



**Methodist Hospital of Sacramento Utilization Analysis**

The Abaris Group was asked to look at Methodist Hospital of Sacramento’s expected utilization for various medical services, to determine whether or not the capacity proposed in Methodist’s trauma application would be appropriate to meet the expected demand for services at the hospital if granted trauma center status.

**Capital Commitment Comparison**

In their trauma center proposals, Methodist Hospital of Sacramento and Kaiser – South Sacramento both outlined their proposed capacity expansion plans that they will commit to if granted trauma center designation. Current and proposed capacities for each hospital are shown in the table below. Kaiser – South Sacramento’s capacity currently exceeds that of Methodist Hospital of Sacramento in terms of ED beds, trauma beds, operating rooms, ICU beds, Post Anesthesia Care Unit (PACU) beds, and post-anesthesia isolation room beds; both currently have the same number of licensed general acute care beds.

In comparing the capital commitments made from each proposal, Kaiser promises greater total capacity than Methodist, with 41 versus 29 ED beds, 4 versus 2 trauma beds, 17 versus 5 operating rooms, 40 versus 20 ICU beds, 10 versus 6 ICU beds dedicated to trauma, and 37 versus 8 PACU beds.

Methodist does not mention any plans to increase the number of medical/surgical beds; thus for this analysis we will assume that there will be no expansion and consider the 100 available beds listed on OSHPD.

Sacramento Trauma Center RFP Comparison of Capital Commitments				
	Kaiser - South Sacramento		Methodist Hospital of Sacramento	
	Current Capacity	Capital Commitments	Current Capacity	Capital Commitments
Licensed Beds	162	290	162 <sup>1</sup>	unknown <sup>2</sup>
ED Beds	38	41	15	29
Trauma Beds	1	4	0	2
Operating Rooms <sup>3</sup>	11	17	4	5
ICU Beds	20	40	14	20
ICU - Trauma	0	10	0	6
Post Anesthesia Care Unit	37	37	unknown	8
Isolation Room	1	1	0	1

<sup>1</sup> Licensed General Acute Care beds according to OSHPD 2006 utilization data

<sup>2</sup> Capacity of 73 Medical/Surgical and Medical/Telemetry beds, with 10 overflow were mentioned in their proposal; this is fewer than the current 100 available beds according to OSHPD

<sup>3</sup> Kaiser has 10 licensed ORs and 1 unlicensed OR

Source: Methodist Hospital Trauma Center Designation Proposal; Kaiser - South Sacramento Trauma Center Designation Proposal





Methodist Hospital of Sacramento's Utilization Metrics

The following tables contain utilization data for Methodist Hospital of Sacramento's medical/surgical unit, ICU/CCU, emergency department (ED), and operating rooms.

Methodist Hospital of Sacramento Utilization Metrics - Medical/Surgical Beds					
	Beds	Discharges	Discharges per Bed	Patient Days	Occupancy Rate
2002	100	4,585	45.9	19,533	53.5%
2003	100	4,470	44.7	18,619	51.0%
2004	100	5,105	51.1	20,149	55.2%
2005	100	5,142	51.4	22,247	61.0%
2006	100	5,326	53.3	20,992	57.5%

Total medical/surgical discharges from Methodist increased from 2002 to 2006, from 4,585 visits to 5,326 visits. The number of patient days also increased during that time

Source: OSHPD, Hospital Annual Utilization Data

period, from 19,533 to 20,992. As available beds remained constant, this meant that the occupancy rate increased from 53.5 percent in 2002 to 57.5 percent in 2006.

Methodist Hospital of Sacramento Utilization Metrics - ICU/CCU					
	ICU/CCU Beds	ICU/CCU Discharges	Discharges per Bed	ICU/CCU Patient Days	Occupancy Rate
2002	20	232	11.6	2,949	40.4%
2003	20	196	9.8	2,722	37.3%
2004	20	263	13.2	3,012	41.3%
2005	20	233	11.7	2,994	41.0%
2006	20	262	13.1	3,418	46.8%

Looking at the ICU and CCU units combined, we see that total discharges have increased from 232 to 262 from

Source: OSHPD, Hospital Annual Utilization Data

2002 to 2006, with great fluctuation in the years in between. As the total number of ICU/CCU beds remained constant at 20 during this time period, discharges per bed also increased, from 11.6 to 13.1. ICU/CCU patient days were 2,949 in 2002, increasing to 3,418 in 2006. The resulting occupancy rate also increased, from 40.4 percent to 46.8 percent. It is important to note that all of these discharges actually came from the ICU, although 10 of the 20 beds are CCU beds. According to OSHPD data, there were no CCU discharges in any year from 2003 to 2006; 2002 data indicates that there were 232 CCU discharges, however this is suspected to be an error as the numbers of discharges and patient days are identical to those for the ICU.

Methodist Hospital of Sacramento Utilization Metrics - Emergency Department			
	Treatment Stations	ED Visits	Visits per Station
2002	9	32,698	3,633.1
2003	9	36,747	4,083.0
2004	18	29,741	1,652.3
2005	18	36,785	2,043.6
2006	15	41,092	2,739.5

In 2004, Methodist doubled the size of its ED, from 9 to 18 treatment stations. In 2006, they decreased licensed treatment stations to 15. According to Methodist's trauma center proposal, if awarded the trauma designation, they will again increase the number of ED beds to 29. ED visits increased overall from 2002 to 2006, from 32,698 to 41,092 visits. However, as a result of the increased capacity, visits per treatment station actually decreased, from 3,633 to 2,739.

Source: OSHPD, Hospital Annual Utilization Data





Methodist Hospital of Sacramento Utilization Metrics - Operating Rooms									
	Operating Rooms	Operations	Operations per OR	Operation Minutes	Occupancy Rate	Inpatient Operations	Inpatient Operations per OR	IP Operation Per Licensed Med/Surg Bed	
2002	14	2,299	164.2	224,525	3.1%	1,546	193.3	15.5	
2003	4	2,192	548.0	219,795	10.5%	1,462	182.8	14.6	
2004	4	2,194	548.5	199,520	9.5%	1,508	188.5	15.1	
2005	4	2,276	569.0	229,855	10.9%	1,537	192.1	15.4	
2006	4	5,234	1,308.5	403,055	19.2%	1,601	160.1	16.0	

Source: OSHPD, Hospital Annual Utilization Data

Total surgical operations at Methodist more than doubled from 2,229 in 2002 to 5,234 in 2006. From 2002 to 2005, the number of operations remained fairly constant; most of the increase happened from 2005 to 2006 due to a substantial increase in outpatient operations. In 2002, Methodist had 14 operating rooms (3 inpatient, 4 outpatient, and 7 combined); however since then only 4 combined operating rooms remain. Due to the combined effects of decreasing the number of operating rooms and increasing the number of operations, occupancy rate increased dramatically from 3.1 percent to 19.2 percent during this time period.

### Projections

Simple linear projections of this five-year trend data can be used to project utilization of these services into the future (See Appendix A for charts).

Methodist Hospital of Sacramento Projected Utilization, 2007-2015							
	Med/Surg Discharges	Med/Surg Patient Days	ICU/CCU Discharges	ICU/CCU Patient Days	ED Visits	Operations	Inpatient Operations
2002	4,585	19,533	232	2,949	32,698	2,299	1,546
2003	4,470	18,619	196	2,722	36,747	2,192	1,462
2004	5,105	20,149	263	3,012	29,741	2,194	1,508
2005	5,142	22,247	233	2,994	36,785	2,276	1,537
2006	5,326	20,992	263	3,418	41,092	5,234	1,601
2007	5,572	22,272	266	3,382	40,461	4,625	1,586
2008	5,787	22,926	276	3,503	42,143	5,221	1,605
2009	6,003	23,581	286	3,624	43,826	5,816	1,623
2010	6,218	24,235	295	3,745	45,508	6,411	1,642
2011	6,433	24,890	305	3,866	47,191	7,007	1,660
2012	6,649	25,545	315	3,987	48,874	7,602	1,679
2013	6,864	26,199	325	4,108	50,556	8,198	1,697
2014	7,080	26,854	334	4,229	52,239	8,793	1,716
2015	7,295	27,508	344	4,350	53,921	9,388	1,734

Source: OSHPD, Hospital Annual Utilization Data; The Abaris Group projections

This linear projection model is a good fit for medical/surgical discharges and reasonable for medical/surgical patient days and ICU/CCU patient days; however, due to substantial year-to-





year variation for each of the other services, this model may not be the most accurate means of projecting demand into the future.

These projections, along with Methodist’s proposed capacity, can be used to obtain future utilization rates for each of these services.

Methodist Hospital of Sacramento Utilization Rates, 2010 and 2015				
	Planned Beds <sup>1</sup>	Current Utilization Rate	2010 Projected Utilization Rate	2015 Projected Utilization Rate
Total GAC	182	32.9	34.2	40.1
ICU/CCU	26	13.2	11.4	13.2
ED	29	2,739.5	1,569.3	1,859.4
OR	5	1,308.5	1,282.3	1,877.7

<sup>1</sup> Planned expansion should be completed by December 2009

Source: OSHPD, Hospital Annual Utilization Data; The Abaris Group projections

Specifically, in 2010 Methodist can expect to see 34 discharges per general acute care bed, 11 ICU/CCU discharges per ICU/CCU bed, 1,569 ED visits per ED treatment station, and 1,282 operations per operating room. By 2015, these rates will increase to 40 discharges per general acute care bed, 13 ICU/CCU discharges per ICU/CCU bed, 1,859 ED visits per ED treatment station, and 1,878 operations per operating room. With the exception of ED visits per ED treatment station and ICU/CCU discharges, each of these utilization rates exceeds the actual utilization rate for 2006. These utilization rates do not take into account any trauma patients that will go to Methodist if it is granted trauma center designation.

### Trauma

In 2005, the annual trauma admissions estimated to be distance-closest to existing south county hospitals was 782.<sup>1</sup> According to the Sacramento County EMS Agency, the best-estimate of the annual increase in local admissions is 9.5 percent, which leads to an estimated 1,231 south county trauma admissions in 2010. Continuing with this rate of growth, trauma admissions can be estimated to be 1,937 in 2015.

Adding these trauma admissions to the previously projected total discharges for Methodist in 2010 brings the new total projected discharges to 7,449. This brings the number of discharges per general acute care bed to approximately 41. For 2015, adding the projected trauma admissions to the previously projected number of discharges brings the new projection to 9,232, which results in 51 discharges per licensed general acute care bed.

Adding these trauma visits to the projected ED visits for 2010 brings the projected number of visits to Methodist’s ED and trauma center to 46,793, or approximately 1,612 visits per ED treatment station. For 2015, the projected number of ED visits and trauma visits becomes 55,858, or approximately 1,926 visits per bed.

<sup>1</sup> “Injury Locations for Persons Admitted to Trauma Services from within Sacramento County 10/01/05-12/31/05.” Sacramento County EMS.  
[http://www.sacdhhs.com/CMS/download/pdfs/EMS/EMS\\_TAILLOCNODE05.pdf](http://www.sacdhhs.com/CMS/download/pdfs/EMS/EMS_TAILLOCNODE05.pdf)





Assuming that the average length of stay for a trauma admission is 5.5 days, including 1.5 days in the ICU, projected patient days increase to 29,159 medical/surgical patient days and 5,592 ICU/CCU patient days in 2010. According to these projections, the medical/surgical unit will have an occupancy rate of 79.9 percent, and the ICU/CCU will have a 58.9 percent occupancy rate. In 2015, patient days are projected to increase to 35,256 medical/surgical patient days, and 7256 ICU/CCU patient days, with occupancy rates of 96.6 percent and 76.5 percent, respectively.

Methodist Hospital of Sacramento Occupancy Rates, 2010 and 2015				
	Planned Beds <sup>1</sup>	Current Occupancy	2010 Projected Occupancy	2015 Projected Occupancy
Med/Surg <sup>2</sup>	100	57.5%	79.9%	96.6%
ICU/CCU	26	46.8%	58.9%	76.5%

<sup>1</sup> Planned expansion should be completed by December 2009

<sup>2</sup> There is no planned expansion for med/surg beds

Source: OSHPD, Hospital Annual Utilization Data; The Abaris Group projections

**Note:** According to page 99 of Methodist’s proposal, combined medical/surgical and medical/telemetry beds total 73, with 10 overflow beds. This number differs from the number of available medical/surgical beds according to OSHPD. If the correct number of such beds is in fact 73, even with the overflow beds Methodist will have insufficient capacity to accommodate the number of patient days projected under this model in 2015, as the projected occupancy rate exceeds 100 percent.

### Conclusions

With no planned expansion of medical/surgical beds, Methodist is likely to face some capacity issues by the year 2015, according to our model. Taking into account the additional patient days that will result from added trauma admissions, Methodist will near 100 percent occupancy (96.6 percent in 2015). Given that a hospital is considered “at capacity” when occupancy reaches 85 percent, Methodist is projected to be well over capacity by 2015.<sup>2</sup>

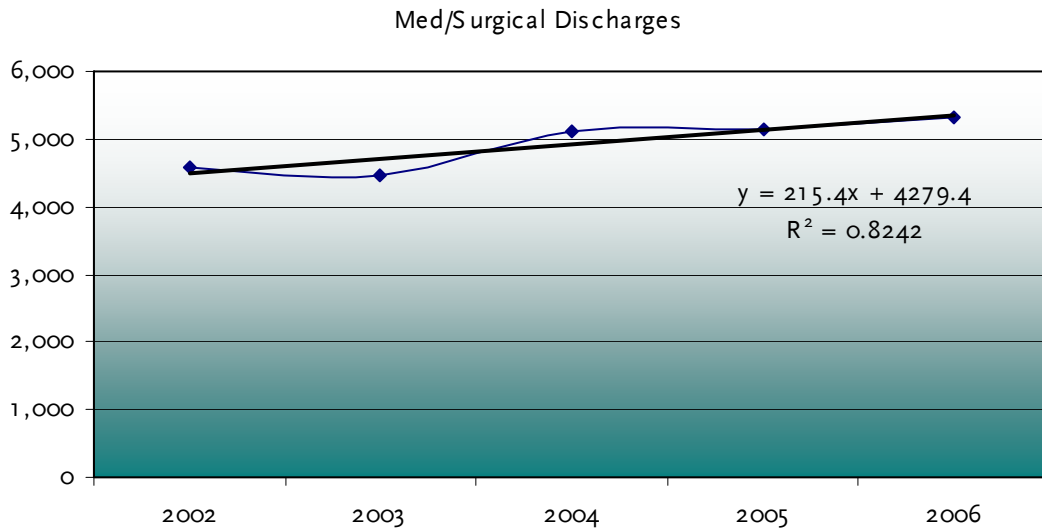
The ideal capacity for an ED is about 1,600 visits per ED treatment station. Even without taking into account the 1,937 projected trauma visits that Methodist is likely to see if granted the trauma designation, the ED will be under-bedded according to this standard based on the linear projection model used.

<sup>2</sup> Sutter and Catholic Healthcare West (CHW) have announced plans to build a new hospital (Sutter) and a medical complex with outpatient services (CHW), which could mitigate these projected shortages.

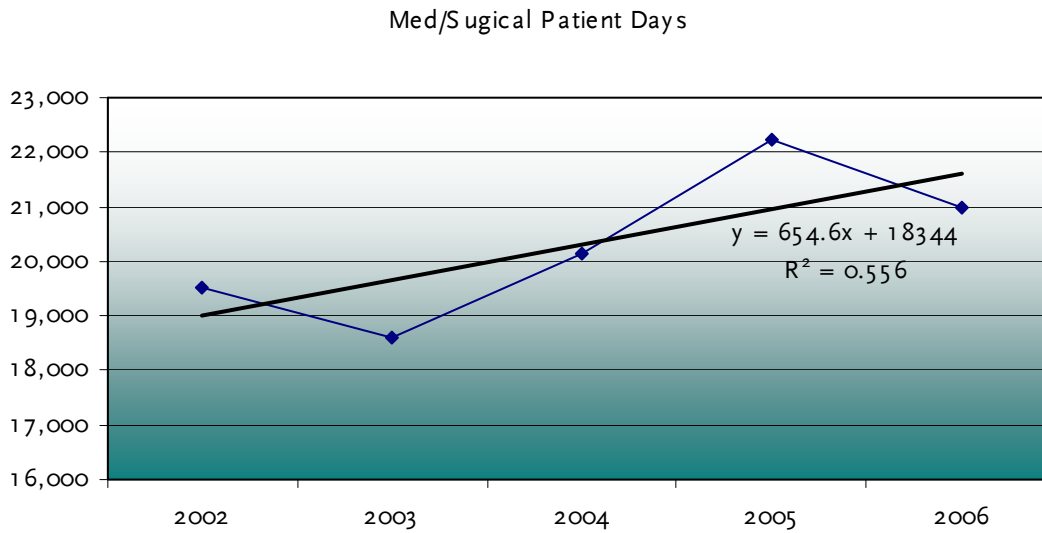




Appendix A – Linear Regression Charts – Med/Surg, ED, ICU, OR



Source: OSHPD, Hospital Annual Utilization Data

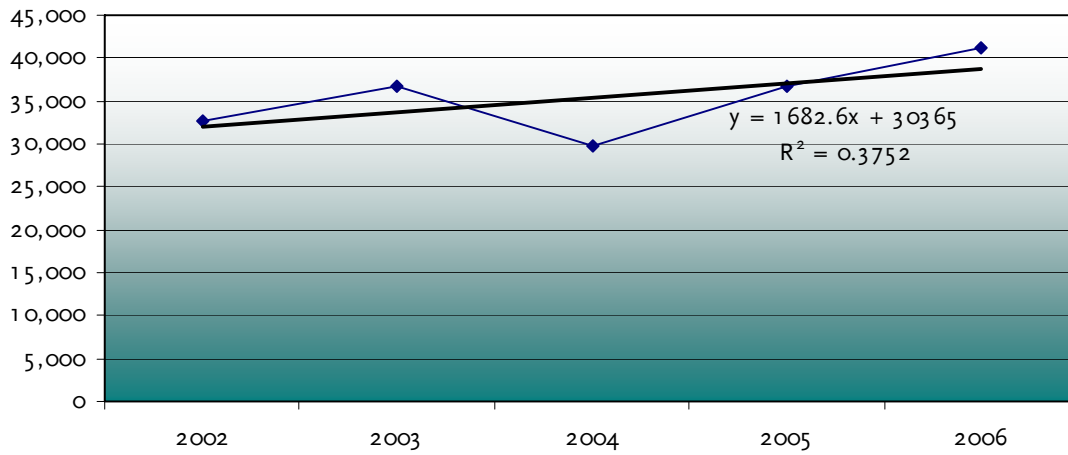


Source: OSHPD, Hospital Annual Utilization Data



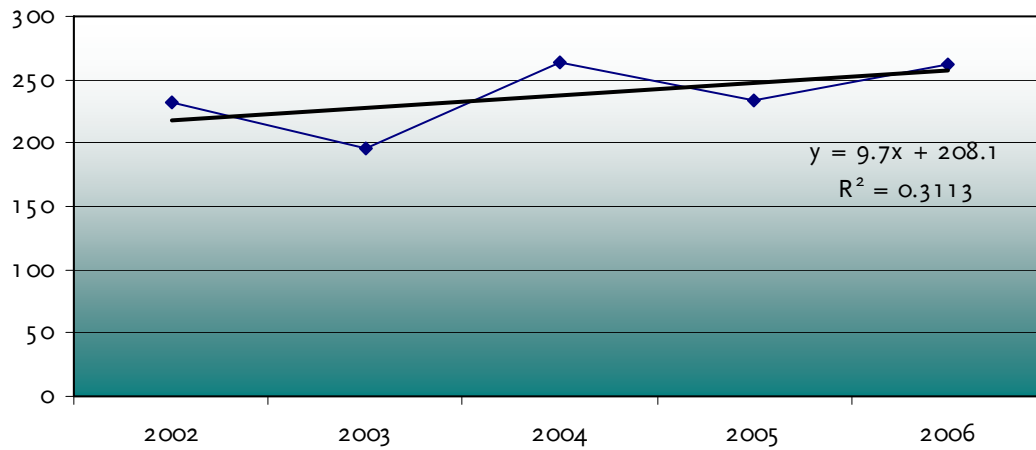


### ED Visits



Source: OSHPD, Hospital Annual Utilization Data

### ICU/CCU Discharges

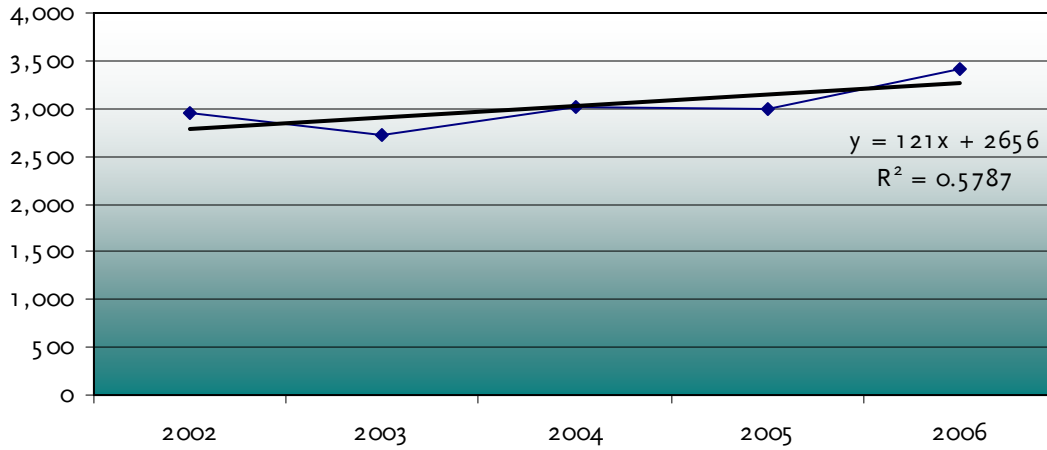


Source: OSHPD, Hospital Annual Utilization Data



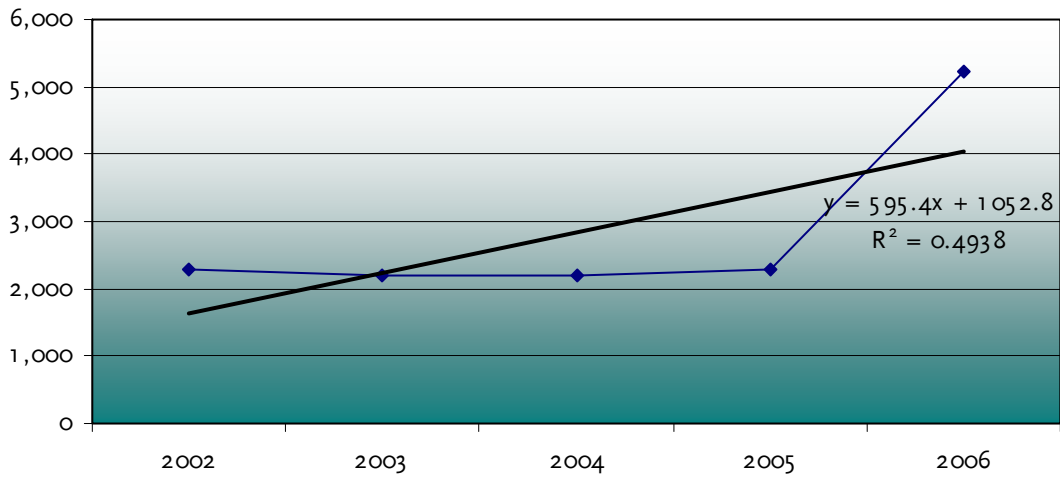


### ICU/CCU Patient Days



Source: OSHPD, Hospital Annual Utilization Data

### Surgical Operations

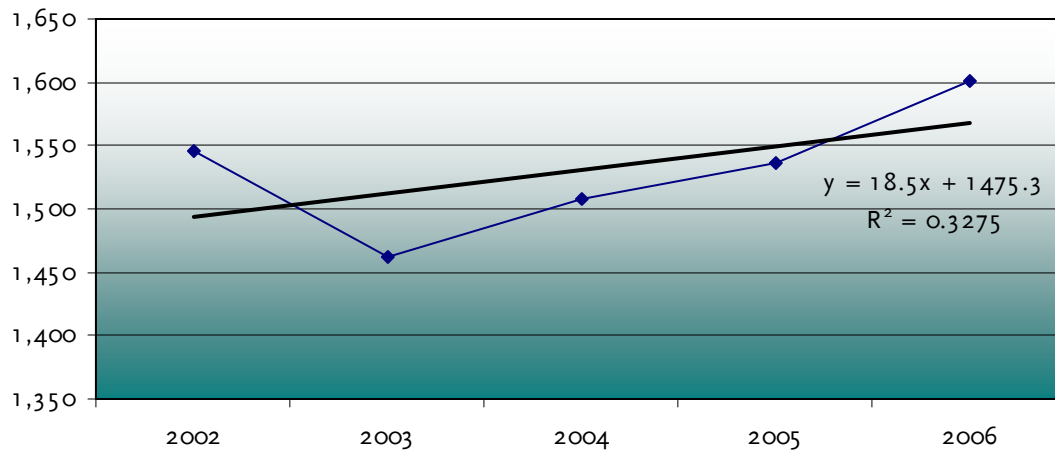


Source: OSHPD, Hospital Annual Utilization Data





### Inpatient Surgical Operations



Source: OSHPD, Hospital Annual Utilization Data

