

Radiologic Sciences Staffing and Workplace Survey 2015



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Table of Contents

Executive Summary	3
Staffing Levels	3
Longitudinal Tracking of Staffing Trends	3
Work Volume	3
Facility Demographics	4
Workforce Demographics	4
Calculation of Percent Vacancy Rates	4
Staffing Levels	5
Please provide information on the following services provided at your primary workplace:	5
Longitudinal Tracking of Estimated Percent of Unfilled Positions	5
Longitudinal Tracking of Mean Budgeted FTEs	6
In terms of staffing level over the last fiscal year, how would you describe your facility?	8
Work Volume	9
Please indicate the number of imaging machines of each type at your facility:	9
Please indicate the number of patients imaged per year at your facility:	.10
Please indicate the number of images performed per year at your facility:	.11
Please indicate the number of images performed per year at your facility in which contrast is administered:	.12
Facility Demographics	13
In which employment setting do you practice most of the time?	.13
Is your facility open 24 hours a day, 7 days a week?	.14
Location of facility:	.15
In what state is your facility located?	.16
Workforce Demographics	17
Over the last two years, how many full-time equivalent (FTE) radiologic technologists in your department have l for any of the following reasons?	eft .17
Have you eliminated any full-time equivalent positions over the last year (i.e. permanently reduced FTE staff)?	.18
Have you converted any full-time position(s) into one or more part-time position(s)?	.18
Appendix A. Survey Instruments and Invitation Letter (Please contact the ASRT for a copy.)	

Appendix B. Verbatim responses (Please contact the ASRT for a copy.)



Executive Summary

The ASRT surveys managers of radiology departments across the United States regarding the capacities and staffing levels of their facilities on a biannual basis. In early April 2015, an invitation to participate in the Radiologic Sciences Staffing and Workplace Survey 2015 was sent via e-mail to 15,000 department managers. At the close of the survey on May 31, 2015, a total of 1,123 responses had been received, yielding an overall response rate of 7.5%.

At its widest, a sample size of 1,123 yields a margin of error of ± 3.0% (at the 95% confidence interval).

Staffing Levels

Respondents were asked the number of budgeted full-time equivalent (FTE) positions within each discipline at their facility. The averages per facility were:

- Radiography/fluoroscopy (8.4).
- Computed tomography (5.5).
- Sonography (4.3).
- Magnetic resonance imaging (4.1).
- Mammography (4.1).
- Nuclear medicine technology (3.0).
- Cardiovascular interventional technology (CVIT) (5.8).
- Bone densitometry (1.9).

The figures for budgeted FTEs in each discipline along with figures on positions that are currently vacant and recruiting produce an estimate for the percent of unfilled positions in each discipline:

- Radiography/fluoroscopy (3.4%).
- Computed tomography (4.5%).
- Sonography (5.1%).
- Magnetic resonance imaging (4.2%).
- Mammography (2.6%).
- Nuclear medicine technology (2.8%).
- CVIT (4.1%).
- Bone densitometry (1.0%).

Vacancy rates were cross-tabulated by region and discipline. An overall mean vacancy rate was computed for these figures. The Pacific region had the highest estimated vacancy rate at 5.7%; New England and the Mid-Atlantic regions had the lowest estimated vacancy rates at 2.9% in each.

Respondents were asked several additional questions to gauge their department's staffing levels:

- Asked to describe their facility's staffing level over the course of the preceding fiscal year, 69.2% characterized their facility as "appropriately staffed," 28.1% said their facility was understaffed and 2.7% said their facility was overstaffed.
- Asked whether their department is currently under a hiring freeze, 73.7% said "no" and 26.3% said "yes."

Longitudinal Tracking of Staffing Trends

The ASRT has been tracking staffing levels in terms of mean budgeted full-time equivalents (FTEs) and estimated percent of unfilled positions since 2003. The staffing survey is usually sent to facility managers biannually. With more than 10 years of data available, the ASRT is able to provide a look at longterm trends in staffing.

 Radiography has experienced a long-term decline in the average number of budgeted FTEs per department. In 2003, the average department had 10.1 FTEs in radiography. That number increased to 10.4 in 2005 and 10.7 in 2007, before beginning a decline to 10.0 in 2009 and to 8.4 in 2015, the lowest number recorded since the staffing survey began.

- All other disciplines have seen at least some growth since 2003, and almost all have grown since the previous survey in 2013. In CT, the average number of budgeted FTEs is up to 5.5 in 2015 from 3.4 in 2003 and 5.4 in 2013. The average number of budgeted FTEs in CVIT is 5.8 in 2015, up from 0.9 in 2003 and 4.9 in 2013. Nuclear medicine staffing levels are up from 2003 (when there were 1.8 FTEs per department), the number of FTEs remained flat between 2013 and 2015 (3.0 FTEs per department in both years). Only sonography, which is still up from an average of 2.6 FTEs in 2003, experienced a minor correction between 2013 and 2015, declining from an average of 4.4 to 4.3 FTEs.
- Estimated percent vacancy rates have declined without exception since their respective highs in 2003. For example, there was a 10.3% vacancy rate in radiography in 2003; in 2015, the vacancy rate in radiography was 3.4%. Nonetheless, the vacancy rates in almost every discipline were slightly higher in 2015 than they were in 2013: radiography was up from 1.7% in 2013 to 3.4% in 2015, CT rose from 2.7% in 2013 to 4.5% in 2015, and MR was up to 4.2% in 2015 from 3.0% in 2013. In CVIT, the vacancy rate declined from 5.2% in 2013 to 4.1% in 2015, and in bone densitometry, the vacancy rate fell from 1.8% in 2013 to 1.0% in 2015.

Work Volume

Respondents were asked a number of questions about annual patient throughput, annual number of exams, and number of imaging machines in their department:

- In radiography, the average department has 3.4 machines and images 13,324 patients per year; 26,872 images are taken, and 1,370 of those use contrast.
- In CT, the average department has 1.8 machines and images 5,671 patients per year; 12,949 images are taken, and 6,225 of those use contrast.
- In sonography, the average department has 2.9 machines and images 4,351 patients per year; 14,424 images are taken, and 236 of those use contrast.
- In MR, the average department has 1.6 machines and images 3,504 patients per year; 4,215 images are taken, and 3,099 of those use contrast.
- In mammography, the average department has 2.1 machines and images 5,692 patients per year; 10,597 images are taken, and 175 of those use contrast.



- In nuclear medicine, the average department has 2.0 machines and images 2,236 patients per year; 4,746 images are taken and 1,057 of those use contrast.
- In CVIT, the average department has 2.2 machines and images 2,895 patients per year; 9,565 images are taken and 3,900 of those use contrast.
- In bone densitometry, the average department has 1.2 machines and images 1,051 patients per year; 1,897 images are taken and 0 of those use contrast.

Facility Demographics

Respondents were asked a number of questions about their facility.

- A plurality of respondents work in hospitals (48.3%), with 32.5% in nonprofit hospitals alone; 14.8% work at imaging centers, 13.6% work in a physician's office, 7.3% work in small clinics, and 6.7% work in large clinics.
- Among those working in hospitals, the mean number of beds at their facility was 268.
- Respondents were asked whether their facility is open 24 hours a day, 7 days a week; 51.8% said "no" and 48.2% said "yes." Facilities that are not open all of the time are, on average, open 52 hours per week.
- A plurality of respondents (41.2%) work in suburban facilities; 33.1% work in urban facilities, and 25.8% work in a rural setting.

Workforce Demographics

Respondents were asked several questions about turnover in the workforce in their department over the last two years:

- In 2013, the average department lost a total of 1.12 FTEs. Of those:
 - o On average, .38 retired.
 - o On average, .26 were laid off.
 - On average, .43 were terminated with cause.
 - On average, .49 left to work in another profession.
 - o On average, .34 left for personal reasons.
 - On average, .38 left for other reasons.
- In 2014, the average department lost a total of 1.37 FTEs. Of those:
 - On average, .50 retired.
 - On average, .30 were laid off.
 - o On average, .41 were terminated with cause.
 - On average, .58 left to work in another profession.
 - o On average, .43 left for personal reasons.
 - On average, .49 left for other reasons.

Respondents were also asked whether they had eliminated any FTE positions, or converted any FTE positions to part-time positions.

- Most respondents (82.5%) had not eliminated any FTE positions; of the 17.5% who had, the average number of positions eliminated was 2.5.
- Most respondents (79.9%) had not converted any FTE positions to part-time positions; among the 20.1% who had, the average number of positions converted was 2.1.

Calculation of Percent Vacancy Rates

The estimated proportion of unfilled positions for a given discipline for the population of U.S. radiology facilities is defined as:

(Mean number of vacant and recruiting FTEs per facility) ÷ (Mean number of budgeted FTEs per facility)

Staffing Levels

Please provide information on the following services provided at your primary workplace:

Discipline	N Mean N Budgeted <i>SD</i> FTEs		SD	Mean Vacant and Recruiting FTEs	SD	Estimated Percent Unfilled FTE Positions	
Radiography	743	8.4	12.8	.29	1.1	3.4%	
Computed Tomography	504	5.5	6.6	.25	1.3	4.5%	
Sonography	492	4.3	4.7	.22	.70	5.1%	
Magnetic Resonance Imaging	452	4.1	5.2	.17	.86	4.2%	
Mammography	455	4.1	4.9	.11	.43	2.6%	
Nuclear Medicine	343	3.0	3.1	.08	.40	2.8%	
Cardiovascular Interventional Technology	169	5.8	5.2	.24	.77	4.1%	
Bone Densitometry	289	1.9	2.7	.02	.13	1.0%	

Longitudinal Tracking of Estimated Percent of Unfilled Positions

	2003	2005	2007	2009	2011	2013	2015
Radiography	10.3%	5.4%	3.7%	2.5%	2.0%	1.7%	3.4%
Computed Tomography	8.5%	5.9%	3.9%	3.5%	2.0%	2.7%	4.5%
Sonography	11.7%	9.1%	8.3%	5.4%	3.4%	2.6%	5.1%
Magnetic Resonance Imaging	9.0%	7.4%	4.4%	3.2%	2.5%	3.0%	4.2%
Mammography	7.2%	6.2%	5.5%	2.3%	1.7%	1.4%	2.6%
Nuclear Medicine	10.9%	8.0%	4.7%	2.8%	1.4%	1.3%	2.8%
Cardiovascular Interventional Technology	14.6%	9.1%	8.3%	5.4%	3.4%	5.2%	4.1%
Bone Densitometry						1.8%	1.0%

16.0% 14.0% 12.0% ► R 10.0% CT **≜**S 8.0% ₩ MR <u>→</u>M 6.0% -NMT 4.0% 2.0% 0.0% 2003 2005 2007 2009 2011 2013 2015

Longitudinal Tracking of Estimated Percent of Unfilled Positions

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Longitudinal Tracking of Mean Budgeted FTEs								
	2003	2005	2007	2009	2011	2013	2015	
Radiography	10.1	10.4	10.7	10.0	9.3	9.2	8.4	
Computed Tomography	3.4	4.3	4.8	4.8	5.6	5.4	5.5	
Sonography	2.6	3.2	3.6	3.9	4.1	4.4	4.3	
Magnetic Resonance Imaging	1.7	2.8	3.4	3.8	4.1	3.4	4.1	
Mammography	2.1	2.6	3.3	4.0	4.1	3.5	4.1	
Nuclear Medicine	1.8	2.6	2.8	2.9	3.1	3.0	3.0	
Cardiovascular Interventional Technology	0.9	2.2	2.9	4.0	6.9	4.9	5.8	
Bone Densitometry						1.7	1.9	

Longitudinal Tracking of Mean Budgeted FTEs



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Discipline	Statistic	Pacific	East- South Central	Mountain	East- North Central	South Atlantic	West- North Central	West- South Central	New England	Mid- Atlantic
Padiography	Ν	74	54	63	94	126	90	83	42	88
Radiography	%	4.4%	5.3%	5.7%	2.6%	2.3%	3.1%	2.1%	2.4%	3.2%
Computed	Ν	53	33	37	62	77	61	54	33	70
Tomography	%	6.9%	4.4%	3.3%	2.4%	7.7%	4.7%	4.2%	3.0%	3.3%
Sanagraphy	N	57	32	37	63	82	49	53	27	70
Sonography	%	8.0%	7.2%	6.9%	9.3%	5.4%	3.6%	2.3%	3.8%	2.7%
Magnetic Resonance	Ν	56	29	34	58	86	38	45	27	60
Imaging	%	4.2%	1.1%	1.7%	4.2%	7.3%	4.4%	4.6%	4.4%	2.7%
Mammography	Ν	52	30	34	59	69	61	41	27	63
Mannography	%	3.2%	4.8%	5.2%	4.4%	0.7%	1.7%	2.9%	0.0%	1.6%
Nuclear Medicine	Ν	45	22	22	49	55	20	32	23	52
Technology	%	6.7%	6.3%	5.4%	2.8%	0.9%	0.0%	2.4%	2.1%	2.5%
Cardiovascular	Ν	30	6	17	20	25	8	22	11	22
Technology	%	7.7%	11.9%	1.3%	6.6%	0.6%	3.0%	3.9%	3.8%	1.2%
Bone	N	29	17	22	42	49	28	26	18	50
Densitometry	%	0.0%	5.1%	2.5%	1.2%	0.0%	0.0%	2.1%	3.0%	2.4%
Overall Mean		5.7%	5.3%	4.6%	4.4%	4.0%	3.3%	3.3%	2.9%	2.9%

Estimated Vacancy Rates by Region^a

^aPacific: Alaska, Washington, Oregon, California and Hawaii.

East-South Central: Kentucky, Tennessee, Mississippi and Alabama.

Mountain: Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, and New Mexico.

East-North Central: Wisconsin, Michigan, Illinois, Indiana and Ohio.

South Atlantic: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Caroline, Georgia and Florida.

West-North Central: Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota and Iowa.

West-South Central: Oklahoma, Texas, Arkansas and Louisiana.

New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. **Mid-Atlantic:** New York, Pennsylvania and New Jersey.



Overall Mean Vacancy Rates by Region

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In terms of staffing level over the last fiscal year, how would you describe your facility?

		Valid
	Frequency	Percent
Overstaffed	30	2.7%
Appropriately Staffed	759	69.2%
Understaffed	308	28.1%
Total	1097	100.0%

In terms of staffing level over the last fiscal year, how would you describe your facility?



Is your department currently under a hiring freeze?

		Valid
	Frequency	Percent
Yes	289	26.3%
No	811	73.7%
Total	1100	100.0%



Is your department currently under a hiring freeze?

Work Volume

Please indicate the number of imaging machines of each type at your facility:

	N	Mean	SD	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Radiography	733	3.4	5.1		1.2	2.0	3.9	10.0
Computed Tomography	485	1.8	1.5			1.3	2.1	4.8
Sonography	498	2.9	2.9	•	1.3	2.3	3.6	7.5
Magnetic Resonance Imaging	433	1.6	1.9			1.3	1.9	4.6
Mammography	433	2.1	2.3			1.6	2.6	5.8
Nuclear Medicine	308	2.0	1.6	•		1.6	2.6	5.1
Cardiovascular Interventional Technology	154	2.2	1.5		1.0	1.8	3.0	5.4
Bone Densitometry	381	1.2	.73			1.1	1.6	2.3

Mean number of imaging machines of each type at your facility



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	N	Mean	SD	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Radiography	339	13,324	51,653	244	1,287	3,459	9,058	41,471
Computed Tomography	194	5,671	8,397	286	859	2,492	6,518	20,920
Sonography	193	4,351	6,579	215	1,119	2,520	4,860	13,925
Magnetic Resonance Imaging	172	3,504	5,571	201	792	1,989	3,880	11,139
Mammography	170	5,692	8,438	290	1,200	3,040	6,013	23,000
Nuclear Medicine	122	2,236	3,941	92	508	1,204	2,223	8,100
Cardiovascular Interventional Technology	43	2,895	4,094	67	781	2,000	3,725	7,795
Bone Densitometry	169	1,051	2,178	74	210	530	1,174	3,540

Please indicate the number of patients imaged per year at your facility:





	N	Mean	SD	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Radiography	295	26,872	75,496	606	2,613	6,900	23,667	101,135
Computed Tomography	107	12,949	23,643	426	1,321	3,664	14,246	51,424
Sonography	116	14,424	52,045	283	1,305	3,700	9,867	36,775
Magnetic Resonance Imaging	90	4,215	5,545	322	930	2,002	6,324	12,200
Mammography	119	10,597	18,104	448	1,454	4,200	11,150	43,990
Nuclear Medicine	91	4,746	15,981	250	786	1,515	3,891	14,750
Cardiovascular Interventional Technology	36	9,565	18,015	114	1,550	3,414	7,747	35,012
Bone Densitometry	104	1,897	3,407	77	338	929	1,973	6,192

Please indicate the number of images performed per year at your facility:





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Please indicate the number of images performed per year at your facility in which contrast is administered:

	N	Mean	SD	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Radiography	256	1,370	5,915			2	314	5,960
Computed Tomography	128	6,225	12,772	39	548	1,960	5,387	34,820
Sonography	115	236	1,716		•	2	10	130
Magnetic Resonance Imaging	112	3,099	9,615	16	201	500	2,050	9,800
Mammography	110	175	1,811		•	0	1	6
Nuclear Medicine	58	1,057	2,440			18	1,200	6,283
Cardiovascular Interventional Technology	34	3,900	7,111	29	366	1,456	3,900	22,400
Bone Densitometry	96	0	0					

Mean number of images performed per year at your facility in which contrast is administered:



Facility Demographics

In which employment setting do you practice most of the time?

	Ν	Valid Percent
Hospital (not-for-profit)	365	32.5%
Imaging center/outpatient imaging facility	166	14.8%
Physician's office	153	13.6%
Hospital (for-profit)	105	9.3%
Small clinic	82	7.3%
Large clinic	75	6.7%
Hospital (Rural Critical Access)	45	4.0%
Education	33	2.9%
Government/VA hospital	28	2.5%
Mobile unit	17	1.5%
Corporate	14	1.2%
Other	40	3.6%
Total	1123	100.0%

In which employment setting do you practice most of the time?



	Ν	Valid Percent	Cumulative Percent			
100 beds or less	201	37.5%	37.5%			
101-200 beds	85	15.9%	53.4%			
201-300 beds	78	14.6%	67.9%			
301-400 beds	61	11.4%	79.3%			
401 beds or more	111	20.7%	100.0%			
Total	536	100.0%				
Mean number of beds	268 (SD = 483)					
Percentiles	5th= 17, 25th = 55, 50th (Median) = 199, 75th = 371, 95th = 780					

If your primary employment setting is a hospital, how many beds are at the facility?

If your primary employment setting is a hospital, how many beds are at the facility?



Is your facility open 24 hours a day, 7 days a week?

	Ν	Valid Percent
Yes	541	48.2%
No	582	51.8%
Total	1123	100.0%



Is your facility open 24 hours a day, 7 days a week?

If your facility is not open 24 hours, 7 days per week, how many hours per week is it open?

	N	Valid Percent	Cumulative Percent			
Fewer than 40 hours	180	33.0%	33.0%			
41-50 hours	152	27.9%	60.9%			
51-60 hours	89	16.3%	77.2%			
61-70 hours	44	8.1%	85.3%			
71-80 hours	38	7.0%	92.3%			
81-90 hours	23	4.2%	96.5%			
More than 90 hours	19	3.5%	100.0%			
Total	545	100.0%				
Mean number of hours	52 (<i>SD</i> = 21)					
Percentiles	5th = 15, 25th = 40, 50th (Median) =50, 75th = 60, 95th = 84					

If your facility is not open 24 hours, 7 days per week, how many hours per week is it open?



Location of facility:

		Valid
	Ν	Percent
Suburban	458	41.2%
Urban	368	33.1%
Rural	287	25.8%
Total	1113	100.0%



Location of facility:



In what state is your facility located?

State	Ν	State
AK	5	HI
AL	23	IA
AR	18	ID
AZ	26	L
CA	73	IN
CO	14	KS
СТ	16	KY
DE	3	LA
FL	51	MA
GA	29	MD/DC

Ν		State	Ν
6		ME	4
16		MI	24
8		MN	41
37		MO	19
24		MS	11
21		MT	9
16		NC	34
23		ND	4
26		NE	18
21	1	NH	11

State	Ν
NJ	29
NM	8
NV	12
NY	59
OH	34
OK	24
OR	11
PA	48
RI	5
SC	18

State	Ν
SD	8
TN	29
ТХ	62
UT	6
VA	31
VT	7
WA	19
WI	24
WV	7
WY	4

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Workforce Demographics

Over the last two years, how many full-time equivalent (FTE) radiologic technologists in your department have left for any of the following reasons?

	2013							2014				
	Ν	Mean	Median	SD	Min	Max	Ν	Mean	Median	SD	Min	Max
Retirement	577	.38	.00	.82	0	6	603	.50	.00	1.74	0	35
Layoffs	557	.26	.00	1.04	0	12	554	.30	.00	2.23	0	50
Terminated with	583	.43	.00	.92	0	9	574	.41	.00	.87	0	8
cause												
Left to work in	563	.49	.00	1.93	0	30	587	.58	.00	2.04	0	35
another profession												
Personal reasons	560	.34	.00	.90	0	15	584	.43	.00	1.12	0	20
Other reasons	473	.38	.00	1.14	0	11	499	.49	.00	1.21	0	15
Total staff who left	1123	1.12	.00	2.59	0	30	1123	1.37	.00	3.49	0	55

Over the last two years, how many full-time equivalent (FTE) radiologic technologists in your department have left for any of the following reasons?



Have you eliminated any full-time equivalent positions over the last year (i.e. permanently reduced FTE staff)?

	Ν	Valid Percent
Yes	186	17.5%
No	878	82.5%
Total	1064	100.0%
Mean number eliminated if "yes":	2.5 (S	D = 4.3)
Percentiles:	5th =	1, 25th = 1, 50th = 1.5, 75th = 2.5, 95th = 6.3

Have you eliminated any full-time equivalent positions over the last year (i.e. permanently reduced FTE staff)?



Have you converted any full-time position(s) into one or more part-time position(s)?

	Ν	Valid Percent
Yes	213	20.1%
No	847	79.9%
Total	1060	100.0%
Mean number converted if "yes":	2.1 (SD=2.0)	
Percentiles:	5th = 1, 25th =	1, 50th = 1, 75th = 2, 95th = 6

Have you converted any full-time position(s) into one or more part-time position(s)?

