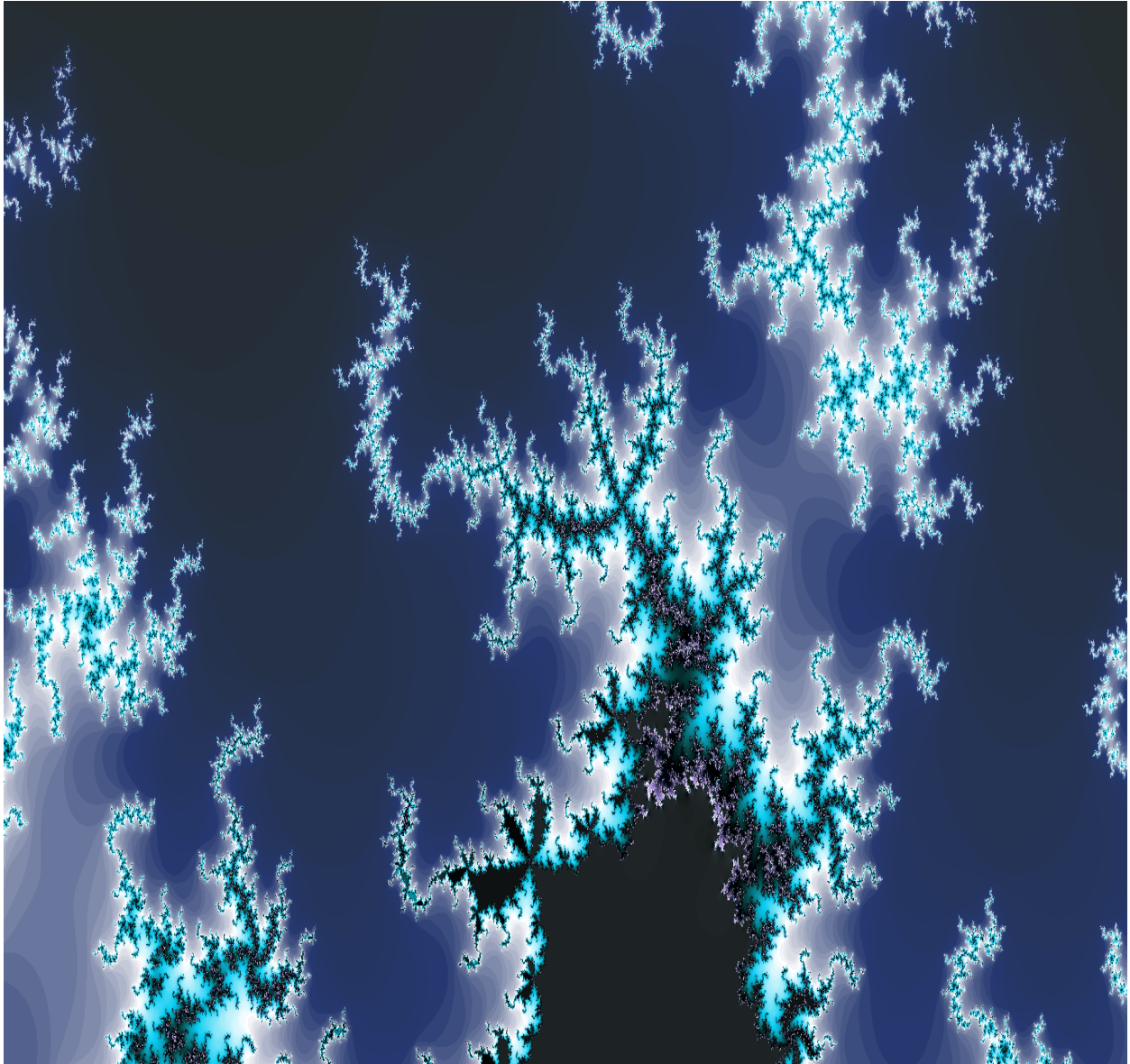


2021 Radiologic Sciences Workplace and Staffing Survey



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American Society of Radiologic Technologists

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Executive Summary

Note: This survey was conducted during the COVID-19 pandemic. Given that staffing and vacancy could substantially change following this period, the survey results should be viewed as a snapshot specific to the dates in which the data was collected.

Sample

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 February 2021 an invitation to participate in the Radiologic Sciences Staffing and Workplace Survey 2021 was sent via e-mail to 13,718 department managers. At the close of the survey in April 2021, a total of 457 responses had been received, yielding an overall response rate of 3.3%. At its widest, a sample size of 457 yields a margin of error of $\pm 4.6\%$ (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 (9.3)
- Cardiovascular Interventional Technology (CVIT) (7.4)
- Computed Tomography (6.2)
- Sonography (5.0)
- Magnetic Resonance Imaging (4.7)
- Mammography (4.9)
- Nuclear Medicine Technology (3.6)
- Bone Densitometry (2.0)

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

- Computed Tomography (8.7%)
- Magnetic Resonance Imaging (8.7%)
- Cardiovascular Interventional Technology (CVIT) (7.7%)
- Sonography (6.9%)
- Radiography (6.2%)
- Mammography (4.3%)
- Nuclear Medicine Technology (4.2%)
- Bone Densitometry (3.8%)

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

- The East-North Central region had the highest estimated vacancy rate at 8.3%.
- The East-South Central region had the lowest estimated vacancy rate at 2.8%.

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. As of the 2021 survey, this figure had rebounded to 9.3 budgeted FTEs in radiography.
- The other disciplines surveyed have experienced at least modest growth in the average number of budgeted FTEs per department since 2003,

albeit marked by intermittent setbacks in some years.

- CT has grown a great deal: 3.8 FTEs were budgeted per department in 2003; by 2015, there were 5.5 FTEs per department, and in 2021, there are 6.1 budgeted FTEs per department, stable since the previous survey in 2019.
- MR grew from 1.7 budgeted FTEs per department in 2003 to 4.1 in 2015, where it remained until another increase to 4.7 FTEs in 2021.
- 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 2021, the average number of budgeted FTEs in sonography had rebounded to 4.7.
- In the interventional disciplines, there were an average of 0.9 FTEs budgeted per department in 2003. By 2011, the number of budgeted FTEs had grown to 6.9, falling back to 4.9 in 2013. In 2021 the number of budgeted FTEs for the interventional disciplines reached a new peak of 7.4.
- 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. As of the 2021 survey, budgeted FTEs in nuclear medicine had rebounded to 3.6.
- In 2003 there were 2.1 budgeted FTEs in mammography; with intermittent setbacks, the number of budgeted FTEs in mammography grew to an average of 4.9 FTEs in 2021.
- 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. In 2021, there was a rebound to 2.0 FTEs per department.
- Estimated percent vacancy rates for most disciplines have declined since their respective highs at the survey's inception in 2003. However, vacancy rates for many disciplines

remained elevated from their mid-10s slump in 2021:

- 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. In 2021, the vacancy rate for radiography is back up to 6.2%, lower than the 8.5% vacancy rate seen in 2019 but still noticeably up from the 4.2% seen in 2017.
- In magnetic resonance imaging, the vacancy rate is 8.7% according to the 2021 survey; that is close to the all-time high of 9.0% in 2003, and up slightly from 8.7% in 2019.
- In 2021 the vacancy rate for CT is 8.7%, down from a high of 10.1% in 2019, but still much higher than 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.
- In the interventional disciplines, the vacancy rate in 2021 is 7.7%; that is roughly half of the vacancy rate of 14.6% in 2003; however, it is well above the low of 3.4% in 2011, and marginally higher than the 7.3% vacancy rate seen in the 2019 survey.
- In sonography, the vacancy rate in 2021 is 6.9%, down from a near-term high of 9.0% in 2019, and from an all-time high of 11.7% in 2003.
- The vacancy rate for mammography was 4.3% in 2021, down from the 5.2% seen in the 2019 survey, and from the high of 7.2% in the 2003 survey.
- The vacancy rate for nuclear medicine is 4.2% in 2021, less than half its all-time high of 10.9% in 2003, and down from 5.2% in 2019.
- In bone densitometry, the 2021 vacancy rate is 3.8%, the same as seen in the 2019 survey, and up from 1.8% in 2013 when the discipline was surveyed for the first time.

Facility Demographics

- Respondents were asked a number of questions about their facility.

- A majority of respondents (50.3%) work in hospitals, with 36.5% in non-profit hospitals alone.
- 11.6% work in imaging centers.
- 10.9% work in a physician's office.
- 8.3% work in a large clinic.
- 6.6% work in a small clinic.
- 3.5% work in education.
- 2.6% work in a mobile unit.
- 1.5% work in a corporate setting.
- The remaining 3.7% work in some other setting.
- On average, the hospitals where respondents work have 290.6 beds.
- 96.1% of respondents (all but 9) work in a facility that is open 24 hours per day, 7 days per week.
- 42.2% of respondents work in suburban facilities, while 34.8% work in urban facilities and 23.0% 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 (62.6%) have kept their staffing levels the same; 20.1% have increased the number of positions in their department, and 17.3% have decreased the number of positions.
 - Departments that have increased the number of positions added, on average, 2.81 positions.
 - Departments that have decreased the number of positions eliminated, on average, 1.71 positions.
 - If those positions eliminated, on average, 1.44 positions were eliminated due to COVID-19.

- A majority of departments responding to the survey (50.1%) experienced some staff turnover.
 - Among departments that experienced staff turnover, an average of 1.61 FTEs left.

COVID-19 Questions

Asked about staff's access to personal protective equipment (PPE):

- 48.6% of respondents said staff had adequate access throughout the pandemic.
- 38.6% said staff had limited access at the beginning of the pandemic, but adequate access now.
- 9.5% said staff access to PPE has been limited throughout the pandemic, including now.
- 3.3% said staff had adequate access at the beginning of the pandemic, but have limited access now.
- Respondents were asked how the COVID-19 pandemic affected the throughput in their department:
 - 46.2% of respondents said their department experienced decreased throughput.
 - 27.9% said there was very little change in throughput.
 - 25.9% said there had been an increase in patient throughput.
- Finally, respondents asked several questions regarding the way COVID-19 has affected their staff:
 - An average of 68.3% of staff in imaging departments are vaccinated.
 - An average of 15.0% of staff in imaging departments have had COVID-19 at some point during the pandemic.
 - An average of 10.8% of staff in imaging departments have needed to take time off to care for infected family members during the pandemic.

Weighting

Based upon the response distribution of budgeted FTEs per facility, a weight was derived to ensure that the results are representative of the distribution of ARRT registrants across the country when reported in total.

The weight was applied to correct for under and over-representation of budgeted FTEs per facility. The weight was computed as the ratio between the known population percentage of ARRT-registered R.T.s in management positions and the observed percentage of such R.T.s in the sample.

Thus, the weighted results reported are the best estimates of the summary statistics that would have been obtained had 457 observations been taken at random (without regard to budgeted FTEs per facility) from the entire database of ARRT registrants in management positions.

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:

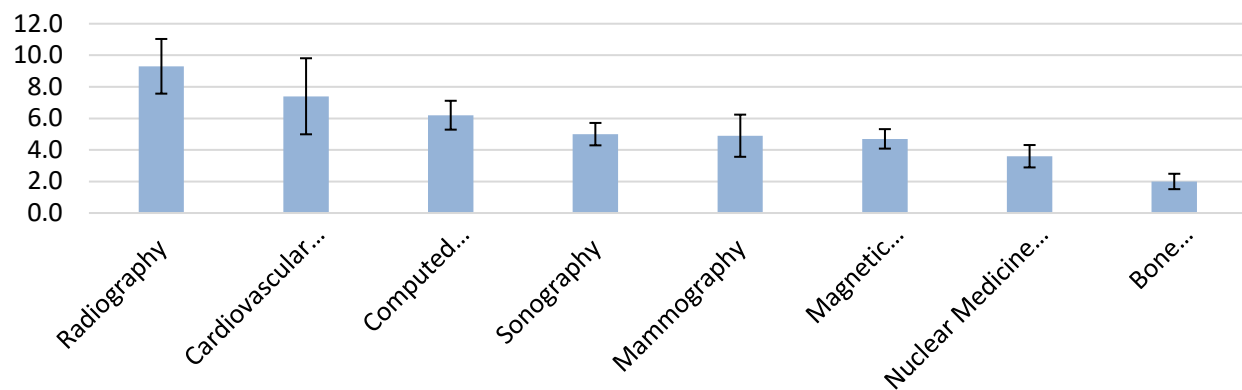
(Mean number of vacant and recruiting FTEs per facility) ÷ (Mean number of budgeted FTEs per facility)

Staffing Levels

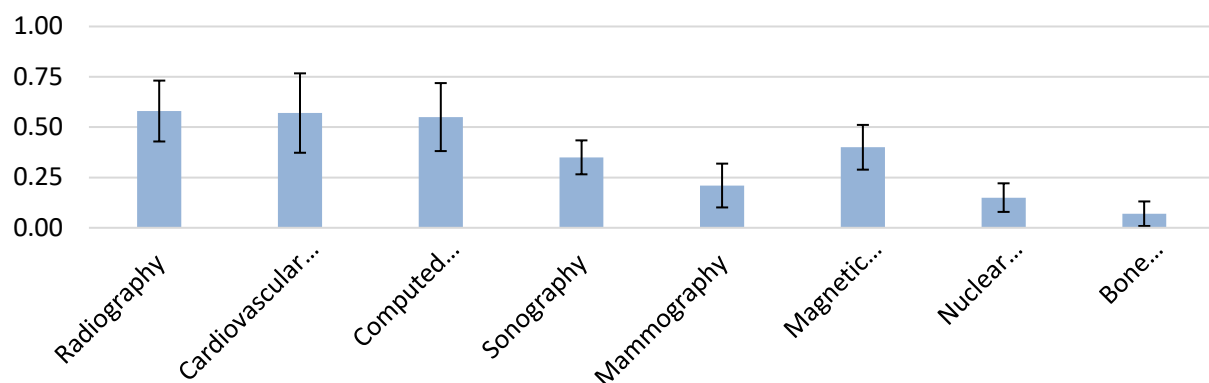
Please provide information on the following services provided at your primary workplace:

Discipline	N	Mean Budgeted FTEs	SD	95% Confidence Level	Mean Vacant and Recruiting FTEs	SD	95% Confidence Level	Estimated Percent Unfilled FTE Positions
Radiography	284	9.3	14.9	± 1.7	0.58	1.3	± 0.15	6.2%
Cardiovascular Interventional	80	7.4	11.0	± 2.4	0.57	0.9	± 0.20	7.7%
Computed Tomography	194	6.2	6.5	± 0.91	0.55	1.2	± 0.17	8.7%
Sonography	265	5.0	5.9	± 0.71	0.35	0.7	± 0.08	6.9%
Magnetic Resonance Imaging	159	4.9	8.6	± 1.3	0.21	0.7	± 0.11	4.3%
Mammography	252	4.7	5.0	± 0.6	0.40	0.9	± 0.11	8.7%
Nuclear Medicine Technology	122	3.6	4.0	± 0.71	0.15	0.4	± 0.07	4.2%
Bone Densitometry	93	2.0	2.4	± 0.49	0.07	0.3	± 0.06	3.8%

Mean Budgeted FTEs



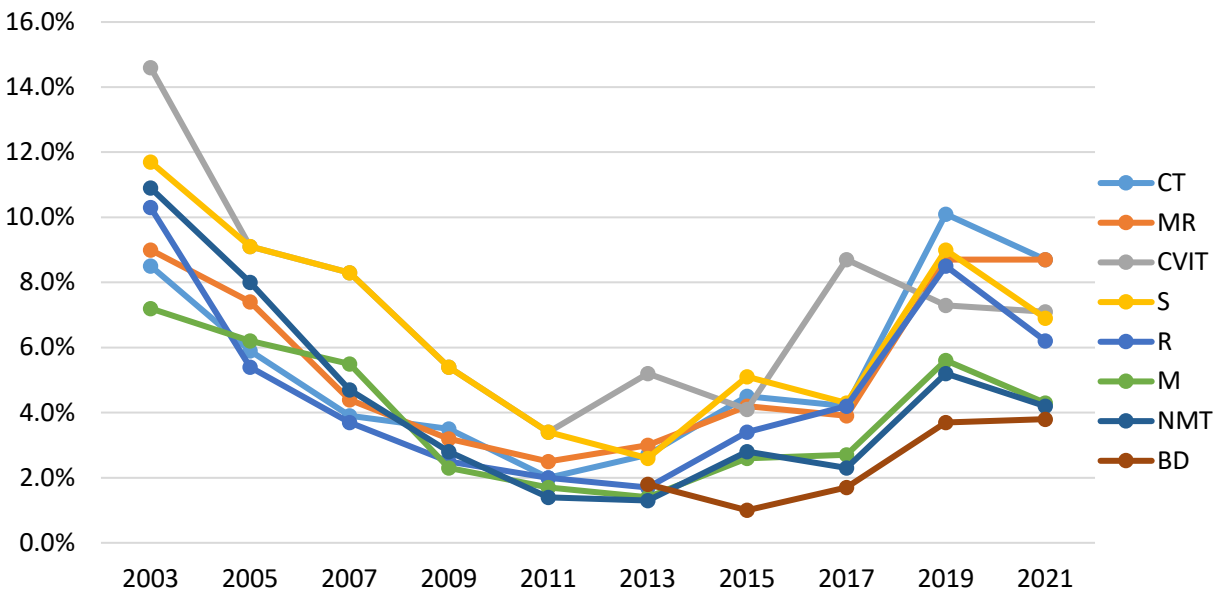
Mean Vacant and Recruiting FTEs



Longitudinal Tracking of Estimated Percent of Unfilled Positions

	2003	2005	2007	2009	2011	2013	2015	2017	2019	2021
CT	8.5%	5.9%	3.9%	3.5%	2.0%	2.7%	4.5%	4.2%	10.1%	8.7%
MR	9.0%	7.4%	4.4%	3.2%	2.5%	3.0%	4.2%	3.9%	8.7%	8.7%
CVIT	14.6%	9.1%	8.3%	5.4%	3.4%	5.2%	4.1%	8.7%	7.3%	7.1%
S	11.7%	9.1%	8.3%	5.4%	3.4%	2.6%	5.1%	4.3%	9.0%	6.9%
R	10.3%	5.4%	3.7%	2.5%	2.0%	1.7%	3.4%	4.2%	8.5%	6.2%
M	7.2%	6.2%	5.5%	2.3%	1.7%	1.4%	2.6%	2.7%	5.6%	4.3%
NMT	10.9%	8.0%	4.7%	2.8%	1.4%	1.3%	2.8%	2.3%	5.2%	4.2%

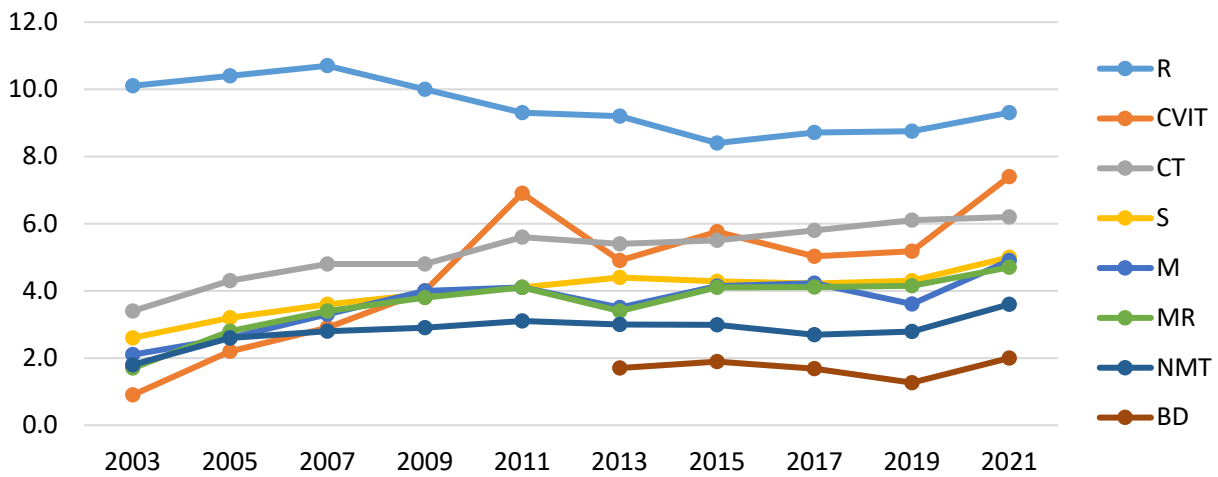
Longitudinal Tracking of Estimated Percent of Unfilled FTE Positions



Longitudinal Tracking of Mean Budgeted FTEs

	2003	2005	2007	2009	2011	2013	2015	2017	2019	2021
R	10.1	10.4	10.7	10.0	9.3	9.2	8.4	8.7	8.7	9.3
CVIT	0.9	2.2	2.9	4.0	6.9	4.9	5.8	5.0	5.2	7.4
CT	3.4	4.3	4.8	4.8	5.6	5.4	5.5	5.8	6.1	6.2
S	2.6	3.2	3.6	3.9	4.1	4.4	4.3	4.2	4.3	5.0
M	2.1	2.6	3.3	4.0	4.1	3.5	4.1	4.2	3.6	4.9
MR	1.7	2.8	3.4	3.8	4.1	3.4	4.1	4.1	4.1	4.7
NMT	1.8	2.6	2.8	2.9	3.1	3.0	3.0	2.7	2.8	3.6
BD	.	.	.	.	.	1.7	1.9	1.7	1.3	2.0

Longitudinal Tracking of Mean Budgeted FTEs



Estimated percent vacancy rates by region^a

Discipline	Statistic	East-North Central	South Atlantic	Mountain	New England	West-South Central	West-North Central	Pacific	Mid-Atlantic	East-South Central
R	%	4.4%	8.5%	6.9%	7.0%	7.0%	7.6%	5.2%	4.1%	6.2%
	N	29	58	23	19	34	44	37	28	12
CT	%	10.4%	8.7%	11.9%	9.3%	9.3%	8.0%	8.1%	10.5%	2.7%
	N	15	42	16	11	23	31	32	19	5
S	%	12.7%	7.6%	13.9%	7.6%	10.0%	4.4%	5.2%	5.3%	0.0%
	N	19	41	15	12	27	26	31	16	5
MR	%	9.9%	9.8%	8.2%	12.4%	7.0%	9.4%	12.3%	2.5%	0.0%
	N	18	45	16	12	27	32	30	18	7
M	%	9.8%	6.7%	3.5%	6.3%	1.6%	2.2%	3.5%	0.6%	0.0%
	N	19	35	9	12	15	25	24	17	3
NMT	%	10.6%	3.1%	0.0%	0.0%	7.0%	4.1%	3.3%	6.1%	0.0%
	N	10	33	8	7	15	11	21	13	4
CVIT	%	1.7%	7.3%	6.0%	9.0%	9.4%	8.6%	9.6%	7.0%	7.3%
	N	4	18	5	6	12	4	18	9	4
BD	%	2.2%	7.6%	0.0%	3.9%	0.0%	9.4%	0.0%	5.8%	0.0%
	N	10	18	8	11	13	14	10	7	2
Overall		8.3%	7.6%	7.5%	7.2%	6.9%	6.8%	6.4%	5.0%	2.8%

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

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

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

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

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

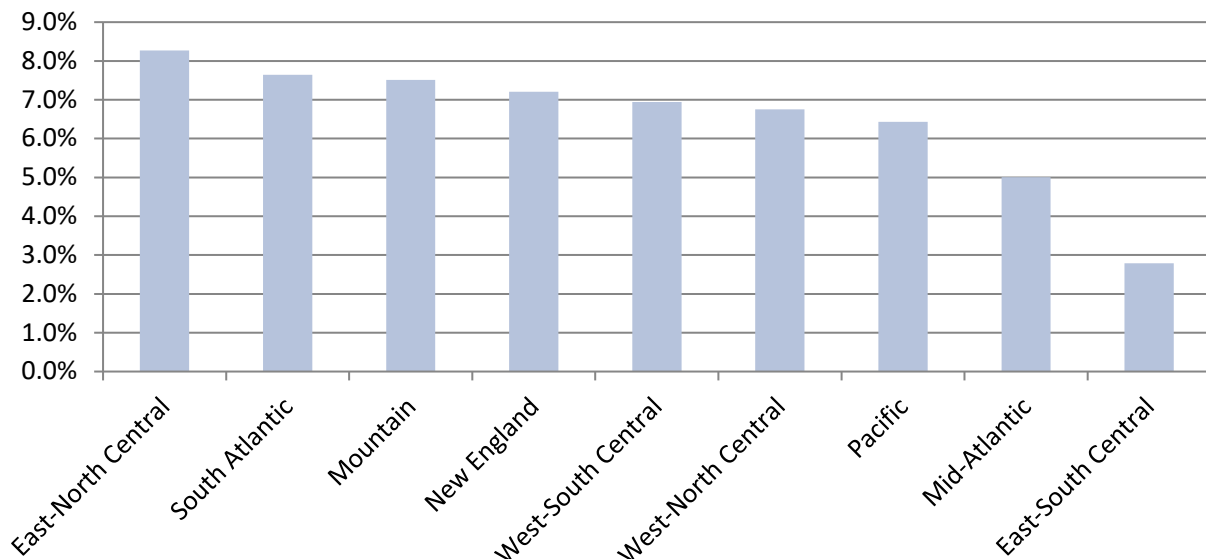
West-North Central: Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota and Iowa.

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.

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

Mean vacancy rate by region

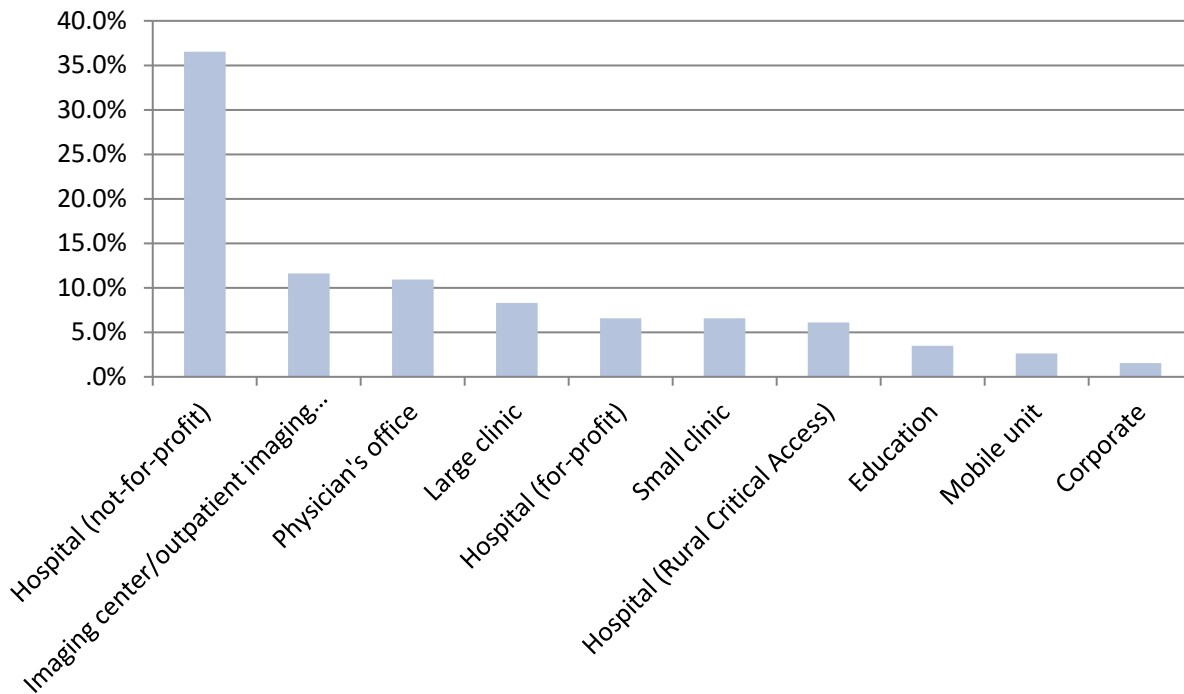


Facility Demographics

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

	N	Valid Percent
Hospital (not-for-profit)	167	36.5%
Imaging center/outpatient imaging facility	53	11.6%
Physician's office	50	10.9%
Large clinic	38	8.3%
Hospital (for-profit)	30	6.6%
Small clinic	30	6.6%
Hospital (Rural Critical Access)	28	6.1%
Education	16	3.5%
Mobile unit	12	2.6%
Corporate	7	1.5%
Government/VA hospital	5	1.1%
Other:	21	4.6%
Total	457	100.0%

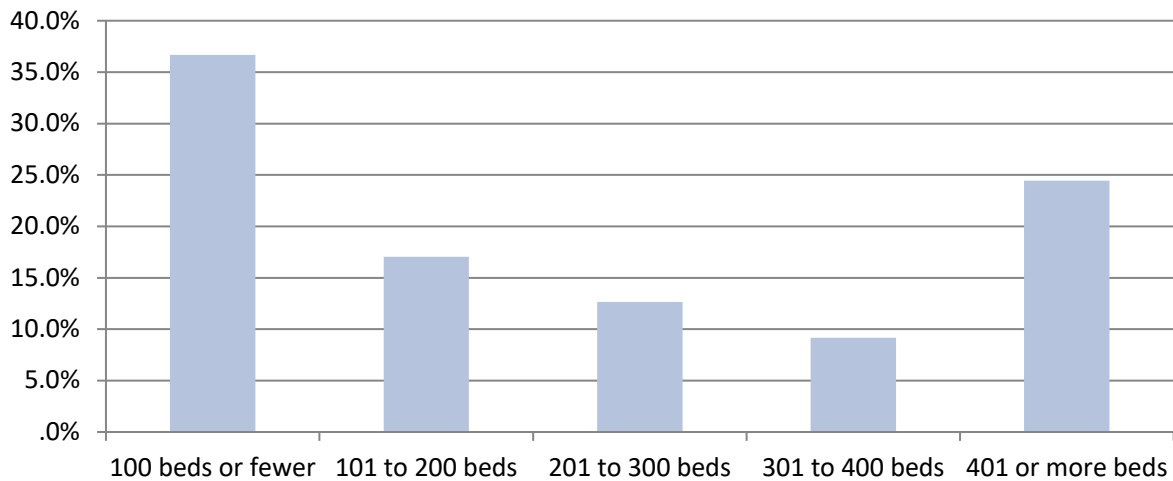
In which employment setting do you practice most of the time?



How many beds are at the hospital?

	N	Valid Percent	Cumulative Percent
100 beds or fewer	84	36.7%	36.7%
101 to 200 beds	39	17.0%	53.7%
201 to 300 beds	29	12.7%	66.4%
301 to 400 beds	21	9.2%	75.5%
401 or more beds	56	24.5%	100.0%
Total	229	100.0%	
Mean	290.6(SD=368.0)		
Percentiles	5th=19.0, 25th=58.0, 50th=200.0, 75th=400.0, 95th=890.5		

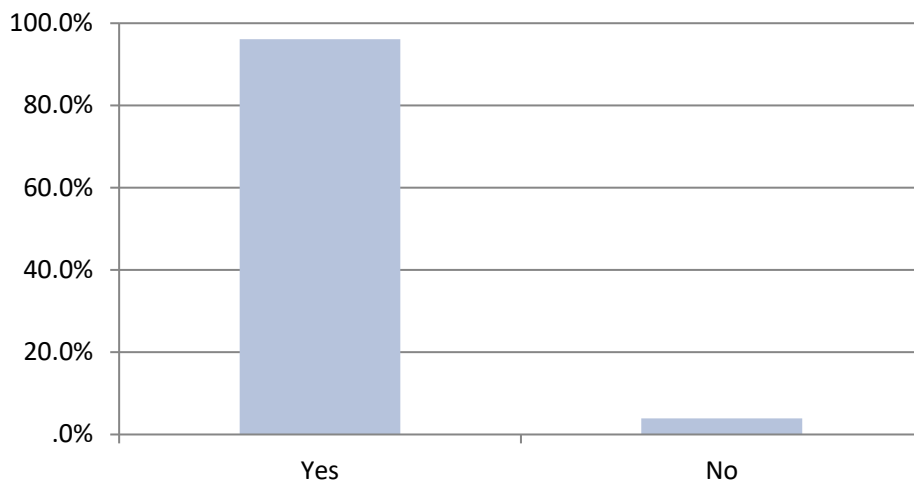
How many beds are at the hospital?



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

	N	Valid Percent
Yes	221	96.1%
No	9	3.9%
Total	230	100.0%

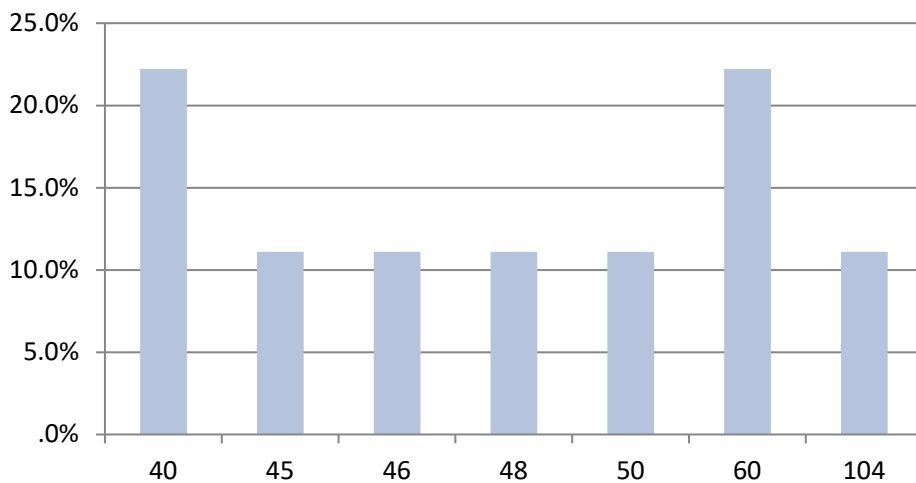
Is your facility open 24 hours a day, 7 days a week?



How many hours per week is your facility open?

	N	Valid Percent
40	2	22.2%
45	1	11.1%
46	1	11.1%
48	1	11.1%
50	1	11.1%
60	2	22.2%
104	1	11.1%
Total	9	100.0%
Mean	54.8 (SD=19.9)	
Percentiles	5th=40.0, 25th=42.5, 50th=48.0, 75th=60.0, 95th=	

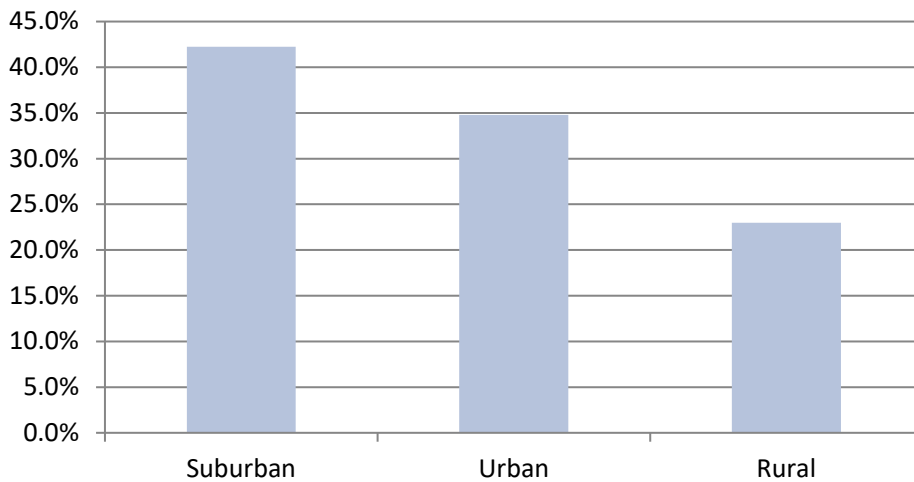
How many hours per week is your facility open?



Location of facility:

	N	Valid Percent
Suburban	193	42.2%
Urban	159	34.8%
Rural	105	23.0%
Total	457	100.0%

Location of facility:



In what state is your facility located?

State	N
AK	4
AL	5
AR	10
AZ	11
CA	34
CO	5
CT	5
DE	3
FL	20
GA	17

State	N
HI	1
IA	8
ID	5
IL	9
IN	15
KS	6
KY	5
LA	6
MA	15
MD/DC	12

State	N
ME	4
MI	13
MN	18
MO	14
MS	6
MT	2
NC	21
ND	2
NE	7
NH	4

State	N
NJ	9
NM	7
NV	1
NY	21
OH	9
OK	9
OR	5
PA	25
RI	3
SC	6

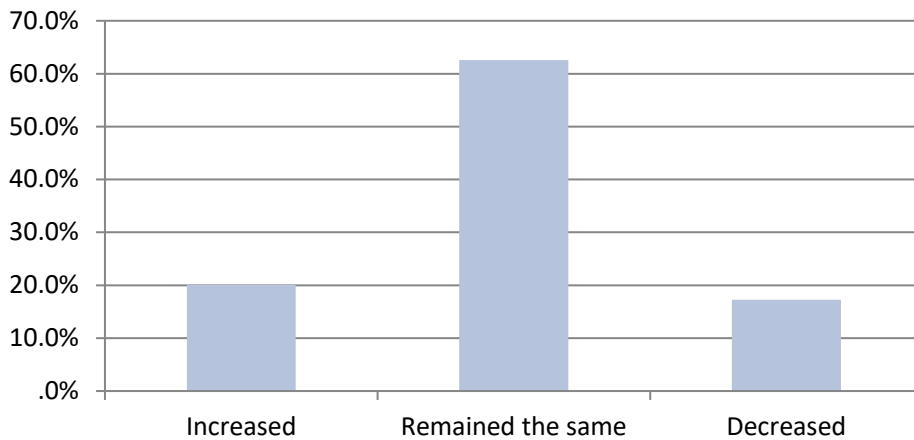
State	N
SD	5
TN	5
TX	28
UT	4
VA	12
VT	1
WA	4
WI	7
WV	4
WY	2

Personnel Demographics

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

	N	Valid Percent
Increased	92	20.1%
Remained the same	286	62.6%
Decreased	79	17.3%
Total	457	100.0%

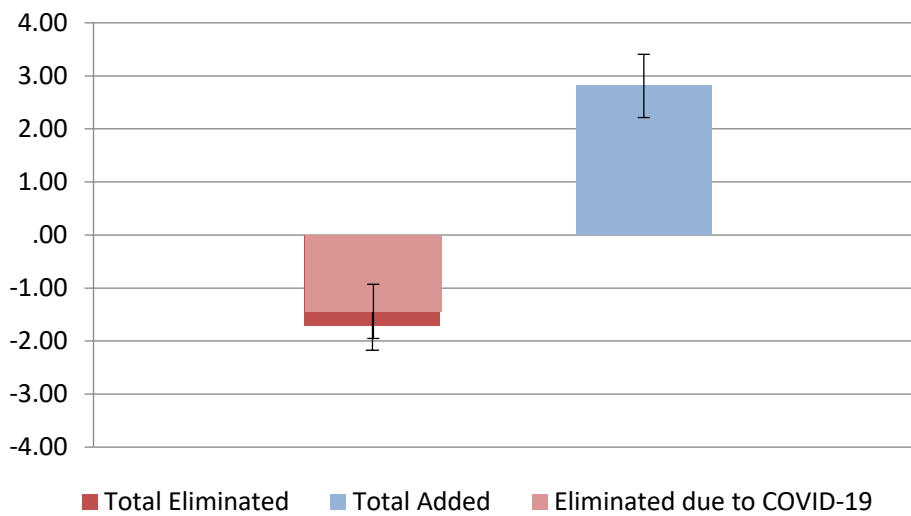
Over the last year, the number of radiologic technologist positions in my department has:



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

	N	Mean	SD	95% Confidence Level
Total Eliminated	73	1.71	2.02	±0.46
Eliminated due to COVID-19	68	1.44	2.15	±0.51
Total Added	89	2.81	2.87	±0.57

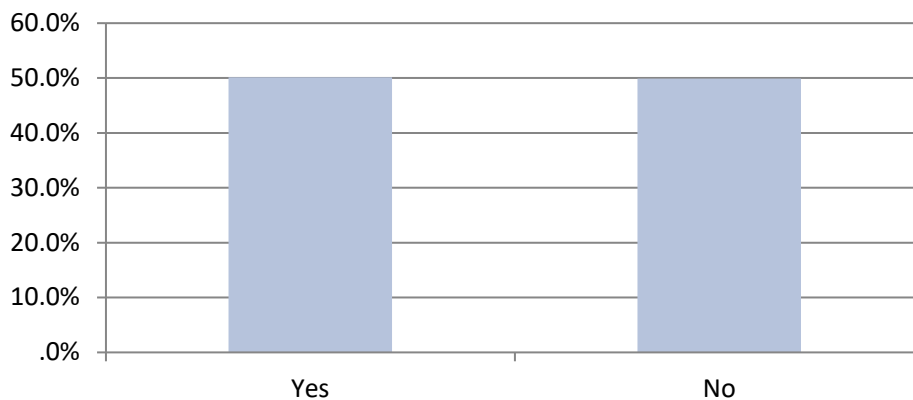
Mean Positions eliminated/added:



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

	N	Valid Percent
Yes	229	50.1%
No	228	49.9%
Total	457	100.0%

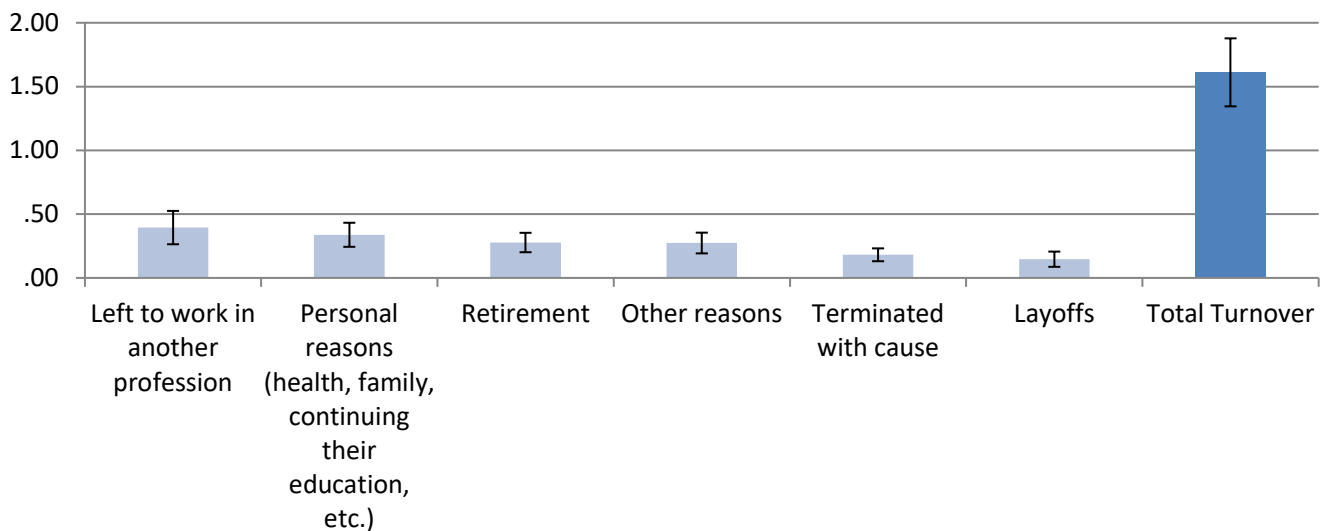
Has there been any turnover of radiologic technologist positions in your department over the last year ?



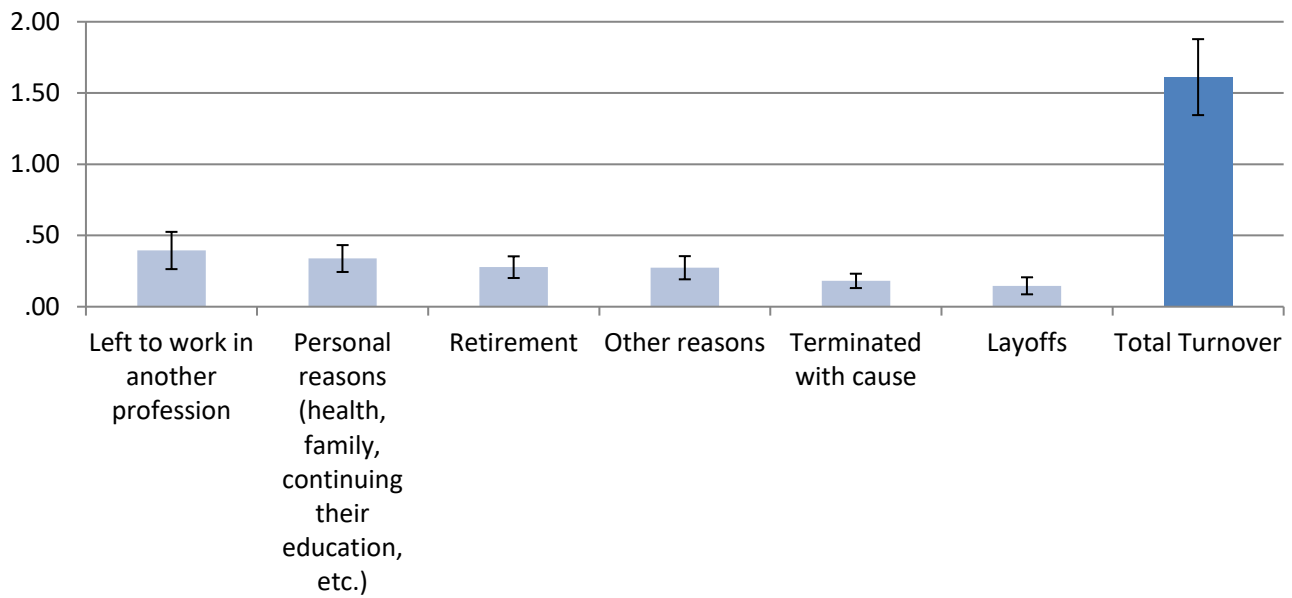
In 2020, how many full-time equivalent (FTE) radiologic technologists in your department left for any of the following reasons?

	N	Mean	SD	95% Confidence Level
Left to work in another profession	70	.39	1.43	±.131
Personal reasons (health, family, continuing their education, etc.)	78	.34	1.03	±.094
Retirement	78	.28	.83	±.076
Other reasons	60	.27	.89	±.081
Terminated with cause	59	.18	.55	±.050
Layoffs	29	.15	.65	±.060
Total Turnover	197	1.61	2.91	±.267

In 2020, how many full-time equivalent (FTE) radiologic technologists in your department left for any of the following reasons?



In 2020, how many full-time equivalent (FTE) radiologic technologists in your department left for any of the following reasons?

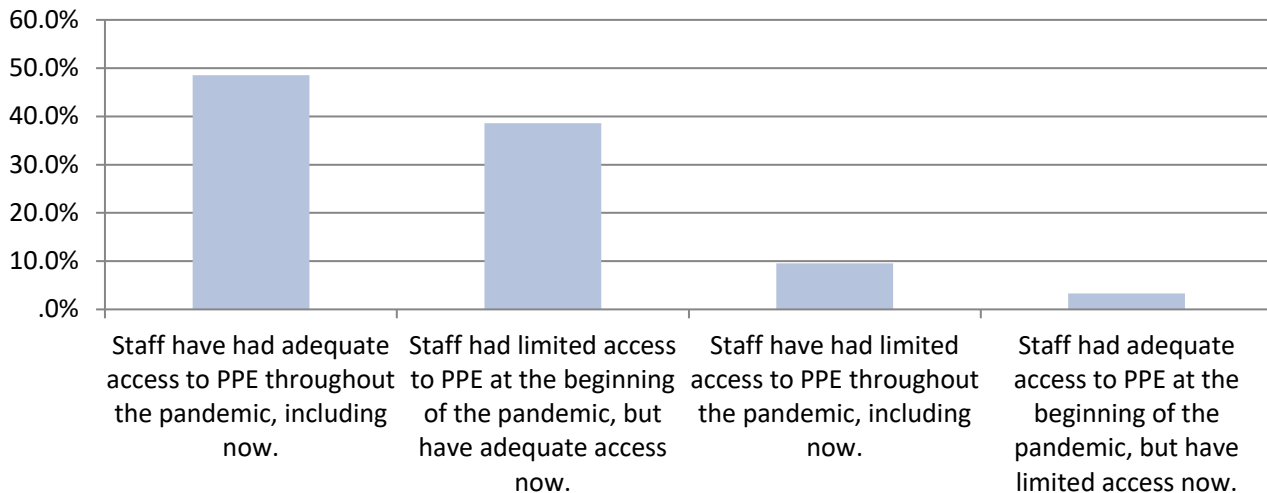


COVID-19 Questions

Please select the option that best represents your staff's access to personal protective equipment (PPE) during the COVID-19 pandemic.

	N	Valid Percent
Staff have had adequate access to PPE throughout the pandemic, including now.	219	48.6%
Staff had limited access to PPE at the beginning of the pandemic, but have adequate access now.	174	38.6%
Staff have had limited access to PPE throughout the pandemic, including now.	43	9.5%
Staff had adequate access to PPE at the beginning of the pandemic, but have limited access now.	15	3.3%
Total	451	100.0%

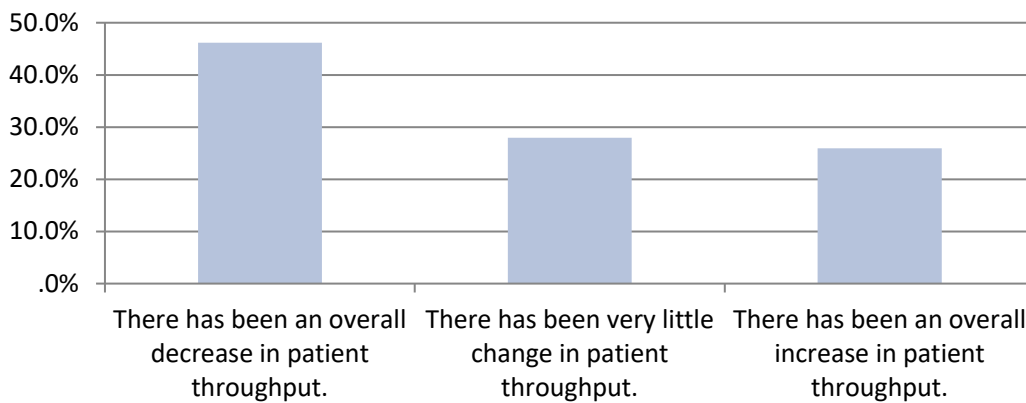
Please select the option that best represents your staff's access to personal protective equipment (PPE) during the COVID-19 pandemic.



Please select the option that best describes your department's patient throughput during the COVID-19 pandemic.

	N	Valid Percent
There has been an overall decrease in patient throughput.	205	46.2%
There has been very little change in patient throughput.	124	27.9%
There has been an overall increase in patient throughput.	115	25.9%
Total	444	100.0%

Please select the option that best describes your department's patient throughput during the COVID-19 pandemic.



Additional COVID-19 Questions

	N	Mean	SD	95% Confidence Level
What percentage of your staff has received at least one dose of the COVID-19 vaccine?	416	68.3%	28.3%	±2.7%
What percentage of your staff has contracted COVID-19 since the pandemic began?	417	15.0%	19.6%	±1.9%
What percentage of your staff has needed to take time off to care for family members with COVID-19 since the pandemic began?	415	10.8%	18.2%	±1.7%

Additional COVID-19 Questions

