

## Chapter 4: Analyzing Future Supply and Demand of Acute Care Hospitals

### Key Points

- **New Jersey currently faces an oversupply of hospital beds – this oversupply is projected to increase between now and 2015 in all hospital markets.**
- **Projected hospital bed surpluses are largest in the northeastern section of the State.**
- **Declining average length of stay combined with relatively stable or slowly increasing use rates accounts for some of the projected increases in bed surpluses.**

As the State faces mounting numbers of hospitals in financial distress and threatened closure, it is critical to understand the current supply of hospital beds relative to need. In addition, decisions today have profound implications for the future. Thus, the Commission engaged consultants to assist with projecting future need based on health care industry and population trends.

This chapter presents an analysis of the demand for acute care hospital beds in the eight hospital market areas in New Jersey and compares the demand projections with the current supply of beds. The purpose of this analysis is to identify areas with bed needs or surpluses, and to evaluate areas' capacity to absorb patients of hospitals that may close in the near term. It should be noted that the issue of surge capacity – that is, hospital capacity to deal with natural disasters, bioterrorism, or other large-scale emergencies – was beyond the scope of the Commission's work. Planning for such events requires a separate commission that can focus on the complex issues associated with disaster preparedness.

### I. Basic Methodology

At the simplest level, the methodology used in this chapter to estimate a potential surplus or deficit of maintained (staffed) beds in a hospital market area is as follows:

First, for the base year (2005) or a given future year (2010 or 2015), we determine the actual or projected number of patient days demanded in the area. Dividing that number by 365 days per year we arrive at the

average daily census, that is, the average number of occupied beds per day in the area.

Next, we convert the average daily census into the required number of maintained beds in the area if, hypothetically, all hospitals in the area operated at an occupancy rate of 83%. That rate is widely considered among the experts to be “full occupancy” for hospitals poised to cope with some volatility in their daily patient census. For example, if the average daily census in an area were 1,750, then 2108 (i.e.,  $1750/0.83$ ) maintained beds would be needed to arrive at an 83% occupancy ratio.

Next, we compare this *normative* bed requirement with the number of maintained beds *actually* available in the area in base year 2005 (or, for future years, projected then to be available in the area). The difference between the *normative* bed requirement and the *actual* current or projected number of maintained beds in the year in question then gives us the bed surplus or deficit for the area in that year.

Finally, we divide the estimated bed surplus or deficit by the current, average number of maintained beds per hospital in the area (or, for comparison, by the median number of beds per hospital in the area<sup>26</sup>). The resulting ratio indicates very roughly to what number of average sized hospitals in the area the area's bed surplus or deficit is equivalent.

<sup>26</sup> If hospitals in an area vary considerably in terms of their number of beds, their average bed size will differ substantially from their median bed size. The average bed size is obtained by dividing the total number of beds in an area by the number of hospitals in the area. The median bed size, on the other hand, is a number such that half the hospitals in the area have a bed size above that number and half below that number.

To illustrate, suppose we were making the estimate for the base year, 2005. Suppose next that a given hospital market area in 2005 had 2,000 maintained beds, but that the area had an average hospital occupancy ratio much below the normative 83%. Suppose next that if all hospitals in the area operated at an 83% occupancy ratio, only 1,700 maintained beds would be needed. Thus we estimate that there was a surplus of 300 maintained beds in the area in 2005. If the average number of beds per hospital in the market area were 300, then the estimated bed surplus would be *equivalent* to 1 averaged sized hospital in the area.

This equivalent number does not, of course, mean that one could eliminate any one of the area's existing hospitals without detrimental impact on the citizenry. Indeed, if all hospitals in the area were deemed essential on the criteria used in this report, then no one hospital should be closed. Instead, hospitals with low occupancy ratios should reduce the number of beds they staff until most or all hospitals in the area approximated an occupancy ratio of 83%.

The bed surpluses or deficits for 2010 and 2015 are estimated in similar fashion. Here the projected number of patient days demanded will be based on projected population growth, in terms of 5 distinct age groups and in terms assumptions about the future rates of hospital admissions and average lengths of patient stay (ALOS).

## **II. Findings**

Analyses of the demand for hospital services indicate that there is currently a surplus of beds in every hospital market area and without a reduction in the supply of hospital beds, estimated bed surpluses will continue in many hospital market areas through 2010 and 2015.

Considering the bed surpluses relative to average and median hospital size, the surplus estimates are particularly noticeable in the Hackensack, Ridgewood and Paterson hospital market area currently and in 2010, and in the Newark/Jersey City and Toms River hospital market areas in 2010. These results suggest that projected demand for inpatient hospital services could be satisfied without at least one of each of these areas' current hospitals. This finding is generally consistent with the financial viability analysis discussed in Chapter 5, in that two of these three hospital market areas – Hackensack, Ridgewood and Paterson and

Newark/Jersey City – have the highest proportions of hospitals below the statewide average financial viability score. This finding also suggests that an oversupply of beds may be one cause of the financial distress that many of the hospitals in these two areas are experiencing.

The sections below provide information on New Jersey's projected population, historical inpatient hospital utilization, and the results of our projections.

### **A. New Jersey's Demographic Projections<sup>27</sup>**

Because demand is projected at the market level, a brief discussion of New Jersey's population projections and market area variations is warranted. As noted in Chapter 2, the age composition of New Jersey's population is similar to the nation as a whole. Population projections indicate that:

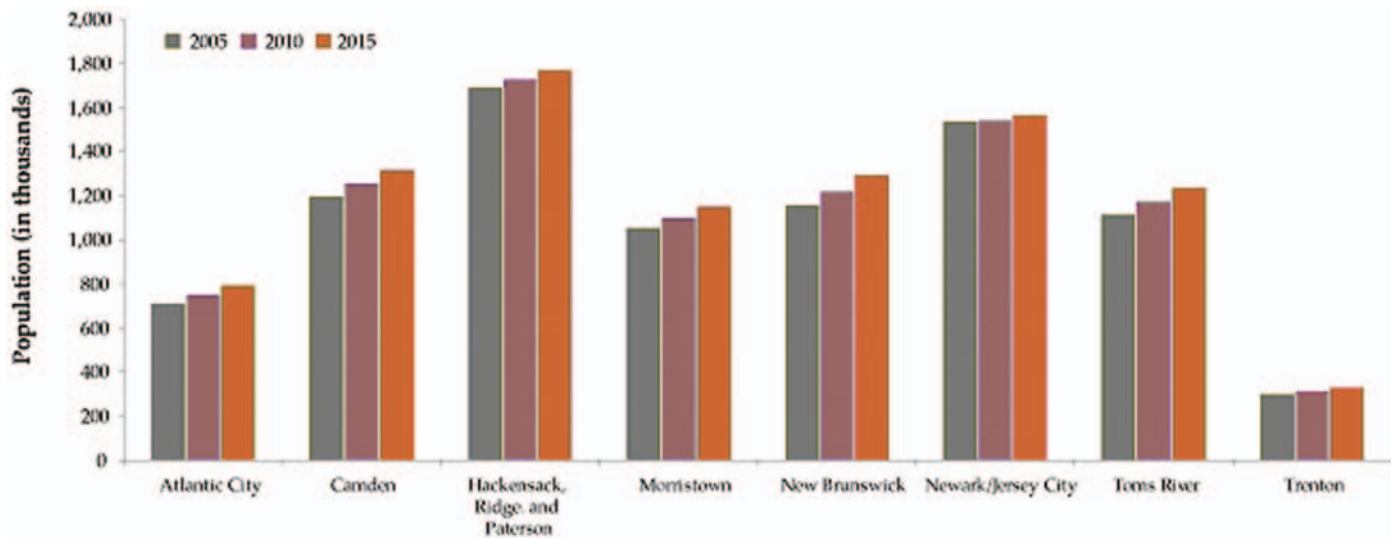
- New Jersey's age composition will also be comparable to that of the United States in 2015, and both New Jersey and the United States will experience aging of their populations.
- New Jersey's population is projected to grow at a slower rate (8 percent) than the nation's (10 percent) between 2005 and 2015.
- In 2015, both New Jersey and the United States are projected to have higher percentages of their populations over the age of 45 than is currently the case.
- New Jersey's proportion of population age 18 to 44 is projected to be slightly smaller than the nation's as a whole in 2015 and its proportion of the population age 45 to 64 slightly larger than the nation's as a whole in 2015.
- All of the other age groups in New Jersey will comprise roughly the same proportion of the population as for the nation as a whole in 2015.

(See Appendix 4 for illustrations of these population projections.)

As Figure 4.1 illustrates, the population in all eight New Jersey hospital market areas is projected to increase by 2015, with growth between 2005 and 2015 ranging from a low of 1.9 percent in the Newark/Jersey City area to a high of 12 percent in the New Brunswick area.

<sup>27</sup> Source: Claritas MarketPlace;  
<http://www.claritas.com/eConnect2/Content/reports/addNewSite.jsp?back=back>.

**Figure 4.1:**  
**Population by Market Area (2005 and projected 2010 and 2015)**



There is substantial variation in the 2005 and projected 2015 population by age group across the eight hospital market areas in New Jersey. In 2005, the Toms River and Atlantic City areas had the highest proportions of population in the 65 and over age group. By 2015, the 65 and over age group is projected to comprise 19 percent of the Toms River area's and 16 percent of the Atlantic City and Hackensack, Ridgewood and Paterson areas' total population.

**B. Recent Trends in New Jersey Residents' Use of Inpatient Hospital Services**

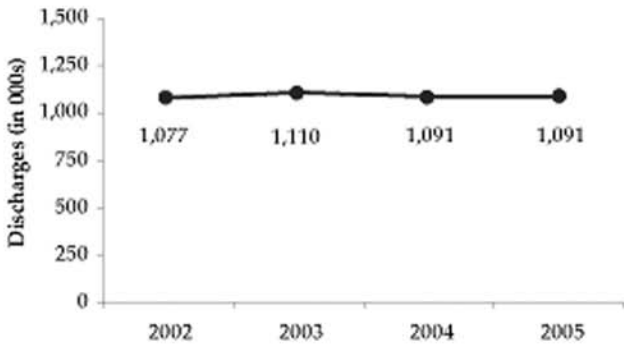
To gain an understanding of inpatient hospital utilization trends, the Commission's consultants analyzed UB-92 hospital discharge data from the Department of Health

and Senior Services from 2002 through 2005 for New Jersey residents hospitalized in New Jersey acute care hospitals at the statewide and hospital market area levels. At the statewide level, the figures below illustrate that between 2002 and 2005 (Figures 4.2-4.5):

- Discharges increased 1.3 percent.
- The use rate, i.e., discharges per 1,000 population, was relatively stable, declining a modest 0.6 percent.
- Inpatient days decreased 2.3 percent.
- The decrease in inpatient days was due to a 3.5 percent reduction in average length of stay (ALOS).

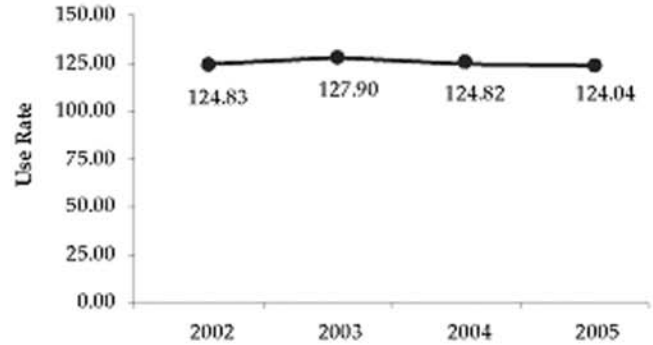
**Figure 4.2:**

**New Jersey Residents' Discharges (2002-2005)**



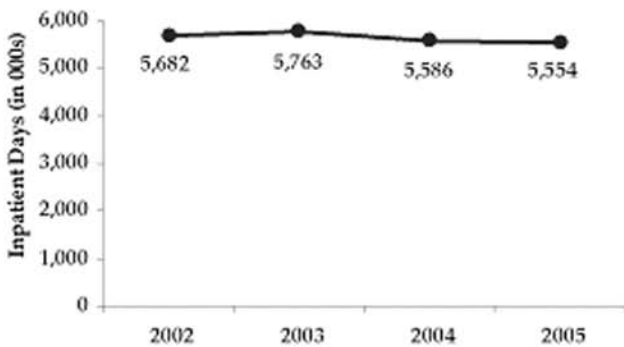
**Figure 4.3:**

**New Jersey's Use Rate (Discharges per 1,000 population) (2002-2005)**



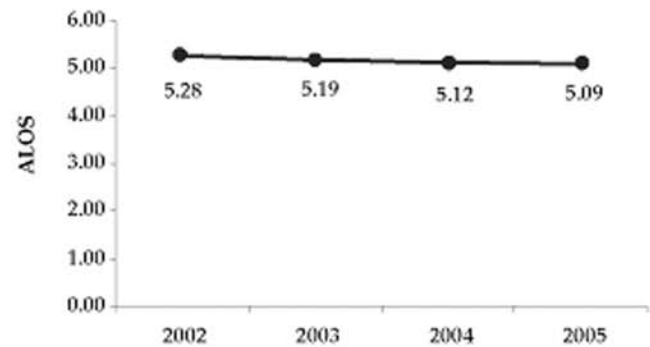
**Figure 4.4:**

**New Jersey Residents' Inpatient Days (2002-2005)**



**Figure 4.5:**

**New Jersey's ALOS (2002-2005)**



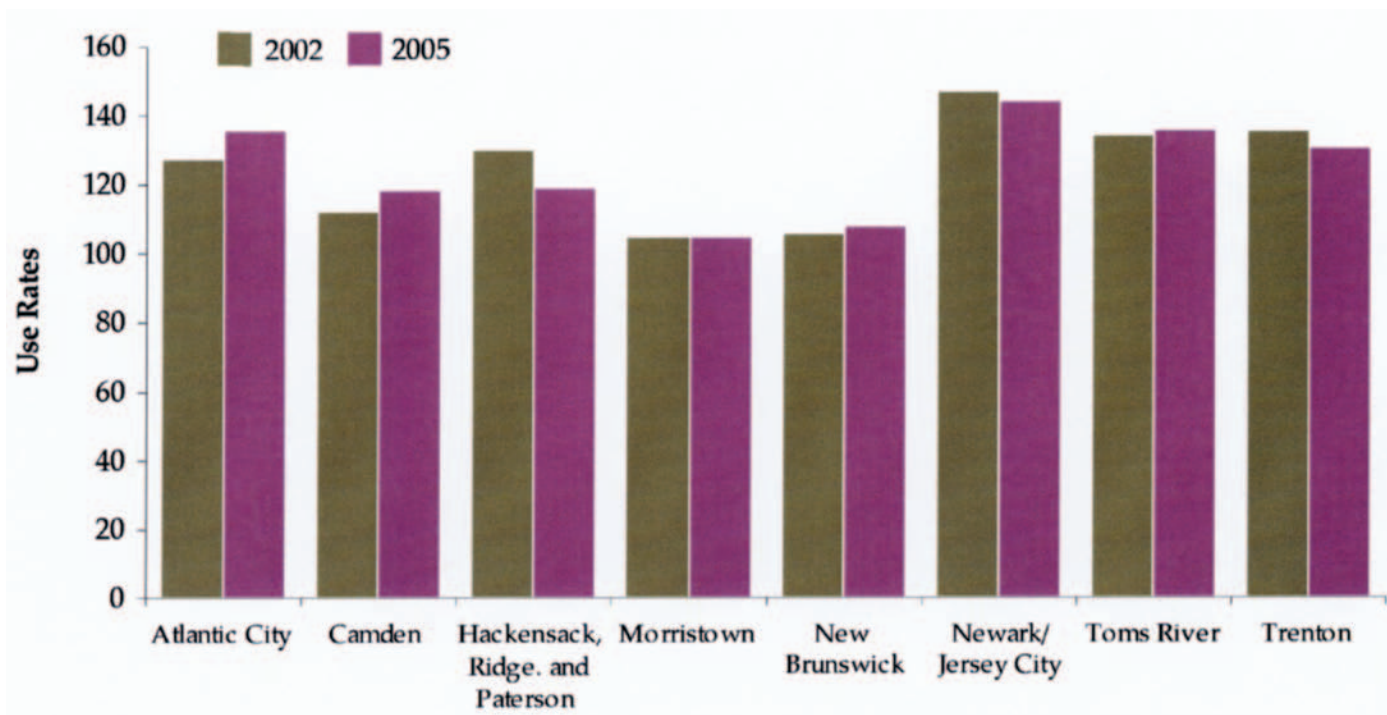
As Figures 4.6 and 4.7 illustrate, across hospital market areas there were significant variations in use rates and ALOS between 2002 and 2005:

- Changes in use rates ranged from an eight percent decrease in the Hackensack, Ridgewood and Paterson area, to a nearly seven percent increase in the Atlantic City area.
- ALOS decreased in most market areas, ranging from a drop of nearly nine percent in the Toms River area to one percent in the Camden area, while in the Hackensack, Ridgewood and Paterson and Trenton areas, ALOS increased two percent.

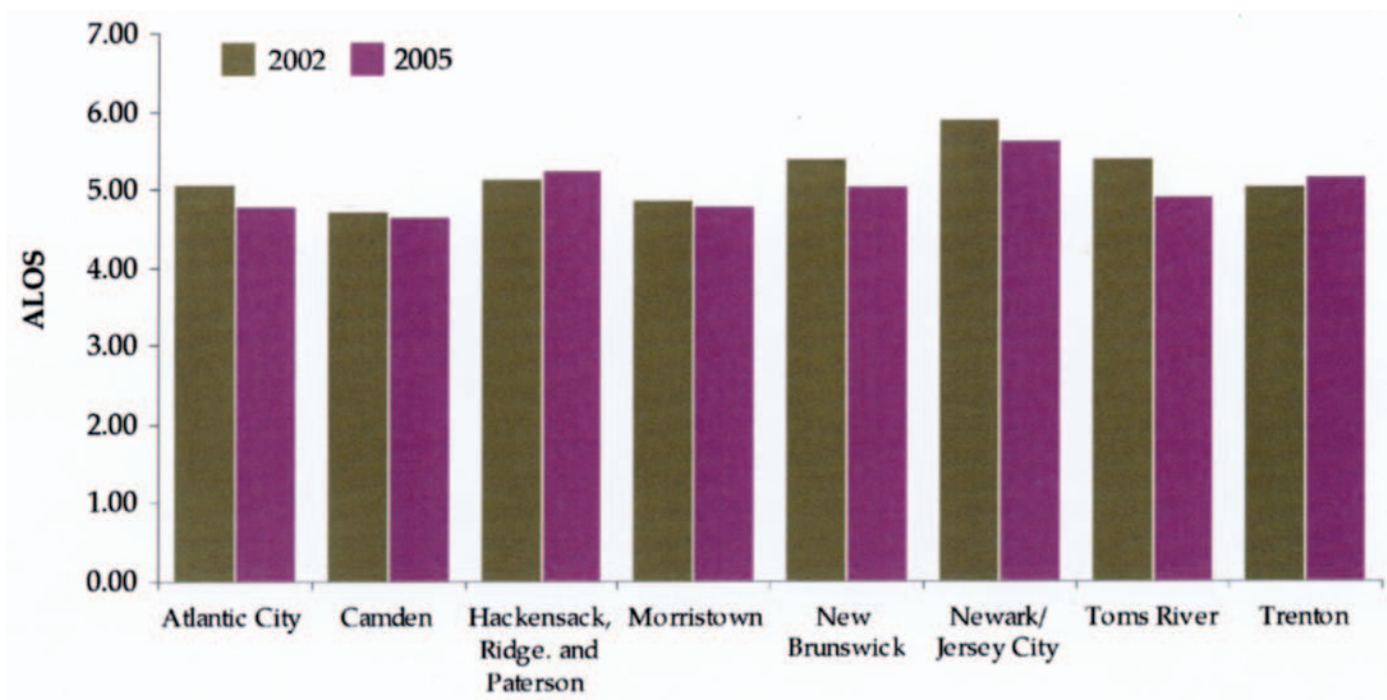
To gain a further understanding of these variations across hospital market areas, use rates and ALOS in 2005 were analyzed by hospital market area for selected

diagnosis-related grouping (DRGs), which are groupings of cases with clinically similar conditions. Variations in use rates across market areas are due to variations in the population's age composition, health and socioeconomic status, mix of services and local medical practice patterns. To remove the effect of age composition and mix of service variations across hospital market areas, we compared use rates and ALOS across market areas for 10 high volume DRGs for the 45 to 64 age group. We found that, even within the same age group, there was substantial variation in use rates and ALOS across the eight hospital market areas for these selected DRGs. This analysis supports the plan to perform the volume projections at the DRG and age group level within each market area. (See Appendix 4 for these data.)

**Figure 4.6:**  
**Use Rates (Discharges per 1,000 population) by Hospital Market Area (2002 – 2005)**



**Figure 4.7:**  
**ALOS by Hospital Market Area (2002 – 2005)**





### III. Results of Projected Demand for Inpatient Hospital Services

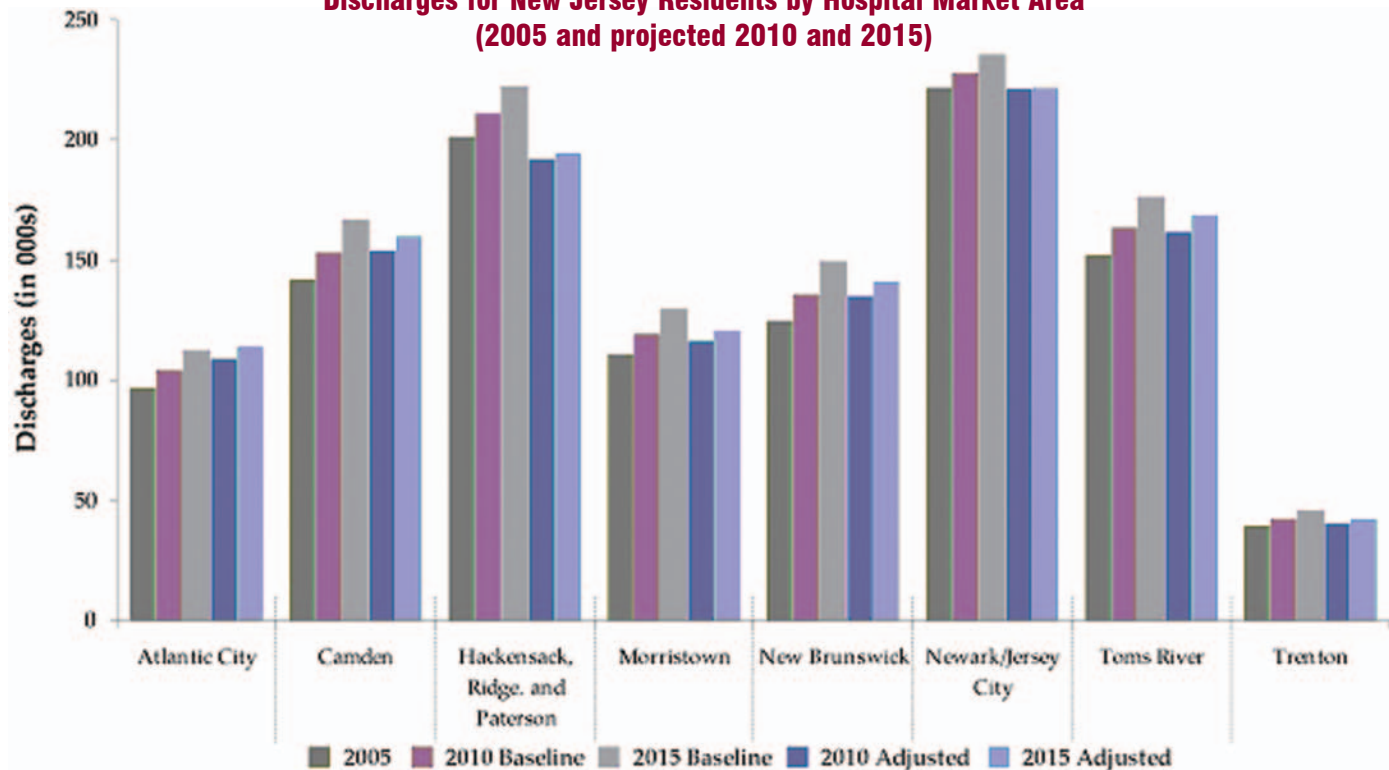
Figure 4.8 illustrates 2005 discharges compared to projected 2010 and 2015 discharges under the two projection scenarios. Under the baseline projection scenario, discharges are projected to increase in all hospital market areas by 2010 and 2015. Under the more likely adjusted baseline scenario, discharges are projected to increase in most hospital market areas by 2010 and 2015, but at lower rates than under the baseline scenario. The exceptions to this are in the Hackensack, Ridgewood and Paterson hospital market where, under the adjusted baseline scenario, discharges are projected to decrease through 2010 and 2015 and in the Newark/Jersey City market area where discharges under this scenario are projected to remain essentially constant.

Figure 4.9 illustrates the ALOS in 2005 and the projected ALOS for 2010 and 2015 under the two projection scenarios. Since the baseline projection scenario assumes a constant ALOS in 2005 level, there is little or no change in ALOS between 2005 and 2010 and 2015. Under adjusted baseline scenario, which continues the observed trend in

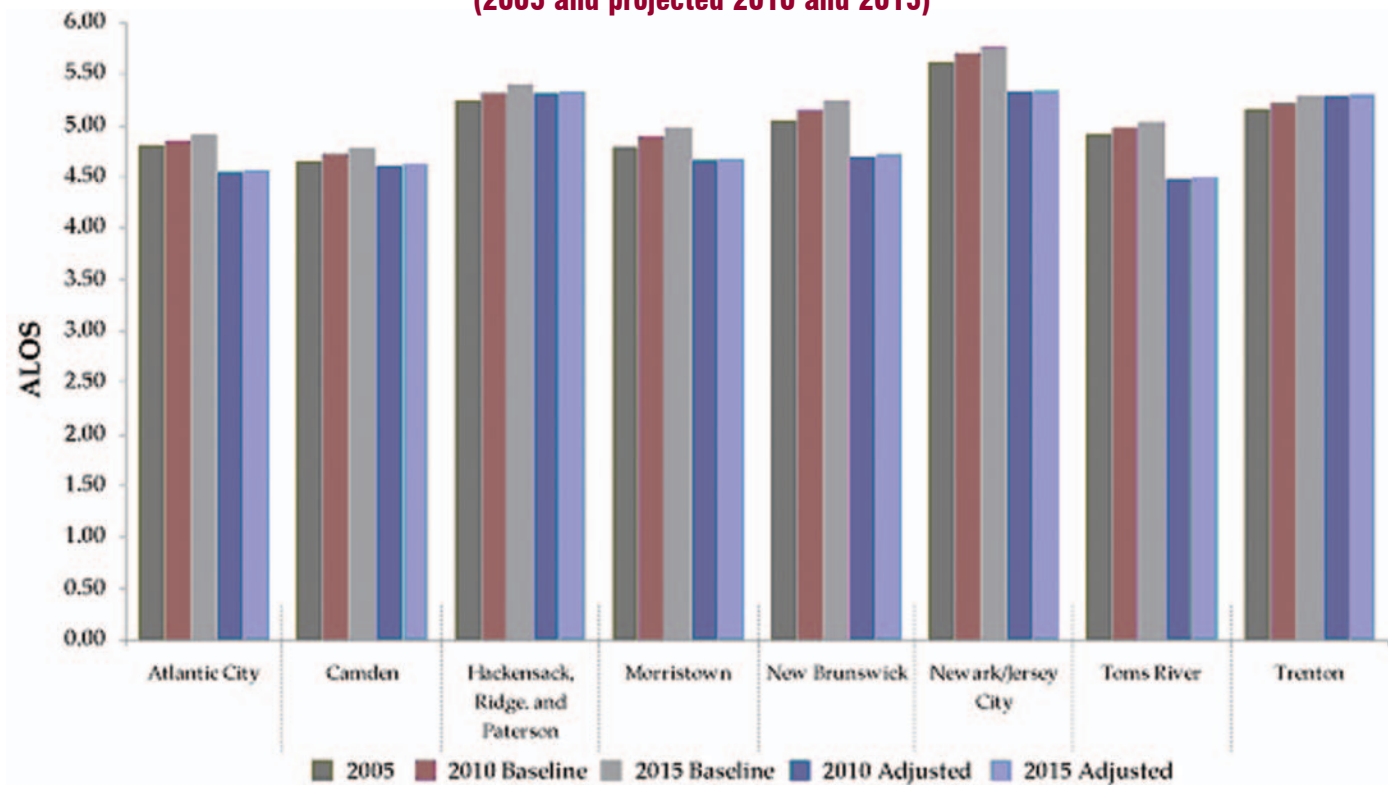
ALOS between 2002 and 2005 through 2008 and then holds ALOS constant thereafter, there are reductions in ALOS in most hospital market areas. The exceptions to this are in the Hackensack, Ridgewood and Paterson and Trenton market areas where, under the adjusted baseline scenario, ALOS increases very slightly between 2005 and 2010 and 2015. On a statewide basis, the ALOS in 2005 of 5.1 days increases to 5.2 under the baseline projections scenario and decreases to 4.9 under the adjusted baseline scenario.

Inpatient day projections are a function of projected discharge and projected ALOS. Figure 4.10 illustrates 2005 inpatient days and projected 2010 and 2015 inpatient days under the two projection scenarios. Under the baseline projection scenario, inpatient days are projected to increase in all hospital market areas through 2010 and 2015. Under the more likely adjusted baseline scenario, inpatient days are projected to increase in the majority of hospital market areas by 2010 and 2015, but at lower rates than under the baseline scenario. The exceptions to this are in the Hackensack, Ridgewood and Paterson and Newark/Jersey City market areas where under the adjusted baseline scenario, inpatient days are projected to decrease through 2010 and 2015.

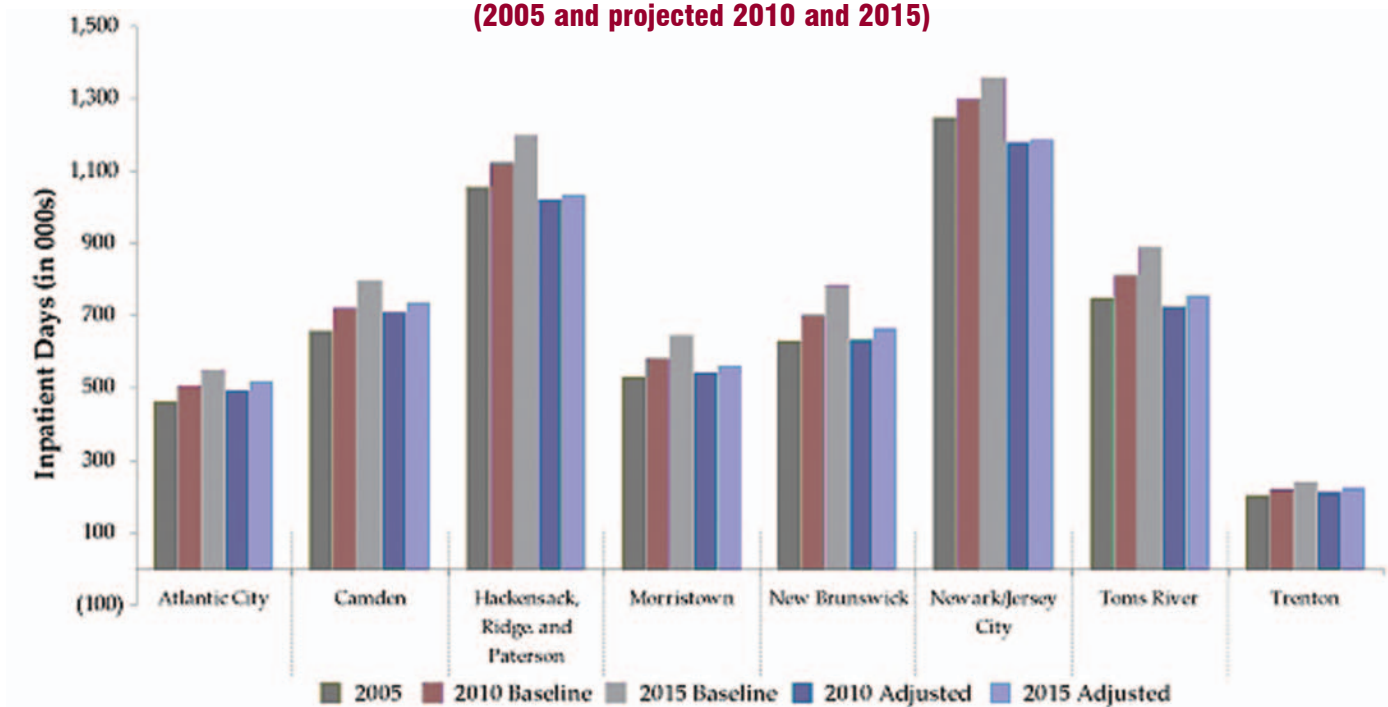
**Figure 4.8:**  
**Discharges for New Jersey Residents by Hospital Market Area (2005 and projected 2010 and 2015)**



**Figure 4.9:**  
Average Length of Stay for New Jersey Residents by Hospital Market Area  
(2005 and projected 2010 and 2015)



**Figure 4.10:**  
Inpatient Days for New Jersey Residents by Hospital Market Area  
(2005 and projected 2010 and 2015)

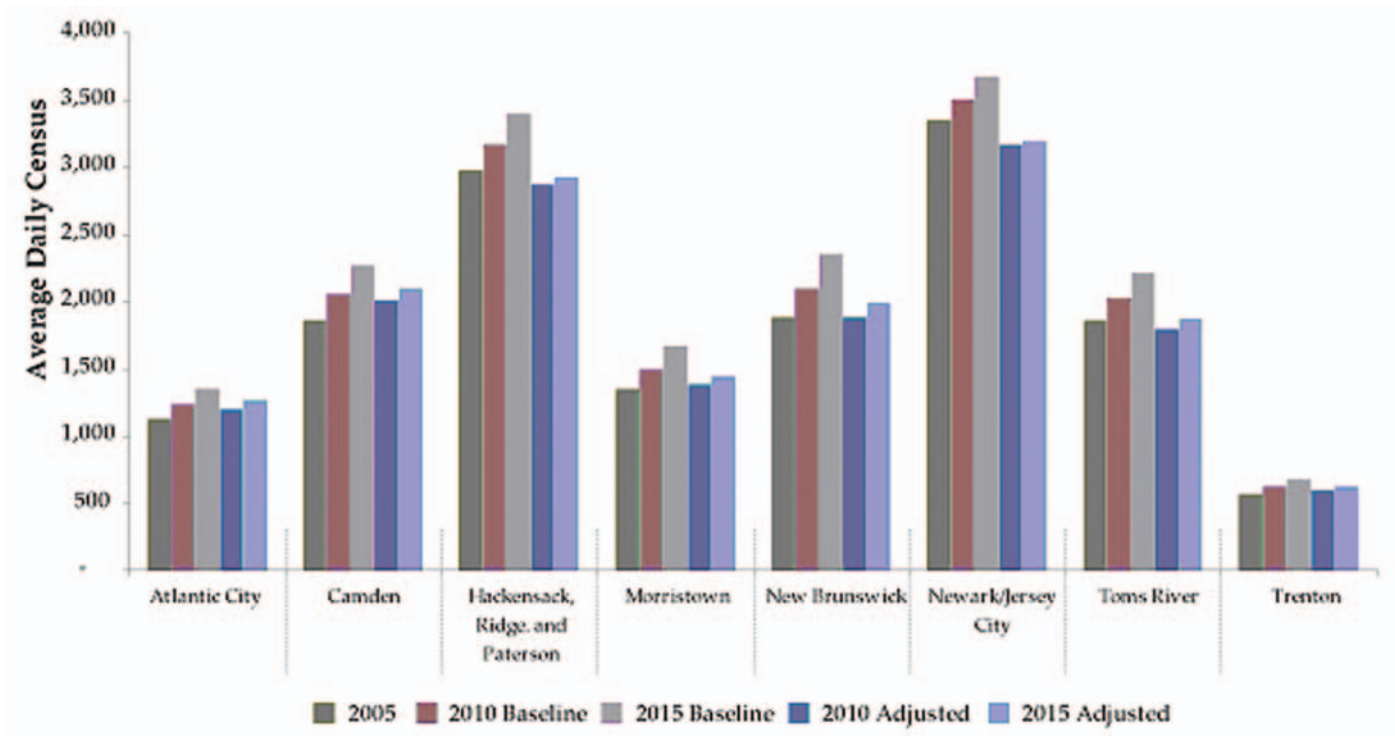


### A. Number of Hospital Beds Needed to Meet Projected Demand

Two adjustments were made to the population-based projected inpatient days presented above to estimate the number of hospital beds needed to meet the projected demand. First, to account for inter-market migration by New Jersey residents across hospital market areas, the projected inpatient days for the population that reside in each hospital market area were converted to the market

area of hospitalization.<sup>28</sup> Secondly, to account for residents of other states who are hospitalized in New Jersey, it is assumed that their 2005 proportion of each market’s total inpatient days for New Jersey residents would remain constant; hence, the projected days were increased accordingly. Figure 4.11 shows the average daily census,<sup>29</sup> after making these adjustments, for each hospital market area in 2005 and projected for 2010 and 2015 under the two projection scenarios.

**Figure 4.11:**  
Average Daily Census for New Jersey Hospitals by Hospital Market Area (2005 and projected 2010 and 2015)



<sup>28</sup> The population-based projected inpatient days by market area were converted to the market area where hospitals are located by multiplying them by the ratio of inpatient days for hospital located in each market area to inpatient days for patients who reside in each market area. For example, the ratio of inpatient days for hospitals located in the Camden market area to inpatient days in all New Jersey hospitals for residents of the Camden hospital market area is 1.05 based on 2005 UB-92 data. This means that there is net in-migration to hospitals in the Camden hospital market area by New Jersey

residents. The population-based projected inpatient days for the Camden hospital market area were multiplied by 1.05 to determine inpatient days for hospitals located in the Camden market area.

<sup>29</sup> Average daily census (ADC) is inpatient days divided by 365 days. For purposes of comparing 2005 and projected ADC with the number of maintained hospital beds, the inpatient days for normal newborns were excluded because the number of Level I nursery beds are not reported by hospitals on their B2 Reports.



A target occupancy rate of 83 percent was used to estimate the number of beds needed to meet the projected average daily census in 2010 and 2015, assuming efficient use of hospital capacity. Commission members agreed that 83 percent is a reasonable target occupancy rate for a mix of predominantly semi-private hospital rooms. By contrast, as Table 4.1 shows, the average occupancy

rate in 2006 varied across hospital market areas from a low of 59 percent in the Trenton area to a high of 80 percent in the New Brunswick area. The statewide average occupancy rate was 72 percent.<sup>30</sup>

Table 4.2 shows the number of maintained beds, average daily census and occupancy rate for each individual hospital by hospital market area.

**Table 4.1:**  
**Total, Average and Median Number of Maintained Hospital Beds and Occupancy Rate by Hospital Market Area (2006)**

Market Area where Hospitals are Located	Total Maintained Beds <sup>31</sup>	Average Hospital Bed Size <sup>32</sup>	Median Hospital Bed Size	Average Occupancy Rate
<b>Atlantic City</b>	<b>1,630</b>	<b>181</b>	<b>170</b>	<b>71%</b>
<b>Camden</b>	<b>2,599</b>	<b>236</b>	<b>214</b>	<b>72%</b>
<b>Hackensack, Ridgewood and Paterson</b>	<b>4,352</b>	<b>290</b>	<b>260</b>	<b>73%</b>
<b>Morristown</b>	<b>1,870</b>	<b>208</b>	<b>150</b>	<b>69%</b>
<b>New Brunswick</b>	<b>2,498</b>	<b>312</b>	<b>293</b>	<b>80%</b>
<b>Newark/Jersey City</b>	<b>4,475</b>	<b>280</b>	<b>256</b>	<b>73%</b>
<b>Toms River</b>	<b>2,745</b>	<b>343</b>	<b>316</b>	<b>66%</b>
<b>Trenton</b>	<b>995</b>	<b>249</b>	<b>240</b>	<b>59%</b>
<b>Entire State</b>	<b>21,164</b>	<b>265</b>	<b>248</b>	<b>72%</b>

<sup>30</sup> Based on number of maintained Acute Care, Level II and Level III Nursery Beds and inpatient days reported by hospitals on the B2 Reports for 2006.

<sup>31</sup> Includes number of Acute Care, Level II and Level III Nursery Beds.

<sup>32</sup> Total maintained beds divided by number of hospitals.

**Table 4.2:**  
**Total Maintained Hospital Beds, Average Daily Census and Occupancy Rate by Hospital (2006)**

Hospital / Hospital Market Area	Total Maintained Beds <sup>33</sup>	Average Daily Census <sup>34</sup>	Occupancy Rate
<b>Atlantic City Hospital Market Area</b>			
AtlantiCare Regional Medical Center, Inc.-Mainland Division	323	251	78%
South Jersey Healthcare Regional Medical Center	320	248	78%
Burdette Tomlin Memorial Hospital, Inc.	208	124	60%
Shore Memorial Hospital	208	163	78%
AtlantiCare Regional Medical Center, Inc.-City Division	170	120	71%
Southern Ocean County Hospital	124	99	80%
Memorial Hospital of Salem County	110	59	54%
South Jersey Hospital - Elmer	88	46	52%
William B. Kessler Memorial Hospital, Inc.	79	50	63%
<b>Camden Hospital Market Area</b>			
Cooper Hospital/University Medical Center	441	326	74%
Virtua-Memorial Hospital of Burlington County, Inc.	383	226	59%
Our Lady of Lourdes Medical Center	319	261	82%
Virtua - West Jersey Hospital Voorhees (East)	288	221	77%
Underwood - Memorial Hospital	229	174	76%
Lourdes Medical Center of Burlington County	214	127	59%
Virtua - West Jersey Hospital Marlton	198	136	69%
Kennedy Mem. Hospitals-Univ. M.C.-Washington Twp.	157	130	83%
Kennedy Mem. Hospitals-Univ. M.C.-Cherry Hill Div.	144	118	82%
Kennedy Mem. Hospitals-Univ. M.C.-Stratford Div.	131	90	69%
Virtua - West Jersey Hospital Berlin (South)	95	56	59%
<b>Hackensack, Ridgewood &amp; Paterson Hospital Market Area</b>			
Hackensack University Medical Center	674	631	94%
St. Joseph's Hospital and Medical Center	527	362	69%
Valley Hospital	427	373	87%
Bergen Regional Medical Center	401	326	81%
Holy Name Hospital	307	218	71%

<sup>33</sup> Includes Acute Care, Level II and Level III Nursery Beds reported by hospitals on the B2 Reports for 2006.

<sup>34</sup> Total acute care, Level II and Level III patient days reported by hospitals on the B2 Reports for 2006 divided by 365 days.

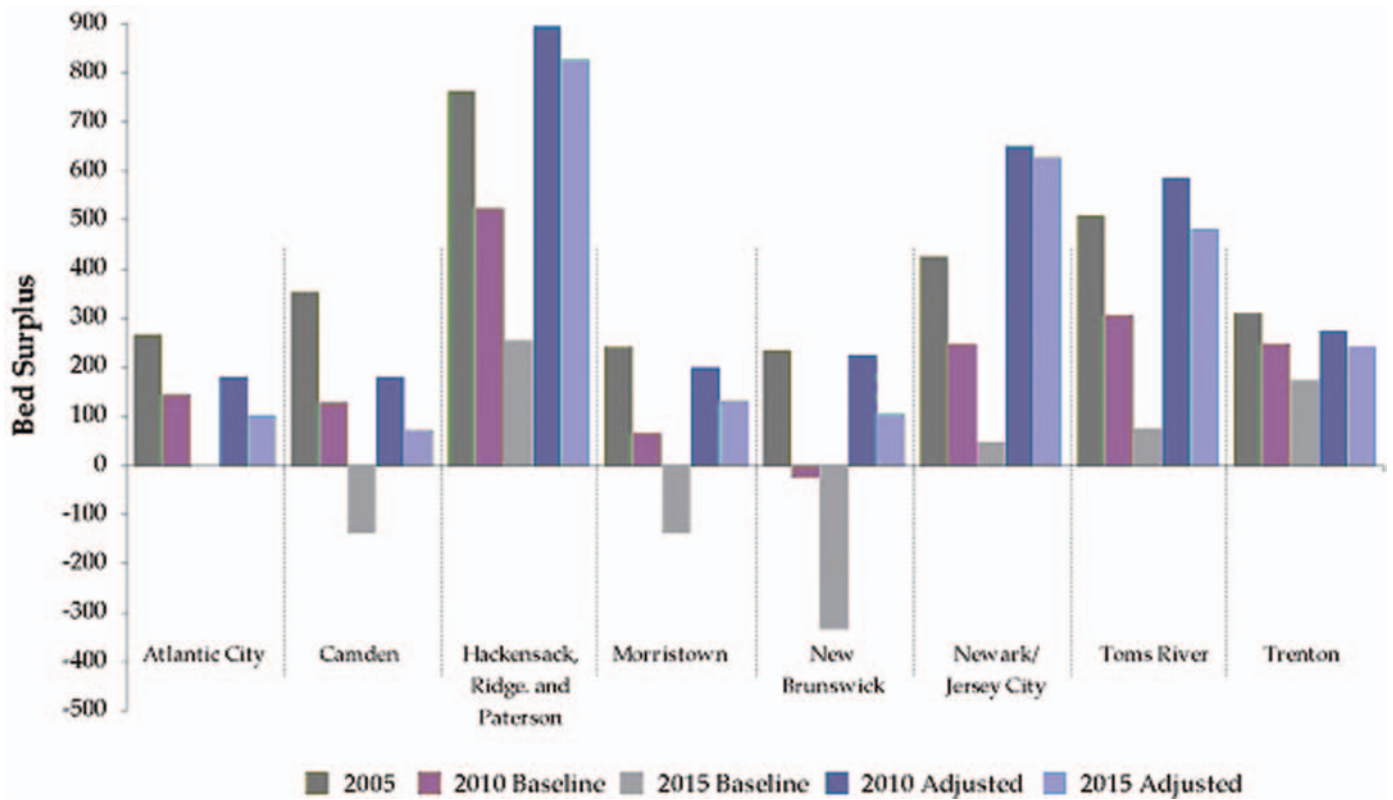
Hospital / Hospital Market Area	Total Maintained Beds <sup>33</sup>	Average Daily Census <sup>34</sup>	Occupancy Rate
Englewood Hospital and Medical Center	293	222	76%
Pascack Valley Hospital	280	106	38%
Chilton Memorial Hospital	260	158	61%
PBI Regional Medical Center	245	125	51%
St. Mary Hoboken	216	120	56%
Palisades Medical Center of NY Presbyterian Healthcare System	183	150	82%
Barnert Hospital	171	97	57%
Meadowlands Hospital Medical Center	136	97	71%
St. Mary's Hospital (Passaic)	121	86	71%
St. Joseph's Wayne Hospital	111	102	92%
<b>Morristown Hospital Market Area</b>			
Morristown Memorial Hospital	532	431	81%
Overlook Hospital	375	263	70%
Saint Clare's Hospital / Denville Campus	242	160	66%
Muhlenberg Regional Medical Center	240	146	61%
Warren Hospital	150	90	60%
Newton Memorial Hospital	140	92	66%
Hackettstown Regional Medical Center	96	53	55%
Saint Clare's Hospital / Dover Campus	54	40	74%
Saint Clare's Hospital / Sussex	41	16	39%
<b>New Brunswick Hospital Market Area</b>			
Robert Wood Johnson University Hospital	584	531	91%
Saint Peter's University Hospital	421	328	78%
JFK Medical Center (Anthony M. Yelencsics Community Hospital)	343	293	85%
University Medical Center at Princeton	314	237	75%
Somerset Medical Center	271	240	89%
Raritan Bay Medical Center - Perth Amboy Division	264	158	60%
Hunterdon Medical Center	182	117	64%
Raritan Bay Medical Center - Old Bridge Division	119	100	84%
<b>Newark/Jersey City Hospital Market Area</b>			
Saint Barnabas Medical Center	641	451	70%

<b>Hospital / Hospital Market Area</b>	<b>Total Maintained Beds<sup>33</sup></b>	<b>Average Daily Census<sup>34</sup></b>	<b>Occupancy Rate</b>
<b>Newark Beth Israel Medical Center</b>	<b>490</b>	<b>397</b>	<b>81%</b>
<b>UMDNJ - University Hospital</b>	<b>440</b>	<b>361</b>	<b>82%</b>
<b>Trinitas Hospital - Williamson Street Campus</b>	<b>347</b>	<b>273</b>	<b>79%</b>
<b>Jersey City Medical Center</b>	<b>316</b>	<b>253</b>	<b>80%</b>
<b>Clara Maass Medical Center</b>	<b>308</b>	<b>205</b>	<b>67%</b>
<b>Christ Hospital</b>	<b>278</b>	<b>212</b>	<b>76%</b>
<b>Bayonne Medical Center</b>	<b>261</b>	<b>142</b>	<b>54%</b>
<b>Robert Wood Johnson University Hospital at Rahway</b>	<b>251</b>	<b>106</b>	<b>42%</b>
<b>Saint Michael's Medical Center</b>	<b>223</b>	<b>176</b>	<b>79%</b>
<b>Mountainside Hospital</b>	<b>214</b>	<b>160</b>	<b>75%</b>
<b>East Orange General Hospital</b>	<b>202</b>	<b>160</b>	<b>79%</b>
<b>Columbus Hospital</b>	<b>175</b>	<b>116</b>	<b>66%</b>
<b>Union Hospital</b>	<b>142</b>	<b>94</b>	<b>66%</b>
<b>Saint James Hospital</b>	<b>104</b>	<b>81</b>	<b>78%</b>
<b>Greenville Hospital</b>	<b>83</b>	<b>63</b>	<b>76%</b>
<b>Toms River Hospital Market Area</b>			
<b>Jersey Shore University Medical Center</b>	<b>523</b>	<b>359</b>	<b>69%</b>
<b>Community Medical Center</b>	<b>454</b>	<b>363</b>	<b>80%</b>
<b>Riverview Medical Center</b>	<b>451</b>	<b>166</b>	<b>37%</b>
<b>Monmouth Medical Center</b>	<b>345</b>	<b>243</b>	<b>70%</b>
<b>Kimball Medical Center</b>	<b>287</b>	<b>191</b>	<b>67%</b>
<b>CentraState Medical Center</b>	<b>260</b>	<b>201</b>	<b>77%</b>
<b>Ocean Medical Center</b>	<b>257</b>	<b>179</b>	<b>70%</b>
<b>Bayshore Community Hospital</b>	<b>168</b>	<b>123</b>	<b>73%</b>
<b>Trenton Hospital Market Area</b>			
<b>Capital Health System at Mercer</b>	<b>350</b>	<b>143</b>	<b>41%</b>
<b>Capital Health System at Fuld</b>	<b>269</b>	<b>137</b>	<b>51%</b>
<b>Robert Wood Johnson University Hospital at Hamilton</b>	<b>211</b>	<b>209</b>	<b>99%</b>
<b>St. Francis Medical Center (Trenton)</b>	<b>165</b>	<b>98</b>	<b>59%</b>

The estimated number of beds needed at the 83 percent occupancy level to meet the projected average daily census compared to the current (2006) bed supply is the bed need or surplus. As Figure 4.12 and Table 4.3 show, assuming an efficient use of the existing hospital capacity, i.e., an 83 percent occupancy rate, there is a

current surplus of beds in every hospital market area. A comparison of the current bed supply with the projected number of beds needed in 2010 and 2015 suggests that without a reduction in the bed supply, estimated bed surpluses will continue in many hospital market areas through 2010 and 2015.

**Figure 4.12:**  
**Bed Surplus Estimates by Market Area**  
**(2005 and projected 2010 and 2015)**





**Table 4.3:**  
**Bed Surplus Estimates by Hospital Market Area (2005 and projected 2010 and 2015)**

<b>Market Area where Hospitals are Located</b>	<b>2005 Estimated</b>	<b>2010 Baseline Projected</b>	<b>2015 Baseline Projected</b>	<b>2010 Adjusted Projected</b>	<b>2015 Adjusted Projected</b>
<b>Atlantic City</b>	<b>269</b>	<b>144</b>	<b>3</b>	<b>181</b>	<b>269</b>
<b>Camden</b>	<b>354</b>	<b>128</b>	<b>-137</b>	<b>180</b>	<b>354</b>
<b>Hackensack, Ridgewood and Paterson</b>	<b>765</b>	<b>527</b>	<b>254</b>	<b>895</b>	<b>765</b>
<b>Morristown</b>	<b>242</b>	<b>68</b>	<b>-138</b>	<b>199</b>	<b>242</b>
<b>New Brunswick</b>	<b>235</b>	<b>-25</b>	<b>-336</b>	<b>227</b>	<b>235</b>
<b>Newark/Jersey City</b>	<b>427</b>	<b>250</b>	<b>50</b>	<b>652</b>	<b>427</b>
<b>Toms River</b>	<b>510</b>	<b>308</b>	<b>79</b>	<b>586</b>	<b>510</b>
<b>Trenton</b>	<b>308</b>	<b>247</b>	<b>175</b>	<b>276</b>	<b>308</b>

When a hospital market area's bed surplus estimate exceeds its average or median hospital bed size, it suggests that the area's demand for inpatient services could be satisfied without at least one of the existing hospitals. Table 4.4 shows the current and projected bed surplus estimates in relation to the average and median bed sizes by hospital market area. In every hospital market area, except New Brunswick, the current bed surplus estimates are greater than the average and median bed sizes. In the Hackensack, Ridgewood and Paterson hospital market area the current bed surplus is over twice the average and median hospital size (2.6 and 2.9, respectively), suggesting that current demand for

inpatient hospital services could be satisfied without at least one of this hospital market area's hospitals. In 2010, the estimated bed surplus under the adjusted projected scenario grows to over three times the current average and median bed size in the Hackensack, Ridgewood and Paterson hospital market area (3.1 and 3.4, respectively). Two other hospital market areas have significant estimated bed surpluses in 2010 – Newark/Jersey City, where the projected surplus is over twice its current average and median bed size (2.3 and 2.6, respectively) and Toms River area, where the projected surplus is nearly twice the size of the average and median number of beds in the area.

**Table 4.4:**  
**Current and Projected Bed Surplus Estimates Relative to Average Number of Beds per Hospital in Each Hospital Market Area**

<b>Market Area where Hospitals are Located</b>	<b>Ratio of Current Bed Surplus to Average Bed Size</b>	<b>Ratio of Current Bed Surplus to Median Bed Size</b>	<b>Ratio of 2010 Adjusted Projected Bed to Average Bed Size</b>	<b>Ratio of 2010 Adjusted Projected Bed Surplus to Median Bed Size</b>
<b>Atlantic City</b>	<b>1.5</b>	<b>1.6</b>	<b>1.0</b>	<b>1.1</b>
<b>Camden</b>	<b>1.5</b>	<b>1.7</b>	<b>0.8</b>	<b>0.8</b>
<b>Hackensack, Ridgewood and Paterson</b>	<b>2.6</b>	<b>2.9</b>	<b>3.1</b>	<b>3.4</b>
<b>Morristown</b>	<b>1.2</b>	<b>1.6</b>	<b>1.0</b>	<b>1.3</b>
<b>New Brunswick</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.8</b>
<b>Newark/Jersey City</b>	<b>1.5</b>	<b>1.7</b>	<b>2.3</b>	<b>2.6</b>
<b>Toms River</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>
<b>Trenton</b>	<b>1.2</b>	<b>1.3</b>	<b>1.1</b>	<b>1.2</b>

### **B. Hospital Bed Surplus Estimates Under Alternative Average Length of Stay Assumptions**

In New Jersey hospitals, as well as nationally, increasing proportions of total births are premature and a growing percentage of total deliveries are by cesarean section. The effect that continuation of these trends would have on projected inpatient days and estimated bed need was tested. For the obstetrics and newborn service lines, the 2005 use rates were not adjusted based on the trend between 2002 and 2005 because these services are a function of the female population's birth rate rather than changes in technology and practice patterns. However, between 2002 and 2005, the proportion of cesarean section deliveries and premature births increased in every hospital market area. Because cesarean section deliveries have a slightly longer average length of stay than vaginal deliveries and premature newborns have a significantly longer average length of stay than healthy newborns, the effect on projected days and bed need was calculated assuming these trends continue for three

years beyond 2005. The effect of this calculation is a slight reduction in the estimated bed surplus in 2010 and 2015, but it does not materially change the overall results of the estimated bed need analysis presented in Figure 4.12.

In addition, sensitivity testing was performed on the adjusted projection of inpatient days using a more aggressive (i.e., lower) average length of stay assumption. In response, the "Best New Jersey Practice" in average lengths of stay was identified and assumed this could be achieved across the entire state. At the DRG level, the hospital market area with the lowest average lengths of stay in 2005 was identified to calculate a "Best New Jersey Practices" average lengths of stay by service line. These average lengths of stay were applied to the projected discharges under the baseline and adjusted scenarios. The "Best New Jersey Practices" assumption reduced projected average lengths of stay to 4.4 days compared to the 4.9 and 5.2 days from our original baseline and adjusted projection scenarios and decreased projected inpatient days 10 to

15 percent, thereby resulting in significantly higher estimates of surplus beds.

However, the Commission concluded it was unrealistic to assume that all hospitals in New Jersey could achieve these “best practices” in average lengths of stay, because current variation in average lengths of stay are not solely due to variations in medical practice patterns that hospitals, in theory, could alter. Rather, the longer average lengths of stay in some of the market areas may be due to high proportion of low-income residents who have poor health status, lack stable relationships with primary and secondary care providers and social support networks. These factors contribute to longer lengths of stay because such “at risk” patients often must convalesce in the hospital rather than at home. These results reinforce the Commission’s belief that the original adjusted baseline scenario projections, which assume the continuation of each hospital market area’s recent trends in ALOS, are reasonable, albeit conservative.

## **IV. Conclusion**

In conclusion, the analyses presented in this chapter indicate that there is currently an oversupply of hospital beds in every hospital market area in New Jersey, and the current oversupply is especially noticeable in the Hackensack, Ridgewood and Paterson area. Without a reduction in the supply of beds, the Hackensack, Ridgewood and Paterson area’s bed surplus is projected to grow through 2010, and by 2010, there will also be significant bed surpluses in the Newark/Jersey City and Toms River areas. These results suggest that projected demand for inpatient hospital services could be satisfied without at least one of each of these areas’ current hospitals. These findings are generally consistent with the essentiality and financial viability framework analysis discussed in Chapter 12, in that the two market areas of Newark/Jersey City, and Hackensack, Ridgewood and Paterson have the highest proportions of hospitals below the statewide average in terms financial viability.