinical staff, and support personnel.

4. Invest in initiatives that represent the optimal use of capital over the longer-term (i.e., more than five years).

5. Reduce the amount of State operating subsidies.

In addition to the above Guiding Principles, any decisions on how to address the health care delivery situation in Hudson County should also take into consideration the Patient Protection and Affordable Care Act that was passed in March 2010 and the likely changes that legislation will generate.

Conclusion and Recommendations

Analysis of current and projected need for and utilization of services in the market area leads Navigant to conclude there is significant excess inpatient capacity in virtually every service offered (pediatrics, obstetrics, psychiatry, and medical/surgical), and unnecessary duplication of services. It is also clear that continuation of the status quo is not a viable option. All three hospitals have attempted to "rightsize" their operations over the last several years and their 2010 budgets reflect continued efforts to do so. And while they have made some progress (to varying degrees), they have not succeeded in "turning the corner" in terms of financial performance. Nor have they made any significant progress in reducing the significant excess bed capacity and duplication of services that exist in the market area, and it is unlikely they will be able to do so with all three hospitals continuing to operate as separate legal entities. Similarly, maintaining the status quo (even with continued individual "rightsizing" initiatives) would be highly unlikely to do anything to mitigate the need for significant, ongoing financial support from the State. As a result, we believe maintaining the status quo is not a practical or appropriate scenario and should be avoided if at all possible.

Given that there is a clear and compelling case for consolidation and/or regionalization of services, Navigant offers the following recommendations:

1. **Christ Hospital, HUMC, and JCMC should reduce excess/unused bed capacity and seek to achieve the level of patient volumes necessary to enhance clinical quality,**

operational efficiency, and financial performance by consolidating under-utilized services. We recommend the market area hospitals work collaboratively with one another and the State to explore and pursue potential service consolidation opportunities in the near-term. We believe there are significant consolidation opportunities (which are delineated in more detail in the body of this report) in pediatrics, psychiatric services, and possibly obstetrics that would help align bed supply with need; improve the clinical quality, operational efficiency, and financial performance of services and facilities; and enhance the ability to recruit and retain an appropriate complement of high quality physicians, clinical staff, and support personnel. However, implementation of any of the service consolidation opportunities would entail significant changes in the existing community and organizational dynamics in Hudson County (discussion of which is beyond the scope of this engagement).

2. **The three hospitals should optimize the efficient use of capital over the longer-term (i.e. beyond five years) by exploring facility consolidation options.** There is a projected excess of approximately 210 medical/surgical beds in the market area (a number roughly equal to—or greater than—the number of maintained medical/surgical beds at any of the three hospitals) and insufficient volume to support three separate pediatric, obstetric, and psychiatric units. In addition, Christ and HUMC will likely require significant capital expenditures to address their significant facility and infrastructure needs in order to extend their useful lives beyond ten years. These facts create a compelling rationale for facility consolidation. Although facility consolidation represents the option with the most strategic potential to result in viable, sustainable hospital facilities in the market area over the ***long-term*** (and thereby reduce the need for State subsidies), we recognize the community, financial, and organizational challenges associated with facility consolidation. In addition, accommodating all of the patient volume of Christ, HUMC, and JCMC in some lesser number of facilities than currently exists would involve a significant capital investment—which none of the facilities (nor the State) are presently in a position to make. However, even recognizing the potential facility, fiscal, and organizational constraints associated with facility consolidation, we believe that the residents of the market area (along with the State of New Jersey) would be better served in the long-term by having appropriately sized, financially viable hospitals providing high quality, affordable care in contemporary facilities. Facility consolidation represents one way of achieving this goal. We therefore recommend that the market area hospitals and the State collaborate on the development of a long-term facility consolidation and redevelopment plan designed to optimize the efficient use of capital over the longer-term and that provides area residents with appropriate access to high quality, affordable health care services in contemporary facilities.

Impact of the Purchase of HUMC by HOLDCO on Consolidation/Regionalization Opportunities

As noted previously, prior to the finalization of our report, HMHA issued a request for proposal seeking proposals from parties interested in acquiring Hoboken University Medical Center and continuing to operate it as an acute care hospital. After considering several proposals, HMHA selected the proposal submitted by HUMC HOLDCO, LLC, and HUMC OPCO, LLC. HUMC HOLDCO LLC (the Purchaser) was established by the principal owner of Bayonne Medical Center's for-profit parent company. HUMC HOLDCO LLC will be responsible for retiring up to $51.6 million in HMHA bonded debt now guaranteed by the City of Hoboken. The Purchaser's financial projections assume that stabilization grant funding of $7 million and Medicaid Disproportionate Share Hospital funding of $11.5 million from the State to HUMC in 2011 will be eliminated under HUMC's new ownership.

The Purchaser proposes to continue operating HUMC, including its existing clinics, as a general acute care hospital for at least seven years, to continue providing HUMC's existing services, and to seek licensing approval to add a transitional care unit and low risk cardiac catheterization laboratory.

In assessing the impact of the selected proposal on the opportunities for consolidation and regionalization of services in Hudson County, we reviewed the asset purchase agreement between HMHA and the Purchaser signed on April 20, 2011 and the Certificate of Need Application submitted to DHSS for transfer of ownership of Hoboken University Medical Center. We then evaluated the proposal in light of the Guiding Principles articulated above and assessed its potential impact of the proposal on the opportunities for consolidation and regionalization in Hudson County.

The Purchaser proposes to continue providing existing services and to operate HUMC as a general acute care hospital for at least seven years (with no stated plans to reduce HUMC's bed complement). The proposal therefore essentially represents a continuation of the status quo in terms of bed capacity and service complement and thus does not appear to have any immediate impact on consolidation or regionalization opportunities in Hudson County. The proposal will address the objective of reducing State subsidies, and it has the added benefit of retiring the HMHA bonded debt now guaranteed by the City of Hoboken.

The proposal does not include any clinical consolidation between HUMC and Bayonne Medical Center and thus does not address the excess capacity and unnecessary duplication of services in the market area (which are major contributing factors to the poor financial performance of market area hospitals). Common ownership and operation of HUMC and Bayonne Medical

Center does create the opportunity to realize some administrative economies of scale and efficiencies (and in fact, the Purchaser has included assumptions about cost savings from such efficiencies in its Certificate of Need application). However, experience has shown these types of economies and efficiencies tend to be relatively modest, and they are not likely, in and of themselves, to address HUMC's significant financial challenges. More important than these modest administrative efficiency gains, however, is the establishment of a single operating entity responsible for both HUMC and Bayonne Medical Center. The proposed purchase will reduce the number of organizations that own hospitals in the market area, which is step (albeit a very small one) in the direction of being able to address the excess capacity and unnecessary duplication of services that exist in the market area.

Therefore, although it does not appear the proposal will address the excess capacity or unnecessary duplication of services in the market area in the near-term, it does create the potential for HOLDCO, Christ Hospital and JCMC to work collaboratively with one another and the State to explore and pursue potential service consolidation opportunities among the four hospitals over the longer-term. Furthermore, as the facilities in the market area (Christ Hospital and HUMC in particular) begin to address their significant facility and infrastructure needs, we believe there is a significant opportunity for the market area hospitals and the State to collaborate on the development of a long-term facility consolidation and redevelopment plan that provides area residents with appropriate access to high quality, affordable health care services in contemporary facilities while also optimizing the efficient use of capital over the longer-term.

Section 1: Introduction

Christ Hospital, Hoboken University Medical Center (HUMC) and Jersey City Medical Center (JCMC) are independent, general acute care hospitals located in close proximity to one another in Hudson County. All three hospitals have received stabilization grants from the New Jersey Department of Health and Senior Services (DHSS) intended to help financially troubled hospitals improve their operating and financial performance. As a condition of receiving the stabilization grant funding, the three hospitals agreed to an independent, objective assessment of opportunities for consolidation or regionalization of hospital services in Hudson County. In March 2010, the New Jersey Health Care Facilities Financing Authority (NJHCFFA) engaged Navigant Consulting, Inc. to inventory the health care services available in the primary service areas of the three hospitals, determine whether duplication of services or unused capacity exists in this area of Hudson County, and if so, propose recommendations to the Commissioner of DHSS for consolidation or regionalization of services. This document presents Navigant Consulting Inc.'s findings and proposed recommendations.

Background

All three of the hospitals that were the focus of this study are located in Hudson County. JCMC and Christ Hospital are located in Jersey City less than two miles from one another. HUMC, located in Hoboken, is less than two miles from Christ Hospital and less than two and a half miles from Jersey City Medical Center. Christ Hospital and HUMC are single-site hospitals unaffiliated with any healthcare system. Christ Hospital is a not-for-profit corporation. HUMC is owned by a municipal hospital authority created by the City of Hoboken. The City of Hoboken has guaranteed HUMC's bonds. JCMC is a not-for-profit corporation that is affiliated with the Liberty Health System. The Liberty Health System was granted a Certificate of Need to sell Meadowlands Hospital Medical Center in Secaucus in December 2010 and in 2008 the System's other affiliate, Greenville Hospital, which was located in Jersey City, closed.

Project Scope

The scope of our assessment originally included the following components:

- Assess the current inventory of hospital services, including, inpatient, emergency department, outpatient clinics and community services in the service areas of Christ Hospital, JCMC and HUMC;

- Identify duplicative services and/or unused capacity in the service areas or at the three hospitals; and

- Propose recommendations to address any duplication or excess capacity identified.

Subsequent to Navigant Consulting's engagement by DHSS and NJHCFFA (and prior to our report being issued), Hoboken Municipal Hospital Authority (HMHA) issued a request for proposals seeking proposals from parties interested in acquiring Hoboken University Medical Center and continuing to operate it as an acute care hospital. After considering several proposals, HMHA recently selected the proposal submitted by HUMC HOLDCO, LLC, and HUMC OPCO, LLC. Following its selection, HOLDCO submitted a Certificate of Need to DHSS requesting approval of the transfer of ownership of HUMC.

In light of this development, DHSS and NJHCFFA expanded the original project scope to include an assessment of the impact of the HUMC HOLDCO, LLC, and HUMC OPCO, LLC proposal on the opportunities for consolidation or regionalization of hospital services in Hudson County.

Structure of Report

Section 2 of our report includes the definition of the market area used in our analyses along with a demographic and socioeconomic profile of the market area. Section 3 provides an inventory of the health care resources available in the defined market area and an assessment of the historical and forecasted demand for healthcare services. Section 4 summarizes the key findings about the market area and its demand for and supply of health care services. Section 5 profiles each of the three hospitals, including the services they provide, their occupancy and utilization, the condition of their facilities, their financial performance, their medical staff complement, and their quality and productivity indicators. Section 6 outlines the key findings regarding the facility profiles of the three hospitals. Section 7 presents the guiding principles that should be used to guide decisions regarding how to most appropriately address the current health care delivery situation in the market area and Section 8 includes the conclusions and recommendations.

Section 2: Market Area Definition

This section of our report defines the service areas of Christ Hospital, HUMC, and JCMC and provides a profile of the market area's key demographic and socioeconomic characteristics.

Hospital Market Area

The first step in conducting our assessment involved developing a definition of the respective service areas for each of the three hospitals. Traditionally, hospital service areas are defined as the geographic region (typically delineated on a zip code level) from which the hospital draws the majority of its patients—usually somewhere between two-thirds and three quarters of its total patients. In defining the hospitals' service areas, we used a variety of approaches and data sources, including the New Jersey Discharge Data Collection System from the DHSS for 2008 and 2009. Since there were relatively minor differences between the 2008 and 2009 data, we used the 2009 data as the basis for our analyses. We assessed each hospital's patient origin (number and percentage of patients it draws from each zip code) as well as each hospital's market share (the percentage of each zip code's total patients served by each hospital) and developed a current service area definition. These definitions took into account factors such as natural and man-made barriers, travel patterns and road networks, access to/presence of other providers, etc. Our assessment also considered where the residents of each zip code went for their hospital care, including other hospitals in Hudson County, other hospitals in the State of New Jersey, and hospitals across the river in New York City.

Exhibits 2-1, 2-2, and 2-3 present the patient origin and market shares for Christ Hospital, HUMC, and JCMC, respectively.

Exhibit 2-1

Christ Hospital Patient Origin and Market Shares by Zip Code, 2009

Patient Origin					Market Share
Zip Code	City	Number of Discharges	Percent of Total	Cumulative Percent	
07306	Jersey City	2,295	19.2%	19.2%	37.5%
07305	Jersey City	2,097	17.5%	36.7%	21.4%
07307	Jersey City	2,021	16.9%	53.6%	43.2%
07087	Union City	1,374	11.5%	65.1%	16.4%
07304	Jersey City	1,261	10.5%	75.7%	22.4%
07302	Jersey City	754	6.3%	82.0%	21.0%
07047	North Bergen	369	3.1%	85.1%	5.1%
07002	Bayonne	367	3.1%	88.2%	4.6%
07093	West New York	317	2.7%	90.8%	4.9%
07030	Hoboken	163	1.4%	92.2%	4.3%
All Other Hudson County Zip Codes		282	2.4%	94.5%	2.8%
All Other		654	5.5%	100.0%	
Total		**11,954**	**100.0%**		

Excludes normal newborns.

Source: NCI analysis of 2009 inpatients from DHSS' New Jersey Discharge Data Collection System.

Note: Zip codes highlighted in yellow comprise the "core service area"

Exhibit 2-2

HUMC Patient Origin and Market Share by Zip Code, 2009

Patient Origin					Market Share
Zip Code	City	Number of Discharges	Percent of Total	Cumulative Percent	
07030	Hoboken	2,367	24.4%	24.4%	62.4%
07087	Union City	2,292	23.7%	48.1%	27.4%
07093	West New York	742	7.7%	55.8%	11.4%
07047	North Bergen	737	7.6%	63.4%	10.2%
07307	Jersey City	579	6.0%	69.4%	12.4%
07305	Jersey City	499	5.1%	74.5%	5.1%
07306	Jersey City	420	4.3%	78.8%	6.9%
07304	Jersey City	299	3.1%	81.9%	5.3%
07002	Bayonne	299	3.1%	85.0%	3.7%
07302	Jersey City	286	3.0%	88.0%	8.0%
All Other Hudson County Zip Codes		410	4.2%	92.2%	4.1%
All Other		760	7.8%	100.0%	
Total		**9,690**	**100.0%**		

Excludes normal newborns.

Source: NCI analysis of 2009 inpatients from DHSS' New Jersey Discharge Data Collection System.

Note: Zip codes highlighted in yellow comprise the "core service area"

Exhibit 2-3
JCMC Patient Origin and Market Share by Zip Code, 2009

Patient Origin					Market Share
Zip Code	City	Number of Discharges	Percent of Total	Cumulative Percent	
07305	Jersey City	4,765	29.0%	29.0%	48.6%
07304	Jersey City	3,013	18.4%	47.4%	53.6%
07306	Jersey City	2,175	13.2%	60.6%	35.6%
07302	Jersey City	1,847	11.3%	71.9%	51.4%
07002	Bayonne	1,110	6.8%	78.6%	13.9%
07307	Jersey City	861	5.2%	83.9%	18.4%
07087	Union City	489	3.0%	86.9%	5.8%
07047	North Bergen	284	1.7%	88.6%	3.9%
07093	West New York	239	1.5%	90.0%	3.7%
07030	Hoboken	191	1.2%	91.2%	5.0%
All Other Hudson County Zips		411	2.5%	93.7%	4.1%
All Other		1,032	6.3%	100.0%	
Total		**16,417**	**100.0%**		

Excludes normal newborns.
Source: NCI analysis of 2009 inpatients from DHSS' New Jersey Discharge Data Collection System.
Note: Zip codes highlighted in yellow comprise the "core service area"

As these exhibits show, all three hospitals serve well-defined, relatively compact geographic markets, with their "core service areas" (defined as those zip codes that contribute a significant percentage of the hospital's discharges **and** in which the hospital is a major provider of care as measured by market share) consisting of five (in the case of HUMC) or six (in the case of Christ Hospital and JCMC) zip codes. The local orientation of all three hospitals is further reflected by the fact that none of the three draw more than 8 percent of their patients from outside of Hudson County.

Using the above definitions of the three hospitals' service areas, we then compared the definitions and developed a combined hospital market area served by the three hospitals that served as the relevant geographic area for our analysis.

Based on our assessment of patient origin and market share data along with in- and out-migration of patients, we identified 12 zip codes that comprised the combined market area of the three hospitals. The vast majority of each hospital's patients reside in these 12 zip codes—93 percent of Christ Hospital's patients, 91 percent of HUMC's patients, and 92 percent of JCMC's patients. These 12 zip codes include all of the zip codes identified as "core service area" zip codes for each hospital along with two zip codes (07086—Weehawken, and 07310—Jersey City) that were included because of their geographic proximity/contiguousness to the other zip codes. They are zip codes with comparatively small populations (12,125 for 07086 and 9,677 for 07310), which means the total number of patients from each of these zip codes is much smaller than the other zip codes, which have populations ranging from approximately 36,000 to 61,000.

Exhibit 2-4 presents a map of Hudson County with the combined market area shaded in green.

Exhibit 2-4
Map of the Market Area

Note: Area shaded in green is the defined market area. Area shaded in pink is the portion of Hudson County that is not the defined market area.

As shown in Exhibit 2-4, there are two other hospitals located in the defined market area: Bayonne Medical Center in Bayonne and Palisades Medical Center in North Bergen. In addition, there is one other hospital in Hudson County not located in the defined market area (Meadowlands Hospital Medical Center). Patient origin data indicate that somewhere between two-thirds to more than three-quarters of the residents in the 12 zip codes comprising the

combined market area who were discharged from a hospital in 2008 and 2009 were discharged from one of the six hospitals located in Hudson County. Exhibit 2-5 below shows the number of patients discharged from one of the six Hudson County hospitals in 2009 for each of the 12 zip codes in the defined market area of the three hospitals, with the shaded cells indicating the zip codes that comprise the core service area of each of the hospitals.

Exhibit 2-5

Hudson County Residents' Discharges from Hudson County Hospitals, 2009

Zip Code	City	Christ Hospital	HUMC	JCMC	Bayonne Medical Center	Palisades Medical Center	Meadowlands Hospital Medical Center
07030	Hoboken	163	2,367	191	14	149	57
07087	Union City	1,374	2,292	489	2	1,793	673
07093	West New York	317	742	239	0	2,955	363
07047	North Bergen	369	737	284	15	2,718	756
07307	Jersey City	2,021	579	861	72	119	303
07086	Weehawken	84	215	29	0	296	66
07305	Jersey City	2,097	499	4,765	849	44	232
07306	Jersey City	2,295	420	2,175	147	44	205
07304	Jersey City	1,261	299	3,013	165	26	130
07302	Jersey City	754	286	1,847	86	51	59
07310	Jersey City	61	71	175	3	13	13
07002	Bayonne	367	299	1,110	4,355	23	184
Market Area Total		11,163	8,806	15,178	5,708	8,231	3041
Total Hospital Discharges		11,954	9,690	16,417	6,080	9,523	5,339
Portion from Market Area		93%	91%	92%	94%	86%	57%

Excludes normal newborns.

Source: NCI analysis of 2009 inpatients from DHSS' New Jersey Discharge Data Collection System.

As Exhibit 2-5 shows, among the three hospitals that are the focus of this study, Christ Hospital's and HUMC's core service areas overlap in two zip codes; Christ Hospital's and JCMC's core service areas overlap in five zip codes; and HUMC's and JCMC's core service areas overlap in one zip code. The core service areas of HUMC and Palisades overlap in three zip codes, one of which is also in Christ Hospital's core service area. JCMC's core service area overlaps with the one zip code that comprises Bayonne Medical Center's core service area.

Secaucus, where Meadowland Hospital Medical Center is located, is not part of any of the other Hudson County hospital's core service areas. Residents of the 12 zip codes market area account for only 57 percent of Meadowland Hospital Medical Center's total discharges compared with all the other Hudson County hospitals where market area residents account for 86 percent to 94 percent of their total discharges.

We also analyzed the number of New Jersey residents discharged from New York hospitals in 2009 using data obtained from the New York State Department of Health. Exhibit 2-6 shows discharges and percent of total discharges from each market area zip code from the five hospitals located in the market area, from other New Jersey hospitals and from New York hospitals. The three columns on the right of the table show the percent of hospitalizations that stay in the market area and the percent that migrate out of the area to hospitals in other parts of New Jersey and New York. There is considerable variation in the extent of outmigration across the 12 zip codes. Outmigration to New York hospitals is highest in Hoboken while outmigration to other New Jersey hospitals is highest in the North Bergen zip code, which borders Bergen County and is where Palisades Medical Center is located. For the market area combined, 71 percent of hospitalizations occur within the market area, 23 percent migrate out to other parts of New Jersey, and 6 percent migrate out to New York hospitals. This level of outmigration is not surprising given the large supply of readily accessible hospitals in Bergen and Essex counties, the presence of numerous, large, specialized, and highly prestigious hospitals in New York City, and the fact that a large number of Hudson County residents commute into New York City for work. Data on Hudson County residents' commuting patterns from the 2000 U.S. Census, the most recent available indicate that 69,760 persons commuted to work in New York State (66,547 of them to New York City) which represented 11 percent of Hudson County's population in 2000. The level of outmigration by market area residents is also generally consistent with that in other densely-populated, multi-state urban areas (e.g., Boston hospitals attract residents of southern New Hampshire, Philadelphia hospitals attract residents from southern New Jersey and northern Delaware, hospitals in Washington, D.C. serve residents from Maryland and northern Virginia).

Exhibit 2-6
Market Area Residents' Discharges by Location of Hospital, 2009

Zip Code	City	Discharges From:			Percent of Discharges From:		
		Market Area Hospitals	Other New Jersey Hospitals	New York Hospitals	Market Area Hospitals	Other New Jersey Hospitals	New York Hospitals
07030	Hoboken	2,884	912	808	63%	19%	18%
07087	Union City	5,950	2,419	271	69%	28%	3%
07093	West New York	4,253	2,234	452	61%	32%	7%
07047	North Bergen	4,123	3,097	371	54%	41%	5%
07307	Jersey City	3,652	1,025	237	74%	21%	5%
07086	Weehawken	624	296	143	59%	28%	13%
07305	Jersey City	8,254	1,542	308	82%	15%	3%
07306	Jersey City	5,081	1,032	286	79%	16%	5%
07304	Jersey City	4,764	853	154	82%	15%	3%
07302	Jersey City	3,024	568	615	72%	13%	15%
07310	Jersey City	323	95	252	48%	14%	38%
07002	Bayonne	6,154	1,837	346	74%	22%	4%
Market Area Total		**49,086**	**15,910**	**4,243**	**71%**	**23%**	**6%**

Excludes normal newborns.
Source: NCI analysis of 2009 inpatient data from DHSS' New Jersey Discharge Data Collection System and New York State Department of Health.

Analysis of the 2009 outpatient emergency department (ED) visits – that is for patients not admitted as inpatients – by residents of the 12 market area zip codes indicates that there is less out-migration for outpatient ED services than for inpatient services, as would be expected given that people typically seek emergency care from the closest hospital. Eighty-seven percent of the outpatient ED visits for residents of the 12 zip codes occurred at hospitals located in the market area. Outpatient ED visits by market area residents accounted for over 90 percent of the total ED visits at Christ Hospital, HUMC, and JCMC.

Analysis of Market Area Residents' Outmigration to New York Hospitals

To gain an understanding of the trend in outmigration to New York hospitals, we analyzed the New York State Department of Health data of market area residents' hospitalizations in New York for 2006 through 2009. As Exhibit 2-7 shows, market area residents' discharges from New York hospitals increased from 3,972 in 2006 to 4,243 in 2009 or 6.8 percent. Hoboken residents accounted for the largest number of market area discharges from New York hospitals in each of the four years, comprising 19 percent of all market area residents' 2009 hospitalizations in New York, and their discharges increased 8.5 percent between 2006 and 2009. In terms of average daily census (ADC) (i.e., inpatient days divided by 365 days; ADC measures that number of hospital beds filled with patients on an average day) as shown in the four right-hand columns in Exhibit 2- 7, on an average day, market area residents filled 52 New York hospital beds in 2009, down from 56 in 2006 due to a decrease in average length of stay. The number of Hoboken residents in New York hospitals on a daily basis has fluctuated over the four years, increasing from 8 in 2006 to 10 in 2008 and then decreasing to 7 in 2009.

Exhibit 2-7

Market Area Residents' Outmigration to New York Hospitals, 2006 - 2009

Zip Code	City	Discharges				Average Daily Census			
		2006	2007	2008	2009	2006	2007	2008	2009
07030	Hoboken	745	793	869	808	8	7	10	7
07087	Union City	250	239	256	271	4	3	5	4
07093	West New York	430	492	441	452	10	7	7	5
07047	North Bergen	368	339	318	371	6	5	5	6
07307	Jersey City	197	207	208	237	3	3	3	3
07086	Weehawken	128	145	126	143	2	2	1	2
07305	Jersey City	283	336	323	308	4	5	4	4
07306	Jersey City	292	295	307	286	5	5	4	6
07304	Jersey City	161	188	181	154	2	3	3	2
07302	Jersey City	474	544	538	615	5	6	5	6
07310	Jersey City	224	211	269	252	1	2	2	2
07002	Bayonne	420	341	363	346	6	6	5	5
Market Area Total		**3,972**	**4,130**	**4,199**	**4,243**	**56**	**54**	**54**	**52**

Excludes normal newborns.

Source: NCI analysis of 2006 – 2009 inpatient data from New York State Department of Health.

Obstetrics and newborns services accounted for a combined total of 50 percent (25 percent each) of total market area residents' discharges from New York hospitals in 2009 as Exhibit 2-8 shows. By contrast, for market area residents hospitalized in New Jersey, obstetrics and newborn cases combined accounted for less than a quarter, 23 percent, of their total discharges. Obstetrics and newborns services combined accounted for a larger percentage of Hoboken residents' discharges from New York hospitals, 71 percent, than for the market area as a whole. The vast majority of market area and Hoboken maternity cases in New York hospitals were uncomplicated pregnancies that resulted in normal newborn births. The proportions of market area and Hoboken residents with high risk pregnancies who delivered in New York hospitals were six percent and five percent respectively, which is comparable to the percentage of market area residents with high risk pregnancies (five percent) who delivered in New Jersey hospitals. The last column in Exhibit 2-8 shows the percentage of all newborns that normal newborns comprised. For market area residents, 85 percent of the births in New York hospitals were normal newborns, which is very similar to the 84 percent of birth for market area residents in New Jersey hospitals. The proportion of births that were normal newborns for Hoboken residents in New York hospitals (82 percent) is generally comparable to that for market area residents overall. Based on these analyses, it appears that market area residents are choosing to utilize New York hospitals for basic obstetrics services and not just for the specialized tertiary care they offer for complex obstetric cases.

Exhibit 2-8

Service Distribution of Market Area Residents Hospitalized in New York, 2009

Zip Code	City	Percent of Total Discharges					Normal Newborns as Percent of All Newborns
		Medical/ Surgical	Obstetrics	Newborns[1]	Psychiatry and Rehabilitation		
07030	Hoboken	27%	36%	35%	2%		82%
07087	Union City	63%	17%	16%	4%		86%
07093	West New York	59%	19%	19%	3%		84%
07047	North Bergen	75%	9%	10%	6%		94%
07307	Jersey City	58%	19%	18%	5%		87%
07086	Weehawken	48%	25%	23%	4%		92%
07305	Jersey City	66%	16%	15%	3%		76%
07306	Jersey City	62%	18%	15%	5%		81%
07304	Jersey City	57%	19%	18%	6%		70%
07302	Jersey City	25%	37%	36%	2%		87%
07310	Jersey City	19%	40%	39%	2%		88%
07002	Bayonne	77%	10%	9%	4%		94%
Market Area Residents Hospitalized in New York Hospitals		**46%**	**25%**	**25%**	**4%**		**85%**
Market Area Residents Hospitalized in New Jersey Hospitals		**70%**	**12%**	**11%**	**7%**		**84%**

[1]Note that normal newborns are included in this analysis of the service mix, but not in outmigration analysis.

Source: NCI analysis of 2009 inpatient data from New York State Department of Health

Market Area Demographics

The population in the 12 zip codes that comprise the market area totaled 526,681 in 2009 as Exhibit 2-9 shows. Jersey City zip codes comprised 46 percent of the market area's total population. The market area's combined population is younger than New Jersey's overall

population; 65 percent of the market area's population is under age 45 compared with 60 percent for all New Jersey residents.

Exhibit 2-9
Market Area Population and Age Distribution by Zip Code – 2009

Zip Code	City	Population	Population Distribution by Age				
			0 – 17	18 – 44	45 – 64	65 – 84	85 & Over
07002	Bayonne	56,768	21%	37%	27%	13%	2%
07030	Hoboken	40,895	11%	62%	19%	7%	1%
07047	North Bergen	55,319	22%	39%	25%	11%	3%
07086	Weehawken	12,125	16%	46%	25%	10%	2%
07087	Union City	61,365	25%	42%	23%	9%	1%
07093	West New York	56,802	22%	42%	24%	11%	2%
07302	Jersey City	36,418	18%	49%	24%	8%	1%
07304	Jersey City	41,598	27%	41%	23%	8%	1%
07305	Jersey City	59,476	26%	40%	23%	9%	2%
07306	Jersey City	51,372	23%	43%	24%	9%	2%
07307	Jersey City	44,866	25%	42%	23%	8%	1%
07310	Jersey City	9,677	18%	58%	19%	5%	1%
Market Area Total		**526,681**	**22%**	**43%**	**24%**	**9%**	**2%**
New Jersey		**8,716,672**	**24%**	**36%**	**27%**	**11%**	**2%**

Source: Nielsen Claritas SiteReports.

The population of the 12-zip code market area is projected to decrease very slightly, 0.6 percent, between 2009 and 2014 as shown in Exhibit 2-10. Projections for 2019 show the total market area population increasing slightly between 2014 and 2019 (by 0.3 percent), for an overall decrease of about 0.4 percent between 2009 and 2019. By contrast, over this same time period, New Jersey's entire population is projected to increase 3.8 percent. Jersey City zip codes, which comprise 46 percent of the market area's total population in 2009, are projected to have a combined increase of 2.1 percent between 2009 and 2019. Union City is projected to have the largest decrease in population, 7.7 percent, between 2009 and 2019.

Exhibit 2-10

Market Area and New Jersey Population, 2009 and projected 2014 and 2019

Zip Code	City	Population			Change 2009 - 2019
		2009	2014 Projected	2019 Projected	
07002	Bayonne	56,768	55,561	54,476	-4.0%
07030	Hoboken	40,895	41,079	42,195	3.2%
07047	North Bergen	55,319	54,688	54,256	-1.9%
07086	Weehawken	12,125	11,736	11,421	-5.8%
07087	Union City	61,365	58,770	56,649	-7.7%
07093	West New York	56,802	56,750	57,151	0.6%
07302	Jersey City	36,418	37,054	38,607	6.0%
07304	Jersey City	41,598	41,691	41,913	0.8%
07305	Jersey City	59,476	61,433	63,619	7.0%
07306	Jersey City	51,372	49,413	47,942	-6.7%
07307	Jersey City	44,866	44,824	45,031	0.4%
07310	Jersey City	9,677	10,427	11,525	19.1%
Market Area Total		**526,681**	**523,426**	**524,783**	-0.4%
New Jersey Total		**8,716,672**	**8,880,838**	**9,048,096**	3.8%

Source: Nielsen Claritas SiteReports.

The market area's population is projected to age between 2009 and 2019, as the number of persons age 18 – 44 is projected to decrease nearly 15 percent, while the number of people age 45 – 64 and 65 – 84 are projected to increase 22 percent and 21 percent, respectively. However, the market area's population will remain younger than the New Jersey population overall; as Exhibit 2-11 shows, the proportion of the market area's population under age 45 is projected to be 58 percent in 2019 compared with the 54 percent for all of New Jersey and the portion age 65 and older is projected to be 13 percent in the market area compared with 16 percent in all of New Jersey.

Exhibit 2-11
Age Distribution of Population, Market Area and New Jersey
2009 and projected 2014 and 2019

Age Group	Market Area			New Jersey		
	2009	2014 Projected	2019 Projected	2009	2014 Projected	2019 Projected
0 - 17	22%	22%	21%	24%	23%	22%
18 - 44	43%	40%	37%	36%	34%	32%
45 - 64	24%	26%	29%	27%	28%	30%
65 - 84	9%	10%	11%	11%	13%	14%
85 and over	2%	2%	2%	2%	2%	2%

Source: Nielsen Claritas SiteReports.

Income Status and Payer Mix

The market area includes relatively large proportions of low income residents as indicated by the lower than statewide average household income in 10 of the 12 market area zip codes as shown in Exhibit 2-12. The average household income for the market area as a whole, $68,613, is 70 percent of the New Jersey average of $97,747. Average household income in the market area zip codes range from $48,808 in the Union City zip code, 07087 (50 percent of the New Jersey statewide average) to $125,230 in Jersey City zip code 07310 (128 percent of the New Jersey statewide average). This Jersey City zip, which has a small population of 9,677 residents, and the Hoboken zip code, 07030, are the only market area zip codes with average household incomes above the statewide average. These two zip codes also have the highest rates of outmigration in the market area to New York hospitals.

Exhibit 2-12
Average Household Income, 2009

Zip Code	City	Average Household Income	Zip Code's Average Household Income as a Percent of State's Average Household Income
07002	Bayonne	$66,431	68%
07030	Hoboken	$118,257	121%
07047	North Bergen	$64,217	66%
07086	Weehawken	$92,818	95%
07087	Union City	$48,803	50%
07093	West New York	$63,616	65%
07302	Jersey City	$88,657	91%
07304	Jersey City	$51,788	53%
07305	Jersey City	$66,082	68%
07306	Jersey City	$58,448	60%
07307	Jersey City	$60,535	62%
07310	Jersey City	$125,230	128%
Market Area		**$68,613**	**70%**
New Jersey		$97,747	
U.S.		$65,083	

Source: Nielsen Claritas SiteReports.

Reflecting the market area population's income status, the payer mix for market area residents hospitalized in 2009, (as shown in the second to the last column in Exhibit 2-13) indicates high percentages of Medicaid and uninsured patients, with Medicaid coverage accounting for 15 percent of market area residents' discharges in 2009 and 14 percent of the discharges were for residents without health insurance for a combined share of Medicaid and uninsured of 29 percent. In contrast, Medicaid and uninsured patients discharged from all New Jersey hospitals in 2009 accounted for 19 percent (last column in Exhibit 2-13). Conversely, Blue Cross and Commercial coverage account for 35 percent of market area residents' discharges compared with 41 percent from all New Jersey hospitals in 2009.

As discussed previously, 71 percent of market area residents are hospitalized within the market area while 23 percent migrate out to other hospitals in New Jersey and 6 percent migrate out to hospitals in New York. There are substantial differences in the payer mix of residents who are hospitalized in the market area and residents who migrate out for hospitalization. As Exhibit 2-13 shows, Blue Cross and Commercial patients comprise 28 percent of total market area residents' discharges from the five hospitals located in the market area whereas they account for 45 percent of other New Jersey hospitals' discharges of market area residents. The more striking, although not surprising, difference in payer mix is for the market area residents who are hospitalized in New York: Blue Cross and Commercial coverage accounts for 72 percent of New York hospitals' discharges of market area residents. Conversely, higher proportions of market area residents with Medicaid coverage or no insurance are hospitalized within the market area.

These data indicate that higher proportions of residents with greater economic means, as measured by private health insurance coverage, leave the market area for inpatient hospital care than low-income residents. This pattern reflects the greater mobility of the more affluent population in the market area and their likely connections to the New York City hospital market (through commuting for work and previous health care relationships) along with the more limited mobility of the less affluent market area residents. This is a pattern that is consistent with migration patterns across the nation, and is a contributing factor to the financial stress that some market area hospitals face. This pattern is especially evident in the Hoboken zip code which has an average household income that is substantially above the market area and statewide averages. Hoboken's relative affluence combined with its proximity to New York City helps explain why it has the highest level of outmigration to New York hospitals.

Exhibit 2-13
Payer Mix of Market Area Residents by Location of Hospitalization and for All New Jersey Hospitals, 2009

Payer	Market Area Resident Hospitalized In:				Discharges from All New Jersey Hospitals
	Market Area Hospitals	Other New Jersey Hospitals	New York Hospitals	All New Jersey and New York Hospitals	
Blue Cross & Commercial	28%	45%	72%	35%	41%
Medicare	38%	29%	17%	35%	38%
Medicaid	16%	13%	4%	15%	10%
Uninsured	16%	10%	4%	14%	9%
Other	1%	2%	3%	1%	2%
Total	100%	100%	100%	100%	100%

Excludes normal newborns.
Source: NCI analysis of 2009 inpatient data from DHSS' New Jersey Discharge Data Collection System and New York State Department of Health.

Mortality Rates

Although mortality data are not available at the zip code-level, Exhibit 2-14 shows mortality rates from all and selected diseases for Hudson County and all of New Jersey for 2000 through 2005, the most recent year for which data are available. Mortality rates in Hudson County are generally consistent with those in the State overall, with no statistically significant differences between Hudson County and Statewide disease mortality rates.

Exhibit 2-14
Disease Mortality Rates for Hudson County and New Jersey – 2000 – 2005

Year	Age-Adjusted Death Rates per 100,000 Standard Population							
	All Diseases		Heart Disease		Stroke		Cancer	
	Hudson County	Statewide	Hudson County	Statewide	Hudson County	Statewide	Hudson County	Statewide
2000	865.8	848.6	279.7	267.9	43.3	48.7	*not available*	
2001	848.9	837	267.1	252.6	42.5	44.6	*not available*	
2002	819.1	816.2	265.6	246.2	39.2	43.9	182.4	197.5
2003	787.5	801.4	247.9	237.2	39.4	42.6	180.9	196.6
2004	760.3	769.3	240.4	219.1	39.1	40.4	170.2	186.4
2005	760.8	758.7	235.2	214.4	40.7	37.6	172.0	184.6

Source: New Jersey State Health Assessment Data, Department of Health and Senior Services

Market Area Travel Times

State Medicaid agencies typically require that the managed care organizations with which they contract maintain provider networks that meet specific standards for providing their members geographic access to care. These geographic access standards are expressed in terms of travel times to providers; for hospital care, 30 minutes is the typical standard in urban areas. This 30 minute travel time standard is also common in the commercial managed care industry.

The maximum driving distance between zip codes that comprise the market area and the locations of market area hospitals is approximately 14 miles, with estimated driving times of 23 to 50 minutes depending on the time of day from Bayonne, zip code 07002, located at the southern end of the market area where Bayonne Medical Center is located, to North Bergen, zip code 07047, at the northern end of the market area where Palisades Medical Center is located. Exhibit 2-15 shows estimated minimum and maximum average travel time in minutes between each zip code in the market area and the locations of market area hospitals. The maximum estimated driving times reflect weekday rush hour traffic patterns and volumes on thoroughfares, including tunnel entrances and exits. As Exhibit 2-15 shows, estimated maximum driving times in the market area between all the other zip codes and hospital locations are, with few exceptions, less than 30 minutes. Moreover, every zip code is within 30 minutes driving time of at least two hospitals.

Exhibit 2-15
Estimated Driving Time from Market Area Zip Codes to Market Area Hospitals

From Center of Zip Code		Christ Hospital	Hoboken University Medical Center	Jersey City Medical Center	Bayonne Medical Center	Palisades Medical Center
07002	Bayonne	15-40 min	17-40 min	12-26 min	-	26-50 min
07030	Hoboken	7-14 min	-	10-20 min	14-28 min	11-22 min
07047	North Bergen	15-30 min	15-30 min	17-34 min	23-46 min	-
07086	Weehawken	7-14 min	6-12 min	13-26 min	16-32 min	8-15 min
07087	Union City	9-18 min	8-16 min	13-26 min	18-35 min	8-16 min
07093	West New York	10-20 min	10-20 min	16-32 min	19-38 min	4-8 min
07302	Jersey City	5-10 min	8-16 min	-	11-22 min	16-32 min
07304	Jersey City	10-20 min	12-24 min	3-6 min	11-22 min	21-42 min
07305	Jersey City	11-35 min	14-40 min	8-16 min	8-16 min	24-48 min
07306	Jersey City	-	10-20 min	8-20 min	13-26 min	19-38 min
07307	Jersey City	8-16 min	11-22 min	9-18 min	15-30 min	15-30 min
07310	Jersey City	4-8 min	5-10 min	5-10 min	11-22 min	14-28 min

Note: Blank cells in exhibit denote zip code location of hospital.
Source: Google Maps

Most of the market area hospitals are located near public transit stops. Christ Hospital is located on a bus route and the other market hospitals are within 5 minutes walking time from either a bus or light rail stop. Exhibit 2-16 shows travel time and the number of transfers on public transit within the market area to hospital locations. Travel times in the market area to hospital locations are longer on public transit than by private vehicle, but with the exception of one zip code (07047 North Bergen) all zip codes are within 30 minutes on public transit of at least one market area hospital. In most zip codes where travel time on public transit to the second nearest hospital exceeds 30 minutes, travel time is less than 40 minutes. For example, Union City, zip code 07087, is within 33 minutes of JCMC its second nearest hospital, and 37 minutes of Christ Hospital its third nearest hospital. Likewise, the travel time on public transit from Hoboken, zip code 07030, to market area hospitals other than HUMC, ranges from 36 to 38 minutes to JCMC, Christ Hospital and Palisades Medical Center.

Exhibit 2-16
Public Transportation Travel Time[1] (in minutes)
from Market Area Zip Codes to Market Area Hospitals

From Center of Zip Code	Christ Hospital[2]		Hoboken University Medical Center[3]		Jersey City Medical Center[4]		Bayonne Medical Center[5]		Palisades Medical Center[6]	
	Time	No. of Transfers	Time	No. of Transfers	Time	No. of Transfers	Time	No. of Transfers	Time	No. of Transfers
07002 Bayonne	67	2	60	2	30	0	23	0	78	2
07030 Hoboken	37	0	16	0	36	0	54	1	38	1
07047 North Bergen	70	0	54	2	77	1	75	2	45	1
07086 Weehawken	34	0	31	0	37	0	56	1	16	0
07087 Union City	37	0	41	0	33	0	52	1	29	1
07093 West New York	49	0	45	0	44	1	66	3	18	1
07302 Jersey City	27	0	30	1	10	0	28	0	50	1
07304 Jersey City	30	0	39	0	16	0	28	0	61	2
07305 Jersey City	43	0	52	0	35	0	22	0	70	2
07306 Jersey City	31	0	41	0	26	0	48	1	61	2
07307 Jersey City	30	0	37	0	34	1	65	2	49	2
07310 Jersey City	24	0	22	0	20	0	40	0	48	1

Source: Google Maps, Public Transportation Directions

[1] Travel times shown include walking time to and from public transit and reflect travel on weekdays during regular business hours.
[2] Christ Hospital is on a bus route and is 18 minutes from light rail transit stop.
[3] Hoboken University Medical Center is 5 minutes from a bus stop and 15 minutes from a light rail transit stop.
[4] Jersey City Medical Center is 4 minutes from light rail transit stop.
[5] Bayonne Medical Center is 4 minutes from a bus stop and 8 minutes from a light rail transit stop.
[6] Palisades Medical Center is 2 minutes from a bus stop.

Section 3: Health Care Resources in the Market Area and Projected Demand for Services

This section of the report provides a summary overview of the health care resources available in the defined market area and an assessment of the historical and forecasted demand for healthcare services.

Market Area Health Care Resources

As noted previously, there are five hospitals located within the defined market area: Christ Hospital, HUMC, JCMC, Bayonne Medical Center, and Palisades Medical Center. These five hospitals provide a combined total of 1,144 maintained beds. In addition, there is a sixth hospital in Hudson County—Meadowlands Hospital Medical Center; however, it is located outside the market area defined for purposes of this study.

Beyond the inpatient facilities, the defined market area includes a large number of ambulatory care centers. Exhibit 3-1 presents the number of ambulatory care centers licensed by DHSS.

Exhibit 3-1
Number of Ambulatory Care Centers in the Market Area

Zip Code	City	Federally Qualified Health Centers	Free Standing Surgery and Imaging Centers	Hospital Based/Affiliated Centers	Other	Total
07002	Bayonne	1	1	1	5	8
07030	Hoboken	1	3	1	1	6
07047	North Bergen	1	2	0	2	5
07087	Union City	1	3	1	2	7
07093	West New York	3	2	0	1	6
07302	Jersey City	0	3	2	3	8
07304	Jersey City	1	1	1	2	5
07306	Jersey City	1	7	1	3	12
07307	Jersey City	1	0	0	0	1
Market Area Total		**10**	**22**	**7**	**19**	**58**

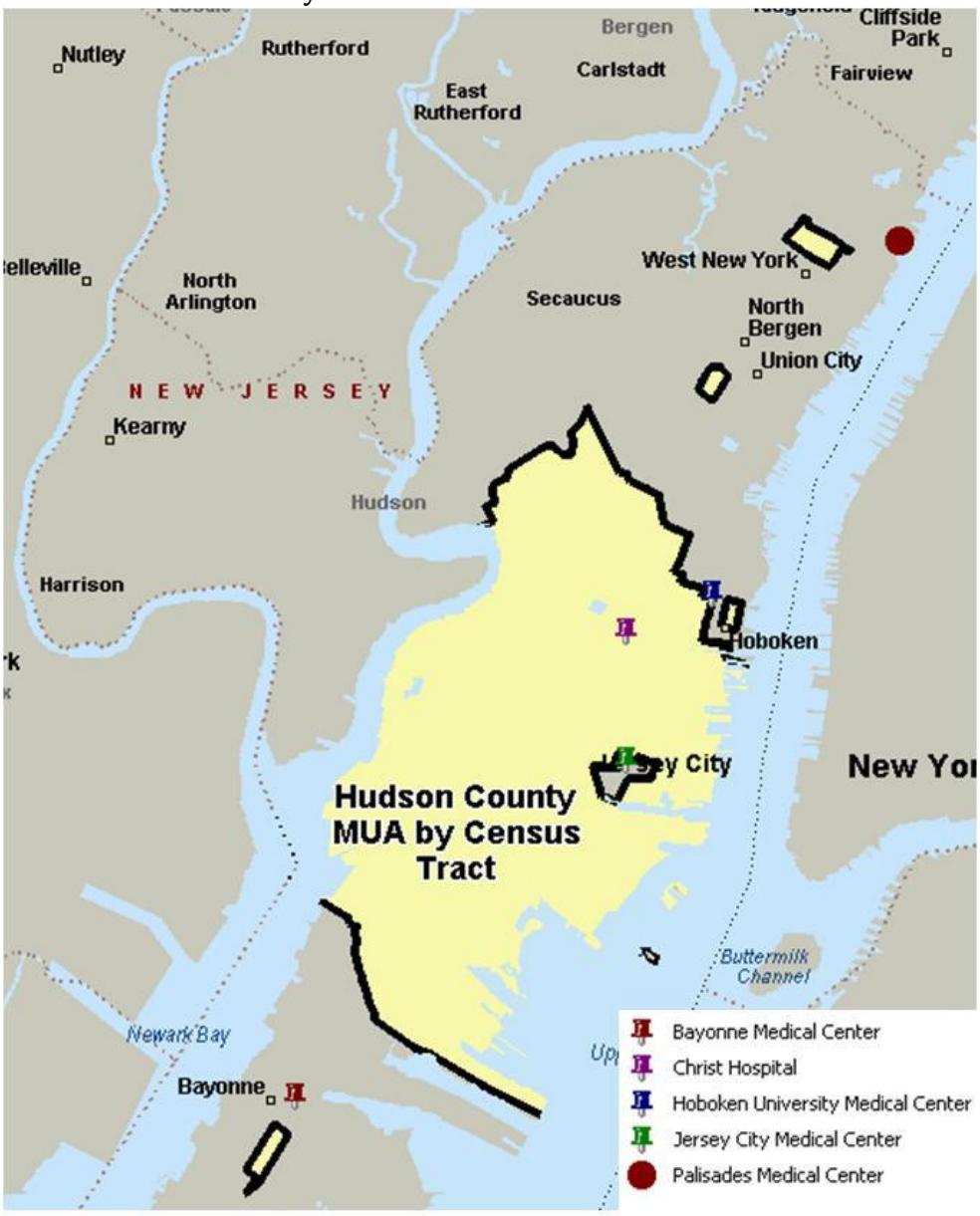
Source: New Jersey DHSS.

As shown in Exhibit 3-1, there are 10 Federally Qualified Health Centers (FQHCs) in the market area. FQHCs are public and non-profit organizations that provide primary care to federally-designated medically underserved areas and populations and are important sources of primary care for uninsured and Medicaid patients. There are 17 free-standing imaging centers and 5 ambulatory surgery centers in the market area. These centers compete with the hospitals in the market area. Among the hospital based or affiliated ambulatory centers, the facility located in Hoboken is HUMC's Center for Family Health which houses the Family Medicine residency clinic, the facility in Bayonne is Bayonne Medical Center's cancer pavilion and the facilities in Jersey City zip codes, 07302 and 07304 are JCMC's two Family Health Centers and its Ambulatory Care Center. The Mount Carmel Guild organization, which provides substance abuse services, operates the center in Union City and in Jersey City zip code, 07306.

Medically Underserved Areas

The Health Resources and Services Administration (HRSA) of the United States Department of Health and Human Services designates geographic areas, for example, a county or collection of census tracts, as Medically Underserved Areas (MUAs) based on four variables: the ratio of primary medical care physicians per 1,000 population, infant mortality rate, percentage of the population with incomes below the poverty level, and percentage of the population age 65 or over. There are five MUAs in Hudson County and all five are within the market area defined for this project. Exhibit 3-2 illustrates the location of the five MUAs, the largest of which encompasses much of Jersey City. One of the MUAs is comprised of four census tracts in Hoboken and each of the other three MUAs is comprised of a single census tract. Christ Hospital is located in the Jersey City MUA and although the census tract in which Jersey City Medical Center is located is not part of the MUA, all the surrounding census tracts are part of the MUA. Hoboken University Medical Center is not located in the Hoboken MUA but is located between it and the Jersey City MUAs.

Exhibit 3-2
Medically Underserved Areas in Market Area



Market Area Residents' Future Demand for Hospital Services

We analyzed population projections for the market area and market area residents' utilization of inpatient services to project the demand for these services in the future and then compared the projections with the current supply of beds. The purpose of this analysis was to quantify the bed need or surplus and to evaluate the capacity among market area hospitals to accommodate additional patients. We also projected market area residents' demand for emergency department outpatient services.

Historical Utilization of Inpatient Hospital Services

To gain an understanding of inpatient hospitalization utilization trends for the market area, we analyzed three years of information from the New Jersey Discharge Data Collection System from the DHSS. The analysis included market area residents' hospitalizations in New Jersey acute care hospitals. The figures in Exhibit 3-3 below illustrate that between 2006 and 2009:

- Market area discharges decreased 1.9 percent.
- The market area use rate, i.e., discharges per 1,000 population, decreased 1 percent
- Market area inpatient days decreased nearly 15 percent
- The decrease in inpatient days was mainly due to a 13 percent reduction in average length of stay (ALOS)

Exhibit 3-3
Market Area Residents' Recent Inpatient Utilization

Year	Discharges	Inpatient Days	Average Length of Stay	Use Rate (Discharges per 1000 Population)
2006	66,235	387,044	5.84	124.7
2008	64,554	341,556	5.29	122.2
2009	64,996	330,200	5.08	123.4
Compound Annual Growth Rate 2006 – 2009	-0.6%	-5.2%	-4.5%	-0.3%
Change 2006 – 2009	-1.9%	-14.7%	-13.0%	-1.0%

Excludes normal newborns
Source: NCI analysis of inpatient data from DHSS' New Jersey Discharge Data Collection System.

Projection Methodology

We projected market area residents' demand for hospital services in the future based on 2009 use rates calculated at the DRG level for each of five age groupings: 0 – 17, 18 – 44, 45 – 64, 65 – 84 and 85 and over. Our projections included two scenarios: a baseline and an adjusted projection scenario. For the baseline scenario projection, we applied the 2009 use rates to the

2014 and 2019 projected populations in each age group to determine discharges for each DRG and age group and determined inpatient days by multiplying the projected baseline discharges by the ALOS in 2009 for each DRG and age group. This method assumes that the 2009 use rates and ALOS will remain constant and thus, projects the future demand for hospital services due only to the market area's projected population size and age composition.

For the adjusted projection scenario, we incorporated the market area's utilization trend in discharges during the recent past, as illustrated in Exhibit 3-3 above, by adjusting the 2009 use rates by the observed compound annual growth rate, both positive and negative, between 2006 and 2009 at a service line level.[7] We assumed that these use rate changes would continue through 2012, after which time, we held use rates constant. We made one exception in adjusting the 2009 baseline use rates; for the psychiatry service line we did not think it was reasonable to assume the 18 percent compound annual growth rate between 2006 and 2009 would continue for three years beyond 2009. For this reason, we reduced the 18 percent annual growth in the psychiatry service line use rate by half and applied this 9 percent growth for one year beyond 2009 and then held the use rate constant thereafter. Because of the sharp decline in the ALOS in recent years, we assumed that ALOS would not continue to decrease and held it constant throughout the 10-year projection period.

Projection Results

Exhibit 3-4 shows 2009 volume compared to projected 2014 and 2019 volumes under the two projection scenarios. Under the baseline projection scenario, discharges and inpatient days are projected to decrease slightly through 2019 (by less than 1 percent). Under the adjusted projection scenario, discharges and inpatient days are projected to decrease 2.3 percent and 1.7 percent, respectively by 2014 and then increase very slightly between 2014 and 2019.

[7] Thirty-five grouping of DRGs.

Exhibit 3-4
Market Area Residents' Demand for Inpatient Hospital Services,
2009 and Projected 2014 and 2019

	2009	Baseline Projection Scenario		Adjusted Projection Scenario	
		2014 Projected	2019 Projected	2014 Projected	2019 Projected
Discharges	64,996	64,603	64,642	63,510	63,562
Inpatient Days	330,200	328,322	328,825	324,727	325,249
ALOS	5.1	5.1	5.1	5.1	5.1
Use Rate (Discharges per 1000 Population)	123.4	123.4	123.2	121.3	121.1

Source: NCI analysis of inpatient data from DHSS' New Jersey Discharge Data Collection System.
Note: Excludes normal newborns

Number of Hospital Beds Needed to Meet Projected Demand

We made two adjustments to the population-based projected demand presented above to determine the number of hospital beds needed in the market area to meet the projected demand. We adjusted the population-based projected demand for the level of outmigration by market area residents to other hospitals in New Jersey observed in 2009. We also adjusted the population-based projected demand for the level of in-migration to market area hospitals by residents of other parts of New Jersey and other states observed in 2009.

Exhibit 3-5 shows the inpatient days and average daily census (i.e., the number of patients in hospital beds per day on average), after making these adjustments, for the market area hospitals in 2009 and projected for 2014 and 2019 under the two projection scenarios. The projected average daily census ranges from 710 to 726 in 2014 and from 711 to 727 in 2019, depending on the projection scenario. We used the following target occupancy rates as efficient levels of use of hospital capacity to estimate the number of beds needed to meet the projected average daily censes: 85% for adult medical and surgical, 65% for pediatrics; 70% for obstetrics; 65% for Level II and III nursery and 90% for psychiatry and substance abuse. Based on these target occupancy rates, the estimated number of beds needed ranges from 856 to 876 in 2014 and from 854 to 875 in 2019. A comparison of the hospitals reported supply of 1,144 maintained beds in the market area in 2009 with the five market area hospitals' actual volume in 2009 suggests there is a surplus of 264 beds currently. Comparing the current bed supply with the projected number of beds needed in 2014 and 2019 suggests that without a reduction in the bed supply, the estimated bed surplus will continue through 2014 and 2019.

Exhibit 3-5
Demand for Hospital Beds in the Market Area Compared with Current Supply, 2009 and Projected 2014 and 2019

Demand for Inpatient Hospital Services in the Market Area	2009	Baseline Projection Scenario		Adjusted Projection Scenario	
		2014 Projected	2019 Projected	2014 Projected	2019 Projected
Inpatient Days	266,446	264,914	265,358	259,070	259,511
Average Daily Census	730	726	727	710	711
Beds Needed in Market Area at Target Occupancy Rates	880	876	875	856	854
2009 Maintained Beds[8]	1,144				
Bed Need/(Surplus)	(264)	(268)	(269)	(288)	(290)

Source: NCI projections using 2009 inpatient data from DHSS' New Jersey Discharge Data Collection System.
Note: Excludes normal newborns

Exhibit 3-6 shows the breakdown by category of the 268 bed surplus projected under the baseline scenario for 2014 without a change in the current bed supply.

[8] Includes acute care beds and Level II and II Nursery Bassinets as reported by the five market area hospitals on the B2 Reports submitted to the DHSS.

Exhibit 3-6
Demand for Hospital Beds in the Market Area Compared with Current Supply, 2009 and Projected 2014

Hospital Bed Category	Average Daily Census		Target Occupancy Rate	2014 Projected Beds Needed at Target Occupancy Rate	Current Maintained Bed Supply	Estimated Bed Need/ (Surplus) in 2014 without Change in Current Bed Supply
	2009	2014 Baseline Projected				
Medical/Surgical	559	554	85%	652	862	(210)
Pediatrics	19	20	65%	31	62	(31)
Obstetrics	48	48	70%	69	85	(16)
Level II or III Nursery	21	21	65%	32	27	5
Psychiatry & Substance Abuse	83	83	90%	92	108	(16)
Total	**730**	**726**		**876**	**1,144**	**(268)**

Note: Excludes normal newborns

In addition to an overall surplus of beds, there is also substantial duplication of the above services among the five market area hospitals, with the exception of Level II and Level III Nursery services (which only JCMC and HUMC have). JCMC has 21 maintained Level III bassinets and HUMC has 6 maintained Level II bassinets. Christ Hospital, JCMC and HUMC all have the other services. Bayonne Medical Center has all the other services except obstetrics and Palisades Medical Center has all the other services except psychiatry. Such duplication is especially noteworthy in pediatrics and obstetrics because the low (current and projected) volume precludes any one of the market area hospitals from achieving critical mass in these services.

Historical Emergency Department Utilization

Emergency Department (ED) utilization, as measured in patient visits, is comprised of patients who are seen in hospital EDs and then admitted as inpatients and patients who are treated in hospital EDs as outpatients. Exhibit 3-7 shows for market area residents in recent years, the number of inpatient discharges that came through hospital EDs; note that this volume is included in the inpatient volume shown in Exhibits 3-3 through 3-6 above and all the analysis of inpatient volume in this section. As Exhibit 3-7 shows, in 2009, 63 percent of market area

residents' hospitalizations were emergency admissions and this percentage has been constant over the past few years.

Exhibit 3-7
Market Area Residents' Inpatient Discharges Admitted through Hospital Emergency Departments, 2006, 2008 and 2009

Year	Inpatient Discharges Admitted through ED	Portion of Discharges Admitted through ED
2006	41,920	63%
2008	40,282	62%
2009	40,727	63%

Source: NCI analysis of inpatient data from data from DHSS' New Jersey Discharge Data Collection System.

Exhibit 3-8 shows market area residents' ED utilization in 2009 by type of visit – those that resulted in inpatient admission and those that were outpatients. Outpatient ED visits accounted for 82 percent of all ED visits by market area residents in 2009.

Exhibit 3-8
Market Area Residents' Emergency Department Visits by Type, 2009

Type of Visit	2009 ED Visits
Admitted as Inpatients	40,727
Outpatients	188,778
Total ED Visits	229,505

Source: NCI analysis of 2009 inpatient and emergency department data from data from DHSS' New Jersey Discharge Data Collection System.

Projection Methodology

We projected market area residents' demand for outpatient emergency department services in the future based on 2009 use rates calculated for each of five age groupings used for the inpatient projections. As for the inpatient projections, in the baseline scenario we applied the 2009 use rates to the 2014 and 2019 projected populations in each age group to determine outpatient emergency department visits for market area residents in 2014 and 2019. For the adjusted projection scenario, we assumed that three year historical annual growth rate in the emergency department use rate of 2.7 percent in all of New Jersey would continue for three

years beyond 2009, followed by two years of annual growth of 1.6 percent (the annual growth rate between 2000 and 2008), after which time, the use rate would remain constant. [9]

Emergency Department Services Demand Projection Results

Exhibit 3-9 shows 2009 volume compared to projected 2014 and 2019 volumes under the two projection scenarios. Under the baseline scenario, outpatient emergency department visits are projected to decrease 1.6 percent by 2014 and 2.4 percent by 2019. Under the adjusted baseline scenario, emergency outpatient visits are projected to increase 10.0 percent by 2014 and 10.3 percent by 2019.

Exhibit 3-9
Market Area Residents' Demand for Outpatient Emergency Department Visits, 2009 and Projected 2014 and 2019

		Baseline Projection Scenario		Adjusted Projection Scenario	
	2009	2014 Projected	2019 Projected	2014 Projected	2019 Projected
Market Area Residents' Demand for Outpatient Emergency Department Visits	188,779	185,748	184,243	207,693	208,232

Source: NCI projections using 2009 emergency department data from DHSS' New Jersey Discharge Data Collection System.

Emergency Department Capacity Needed to Meet Projected Demand

As we did for the inpatient volume projections, we made adjustments to the population-based projected demand for outpatient emergency department visits presented above to determine the number of emergency department exam rooms or bays needed in the market area to meet the projected demand. These adjustments to the population-based projected demand include factoring in the 2009 rate of outmigration by market area residents to other hospitals in New Jersey and the 2009 rate of in-migration to market area hospitals by residents of other parts of New Jersey and other states. The first row of Exhibit 3-10 shows the demand for outpatient emergency visits in market area hospitals after these adjustments for in- and outmigration. We added emergency department visits by patients who were admitted as inpatients to the outpatient emergency department visits to obtain total visits for purposes of estimating the

[9] American Hospital Association Hospital Statistics.

number of emergency department exam rooms/bays needed for the future. The second row of Exhibit 3-10 shows this total number of visits. Assuming an exam room/bay capacity level of 1,890 visits per room/bay, the estimated number of emergency department rooms/bays needed to meet projected demand varies from a decrease of approximately two to three percent to an increase of seven to eight percent in 2014 and 2019, respectively, depending on the projection scenario.

Exhibit 3-10
Demand for Emergency Department Visits and Exam Rooms in the Market Area, 2009 and Projected 2014 and 2019

		Baseline Projection Scenario		Adjusted Projection Scenario	
	2009	2014 Projected	2019 Projected	2014 Projected	2019 Projected
Demand for Outpatient ED Visits in Market Area	180,168	177,279	175,843	198,224	198,738
Total ED Visits including Visits by Patients Admitted as Inpatients	217,439	213,936	212,531	234,001	234.515
Estimated ED Rooms/Bays Needed at 1,890 Visits per Room/Bay[10]	116	114	113	124	125

Source: NCI projections using 2009 emergency department and inpatient data from DHSS' New Jersey Discharge Data Collection System.

The DHSS does not have information about the supply of emergency department exam rooms/bays with which to compare the estimated need to meet the projected demand in the entire market. However, we were able to make this comparison for the three hospitals that are the focus of this study using facility drawings that each of the hospitals provided. In making this comparison, we used the 2014 adjusted baseline projected visit volume. Exhibit 3-11 shows the results of this analysis which suggest a need for additional ED capacity at JCMC and sufficient capacity at Christ and HUMC. The result for JCMC is as would be expected given the

[10] Based on emergency department space planning data from the American College of Emergency Physicians.

crowding that it is currently experiencing in its ED. The result for HUMC is also as would be expected given that its ED was newly built in 2009 and thus, would be expected to have capacity to accommodate future growth in volume.

Exhibit 3-11
Demand for Emergency Department Exam Rooms/Bays Compared with Current Supply by Hospital, Projected 2014

Hospital	Total ED Visits		2014 Projected ED Room/Bays Needed at 1,890 Visits per Room[11]	Current Supply of ED Rooms/Bays[12]	Estimated Need/(Surplus) of ED Rooms/Bays
	2009	2014 Adjusted Projection Scenario			
Christ Hospital	44,392	48,033	26	30	(4)
Hoboken University Medical Center	36,358	39,335	21	28	(7)
Jersey City Medical Center	76,575	82,834	44	38	6

Source: NCI projections using 2009 emergency department and inpatient data from DHSS' New Jersey Discharge Data Collection System.

[11] Based on emergency department space planning data from the American College of Emergency Physicians.

[12] Based on facility drawings provided by each hospital.

Section 4: Key Market Area Findings

This section summarizes the key findings about the market area and its demand for and supply of health care services.

- Christ Hospital, HUMC, and JCMC all serve well-defined, compact market areas, and draw relatively few (less than 8 percent) of their patients from outside of Hudson County. As a result, all three hospitals clearly serve as local community providers rather than as regional referral centers.

- Christ Hospital, HUMC, and JCMC have a combined market area consisting of 12 zip codes, which together account for over 90 percent of the inpatient discharges and outpatient emergency department visits for the three hospitals. This market area is well-defined, densely populated, and relatively compact, encompassing an area approximately 14 miles long and 4 miles wide.

- The market area has a population of approximately 527,000 residents and projections show a decrease over the next 10 years to slightly less than 525,000. This means that changes in total population will not, in and of themselves, drive increased demand for health care services in the market area. And although the population is projected to age, it will remain younger than the State and the U.S. population. In addition, the pediatric age population (0-17) is expected to decline by approximately 6 percent and the obstetric age population (females 18-44) is expected to drop by nearly 18 percent, which will likely further reduce the demand for these services.

- Slightly less than 30 percent of market area residents leave the area for inpatient hospital care, with 23 percent going to other parts of New Jersey and 6 percent going to New York. The payer mix of the market area residents who leave the area for inpatient care has a much higher percentage of commercially insured patients than for residents who stay in the market area (72 percent for residents who go to New York have commercial insurance and 45 percent for residents who go to other parts of New Jersey are commercially insured versus 28 percent for residents who are hospitalized in the market area). An interesting note is that the rate of outmigration in the market area to New York hospitals is highest in the two zip codes with the highest average household incomes. This pattern of patient migration is similar to those found in other major metropolitan areas with a substantial number of well-regarded tertiary, specialty, and academic medical center hospitals. And this pattern is unlikely to change in the future,

and in fact, the outmigration of better insured patients may increase as portions of the market area re-gentrify and attract more affluent residents and businesses, including those who formerly were in New York. It should be noted, however, that even if outmigration to New York hospitals could be reduced by 20 percent, such a change would fill only 10 beds on an average daily basis. A 20 percent reduction in market area residents' outmigration to other parts of New Jersey would fill only 47 beds on an average daily basis.

- Travel times between most market area zip codes and hospital locations are reasonable and public transit is readily available and serves the Christ Hospital, HUMC and JCMC locations. Except for the two zip codes at the southern and northern ends of the market area, driving times in the market area between all the other zip codes and hospital locations are, with few exceptions, less than 30 minutes, the travel time used in the public and private managed care industries as the standard for geographic access to hospital care. Moreover, every zip code is within 30 minutes driving time of at least two hospitals. Travel times in the market area to hospital locations are longer on public transit than by private vehicle, but with the exception of one zip code (07047 North Bergen) all zip codes are within 30 minutes on public transit of at least one market area hospital. In most zip codes where travel time on public transit to the second nearest hospital exceeds 30 minutes, travel time is less than 40 minutes. For example, travel time on public transit from Hoboken, zip code 07030, to market area hospitals other than HUMC, ranges from 36 to 38 minutes to JCMC, Christ Hospital and Palisades Medical Center. Thus, access to all three of the hospital campuses is relatively convenient and achievable in reasonable travel times for market area residents.

- In addition to Christ Hospital, HUMC, and JCMC, the market area is also home to two other hospitals: Palisades Medical Center (with 180 maintained beds) and Bayonne Medical Center (with 201 maintained beds). In total, the market area has 1,144 maintained beds. Inpatient utilization in the market area has decreased over the last few years, and given the relatively stable population base in the market area, is unlikely to increase to any significant extent for the foreseeable future. The current and projected demand for inpatient hospital services indicates there is a substantial surplus of maintained beds (264) which is projected to increase modestly by 2014 to a surplus of 268 to 290 beds.

- All three hospitals offer essentially the same complement of general acute care services. As a result, there is substantial duplication of services in the market area, especially in services like obstetrics and pediatrics. Current trends in pediatrics reflect a strong

preference among physicians and families to utilize facilities with specialized pediatrics capabilities. Similarly, obstetrical patients generally prefer facilities with the ability to handle all types of obstetrical and newborn cases, which requires sufficient volumes to justify providing specialized services from a financial and quality perspective. With Christ Hospital, HUMC, and JCMC all providing pediatric and obstetrics, the ability of any one of them achieving a critical mass of patient volumes in these services is highly limited, a situation made even more difficult by the fact that both Palisades Medical Center and Bayonne Medical Center provide pediatrics and Palisades Medical Center offers obstetrics. Specifically, the total number of current and projected market area pediatric patients of 19 to 20 per day represents the equivalent of one patient unit at a pediatric hospital. Divided among three to four hospitals, this volume of pediatric patients does not represent an economically or clinically viable patient base. Similarly, the current and projected market area obstetric average daily census of 48 could be most appropriately accommodated in a single facility (versus being distributed over four facilities, none of which would have sufficient critical mass to justify or support the required specialized services demanded by obstetric patients from a financial or clinical quality perspective).

- In addition to the five hospitals, the market area includes a large number of other health care facility resources. There are 10 Federally Qualified Health Centers (FQHCs) which serve as important sources of primary care for uninsured and Medicaid patients. There are also seven hospital-based or affiliated ambulatory centers, including HUMC's Center for Family Health which houses the Family Medicine residency clinic, JCMC's two Family Health Centers and its Ambulatory Care Center, and two centers operated by the Mount Carmel Guild organization, which provides substance abuse services. In addition, the market area includes 17 free-standing imaging centers and 5 ambulatory surgery centers. All these ambulatory care facilities represent alternative sources of care to many services provided in market area hospitals' outpatient departments.

- Christ Hospital, HUMC and JCMC are single entity providers and are not part of a multi-hospital system or network. As unaligned, general acute care community hospitals with limited geographic reach and very similar (and largely undifferentiated) service complements, each of the three hospitals must compete in a rapidly consolidating and increasingly resource constrained marketplace. In the last several years, there has been a trend towards consolidation among health care providers in the United States, with the percentage of hospitals in systems increasing from less than 40 percent in 1990 to more than 60 percent today. One effect of this industry consolidation

has been a growing gap between high performing organizations and financially stressed facilities, with the high performing organizations tending to be larger systems. And the general consensus is that federal health care reform will exacerbate the gap between high performing and financially stressed providers. Indeed, as noted by Moody's Investor Service in their April 2010 commentary:

> "The ultimate credit effect of the recently passed federal healthcare reform for the not-for-profit hospital sector will be negative despite reduced bad debt expense and charity care provided by expanded insurance coverage for previously uninsured patients.
>
> The key longer-term challenge for not-for-profit hospitals is the reform's reliance on extracting long-term cost efficiencies from hospitals, probably resulting in diminished hospital revenues. The trend will become more pronounced over time as key provisions of the law do not become effective until 2014.
>
> The effects will include more difficult negotiations with private health insurers due to increasing regulatory scrutiny of the insurers by federal regulators. Hospitals also will face reimbursement pressures from government payers as the reform includes provisions that squeeze savings out of Medicare and Medicaid, including initiatives to identify improved operating efficiency.
>
> ***While the most efficiently operated health systems will take advantage of healthcare reform to leverage economies of scale, many not-for-profit hospitals, especially single site and small hospital systems, may struggle. Industry consolidation resulting in bigger health systems with greater access to credit – already encouraged by current market forces – likely will increase further under healthcare reform."*** (Emphasis added)

Section 5: Facility Profiles

This section of the report provides an overview of each of the three facilities, including service complement, bed complement and utilization, payer mix, condition of the physical plants, medical staff complement, financial condition, and comparative cost, quality, patient satisfaction, and productivity indicators.

Service Complement

Each of the three hospitals included in the scope of this study have long histories of service to the residents of Hudson County. The background and general service complement of each facility is summarized below.

Christ Hospital

Founded by the Episcopal Church in 1872, Christ Hospital is a general acute care facility located in the northern portion of Jersey City on Palisade Avenue overlooking the Hudson River and the New York City skyline. Licensed for 376 beds, Christ Hospital has a maintained bed complement of 250 beds. In addition to general medical and surgical care, Christ Hospital's inpatient service complement includes critical care, pediatrics, oncology, obstetrics, and psychiatry. Among Christ Hospital's major services (based on a review of the Hospital's web site) are the following:

- Behavioral Health (including psychiatric emergency services, adult voluntary inpatient unit, and a variety of outpatient mental health, substance abuse, and addiction treatment services for children, adolescents, adults, and older adults)
- Cardiology (including cardiac catheterization and primary angioplasty, echocardiography, cardiac stress testing, electrocardiography, Holter monitoring, pacemakers, cardiac rehabilitation, and peripheral vascular services)
- Emergency department
- Obstetrics and maternity (including a recently renovated maternity unit with 13 private rooms and 4 LDRs)
- Oncology (with a dedicated 28-bed inpatient unit and an infusion center)
- Pediatrics (which has a 13-bed inpatient unit)
- Sleep center
- Same day surgery
- Vascular laboratory

Hoboken University Medical Center

Hoboken University Medical Center is a general acute care facility licensed for 328 acute care beds and 30 comprehensive rehabilitation beds, and is located adjacent to Church Square Park in the south central area of Hoboken. HUMC currently maintains 217 acute care beds and 6 Level II Nursery bassinets. Formerly named Saint Mary Hospital, this facility was acquired by the City of Hoboken's Municipal Hospital Authority from Bon Secours New Jersey Health System in February 2007 and is currently managed and operated by Hudson Healthcare, Inc., a non-profit corporation. As a community hospital, HUMC maintains a full complement of services, including (according to its web site):

- Behavioral health (which includes dedicated inpatient units for adults and seniors along with an array of outpatient services)
- Cardio-pulmonary (including cardiac rehabilitation)
- Center for Family Health (a family medicine practice and the site of the University of Medicine and Dentistry of New Jersey's Family Medicine Residency Program)
- Children's Crisis Intervention Services (which serves children age 5-17 in a 17-bed inpatient unit)
- Community Mental Health Center (which offers a range of outpatient services and individual and group counseling and specialized gero-psychiatric services
- Emergency services (which are provided in a new $52 million dollar facility)
- FAITH services (a dedicated HIV/AIDS agency offering a case management program to more than 1,000 people)
- Diagnostic imaging services
- Oncology (both inpatient and outpatient)
- Pain management
- Pediatrics (including a 20-licensed bed inpatient unit and a "fast-track" pediatric emergency room program)
- Perinatology (featuring 4D ultrasound)
- Podiatry (which includes a residency program in Podiatric Medicine and Surgery)
- Rehabilitation (inpatient and outpatient)
- Pre-Admission testing for surgery
- Surgical services
- Women's services (with a full range of gynecological and obstetric services, private rooms, and a Level II neonatal nursery)
- Wound healing center

Jersey City Medical Center

Established originally as Charity Hospital in 1882 and renamed Jersey City Hospital in 1885, Jersey City Medical Center expanded dramatically during the Great Depression under the

leadership of Jersey City mayor Frank Hague. In 2004, Jersey City Medical Center relocated to its present location at Grand Street and Jersey Avenue. Operated by Liberty Health System, Jersey City Medical Center is licensed for 281 acute care beds and maintains 269 acute care beds and 21 Level III Nursery bassinets. In addition to general medical and surgical services, Jersey City Medical Center's major service offerings (or care centers) include the following (according to the JCMC web site):

- Fannie E. Rippel Foundation Heart Institute (offering a wide array of cardiac related services including angioplasty, diagnostic cardiac catheterization, echocardiograms, stress testing, tilt table, nuclear medicine 64-slice CT scan, intravascular ultrasound, percutaneous coronary intervention, pacemaker and implantable cardioverter defibrillator (ICD) therapy, minimally invasive vein harvesting, revascularization including on and off pump, MAZE procedure, aneurysm surgery, mitral valve repair and replacement)
- Port Authority Heroes of September 11 Trauma Center (a state-designated Level II Trauma Center for Hudson County) and an Emergency Department that sees over 70,000 patients per year and has a pediatric emergency department and a "fast track" for minor ailments
- Provident Bank Ambulatory Center (a multi-story ambulatory care center adjacent to the inpatient facility that includes rehabilitation services, behavioral medicine, and a general pediatrics outpatient center for children with behavioral or developmental health needs)
- Kazmir Family Regional Perinatal Center
- Center for Comprehensive Care (which provides comprehensive medical services and case management to children, adolescents and adults infected with HIV in Jersey City/Hudson County)
- General pediatrics
- Rehabilitation services (including physical therapy, speech/audiology, and occupational therapy)
- Liberty Eye Center
- Behavioral Health (which includes inpatient detoxification, psychiatric emergency/ screening mobile outreach, acute psychiatric and detoxification inpatient care, partial hospitalization programs, outpatient programs, integrated case management services, residential services, consultation and education/ traumatic loss program)

JCMC is also an Emergency Medical Service provider that offers advanced life support, the highest level of pre-hospital care, through operation of a mobile intensive care unit.

Bed Complement and Utilization

The three hospitals have a combined total of 763 maintained beds, as shown in Exhibit 5-1 below.

Exhibit 5-1
Maintained Bed Complement, 2009

Facility	Medical/ Surgical/ ICU	Pediatrics	Obstetrics	Psychiatry	Level II & III Nursery	Total Acute and Level II & III Nursery
Christ Hospital	199	15	17	19	0	250
HUMC	142	15	22	38	6	223
JCMC	197	10	26	36	21	290
Total	**538**	**40**	**65**	**93**	**27**	**763**

Source: New Jersey DHSS 2009 B2 Report.
Note: Excludes Level I bassinets and HUMC's rehabilitation beds.

Information provided by the State of New Jersey indicates that in 2009, the three hospitals had a combined average daily census (ADC) of 534 (excluding Level I Nursery newborns), resulting in an overall occupancy of 70 percent on their 763 maintained beds. The 2009 ADC by bed category for each of the three hospitals is shown in Exhibit 5-2 below.

Exhibit 5-2
Average Daily Census (ADC) by Bed Category, 2009

Facility	Medical/ Surgical	ICU	Pediatrics	Obstetrics	Psychiatry	Level II & III Nursery	Total Acute and Level II & III Nursery
Christ Hospital	136	14	8	9	9	-	176
HUMC	81	7	5	12	19	2	126
JCMC	140	25	4	15	33	15	232
Total	**357**	**46**	**17**	**36**	**61**	**17**	**534**

Excludes Level I Nursery newborns.
Source: New Jersey DHSS 2009 B2 Report.

Occupancy rates by bed category in 2009 for the three facilities are shown below in Exhibit 5-3.

Exhibit 5-3
Occupancy Rates by Bed Category, 2009

Facility	Medical/ Surgical/ ICU	Pediatrics	Obstetrics	Psychiatry	Level II & III Nursery	Total Acute and Level II & III Nursery
Christ Hospital	75%	53%	53%	47%	-	70%
HUMC	62%	33%	55%	50%	33%	57%
JCMC	84%	40%	58%	92%	71%	80%
Total	**75%**	**43%**	**55%**	**66%**	**63%**	**70%**

Excludes Level I Nursery newborns.
Source: New Jersey DHSS 2009 B2 Report.

Target occupancy rates for efficient use of medical/surgical units typically range from the mid 70s to the mid 80s, depending on the mix of private and semi-private rooms. Obstetric and pediatric target occupancy rates are typically in the mid 60s to the mid 70s, while the target for psychiatry is usually around 90 percent.

In the largest bed category, medical/surgical (including ICU), which accounts for 70.5 percent of the three facilities total maintained beds, Christ Hospital and JCMC have occupancy rates that are close to or within the target occupancy range. However, HUMC's medical/surgical occupancy rate of 62 percent is well below the target range.

All three facilities fall short of the obstetric occupancy target. None of the three facilities approaches target pediatric occupancy rates, which likely reflects the decades-long national trend in pediatrics of physicians and parents preferring to use a comprehensive children's hospital with 24/7 coverage rather than general community hospitals for those children sick enough to require hospitalization. JCMC is the only one of the three facilities with a psychiatric occupancy rate within the target range. Both Christ and HUMC have psychiatric occupancy rates significantly below the 90 percent target.

Between 2008 and 2009, data from the New Jersey Department of Health and Senior Services B2 reports indicate that Christ Hospital recorded a decline in its average daily census (ADC) of 8.8 percent, HUMC experienced a decrease of 6.8 percent, while JCMC reported an increase of 8.9 percent in its ADC.

All three facilities provide emergency department services along with a variety of other outpatient services. According to data provided by each of the hospitals, the trend over the past few years in total emergency department visits, including patients admitted through the emergency department, has been upward, as shown in Exhibit 5-4. Total emergency department visits to the three hospitals increased from 138,359 in 2007 to 143,964 in 2008 (an increase of 4.1 percent) and to 158,468 in 2009, an increase of 14,504 visits, or slightly more than 10 percent). Between 2007 and 2008, HUMC and JCMC experienced growth in emergency department visits of 5.3 percent and 6.0 percent, respectively and their visits grew at substantially higher rates between 2008 and 2009, 13.6 percent for HUMC and 12.7 percent for JCMC. The higher rates of growth in 2009 may reflect the impact of the economic recession and the tendency for patients to postpone seeking care and to utilize the ED as a source of primary care. Christ Hospital's emergency department visits were nearly flat between 2007 and 2008 and grew by 3.5 percent between 2008 and 2009. For 2010, HUMC's budget shows a modest increase of 1.8 percent in emergency department visits, while JCMC's 2010 budget shows an increase in visits of 14 percent which is a slightly higher increase than it experienced between 2008 and 2009. Christ Hospital's budget for 2010 shows a 6.5 percent increase in emergency department visits which is considerably higher than its prior year increases.

Exhibit 5-4
Total Emergency Department (ED) Visits, 2007-2010

Facility	2007	2008	2009	2010 (Budget)	Percent Change		
					07-08	08-09	09-10
Christ Hospital	43,859	43,977	45,529	48,480	0.3%	3.5%	6.5%
HUMC	30,402	32,012	36,358	37,012	5.3%	13.6%	1.8%
JCMC	64,098	67,975	76,575	87,326	6.0%	12.7%	14.0%
Total	**138,359**	**143,964**	**158,468**	**172,818**	**4.1%**	**10.1%**	**9.1%**

Source: Hospital records.

Total ED visits are comprised of patients who are cared for in the ED on an outpatient basis and those who are seen in the ED and admitted as inpatients. As Exhibit 5-5 indicates, the vast majority of the three hospitals' total ED visits were outpatient visits, in 2009 ranging from 81 percent for Christ Hospital to 85 percent for JCMC. Conversely, ED visits that resulted in inpatient admission comprised from 15 percent (for JCMC) to 19 percent (for Christ Hospital) of total ED visits. By way of comparison, of all ED visits in New Jersey hospitals in 2009, 81 percent were outpatient visits and 19 percent resulted in inpatient admission. Latest national figures available are for 2007 and indicate that nearly 16 percent of all ED visit resulted in inpatient admission.[13]

Exhibit 5-5
Percent of Emergency Department (ED) Visits by Type, 2007-2009

Facility	Outpatients Visits			Visits Resulting in Inpatient Admission		
	2007	2008	2009	2007	2008	2009
Christ Hospital	81%	79%	81%	19%	21%	19%
HUMC	86%	85%	84%	14%	15%	16%
JCMC	83%	84%	85%	17%	16%	15%
Total	**83%**	**83%**	**84%**	**17%**	**17%**	**16%**
All New Jersey Hospitals	80%	80%	81%	20%	20%	19%

Source: Hospital records.

The Emergency Department is a major source of admissions for the three hospitals, in 2008 and 2009 accounting for 65 percent to 66 percent of the three hospitals' combined discharges as shown in Exhibit 5-6. JCMC had the highest percentage of discharges from the ED, 72 percent, which would be expected given that it is a State-designated Level II Trauma Center, while HUMC had the lowest percentage of discharges from the ED, 58 percent. By way of comparison, for all New Jersey hospitals in 2009, the ED accounted for 64 percent of total discharges, up from 62 percent in 2008. Latest national figures available are for 2007 and indicate that 48 percent of hospital discharges were admitted through the ED.[14]

[13] Healthcare Cost and Utilization Project, The Nationwide Emergency Department Sample, Agency for Healthcare Research and Quality, United States Department of Health and Human Services.
[14] Healthcare Cost and Utilization Project, The Nationwide Emergency Department Sample, Agency for Healthcare Research and Quality, United States Department of Health and Human Services.

Exhibit 5-6
Percent of Total Discharges Admitted Through the ED, 2008 and 2009

Facility	2008	2009
Christ Hospital	63%	64%
HUMC	58%	58%
JCMC	72%	72%
Total	**65%**	**66%**
All New Jersey Hospitals	62%	64%

Excludes normal newborns.
Source: NCI analysis of 2008 and 2009 inpatient data from DHSS' New Jersey Discharge Data Collection System

Payer Mix

Although the three hospitals are located relatively close to one another and have significantly overlapping service areas, they each exhibit significantly different inpatient payer mixes. HUMC has the highest percentage of Blue Cross and Commercial Insurance discharges (40 percent) and the lowest percentage of Medicaid discharges (12 percent). This may reflect the higher average household income level in HUMC's home zip code. Christ Hospital has the highest percentage of Medicare (39 percent) and Medicaid (24 percent) discharges and the lowest percentage of Blue Cross/Commercial (23 percent) and Uninsured (14 percent) discharges. JCMC has the highest percentage of uninsured discharges (25 percent). The inpatient payer mix of each of the hospitals is shown below in Exhibit 5-7 below.

Exhibit 5-7
Inpatient Payer Mix, 2009

Payer	Christ Hospital	HUMC	JCMC
Blue Cross & Commercial Insurance	23%	40%	24%
Medicare	39%	31%	30%
Medicaid	24%	12%	20%
Uninsured	13%	17%	25%
Other	1%	0%	1%

Note: Excludes normal newborns
Source: NCI analysis of 2009 inpatient data from DHSS' New Jersey Discharge Data Collection System.

Physical Plants

As part of our scope of work, in April 2010, we assessed the physical facilities of each of the three hospitals. This assessment included site tours of every department of each of the three hospitals, accompanied by one or more representatives of the hospital's management. We also had the opportunity to ask questions of the department managers. The purpose of these tours was to evaluate the general condition of each facility, assess general maintenance requirements, identify needed physical changes to address regulatory and/or operational efficiency imperatives, and identify potential alternate uses of space. We also performed a qualitative and quantitative assessment of the facilities of each of the three hospitals. The qualitative assessment took into consideration a number of factors such as internal work flows; size and shape of rooms; functional adjacencies; flow of patients, visitors, staff, and materials; safety and security of patients, family, and staff; environmental quality (including daylight, views, access to outdoors, lighting, noise, and finishes); and building systems (including structural, electric, telephone and data and HVAC).

The quantitative analysis evaluated the space in each department in two complementary ways: the first considered the number of primary activity spaces (PAS) that are available in which patients are served and the second assessed the amount of space provided in the department as a whole to support the number of needed PAS. The analysis measures the percent of existing PAS and overall space to the required PAS and total space. The measures used in each department are a combination of industry standards developed over the past forty years of modern hospital design as well as Navigant's own database. The two measures taken together show whether, for example, there are adequate PAS but limited support space (for offices, waiting, storage, etc.) or limited PAS but ample overall space.

The facilities evaluation did not entail a detailed engineering systems inspection; rather, the intention was to identify general issues from both a limited first-hand observation and secondary sources, such as the most recent JCAHO report and both recent and planned facilities capital expenditures.

Our assessment of each of the three hospital's campuses and physical plants are summarized below, beginning with a general description and assessment of each campus, followed by the qualitative and quantitative comparisons of the three hospitals.

General Description and Campus Assessments

Christ Hospital

Christ Hospital's campus is comprised of a series of interlocking adjacent buildings completed in a series of additions dating from 1920 to 1981 on the east side of Palisade Avenue. These buildings include:

- North Building – 1928
- West Building – 1968
- East Building – 1948
- Power Plant and Laundry – 1968
- Kitchen Wing – 1968
- Cancer Center – 1981
- Tower Building – 1978

Also on the same side of Palisade Avenue to the south are three other structures:

- An unattached Medical Office Building (1977/78),
- Parking garage (348 spaces, 1996) and
- Former Day Care Center (1998)

To the north are:

- Property running along the edge of the palisade that is used by the hospital for employee and physician on-grade parking
- Six town houses, some of which are occupied by hospital departments or functions and
- The finance department which occupies a one-story building.

Across Palisade Avenue are two other significant structures:

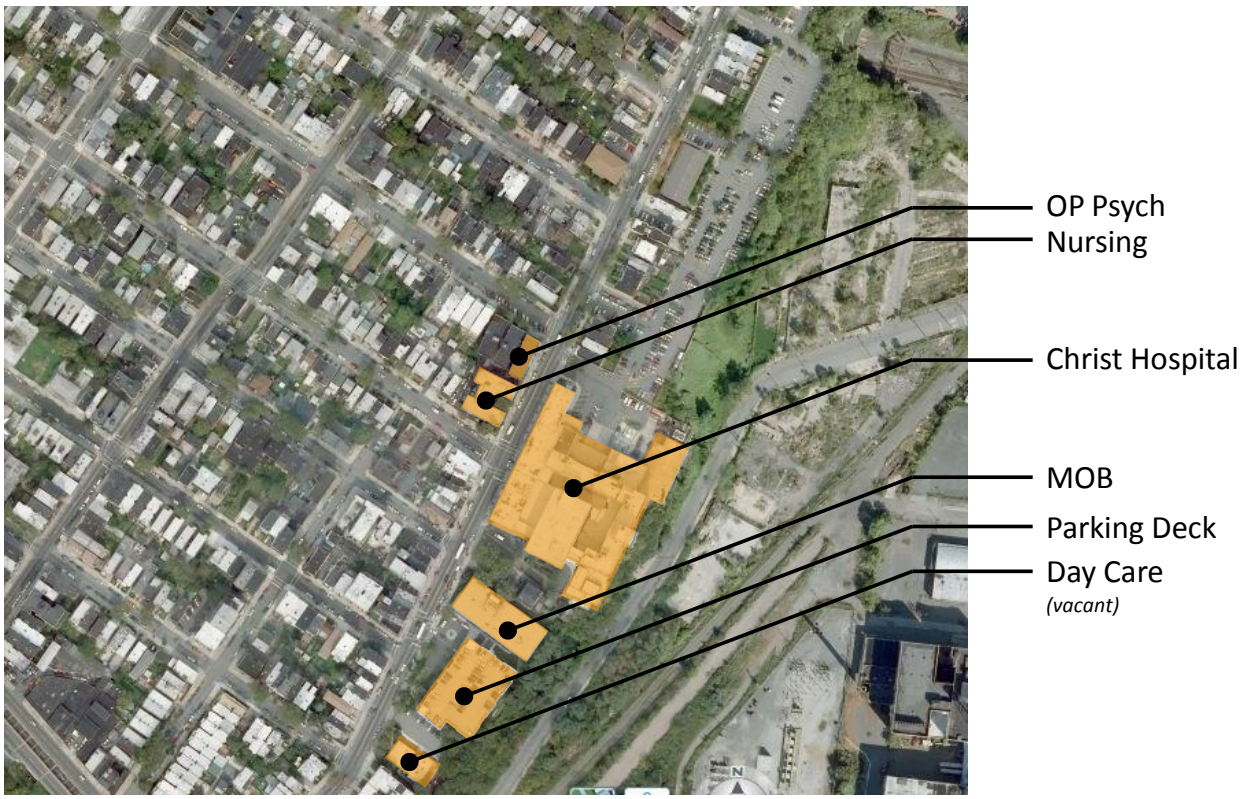
- School of Nursing, which is a four-story (plus basement) facility dating from 1924 and
- Four-story former apartment building dating from 1977 that is used for outpatient psychiatry.

While most of Christ Hospital's facilities were designed well before the emergence of current hospital planning principles such as patient focused care with larger room sizes and single patient rooms to accommodate modern equipment and provide more privacy and patient safety from nosocomial infection, they have been well maintained. The Tower Building, in particular, which has a race-track layout of its patient units, offers an adequate environment for patient care, even though it has semi-private rooms. The other patient care units in the older buildings have limited useful life as a hospital due to the fact they have a single-corridor design that is inefficient in terms of travel distances for nurses and does not provide good oversight of patients.

Exhibit 5-8 shows an aerial view of the Christ Hospital campus.

Exhibit 5-8
Christ Hospital Campus

Christ Hospital
Jersey City, New Jersey



As the aerial view in Exhibit 5-8 indicates, Christ Hospital occupies a long and relatively narrow 8.7-acre site on both sides of Palisade Avenue. The majority of the campus sits on the eastern side of Palisade Avenue and is bounded on the east by the palisade and on the west by a densely populated, highly impacted residential neighborhood and a few commercial establishments.

Although hospital management has developed plans for replacing the outpatient diagnostic services and some inpatient beds in a new building to the south of the current hospital between it and the physicians' office building, and expanding the emergency department to the north and relocating the central supply and support functions to alleviate traffic congestion of emergency, supply delivery and waste disposal vehicles, the site has limitations for its long-term use as a hospital due to its long, narrow configuration. In addition, while the facilities have been consistently and well-maintained (thereby extending the infrastructure's useful life), many of the buildings have significant space configuration and size constraints that do not support patient comfort, contemporary practices, or current diagnostic and treatment equipment and are in essence, at or near the end of their serviceable life. Exhibit 5-9 presents a summary of the Christ Hospital campus assessment and functional capacity analysis.

Exhibit 5-9
Christ Hospital Campus and Functional Capacity Assessment

Campus Assessment	Bed Units	Major Clinical Ancillaries	Support Services & Infrastructure
• Long narrow site restricts expansion and replacement options • Workable master plan in place to expand ED and replace IP/OP facilities • Although Tower building (newest inpatient facility) has useful service life, majority of buildings are aged, designed solely for inpatient service, and do not support patient comfort, contemporary practices, and current diagnostic and treatment equipment • Site has potential real estate value for residential development	• Tower building (1978) houses majority of inpatient units and these units are serviceable. • Recent upgrade to OB unit on 4th floor • Other inpatient units are in buildings that are 62 and 82 years old and are at the end of their serviceable life	• Surgery suite configuration is outdated • Imaging has patient access and privacy issues, limited storage, and co-mingled patient and staff areas • ED is overcrowded and has an inefficient layout	• Consistent quality maintenance has extended the infrastructure's useful life

Hoboken University Medical Center

Hoboken University Medical Center occupies a full city block within a residential neighborhood of downtown Hoboken. Originally a Catholic institution, it is across the street from a stately church and together with that building faces a small city park. A parking structure owned by the City of Hoboken is attached at the fourth level by a pedestrian bridge spanning a city street and provides parking for the hospital. A former apartment building a block and a half from the hospital houses the hospital's family practice residency program.

The hospital's clinical services are provided in two buildings housing inpatient units and diagnostic and treatment services. These buildings include:

- South Building, completed in 1962 is 48 years old and has 140,000 square feet, and
- North Building completed in 1971 is 39 years old, with 110,000 square feet.

Two other buildings – the West Tower (1962) and Assumption Hall (early 20th century) together comprise 20,000 square feet and provide meeting rooms, offices, and storage.

HUMC's most recent facility, completed in 2009, is the one-story, 18,000 square foot building housing the Emergency Department. The ED building has the structural capability of supporting an additional four levels, and is seen as providing space for the potential replacement of the clinical care functions in the older buildings.

Hoboken University Medical Center's facilities were designed when hospitals were emerging as technological centers where patients were admitted for diagnostic testing, as well as for care and treatment. Given the size and shape of the building's floor plate, adapting HUMC's facilities to accommodate the many technological developments that have resulted in admitted patients being more acute and medically more complex will likely be extraordinarily challenging and expensive. For example, converting older nursing units into single-occupancy rooms would likely prove to be uneconomical to staff because the units' sizes would be too small to support the fixed staffing level of clerks and other support personnel.

The North Building, with its race-track layout, provides better support and general environment than the units in the South Building. The new Emergency Department is a very good project; its layout is efficient for the number of patient exam and treatment spaces provided. The new Emergency Department only falls short in the limited sight lines between the nurses' station and the more distant rooms.

Exhibit 5-10 provides an aerial view of the HUMC campus.

Exhibit 5-10
HUMC Campus

Hoboken University Medical Center
Hoboken, New Jersey

As the aerial view shows, HUMC is located in a densely populated, highly impacted residential neighborhood. The hospital's property offers very limited future expansion or replacement opportunity other than the opportunity to construct approximately 80,000 square feet above the new emergency building or razing the Assumption building. However, both of these options would create major disruptions to ongoing hospital operations. As a result, the HUMC site offers no "free square" in which to move.

While HUMC's current management has allocated as many resources as available to maintaining the facilities, the hospital's financial challenges of the last several years resulted in the deferral of maintenance and replacement of outdated HVAC equipment, elevator machinery, and switch gear. In addition, the floor plate configuration, floor-to-floor heights, and structural bay sizes of HUMC's buildings are not compatible with current hospital design. As a result, with the notable exception of the recently constructed Emergency Department, the facilities at Hoboken University Medical Center are outdated and have a limited remaining

useful life as a hospital. Exhibit 5-11 presents a summary of the HUMC campus assessment and functional capacity analysis.

Exhibit 5-11
HUMC Campus and Functional Capacity Assessment

Campus Assessment	Bed Units	Major Clinical Ancillaries	Support Services & Infrastructure
• Site offers limited expansion and very complicated replacement options • With the exception of the ED, buildings are 40+ years old, suffer from deferred maintenance, and are at the end of their useful lives • New ED is well-designed and positioned within the campus with interdepartmental connections to imaging and diagnostic services • Site has potential real estate value for residential development • Site has access to well-maintained City-owned parking deck	• Non-conforming inpatient rooms make upgrading very costly and reduces efficiency of unit staffing • Support space is deficient • Site lines from team stations are poor • Visitor and patient support accommodations are limited • High proportion of double-occupancy rooms is non-conforming to current planning guidelines	• Surgery suite configuration is out-dated • Small operating rooms • Diagnostics, including Radiology, on level in undersized; Radiology department operates at two locations, which is inherently inefficient • ED is well designed and adequately sized	• HVAC, plumbing, electrical distribution, and elevator machinery at end of their useful lives • Some deferred maintenance being addressed (e.g., sprinklers, energy use)

Jersey City Medical Center

Jersey City Medical Center relocated to its present 15-acre campus in 2004. Overlooking New York Harbor and Liberty State Park, JCMC's campus includes three major facilities:

- The Wilzig Hospital, which houses all of the inpatient services

- The Provident Bank Ambulatory Center, which is devoted to outpatient physical therapy and outpatient psychiatry services

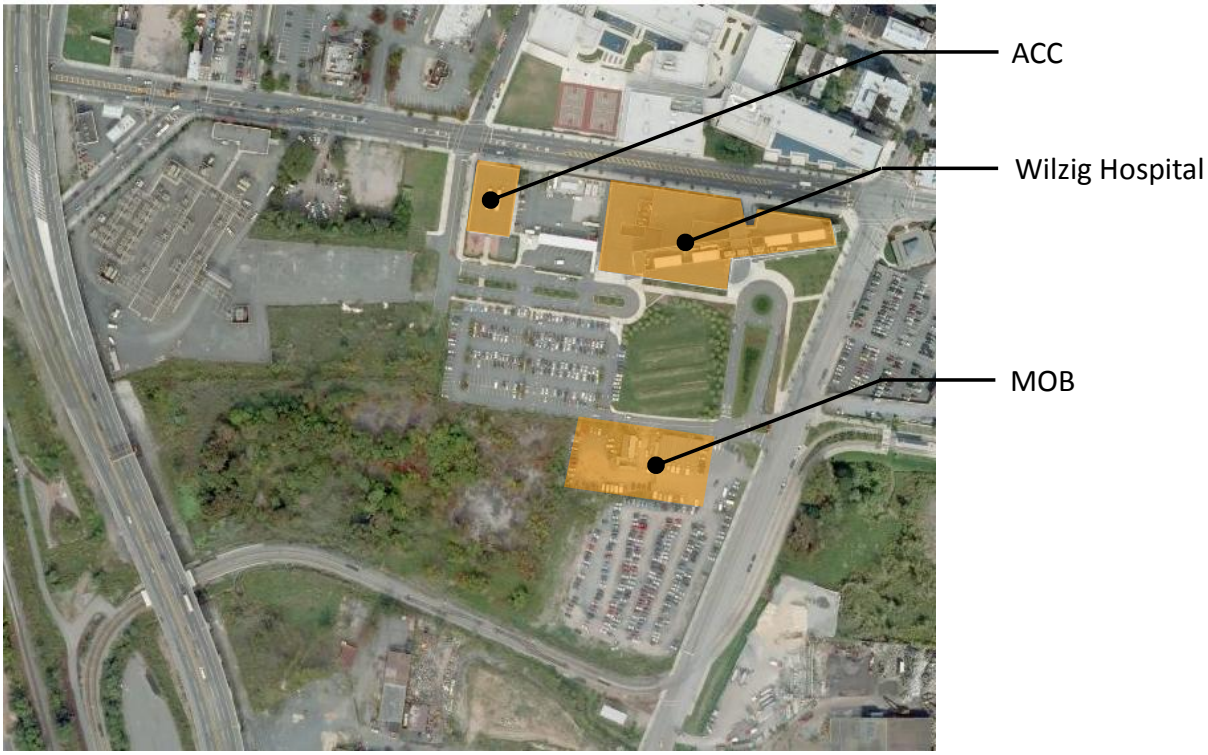
- A recently (February 2010) opened medical office building that was developer-financed and built

While the amount of overall space in the building is constrained due to budget limitations at the time of the facility's construction, resulting in the use of semi-private patient rooms and reducing the amount of support space to a minimum, JCMC's patient care and staff working environments have few limitations resulting from the departments' layouts and none due to the engineering and condition of the facilities.

Exhibit 5-12 provides an aerial view of the JCMC campus.

Exhibit 5-12
JCMC Campus

Jersey City Medical Center
Jersey City, New Jersey



As a new facility that was completed in 2004, Jersey City Medical Center incorporates many of the current hospital design concepts, including race-track inpatient units and optimal relationships of related functions, such as cardiac catheterization and surgery on the same floor.

JCMC's site offers room for future expansion and even the eventual replacement of the hospital over the long-term. The Wilzig Hospital building's infrastructure is in good condition and the building has been well maintained since its opening. The only significant deficiency noted to its condition is poorly installed vinyl composite tile (VCT) that is an appearance and maintenance issue that will need to be resolved in the near future. The Provident Bank Ambulatory Care Center is devoted to outpatient physical therapy and outpatient psychiatry services. This building has acceptable functionality and physical conditions; however, it is spare in décor and has poor elevator capacity for the frequent trips to the upper floors for physical therapy visits. Some space has been given over on the top level for hospital administrative support. The Medical Office Building that opened in February 2010 is designed as a traditional office building, with no provision in the layout for centralized registration and support functions. One floor is currently shelled and is envisioned to be an outpatient surgery center.

Exhibit 5-13 presents a summary of the JCMC campus assessment and functional capacity analysis.

Exhibit 5-13
JCMC Campus and Functional Capacity Assessment

Campus Assessment	Bed Units	Major Clinical Ancillaries	Support Services & Infrastructure
• Ample land accommodates future growth, expansion, or replacement strategies • New hospital facility meets contemporary space allocation guidelines • Ample on-site parking via extensive surface lots • Distances between hospital, ambulatory care building, and medical office building limit fluid movement of patients and staff	• Semi-private rooms are not consistent with best practices to control nosocomial infections, provide privacy, and reduce stress • Bed unit configuration limits observation of visitors and rooms at the distal ends of the corridors	• Surgery suite configuration is adequate; size and shape of rooms is consistent with industry best practices • Imaging is adequately configured but has limited opportunities for expansion • ED is well-designed but severely overcrowded due to current volumes	• Relatively new building with few infrastructure issues • Issues with VCT flooring installation and failing adhesives have occurred throughout the facility and are in the process of being addressed

Qualitative Analysis

In comparing the three hospitals in our qualitative analysis, we rated each department's configuration and internal work flow as well as its relationship to other areas of the hospital. We also assessed each department with respect to safety, security, and privacy of both staff and patients and the quality of the environment through interior finishes and use of natural light. Exhibit 5-14 provides the qualitative factors we evaluated.

Exhibit 5-14

Qualitative Facility Assessment Considerations

Internal Configuration Composite
Internal Work Flow
Size and Shape of Rooms
ADA and Bariatric Accessibility
External Configuration Composite
Functional Adjacencies (External)
Movement of Visitors
Movement of Patients
Movement of Materials
Movement of Staff
Safety & Security Composite
Staff Safety and Security
Patient / Family Safety and Security
Patient / Staff Privacy Composite
Staff Privacy
Patient / Family Privacy
Environmental Quality Composite
Daylight, Views, Access to Outdoors
Finishes
Noise
Lighting
Building Systems Composite
Structural Configuration
Electrical Capacity and Distribution
Communication – Data & Telephone
Temperature / Air Changes Adequacy (HVAC)

While none of the facilities demonstrated conditions that are of any immediate concern in regard to patient or staff safety, all three have limitations and are not equal to best practices in relation to facilities that are currently being planned and designed. The composite qualitative assessment scores for the three facilities are shown in Exhibit 5-15.

Exhibit 5-15

Qualitative Facility Assessment Summary

Evaluation Criteria	HUMC	Christ Hospital	JCMC
Inpatient Nursing Services	3.2	3.0	2.4
Women's Services	3.2	2.6	2.0
Diagnostic / Treatment	3.1	3.0	2.4
Hospital / Ancillary support	3.2	3.0	2.6
Public Support/ Circulation	3.2	2.9	2.1
Building Support	3.3	3.0	2.3
Ancillary Facility Buildings	3.1	3.3	2.6
Summary for each Hospital	**3.2**	**3.0**	**2.3**

Rating Score Key

0.1 – 1.0 Good
1.1 – 2.0 Adequate
2.1 – 3.0 Some Limitations
3.1 – 4.0 Deficient
4,1 – 5.0 Require Replacement

The qualitative scores for the three facilities indicate that Hoboken University Medical Center's facilities are generally deficient, Christ Hospital's facilities are generally acceptable, with some limitations, and Jersey City Medical Center's Women's Services facilities are adequate while the rest of the departments are generally acceptable with some limitations.

HUMC's facilities were designed for a time when hospitals were the locus of care and most patients were admitted for both diagnostic testing and treatment. The accelerating trend of substituting outpatient for inpatient care and treatment has added a new stream of patients who will get sophisticated tests but often not stay as inpatients. Calling upon HUMC's buildings to adapt to the many technological developments that have resulted in admitted patients being more acute and technologically more complex and pervasive, is beyond what is possible within the size and shape of the building's floor plate. Significant investment would be required to alter these basic characteristics of the buildings. The North Building, with its race-track layout, provides better support and general environment than the units in the South Building. The new Emergency Department is a very good project; its layout is efficient for the number of patient exam and treatment spaces provided, and only falls short in the limited sight lines between the nurses' station and the more distant rooms.

All of Christ Hospital's older buildings have the limitations identified for HUMC; however, because the buildings have been well maintained and the newest of the inpatient buildings (the Tower Building) has had selected internal renovation that demonstrate its capability for rejuvenation, the hospital is evaluated at a higher level. It should be noted that the hospital's ability to house additional patients is dependent upon the continued use of the older buildings for inpatient services. The planned (but not funded) expansion of the Emergency Department would help accommodate any increase in patient visits to this already overcrowded department.

JCMC's patient care and staff working environments are generally acceptable by current hospital planning and design standards. The building has clear way-finding due to its simple organization of a base of three levels with four levels of paired inpatient nursing units above. Entry is at the center point of the building, allowing for access to upper floors by two sets of elevator banks, one for visitors and patients and the second for staff and supplies delivery and waste disposal. The building's configuration and location at the edge of the campus allows for expansion, when required, through additions to the west, for expansion of emergency services, and to the south, for the construction of a third inpatient nursing unit wing above two or more levels of expanded diagnostic and treatment and support functions. The configuration of the support functions and the diagnostic and treatment departments on the lower three floors employs a minimum of inter-departmental circulation without sacrificing independent access. Future growth possibilities are assured for the key departments of emergency, surgery, and imaging through expansion to the west and south. The orientation of the nursing units provides good views to the south toward the Statue of Liberty. While the mechanical, electrical and plumbing systems appear to be in good condition, the poorly installed VCT (vinyl composite tile) in many of the areas of the hospital is an unfortunate visual distraction and possible safety concern.

Quantitative Analysis

The quantitative analysis compares the amount of space in each hospital department to the amount of space that would be provided if the department were sized according to national standards for the number of primary activity spaces (PAS)[15] that it contains. The quantity of space per PAS includes administrative and clinical support, internal departmental circulation,

[15] A Primary Activity Space (PAS) is room or location within a larger space that houses a function that is the destination or reason for a particular departmental area. For example, a bed in a nursing unit; an exam room in the emergency department or a clinic; and, an operating room.

and patient waiting and changing areas. Exhibit 5-16 summarizes the sufficiency of the space for the departments within each of the major functional areas of the hospitals. In Exhibit 5-16, 1.00 indicates that the component meets standards, below 1.00 indicates deficient amount of space, and above 1.00 indicates a surplus of space.

Exhibit 5-16
Comparison of Actual Space to National Standards by Component

Component	Facility		
	Christ Hospital	HUMC	JCMC
Inpatient units	0.72	0.64	0.66
Women's services	1.05	0.60	0.93
Diagnostic / treatment	1.14	0.77	0.98
Hospital / ancillary support	0.96	0.92	0.51
Administrative support	0.95	1.68	0.79
Building support	1.00	1.00	1.00
Education	1.00	0.84	0.81
Vacant/ unused	-	1.00	-
Public space	1.00	1.05	0.55
Total Hospital Buildings	**0.94**	**0.78**	**0.80**

In all three hospitals, the low proportion of private beds results in space deficiency by national standards because semi-private rooms provide less space per bed than private rooms. The currently preferred standard is all private rooms for inpatient care. While it is permissible according to the national guidelines[16] that are used by many states and the federal government for planning approvals to house patients in semi-private bed rooms, it is not the state-of-the art best practice. Patients who have a choice in selecting hospitals prefer private accommodation for the privacy and comfort it provides. Beside the issue of privacy, semi-private

[16] Guidelines for Design and Construction of Health Care Facilities, The Facility Guidelines Institute, 2010 edition, with assistance from the U.S. Department of Health and Human Services. Section 2.2-2.2.2.1 states: (1) The maximum number of beds per room shall be one unless the functional program demonstrates the necessity of a two-bed arrangement. (2) Where renovation work is undertaken and the present capacity is more than one patient, maximum room capacity shall be no more than the present capacity, with a maximum of four patients.

accommodations result in lower achievable hospital occupancy levels because of patient incompatibility, as well as posing additional safety concerns for transmission of infection.

Exhibit 5-17 below provides a summary of the proportion of rooms that are currently private and semi-private occupancy in each of the three hospitals.

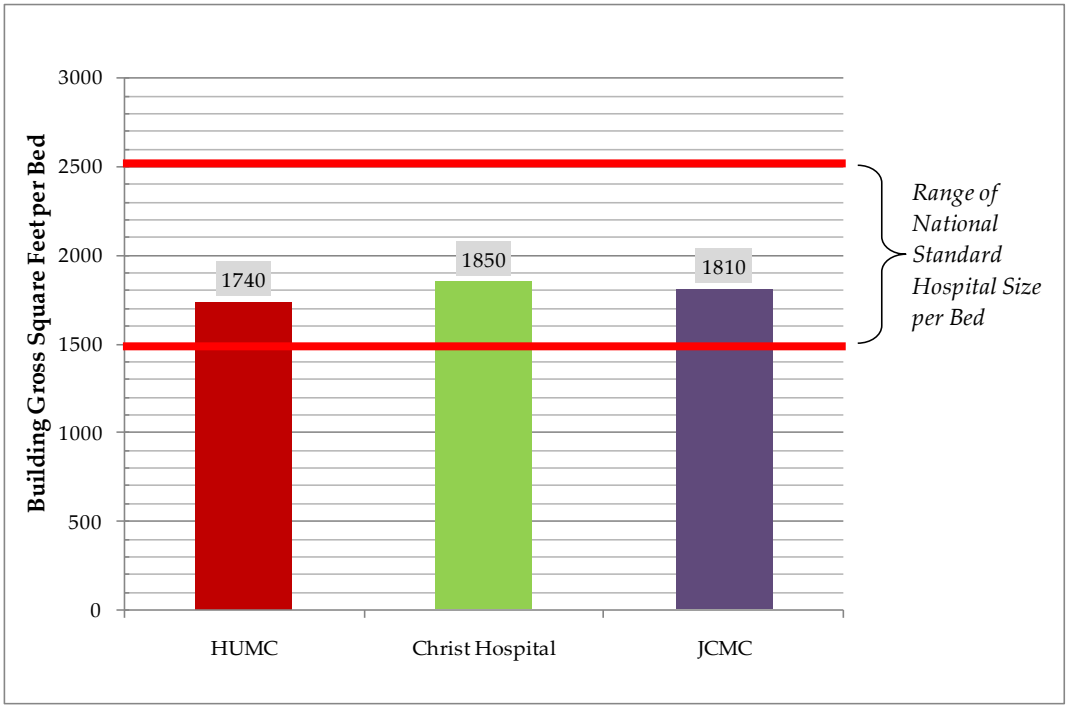
Exhibit 5-17
Private and Semi-Private Mix in Hospitals' Inpatient Nursing Units

Type of Unit	Private	Semi-Private	Total	Percent Private
HUMC				
Intensive Care	15	0	15	100%
Medical/Surgical	30	88	118	25%
Obstetrics	5	20	25	20%
Pediatrics	2	18	20	10%
Psychiatric	3	39	42	7%
Nursery Bassinets	-	-	6	-
Total	**55**	**165**	**220**	**25%**
Christ Hospital				
Intensive Care	18	0	18	100%
Medical/Surgical	25	179	204	12%
Obstetrics	17	6	23	74%
Pediatrics	2	14	16	13%
Psychiatric	2	18	20	10%
Nursery Bassinets	0	0	12	-
Total	**64**	**217**	**281**	**23%**
JCMC				
Intensive Care	40	0	40	100%
Neonatal ICU Bassinets	40	0	40	100%
Medical/Surgical	44	148	192	23%
Obstetrics	16	12	28	57%
Pediatrics	2	8	10	20%
Psychiatric	4	32	36	11%
Nursery Bassinets	-	-	26	-
Total	**146**	**200**	**346**	**42%**

Comparison of Hospital Facility Sizes

All three Hudson County hospitals have an overall facility size that is less than national contemporary trends in hospital planning and design. For HUMC and Christ, the reason is clearly found in the fact that the majority of their facilities were planned and designed as many as eight decades ago, when hospitals functioned on a vastly simpler scale. For JCMC, that same reason is not applicable because it was completed only a few years ago; rather, that hospital's severely constrained capital budget precluded achieving some of the patient privacy provisions and support space that are commonly found in hospitals built with a more adequate budget. None of the shortfalls in space, however, compromise the safety and security of the hospital for patient care. What is absent is the ability to easily expand or grow in volume, as well as a level of comfort and convenience related to room sizes (e.g., shared rather than individual offices, semi-private patient rooms) and the extent to which support spaces (e.g., conference rooms, storage areas) are available for staff. Exhibit 5-18 illustrates each hospital's amount of space relative to national standards for comparably-sized hospitals.

Exhibit 5-18
Comparison of HUMC, Christ Hospital and JCMC to National Standard of Hospital Size Range in BGSF



Note: Building Gross Square Feet (BGSF) is the sum of the floor areas in buildings.

Medical Staff Complement

Our assessment of the three hospitals also included an evaluation of the physicians on staff at each of the hospitals to identify the degree of overlap among the three hospitals (e.g., how many physicians were on staff at more than one of the three hospitals?) and an assessment of the age profile of each hospital's medical staff. This section of our report highlights the key findings from our assessment of the hospitals' medical staff complements.

According to data supplied by the three hospitals, there were just over 600 physicians who admitted at least one patient to Christ Hospital, HUMC, and/or JCMC in 2009. In terms of overlap, just 16 physicians admitted one or more patients to all three hospitals, while 100 physicians admitted one or more patients to two of the three hospitals. The overlap among the three medical staffs is summarized in Exhibit 5-19 below.

Exhibit 5-19
Medical Staff Overlap

Facility	2009 Physicians with Admission	Number that also admitted to at least one of the other two hospitals	Portion that also admitted to at least one of the other two hospitals	Portion of Medical Staff With admissions at all three hospitals
Christ Hospital	223	96	43%	7%
HUMC	204	56	27%	8%
JCMC	175	64	37%	9%
Total	**602**	**100**	**17%**	**3%**

Source: Hospital records.

We also conducted an assessment of the age profile of each hospital's medical staff (for physicians with at least one admission in 2009). This analysis indicated that all three hospitals have medical staffs with average ages above the New Jersey average and significantly above the U.S. average, as shown in Exhibit 5-20 below.

Exhibit 5-20
Medical Staff Average Age

Facility	Average Age of Medical Staff
Christ Hospital	56
HUMC	53
JCMC	52
New Jersey Patient Care Physicians[17]	50
U.S. Patient Care Physicians[18]	48

Source: Hospital records.

With respect to each facility's medical staff age profile, we prepared an analysis of the age and admissions activity of every physician with at least one admission in 2009. This analysis indicated that all three hospitals have significant percentages of physicians age 55+ and these physicians account for a substantial portion of each hospital's admission volumes. As shown in Exhibit 5-21, physicians age 55 and older account for almost 60 percent of Christ Hospital's staff and these physicians represented 58 percent of the hospital's admissions in 2009. Approximately 47 percent of HUMC's medical staff is age 55+ and they accounted for 45 percent of HUMC's admissions, while at JCMC, physicians age 55+ comprised 40 percent of the medical staff and contributed 31 percent of the hospital's admissions in 2009. By way of comparison, higher percentages of all New Jersey patient care physicians in 2005 were in the younger age groups than for the medical staffs at the three hospitals.

[17] Based on NCI analysis patient care physicians excluding medical residents in a 2005 physician supply database previously obtained from Rutgers University Center for State Health Policy.
[18] American Medical Association Physician Characteristics and Distribution in the U.S., 2010 edition; Average age is for patient care physicians in 2008.

Exhibit 5-21
Medical Staff Age Profile – All Physicians

Facility	Percentage of Total Admissions and Physicians by Age Group – All Physicians with Admissions in 2009									
	Under 35		35 – 44		45 – 54		55 – 64		65 and Over	
	Adms.	Phys.	Adms.	Phys.	Adms.	Phys.	Adms.	Phys.	Adms.	Phys.
Christ Hospital	0%	1%	13%	13%	28%	28%	42%	35%	16%	24%
HUMC	1%	4%	29%	22%	25%	27%	33%	31%	12%	16%
JCMC	7%	2%	37%	25%	25%	33%	26%	25%	5%	15%
New Jersey Patient Care Physicians		5%		28%		33%		22%		12%

Source: Hospital records. For all New Jersey physicians, NCI analysis of 2005 physician supply database previously obtained from Rutgers University Center for State Health Policy.

Exhibit 5-22 shows the age distribution analysis results just the primary care medical staff members at each hospital. The percentage of physicians and admissions by age group for primary care physicians is similar to that of all physicians at each hospital.

Exhibit 5-22
Medical Staff Age Profile – Primary Care Physicians[19]

Facility	Percentage of Total Admissions and Physicians by Age Group – Primary Care Physicians with Admissions in 2009									
	Under 35		35 – 44		45 – 54		55 – 64		65 and Over	
	Adms.	Phys.	Adms.	Phys.	Adms.	Phys.	Adms.	Phys.	Adms.	Phys.
Christ Hospital	0%	1%	12%	12%	29%	31%	40%	32%	19%	24%
HUMC	0%	4%	37%	27%	24%	22%	30%	33%	9%	13%
JCMC	7%	2%	37%	21%	29%	36%	24%	28%	3%	13%

Source: Hospital records.

[19] Primary care physicians include the following specialties: Internal Medicine, Family Practice, Pediatrics and OB/GYN.

Comparing the percentage of physicians age 55+ on staff at the three hospitals with all physicians in New Jersey and the U.S. indicates that Christ Hospital and HUMC both have notably higher proportions of physicians in the 55+ age category than either the state or the U.S. The percentage of JCMC's medical staff age 55+ is comparable to national level, but higher than for the overall state.

Exhibit 5-23
Percentage of Physicians Age 55+

Facility	All Physicians	Primary Care Physicians
Christ Hospital	59%	56%
HUMC	47%	46%
JCMC	40%	41%
New Jersey Patient Care Physicians	34%	
U.S.	39%	

Source: Hospital records.

It should be noted that the figure in Exhibit 5-23 above for U.S. physician includes all physicians (including administrative physicians), which skews the average age upward compared to a physician base with solely physicians involved in patient care. So it is likely that the percentage of patient care physicians age 55+ in the U.S. is actually lower than the figures cited in Exhibit 5-23.

We also identified the top admitters at each of the three hospitals to determine the extent of overlap between the three hospitals and to assess how reliant each hospital was on its top admitting physicians. Our analysis indicated that most of the top admitters at each hospital admitted only to that hospital, although one physician admitted to all three hospitals and was among the top five highest volume admitters at two of the three hospitals. In addition, the analysis showed that the top five admitters at Christ Hospital accounted for 19 percent of all admissions compared to 20 percent for the top five admitters at HUMC and 22 percent at JCMC. The top admitter analysis is summarized in Exhibit 5-24 below.

Exhibit 5-24
Top Five Admitting Physicians at Christ Hospital, HUMC and JCMC, 2009

Physician	Facility	Admissions	Percent of Facility's Total Admissions	Overlap
A	Christ Hospital	675	7%	Christ Hospital Only
B	Christ Hospital	425	4%	Christ Hospital & HUMC& JCMC
C	Christ Hospital	332	3%	Christ Hospital Only
D	Christ Hospital	311	3%	Christ Hospital Only
E	Christ Hospital	243	2%	HUMC Only
F	HUMC	541	5%	HUMC Only
G	HUMC	540	5%	HUMC Only
H	HUMC	407	4%	HUMC Only
I	HUMC	320	3%	HUMC Only
J	HUMC	314	3%	HUMC Only
B	JCMC	907	5%	Christ Hospital & HUMC& JCMC
K	JCMC	830	5%	JCMC Only
L	JCMC	787	4%	JCMC Only
M	JCMC	773	4%	JCMC Only
N	JCMC	739	4%	JCMC Only

Source: Hospital records

Financial Condition

A key element of our assessment of the three hospitals was a review of each hospital's historical financial performance as well as their 2010 budgets. This assessment included an evaluation of each organization's statement of revenues over expenses, balance sheet, and key financial indicators. We calculated the hospitals' financial performance in the following standard financial indicators:

- Operating margin – A hospital's operating margin is defined as income (or loss) from patient operations divided by net patient revenues (i.e., not patient revenues billed but patient revenues actually received or expected to be received by hospitals). This metric excludes non-operating items such as fundraising or gains or losses on the sale of assets. Thus, this metric measures a hospital's net income strictly from the core business of patient care. In the short-term, hospitals with negative operating

margins may be able to bridge the shortfall with loans or by tapping cash reserves. These are, however, short-term solutions and a hospital experiencing sustained negative operating margins will likely be unable to meet its financial obligations over the long-term and faces the prospect of insolvency and bankruptcy.

- Days cash on hand – Days cash on hand is defined as cash and highly liquid assets (e.g., marketable securities or money-market funds) divided by the hospital's average daily cash outflow to support operations; it excludes depreciation, which is a non-cash expense. In other words, days cash on hand measures a hospital's cash reserves in terms of the number of days the hospital could continue to meet daily operating expenses even if it were to receive no additional cash revenues. The lower the number, the more vulnerable a hospital is to disruptions in revenues (e.g., a slowdown in payment by third-party payers) or expenses (e.g., sharp increases in supply costs). A very low number may signal that the hospital may not be able to meet payroll.

- Debt to capitalization – A hospital's ratio of debt to capitalization measures its degree of financial leverage. One can think of it as the fraction of a hospital's total assets that has been financed with debt, rather than with the hospital's equity funds (endowments plus accumulated retained earnings). Other things being equal, the higher a hospital's debt-to-capitalization ratio, the larger the interest expense in the hospital's income statement and the larger the total debt-service in its cash flow statement. Therefore, this ratio is widely used by financial analysts to assess the degree to which a hospital is leveraged and thus, may be unable to take on additional debt or the extent to which a hospital may have difficulty meeting its scheduled debt service payments.

In order to evaluate each hospital's performance in these financial indicators, we compared them to the 2009 median values from Standard & Poor's (S&P), one of the credit rating agencies, for not-for-profit stand-alone hospitals whose bonds are rated BBB- and below BBB-. Bonds rated BBB- by S&P's are considered the lowest investment grade and below BBB- are considered speculative grade. A lower bond rating, especially a speculative grade rating, means that it will be more difficult for a hospital to obtain bond financing, and the financing that is obtained will be accompanied by higher interest rates. We also compared each hospital's performance in these financial indictors to statewide median values for the period ending December 31, 2009 for 57 hospitals in New Jersey published by NJHCFFA.

The following section presents a summary of each hospital's financial condition.

Christ Hospital

Between 2007 and 2009, Christ Hospital's net patient service revenue decreased from $126.3M to $118.2M, a decline of 6.4 percent and is budgeted to decline further in 2010 by another 3.5 percent to $114.1M. Christ Hospital received State DSH, charity care, and hospital relief funding of $12.6M in 2007, $13.3M in 2008, and $14.1M in 2009. The 2010 budget for Christ Hospital reflects an increase in these funds to $14.5M, which along with a stabilization grant of $6.5M will increase State funding to $21M. Other revenue fluctuated during the 2007-09 period and is budgeted to increase by 30 percent in 2010. As a result of these changes, Christ Hospital's total revenue is budgeted to increase from $141M in 2009 to $146.5M in 2010, an increase of almost 4 percent.

Although Christ Hospital's total expenses rose steadily between 2007 and 2009 (from $158.8M to $161.1M), the 2010 budget shows a significant decline to $143.1M, driven almost entirely by a 22 percent budgeted decrease in salaries and benefits. The net effect of these changes in revenues and expenses is that Christ Hospital's operating margin (which declined from -7.4 percent in 2008 to -14.2 percent in 2009) is budgeted to be 2.3 percent in 2010, representing an improvement of more than $23M. Christ Hospital's statement of revenues over expenses for the period 2007-2010 is presented in Exhibit 5-25 below.

Exhibit 5-25

Christ Hospital

Statement of Revenues over Expenses

Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Net Patient Service Revenue, net of provision for bad debts	126,258	125,048	118,200	114,122
State DSH funds and subsidization grants:				
Charity care	9,941	10,778	11,710	12,311
Hospital relief & mental health	2,676	2,527	2,354	2,180
Stabilization grant	-	-	-	6,500
Total state DSH funds and subsidization grant	12,617	13,305	14,065	20,991
Other Revenue	8,356	11,303	8,763	11,425
Total Revenue	**147,231**	**149,656**	**141,027**	**146,539**
Expenses:				
Salaries and Benefits	101,197	100,355	109,577	85,126
Purchased Services and Other	30,394	32,685	23,457	28,972
Medical Supplies	22,195	21,556	20,811	22,006
Interest	686	1,980	2,235	2,566
Depreciation and Amortization	4,349	4,222	4,999	4,468
Total Expenses	**158,821**	**160,798**	**161,079**	**143,139**
Operating Loss	**(11,590)**	**(11,142)**	**(20,052)**	**3,400**
Margin	*-7.9%*	*-7.4%*	*-14.2%*	*2.3%*
Non-operating income	2,074	289	104	88
Excess (Deficiencies) of Revenues over Expenses	**$ (9,516)**	**$ (10,853)**	**$ (19,948)**	**$ 3,488**

Exhibit 5-26 presents Christ Hospital's balance sheet for the 2007-2010 period.

Exhibit 5-26

Christ Hospital

Statement of Financial Position

Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Assets				
Current assets:				
Cash and cash equivalents	$ 6,003	$ 3,379	$ 765	$ 118
Assets limited or restricted as to use	4,899	5,086	3,705	3,705
Patient receivables,				
less allowance for doubtful accounts	17,487	16,292	16,276	12,596
Other receivables	1,866	1,728	2,427	1,443
Prepaid expenses and other current assets	1,106	1,058	1,496	1,492
Inventories	2,311	2,337	2,410	2,410
Total current assets	**33,672**	**29,880**	**27,079**	**21,764**
Noncurrent portion of assets limited or restricted as to use	51	57	57	57
Property and equipment, net	20,657	20,126	16,471	13,864
Deferred finance charges and other	52	-	-	-
Total assets	**$ 54,432**	**$ 50,063**	**$ 43,607**	**$ 35,685**
Liabilities and Net Assets				
Current liabilities:				
Line of credit	$ 8,728	$ 9,345	$ 11,916	$ 10,664
Accounts payable and accrued expenses	19,484	22,298	29,704	21,448
Accrued salaries, vacation, and payroll taxes	8,353	8,542	6,481	6,721
Estimated 3rd party payor settlements, net	4,611	4,652	4,562	2,420
Total current liabilities	**41,176**	**44,837**	**52,663**	**41,253**
Long-term liabilities:				
Long-term debt, net of current portion	10,000	10,000	10,738	10,738
Other	44,167	69,125	47,230	47,230
Total liabilities	**95,343**	**123,962**	**110,631**	**99,221**
Net assets:				
Unrestricted	(41,214)	(74,208)	(67,333)	(63,845)
Temporarily restricted	278	284	252	252
Permanently restricted	25	25	58	58
Total net assets	**(40,911)**	**(73,899)**	**(67,024)**	**(63,536)**
Total Liabilities and Net Assets	**$ 54,432**	**$ 50,063**	**$ 43,607**	**$ 35,685**

Exhibit 5-27 presents a summary financial analysis of Christ Hospital's position for 2007-2010. For 2009, Christ Hospital's operating margin was -14.2 percent compared to S&P's 2009 medians of 0.6 percent and -0.7 percent for BBB- and below BBB- rated hospitals, respectively. Christ Hospital's days cash on hand in 2009 was 1.8 days compared to S&P's 2009 medians for BBB- and below BBB- rated hospitals of 107.9 days and 66.1 days, respectively. Christ Hospital's debt-to-capitalization ratio in 2009 was -50.7 percent compared to S&P's 2009

medians of 66.1 percent and 51.3 percent for BBB and below BBB- rated hospital, respectively. Christ Hospital's 2009 financial performance also compares unfavorably with 2009 New Jersey hospitals' statewide medians for operating margin (.47 percent), days cash on hand (79.4 days) and debt-to-capitalization ratio (47.8 percent).

Exhibit 5-27

Christ Hospital

Financial Analysis

Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Operating Margin	-7.9%	-7.4%	-14.2%	2.3%
Excess Margin	-6.5%	-7.3%	-14.1%	2.4%
Days Cash on Hand (excl. Restricted Funds)	14.2	7.9	1.8	0.3
Total Debt	$ 18,728	$ 19,345	$ 22,654	$ 21,402
Total Unrestricted Net Assets	$ (41,214)	$ (74,208)	$ (67,333)	$ (63,845)
Debt-to-Capitalization	-83.3%	-35.3%	-50.7%	-50.4%
Total State DSH Funds and Subsidization Grants	$ 12,617	$ 13,305	$ 14,065	$ 20,991
Net Patient Service Revenue per Adjusted Discharge	$ 7.5	$ 6.6	$ 6.8	$ 6.5
Growth %		*-12.3%*	*2.9%*	*-3.8%*
Operating Cost per Adjusted Discharge	$ 9.5	$ 8.5	$ 9.3	$ 8.2
Growth %		*-10.4%*	*9.0%*	*-11.5%*

Hoboken University Medical Center

Between 2007 and 2009, HUMC's net patient service revenue increased from $86.2M to $97.9M, an increase of 13.5 percent and is budgeted to remain nearly constant in 2010 at $97.7M. HUMC received State DSH, charity care, hospital relief and mental health subsidy funding of $32.1M in 2007, $23.7M in 2008, and $23.7M in 2009 ($24.7 when combined with a $1M stabilization grant). The 2010 budget for HUMC reflects an increase in these funds to $25.4M, which along with a stabilization grant of $6M will increase State funding to $31.4M. Other revenue increased by 40 percent between 2007 and 2009 to $7.4M and is budgeted to remain at that level for 2010. HUMC's total revenue is budgeted to increase from $129.9M in 2009 to $136.5M in 2010, an increase of 5 percent.

Between 2007 and 2009, HUMC's total expenses increased 12.5 percent, from $123.5M to $138.9M. HUMC's 2010 budget indicates total expenses will decline to $132.3M from decreases in salaries, physician fees, non-physician purchased services and supplies. In 2008, HUMC reported a loss from operations of $22.3M and in 2009 its loss from operations was $14.3M. Total losses were $21.7M in 2008 and $16.3M in 2009. HUMC's 2010 budget shows a total loss of $350,000. Exhibit 5-28 presents HUMC's statement of revenue over expenses for the period 2007 – 2010.

Exhibit 5-28

Hoboken University Medical Center
Statement of Revenues over Expenses
Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Net Patient Service Revenue less Bad Debt	86,206	96,374	97,864	97,740
Disproportionate Share Revenue - MA	16,261	6,769	8,479	9,271
Net Patient Service Revenue	102,467	103,143	106,344	107,011
Other Operating Revenue				
State Charity Care Subsidy (UCC)	13,494	15,132	14,319	14,430
State Hospital Relief Subsidy	2,077	1,557	598	1,400
State Mental Health Subsidy	235	256	256	256
Graduate Medical Education	1,553	-	2,032	2,032
Grant Revenues	3,016	4,097	4,331	4,336
Stabilization Grant Revenues	-	-	1,000	6,000
Other	719	488	1,063	1,064
Total Other Operating Revenue	21,094	21,529	23,600	29,518
Total Operating Revenue	**123,562**	**124,672**	**129,943**	**136,529**
Operating Expenses:				
Salaries	60,328	71,034	68,849	64,723
Benefits	15,657	18,073	19,809	19,127
Physician Professional Fees	6,015	7,126	7,475	7,113
Supplies & Drugs	14,165	16,291	15,711	15,176
Non-Physician Purchased Services	18,111	19,007	15,847	14,457
Utilities	2,635	3,067	2,523	2,851
Insurance	2,163	2,083	1,868	1,924
Repairs and maintenance	1,591	1,807	990	1,077
Rental / Lease	1,908	2,909	3,592	4,015
Other	878	1,149	2,217	1,868
Total Expenses	**123,451**	**142,547**	**138,883**	**132,330**
Income From Operations Before Depreciation and An	**$ 111**	**$ (17,875)**	**$ (8,940)**	**$ 4,199**
Margin	*0.1%*	*-14.3%*	*-6.9%*	*3.1%*
Depreciation and Amortization	4,130	4,414	5,341	3,187
Loss From Operations	**(4,019)**	**(22,289)**	**(14,281)**	**1,012**
Non-operating Income (Expenses)				
Contributions				
Cash	6,834	-	-	-
Capital Assets	32,935	-	-	-
Donations	-	2,415	500	-
Investment Income	1,710	401	64	37
Sale of Rehab Beds	-	-	-	1,200
Interest Expense	(2,321)	(2,231)	(2,624)	(2,599)
Excess (Deficiencies) of Revenues over Expenses	**$ 35,138**	**$ (21,704)**	**$ (16,340)**	**$ (350)**

Sources: 2007 and 2008 audited financial statements, 2009 internal financials and 2010 budget

Exhibit 5-29 presents HUMC's statement of financial position.

Exhibit 5-29

Hoboken University Medical Center

Statement of Financial Position

Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010 (1)
Assets				
Current assets:				
Cash and cash equivalents	$ 7,536	$ 361	$ 104	$ (480)
Assets limited or restricted as to use	-	-	-	-
Patient receivables, less allowance for doubtful accounts	14,729	15,456	15,964	15,964
Grants and subsidies receivable	3,198	5,197	8,805	8,805
Due From 3rd Party Payors	-	-	927	927
Due From Foundation	-	2,032	629	629
Inventories	1,923	2,159	2,421	2,421
Other Current Assets	1,397	2,127	2,123	2,123
Total current assets	**28,783**	**27,332**	**30,973**	**30,390**
Long-term investments	-	-	-	-
Noncurrent portion of assets limited or re	34,425	19,555	17,314	17,314
Property and equipment, net	41,275	43,251	46,067	41,679
Bond issuance costs - Net	985	1,590	1,994	1,994
Total assets	**$ 105,467**	**$ 91,729**	**$ 96,348**	**$ 91,377**
Liabilities and Net Assets				
Current liabilities:				
Current portion of long-term debt	$ 2,300	$ 9,720	$ 1,850	$ 1,850
Accounts payable and accrued expense	2,282	3,128	26,645	23,890
Accrued interest payable	1,478	1,060	1,430	1,430
Other current liabilities	-	-	1,325	1,325
Deferred revenue	2,924	6,161	14,320	15,320
Due to Hudson Healthcare, Inc	12,010	15,945	3,532	3,532
Total current liabilities	**20,994**	**36,014**	**49,103**	**47,347**
Long-term liabilities:				
Long-term debt, net of current portion	49,335	42,280	50,150	48,300
Total liabilities	**70,329**	**78,294**	**99,253**	**95,647**
Net assets:				
Invested in capital assets net of related	(28,736)	(20,549)	-	-
Restricted	33,192	19,220	-	-
Unrestricted	30,683	14,764	(2,905)	(4,270)
Total net assets	**35,138**	**13,435**	**(2,905)**	**(4,270)**
Total Liabilities and Net Assets	**$ 105,467**	**$ 91,729**	**$ 96,348**	**$ 91,377**

(1) No balance sheet available from Hospital; interpreted by NCI from cash budget provided.

Exhibit 5-30 presents a summary financial analysis of HUMC's position for 2007-2010. For 2009, HUMC's operating margin was -13.0 percent compared to S&P's 2009 medians of 0.6 percent and -0.7 percent for BBB- and below BBB- rated hospitals, respectively. HUMC's days cash on hand in 2009 was 0.3 days compared to S&P's 2009 medians for BBB- and below BBB- rated hospitals of 107.9 days and 66.1 days, respectively. HUMC's debt-to-capitalization ratio in 2009 was 105.9 percent compared to S&P's 2009 medians of 66.1 percent and 51.3 percent for BBB and below BBB- rated hospital, respectively. HUMC's 2009 financial performance also compares unfavorably with 2009 New Jersey hospitals' statewide medians for operating margin (.47 percent), days cash on hand (79.4 days) and debt-to-capitalization ratio (47.8 percent).

Exhibit 5-30

Hoboken University Medical Center

Financial Analysis

Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010 (1)
Operating Margin	-5.1%	-19.7%	-13.0%	-1.2%
Excess Margin	28.4%	-17.4%	-12.6%	-0.3%
Days Cash on Hand (excl. Restricted Funds)	21.9	0.9	0.3	(1.3)
Total Debt	$ 51,635	$ 52,000	$ 52,000	$ 50,150
Total Unrestricted Net Assets	$ 1,947	$ (5,784)	$ (2,905)	$ (4,270)
Debt-to-Capitalization	96.4%	112.5%	105.9%	109.3%
Total State DSH Funds and Subsidization Grants	$ 15,806	$ 16,944	$ 16,174	$ 22,086
Net Patient Service Revenue per Adjusted Discharge	$ 7.3	$ 7.0	$ 7.0	$ 6.9
Growth %		*-4.2%*	*-0.6%*	*-0.5%*
Operating Cost per Adjusted Discharge	$ 9.3	$ 10.1	$ 9.6	$ 9.0
Growth %		*9.3%*	*-5.1%*	*-7.0%*

(1) No balance sheet available from Hospital; interpreted by NCI from cash budget provided

Jersey City Medical Center

Net patient service revenue at JCMC rose from $151.9M in 2007 to $186.5M in 2009, an increase of almost 23 percent. JCMC's 2010 budget shows an increase in net patient service revenue of 15.6 percent to $215.6M. JCMC received State DSH, charity care, hospital relief and mental health, and stabilization grant funding of $93.6M in 2007, $82.4M in 2008 and $75.3M in 2009. The 2010 budget for JCMC reflects a decrease in these funds to $62.2M. As a result of these changes, JCMC's total revenue increased to $282.9M between 2007 and 2009, a 6.8 percent increase. The budget for 2010 shows JCMC's total revenue increasing to $298.8M, an increase of 5.6 percent.

Total expenses at JCMC increased by 6 percent between 2007 and 2009, rising from $260.3M to $275.8M. The 2010 budget shows an increase to $295.8M, or 7.2 percent, with the largest percentage increases occurring in employee benefits (12.0 percent), supplies (8.3 percent), and salaries (7.7 percent). JCMC's excess of revenues over expenses fluctuated during 2007-2009 from a low of $2.9M in 2008 to a high of $7.1M in 2009. The 2010 budget shows JCMC with an excess of revenues over expenses of just over $3M. Exhibit 5-31 summarizes JCMC's consolidated statement of revenues over expenses and Exhibit 5-32 presents JCMC's consolidated statement of financial position.

Exhibit 5-31

Jersey City Medical Center
Statement of Revenues over Expenses
For the Actual Fiscal Years Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Revenue:				
Net patient service revenue, net of bad debts	$ 151,914	$ 165,288	$ 186,495	$ 215,586
Grant revenues	11,633	12,545	12,283	12,834
State DSH funds and subsidization grant:				
Charity care	66,890	68,579	46,634	45,922
Hospital relief & mental health	10,724	10,721	9,741	9,264
Stabilization grant	16,000	3,143	18,857	7,000
Other revenue	7,794	8,177	8,904	8,183
Total revenue	**264,955**	**268,453**	**282,914**	**298,789**
Expenses:				
Salaries and wages	107,549	111,942	117,074	126,051
Employee benefits	24,879	22,917	25,281	28,327
Physician fees	9,557	12,337	15,582	16,418
Supplies and expenses	93,667	93,891	95,793	103,787
Interest	12,747	12,450	11,810	11,821
Depreciation and amortization	11,881	12,044	10,270	9,360
Total expenses	**260,279**	**265,581**	**275,809**	**295,764**
Excess (Deficiencies) of Revenues over Expenses	**$ 4,676**	**$ 2,872**	**$ 7,105**	**$ 3,025**

Exhibit 5-32

Jersey City Medical Center
Statement of Financial Position

For the Actual Fiscal Years Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Assets				
Current assets:				
Cash and cash equivalents	$ 15,751	$ 10,328	$ 16,730	$ 19,936
Assets limited or restricted as to use	1,071	1,048	6,016	6,516
Patient receivables, less allowance for doubtful accounts	22,279	29,669	22,621	26,321
Inventories, prepaids, and other	1,127	1,078	4,857	4,857
Total current assets	**40,227**	**42,123**	**50,224**	**57,630**
Non-current portion of assets limited or restricted as to use	2,252	2,221	-	-
Property and equipment, net	190,685	181,599	170,405	169,040
Amounts due from affiliates	6,664	10,555	16,218	17,342
Interest in net assets of affiliates	3,383	3,232	3,232	3,232
Total assets	**$ 243,210**	**$ 239,730**	**$ 240,079**	**$ 247,244**
Liabilities and Net Assets				
Current liabilities:				
Current portion of long-term debt	$ 4,115	$ 4,380	$ 4,629	$ 4,953
Accounts payable and accrued expenses	30,374	26,178	25,682	29,382
Note payable, affiliate	532	532	-	-
Accrued restructuring cost	1,090	-	-	-
Advances from government agencies	-	500	-	-
Deferred revenue	267	-	-	-
Estimated 3rd party payor settlements	15,320	20,149	17,490	19,490
Total current liabilities	**51,698**	**51,739**	**47,801**	**53,825**
Long-term liabilities:				
Long-term debt, net of current portion	169,141	164,781	160,169	155,285
Advances from government agencies	2,911	2,411	2,411	2,411
Pension liability	7,298	19,435	19,032	20,832
Postretirement benefits	14,458	16,136	18,092	19,292
Estimated medical malpractice claims liability	1,838	1,921	2,209	2,209
Total liabilities	**247,344**	**256,423**	**249,714**	**253,854**
Total net assets	**(4,134)**	**(16,693)**	**(9,635)**	**(6,610)**
Total Liabilities and Net Assets	**$ 243,210**	**$ 239,730**	**$ 240,079**	**$ 247,244**

Exhibit 5-33 provides a high-level analysis of some of JCMC's key financial indicators. For 2009, JCMC's operating margin was 2.5 percent compared to S&P's 2009 medians of 0.6 percent and -0.7 percent for BBB- and below BBB- rated hospitals, respectively. JCMC's days cash on hand in 2009 was 23 days compared to S&P's 2009 medians for BBB- and below BBB- rated hospitals of 107.9 days and 66.1 days, respectively. JCMC's debt-to-capitalization ratio in 2009 was 106.2

percent compared to S&P's 2009 medians of 66.1 percent and 51.3 percent for BBB and below BBB- rated hospital, respectively. JCMC's 2009 operating margin of 2.5 percent is better than the 2009 New Jersey hospitals' statewide median operating margin (.47 percent), however, its days cash on hand of 23 days, although better than Christ Hospital's and HUMC's, is well below the statewide median of 79.4 days. JCMC's 2009 performance in terms of debt-to-capitalization compares unfavorably with the statewide median of 47.8 percent.

Exhibit 5-33

Jersey City Medical Center

Financial Analysis

Actual Fiscal Year Ended December 31, 2007 - 2009, and Budget 2010

(Dollars in Thousands)	Audited 2007	Audited 2008	Unaudited 2009	Budget 2010
Operating Margin	1.8%	1.1%	2.5%	1.0%
Excess Margin	1.8%	1.1%	2.5%	1.0%
Days Cash on Hand (excl. Restricted Funds)	23.1	14.9	23.0	25.4
Total Debt	$ 173,256	$ 169,161	$ 164,798	$ 160,238
Total Net Assets	$ (4,134)	$ (16,693)	$ (9,635)	$ (6,610)
Debt-to-Capitalization	102.4%	110.9%	106.2%	104.3%
Total State DSH Funds and Subsidization Grants	$ 93,614	$ 82,443	$ 75,232	$ 62,186
Net Patient Service Revenue per Adjusted Discharge	$ 7.3	$ 7.7	$ 7.8	$ 8.3
Growth %		*5.7%*	*1.6%*	*5.8%*
Operating Cost per Adjusted Discharge	$ 12.5	$ 12.4	$ 11.6	$ 11.4
Growth %		*-0.9%*	*-6.4%*	*-1.8%*

Comparative Cost, Quality, Patient Satisfaction, and Productivity Indicators

This section of our report provides an overview of comparative performance indicators of the three hospitals along with selected State and national benchmarks.

Data obtained from Ingenix's hospitalbenchmarks.com site indicated that the cost per Medicare discharge (wage and case mix adjusted) for each of the three hospitals was slightly lower than the overall average for the state of New Jersey, as shown in Exhibit 5-34.

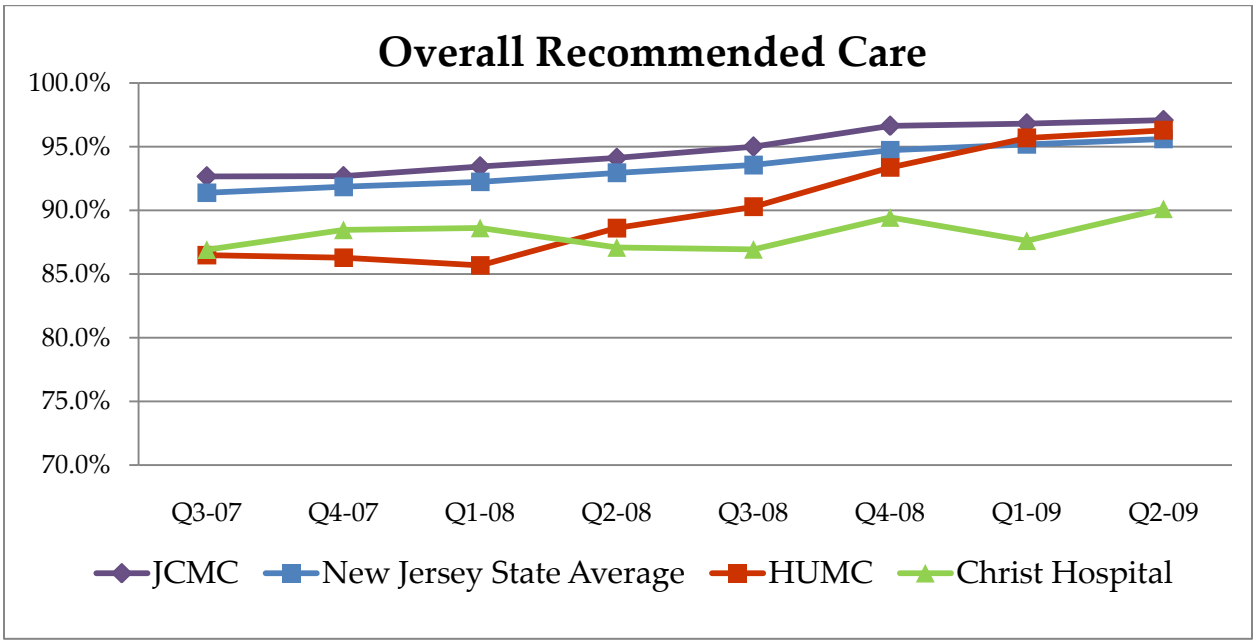
Exhibit 5-34
Wage and Case Mix-Adjusted Cost Per Discharge

Facility	Wage and Case Mix-Adjusted Cost Per Discharge
Christ Hospital	$5,470
HUMC	$5,965
JCMC	$6,174
New Jersey Average	$6,269

Source: https://www.hospitalbenchmarks.com/index.aspx

With respect to quality indicators, we utilized data from the Commonwealth Fund site (www.whynotthebest.org), which provides detailed quality and patient satisfaction from CMS and the HCAHPS studies. The quality data were plotted for each of the three hospitals and the State of New Jersey for the last two quarters of 2007 through the first two quarters of 2009 and show improving scores for all three hospitals, with JCMC consistently above the State average. Quality scores for HUMC and Christ Hospital have fluctuated during the period we examined, with both facilities trailing the State average until the first two quarters of 2009, when HUMC's scores exceeded the State average. Christ Hospital's scores continue to lag the State average by approximately 5 percentage points.

Exhibit 5-35
Quarterly Overall Quality Scores, Q3-07-Q2-09



Source: http://www.whynotthebest.org/

As a basis for further comparison, the average score of the top 10 percent hospitals nationally was 98.4 percent and the average for the top 1 percent nationally was 99.6 percent. Exhibit 5-36 provides a comparison of each of the three hospital scores with the average for the State of New Jersey, the top 10 percent and the top 1 percent nationally.

Exhibit 5-36
Comparative Overall Quality Scores

Facility	Overall Quality Score
Christ Hospital	90.1%
HUMC	96.3%
JCMC	97.1%
New Jersey Average	95.6%
Average of Top 10% Nationally	98.4%
Top 1% Nationally	99.6%

Source: http://www.whynotthebest.org/

Exhibit 5-37 shows the comparative quality scores for overall heart attack care (which includes a variety of factors such as aspirin on arrival, beta blocker prescribed at discharge and primary PCI within 90 minutes of arrival at the hospital).

Exhibit 5-37
Comparative Overall Heart Attack Quality Scores

Facility	Overall Heart Attack Quality Score
Christ Hospital	83.85%
HUMC	97.58%
JCMC	96.90%
New Jersey Average	96.98%
Average of Top 10% Nationally	99.87%
Top 1% Nationally	100.0%

Source: http://www.whynotthebest.org/

As shown in Exhibit 5-37 above, all three hospitals are well below the top 10 percent and top 1 percent of hospitals nationally.

Exhibit 5-38 provides similar comparative data on overall pneumonia care, which includes factors such as pneumococcal vaccination, blood cultures in the Emergency Department prior to initial antibiotic in the hospital, and initial antibiotics within 6 hours of arrival.

Exhibit 5-38
Comparative Overall Pneumonia Quality Scores

Facility	Overall Pneumonia Quality Score
Christ Hospital	89.21%
HUMC	95.49%
JCMC	94.61%
New Jersey Average	94.62%
Average of Top 10% Nationally	98.44%
Top 1% Nationally	99.77%

Source: http://www.whynotthebest.org/

HUMC and JCMC are at or above the State average while Christ Hospital trails the State average on overall pneumonia care. All three hospitals trail the top 10 percent and top 1 percent of hospitals nationally by a significant margin.

Exhibit 5-39 summarizes the comparative quality data on overall heart failure care, which incorporates activities such as discharge instructions and ACEI or ARB for LVSD).

Exhibit 5-39
Comparative Overall Heart Failure Quality Scores

Facility	Overall Heart Failure Quality Score
Christ Hospital	95.18%
HUMC	100.00%
JCMC	97.26%
New Jersey Average	95.76%
Average of Top 10% Nationally	99.45%
Top 1% Nationally	100.00%

Source: http://www.whynotthebest.org/

In the case of heart failure, both HUMC and JCMC exceed the state average, with HUMC performing on par with the top 1 percent nationally.

Exhibit 5-40 presents the overall surgical care quality ratings, which include factors such as pre-surgical antibiotic given at appropriate time, stopping preventive antibiotics at the right time, and patients with recommended venous thromboembolism prophylaxis ordered).

Exhibit 5-40
Comparative Overall Surgical Care Quality Scores

Facility	Overall Surgical Care Quality Score
Christ Hospital	89.09%
HUMC	94.05%
JCMC	98.25%
New Jersey Average	95.40%
Average of Top 10% Nationally	98.78%
Top 1% Nationally	99.72%

Source: http://www.whynotthebest.org/

As shown in the exhibit above, JCMC exceeds the state average while both HUMC and Christ Hospital fall below the state average for overall surgical care quality. All three hospitals fall below the top 10 percent and top 1 percent hospitals nationally.

The Commonwealth Fund site also provides information on readmission rates. Exhibit 5-41 provides comparative data on readmission rates for pneumonia (state averages for New Jersey were not available).

Exhibit 5-41
Comparative Pneumonia Readmission Rates

Facility	30-Day Pneumonia Readmission Rates
Christ Hospital	21.50%
HUMC	21.20%
JCMC	19.40%
Average of Top 10% Nationally	15.84%
Top 1% Nationally	14.37%

Source: http://www.whynotthebest.org/

While JCMC had the lowest 30-day readmission rate of the three hospitals, all three hospitals had substantially higher rates than the top 10 percent and top 1 percent of hospitals nationally.

Exhibit 5-42 presents similar data on 30-day heart failure readmission rates (state averages for New Jersey were not available).

Exhibit 5-42
Comparative Heart Failure Readmission Rates

Facility	30-Day Heart Failure Readmission Rates
Christ Hospital	25.90%
HUMC	26.50%
JCMC	28.50%
Average of Top 10% Nationally	21.53%
Top 1% Nationally	19.46%

Source: http://www.whynotthebest.org/

All three hospitals have substantially higher 30-day heart failure readmission rates than the top 10 percent and top 1 percent of hospitals nationally.

Exhibit 5-43 presents similar data on 30-day heart attack readmission rates (state averages for New Jersey were not available).

Exhibit 5-43
Comparative Heart Attack Readmission Rates

Facility	30-Day Heart Attack Readmission Rates
Christ Hospital	22.40%
HUMC	21.50%
JCMC	23.70%
Average of Top 10% Nationally	17.87%
Top 1% Nationally	16.38%

Source: http://www.whynotthebest.org/

Again, all three hospitals reported higher 30-day readmission rates for heart attack than the top 10 percent and top 1 percent of hospitals nationally.

The Commonwealth Fund site also provides comparative data on 30-day mortality rates for pneumonia, heart failure, and heart attack. Exhibit 5-44 summarizes these data for the three hospitals along with top 10 percent and top 1 percent of hospitals nationally (New Jersey average data were not available).

Exhibit 5-44
Comparative 30-Day Mortality Rates

Facility	30-Day Mortality Rates		
	Heart Attack	Heart Failure	Pneumonia
Christ Hospital	16.50%	10.30%	11.10%
HUMC	16.00%	9.50%	11.30%
JCMC	15.70%	10.80%	11.10%
Top 10%	13.80%	8.90%	9.00%
Top 1%	12.18%	7.61%	7.53%

Source: http://www.whynotthebest.org/

The three hospitals reported relatively similar 30-day mortality rates and all three trailed the top 10 percent and top 1 percent of hospitals nationally.

In addition to data on quality measures, the Commonwealth Fund also provides data on patient satisfaction scores from the HCAHPS surveys. Exhibit 5-45 presents comparative patient satisfaction on two measures (percentage of patients highly satisfied and percentage of patients who would definitely recommend this hospital to friends and family).

Exhibit 5-45
Comparative Patient Satisfaction Scores

Facility	Patient Satisfaction Scores	
	Percent Highly Satisfied	Percent Who Would Definitely Recommend Hospital
Christ Hospital	57.00%	62.00%
HUMC	53.00%	68.00%
JCMC	59.00%	64.00%
New Jersey Average	59.00%	63.00%
Top 10%	82.79%	85.59%
Top 1%	93.41%	94.47%

Source: http://www.whynotthebest.org/

In reviewing these data, it is evident that while the three hospitals are generally in line with the New Jersey averages, the New Jersey scores trail the top 10 percent and top 1 percent of hospitals nationally by a substantial margin.

In addition to cost, quality, and patient satisfaction, we benchmarked each of the three facilities on two high-level labor productivity indicators: Full Time Equivalents (FTEs) per Case Mix Index (CMI)-weighted adjusted occupied beds and paid hours per CMI-weighted adjusted admissions. The statistics for each of the three hospitals for the last few years are shown in Exhibit 5-46 below, along with some generally accepted industry "best practices."

Exhibit 5-46
Comparative Productivity Indicators

Statistic/Facility	2007	2008	2009	2010 (Budgeted)	Best Practice
FTEs per CMI-Adjusted Occupied Bed					4.1
Christ Hospital	4.5	4.4	4.7	5.5	
HUMC	4.8	4.9	4.9	5.0	
JCMC	5.7	5.5	5.2	5.3	
Paid Hours per CMI-Adjusted Admissions					95 – 120
Christ Hospital	145.5	121.5	128.6	125.6	
HUMC	153.0	151.8	141.5	143.6	
JCMC	161.2	157.7	140.6	140.0	

Source: Hospital records, NCI

All three hospitals appear to have substantially higher FTEs per CMI-adjusted occupied bed than best practice (by more than 20 percent) and while all three have made progress in reducing their paid hours per CMI-adjusted admission over the last several years, they all remain well above industry best practice.

Section 6: Key Facility Profile Findings

Based on the data and analyses presented in Section 5, there are several key findings related to the profiles of the three facilities. These key findings are outlined below.

- The three hospitals have a combined total of 763 maintained beds and offer essentially the same set of services (medical/surgical, obstetrics, pediatrics, and psychiatry) with roughly equivalent bed complements. Christ Hospital and HUMC fall well short of target occupancy rates in all services and JCMC falls short in pediatrics and obstetrics. The low occupancy levels indicate there is substantial excess bed capacity and unnecessary duplication of services within the market area.

- JCMC's physical plant is clearly the most functional of the three hospitals and its campus has the most potential for future expansion. The physical plants of both Christ Hospital and HUMC have significant functional and operational limitations and deficiencies resulting from their age and design, and both have limited expansion/redevelopment options. With the exception of the new ED, HUMC's buildings are 40 and more years old, suffer from deferred maintenance, and are at the end of their useful lives. At Christ Hospital, while the 1978 9-story Tower building has been upgraded on some floors and has useful remaining service life, the other inpatient units were designed and built 62 and 82 years ago and do not support contemporary practices and have mechanical and electrical systems that are at the end of their serviceable lives. The estimated remaining useful life of Christ Hospital is between five and ten years, given the current annual routine maintenance budget, while HUMC requires an increase over the routine capital budget currently in place to extend its useful life beyond five years.

- All three hospitals have older medical staffs, with average ages well above New Jersey and U.S. levels. Both Christ Hospital and HUMC have particularly high percentages of physicians age 55+ and these physicians account for 58 percent of Christ Hospital's admissions and 45 percent of HUMC's admissions. The high average ages and heavy concentration of and reliance on older physicians indicate a significant need for succession planning and physician recruitment. However, the physician age profile at all three hospitals indicates that they have likely had difficulty in recruiting new/younger physicians, a difficulty that will almost certainly increase in the future as newly trained physicians opt to practice at newer, financially more stable hospitals. Over the past decade there has been an increasing

trend in hospital ownership of physician practices. This trend is driven by environmental factors affecting physicians and hospitals. Physicians' interest in seeking hospital employment is due to stagnant or downward pressure on third-party payment, curbs on ancillary revenue, rising practice expenses and a greater need for practice scale with expectations for adoption and use of electronic medical records. Hospitals are interested in owning physician practices because of the benefits it provides them in controlling quality, assuring access to specialists that are in short supply and improving financial performance by aligning physician and hospital incentives. However, none of the three hospitals has a particularly large or strong physician enterprise, and with more physicians choosing to practice in large groups or be employed by a hospital, the absence of such a physician enterprise will make physician recruitment and retention even more difficult. As a result, all three hospitals appear to have major physician replenishment challenges.

- All three hospitals are, and have been, heavily reliant on State funding and subsidies to remain financially solvent. Each hospital received a $7 million stabilization grant in State Fiscal Year 2010 in addition to other State subsidies. The $21 million in combined stabilization grants to these three hospitals was more than half of the total stabilization grant funding available that year. Their performance on key financial indicators (operating margin, days cash on hand, and debt to capitalization ratio) in 2009 was worse than Standard and Poor's 2009 medians for hospitals with bond ratings below BBB- (which is considered a speculative rating), except JCMC for operating margin. All three hospitals also performed worse than New Jersey hospital medians for these three indicators, except JCMC for operating margin. The 2010 budgets for all three hospitals reflect major improvement in financial performance, (particularly at Christ Hospital which has a budgeted improvement of $23 million and at HUMC, which has budgeted a $16 million improvement); however, the track record of the hospitals in 2007, 2008, and 2009 (as well as the year-to-date results for Christ Hospital and HUMC) suggest that the 2010 budgets may be optimistic, especially for Christ Hospital and HUMC.

- While all three hospitals showed improvement in their overall quality score between 2007 and 2009, only JCMC consistently scored above the New Jersey average and none of the hospitals scored among the top 10 percent nationally. In patient satisfaction, none of the three hospitals scored close to the national average and were anywhere from 24 to 30 percentage points lower than the top 10 percent nationally. These results indicate that none of the hospitals are particularly strong performers in quality or patient satisfaction. This, combined with their cost positions, which are

slightly below the New Jersey state average, indicates that none of the three hospitals could be classified as a "value" provider (e.g., high quality and low cost).

Section 7: Guiding Principles

Based on our analysis of the market area, the population's needs, and the financial, operational, and physical condition of the three hospitals, we developed a set of objectives that we recommend be used to guide decisions regarding how to most appropriately address the current health care delivery situation in the market area. While these objectives (or Guiding Principles) relate specifically to the three hospitals that serve as the focus of this project, they also take into consideration the context of the overall market area (including neighboring areas of New Jersey and New York).

The Guiding Principles address both the public policy issues of providing market area residents with adequate access to high quality, affordable health care services and the need to mitigate the significant expenditure by the State of New Jersey in stabilizing the provider organizations delivering those services. The Guiding Principles include the following:

1. Align the supply of beds with the current and future need of the market area population for beds.

2. Improve the clinical quality, operational efficiency, and financial performance of services provided.

3. Enhance the ability to recruit and retain an appropriate complement of high quality physicians, clinical staff, and support personnel.

4. Invest in initiatives that represent the optimal use of capital over the longer-term (i.e., more than five years).

5. Reduce the amount of State operating subsidies.

In addition to the above Guiding Principles, any decisions on how to address the health care delivery situation in Hudson County should also take into consideration the Patient Protection and Affordable Care Act and the likely changes that legislation will generate.

Section 8: Conclusions and Recommendations

Analysis of current and projected need for and utilization of services in the market area leads us to conclude there is significant excess inpatient capacity in virtually every service offered (pediatrics, obstetrics, psychiatry, and medical/surgical), and unnecessary duplication of services. It is also clear that continuation of the status quo is not a viable option. All three hospitals have attempted to "rightsize" their operations over the last several years and their 2010 budgets reflect continued efforts to do so. And while they have made some progress (to varying degrees), they have not succeeded in "turning the corner" in terms of financial performance. Nor have they made any significant progress in reducing the significant excess bed capacity and duplication of services that exist in the market area, and it is unlikely they will be able to do so with all three hospitals continuing to operate as separate legal entities. Similarly, maintaining the status quo (even with continued individual "rightsizing" initiatives) would be highly unlikely to do anything to mitigate the need for significant, ongoing financial support from the State. As a result, we believe maintaining the status quo is not a practical or appropriate scenario and should be avoided if at all possible.

Given that there is a clear and compelling case for consolidation and/or regionalization of services, Navigant offers the following recommendations:

1. **Christ Hospital, HUMC, and JCMC should reduce excess/unused bed capacity and seek to achieve the level of patient volumes necessary to enhance clinical quality, operational efficiency, and financial performance by consolidating under-utilized services.** We recommend the market area hospitals work collaboratively with one another and the State to explore and pursue potential service consolidation opportunities in the near-term. We believe there are significant consolidation opportunities in pediatrics, psychiatric services, and possibly obstetrics that would help align bed supply with need; improve the clinical quality, operational efficiency, and financial performance of services and facilities; and enhance the ability to recruit and retain an appropriate complement of high quality physicians, clinical staff, and support personnel. However, implementation of any of the service consolidation opportunities would entail significant changes in the existing community and organizational dynamics in Hudson County (discussion of which is beyond the scope of this engagement).

2. **The three hospitals should optimize the efficient use of capital over the longer-term (i.e. beyond five years) by exploring facility consolidation options.** There is a projected excess of approximately 210 medical/surgical beds in the market area (a

number roughly equal to—or greater than—the number of maintained medical/surgical beds at any of the three hospitals) and insufficient volume to support three separate pediatric, obstetric, and psychiatric units. In addition, Christ and HUMC will likely require significant capital expenditures to address their significant facility and infrastructure needs in order to extend their useful lives beyond ten years. These facts create a compelling rationale for facility consolidation. Some viable facility consolidation options are discussed in Appendix B. Although facility consolidation represents the option with the most strategic potential to result in viable, sustainable hospital facilities in the market area over the ***long-term*** (and thereby reduce State subsidies), we recognize the community, financial, and organizational challenges associated with facility consolidation. In addition, accommodating all of the patient volume of Christ, HUMC, and JCMC in some lesser number of facilities than currently exists would involve a significant capital investment—which none of the facilities (nor the State) are presently in a position to make. However, even recognizing the potential facility, fiscal, and organizational constraints associated with facility consolidation, we believe that the residents of the market area (along with the State of New Jersey) would be better served in the long-term by having appropriately sized, financially viable hospitals providing high quality, affordable care in contemporary facilities. Facility consolidation represents one way of achieving this goal. We therefore recommend that the market area hospitals and the State collaborate on the development of a long-term facility consolidation and redevelopment plan designed to optimize the efficient use of capital over the longer-term and that provides area residents with appropriate access to high quality, affordable health care services in contemporary facilities.

Impact of Purchase of HUMC by HOLDCO on Consolidation/Regionalization Opportunities

As noted previously, prior to the finalization of our report, HMHA issued a request for proposals seeking proposals from parties interested in acquiring Hoboken University Medical Center and continuing to operate it as an acute care hospital. After considering several proposals, HMHA selected the proposal submitted by HUMC HOLDCO, LLC, and HUMC OPCO, LLC. HUMC HOLDCO LLC (the Purchaser) was established by the principal owner of Bayonne Medical Center's for-profit parent company. HUMC HOLDCO LLC will be responsible for retiring up to $51.6 million in HMHA bonded debt now guaranteed by the City of Hoboken. The Purchaser's financial projections assume that stabilization grant funding of $7 million and Medicaid Disproportionate Share Hospital funding of $11.5 million from the State to HUMC in 2011 will be eliminated under HUMC's new ownership.

The Purchaser proposes to continue operating HUMC, including its existing clinics, as a general acute care hospital for at least seven years, to continue providing HUMC's existing services, and to seek licensing approval to add a transitional care unit and low risk cardiac catheterization laboratory.

In assessing the impact of the selected proposal on the opportunities for consolidation and regionalization of services in Hudson County, we reviewed the asset purchase agreement between HMHA and the Purchaser signed on April 20, 2011 and the Certificate of Need Application submitted to DHSS for transfer of ownership of Hoboken University Medical Center. We then evaluated the proposal in light of the Guiding Principles articulated above and assessed its potential impact of the proposal on the opportunities for consolidation and regionalization in Hudson County.

The Purchaser proposes to continue providing existing services and to operate HUMC as a general acute care hospital for at least seven years (with no stated plans to reduce HUMC's bed complement). The proposal therefore essentially represents a continuation of the status quo in terms of bed capacity and service complement and thus does not appear to have any immediate impact on consolidation or regionalization opportunities in Hudson County. The proposal will address the objective of reducing State subsidies, and it has the added benefit of retiring the HMHA bonded debt now guaranteed by the City of Hoboken.

The proposal does not include any clinical consolidation between HUMC and Bayonne Medical Center and thus does not address the excess capacity and unnecessary duplication of services in the market area (which are major contributing factors to the poor financial performance of market area hospitals). Common ownership and operation of HUMC and Bayonne Medical Center does create the opportunity to realize some administrative economies of scale and efficiencies, and in fact, the Purchaser has included assumptions about cost savings from such efficiencies in its Certificate of Need application. However, experience has shown these types of economies and efficiencies tend to be relatively modest, and will not, in and of themselves, address HUMC's significant financial challenges. More important than these modest administrative economies and efficiency gains, however is the establishment of a single operating entity responsible for both HUMC and Bayonne Medical Center. The proposed purchase will reduce the number of organizations that own hospitals in the market area, which is a step (albeit a very small one) in the direction of being able to address the excess capacity and unnecessary duplication of services that exist in the market area.

Therefore, although it does not appear the proposal will address the excess capacity or unnecessary duplication of services in the market area in the near-term, it does create the potential for HOLDCO, Christ Hospital and JCMC to work collaboratively with one another

and the State to explore and pursue potential service consolidation opportunities among the four hospitals over the longer-term. Furthermore, as the facilities in the market area (Christ Hospital and HUMC in particular) begin to address their significant facility and infrastructure needs, we believe there is a significant opportunity for the market area hospitals and the State to collaborate on the development of a long-term facility consolidation and redevelopment plan that provides area residents with appropriate access to high quality, affordable health care services in contemporary facilities while also optimizing the efficient use of capital over the longer-term.

Appendix A: Program Consolidation Assessment

This appendix presents a detailed assessment of potential program consolidation options we evaluated as part of our analysis.

Pediatrics. The ideal pediatric inpatient unit is generally considered to be 24-28 beds, with a target average annual occupancy rate of approximately 65 percent, which allows capacity for seasonal variations in demand. Christ Hospital, HUMC, and JCMC have a combined total of 40 maintained pediatric beds and a combined average daily census of 17. Demand projections indicate that the combined pediatric average daily census (ADC) will decline slightly to 16, thus requiring about 25 beds (at the target occupancy rate of 65 percent), which, coincidentally, is the ideal unit size. Therefore, consolidating the inpatient pediatric units of Christ, HUMC, and JCMC into a single facility could help achieve the objectives articulated in the Guiding Principles.

Consolidating pediatrics could physically be accommodated at any of the three hospitals and most easily at Christ Hospital, which has unused patient units that could accommodate the projected need for 25 beds without a significant capital expenditure for renovation to adapt an adult unit. By consolidating the pediatric volume of the three hospitals into a single facility, that facility would have a better chance of achieving the critical mass necessary to deliver quality pediatric care, improve staffing proficiency and efficiency, and reduce the financial loss associated with operating three separate pediatrics units, each with an average daily census of less than 9 patients.

While consolidating pediatrics is almost certainly necessary from a clinical quality and economic efficiency standpoint, and is physically practical, it is not likely in and of itself, to generate savings sufficient to improve the financial circumstances of the hospitals or reduce the level of State subsidization in a meaningful manner. Pediatric patients account for only 2 to 4 percent of each of the hospital's overall average daily census, so any savings, while helpful, would not materially improve the financial situation at any of the facilities. In addition, the consolidation of pediatrics by itself would not help address the excess capacity in the higher volume medical/surgical, obstetrics, or psychiatric services. Consequently, consolidation of pediatric services should be considered as part of a more comprehensive approach to program consolidation and rationalization rather than as a stand-alone option. Furthermore, as part of any pediatric service consolidation, we would also recommend that a strategic partnership be

established with a specialized pediatric/children's hospital to ensure appropriate access to specialty physicians and to enhance clinical capabilities.

Obstetrics. Christ, HUMC, and JCMC have a combined total of 65 maintained obstetrical beds and a projected average daily census of 36 patients. At the target occupancy rate of 70 percent, these 36 patients need approximately 51 beds. For obstetrics, the ideal inpatient unit size is generally considered to be 28-36 beds, with 32 beds being the optimally sized unit.

By consolidating the inpatient obstetrics services now provided by all three hospitals into one of the three facilities, the chances increase that the facility with the consolidated obstetrics service would be able to achieve the patient volumes necessary to deliver high quality care, improve operational efficiency, and reduce the negative financial impact of operating three separate obstetrical units, none of which operates at or near the target occupancy rate of 70 percent.

Analysis of the physical plants of the three hospitals indicates that consolidation of obstetrics could be accomplished at either Christ Hospital or JCMC. It should be noted, however, that consolidating obstetrics at either Christ Hospital or JCMC would require substantial capital investment for conversion of existing space to provide the labor-delivery-recovery (LDR) and C-Section rooms, post-partum beds and neonatal intensive care unit (NICU) bassinets needed to meet the consolidated projected demand. Furthermore, while consolidation of obstetrics is achievable from a physical capacity standpoint and has a relatively moderate capital cost, doing so would involve some significant tradeoffs and implications, thus diminishing its practicality. The major trade-offs and implications are summarized below.

At Christ Hospital, the renovations necessary to accommodate a consolidated obstetrics service would entail converting three 40-bed medical/surgical floors to 39 additional Post-Partum beds to provide the required number of 51 Post-Partum beds, and developing 7 additional LDR rooms to reach the projected need for 13. Given the physical condition of Christ Hospital's facilities, the units that would be most appropriate for this conversion would be three of the newer nursing units. In addition, a 32-bed medical/surgical unit would need to be put back into service to offset the loss of beds due to the conversion of the medical/surgical units to obstetrics. This reopened unit would likely be one in the oldest building, which is not ideally suited to current standards of patient care. These renovations would represent a capital expenditure of approximately $13.5 million at Christ plus approximately $1.0 million at JCMC to accommodate patient volume displaced at Christ in converting medical/surgical units to obstetrics for a total of $14.5 million for this configuration. In light of the capital cost associated with the renovations and the poor trade-off of using three of the newest nursing units and having to

make up for the lost beds by reopening nursing units in the oldest building on campus, we considered consolidating obstetrics at Christ Hospital as a less than optimal option.

At JCMC, a consolidated obstetrics service could be accommodated by converting a medical/surgical unit to provide the needed bed complement of 51 Post-Partum beds, 13 LDRs, 31 NICU bassinets, and 2 C-Section rooms. The capital cost associated with this conversion would be approximately $1.8 million. In addition to the costs at JCMC, this option would entail converting the obstetrics service at Christ to a medical/surgical unit at a cost of $1.5 million, bringing the total for this configuration to $3.3 million. While this cost estimate is substantially lower than consolidation of obstetrics at Christ Hospital, it would result in a decrease in JCMC's medical/surgical capacity of approximately 62 beds. Furthermore, while this option would help reduce the excess capacity in obstetrics, it would not address the excess capacity in pediatrics or psychiatry. In addition, although this option would help reduce some (but not all) of the excess medical/surgical capacity, it would do so by redirecting medical/surgical patients from JCMC which has a physical plant that is generally consistent with current design and functional considerations to the two much older facilities at Christ Hospital and HUMC.

Consolidation of obstetric at HUMC does not appear viable or practical because renovations there would likely be prohibitively expensive, requiring complete renovation of two entire floors for single occupancy post partum and contemporary standard LDR rooms. In addition, HUMC's mechanical, electrical, plumbing, and elevator infrastructure is decades old and would likely need to be upgraded. Such a major renovation of a portion of the building to accommodate the consolidated obstetrics volume would likely trigger the need for a much larger expenditure on other portions of the facility to address infrastructure, functional, and operational needs/deficiencies. As a result, the cost of this configuration would likely be extremely high (possibly even exceeding that of new construction) and would not address the internal and external access difficulties, poorly configured floor plates, and low floor-to-floor heights.

Psychiatry. The three hospitals have a combined total of 93 maintained psychiatric beds. Christ Hospital's and HUMC's psychiatric occupancy rates are significantly below the target rate of 90 percent indicating that there is significant excess capacity and duplication of psychiatric services among the three study hospitals.

The potential of consolidating psychiatry at one facility appears achievable from a physical capacity standpoint. Given the physical plant conditions and capabilities discussed in Section 5, along with the principle of using each facility at its highest and best use to make optimal use of

capital resources, we believe that HUMC would be the best suited of the three hospitals to serve as the location of a consolidated psychiatric program, and could be accommodated with the least capital investment at HUMC. Consolidation of psychiatry at HUMC would likely require devoting the entire HUMC facility to the 90 inpatient psychiatric beds needed (while continuing use of the emergency department for all lower acuity urgent care visits). Analysis of capacity at other market area hospitals indicates HUMC's non-psychiatric patients could be accommodated in the market area's remaining maintained bed capacity.

The estimated project budget for conversion of existing units to psychiatry at HUMC is approximately $2.5 million. Accommodating HUMC's medical/surgical, pediatrics, obstetric and Level II nursery patients at Christ and JCMC would require a capital expenditure of approximately $4.0 million. Therefore, the total for this consolidation would be is $6.5 million.

Consolidation of the three hospitals' psychiatric services at HUMC would help address the excess capacity in beds in all services, would represent the highest and best use of the HUMC facility, and entail a moderate capital cost. It is important to note that this option would require that the psychiatric services at the HUMC campus be under the aegis of a general acute care hospital in order to be eligible for Medicaid payment for services provided to Medicaid beneficiaries ages 21 – 64.

Consolidate Inpatient Pediatrics, Obstetrics, and Psychiatry at One Facility and Medical/Surgical at Two Facilities. In this program consolidation option, one of the three facilities would be re-tasked as a specialized facility providing pediatrics, obstetrics, and psychiatric services while the other two hospitals would provide general medical/surgical services. The rationale for this option is that there is a projected excess of approximately 210 medical/surgical beds in the market area (a number roughly equal to—or greater than—the number of maintained medical/surgical beds at any of the three hospitals) and insufficient volume to support three separate pediatric, obstetric, and psychiatric units.

Consolidating pediatrics, obstetrics, and psychiatry at one facility requires finding suitable nursing units and support space for the 25 pediatric beds as described in the pediatrics option plus the post partum beds, LDR rooms, C-Section rooms and NICU bassinets as described in the obstetrics option, as well as the 90 psychiatric beds as described in the psychiatric option. Under this option, the other two hospitals would have only medical/surgical services.

As discussed previously, consolidating obstetrics at HUMC would likely require a prohibitively expensive capital investment, so HUMC should not be considered for this option. While initial

assessment of physical capacity indicates that Christ Hospital and JCMC have sufficient inpatient capacity to serve as the sole pediatric, obstetric, and psychiatric provider among the three hospitals, the choice of where to locate these consolidated services must be made based on where the expenditure results in operationally efficient units, and where it is possible to achieve a similar standard for the remaining medical/surgical inpatient and related outpatient services.

To accommodate the consolidation of these services at Christ Hospital would involve a capital expenditure of approximately $13.6 million and approximately $2.0 million to convert obstetric, pediatric, and psychiatric units at JCMC to medical/surgical units. There would be no capital expenditure required at HUMC. Therefore, the total capital expenditure for this alternative would be $15.7 million. In addition to requiring these costly renovations, this alternative would redirect medical/surgical patient volume from Christ to HUMC which has a more limited remaining useful life and more significant physical and functional limitations.

Given the capital cost associated with this alternative configuration and the continued use of HUMC's facilities beyond their likely useful life, we do not believe this alternative represents a practical option.

JCMC could accommodate the consolidated obstetrics, pediatrics, and psychiatry volumes for a capital expenditure of approximately $7.5 million, and accommodating JCMC's medical/surgical volumes at Christ Hospital would require an additional capital expenditure of $7.7 million. There would be no capital expenditure required at HUMC. Therefore, the total capital expenditure for this alternative would be $15.2 million, a very similar amount to the consolidation at Christ alternative. This alternative has the added disadvantage of redirecting medical/surgical patient volume from JCMC, the most current, functionally efficient facility, to two facilities which have significant limitations and limited remaining useful lives. We therefore do not consider this alternative configuration to be practical.

Create Specialty-Focused Facilities. In this option, the inpatient services of the three hospitals would be redeployed to create specialty-oriented campuses at each of the three facilities: For example, one facility could provide general medical/surgical services and serve as the specialty center for cardiac care, orthopedics, and neurosurgery for the market area; another hospital could serve as the designated women and children's hospital in the market area; and, the third could serve as the behavioral health center of excellence for the market area. The underlying rationale for this option is that it would reduce unnecessary duplication of services, help achieve critical mass in clinical services (which in turn would foster greater operational efficiency and clinical quality), and establish a unique and differentiated role for each entity.

The creation of specialty-focused facilities has some inherent strategic appeal, as it would be consistent with emerging trends in healthcare delivery. In his groundbreaking book ***The Innovator's Prescription***, Harvard Business School professor Clayton M. Christensen outlines a solution to the problems facing America's healthcare system that includes development of what he (somewhat inelegantly) terms "value-adding process businesses" (VAPs), which are essentially highly specialized facilities focused on specific types of cases or procedures. Christensen's research indicates that such VAPs can deliver care at much lower costs and achieve higher quality. The likely candidates for focused facilities in the community hospital setting of these three hospitals are: psychiatry at HUMC, obstetrics and pediatrics at Christ Hospital, and medical and surgical services (along with sub-specialty programs such as orthopedics, cardiology, and neurosurgery) at JCMC.

While the redeployment of services to create specialty-focused campuses has strategic appeal, it would require a $15.8 million capital expenditure at Christ and $10.3 million to convert all of JCMC's existing units for medical/surgical services, for a total of $26.1 million. Moreover, there would not be sufficient bed capacity at JCMC to accommodate all three hospitals' projected medical and surgical patient volume. We therefore conclude that this option, while strategically appealing, is not a highly practical alternative in the near-term and under current organizational structures/configurations.

Appendix B: Facility Consolidation Assessment

We carefully considered the physical plant conditions of each of the three hospitals in exploring facility consolidation options. This appendix presents four potential facility consolidation options, the first three of which could be accomplished in the relative near-term while the fourth represents a more dramatic, longer-term option. These facility consolidation options are described below.

Repurpose HUMC's Campus. In this option, HUMC's campus would be repurposed to provide ambulatory care services and operate a 24/7 emergency department, while its inpatient services would be decanted to other area facilities. The inpatient facilities could be redeveloped as a "medical mall" or some other purpose or secured pending disposition. This option would seek to address the overall bed surplus in the market area, which, as noted previously, is in excess of 250 beds (HUMC has 223 maintained beds), while continuing to provide residents of HUMC's core service area with access to ambulatory and emergency services. The changes at HUMC would require a capital expenditure budget of approximately $3.3 million.

An essential aspect of this option would entail continued use of the recently completed emergency services building and the off-campus ambulatory care sites (Faith Services, Center for Family Health, Giant Steps, and Center for Mental Health), while providing the opportunity to reduce operating costs by redeveloping or securing the North and South Buildings, West Tower, and Assumption Hall). This is made possible because the emergency department building has its own independent HVAC (heating, ventilation, air conditioning) plant.

The emergency facility includes some outpatient diagnostic and treatment services, including a 4-bed holding area for longer stay patients, a radiology room, and space for a small clinical laboratory, as well as sufficient administrative support space. As a result, the emergency facility could successfully function as a standalone service. And in fact, there are an increasing number of free-standing emergency facilities operating successfully in the U.S. Not having access to more advanced imaging and a fully equipped and staffed surgical facility means that patients with immediately life-threatening conditions would be triaged directly to an inpatient facility.

Several factors support this option. First, it preserves the best aspects of the HUMC facility – its presence as a source of healthcare within the city of Hoboken, while continuing to use its most

recently built facility, the emergency department. Another factor supporting this option is that it would avoid the substantial capital investment, which over time could amount to a more than the cost of building completely new facilities, to address the multiple facility needs and deficiencies that have resulted from many years of deferred maintenance and upgrades and the legacy of facilities that were designed a half-century ago. Nearly 60 percent of HUMC's campus' square footage (160,000 square feet of a total of 270,000 square feet) is 48 years or older without any major renovation or upgrading of systems (HVAC, power plant, elevators, electrical distribution, windows), and the remainder, with the exception of the emergency department (which is only 3 percent of the campus) is 39 years old and is in nearly the same condition. The older buildings have suffered from years of deferred maintenance and lack of replacement of mechanical, electrical, and plumbing systems that are now at or near the end of their useful lives.

A third factor supporting this option is that with a projected 2014 bed surplus of 268 in the market area, there is sufficient unused bed capacity to accommodate HUMC's current and projected inpatient average daily census of 125 to 127. The other four hospitals in the market area (Christ Hospital, JCMC, Palisades Medical Center and Bayonne Medical Center) have a combined total of 921 maintained beds with which to accommodate the market area's projected average daily census of 710 to 726 patients. As noted in Section 2, residents of HUMC's service area are within 30 minutes driving time of all four of the other hospitals and within less than 40 minutes travel time on public transportation of all but Bayonne Medical Center.

Experience from hospital consolidations and repurposings over the past two decades suggests that approximately 90 percent of the repurposed facility's patient volume gets distributed among the other hospitals in the area and the remaining 10 percent of the patient volume dissipates. However, for this study, we assumed 100 percent of HUMC's projected inpatient volume would be distributed among the area hospitals based on each of their 2009 market shares in the zip codes that HUMC drew from in 2009. This resulted in the following distribution of HUMC volumes: 26 percent to Christ Hospital, 26 percent to JCMC, 33 percent to Palisades Medical Center, 4 percent to Bayonne Medical Center and 11 percent to Meadowlands. This means that Christ Hospital and JCMC combined would need to accommodate an additional average daily census of approximately 66 patients from HUMC. Based on the other three hospitals' occupancy rates on their maintained bed (68 percent for Palisades, 43 percent for Bayonne and 59 percent for Meadowlands), it would appear they have sufficient unused capacity to accommodate their shares of HUMC's remaining average daily census of approximately 60 patients.

We considered several alternatives for accommodating HUMC's average daily census of 66 at Christ Hospital and JCMC based on both hospitals' nursing unit configurations but determined that two were more viable alternatives than the others because they had the lowest capital expenditure requirements while achieving service consolidation.

The first alternative would be to consolidate psychiatry at Christ Hospital and pediatrics at JCMC while continuing to provide medical/surgical and obstetrics and newborn nurseries at both Christ and JCMC. This alternative would require a capital expenditure budget of approximately $3.5 million for renovations at Christ and a budget of $.7 million to relocate HUMC's patients to Christ and JCMC for a total capital budget of $7.5 million when combined with the $3.3 million in renovations at HUMC. This configuration alternative would result in occupancy rates slightly above target levels in obstetrics (77 percent versus 70 percent target) and medical/surgical (88 percent versus 85 percent).[20] (See Appendix C for analysis of market area hospitals' average lengths of stay with the statewide average and the effect the difference has on average daily census for medical/surgical services.) Occupancy rates in pediatrics and psychiatry, while improved over historical levels, would be below target levels of 65 percent and 90 percent, respectively. It should be noted that accommodating Christ Hospital's and JCMC's shares of HUMC's inpatient volume without consolidating psychiatry and pediatrics requires renovation that amounts to the same capital cost and yields similar occupancy rates.

The second alternative for accommodating Christ Hospital's and JCMC's shares of HUMC's inpatient volume would be to consolidate psychiatry at Christ Hospital and obstetrics, including NICU and pediatrics at JCMC, with both facilities having medical/surgical services. This alternative would require a capital expenditure budget of approximately $6.4 million in renovations at Christ Hospital and $4.1 million in renovations at JCMC for a total capital budget of $13.9 million when combined with the $3.3 million in renovations at HUMC. This alternative would result in occupancy rates at or below target levels in all services except in pediatrics at JCMC (73 percent versus 65 percent target) and medical/surgical at JCMC (88 percent versus 85 percent target).

In summary, there are several factors supporting the consolidation option of repurposing HUMC's facilities for ambulatory and emergency services only, and we believe it represents a viable and practical alternative.

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[20] This configuration alternative accommodates HUMC's rehabilitation programs at its 2009 average daily census of seven in JCMC's medical/surgical bed complement in a self-contained sub-unit of a medical /surgical nursing unit. This is similar to the current configuration of HUMC's rehabilitation unit. If a location other than JCMC were found for HUMC's current rehabilitation program, JCMC's medical/surgical occupancy under this scenario would be 86 percent.

Repurpose Christ Hospital's Campus. This option would involve repurposing Christ Hospital's campus as a means of reducing the excess bed capacity in the market area, perhaps utilizing the scenic locale for residential development and/or retaining emergency and ambulatory care services. Christ Hospital has a total of 250 maintained beds, a number somewhat less than the overall market area surplus bed capacity. Repurposing Christ Hospital would reduce the market area's maintained bed complement to 894 beds, and as with the option of repurposing HUMC, the assumption is that the remaining area hospitals would be able to accommodate the market area's projected average daily census of 710-726 patients in those 894 beds. And as noted previously, area residents are within reasonable drive and public transportation times of the other hospitals in the area.

Although repurposing Christ Hospital might initially appear to be a viable option, it would entail a redirection of patients to HUMC, along with other market area hospitals. In conducting a patient volume distribution analysis for Christ Hospital's patients in the case of a repurposing similar to that described in the assessment of repurposing HUMC, we estimate that HUMC and JCMC combined would need to accommodate an average daily census of 130 from Christ Hospital. No service consolidation would be possible under this option. To accommodate Christ's average daily census of 130 would require a capital expenditure of $2.3 million for renovations at HUMC. No renovations would be necessary at JCMC. This option would result in occupancy rates below target levels in all services except in combined medical/surgical and pediatrics where the occupancy rates would be slightly higher than the target level. The capital expenditure necessary to repurpose Christ Hospital would be approximately $8.7 million, $6.4 million at Christ Hospital plus $2.3 million in renovations necessary at HUMC. This $8.7 million capital budget is between the $7.5 million and $13.9 estimates for the two alternative options to repurpose HUMC.

Although the capital expenditure for required renovations under this option is less than the capital expenditure for renovations under one of the repurposing of HUMC options, there are disadvantages to repurposing Christ. First, unlike with the repurposing HUMC option, no service consolidation would be possible. In addition, as noted previously, HUMC's facilities have significant limitations and functional deficiencies and we believe that making a significant investment in this facility would not represent the best long-term use of capital. In addition, although Christ Hospital's facilities have some of the same limitations as HUMC's plant, Christ Hospital's physical plant is in the second best condition (after JCMC's) of the three hospitals, and it has a reasonable (if unfunded) facility plan to replace the outpatient diagnostic services and some inpatient beds in a new building to the south of the current hospital and expand the

emergency department. Thus, if the decision is to reduce bed capacity in the market area by repurposing one of the three hospitals, it would seem impractical to repurpose Christ Hospital as a standalone alternative.

Repurpose JCMC's Campus. This option would represent another approach to reducing the surplus bed capacity in the market area by repurposing JCMC's campus as an emergency and ambulatory campus while decanting its inpatient volumes to other area hospitals. The redistribution of JCMC's 290 maintained beds would leave the market area with a total of 854 beds with which to accommodate the market area's projected average daily census of 710-726 patients. As noted in the discussion regarding repurposing HUMC and Christ, area residents are within reasonable drive and public transportation times of the other two facilities.

This alternative does not appear to be practical. The JCMC facility is the newest and most functional of the three facilities; it has the most potential for expansion and it is the facility with the highest overall occupancy rate. Redirecting JCMC's inpatient census to the other facilities in the market area would result in taking the facility with the longest useful remaining life out of service and decanting a significant portion (approximately 70 percent) to Christ Hospital and HUMC, two facilities whose plants have limited useful lives. Nevertheless, we analyzed this option as we did for repurposing HUMC and Christ Hospital and found that even with renovations at HUMC and Christ totaling $13.2 million, the two facilities would fall short of accommodating 89 (75 medical/surgical and 14 psychiatry) patients per day of their combined shares of JCMC's patient volume. Moreover, the $13.2 million in renovations at HUMC and Christ plus the capital expenditure necessary to close and secure the inpatient facilities at JCMC would total approximately $21.4 million.

Consolidate All Inpatient Services Into a Single Facility. As noted previously, this option involves a longer-term reconfiguration of the overall inpatient capacity in the market area by repurposing the Christ Hospital and HUMC campuses while maintaining emergency and ambulatory care capabilities at the HUMC campus (and possibly at the Christ Hospital campus), and expanding JCMC's inpatient and diagnostic and treatment capacity to accommodate the consolidated inpatient volume of the three facilities. This option would require ten years to accomplish and it would be best facilitated by merging all three organizations into a single legal entity, which would generate administrative cost savings, efficiencies, and economies of scale.

JCMC's facility and site offer sufficient functional support, building massing configuration, and land area for growth, while continued use of hospital facilities that are more than 30 years old at

both Christ and HUMC is not sustainable in a competitive market, nor conducive to the maintenance of a favorable operating cost structure or the provision of high quality care that requires the use of increasingly sophisticated technology and patient management practices for which older facilities were not designed. Therefore, this facility consolidation option is only practical and physically possible at JCMC. This configuration is further supported by the comparatively limited estimated remaining useful life at Christ Hospital (approximately five to ten years, given the current level of the annual routine maintenance budget) and at HUMC (which will require an increase over the routine capital budget currently in place to extend its useful life beyond five years).

If the Christ Hospital and HUMC campuses were to be repurposed, we estimate that approximately 55 percent of their combined patient volumes would migrate to JCMC for a projected increase of 164 patients per day which would require approximately 180 additional beds at the JCMC site assuming the consolidation of all inpatient services would enable patient care units to be optimally utilized at target occupancy levels in all services. The capital cost budget of adding 180 beds with associated ancillary diagnostic and treatment services is approximately $124.5 million. While ideally the HUMC and Christ Hospital campuses could be redeveloped for other purposes (e.g., a medical mall at HUMC, residential development at Christ Hospital), the viability of such redevelopment is uncertain at this point and beyond the scope of this report. Therefore, to be conservative, we estimate that in the absence of any redevelopment of the HUMC and Christ Hospital campuses, additional costs would be incurred to secure the buildings at Christ and HUMC. These costs would represent an additional capital expenditure of approximately $7 million.

Exhibit B-1 below summarizes the estimated capital cost for the program and facility consolidation options described in this report. (See Appendix D for a discussion of the assumptions for these capital cost budgets.)

Exhibit B-1

Estimated Capital Costs for Program and Facility Consolidation Options

Option	Capital Cost Budget (in millions)
Consolidate Pediatrics	$0
Consolidate OB at Christ	$14.5
Consolidate OB at JCMC	$3.3
Consolidate Psychiatry at HUMC	$6.5
Consolidate OB, Peds and Psych at Christ; Med/Surg at HUMC and JCMC	$15.7
Consolidate OB, Peds and Psych at JCMC; Med/Surg at HUMC and Christ	$15.2
Specialty-Focused: OB and Peds at Christ; Psych at HUMC; Med/Surg at JCMC	$26.1
Repurpose HUMC for Emergency and Ambulatory Care only; Consolidate Psych at Christ and Pediatrics at JCMC	$7.5
Repurpose HUMC for Emergency and Ambulatory Care only; Consolidate OB and Peds at JCMC; Med/Surg and Psych at Christ	$13.9
Repurpose Christ Hospital for Emergency and Ambulatory Care only; accommodate patients at HUMC and JCMC	$8.7
Repurpose JCMC for Emergency and Ambulatory Care only; accommodate patients at Christ and HUMC	$21.4
Consolidate all inpatient services into a single facility by expanding JCMC	$131.5

Appendix C: Analysis of Market Area Hospitals' Average Length of Stay

Our discussion of potential program and facility consolidations assumed no reduction in current average lengths of stay. However, if there are opportunities for the hospitals to reduce their lengths of stay, further program consolidation becomes more feasible in terms of a physical plant capacity. As discussed in Section 3, we held the 2009 average length of stay constant in projecting future demand for inpatient services under both projections scenarios because it had decreased substantially in recent years. Nevertheless, to assess whether there are opportunities for market area hospitals' to reduce their lengths of stay, we compared at the DRG level their actual length of stay with what it would be if it were equal to the statewide average. Exhibit C-1 presents the results of this analysis aggregated by service category, and shows that the average length of stay for market area hospitals combined is higher in the adult and pediatric medical/surgical service category and is lower or equal to the statewide average in all other service categories.

Exhibit C-1
Market Area Hospitals' Average Length of Stay
Compared with Statewide Average, 2009

Service Category	Market Area Hospitals' Actual Average Length of Stay	Statewide Average Length of Stay for Same Case Mix	Difference in Average Length of Stay
Medical/Surgical including pediatrics	5.1	4.6	0.5
Obstetrics	2.6	2.9	(0.3)
Neonatal (premature newborns)	8.2	8.2	-
Psychiatry and Substance Abuse	6.4	6.5	(0.1)

Excludes normal newborns.
Source: NCI analysis of 2009 inpatients from DHSS' New Jersey Discharge Data Collection System.

Focusing on the medical/surgical service category, which in 2009, accounted for 77 percent of total market area hospitals' discharges, Exhibit C-2 shows the comparison of actual and the statewide average length of stay by hospital in the market area. The last column in the table shows the effect on average daily census if each hospital's medical/surgical average length of stay were equal to the statewide average. This analysis suggests that Christ Hospital has the

greatest opportunity to reduce its length of stay and if it were to reduce it to the statewide average, it would have 37 less patients per day and thus need approximately 44 fewer medical/surgical beds assuming an 85 percent target occupancy rate. Even if Christ reduced its average length of stay by 7.5 percent, narrowing the gap between its average length of stay and the statewide average by one third, it could accommodate its share of HUMC's medical/surgical patients.

Exhibit C-2
Market Area Hospitals' Medical/Surgical Average Length of Stay
Compared with Statewide Average by Hospital, 2009

Hospital	Market Area Hospital Actual Average Length of Stay	Statewide Average Length of Stay for Same Case Mix	Difference between Actual and Statewide		Effect of Average Length of Stay Difference on projected Average Daily Census
			In Days	Percentage	
Christ Hospital	5.8	4.4	1.4	24%	37
HUMC	4.8	4.3	0.5	10%	8
JCMC	4.6	4.5	0.1	2%	2
Bayonne Medical Center	5.2	5.0	0.2	3%	3
Palisades Medical Center	5.2	4.8	0.4	8%	8
Total for Market Area Hospitals	5.1	4.6	0.5	10%	58

Source: NCI analysis of 2009 inpatients from DHSS' New Jersey Discharge Data Collection System.

Appendix D: Assumptions for Capital Cost Budgets

Project Cost Budgets

The project cost budgets prepared for the comparative analysis of the program and facility consolidation options are meant solely for the purpose of gauging the order of magnitude of expenditures needed to follow certain strategic options. They are not intended for any other purpose, such as the basis for financial planning, acquisition of financing, acquisition or sale.

The budgets were prepared on a cost per square foot basis and used the average reported historical cost of hospitals as a building type adjusted for Jersey City local labor and materials costs, as reported by the firm R.S. Means for 2010. The national average cost per square foot for new construction of hospitals nationally at the 50th percentile was used, meaning that 50 percent of the hospitals constructed in 2010 will have lower unit construction costs. To determine renovation costs, the new construction cost was multiplied by a factor that adjusts the unit cost according to the consultants' judgment of the extent of the renovation needed based upon the facilities tours. Costs were adjusted as follows:

- R1 = Extensive renovation; relocation of partitions, replace all surfaces, upgrades to HVAC, electrical, plumbing; 75% of new construction
- R2 = Moderate renovation; relocation of some partitions, replace finishes, light upgrades to HVAC, electrical, plumbing; 50% of new construction
- R3 = Light renovation; upgrades to finishes - ceilings, floor covering, walls, replacement of lighting fixtures, some cabinetry; 25% of new construction
- R4 = New paint, replacement of ceiling and floor tiles where needed, new light fixtures; 10% of new construction

The construction costs were further adjusted by a department factor that takes into account the degree of complexity, in terms of mechanical, electrical, plumbing, and architectural characteristics, of the specific departments. For instance, renovating for surgery is more expensive than renovating for nursing units.

In addition to the locality factor, renovation factor and department factor, the costs were further adjusted for the costs of movable and fixed medical equipment, furniture, and fixtures, as well as professional design and advisory fees and permits. The resulting cost is then termed the project cost budget. If the project is scheduled for implementation in the future, the project cost budget is escalated to the mid-point of the construction at 3.5 percent per year. Finally, the project cost budget is adjusted by a contingency factor to allow for possible changes in work

scope or complexity that may be revealed as a result of further investigation. This factor is a conservative 20 percent.

Costs of Securing Unused Buildings

In preparing the budget costs of maintaining unused buildings in the options, Navigant Consulting has conservatively budgeted for ensuring that the unoccupied buildings are sealed from intruders, receive adequate 24/7 security through both electronic and human surveillance, have continued fire safety provisions, such as electrical supply that provides for water pumps to maintain pressure for sprinklers, light but routine maintenance of the roofs and windows against infiltration by water and danger of portions of the façade from coming loose. The costs consist of a one-time project to effect all the above measures and an annual cost of providing the services for a period of five years.

Navigant Consulting did not contemplate the demolition of the buildings because our facilities review did not reveal any documentation regarding the extent to which older buildings at Christ and HUMC had asbestos infiltration that would require possibly costly abatement before demolition.

Sale or Lease of Unused Buildings or Land

Navigant Consulting excluded from the project cost budgets the value that unused buildings would have for sale or lease. While this value could be significant, depending upon the condition and other characteristics of the buildings, as well as the status of the local real estate market and the business opportunities presented by continued use of the buildings or the land, the structure and timing of offering the property for sale or lease without further specific study of these factors would be highly conjectural and not useful for the comparison of the options.