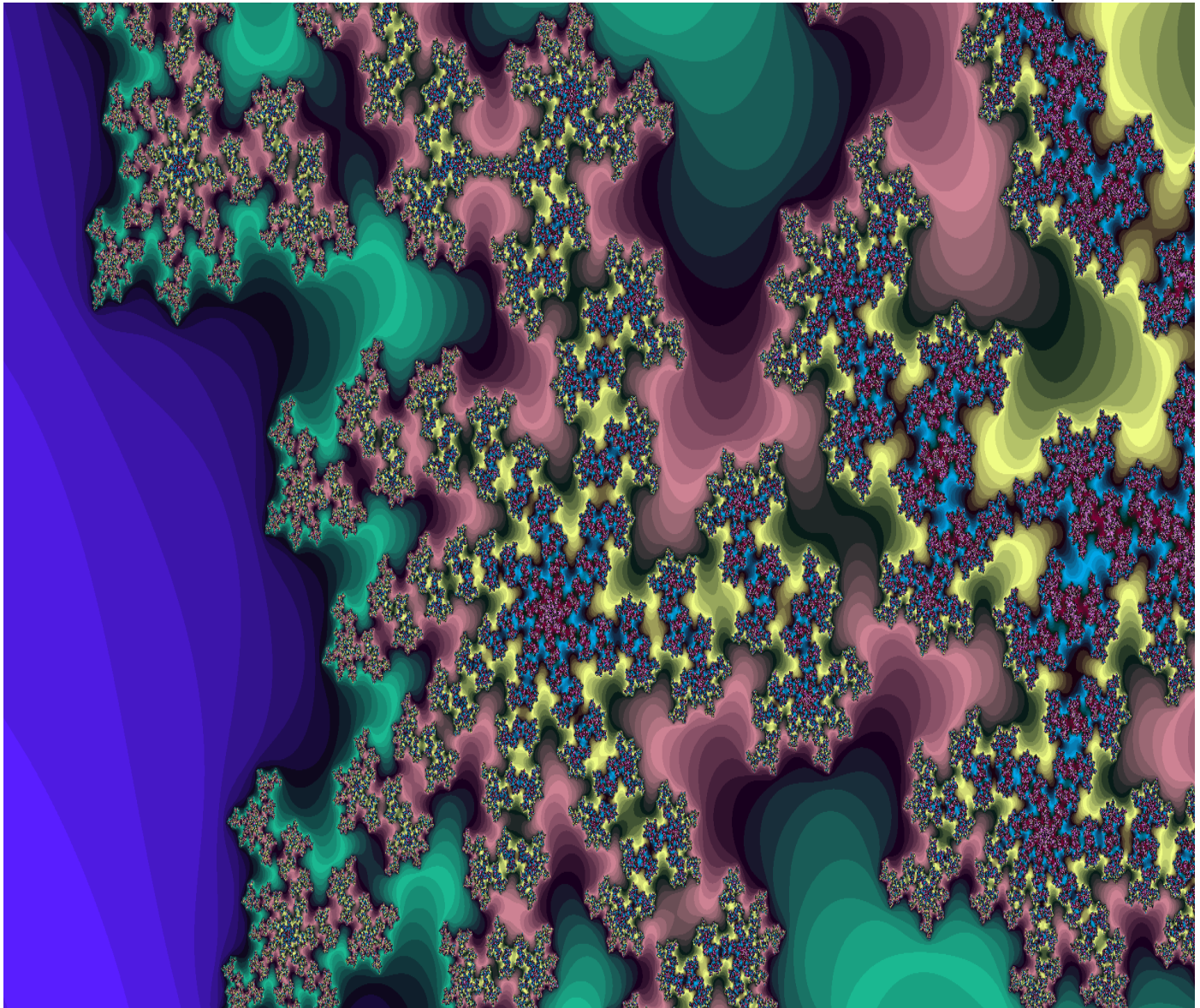


Radiologic Sciences Staffing and Workplace Survey 2019

September 2019



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American Society of Radiologic Technologists

Table of Contents

Executive Summary	2
Staffing Levels	2
Longitudinal Tracking of Staffing Trends	2
Facility Demographics.....	3
Personnel Demographics.....	3
Calculation of Percent Vacancy Rates	5
Staffing Levels	6
Please provide information on the following services provided at your primary workplace:	6
Longitudinal Tracking of Estimated Percent of Unfilled Positions.....	6
Longitudinal Tracking of Mean Budgeted FTEs	7
Estimated Vacancy Rates by Region ^a	8
Facility Demographics	9
In which employment setting do you practice most of the time?	9
If your primary employment setting is a hospital, how many beds are at the facility?	10
Is the imaging center in your hospital open 24 hours a day, 7 days a week?	10
Location of facility:.....	11
In what state is your facility located?	11
Personnel Demographics	12
Over the last year, the number of radiologic technologist positions in my department has:	12
How many radiologic technologist positions were eliminated/added over the last year?.....	12
Has there been any turnover of radiologic technologist positions in your department over the last year ?.....	12
In 2018, how many full-time equivalent (FTE) radiologic technologists in your department left for any of the following reasons?	13
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 on a biannual basis regarding the capacities and staffing levels of their facilities.

In July 2019, an invitation to participate in the *Radiologic Sciences Staffing and Workplace Survey 2019* was sent via e-mail to 11,094 department managers.

At the close of the survey in late August 2019, a total of 405 responses had been received, yielding an overall response rate of 3.7%

At its widest, a sample size of 405 yields a margin of error of $\pm 4.9\%$ (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 (8.7)
- Computed Tomography (6.1)
- Sonography (4.3)
- Magnetic Resonance Imaging (4.1)
- Mammography (3.6)
- Nuclear Medicine Technology (2.8)
- Cardiovascular Interventional Technology (5.2)
- Bone Densitometry (1.3)

The budgeted FTEs in each discipline, along with positions that are currently vacant and recruiting, are used to estimate the percent of unfilled positions in each discipline:

- Radiography (8.5%)
- Computed Tomography (10.1%)
- Sonography (9.0%)
- Magnetic Resonance Imaging (8.7%)
- Mammography (5.6%)
- Nuclear Medicine Technology (5.2%)
- Cardiovascular Interventional Technology (7.3%)
- Bone Densitometry (3.7%)

Vacancy rates were cross tabulated by region and discipline. An overall mean vacancy rate was computed for these figures.

- The East-South Central region had the highest estimated vacancy rate at 10.5%.
- New England had the lowest estimated vacancy rate at 3.8%.

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 typically sent to facility managers biannually. With more than 10 years of data available, the ASRT is able to provide a look at long-term 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. The average peaked at 10.7 in 2007. Since then, there has been a considerable decline in budgeted radiography FTEs, with a low of 8.4 budgeted FTEs per department in 2015. This was followed by a slight rebound that has stabilized at 8.7 budgeted FTEs for both 2017 and 2019.
- Many other disciplines surveyed have experienced at least modest growth in the average number of budgeted FTEs per department since 2003.
 - CT continues to grow: 3.8 FTEs were budgeted per department in 2003; by 2015, there were 5.5 FTEs per department, and in 2019, there are 6.1 budgeted FTEs per department.
 - MR grew from 1.7 budgeted FTEs per department in 2003 to 4.1 in 2015, where it has remained.

- There were 2.6 budgeted FTEs on average in Sonography in 2003; that number grew steadily, reaching a peak of 4.4 in 2013 before declining to 4.2 in 2017. In 2019, the average number of budgeted FTEs in sonography rebounded to 4.3.
- In the interventional disciplines (CVIT), there were an average of 0.9 FTEs budgeted per department in 2003. By 2011, the number of budgeted FTEs had peaked at 6.9, falling back to 4.9 in 2013. Since then, the average number of budgeted FTEs has rebounded moderately to 5.2 in 2019.
- In nuclear medicine technology, there were an average of 1.8 FTEs in 2003; the average number grew to 3.0 in 2015, declined to 2.7 in 2017, and then rebounded to 2.8 in 2019.
- Other disciplines have seen mixed returns in the number of budgeted FTEs per department.
 - In 2003, there were 2.1 budgeted FTEs in mammography; with intermittent setbacks, the number of budgeted FTEs in mammography grew to 4.2 in 2017. In 2019, there were an average of 3.6 FTEs in mammography.
 - In bone densitometry, there were 1.7 FTEs in 2013 (the first year the discipline was measured on the survey); in 2015 there were an average of 1.9 FTEs, declining to 1.3 in 2019.
- Estimated percent vacancy rates for most disciplines declined through 2015 since their respective highs at the survey's inception in 2003. In 2019, many disciplines' reported vacancy rates reached their highest levels in more than a decade, and almost all were higher than their 2017 level:
 - For example, there was a 10.3% vacancy rate in radiography in 2003; the vacancy rate for radiography reached a low point of 1.7% in 2013. However, in 2019 the vacancy rate for radiography was back up to 8.5%, more than double the rate two years prior (4.2%).
 - In CT, the 2019 vacancy rate of 10.1% more than doubled the vacancy rates found in the previous two Staffing Surveys (4.5% in 2015, 4.2% in 2017) and was even higher than the 8.5% vacancy rate found by the 2003 survey.
 - Only the interventional disciplines saw a decline between 2017 and 2019: there was an 8.7% vacancy rate in interventional disciplines in 2017, down to 7.3% in 2019.

Facility Demographics

Respondents were asked a number of questions about their facility.

- A majority of respondents work in hospitals (57.6%), with 41.0% in non-profit hospitals alone.
- 12.8% work in imaging centers.
- 7.4% work in a large clinic.
- 6.9% work in a physician's office.
- 5.2% work in education.
- 2.7% work in a small clinic.
- 2.5% work in a corporate setting.
- 1.2% work in a mobile unit.
- The remaining 3.7% work in some other setting.
- On average, the hospitals where respondents work have 247.5 beds.
- 97.9% of respondents (all but 5) work in a facility that is open 24 hours per day, 7 days per week.
- 39.2% of respondents work in suburban facilities, while 33.7% work in urban facilities and 27.0% work in a rural setting.

Personnel Demographics

Respondents were asked about changes and turnover in the workforce in their department over the last year.

- The majority of departments (55.3%) have kept their staffing levels the same; 32.6% have increased the number of positions in their department, and 12.1% have decreased the number of positions.
 - Departments that have increased the number of positions added, on average, 1 position.

- Departments that have decreased the number of positions eliminated, on average, 0.3 positions.
- A majority of departments responding to the survey (59.8%) experienced some staff turnover.
 - Among departments that experienced staff turnover, an average of 2.2 FTEs left.

Methodology

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:

$$\text{(Mean number of vacant and recruiting FTEs per facility)} \div \text{(Mean number of budgeted FTEs per facility)}$$

Data Reliability

Responses were examined for logically impossible or implausible values of individual variables and for internally inconsistent responses to sets of variables. Box and whisker plots were computed for numeric variables to detect any potential outliers. Any value that was 2.2 times larger than the interquartile range of data was considered an extreme outlier. Such implausible values were assigned a special code in the database and omitted from computation of descriptive and frequency statistics.

Staffing Levels

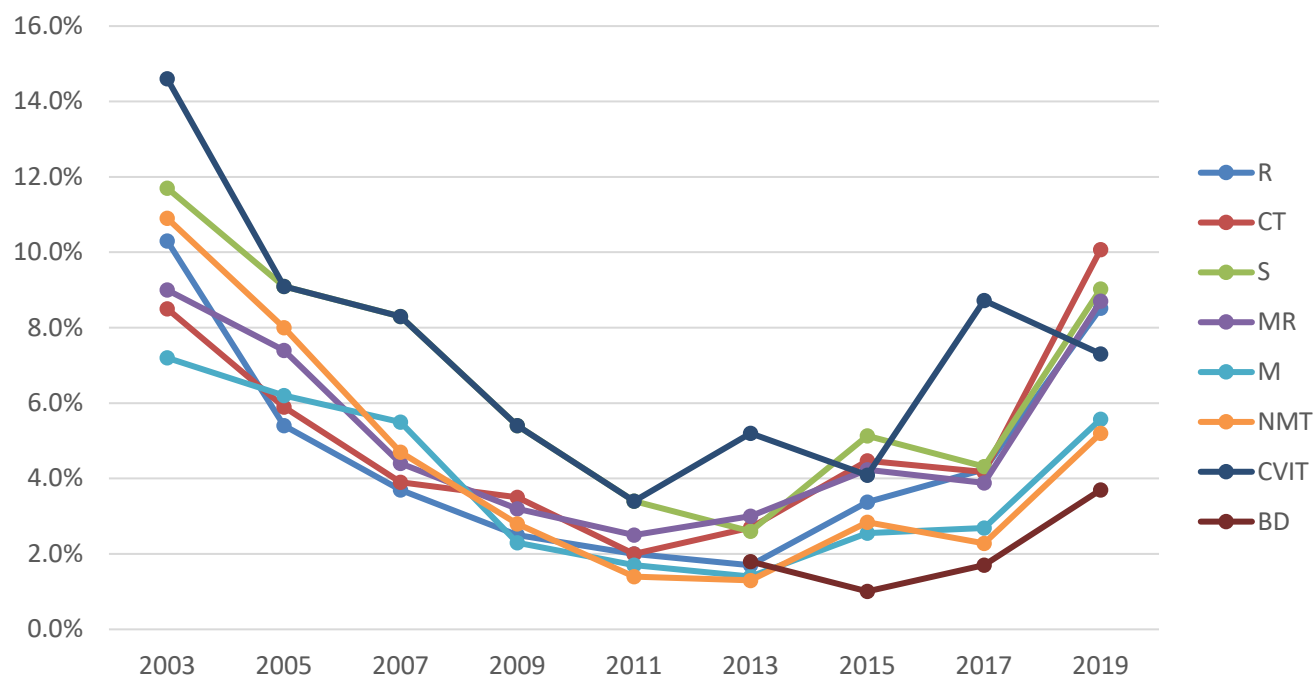
Please provide information on the following services provided at your primary workplace:

Discipline	N	Mean Budgeted FTEs	SD	Mean Vacant and Recruiting FTEs	SD	Estimated Percent Unfilled FTE Positions
Radiography	287	8.7	8.0	0.75	1.3	8.5%
Computed Tomography	227	6.1	5.1	0.61	1.4	10.1%
Sonography	217	4.3	3.4	0.39	0.8	9.0%
Magnetic Resonance Imaging	194	4.1	3.4	0.36	0.9	8.7%
Mammography	190	3.6	2.9	0.20	0.6	5.6%
Nuclear Medicine Technology	141	2.8	1.8	0.15	0.4	5.2%
Cardiovascular Interventional Technology	78	5.2	3.9	0.38	0.8	7.3%
Bone Densitometry	96	1.3	0.7	0.05	0.3	3.7%

Longitudinal Tracking of Estimated Percent of Unfilled Positions

	2003	2005	2007	2009	2011	2013	2015	2017	2019
R	10.3%	5.4%	3.7%	2.5%	2.0%	1.7%	3.4%	4.2%	8.5%
CT	8.5%	5.9%	3.9%	3.5%	2.0%	2.7%	4.5%	4.2%	10.1%
S	11.7%	9.1%	8.3%	5.4%	3.4%	2.6%	5.1%	4.3%	9.0%
MR	9.0%	7.4%	4.4%	3.2%	2.5%	3.0%	4.2%	3.9%	8.7%
M	7.2%	6.2%	5.5%	2.3%	1.7%	1.4%	2.6%	2.7%	5.6%
NMT	10.9%	8.0%	4.7%	2.8%	1.4%	1.3%	2.8%	2.3%	5.2%
CVIT	14.6%	9.1%	8.3%	5.4%	3.4%	5.2%	4.1%	8.7%	7.3%
BD						1.8%	1.0%	1.7%	3.7%

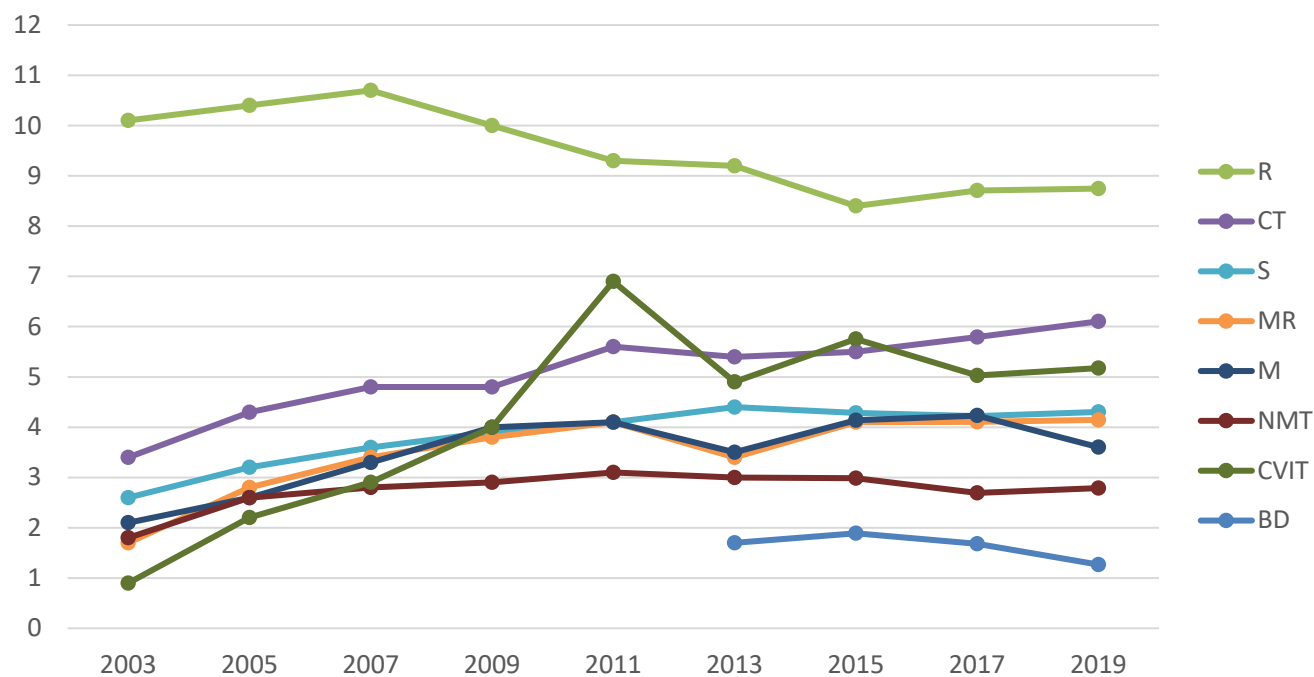
Longitudinal Tracking of Estimated Percent of Unfilled FTE Positions



Longitudinal Tracking of Mean Budgeted FTEs

	2003	2005	2007	2009	2011	2013	2015	2017	2019
R	10.1	10.4	10.7	10.0	9.3	9.2	8.4	8.7	8.7
CT	3.4	4.3	4.8	4.8	5.6	5.4	5.5	5.8	6.1
S	2.6	3.2	3.6	3.9	4.1	4.4	4.3	4.2	4.3
MR	1.7	2.8	3.4	3.8	4.1	3.4	4.1	4.1	4.1
M	2.1	2.6	3.3	4.0	4.1	3.5	4.1	4.2	3.6
NMT	1.8	2.6	2.8	2.9	3.1	3.0	3.0	2.7	2.8
CVIT	0.9	2.2	2.9	4.0	6.9	4.9	5.8	5.0	5.2
BD						1.7	1.9	1.7	1.3

Longitudinal Tracking of Mean Budgeted FTEs



Estimated Vacancy Rates by Region^a

Discipline	Statistic	East-South Central	West-South Central	Mountain	Mid-Atlantic	West-North Central	Pacific	South Atlantic	East-North Central	New England
R	%	10.8%	11.6%	7.2%	5.7%	9.6%	7.7%	6.8%	8.0%	9.4%
	N	17	38	31	29	39	33	46	34	14
CT	%	7.2%	13.2%	7.2%	15.0%	14.3%	5.6%	9.9%	10.3%	2.5%
	N	15	27	23	20	33	25	37	29	13
S	%	8.3%	4.7%	17.6%	4.2%	8.2%	9.5%	6.5%	13.4%	6.0%
	N	11	25	20	22	34	26	38	27	10
MR	%	26.0%	8.1%	10.6%	8.3%	6.8%	5.8%	13.3%	6.2%	2.7%
	N	14	19	18	18	26	24	35	26	10
M	%	0.0%	9.0%	12.4%	9.9%	3.5%	9.4%	2.7%	2.2%	2.3%
	N	8	23	16	18	32	23	34	21	11
NMT	%	0.0%	2.3%	3.3%	12.9%	13.0%	4.5%	4.1%	2.4%	0.0%
	N	6	15	13	14	13	18	28	24	6
CVIT	%	0.0%	9.6%	6.3%	8.0%	3.2%	12.7%	7.1%	3.7%	0.0%
	N	4	8	6	8	5	14	11	15	3
BD	%	20.0%	6.7%	0.0%	0.0%	0.0%	15.4%	3.6%	0.0%	0.0%
	N	4	7	10	8	15	10	20	14	6
Overall		10.5%	8.9%	8.9%	8.2%	8.1%	8.1%	7.0%	6.6%	3.8%

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

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

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

Mid-Atlantic: New York, Pennsylvania and New Jersey.

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

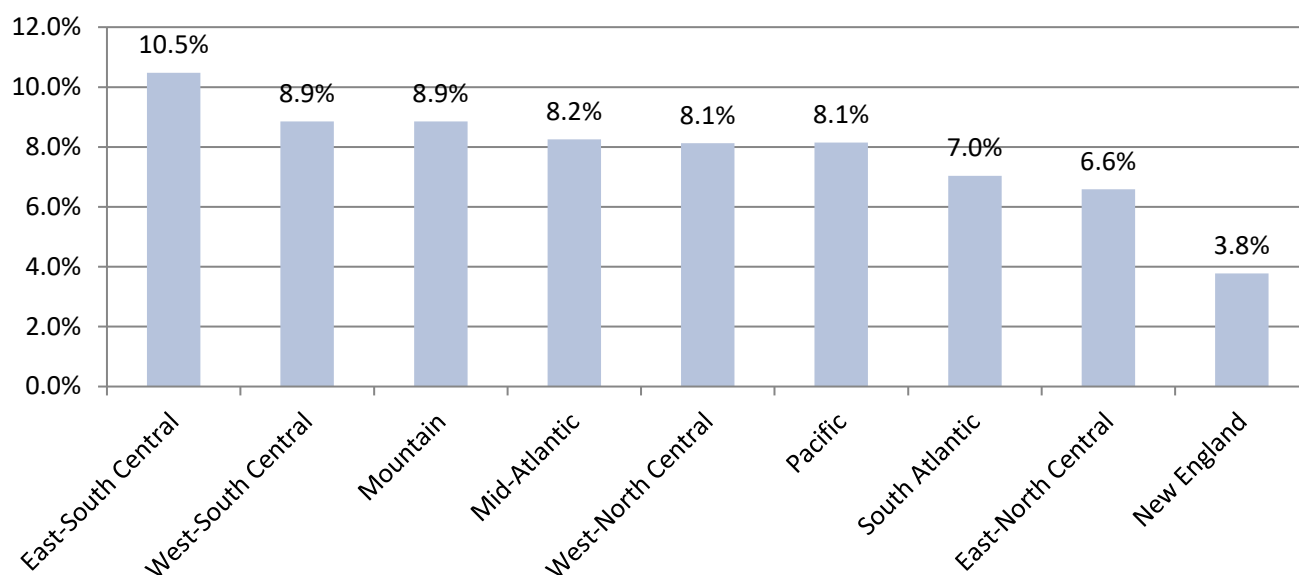
Pacific: Alaska, Washington, Oregon, California and Hawaii.

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

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

New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

Mean Vacancy Rate by Region

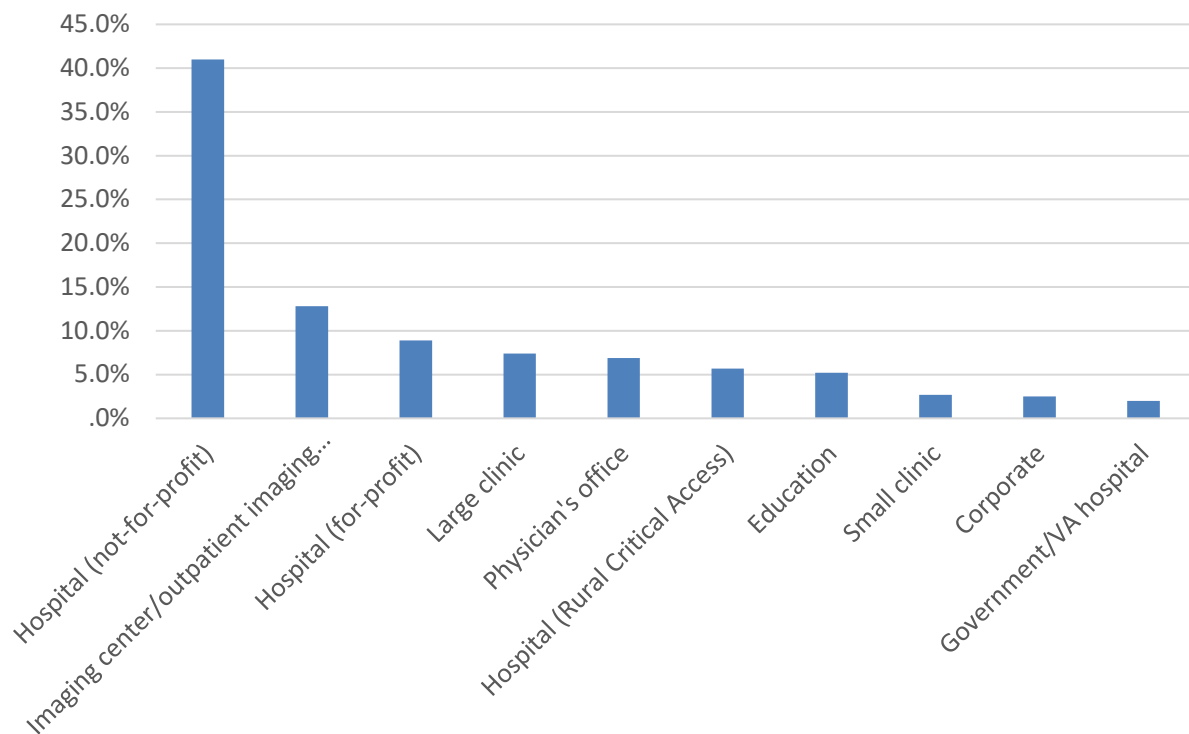


Facility Demographics

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

	N	Valid Percent
Hospital (not-for-profit)	166	41.0%
Imaging center/outpatient imaging facility	52	12.8%
Hospital (for-profit)	36	8.9%
Large clinic	30	7.4%
Physician's office	28	6.9%
Hospital (Rural Critical Access)	23	5.7%
Education	21	5.2%
Small clinic	11	2.7%
Corporate	10	2.5%
Government/VA hospital	8	2.0%
Mobile unit	5	1.2%
Other:	15	3.7%
Total	405	100.0%

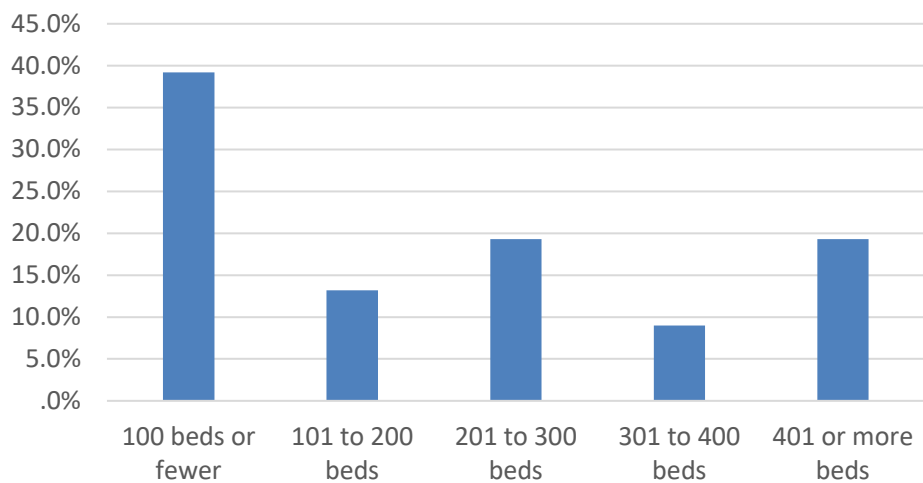
In which employment setting do you practice most of the time?



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

	N	Valid Percent	Cumulative Percent
100 beds or fewer	83	39.2%	39.2%
101 to 200 beds	28	13.2%	52.4%
201 to 300 beds	41	19.3%	71.7%
301 to 400 beds	19	9.0%	80.7%
401 or more beds	41	19.3%	100.0%
Total	212	100.0%	
Mean	247.5 (SD=235.5)		
Percentiles	5th=22.7, 25th=51.0, 50th=199.0, 75th=350.0, 95th=817.5		

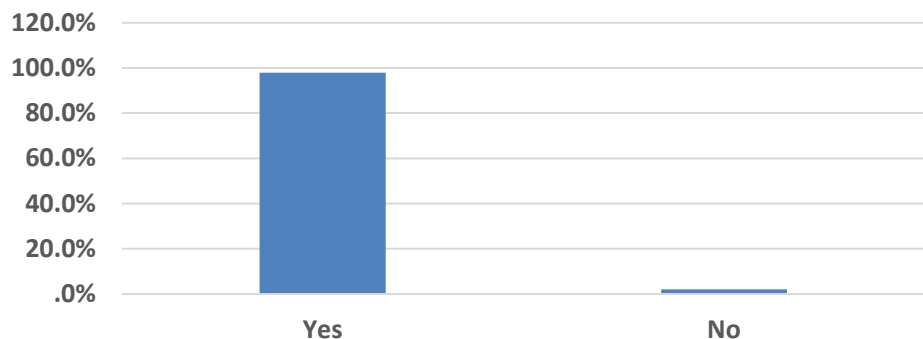
How many beds are at the hospital?



Is the imaging center in your hospital open 24 hours a day, 7 days a week?

	N	Valid Percent
Yes	228	97.9%
No	5	2.1%
Total	233	100.0%

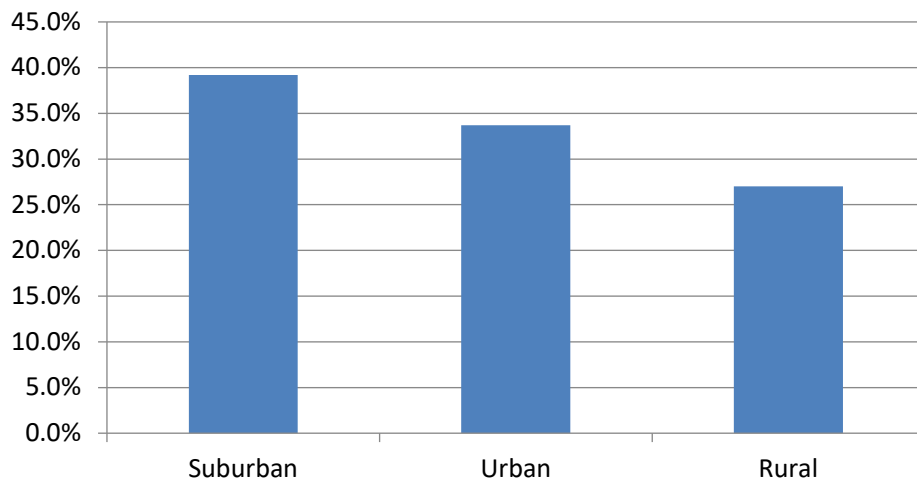
Is your facility open 24 hours a day, 7 days a week?



Location of facility:

	N	Valid Percent
Suburban	158	39.2%
Urban	136	33.7%
Rural	109	27.0%
Total	403	100.0%

Location of facility:



In what state is your facility located?

State	N
AK	4
AL	9
AR	7
AZ	11
CA	32
CO	10
CT	7
DE	1
FL	18
GA	22

State	N
HI	0
IA	9
ID	5
IL	18
IN	3
KS	8
KY	5
LA	6
MA	7
MD/DC	5

State	N
ME	3
MI	9
MN	15
MO	10
MS	3
MT	2
NC	12
ND	3
NE	4
NH	1

State	N
NJ	10
NM	3
NV	2
NY	18
OH	12
OK	6
OR	6
PA	15
RI	5
SC	6

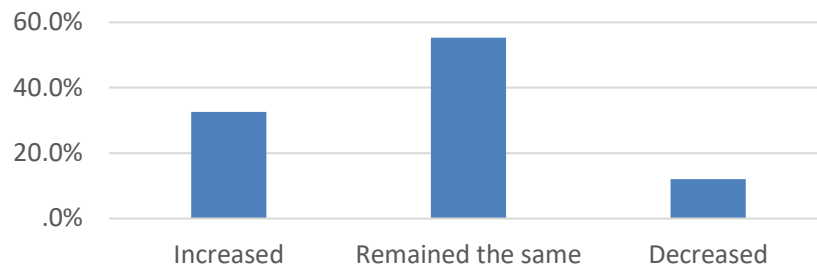
State	N
SD	1
TN	9
TX	29
UT	1
VA	5
VT	0
WA	8
WI	6
WV	1
WY	3

Personnel Demographics

Over the last year, the number of radiologic technologist positions in my department has:

	N	Valid Percent
Increased	132	32.6%
Remained the same	224	55.3%
Decreased	49	12.1%
Total	405	100.0%

Over the last year, the number of radiologic technologist positions in my department has:



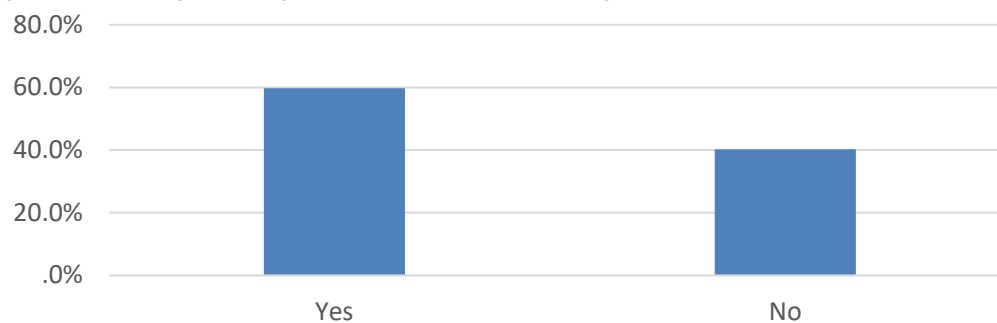
How many radiologic technologist positions were eliminated/added over the last year?

	N	Mean	SD	Minimum	Maximum
Eliminated	356	0.3	0.9	0	7
Added	370	1.0	2.2	0	12

Has there been any turnover of radiologic technologist positions in your department over the last year?

	N	Valid Percent
Yes	242	59.8%
No	163	40.2%
Total	405	100.0%

Has there been any turnover of radiologic technologist positions in your department over the last year ?



In 2018, how many full-time equivalent (FTE) radiologic technologists in your department left for any of the following reasons?

	N	Mean	SD	Minimum	Maximum
Changed profession	373	0.5	1.2	0	7
Personal reasons	373	0.4	1.1	0	8
Retirement	373	0.4	0.8	0	4
Terminations	373	0.3	0.7	0	4
Layoffs	373	0.1	0.7	0	6
Other	373	0.5	1.1	0	7
Total Turnover	373	2.2	2.9	0	15

In 2018, how many full-time equivalent (FTE) radiologic technologists in your department left for any of the following reasons?

