

# FINGER LAKES REGION CT CAPACITY AND UTILIZATION REPORT, 2015

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Data from January 2014 – December 2014

November 5, 2015



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## Executive Summary

On an approximately yearly basis, the Finger Lakes Health Systems Agency surveys regional CT providers to assess if there have been changes in the inventory of CT scanners and their utilization. This assessment is undertaken to help assure that the region's population is appropriately served for CT services. The assessment which follows reports on CT inventory and utilization for calendar year 2014.

No scanners were added to the region in 2014, however Unity Hospital and FF Thomson Hospital were approved by the Community Technology Assessment Advisory Board (CTAAB) to add a second scanner in 2014 and early 2015, respectively. The scanners in the region are similar to those used nationally in terms of age and capability of the machines.

It appears there is sufficient CT capacity to meet the region's needs for the foreseeable future. However, additional consideration should be given to regional hospitals to assure that there is capacity to scan inpatients and Emergency Department patients, which can only be done in the hospital. Survey data disclosed that as much as 100% of some individual scanner capacity may be dedicated to scans of hospital inpatient and ED patients, and some scanners which primarily serve ED patients are used for more scans per year.

CT scans offer many benefits over other diagnostic tests and continue to be employed as the primary method for diagnosing many common conditions. The appropriate use of CT has been an important public health issue in recent years due to the risk of exposure to radiation associated with CT and also reducing costs.

There have been several policy-based and clinical initiatives which may have altered CT utilization in recent years. In an effort to control imaging volume and costs, Excellus in 2007 contracted with CareCore National to manage its radiology benefit, and announced that physicians and other providers would be required to obtain prior authorization for all non-emergent, outpatient PET, CT, MRI, nuclear cardiology and nuclear medicine studies. In June 2008, the program was implemented. MVP Healthcare has also contracted with CareCore National for diagnostic radiology review. Simultaneous with the implementation of the prior authorization programs, the American College of Radiology began programs with the both public and providers recommending reductions in radiation exposure. Appropriate use of CT scans is emphasized as these scans expose patients to a greater dose of radiation than other imaging techniques. Lastly, in January 2011 there was a modification to the method used for reimbursement of abdominal and pelvic CT scans. Prior to January 1<sup>st</sup> 2011, abdominal and pelvic CT scans were coded using distinct CPT codes and were counted as unique procedures. After January 1<sup>st</sup>, the Centers for Medicare and Medicaid Services (CMS) mandated the use of new CPT codes which combined abdominal and pelvic CTs into one procedure when performed at the same time.

Utilization of CT scanners in the 9 county Finger Lakes Region increased by 2.0% between 2013 and 2014 which somewhat reverses an overall negative trend that had occurred since 2007. The region has demonstrated a 5% increase in trend since 2011, when coding changes resulted an artificial decrease in utilization.

To estimate the region's CT capacity, we posit that there are 37.2 "general" CT scanners (excluding scanners used only for specialized procedures or studies) in the region that could each produce about 10,000 procedures per year. Based on the utilization reported in 2014 at the 37.2 "general" scanners, a growth of 27% utilization could be experienced before exceeding capacity.

## **Section One: Introduction**

This report describes the availability and utilization of CT scanners in the Finger Lakes Region of New York<sup>1</sup>. Unless otherwise noted, the source of data is annual CT surveys conducted by the Finger Lakes Health Systems Agency (FLHSA), with the most recent data being from a survey begun in February of 2015 and includes data for calendar year 2014. The information derived from the data will be used by the FLHSA in its roles as defined by the state Certificate of Need law and by the Community Technology Assessment Advisory Board (CTAAB)<sup>2</sup>, in order to provide recommendations to area health plans on the adequacy of CT capacity to meet the needs of local enrollees for this service. Unless indicated, data pertaining to areas outside of the Finger Lakes region is derived from the IMV Medical Information Division 2012 CT Benchmark Report. Additionally, unless indicated, regional aggregate data includes that provided by Veterans Affairs Medical Centers in Bath and Canandaigua.

## **Section Two: Capacity**

### **Introduction**

Finger Lakes Health Systems Agency has been involved with CT planning efforts since 1978, when there were 2 privately owned and 2 hospital-based CT services, all in Rochester. Early on, the Agency sought to promote optimal use of existing units and to prevent duplication of services. Still, by 1988, the region had 18 scanners, and CT was recognized by FLHSA as a standard diagnostic capability that should be available to all acute care hospitals.

Over the next 12 years, FLHSA utilized its adopted policy to review more than 20 CON applications for CT scanners (including replacements as well as additions). By 2004, interest by New York State Department of Health and area payers in CT capacity and utilization waned; as a result, the Agency stopped reviewing applications. In 2006, however, insurers requested the development of guidelines for and review of incremental CT capacity that would have the capability to image coronary arteries. While the insurers considered CT visualization of coronary arteries investigational at the time of their request, they acknowledged growing scientific evidence in support of this technological application.

### **Inventory**

FLHSA surveyed all CT facilities within the Finger Lakes counties, with 36 out of 41 responding. Data were estimated for the non-responding facilities based on historical responses. As of December 2014, there are 40.2 CT scanners in the Finger Lakes Region. Of the total, 29 units are hospital-based, while 11.2 CT scanners are located at freestanding imaging centers. No units are located in offices of doctors who do not practice radiology. There is one mobile unit operated one day per week at the Guthrie Clinic in Big Flats, NY.

Table 1 lists the CT sites in the region. Table 2 describes the manufacturer, and the number of slices each machine is capable of performing.

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<sup>1</sup> The nine counties in the Finger Lakes region include Chemung, Livingston, Monroe, Ontario, Seneca, Schuyler, Steuben, Wayne, and Yates.

<sup>2</sup> CTAAB area includes Livingston, Monroe, Ontario, Seneca, Wayne, and Yates counties in the Finger Lakes region, plus Orleans, Genesee and Wyoming. Therefore, additional analysis is required for CTAAB review.

Table 1: Location and ownership of CT scanners in the Finger Lakes region

Region	Site Location	# Units	Ownership
<b>Monroe County</b>	Highland	2	Hospital
	Rochester General	3	RGHS Imaging
	Unity	1	Hospital
	Strong	6	Hospital
<b>Central Finger Lakes</b>	Clifton Springs*	1	Hospital
	F.F. Thompson	1	Hospital
	Geneva General	1	Hospital
	Newark Wayne	1	Hospital
	Nicholas Noyes	1	Hospital
	Soldiers and Sailors*	1	Hospital
	VAMC Canandaigua*	1	U.S. Government
<b>Southern Tier</b>	Arnot Ogden	2	Hospital
	Corning	1	Hospital
	Ira Davenport	1	Hospital
	Schuyler*	1	Hospital
	St. James Mercy	1	Hospital
	St. Joseph's*	1	IM Associates of Southern Tier
	VAMC Bath	1	U.S. Government
	Big Flats	0.2	Guthrie Clinic
<b>Freestanding-Monroe County</b>	Senator Keating	1	Borg & Ide
	Lattimore Road	1	Borg & Ide
	Clinton Crossings	1	Borg & Ide
	Hagen Drive	1	Borg & Ide
	Park Ridge	1	Borg & Ide
	Ridgeway	1	Borg & Ide
	Culver Road	1	Borg & Ide
	Alexander Park	1	RGHS Imaging
	Cross Keys Park	1	RGHS Imaging
	Portland Avenue	1	RGHS Imaging
	Lac de Ville	2	University Medical Imaging
	Strong West	1	UR Medicine

\*Historical Data used to project 2014 utilization

Table 2: Types of CT scanners in the Finger Lakes region

Region	Site name	Manufacturer	Slices	Notes
<b>Monroe County</b>	Highland	Philips	40	
	Highland	Philips	128	
	Lakeside	Toshiba	64	Now operated by SMH
	Rochester General	GE	16	
	Rochester General	GE	16	
	Rochester General	GE	64	
	Strong	Ingenuity	64	Replaced in 2014
	Strong	Philips	16	
	Strong	Philips	64	
	Strong	Philips	64	
	Strong	Philips	64	
	Strong	Phillips	64	
	Strong	Phillips	64	Relocated in 2014
	Unity	Philips	16	
	Clifton Springs	Philips	16	
<b>Central Finger Lakes</b>	F.F. Thompson	Philips	64	
	Geneva General	Philips	64	
	Newark Wayne	GE	16	
	Nicholas Noyes	Hitachi	64	Replaced in 2011
	Soldiers and Sailors	Philips	16	
	VAMC Canandaigua	GE	4	
	Arnot Ogden	Siemens	128	
<b>Southern Tier</b>	Arnot Ogden	Siemens	64	
	Corning	Siemens	64	
	Ira Davenport	Philips	16	
	Schuyler	GE	16	
	Big Flats	Siemens	16	
	St. James Mercy	Philips	16	
	St. Joseph's (IMAST)	GE	16	
	VAMC Bath	Philips	64	
	Red Creek Drive	GE	4	Closed in 2014
	Alexander Park			
<b>Monroe County Freestanding Centers</b>	Lattimore Road	GE	4	
	Clinton Crossings	GE	64	
	Hagen Drive	GE	16	
	Park Ridge	GE	16	
	Ridgeway	GE	8	
	Culver Road	GE	16	
	Cross Keys Park	GE	4	
	Portland Avenue	GE	64	
	Senator Keating	GE	64	
	Lac de Ville	GE	64	
	Lac de Ville	GE	64	
	Lac de Ville	GE	64	

### Units per Population

The total 40.2 identified scanners represent 3.14 scanners for each 100,000 population. In contrast, there were an estimated 13,065 fixed scanners nationally in 2014, or about 4.10 CT scanners per 100,000 population.

## 2014 CT Availability Finger Lakes Region and U.S.

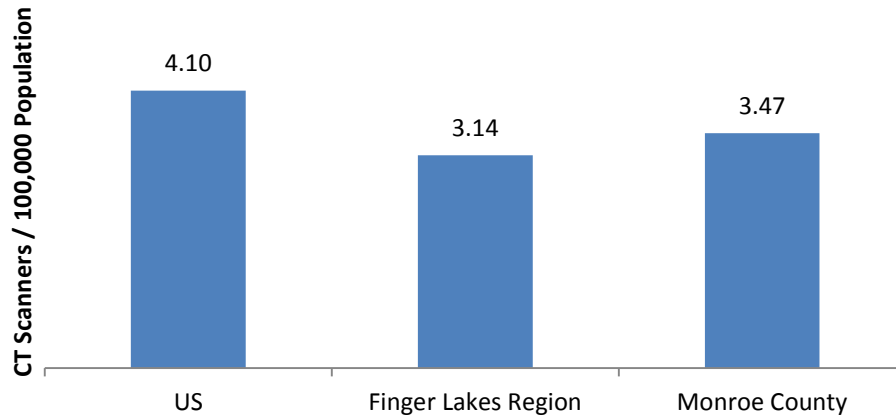


Figure 1: Comparison of number of CT scanners per population nationally and regionally

### Age of Scanners

Recent acquisition of CT units in the Finger Lakes Region is similar to national acquisition. Regionally, 16% of CT units were acquired between 2013 and 2014, compared with 15% nationally.

## Age of CT Units Finger Lakes Region, 2014

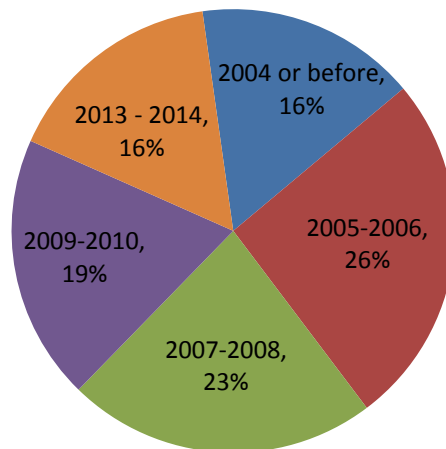
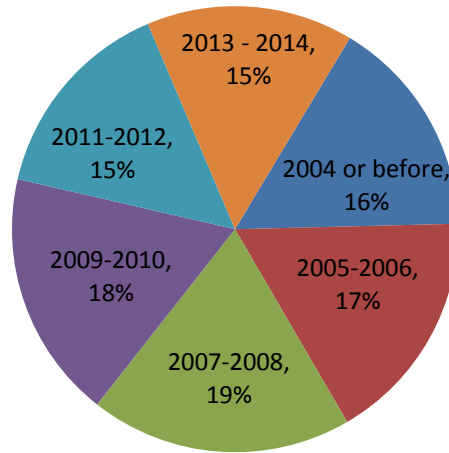


Figure 2 Regional Age of CT Equipment

## Age of CT Units United States, 2014

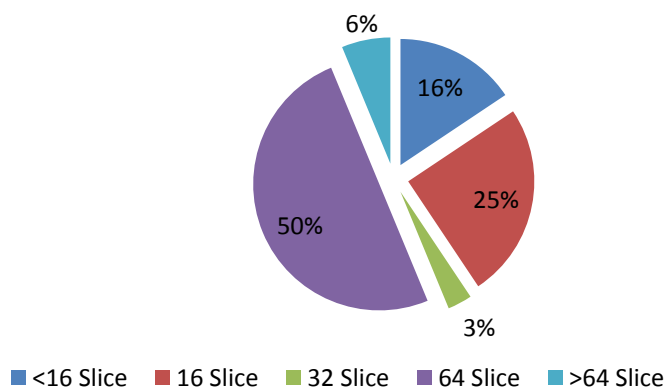


*Figure 3: National Age of CT Equipment*

### Capability of Scanners

In 2014, CT scanners in the Finger Lakes Region have similar capabilities to what is available nationally. In the Finger Lakes Region, 56% percent of CT scanners are 64-slice or greater; in comparison, 47% of CT scanners in the U.S. have this capability (Figures 3, 4 and Table 2).

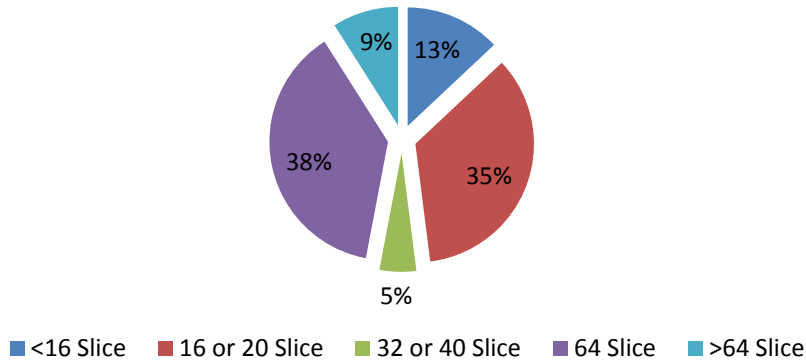
## Capability of CT Units Finger Lakes Region 2014



*Figure 4: Regional capability of CT units (2014)*



## Capability of CT Units United States 2014

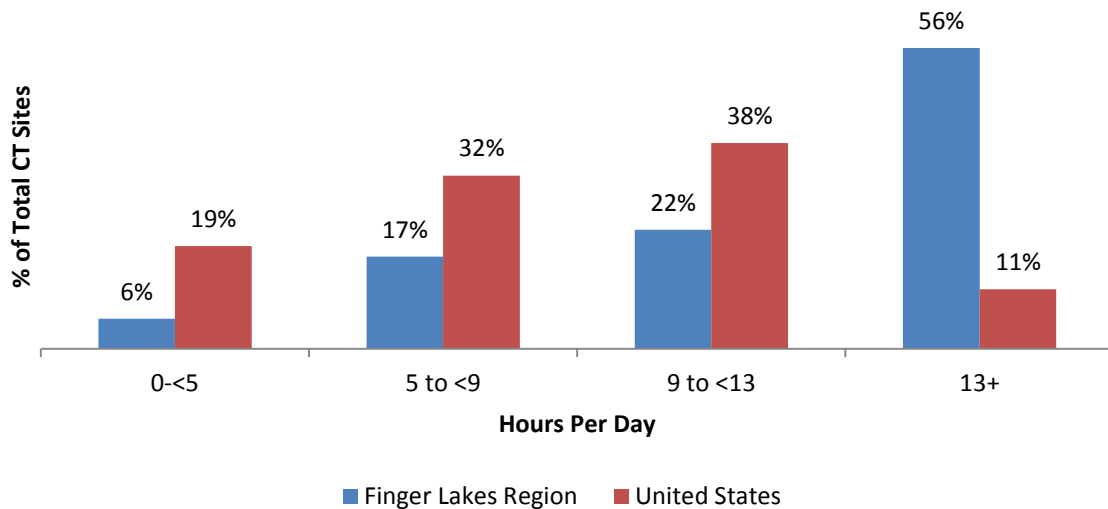


*Figure 5: National Capability of CT Units, 2014*

### Staffing

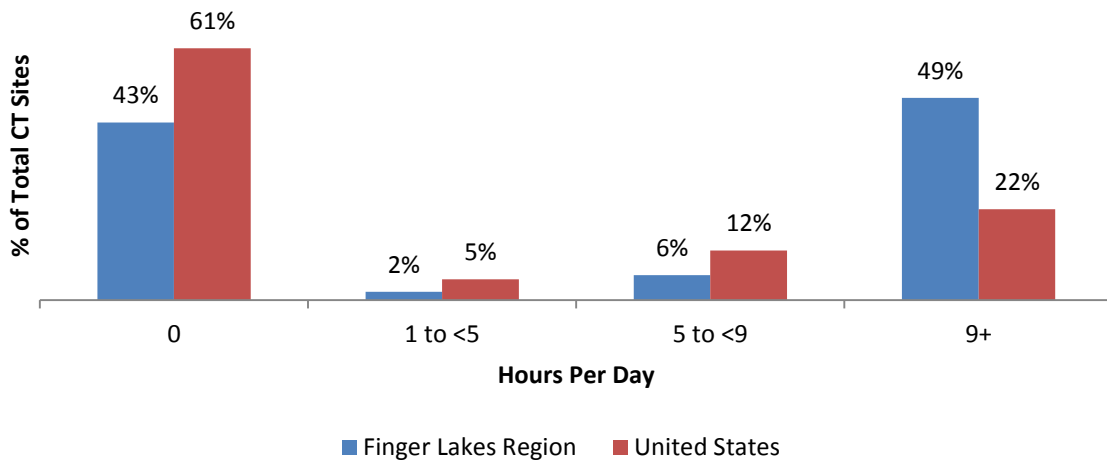
CT facilities in the Finger Lakes Region are generally staffed for more hours than CT sites elsewhere in the U.S. On weekdays, 78% of Finger Lakes sites are staffed a minimum of 9 hours compared with 49% nationally. More than half of Finger Lakes CT sites routinely staff on the weekends (those without assigned coverage may assign staff to be on call), while 39% of U.S. CT sites provide weekend coverage. In the Finger Lakes Region, 49% of sites are staffed for more than 9 hours on the weekends, compared with only 22% nationally.

## Comparison of Weekday Staffed Hours Finger Lakes Region and U.S.



*Figure 6: Comparison of weekday staffing at CT sites nationally and regionally*

## Comparison of Weekend Staffed Hours Finger Lakes Region and U.S.



*Figure 7: Comparison of weekend staffing at CT sites nationally and regionally*

### Section Three: Utilization

#### Utilization per Capita

During 2014, there were 293,941 scans recorded in the 9-county Finger Lakes Region; of these, 185,574 occurred in Monroe County. This suggests a utilization of about 229 scans per 1,000 persons regionally and a use rate of 247 CT scans per 1,000 persons in Monroe County. It is likely that Monroe County CT scanners also serve significant portions of the surrounding counties’ patient populations. The calculation for Monroe County does not take this patient migration into account.

Based on survey data, IMV estimates a total national volume of CT scans at 81.2 million in 2014, at 6,073 hospital and 2,602 non-hospital locations. This represents a 7% increase compared to 2013. Utilizing population estimates, the estimated number of scans per 1,000 persons is 254.6.

Regional utilization was below the national rates in 2014. Historically, the region’s use of CT scans had exceeded national rates. The region’s history of additional use of CT scans may have been attributed to local programs encouraging use of less expensive imaging technologies, such as use of CT instead of MRI scans. Over the past five years, utilization has been lower than national trends. For example, overall CT utilization declined by 11% between 2009 and 2014 while national utilization is similar in 2014 to what it was in 2009. There are several local and national factors which may have affected recent CT utilization in the region which are described below under the section “Constraints on Volume Growth” and “Changes in Clinical Guidelines.”

## Growth in Utilization

Incomplete reporting in earlier years makes it difficult to discern the long-term growth rate of CT scanning in the Finger Lakes Region. Most recently, the region experienced a decrease in utilization, followed by a slight rebound from 2011 to 2012 and then a 4.3% decline in 2013 vs 2012. While the overall utilization decreased by 11% from 2009 to 2014, there is a 2% increase from 2013 to 2014 (Figure 12).

Meanwhile, the CT growth rate in the U.S. increased by 7% this year, following a decline from 2011 to 2013 (Figure 10).

### CT Utilization 2009 & 2014. U.S, Finger Lakes and Monroe County Per 1000 Population

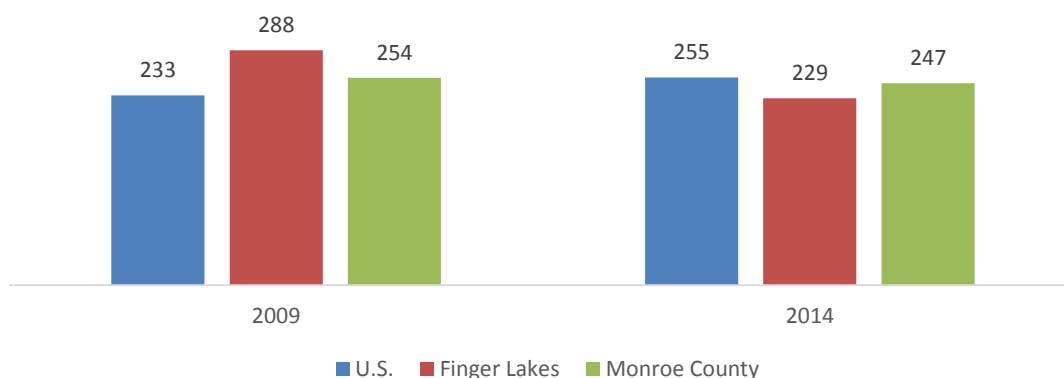


Figure 8: CT Utilization, 2007 and 2014 per 1,000 Persons

### Total CT Utilization Volume by Site Type United States, 1995 - 2014

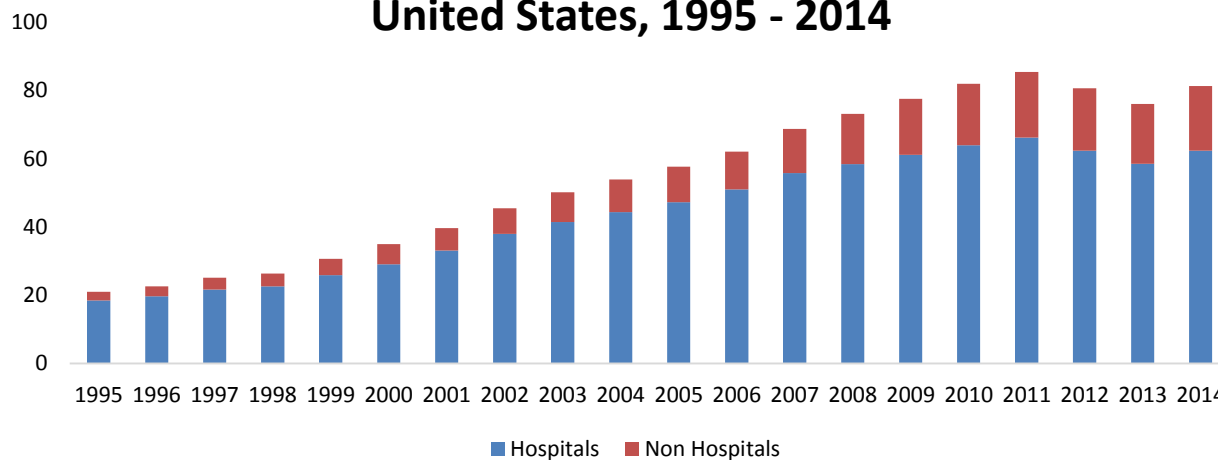


Figure 9: Total CT Utilization Volume by Site Type: United States, 1995-2014

## Annual Growth in CT Utilization United States, 2004-2014

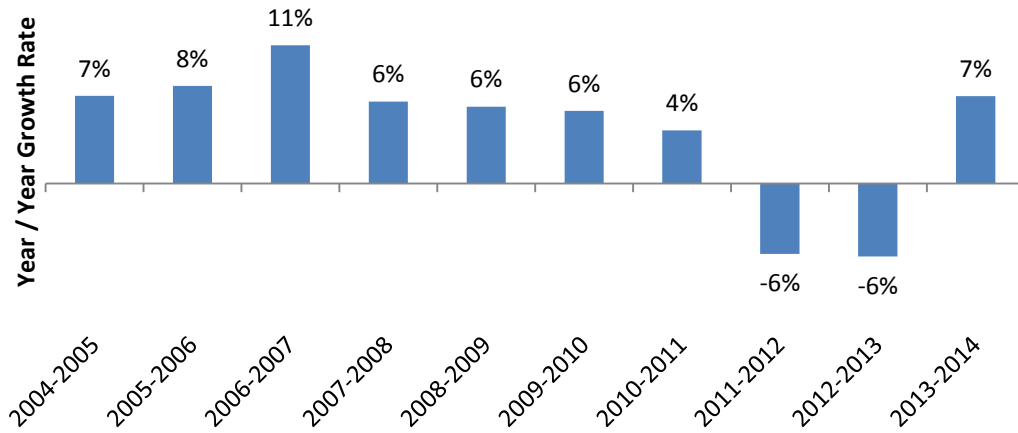


Figure 10: National growth in CT Utilization, 2004-2014

## Number of CT Scans Finger Lakes Region, 2004-2014

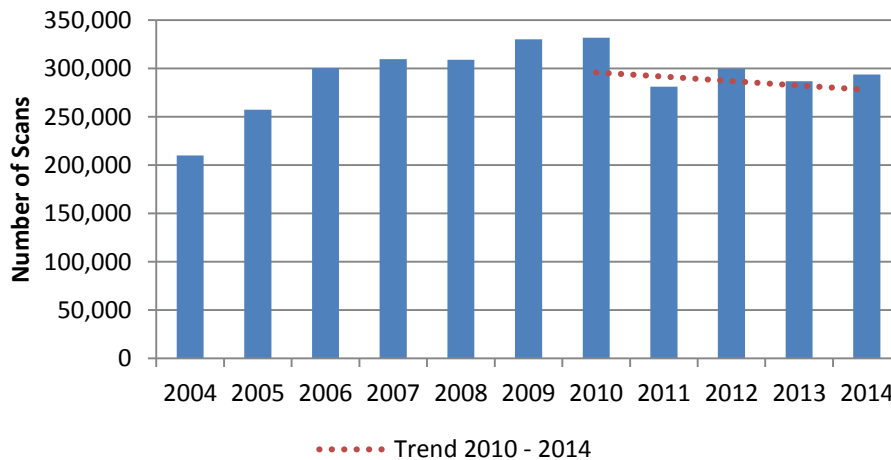
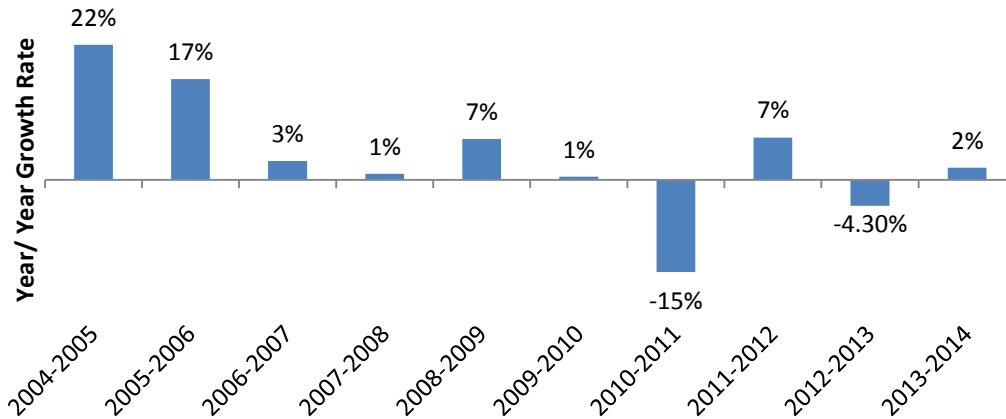


Figure 11: Total CT Utilization in the Finger Lakes Region from 2004-2014

## Annual Growth in CT Utilization Finger Lakes Region, 2004 - 2014



*Figure 12: Regional growth in CT utilization, 2004- 2014*

The proceeding charts include abdominal and pelvic CT data which may not be comparable to data from years prior to 2011 due to potential modifications in counting procedures.

### Constraints on Volume Growth

In an effort to control imaging volume and costs, Excellus in 2007 contracted with CareCore National to manage Excellus' radiology benefit, and announced that physicians and other providers would be required to obtain prior authorization for all PET, CT, MRI, nuclear cardiology and nuclear medicine studies; in June 2008, the program was implemented. A prior-authorization program was also put in place by MVP.

Simultaneous with the implementation of the prior authorization programs, the American College of Radiology and other professional societies expressed concern for the total amount of ionizing radiation to which Americans were being exposed. A broad community-wide effort to reduce radiation exposure was initiated in this region. And with the continuing rise in the cost of health insurance, policies with larger co-payments shifted increased portions of imaging costs to the consumer; with the rise in high-deductible plans, many consumers became liable for the entire cost of services. It is possible that these external influences have served to effectively constrain volume growth.

The Community Technology Assessment Advisory Board (CTAAB) also plays a role in supporting the thoughtful acquisition of new healthcare technology and services in the community. CTAAB is a review board in the Finger Lakes Region dedicated to assessing community need for expanded or new services, technology or capital expenditures. Applications to add CT scanners in the region are reviewed by CTAAB. The Board reviews a request to determine if the service is necessary considering issues such as geography, cost effectiveness and quality of care. The CTAAB review process is intended to reduce duplicative services and ensure quality care is maintained. This review process contributed to the region having fewer CT units per capita when compared to national reports.

In 2011 there was an update in the application of Current Procedural Terminology (CPT) codes for abdominal and pelvic CT scans. Prior to January 1<sup>st</sup> 2011, abdominal and pelvic CT scans were coded using distinct CPT codes and were counted as unique procedures. Because they are often performed together,

after January 1<sup>st</sup>, the Centers for Medicare and Medicaid Services (CMS) mandated that when performed together, abdominal and CT scans be reported utilizing only one CPT code. A 0.2% increase in utilization was reported between 2010 and 2011 when excluding abdominal and pelvic CT data. Although the impact of the change was to billing, depending on how the practices sourced their their responses, the coding change may have had varying impacts on the number of abdominal and pelvic CT scans reported.

## **Volume**

Between 2004 and 2005 there was a 22% increase in total volume in the Finger Lakes Region. In contrast between 2012-2013 CT volume decreased by nearly 5%. This year, there is an increase in volume of 2%. This trend parallels the results of national studies, which also show a growth in volume for 2013-2014 compared to a decline over the past few years (see Figures 8 - 12).

In Monroe County, there was a 6% increase in CT scan volume at hospital facilities as well as at free-standing facilities.

The Central Finger Lakes counties and the Southern Tier counties reported increases of 7% and 3% respectively.

The modifications in CPT codes for abdominal and pelvic CT scans altered how procedures are counted in the region which makes it difficult to create equal comparisons between 2011 and 2014 and previous years. An analysis in 2011 reported near 0% change in utilization when excluding the body sites affected by the coding change. The significant drop in utilization may not represent an actual decrease in the number of scans performed. The respondents' methodology for sourcing their survey responses may or may not be impacted by the billing change. Therefore it is difficult to determine the significance of the billing change for the local data.

## **Body Section Scanned**

During the 2004-2014 period, the aggregated percent of total CT utilization by body section remained relatively constant. Specifically, CT scans of the abdomen and pelvis account for 37% to 51% percent of use, followed by the brain (around 20%), chest (11% to 16%), and head and neck (6% to 11%). All other body sections combined account for 10% to 18% percent of all CT studies (CT angiography, spine, guided procedures, extremities, calcium scoring, other cardiac, whole body screening, virtual colonoscopy, and others). The percentage of Abdomen and Pelvis C scans continues the decline that began in 2011 with a 16% decrease in the volume between 2011 and 2014. As mentioned previously, the variation between 2011 and previous years may be attributed to modifications in the reimbursement structure for abdominal and pelvic CT scans that went into effect on January 1<sup>st</sup> 2011. The new Current Procedural Terminology (CPT) codes combine abdominal and pelvic scans into one procedure. In the past, a CT of the abdomen and CT of pelvis were considered as two separate exams, under the new coding structure, they are now only 1 exam.

In 2014, CT scans of the brain accounted for 21% of all procedures. This maintains an increase in proportion of brain studies noted in 2011 and 2012. Cardiac studies accounts for 16% of all procedures. This is a two percentage point increase in from 2013 and is up from 12% in 2012. Calcium scoring, other cardiac procedures and virtual colonoscopy show negligible activity this year. Whole body screening CT, prevalent in some areas of the nation and sometimes provided on a cash basis by itinerant vendors but of questionable medical use, has not been reported performed by any regional CT scanner between 2004 and 2014.

## CT Utilization by Body Site, Finger Lakes Region 2004-2014 (100% Graph)

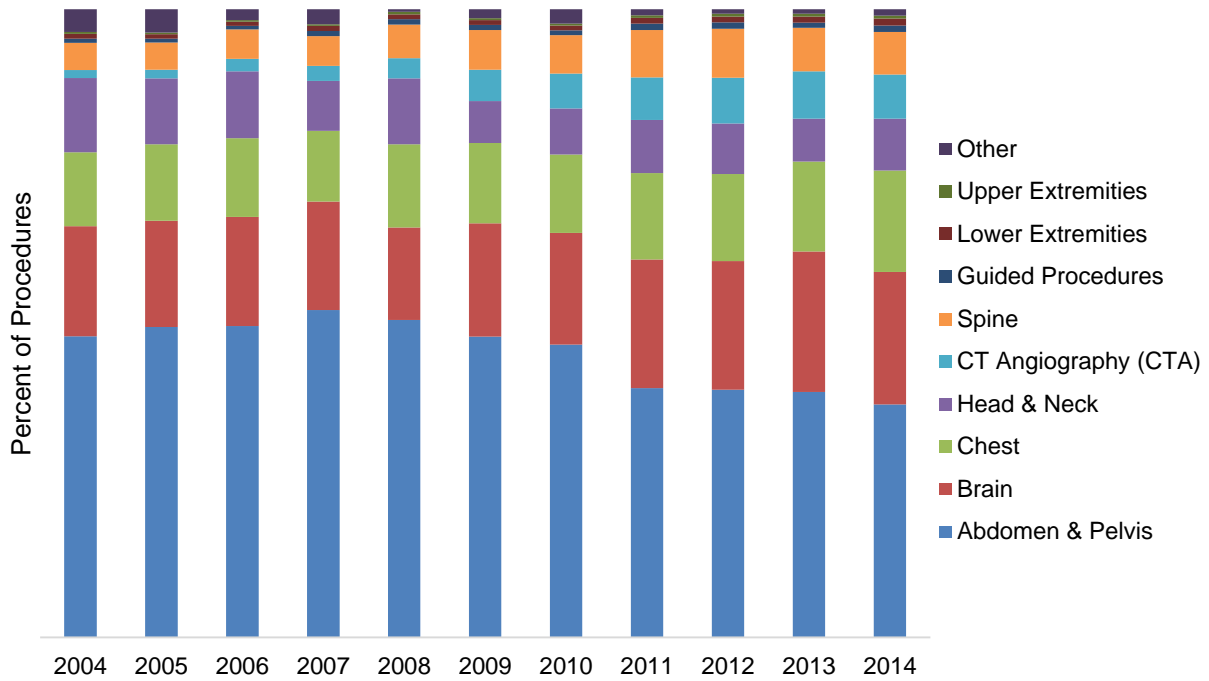


Figure 13: CT utilization by site, Finger Lakes region, 2004- 2014 (100% graph)

## Time per CT Exam by CT Unit Capability (Slices) Finger Lakes Region, 2014

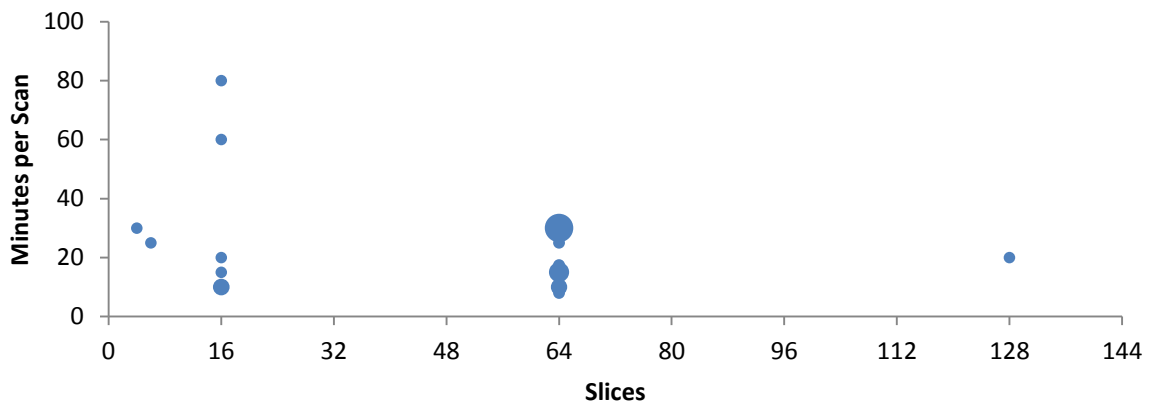


Figure 14: Bubble chart of CT scanning times and number of slices

## Scanning Time

Most area CT providers estimate that a scan takes between 10 and 30 minutes; although some units have an estimated through-put of one patient every 30 minutes, a few have through-put even lengthier. Based on the survey data, one cannot definitively correlate the number of slices with the length of scan time. Even among the 16-slice units, considerable variation exists (range 10-80 minutes), and at one hospital with multiple identical units, time per scan varies (range 30-60 minutes) based on the primary clinical use of each scanner. The bubble chart (Figure 14) demonstrates the variability in required time per scan, even among scanners of the same capability. The sizes of the bubbles represent the number of units with scanning times in each the time ranges. The data presented in Figure 14 are for the 23 units for which this information was provided in 2014.

While advanced CT scanners are faster than those of older technologies, one cannot assume that more slices results in concomitant higher productivity per scanner. In part, this is because of the fixed time to bring the patient to the scanner and position him or her for the examination. This is illustrated in Table 3 below. Patient acuity and case complexity also have a considerable impact on the length of scanning time.

*Table 3: Estimated patient throughput times*

A	B	C	D
Patient positioning (min)	Scan Time (min)	Total exam time (min) (A + B =C)	Number of exams possible/hour (60/C=D)
15	15	30	2
15	10	25	2.4
15	5	20	3
15	1	16	3.75
15	0.5	15.5	3.87

## Potential Capacity

If one considers a scanner performing 3 to 4 scans per hour and a schedule of 12 hours per day/6 days per week (and obviously some of the region's units are used more intensively than that), a capacity per unit of 11,000 to 15,000 is theoretically possible. Some units in the region achieve that level of throughput; some substantially exceed that capacity.

## Capacity vs. Demand

During 2014, there were 293,941 scans recorded in the 9-county Finger Lakes Region; of these, 185,574 occurred in Monroe County. Based on 40.2 CT units, there was an average of 7,312 scans per machine. However, the units at the VA facilities were only used for 947 (2011 data) and 2,900 scans; the balance of the region's CT scanners produced an average of 7,594 scans. There was a wide range of volume exhibited. The least utilized machines had fewer than 2,000 exams and primarily are used for guided procedures or on a specific patient population. A range of 500 to 12,000 scans were completed on freestanding units. 'Typical' hospital installations conducted between 8,000 and 12,000 scans, and some of the most used machines demonstrate utilization between 13,000 and 25,000 annual scans. These units primarily serve Emergency Department patients and inpatients.



Several of the CT units in the region are not for general use; they are dedicated to a special patient population (e.g. Veteran’s administration, smaller regional hospital ) or used primarily for a specific scan type (e.g. guided procedures). To estimate the region’s CT capacity, we posit that there are 37.2 “general” CT scanners in the region that could each produce about 10,000 procedures per year. Based on the utilization reported in 2014 at the 37.2 “general” scanners, a growth of 27% utilization could be experienced before exceeding capacity.

It is important that hospitals have adequate capacity to perform the CT exams that can only be performed in the hospital – exams on inpatients and on Emergency Department patients. Information was provided in the survey on the mix of patients (outpatient, inpatient, ED). In some responses, these categories are not mutually exclusive, as most ED patients are also outpatients. Table 4 displays the trend in inpatient versus outpatient scans. Table 5 provides information collected on numbers of scans performed for ED patients. It should be noted that only a subset of information regarding ED and outpatient usage is available (36 of 40.2 scanners).

*Table 4: Proportion of CT Exams Performed on Outpatients*

	2010	2012	2014
Urban hospital	30.3%	30.1%	30.0%
Rural hospital	44.7%	36.3%	48.1%
Freestanding	99.8%	100.0%	99.8%
Combined	43.3%	44.6%	47.1%

*Table 5: Proportion of CT Exams Performed on Emergency Department Patients*

	2010		2011		2012		2013		2014	
	Count	%	Count	%	Count	%	Count	%	Count	%
Urban hospital	67,146	35.9%	70,675	55.7%	81,405	62.1%	74,856	54.1%	77,336	54.6%
Rural hospital	26,432	39.0%	32,542	48.7%	25,426	45.2%	26,705	35.0%	21,354	26.6%
Freestanding	0	0.0%	0	0.0%	0	0.0%	0	0.0%	50	0.0%
Combined	93,578	36.0%	103,217	45.5%	106,831	44.6%	101,560	39.1%	98,740	37.0%

One can deduce that the vast majority of hospital-based CT scanners in urban areas (Rochester, Elmira) are used for inpatients or ED patients (i.e. approximately 30% of scans are for outpatients in urban hospitals compared to 48% of scans at rural hospitals). In urban areas, freestanding scanners provide the bulk of outpatient scans. In more rural areas, the hospitals provide access to CT for both hospital patients (inpatient, ED) and referred outpatients.

## Section Four: Access

### Geographic Access

There are no specified geographic access standards for CT services in New York State. Instead, the New York State Department of Health bases need for CT services on utilization.

All hospitals within the Finger Lakes Region provide CT scanning services. All residents are within 30 minute travel to a CT scanner. Thus, the region is well served geographically for this service.

### Wait Time to Access CT

A measure of whether there is sufficient capacity to provide a medical care service is how long a potential patient must wait to obtain the services. The current survey provides information on wait time for both emergency and routine services. Respondents almost exclusively indicated that an emergent patient can be evaluated on the day of the request, often within minutes of the request. There was one exception reported of greater than a two-day waiting period. Non-emergent patients can be scanned within one day at 92% percent of facilities. There are two notable exceptions to this open availability where a greater than 24 hour period were reported. Reported wait times were not independently verified.

## Wait Time for Non-Emergent CT Scans Finger Lakes Region, 2014

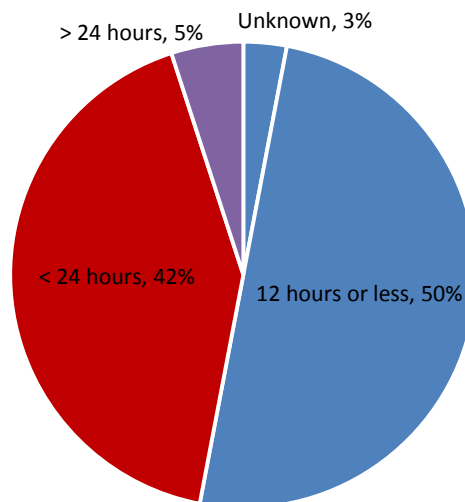


Figure 15: Wait time for non-emergent CT scan: Finger Lakes Region, 2014

### Financial Access

93% of respondents provided information about revenue sources for CT studies. Based on the data received, 25% of CT scans are covered by Medicare, while 40% are covered by private insurance. Regionally, Medicaid provides 10% of CT revenue. However, Medicaid accounts for 11% of hospital CT activity compared with 9% of CT for freestanding imaging centers. Direct patient payments cover 3% of CT scans in the region.

## Section Five: Quality and Patient Risk

Studies utilizing the newest technology come with some potential hazards for patients. First, iodine based radiopaque contrast media may be injected to better delineate the structures being examined. The contrast agent is somewhat toxic to the kidneys, especially for those individuals with impaired kidney function and diabetics. Second, a CT scan exposes patients to ionizing radiation, classified as carcinogenic by the World Health Organization, the Centers for Disease Control and Prevention and the National Institute of Environmental Health Sciences. The dosage of radiation delivered with CT scanning is far greater than with a standard x-ray, as demonstrated in table 6, and multi-slice CT scanners deliver higher doses of radiation than single-slice scanners. It has been estimated that while “CTs make up only 12 percent of all medical radiation procedures, they deliver almost half of the estimated collective dose of radiation exposure in the United States” (Rabin, 2007).

*Table 6: Common CT and X-Ray Procedures and Effective Radiation Dosages*

<b>Diagnostic Procedure</b>	<b>Typical Effective Dose (mSv)</b>	<b>Time period for Equivalent Effective Dose from Natural Background Radiation</b>
Chest X-Ray PA film	0.002	2.4 Days
Skull X-Ray	0.1	12 Days
CT Head	2	243 Days
CT Abdomen	8	986 Days

As diagnostic imaging replaces natural background radiation as the leading cause of human exposure to radiation, increasing attention has been focused on its potential to induce cancer. Einstein et al. (2007) estimated the lifetime attributable risk (LAR) of cancer associated with radiation exposure from 64-slice CT coronary angiography. Their study suggested that the risks were particularly high for women and younger patients.

To this end, the American College of Radiology (ACR) has established a dose index registry (DIR) which allows facilities to compare their dosages to the aggregate results. This registry standardizes exam types and should allow facilities to determine whether their dosages align with their peers. This, among other initiatives, is assisting in reducing the amount of radiation delivered through diagnostic exams.

In response to the safety concerns, many radiology providers are employing CT imaging techniques that reduce radiation yet have been shown to not seriously degrade image quality and diagnostic value. Newer scanners will have some of these techniques built in and local providers are seeking those scanners at time of needed replacements.

In this region, the provider community has used the regional health data exchange to avoid duplicate scanning and has developed guidelines on when CT studies should and should not be repeated in an effort to reduce overall radiation exposure.

## Section Six: Claims Data

As part of the Agency’s ongoing effort to increase the amount of data available to the community, a multiple payer claims database has been developed with support of the primary commercial payers in the region. For the third time we are reporting aggregated claims data for CT scanner utilization. The aggregated claims account for approximately 50% of the Finger Lakes Regions population and do not include data for Medicare and Medicaid Fee for Service Patients.

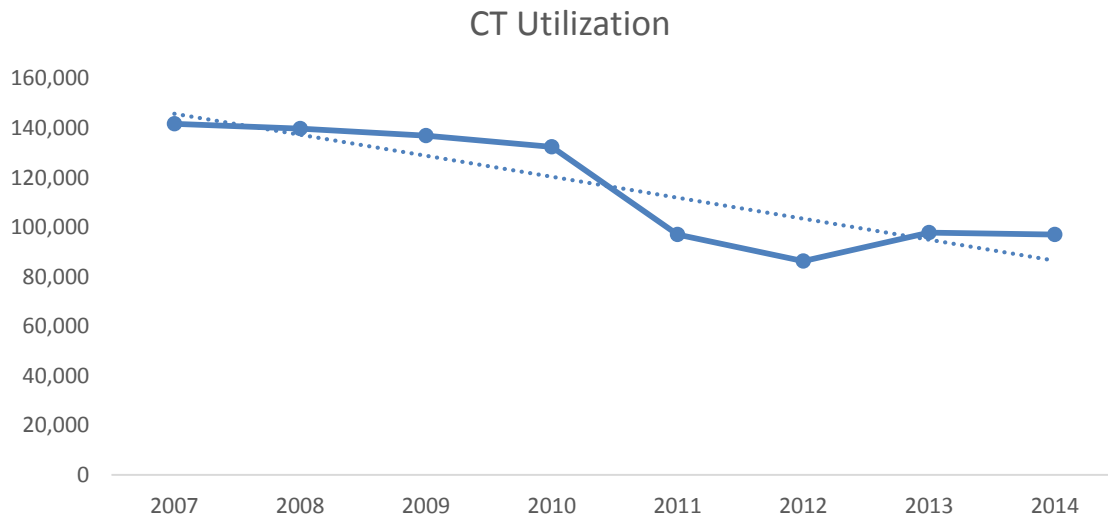


Figure 16: Estimated Utilization, CT, all types, 2007-2014

“Estimated Services” accounts for multiple claim lines associated with unbundled claims (professional and technical components billed separately).

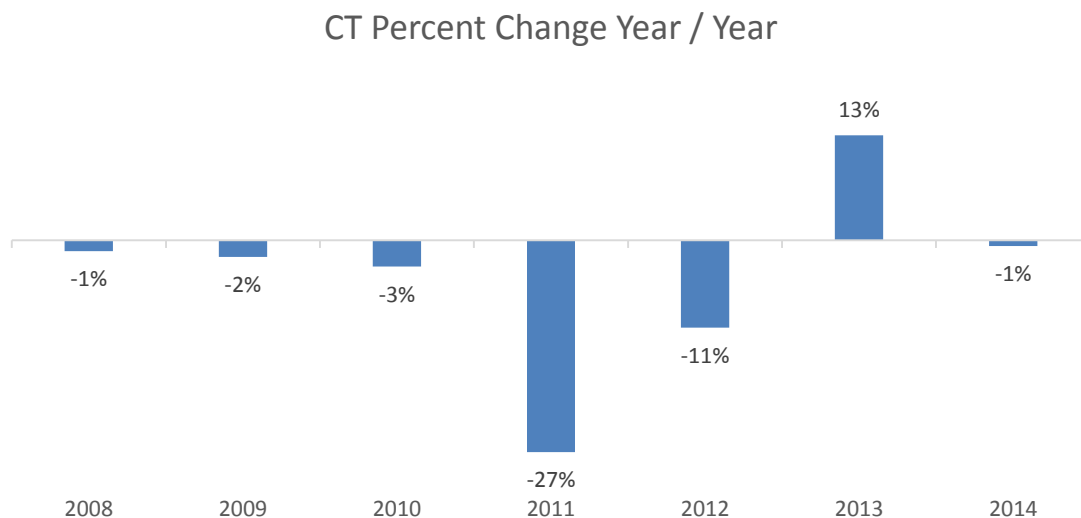
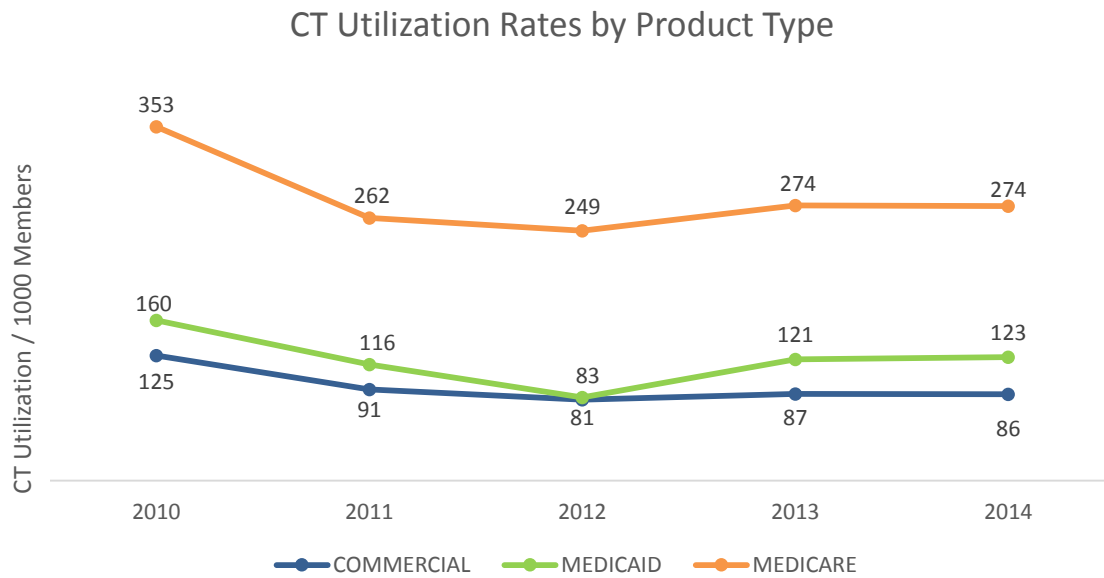


Figure 17: Change in CT claim counts, 2008-2014

Generally, the trends noted from survey data mirror those trends observed in the claims data. However, as more Medicaid Recipients shift from Fee for Service (FFS) to Managed Care, there is an increase in the number of Medicaid patients that are in our database. As a result we see an increase in overall utilization for this population, a trend that is mirrored in CT scan utilization as well.



*Figure 18: CT Utilization estimates by Product Type*

## Section Seven: Conclusions

In this inventory of CT scanners in the Finger Lakes Region, available data indicate that, overall the area is not underserved and regional scanners are accessible. Findings suggest that, at this time, there is no area-wide need for additional CT scanner capacity:

- The region has CT scanner equipment that is similar to that used nationally with regards to age and scanning capability;
- In recent years, regional utilization has declined slightly while national utilization rates have increased. From 2010 to 2014 the Finger Lakes Region experienced an effective negative change in utilization, compared to a previously increasing trend;
- In 2011, there were modifications to the coding and billing procedures used for abdominal and pelvic scans. Abdominal and pelvic CT scans were bundled together into 1 procedure when performed at the same time which may have generated an artificial but noticeable decrease in the number of scans reported. This fact needs to be considered when interpreting historical data.
- Use of each existing scanner is approaching 7,200 scans per unit. However, the average is:
  - skewed higher by very high use at some of the larger hospitals in the region;
  - well within the potential capacity of newer units
- Wait times to obtain a routine, non-emergent CT scan are within 1 day at 92% percent of facilities.

Future surveys may need to account for indications that require longer scanning times, such as image-guided biopsies, in order to consider modification of the finding of no need for additional capacity.

The decision to utilize advanced CT technology should continue to weigh the benefits against potential risks. Work in the community to monitor the evidence and advocate for appropriate utilization should continue.

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