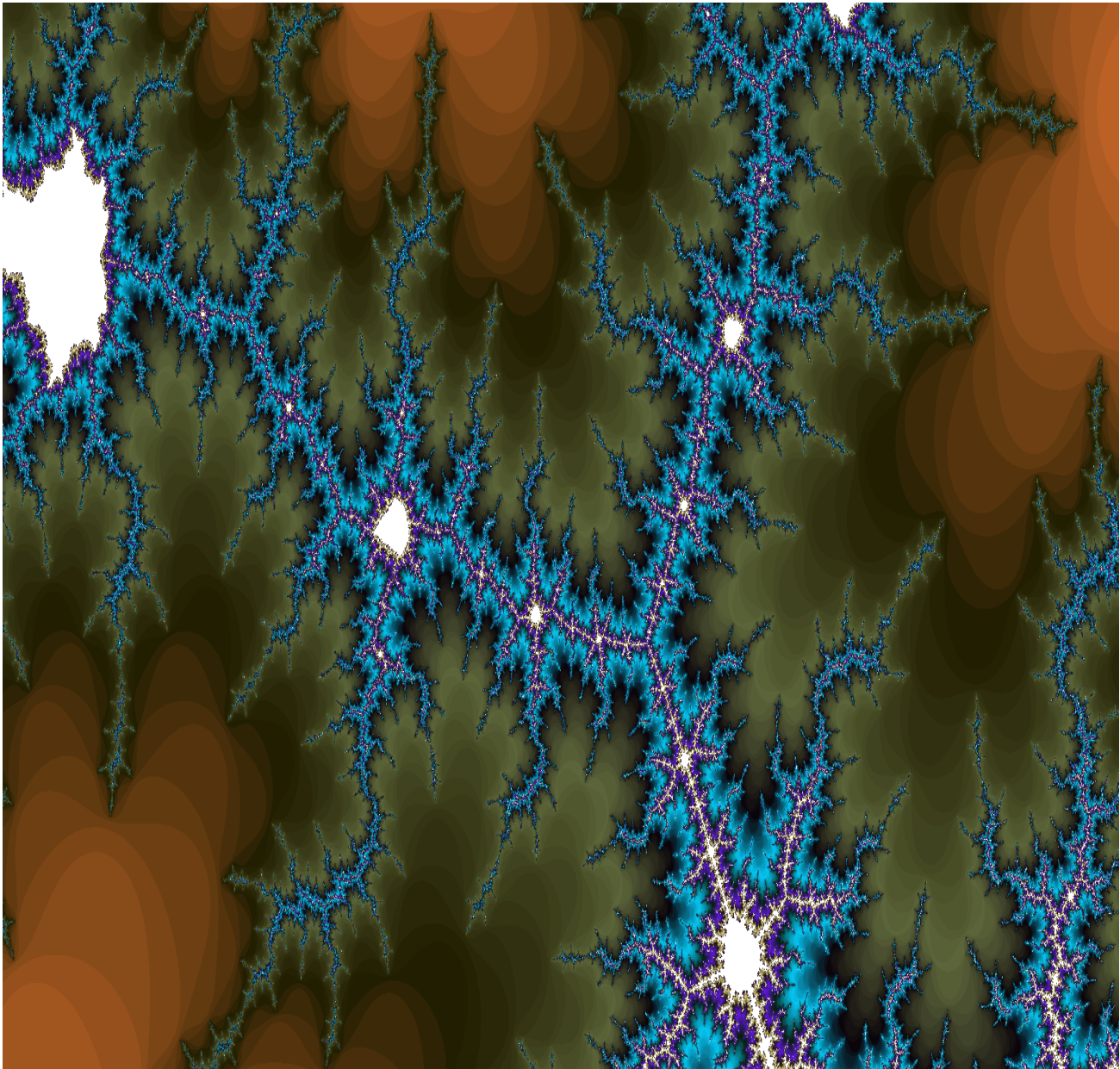


## Radiation Therapy Staffing and Workplace Survey 2022



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American Society of Radiologic Technologists

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## Executive Summary

The 2022 Radiation Therapy Staffing and Workplace Survey was emailed to 14,520 radiation therapists in June 2022. At the close of the survey in July 2022, a total of 629 completed questionnaires had been submitted for a response rate of 4.3%

The sample size of 629 yields a margin of error for overall percentages of  $\pm 3.9\%$  at the 95% confidence interval.

To keep this report brief, responses to open-ended questions were not included, but are available upon request.

### Staffing of Facilities

The mean number of budgeted full-time equivalents (FTEs) across all facilities surveyed is:

- 7.3 for radiation therapy.
- 2.4 for medical dosimetry.

An estimation of the overall percentages of unfilled positions was calculated using the number of budgeted FTEs along with figures on vacant and recruiting positions.

In radiation therapy, an estimated 10.7% of FTE positions are unfilled.

In medical dosimetry, an estimated 11.3% of FTE positions are unfilled.

Overall mean percentages of unfilled positions, calculated by combining the figures from both therapy and dosimetry, were highest in the Middle Atlantic region (15.8%) and lowest in the West North Central region (6.2%). Overall, the percent of unfilled positions combining both disciplines was 11.0%.

The survey also tracks longitudinal changes in staffing levels in radiation therapy and medical dosimetry. The number of FTE radiation therapists budgeted at each facility rose by 0.2 from 7.1 to 7.3 between 2020, when the last Radiation Therapy Staffing Survey was conducted, and 2022. Overall, the number of FTE therapists budgeted per facility has increased by 1.3 from 6.0 in 2004 to 7.3 in 2022.

The number of FTE dosimetrists budgeted per facility fell slightly by 0.1 from 2.5 in 2020 to 2.4 in 2022. Overall, the number of FTE dosimetrists budgeted per facility has increased by 0.8 from 1.6 in 2004 to 2.4 in 2022.

- The estimated vacancy rate for FTE positions in therapy rose by 3.5%, from 7.2% in 2020 to 10.7% in 2022. This marks the fourth consecutive rise in vacancy rates registered by the survey.
- The estimated vacancy rate for FTE positions in medical dosimetry rose by 1.8%, from 9.6% in 2020 to 11.4% in 2022. This marks the second consecutive survey in which vacancy rates in dosimetry have risen.

### Facility Demographics

A slim majority of respondents (51.4%) are staff therapists; 19.6% are senior/lead therapists, 7.8% are supervisors/managers, and 6.5% are medical dosimetrists.

There were respondents from every state.

Urban facilities represented the largest share (44.0%) of respondents; 41.0% were suburban, and the remaining 15.0% were rural.

The average respondent to the survey works in a facility that offers 14.2 services in radiation therapy and related fields. The most commonly offered services are:

- Intensity-modulated radiation therapy (IMRT) (96.6% of facilities).
- CT/simulation (94.8% of facilities).
- Cone-beam CT (CBCT) (93.5% of facilities).

The most commonly offered services remained the same from the previous survey in 2020, albeit with minor changes in position.

The least commonly offered services are:

- Hyperthermia (4.2% of facilities).
- Proton therapy (6.4% of facilities).
- Ultrasound localization (8.5% of facilities).

When asked which, if any, services they plan to expand, 55.6% of respondents said they plan to add additional LINAC therapy units, 16.5% plan to add real-time

surface tracking, and another 16.5% plan to add adaptive planning; 33.4% have no plans to add any of the new services listed.

According to the responses provided, the average facility treats 50.1 patients each day and uses 2.2 linear accelerators.

### Personnel Demographics

The average respondent works at a facility that schedules 2.4 therapists and 1.1 dosimetrist per linear accelerator. On average, there are 1.2 hours per day when only one therapist is scheduled per linear accelerator.

### Calculation of Percent Vacancy Rates

The estimated proportion of unfilled positions for a given specialty in the population of U.S. hospital-based radiology facilities is calculated as:

$$(\text{mean number of vacant and recruiting FTEs per facility}) / (\text{mean number of budgeted FTEs per facility}) * 100$$

For example, in radiation therapy the mean vacant and recruiting FTE positions per facility is 0.78. When divided by the mean budgeted FTE of 7.3, this yields a proportion of unfilled FTE positions of 0.107. Multiplying by 100 to give the percent value, and then rounding to the nearest tenth, gives the percent vacancy rate for radiation therapy of 10.7%.

Note that only responses that included both the number of budgeted FTEs and the number of vacant and recruiting FTEs were used in the calculation of vacancy rates.

### Outliers

Numeric variables were analyzed for non-representative outliers with cross-tabulated scatter plots and box plots. Numeric data points that were 3 times greater than the interquartile range were designated as outliers and excluded from the analysis.

## Staffing of Facilities

Provide the budgeted and vacant full-time equivalents (FTEs) for your facility. Please use decimals for fractional FTEs.

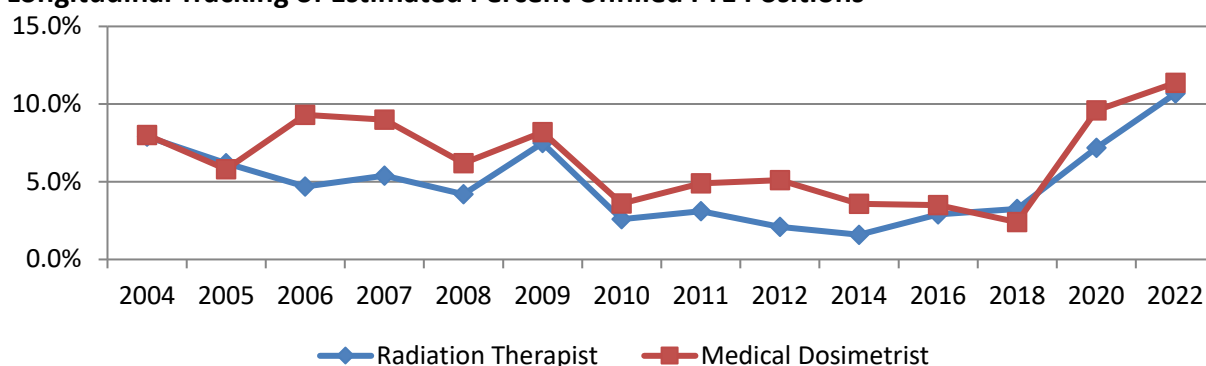
### Radiation Therapist

Year	N	Mean budgeted FTEs per facility	Mean vacant and recruiting FTEs per facility	Estimated percent unfilled FTE positions
2004	360	6.0	0.47	7.9%
2005	352	6.4	0.40	6.2%
2006	522	6.8	0.31	4.7%
2007	549	7.1	0.39	5.4%
2008	476	6.8	0.29	4.2%
2009	448	7.2	0.54	7.5%
2010	484	7.2	0.19	2.6%
2011	460	7.4	0.23	3.1%
2012	439	7.4	0.16	2.1%
2014	575	8.2	0.13	1.6%
2016	552	7.3	0.21	2.9%
2018	124	7.7	0.25	3.2%
2020	517	7.1	0.51	7.2%
2022	573	7.3	0.78	10.7%

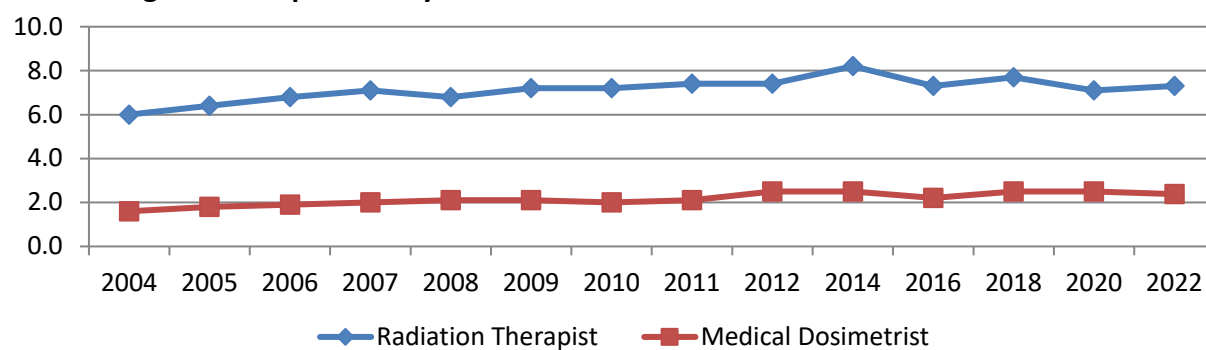
### Medical Dosimetrist

Year	N	Mean budgeted FTEs per facility	Mean vacant and recruiting FTEs per facility	Estimated percent unfilled FTE positions
2004	360	1.6	0.13	8.0%
2005	352	1.8	0.11	5.8%
2006	522	1.9	0.18	9.3%
2007	549	2.0	0.18	9.0%
2008	441	2.1	0.13	6.2%
2009	409	2.1	0.17	8.2%
2010	432	2.0	0.07	3.6%
2011	411	2.1	0.10	4.9%
2012	406	2.5	0.12	5.1%
2014	544	2.5	0.09	3.6%
2016	517	2.2	0.08	3.5%
2018	117	2.5	0.06	2.4%
2020	447	2.5	0.24	9.6%
2022	509	2.4	0.27	11.4%

### Longitudinal Tracking of Estimated Percent Unfilled FTE Positions



### Mean Budgeted FTEs per Facility

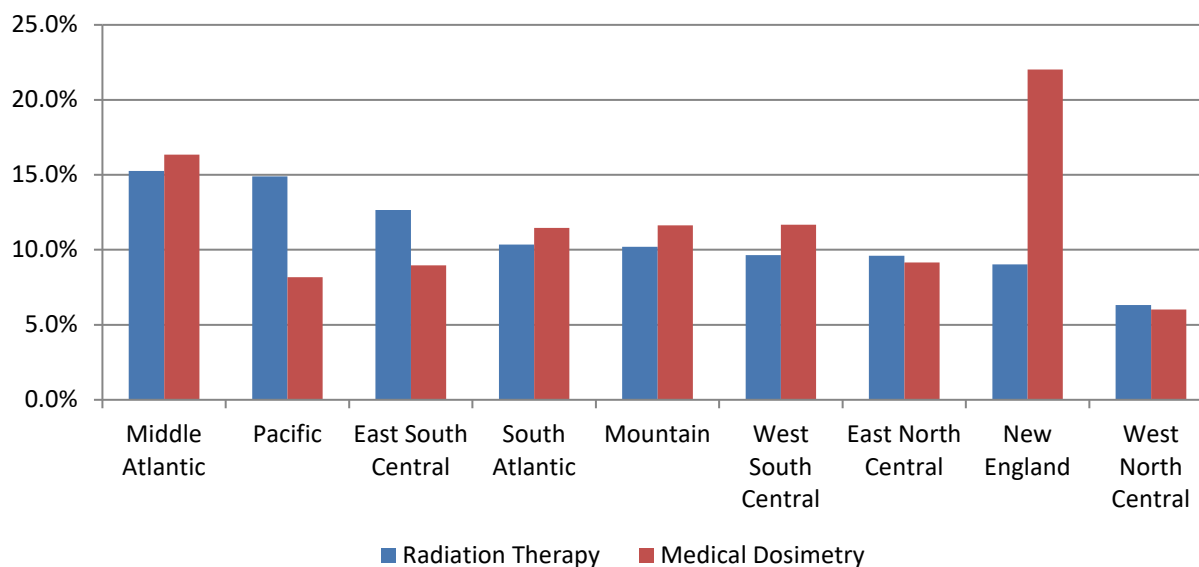


### 2022 Estimated Percent of Unfilled FTE Positions by Geographic Region<sup>a</sup>

		Middle Atlantic	Pacific	East South Central	South Atlantic	Mountain	West South Central	East North Central	New England	West North Central
<b>Radiation Therapy</b>	N	37	71	27	117	95	57	87	41	40
	%	15.3%	14.9%	12.7%	10.4%	10.2%	9.6%	9.6%	9.0%	6.3%
<b>Medical Dosimetry</b>	N	33	63	28	109	79	50	76	34	36
	%	16.4%	8.2%	9.0%	11.5%	11.6%	11.7%	9.2%	22.0%	6.0%
<b>Overall Mean</b>		<b>15.8%</b>	<b>11.7%</b>	<b>10.8%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.6%</b>	<b>9.4%</b>	<b>14.9%</b>	<b>6.2%</b>

<sup>a</sup> Middle Atlantic: New York, Pennsylvania, and New Jersey  
 Pacific: Alaska, Washington, Oregon, California, and Hawaii  
 East South Central: Kentucky, Tennessee, Mississippi, and Alabama  
 South Atlantic: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida  
 Mountain: Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, and New Mexico  
 West South Central: Oklahoma, Texas, Arkansas, and Louisiana  
 East North Central: Wisconsin, Michigan, Illinois, Indiana, and Ohio  
 New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut  
 West North Central: Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, and Iowa

### 2022 Estimated Percent of Unfilled FTE Positions by Geographic Region

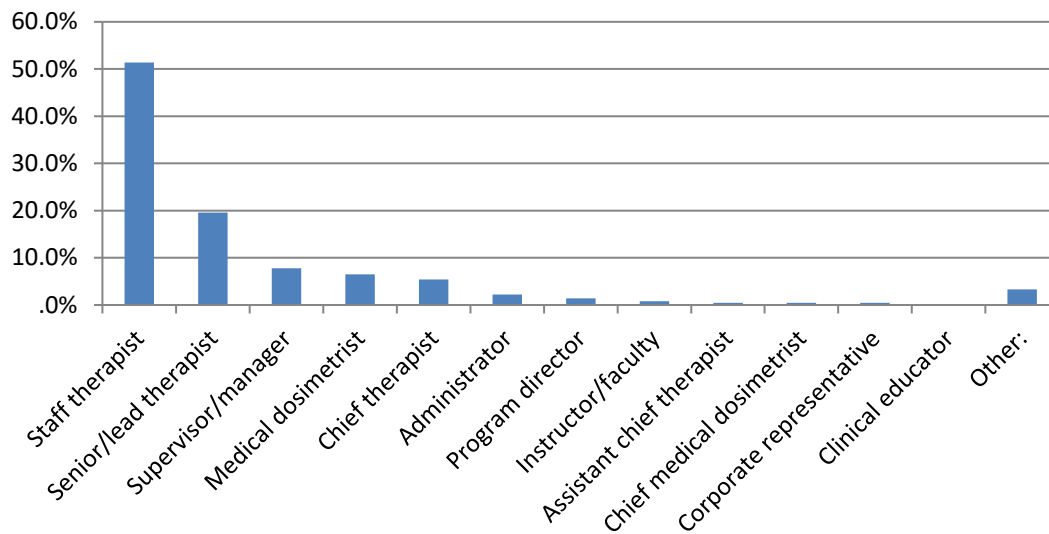


## Facility Demographics

### What is your primary job function?

	N	Valid Percent
Staff therapist	323	51.4%
Senior/lead therapist	123	19.6%
Supervisor/manager	49	7.8%
Medical dosimetrist	41	6.5%
Chief therapist	34	5.4%
Administrator	14	2.2%
Program director	9	1.4%
Instructor/faculty	5	0.8%
Assistant chief therapist	3	0.5%
Chief medical dosimetrist	3	0.5%
Corporate representative	3	0.5%
Clinical educator	1	0.2%
Other:	21	3.3%
<b>Total</b>	<b>629</b>	<b>100.0%</b>

### What is your primary job function?



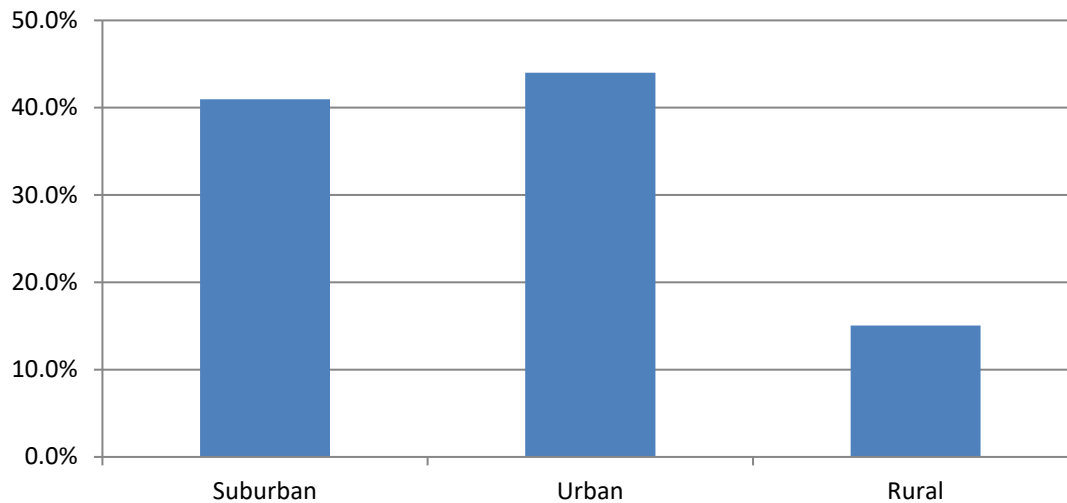
### Responding Facilities by State

State	N	State	N	State	N	State	N	State	N
Alabama	7	Hawaii	2	Massachusetts	13	New Mexico	4	South Dakota	5
Alaska	2	Idaho	2	Michigan	31	New York	29	Tennessee	5
Arizona	16	Illinois	37	Minnesota	13	North Carolina	16	Texas	32
Arkansas	7	Indiana	23	Mississippi	6	North Dakota	2	Utah	5
California	47	Iowa	16	Missouri	11	Ohio	17	Vermont	4
Colorado	12	Kansas	8	Montana	1	Oklahoma	9	Virginia	27
Connecticut	12	Kentucky	14	Nebraska	9	Oregon	11	Washington	9
Delaware	1	Louisiana	7	Nevada	3	Pennsylvania	36	West Virginia	1
Florida	32	Maine	3	New Hampshire	6	Rhode Island	1	Wisconsin	23
Georgia	12	Maryland/DC	13	New Jersey	14	South Carolina	9	Wyoming	3

### Location of Facility:

	N	Valid Percent
Suburban	256	41.0%
Urban	275	44.0%
Rural	94	15.0%
<b>Total</b>	<b>625</b>	<b>100.0%</b>

### Location of Facility:

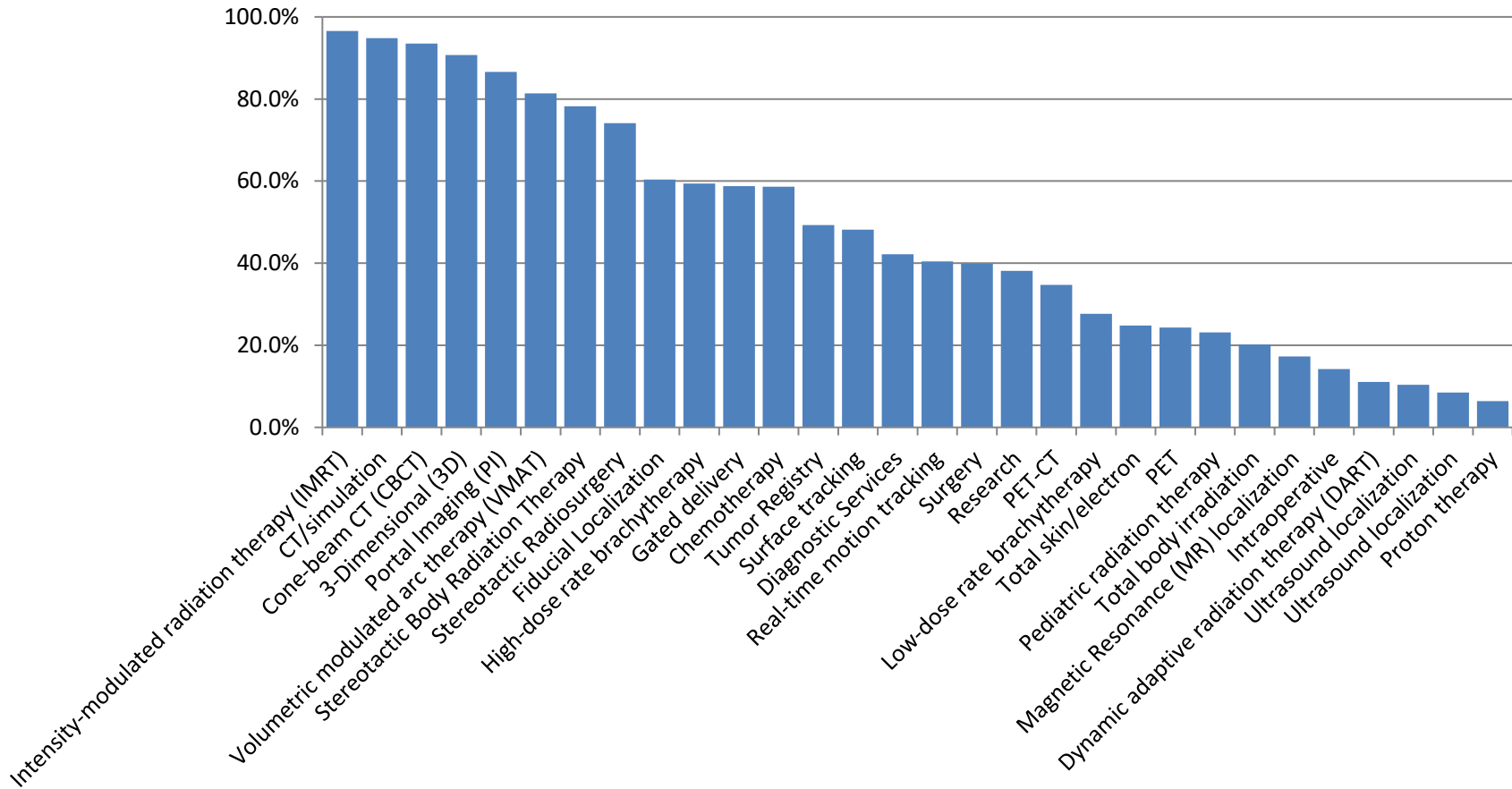




**Which of the following services does your facility provide?**

	<b>N</b>	<b>Percent of Cases</b>
Intensity-modulated radiation therapy (IMRT)	593	96.6%
CT/simulation	582	94.8%
Cone-beam CT (CBCT)	574	93.5%
3-Dimensional (3D)	557	90.7%
Portal Imaging (PI)	532	86.6%
Volumetric modulated arc therapy (VMAT)	500	81.4%
Stereotactic Body Radiation Therapy	480	78.2%
Stereotactic Radiosurgery	455	74.1%
Fiducial Localization	371	60.4%
High-dose rate brachytherapy	365	59.4%
Gated delivery	361	58.8%
Chemotherapy	360	58.6%
Tumor Registry	303	49.3%
Surface tracking	296	48.2%
Diagnostic Services	259	42.2%
Real-time motion tracking	248	40.4%
Surgery	245	39.9%
Research	234	38.1%
PET-CT	213	34.7%
Low-dose rate brachytherapy	170	27.7%
Total skin/electron	152	24.8%
PET	149	24.3%
Pediatric radiation therapy	142	23.1%
Total body irradiation	124	20.2%
Magnetic Resonance (MR) localization	106	17.3%
Intraoperative	87	14.2%
Dynamic adaptive radiation therapy (DART)	68	11.1%
Ultrasound localization	64	10.4%
Ultrasound localization	52	8.5%
Proton therapy	39	6.4%
Hyperthermia	26	4.2%

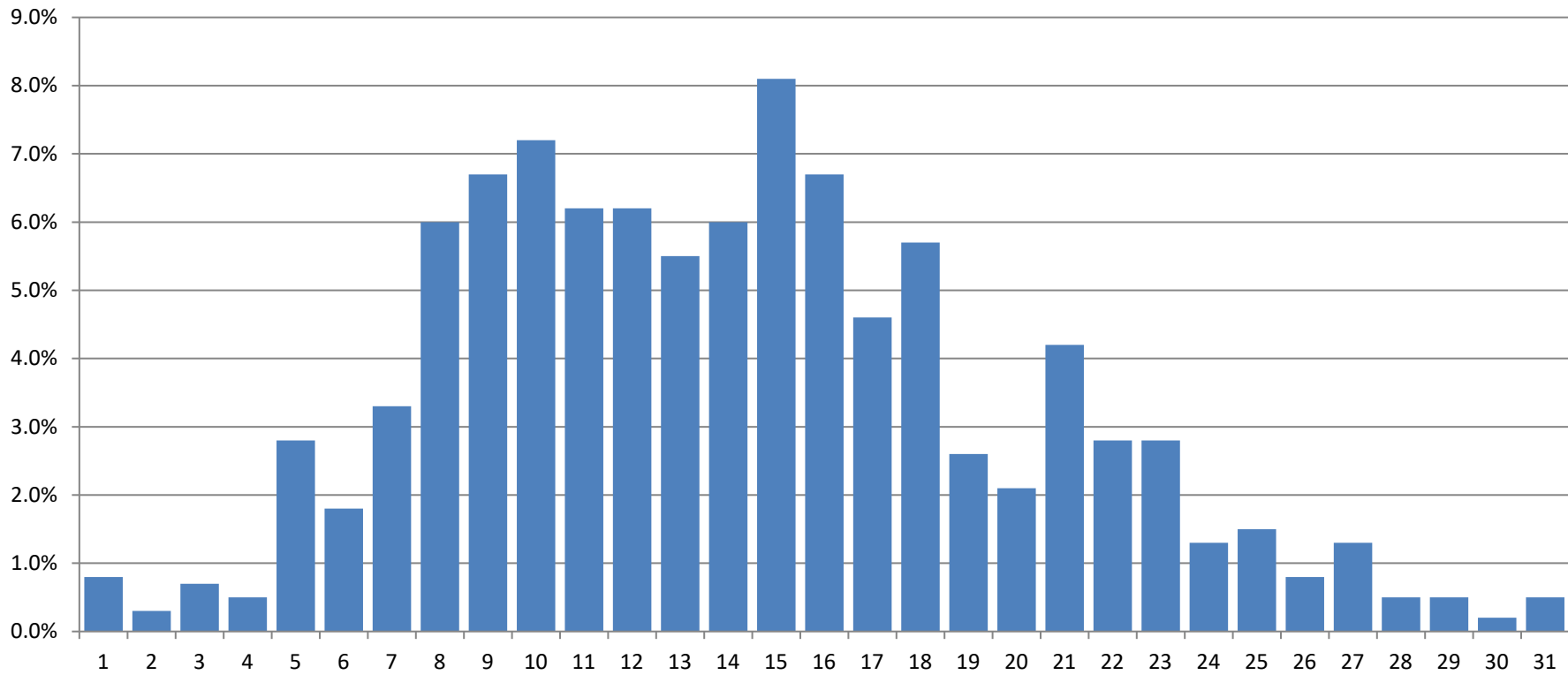
**Which of the following services does your facility provide?**



### Number of Services Provided by Each Facility

	<b>N</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
1	5	0.8%	0.8%
2	2	0.3%	1.1%
3	4	0.7%	1.8%
4	3	0.5%	2.3%
5	17	2.8%	5.0%
6	11	1.8%	6.8%
7	20	3.3%	10.1%
8	37	6.0%	16.1%
9	41	6.7%	22.8%
10	44	7.2%	30.0%
11	38	6.2%	36.2%
12	38	6.2%	42.3%
13	34	5.5%	47.9%
14	37	6.0%	53.9%
15	50	8.1%	62.1%
16	41	6.7%	68.7%
17	28	4.6%	73.3%
18	35	5.7%	79.0%
19	16	2.6%	81.6%
20	13	2.1%	83.7%
21	26	4.2%	87.9%
22	17	2.8%	90.7%
23	17	2.8%	93.5%
24	8	1.3%	94.8%
25	9	1.5%	96.3%
26	5	0.8%	97.1%
27	8	1.3%	98.4%
28	3	0.5%	98.9%
29	3	0.5%	99.3%
30	1	0.2%	99.5%
31	3	0.5%	100.0%
<b>Total</b>	<b>614</b>	<b>100.00%</b>	
<b>Mean</b>	<b>14.2 (SD=5.8)</b>		
<b>Percentiles</b>	5th=5.0, 25th=10.0, 50th=14.0 75th=18.0, 95th=25.0		

**Number of Service Offered:**

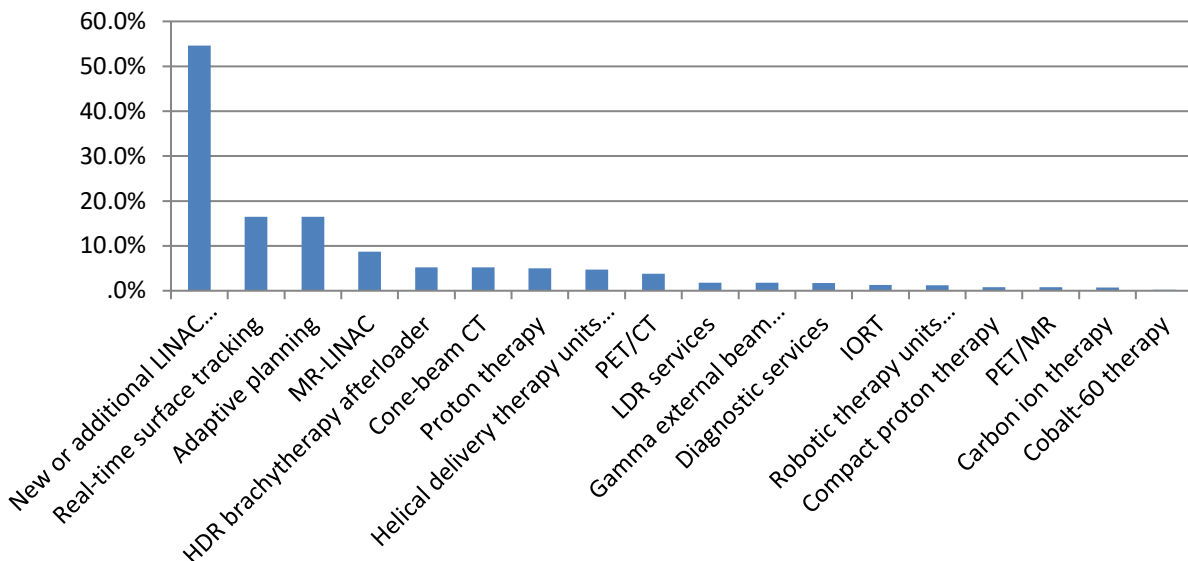


**Over the next few years, is your facility planning to expand services to include any of the following?<sup>a</sup>**

	N	Percent of Cases
New or additional LINAC therapy units	327	54.6%
Real-time surface tracking	99	16.5%
Adaptive planning	99	16.5%
MR-LINAC	52	8.7%
HDR brachytherapy afterloader	31	5.2%
Cone-beam CT	31	5.2%
Proton therapy	30	5.0%
Helical delivery therapy units (TomoTherapy, Halcyon, etc.)	28	4.7%
PET/CT	23	3.8%
LDR services	11	1.8%
Gamma external beam therapy (GammaKnife, GammaPod, etc.)	11	1.8%
Diagnostic services	10	1.7%
IORT	8	1.3%
Robotic therapy units (CyberKnife)	7	1.2%
Compact proton therapy	5	.8%
PET/MR	5	.8%
Carbon ion therapy	4	0.7%
Cobalt-60 therapy	1	0.2%

<sup>a</sup> 200 (33.4%) responded "None of the above".

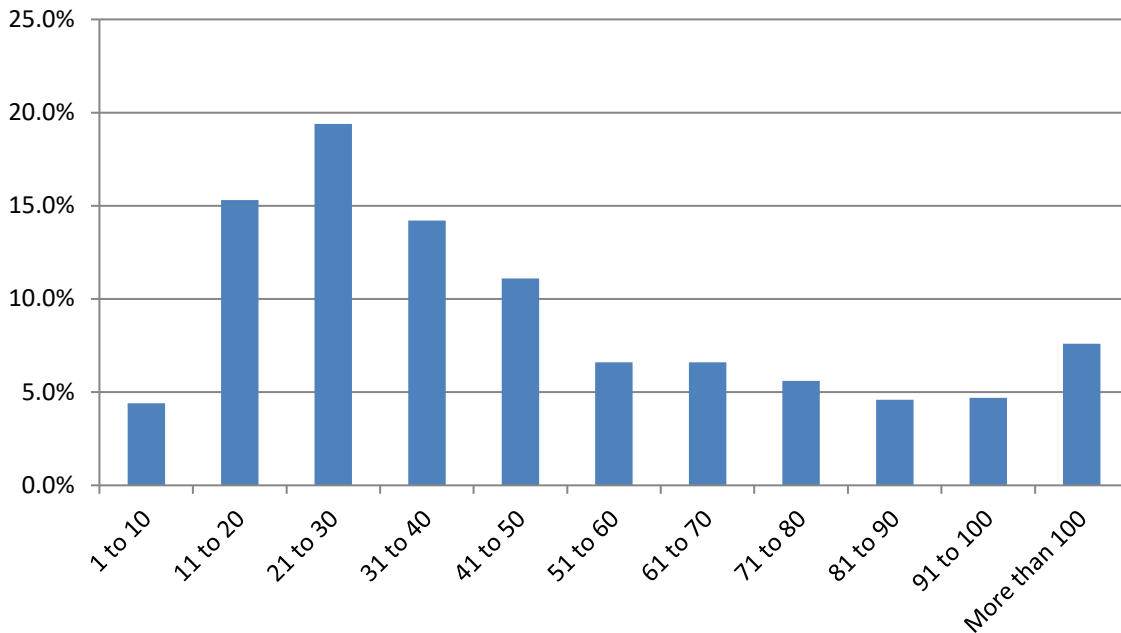
**Over the next few years, is your facility planning to expand services to include any of the following?**



**On average, how many patients are treated daily at your facility?**

	N	Valid Percent	Cumulative Percent
1 to 10	26	4.4%	4.4%
11 to 20	91	15.3%	19.7%
21 to 30	115	19.4%	39.1%
31 to 40	84	14.2%	53.3%
41 to 50	66	11.1%	64.4%
51 to 60	39	6.6%	71.0%
61 to 70	39	6.6%	77.6%
71 to 80	33	5.6%	83.1%
81 to 90	27	4.6%	87.7%
91 to 100	28	4.7%	92.4%
More than 100	45	7.6%	100.0%
<b>Total</b>	<b>593</b>	<b>100.0%</b>	
<b>Mean</b>	<b>50.1 (SD=34.7)</b>		
<b>Percentiles</b>	5th=12.0, 25th=25.0, 50th=40.0 75th=67.6, 95th=120.0		

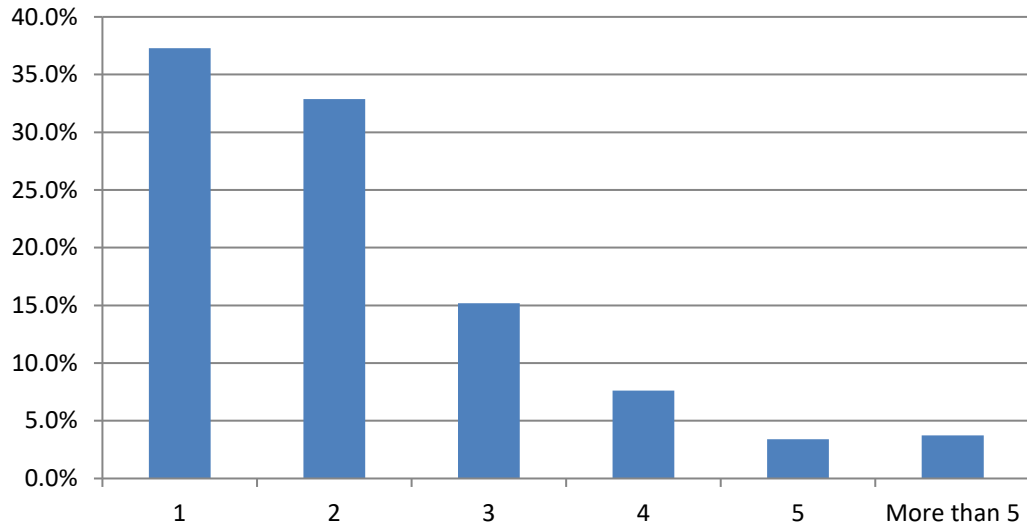
**On average, how many patients are treated daily at your facility?**



**How many linear accelerators are used in your facility?**

	<b>N</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
1	221	37.3%	37.3%
2	195	32.9%	70.2%
3	90	15.2%	85.3%
4	45	7.6%	92.9%
5	20	3.4%	96.3%
More than 5	22	3.7%	100.0%
<b>Total</b>	<b>593</b>	<b>100.0%</b>	
<b>Mean</b>	<b>2.2 (SD=1.38)</b>		
<b>Percentiles</b>	5th=1.0, 25th=1.0, 50th=2.0 75th=3.0, 95th=5.0		

**How many linear accelerators are used in your facility?**

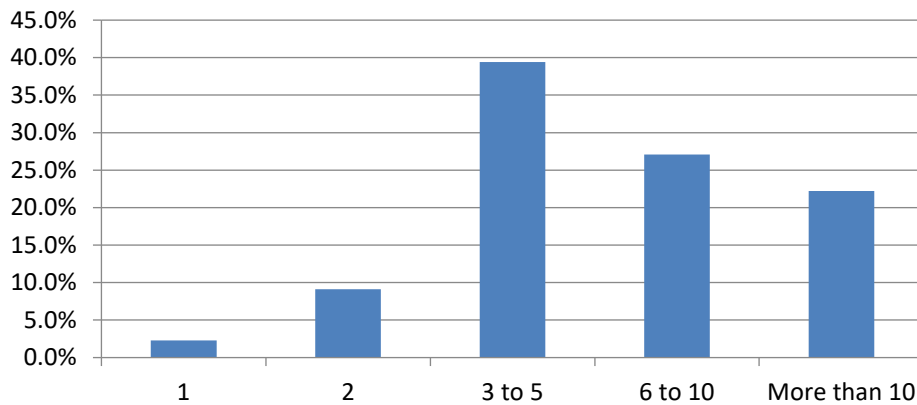


## Personnel Demographics

How many full-time equivalent radiation therapists are budgeted in your department?

	N	Valid Percent	Cumulative Percent
1	13	2.3%	2.2%
2	52	9.1%	11.3%
3 to 5	226	39.4%	50.8%
6 to 10	155	27.1%	77.8%
More than 10	127	22.2%	100.0%
<b>Total</b>	<b>573</b>	<b>100.0%</b>	
<b>Mean</b>	<b>7.3 (SD=5.39)</b>		
<b>Percentiles</b>	5th=2.0, 25th=3.5, 50th=5.0 75th=10.0, 95th=20.0		

How many full-time equivalent radiation therapists are budgeted in your department?

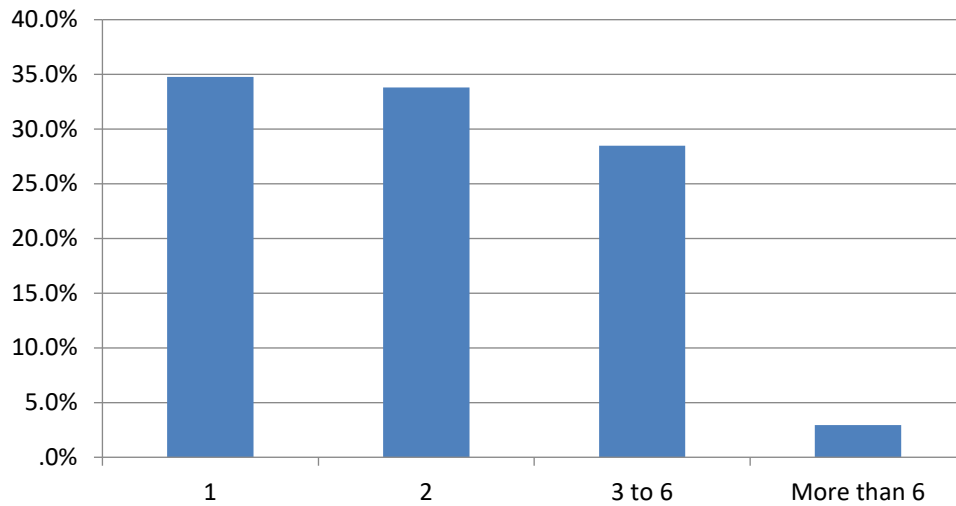




**How many full-time equivalent medical dosimetrists are budgeted in your department?**

	<b>N</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
1	177	34.8%	34.8%
2	172	33.8%	68.6%
3 to 6	145	28.5%	97.1%
More than 6	15	2.9%	100.0%
<b>Total</b>	<b>509</b>	<b>100.0%</b>	
<b>Mean</b>	<b>2.4 (SD=1.62)</b>		
<b>Percentiles</b>	5th=1.0, 25th=1.0, 50th=2.0 75th=3.0, 95th=6.0		

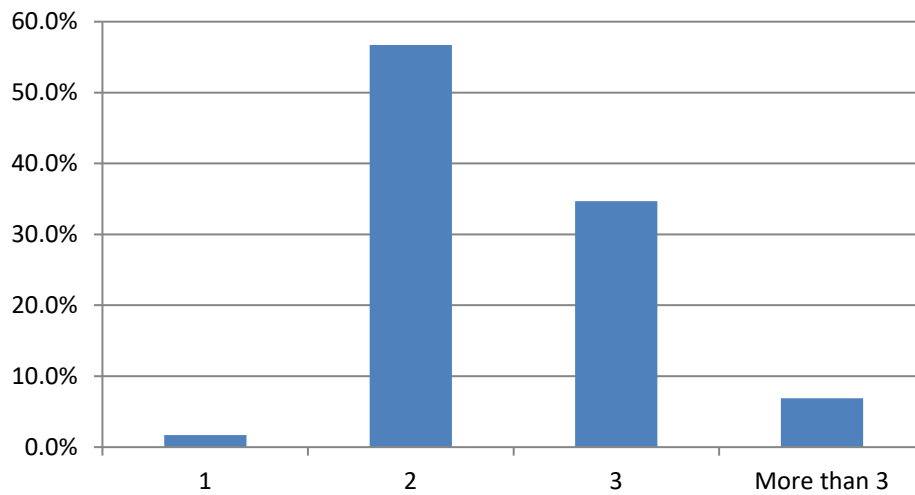
**How many full-time equivalent medical dosimetrists are budgeted in your department?**



**On average, how many therapists per linear accelerator are routinely scheduled at your facility?**

	<b>N</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
1	10	1.7%	1.7%
2	343	56.7%	58.4%
3	210	34.7%	93.1%
More than 3	42	6.9%	100.0%
<b>Total</b>	<b>605</b>	<b>100.0%</b>	
<b>Mean</b>	<b>2.4 (SD=0.654)</b>		
<b>Percentiles</b>	5th=2.0, 25th=2.0, 50th=2.0 75th=3.0, 95th=4.0		

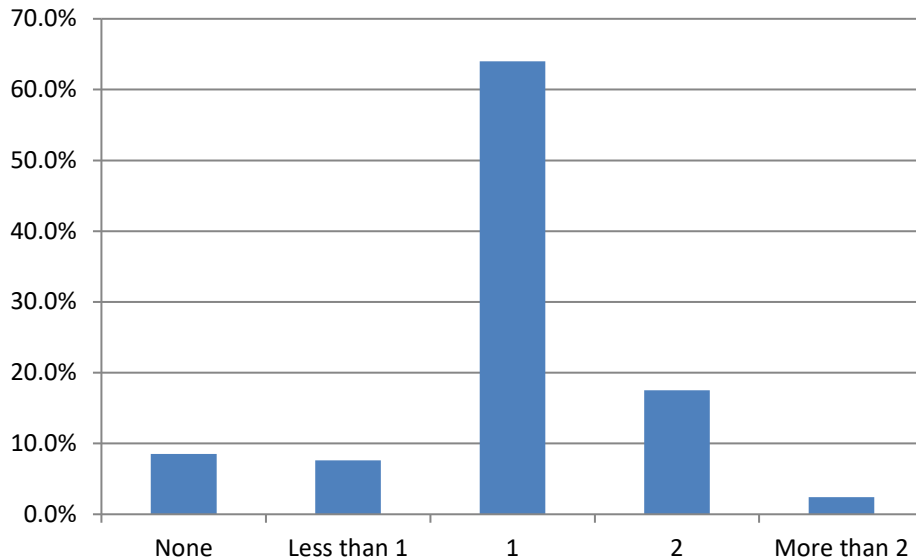
**On average, how many therapists per linear accelerator are routinely scheduled at your facility?**



**On average, how many dosimetrists per linear accelerator are routinely scheduled at your facility?**

	<b>N</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
None	47	8.5%	8.5%
Less than 1	42	7.6%	16.2%
1	352	64.0%	80.2%
2	96	17.5%	97.6%
More than 2	13	2.4%	100.0%
<b>Total</b>	552	100.0%	
<b>Mean</b>	<b>1.1 (SD=0.708)</b>		
<b>Percentiles</b>	5th=0.0, 25th=1.0, 50th=1.0 75th=1.0, 95th=2.0		

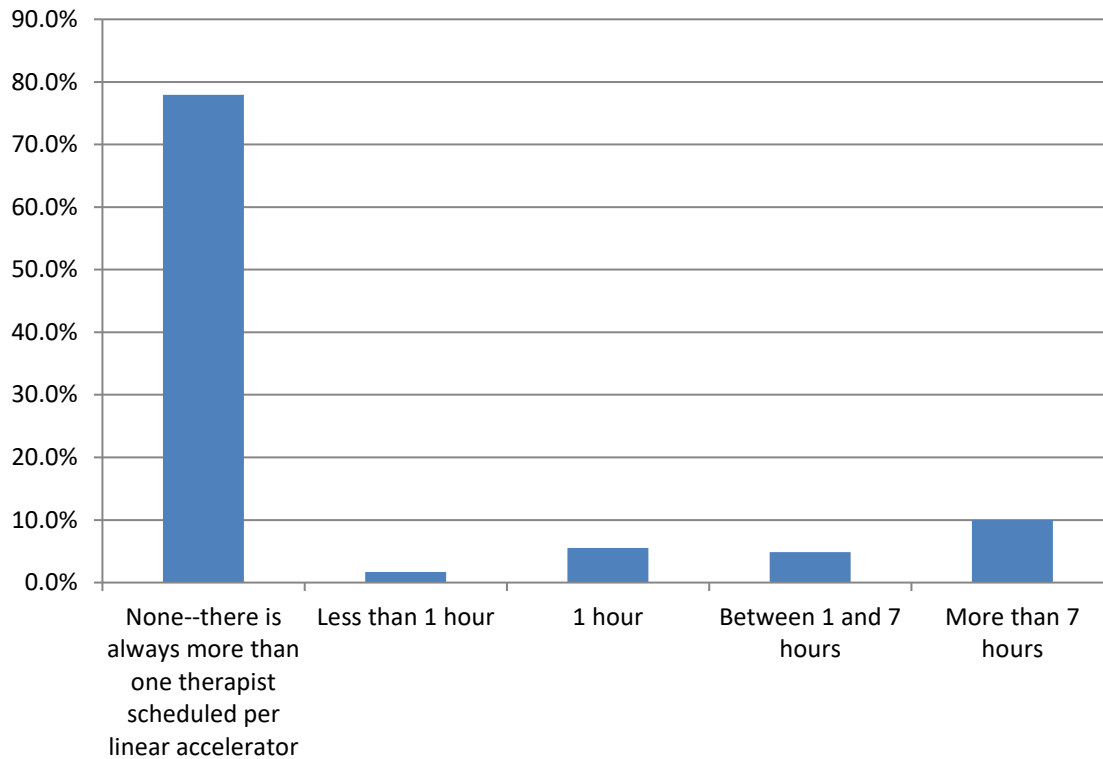
**On average, how many dosimetrists per linear accelerator are routinely scheduled at your facility?**



**How many, if any, hours per day does your facility routinely schedule only one therapist per linear accelerator?**

	<b>N</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
None--there is always more than one therapist scheduled per linear accelerator	461	77.9%	77.9%
Less than 1 hour	10	1.7%	79.6%
1 hour	33	5.6%	85.1%
Between 1 and 7 hours	29	4.9%	90.0%
More than 7 hours	59	10.0%	100.0%
<b>Total</b>	592	100.0%	
<b>Mean</b>	<b>1.2 (SD=3.41)</b>		
<b>Percentiles</b>	5th=0.0, 25th=0.0, 50th=0.0 75th=0.0, 95th=8.0		

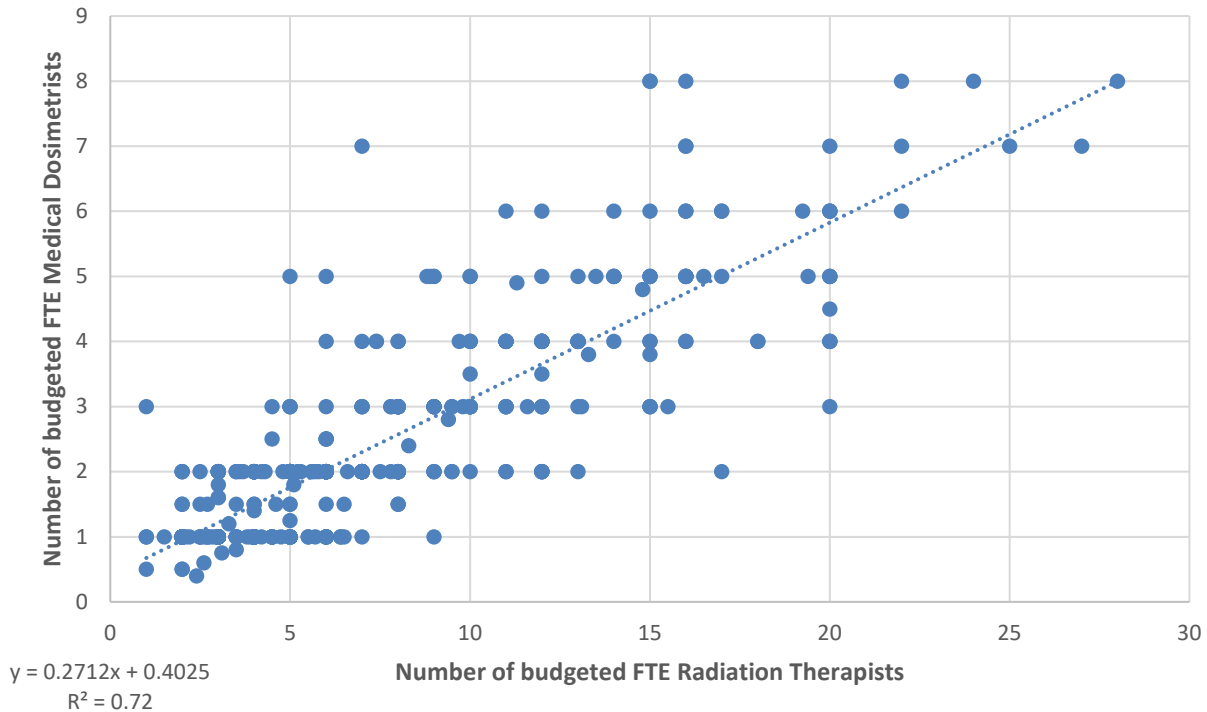
**How many, if any, hours per day does your facility routinely schedule only one therapist per linear accelerator?**



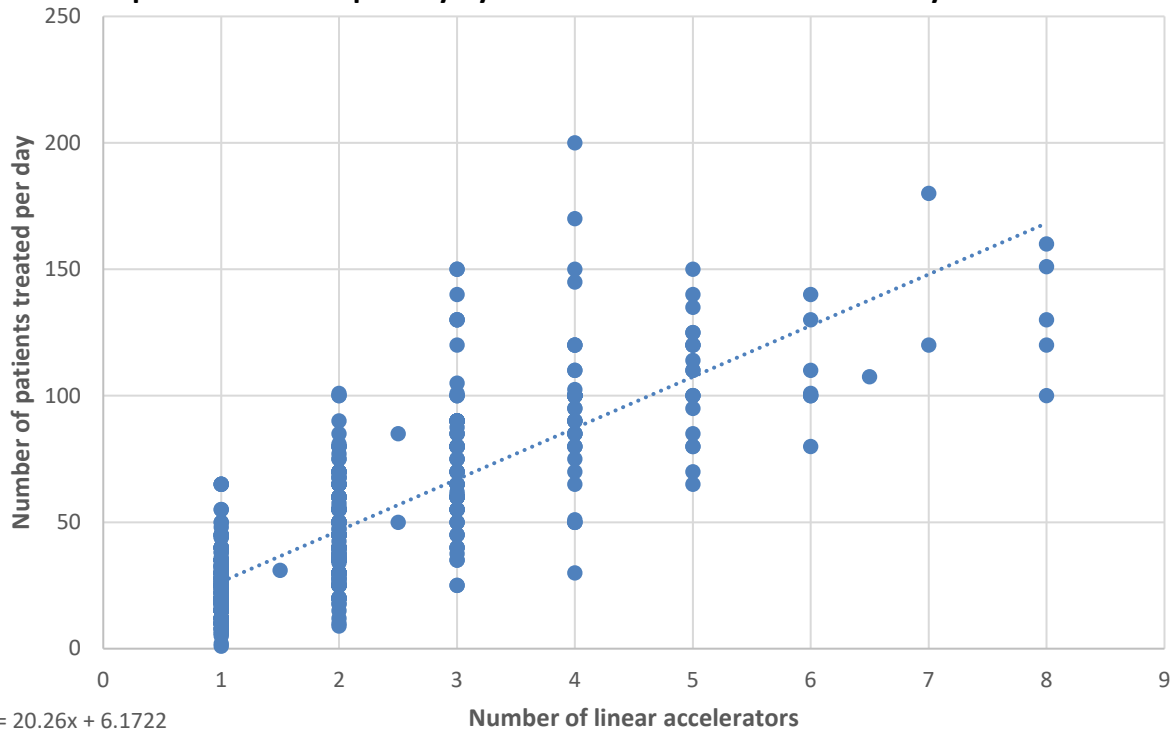
## Appendix A. Scatterplots

Below are scatterplots that demonstrate the observed relationship between selected variables from the survey. Please note that these scatterplots do not necessarily demonstrate any causal relation. They merely show how the given factors measured in the survey vary from each other. In each instance below, one variable is treated as independent (charted on the x-axis) and another is treated as dependent (charted on the y-axis). The points on the chart represent each of the observed data points from the survey. The diagonal line running across the chart represents the best-fit straight line through the observed data points. This is derived from the regression equation in the lower left-hand corner of the chart. The  $r^2$  measures the proportion of variance among the data points accounted for by the regression equation. The closer the  $r^2$  is to 1, the better the line fits the data; the closer the  $r^2$  is to 0, the more poorly the line fits the data. Also listed is the ratio of the variable on the x-axis to the variable on the y-axis.

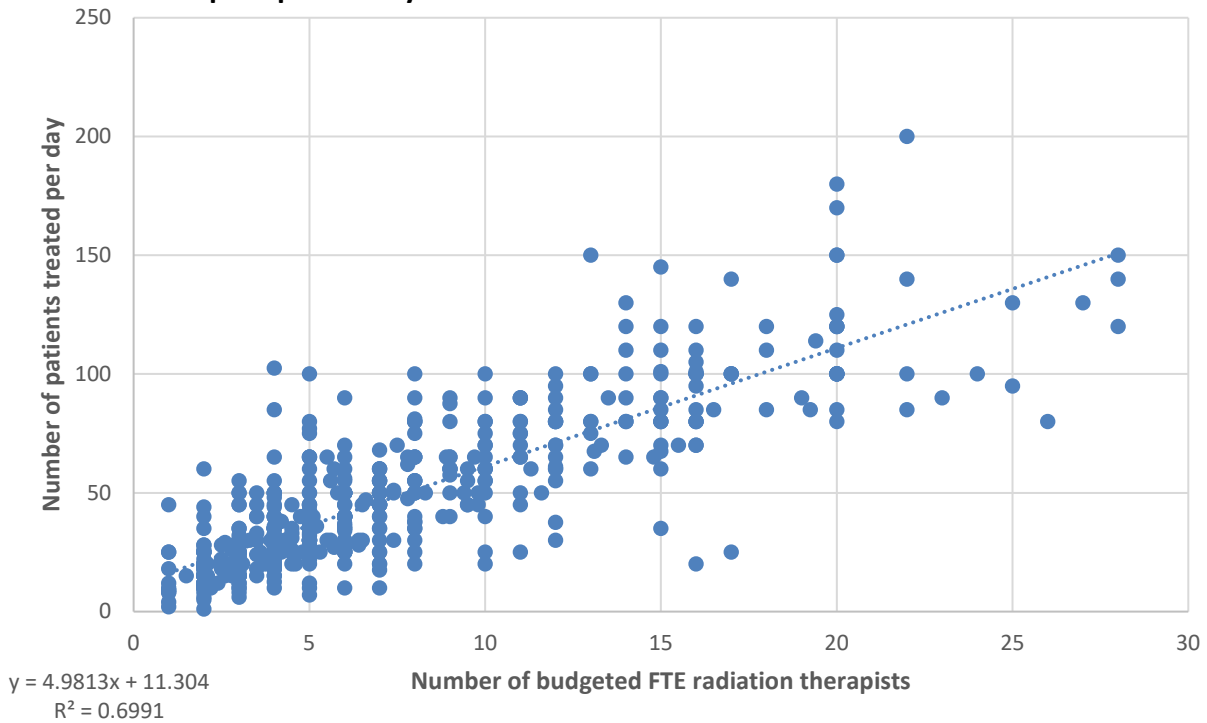
**Number of budgeted FTE medical dosimetrists per facility by number of budgeted FTE radiation therapists per facility**



### Number of patients treated per day by linear accelerators used at facility



### Number of patients treated per day by number of budgeted FTE radiation therapists per facility



### Number of patients treated per day by number of budgeted FTE medical dosimetrists

