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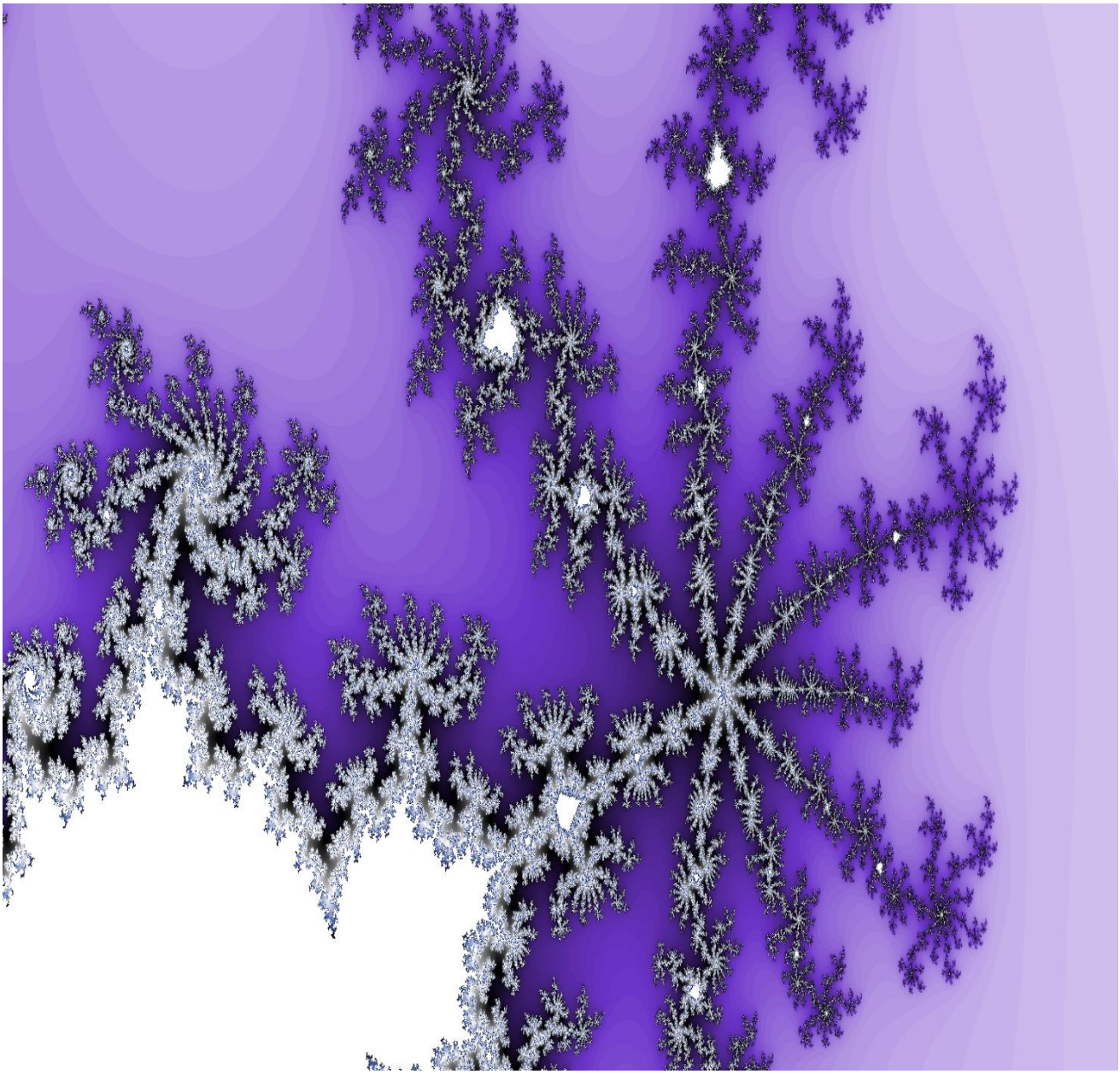
Radiation Therapy Staffing and Workplace Survey 2024



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American Society of Radiologic Technologists

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Executive Summary

Sample

The *Radiation Therapy Staffing and Workplace Survey 2024* was emailed to 22,892 radiation therapists and medical dosimetrists in May 2024. At the close of the survey in June 2024, a total of 645 had completed the questionnaire, yielding a response rate of 2.8%.

At its widest, a sample size of 645 yields a margin of error for overall percentages of ± 3.9% (at the 95% confidence level).

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:

- 8.3 for radiation therapy.
- 2.7 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 13.6% of FTE positions are unfilled.

In medical dosimetry, an estimated 9.6% 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 (16.2%) and lowest in the East North Central region (9.4%). Overall, the percentage of unfilled positions combining both disciplines was 11.7%.

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 1.0 from 7.3 to 8.3 between 2022, when the last Radiation Therapy Staffing Survey was conducted, and 2024. Overall, the number of FTE therapists budgeted per facility has increased by 2.3 from 6.0 in 2004 to 8.3 in 2024.

The number of FTE dosimetrists budgeted per facility rose by 0.3 from 2.4 in 2022 to 2.7 in 2024. Overall, the number of FTE dosimetrists budgeted per facility has increased by 1.1 from 1.6 in 2004 to 2.7 in 2024.

- The estimated vacancy rate for FTE positions in therapy rose by 2.9%, from 10.7% in 2022 to 13.6% in 2024. This marks the fifth consecutive rise in vacancy rates registered by the survey.
- The estimated vacancy rate for FTE positions in medical dosimetry fell by 1.8%, from 11.4% in 2022 to 9.6% in 2024.

Facility Demographics

A plurality of respondents (45.7%) are staff therapists; 18.9% are senior/lead therapists, 8.1% are chief therapists, 7.0% are supervisors/managers, and 6.5% are medical dosimetrists.

There were respondents from every state except for Montana.

Urban facilities represented the largest share (49.3%) of respondents; 36.2% were suburban, and the remaining 14.5% were rural.

The average respondent to the survey works in a facility that offers 14.9 services in radiation therapy and related fields. The most commonly offered services are:

- Intensity-modulated radiation therapy (IMRT) (96.8% of facilities).
- Cone-beam CT (CBCT) (95.3% of facilities).
- CT/simulation (94.6% of facilities).

The most commonly offered services remained consistent with the results of the last two surveys, albeit with minor changes in position.

The least commonly offered services are:

- Hyperthermia (2.8% of facilities).
- Proton therapy (9.3% of facilities).
- Ultrasound localization (11.5% of facilities).

When asked which, if any, services they plan to expand, 57.6% of respondents said they plan to add additional LINAC therapy units, 19.4% plan to add adaptive planning, and 18.5% plan to add real-time surface

tracking; 29.9% have no plans to add any of the new services listed.

According to the responses provided, the average facility treats 56.4 patients each day and uses 2.4 linear accelerators.

Personnel Demographics

The average respondent works at a facility that schedules 2.8 therapists and 1.2 dosimetrist per linear accelerator. On average, there are 1.2 hours per day when only one therapist is scheduled per linear accelerator.

Turnover

Respondents were asked about the level of turnover their department has experienced over the last year.

Overall, 65.6% of respondents reported turnover in their department. Among departments that have experienced turnover, an average of 3.40 FTE radiation therapists and medical dosimetrists had left the department in 2023. Specifically, an average of:

- 0.82 left to work in another profession
- 0.73 left for personal reasons
- 0.43 retired
- 0.14 were terminated with cause
- 0.03 were laid off
- 1.25 left for other reasons

Data Reliability

Outliers

Numeric responses were examined for logically impossible or implausible values. Cross-tabulated scatter plots and boxplots were computed for numeric variables to detect potential outliers. Numeric data that were 3 times greater than the interquartile range above the top quartile were designated as outliers and excluded from the analysis.

Comparison of Management Positions and Remaining Sample

Independent sample *t*-tests were conducted to compare staffing variables for those in management positions and the remaining total sample. There were no statistical differences in budgeted FTEs and vacant positions between the two groups for either radiation therapy or medical dosimetry.

Radiation Therapy

	Management Positions			Remaining Sample			*t*-Test	
	N	Mean	*SD*	N	Mean	*SD*	*t*	*p*
Budgeted FTEs	205	8.3	7.0	349	8.4	7.1	0.12	.906
Vacant and Recruiting	205	1.2	2.0	349	1.1	1.6	0.65	.532

Medical Dosimetry

	Management Positions			Remaining Sample			*t*-Test	
	N	Mean	*SD*	N	Mean	*SD*	*t*	*p*
Budgeted FTEs	180	2.7	2.4	308	2.8	2.1	0.21	.831
Vacant and Recruiting	180	0.3	0.9	308	0.2	0.5	1.03	.303

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:

(mean number of vacant and recruiting per facility) / (mean number of budgeted FTEs per facility) * 100

For example, in radiation therapy the mean vacant and recruiting positions per facility is 1.13. When divided by the mean budgeted FTE of 8.3, this yields a proportion of unfilled FTE positions of 0.136. Multiplying by 100 to give the percent value, and then rounding to the nearest tenth, gives the percent vacancy rate for radiation therapy of 13.6%.

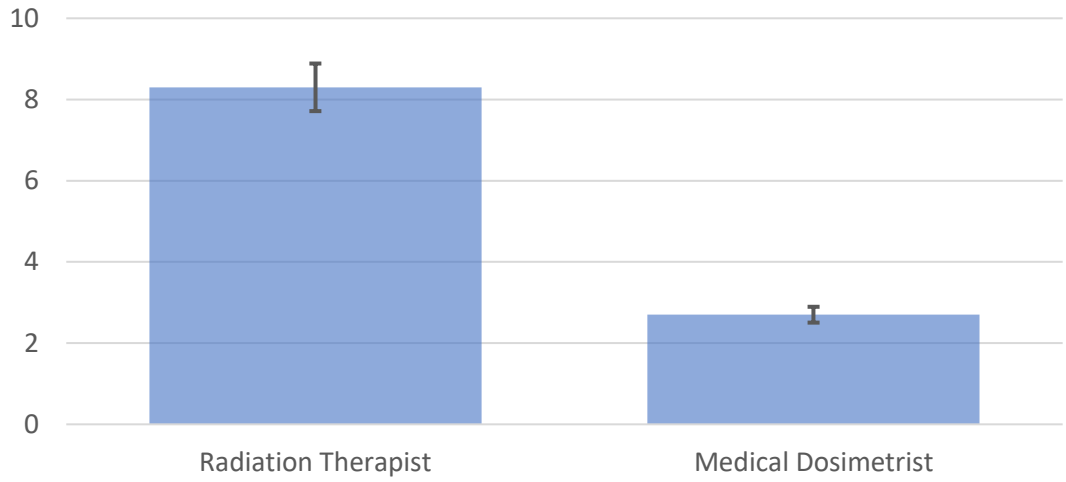
Note that only responses that included both the number of budgeted FTEs and the number of vacant and recruiting were used in the calculation of vacancy rates.

Staffing of Facilities

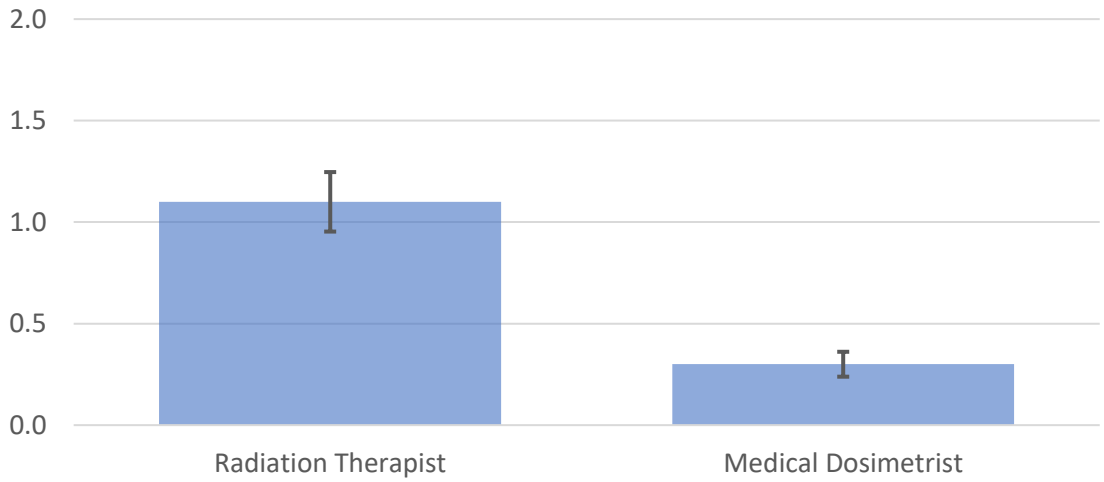
Provide the budgeted and vacant full-time equivalents (FTEs) for your facility. Please use decimals for fractional FTEs.

		Budgeted FTEs			Vacant and Recruiting			Estimated Percent Vacant FTE Positions
Discipline	N	Mean	*SD*	95% Confidence Interval	Mean	*SD*	95% Confidence Interval	
Radiation Therapy	554	**8.3**	7.0	± 0.6	**1.1**	1.8	± 0.15	**13.6%**
Medical Dosimetry	488	**2.7**	2.2	± 0.2	**0.3**	0.7	± 0.06	**9.6%**

Mean Budgeted FTEs



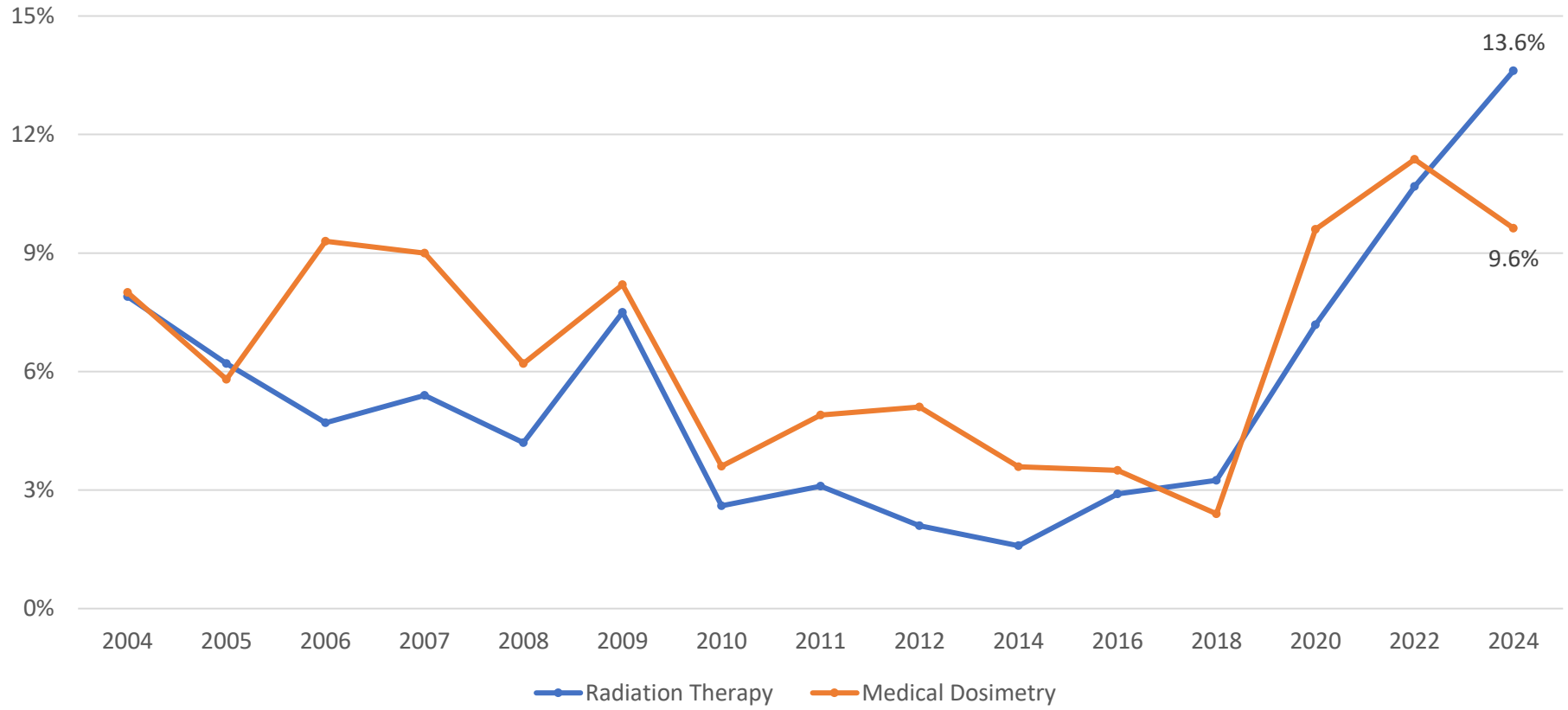
Mean Vacant and Recruiting FTEs



Longitudinal Tracking of Estimated Percent Vacancy Rates

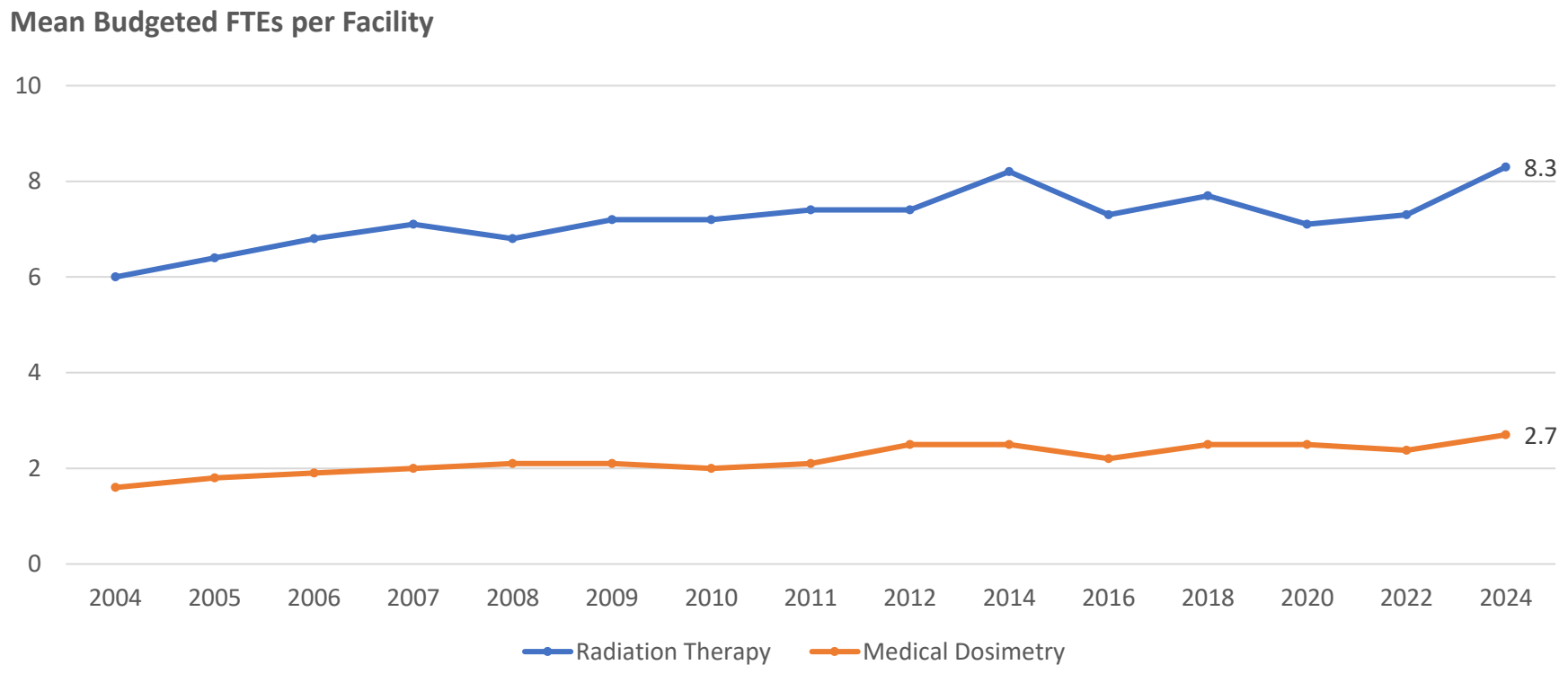
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2014	2016	2018	2020	2022	2024
Radiation Therapy	7.9%	6.2%	4.7%	5.4%	4.2%	7.5%	2.6%	3.1%	2.1%	1.6%	2.9%	3.2%	7.2%	10.7%	13.6%
Medical Dosimetry	8.0%	5.8%	9.3%	9.0%	6.2%	8.2%	3.6%	4.9%	5.1%	3.6%	3.5%	2.4%	9.6%	11.4%	9.6%

Longitudinal Tracking of Estimated Percent Unfilled FTE Positions



Longitudinal Tracking of Mean Budgeted FTEs

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2014	2016	2018	2020	2022	2024
Radiation Therapy	6.0	6.4	6.8	7.1	6.8	7.2	7.2	7.4	7.4	8.2	7.3	7.7	7.1	7.3	**8.3**
Medical Dosimetry	1.6	1.8	1.9	2.0	2.1	2.1	2.0	2.1	2.5	2.5	2.2	2.5	2.5	2.4	**2.7**

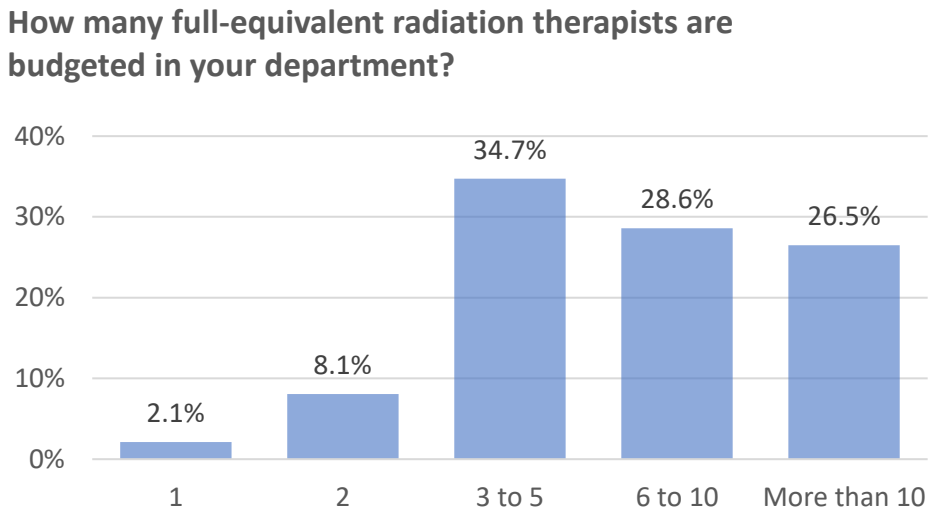


How many full-time equivalent radiation therapists are budgeted in your department?

	N	Percent	Cumulative Percent
1	12	2.1%	2.1%
2	46	8.1%	10.2%
3 to 5	198	34.7%	44.9%
6 to 10	163	28.6%	73.5%
More than 10	151	26.5%	100.0%
Total	**570**	**100.0%**	

Descriptive Statistics

Mean	**8.3** (*SD* = 7.0)
Percentiles	5th = 2.0, 25th = 4.0, 50th = 6.0 75th = 10.0, 95th = 24.3

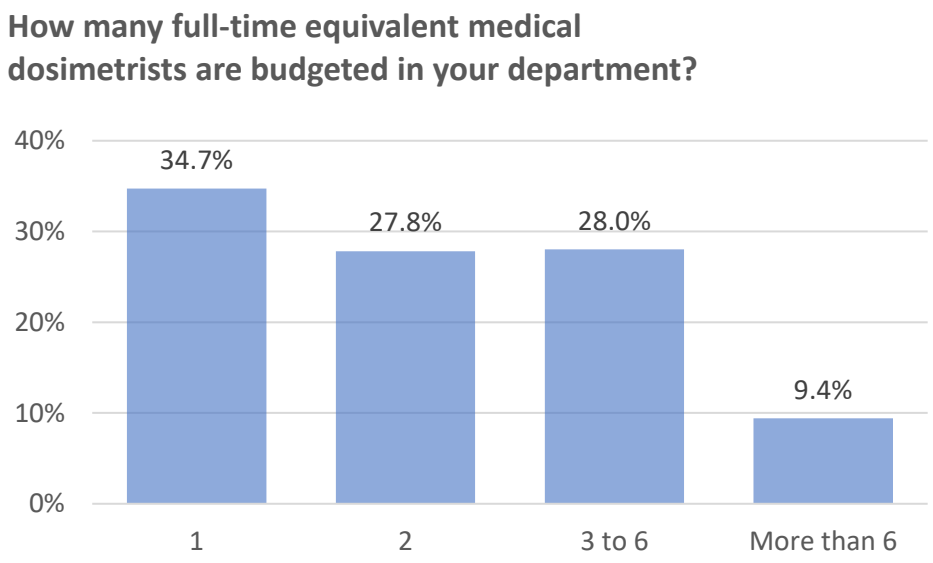


How many full-time equivalent medical dosimetrists are budgeted in your department?

	N	Percent	Cumulative Percent
1	181	34.7%	34.7%
2	145	27.8%	62.6%
3 to 6	146	28.0%	90.6%
More than 6	49	9.4%	100.0%
Total	**521**	**100.0%**	

Descriptive Statistics

Mean	**2.8** (*SD* = 2.3)
Percentiles	5th = 1.0, 25th = 1.0, 50th = 2.0 75th = 3.9, 95th = 8.0

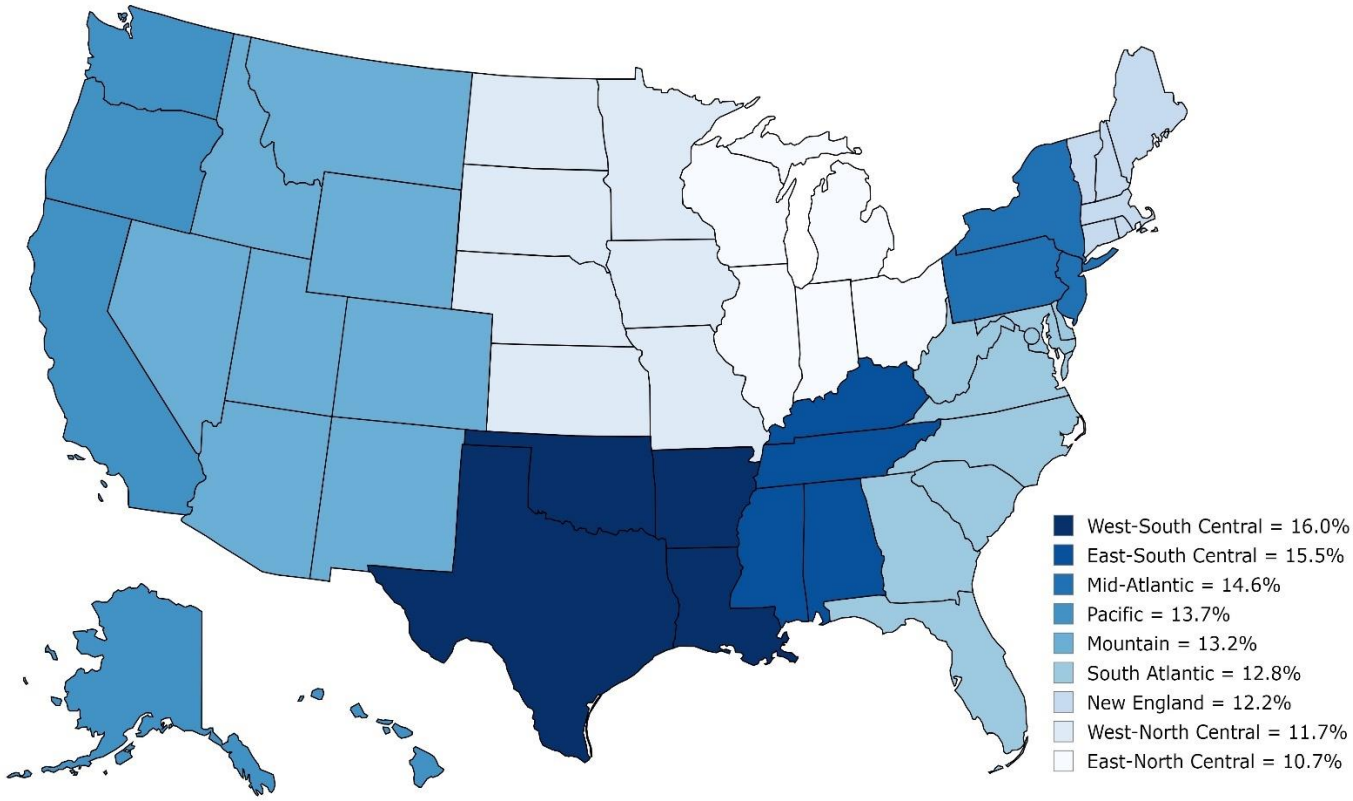


2024 Estimated Percent of Unfilled FTE Positions by Geographic Region[a]

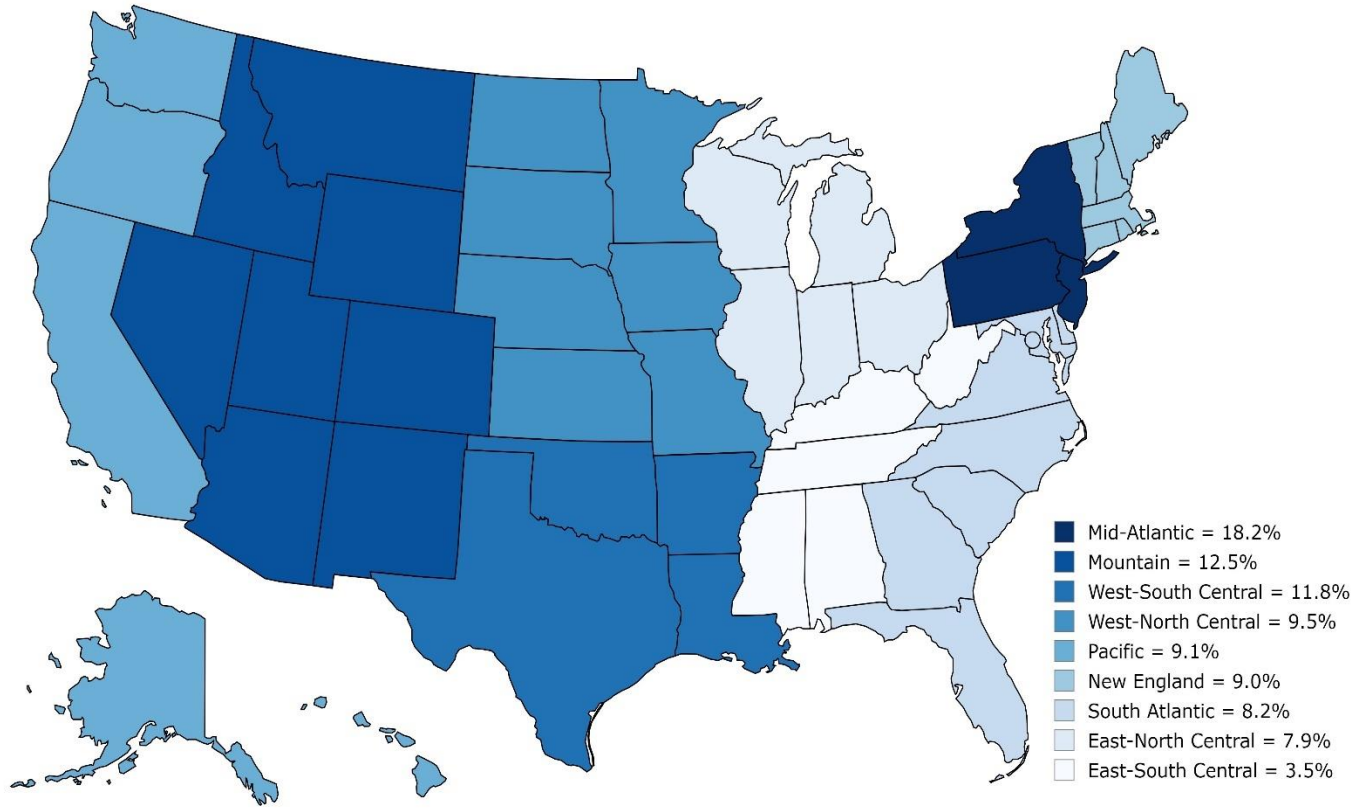
Discipline	Statistic	Middle Atlantic	West South Central	Mountain	Pacific	New England	South Atlantic	West North Central	East South Central	East North Central	Total
Radiation Therapy	N	30	66	88	81	39	107	38	33	59	541
	%	14.6%	16.0%	13.2%	13.7%	12.2%	12.8%	11.7%	15.5%	10.7%	13.3%
Medical Dosimetry	N	24	56	77	76	29	96	37	30	50	475
	%	18.2%	11.8%	12.5%	9.1%	9.0%	8.2%	9.5%	3.5%	7.9%	9.8%
Overall		**16.2%**	**14.0%**	**12.8%**	**11.5%**	**10.9%**	**10.7%**	**10.6%**	**9.8%**	**9.4%**	**11.7%**

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

Radiation Therapy Estimated Percent Vacancy Rate by Geographic Region



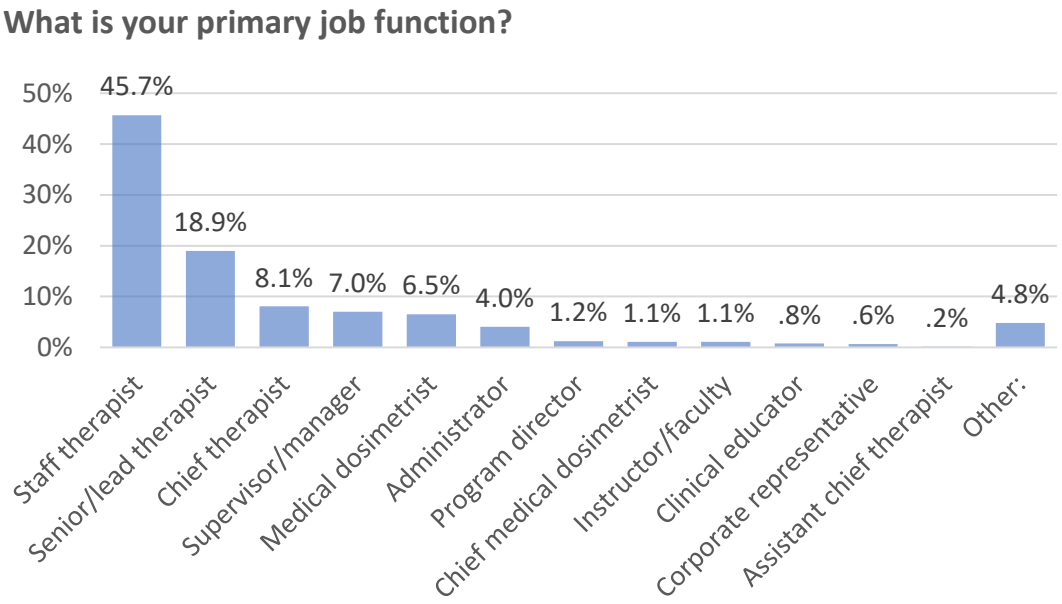
Medical Dosimetry Estimated Percent Vacancy Rate by Geographic Region



Facility Demographics

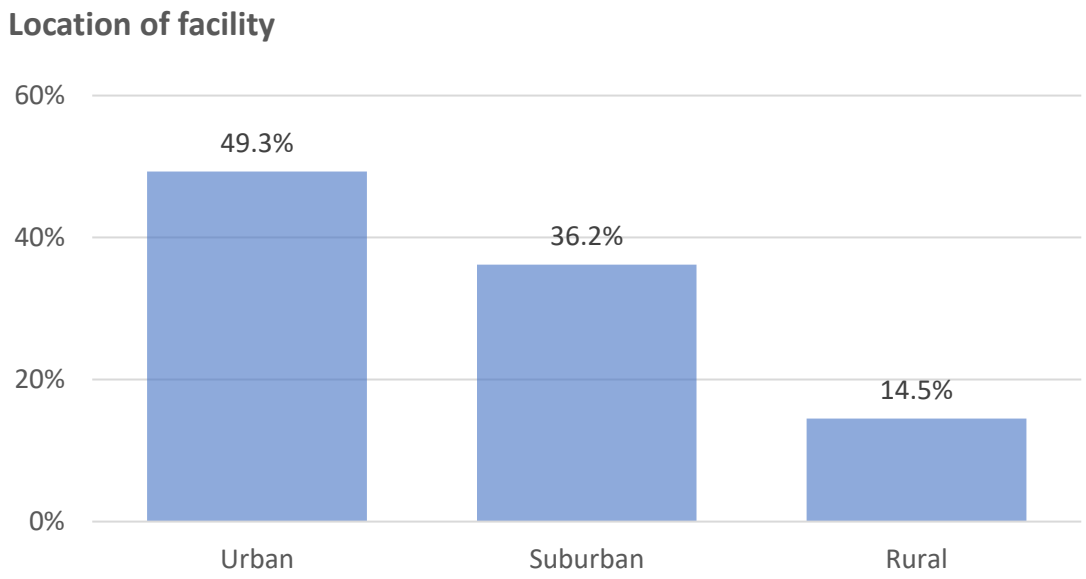
What is your primary job function?

	N	Percent
Staff therapist	294	45.7%
Senior/lead therapist	122	18.9%
Chief therapist	52	8.1%
Supervisor/manager	45	7.0%
Medical dosimetrist	42	6.5%
Administrator	26	4.0%
Program director	8	1.2%
Chief medical dosimetrist	7	1.1%
Instructor/faculty	7	1.1%
Clinical educator	5	.8%
Corporate representative	4	.6%
Assistant chief therapist	1	.2%
Other:	31	4.8%
Total	**644**	**100.0%**



Location of Facility:

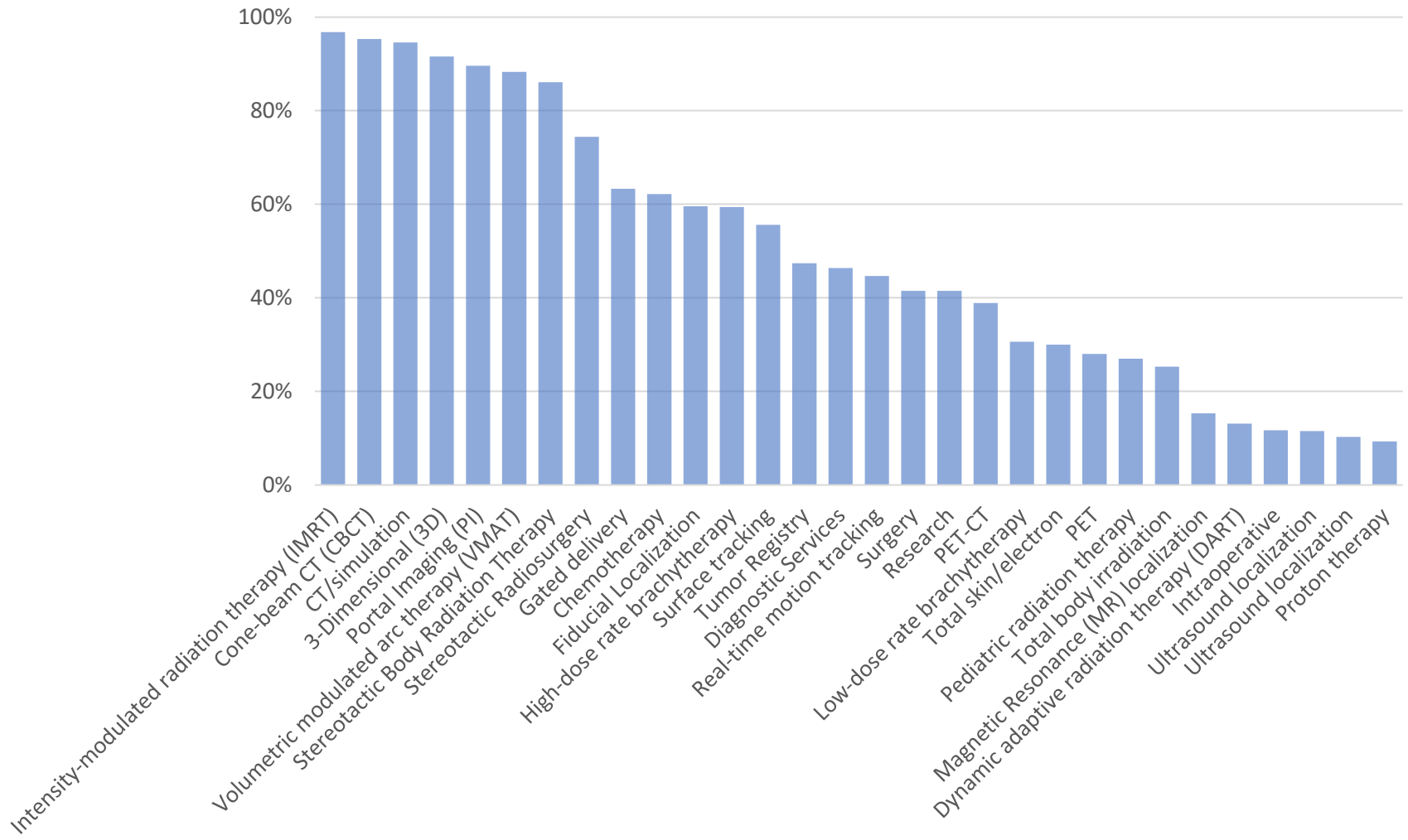
	N	Percent
Urban	316	49.3%
Suburban	232	36.2%
Rural	93	14.5%
Total	**641**	**100.0%**



Which of the following services does your facility provide?

	N	Percent of Cases
Intensity-modulated radiation therapy (IMRT)	613	96.8%
Cone-beam CT (CBCT)	603	95.3%
CT/simulation	599	94.6%
3-Dimensional (3D)	580	91.6%
Portal Imaging (PI)	567	89.6%
Volumetric modulated arc therapy (VMAT)	559	88.3%
Stereotactic Body Radiation Therapy	545	86.1%
Stereotactic Radiosurgery	471	74.4%
Gated delivery	401	63.3%
Chemotherapy	394	62.2%
Fiducial Localization	377	59.6%
High-dose rate brachytherapy	376	59.4%
Surface tracking	352	55.6%
Tumor Registry	300	47.4%
Diagnostic Services	294	46.4%
Real-time motion tracking	283	44.7%
Surgery	263	41.5%
Research	263	41.5%
PET-CT	246	38.9%
Low-dose rate brachytherapy	194	30.6%
Total skin/electron	190	30.0%
PET	177	28.0%
Pediatric radiation therapy	171	27.0%
Total body irradiation	160	25.3%
Magnetic Resonance (MR) localization	97	15.3%
Dynamic adaptive radiation therapy (DART)	83	13.1%
Intraoperative	74	11.7%
Ultrasound localization	73	11.5%
Ultrasound localization	65	10.3%
Proton therapy	59	9.3%
Hyperthermia	18	2.8%

Which of the following services does your facility provide?



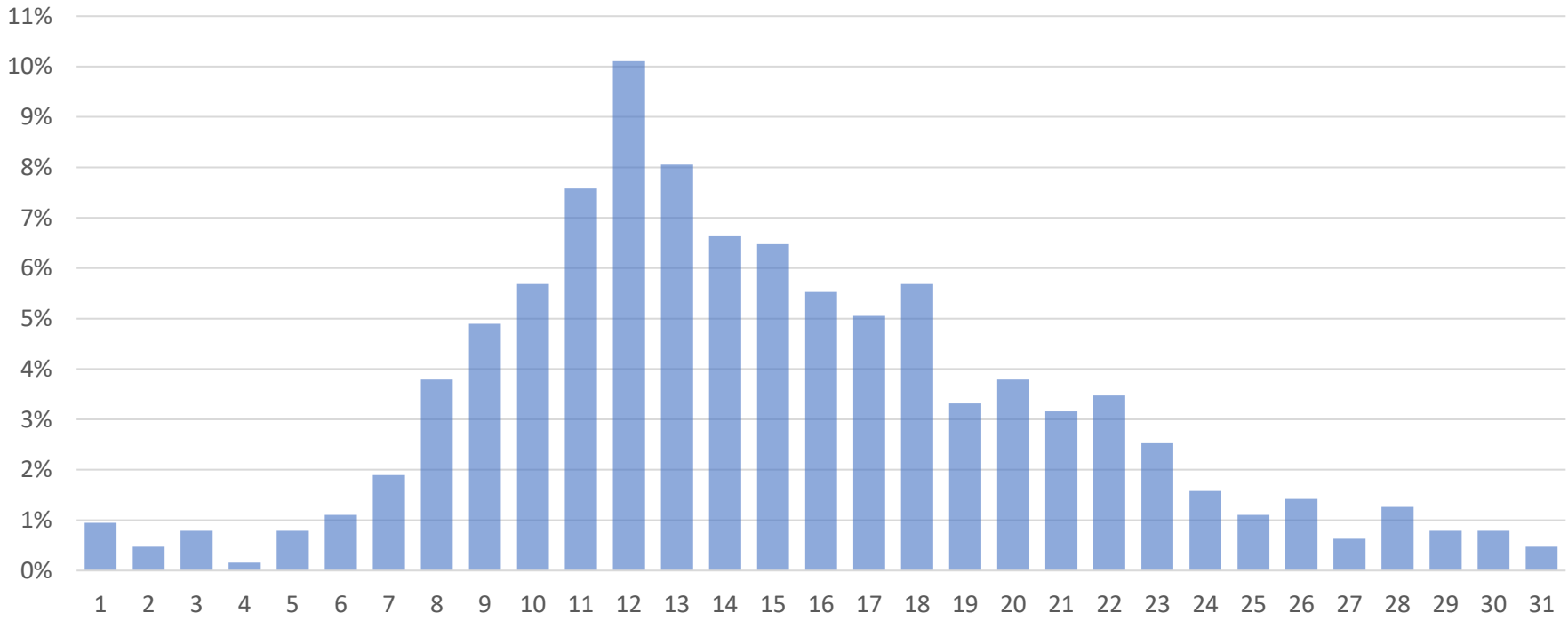
Number of Services Provided by Each Facility

	N	Percent	Cumulative Percent
1	6	0.9%	0.9%
2	3	0.5%	1.4%
3	5	0.8%	2.2%
4	1	0.2%	2.4%
5	5	0.8%	3.2%
6	7	1.1%	4.3%
7	12	1.9%	6.2%
8	24	3.8%	10.0%
9	31	4.9%	14.8%
10	36	5.7%	20.5%
11	48	7.6%	28.1%
12	64	10.1%	38.2%
13	51	8.1%	46.3%
14	42	6.6%	52.9%
15	41	6.5%	59.4%
16	35	5.5%	64.9%
17	32	5.1%	70.0%
18	36	5.7%	75.7%
19	21	3.3%	79.0%
20	24	3.8%	82.8%
21	20	3.2%	85.9%
22	22	3.5%	89.4%
23	16	2.5%	91.9%
24	10	1.6%	93.5%
25	7	1.1%	94.6%
26	9	1.4%	96.1%
27	4	0.6%	96.7%
28	8	1.3%	97.9%
29	5	0.8%	98.7%
30	5	0.8%	99.5%
31	3	0.5%	100.0%
Total	**633**	**100.0%**	

Descriptive Statistics

Mean	**14.9** (*SD* = 5.7)
Percentiles	5th = 7.0, 25th = 11.0, 50th = 14.0, 75th = 18.0, 95th = 26.0

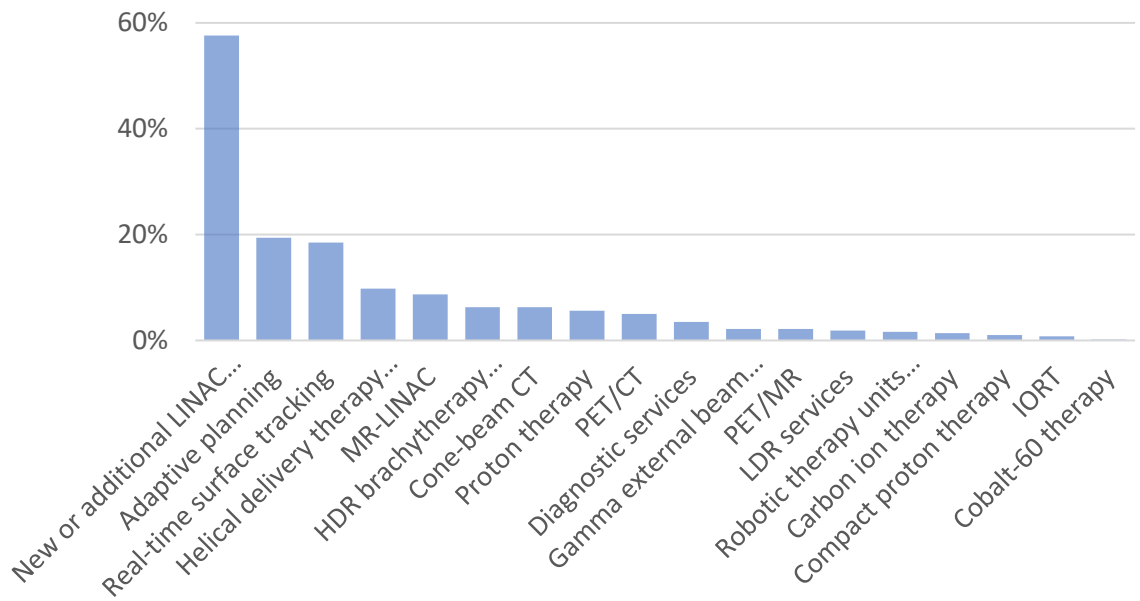
Number of Service Offered:



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

	N	Percent of Cases
New or additional LINAC therapy units.	359	57.6%
Adaptive planning	121	19.4%
Real-time surface tracking	115	18.5%
Helical delivery therapy units (TomoTherapy, Halcyon, etc.)	61	9.8%
MR-LINAC	54	8.7%
HDR brachytherapy afterloader	39	6.3%
Cone-beam CT	39	6.3%
Proton therapy	35	5.6%
PET/CT	31	5.0%
Diagnostic services	22	3.5%
Gamma external beam therapy (GammaKnife, GammaPod, etc.)	14	2.2%
PET/MR	14	2.2%
LDR services	12	1.9%
Robotic therapy units (CyberKnife)	10	1.6%
Carbon ion therapy	9	1.4%
Compact proton therapy	6	1.0%
IORT	5	0.8%
Cobalt-60 therapy	1	0.2%

[a] 186 (29.9%) responded "None of the above"

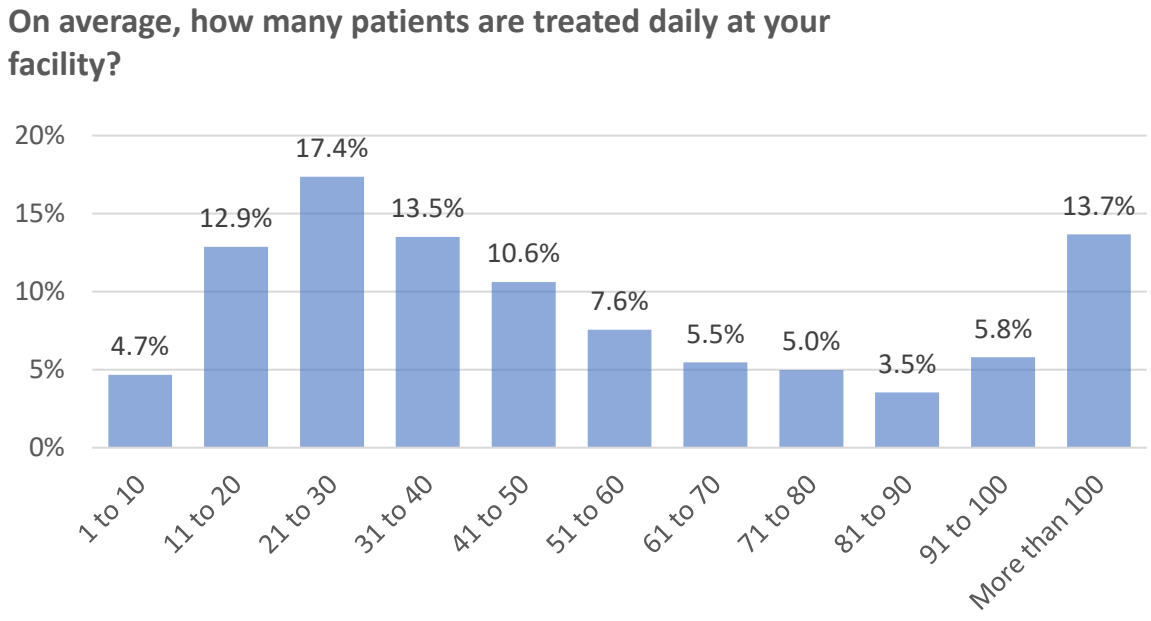


On average, how many patients are treated daily at your facility?

	N	Percent	Cumulative Percent
1 to 10	29	4.7%	4.7%
11 to 20	80	12.9%	17.5%
21 to 30	108	17.4%	34.9%
31 to 40	84	13.5%	48.4%
41 to 50	66	10.6%	59.0%
51 to 60	47	7.6%	66.6%
61 to 70	34	5.5%	72.0%
71 to 80	31	5.0%	77.0%
81 to 90	22	3.5%	80.5%
91 to 100	36	5.8%	86.3%
More than 100	85	13.7%	100.0%
Total	**622**	**100.0%**	

Descriptive Statistics

Mean	**56.4** (*SD* = 44.1)
Percentiles	5th = 12.0, 25th = 25.0, 50th = 44.0, 75th = 75.0, 95th = 150.0

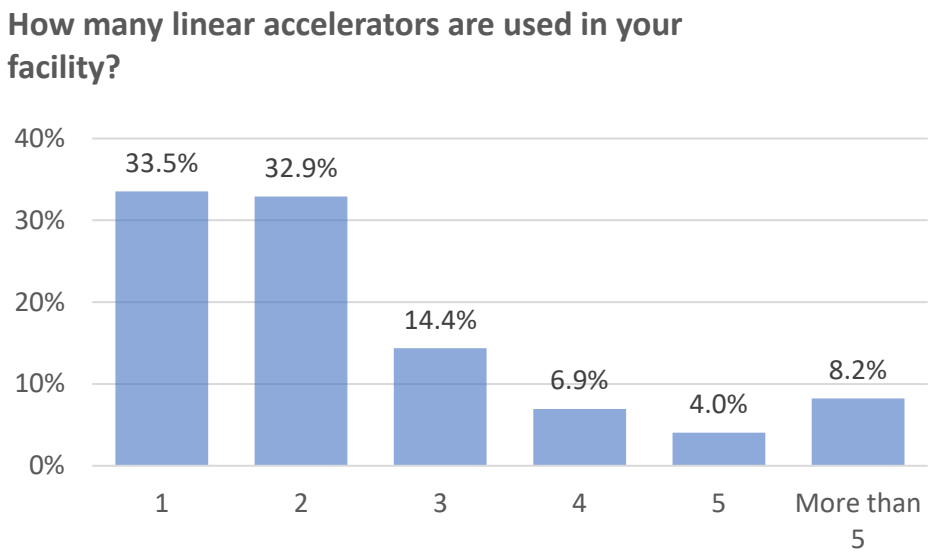


How many linear accelerators are used in your facility?

	N	Percent	Cumulative Percent
1	208	33.5%	33.5%
2	204	32.9%	66.5%
3	89	14.4%	80.8%
4	43	6.9%	87.7%
5	25	4.0%	91.8%
More than 5	51	8.2%	100.0%
Total	**620**	**100.0%**	

Descriptive Statistics

Mean	**2.4** (*SD* = 1.6)
Percentiles	5th = 1.0, 25th = 1.0, 50th = 2.0, 75th = 3.0, 95th = 6.0



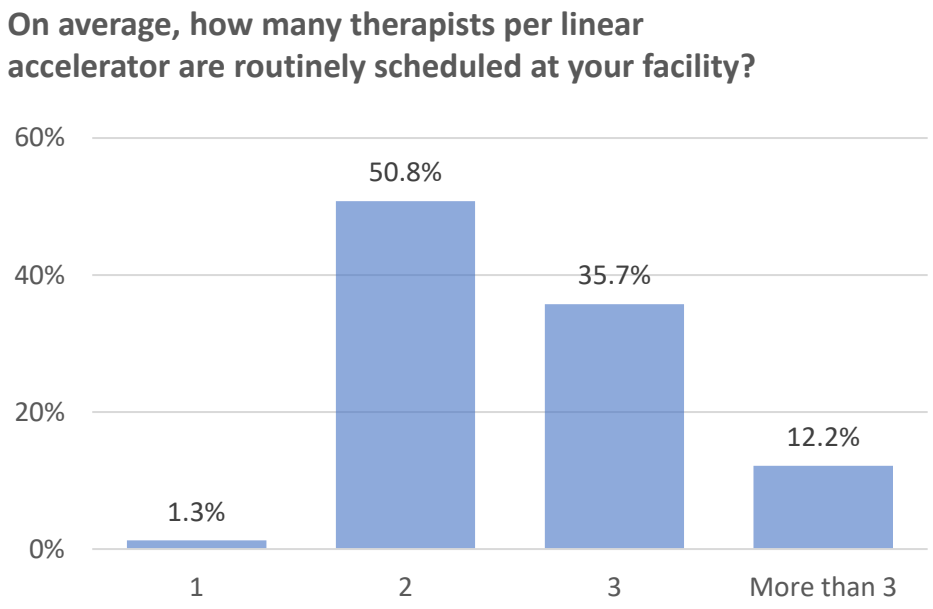
Personnel Demographics

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

	N	Percent	Cumulative Percent
1	8	1.3%	1.3%
2	317	50.8%	52.1%
3	223	35.7%	87.8%
More than 3	76	12.2%	100.0%
Total	**624**	**100.0%**	

Descriptive Statistics

Mean	**2.8** (*SD* = 2.3)
Percentiles	5th = 2.0, 25th = 2.0, 50th = 2.0 75th = 3.0, 95th = 4.0

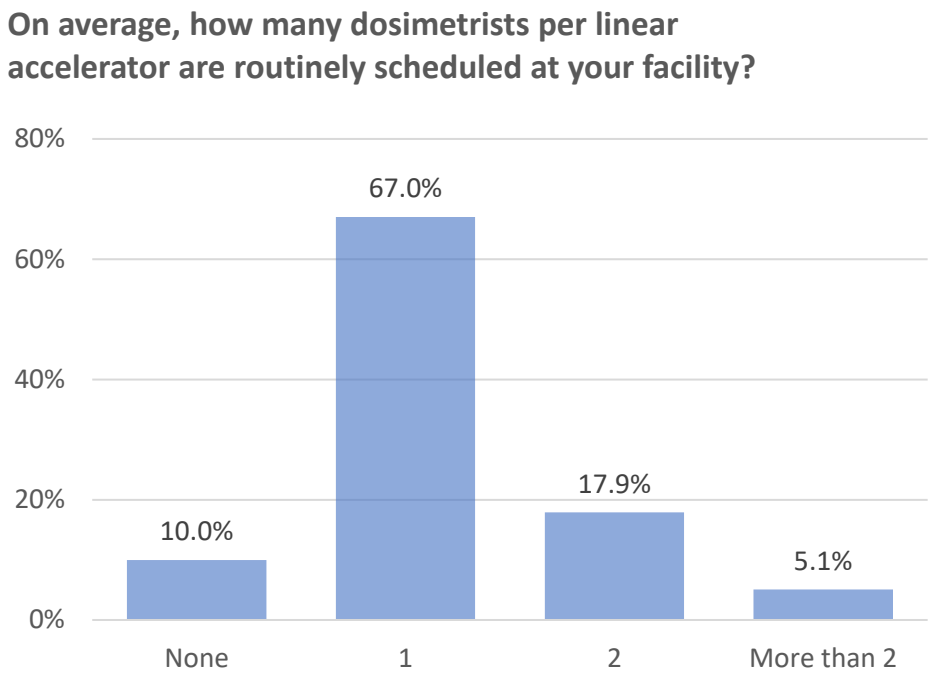


On average, how many dosimetrists per linear accelerator are routinely scheduled at your facility?

	N	Percent	Cumulative Percent
None	53	10.0%	10.0%
1	356	67.0%	77.0%
2	95	17.9%	94.9%
More than 2	27	5.1%	100.0%
Total	**531**	**100.0%**	

Descriptive Statistics

Mean	**1.2** (*SD* = 0.9)
Percentiles	5th = 0.0, 25th = 1.0, 50th = 1.0 75th = 1.0, 95th = 3.0

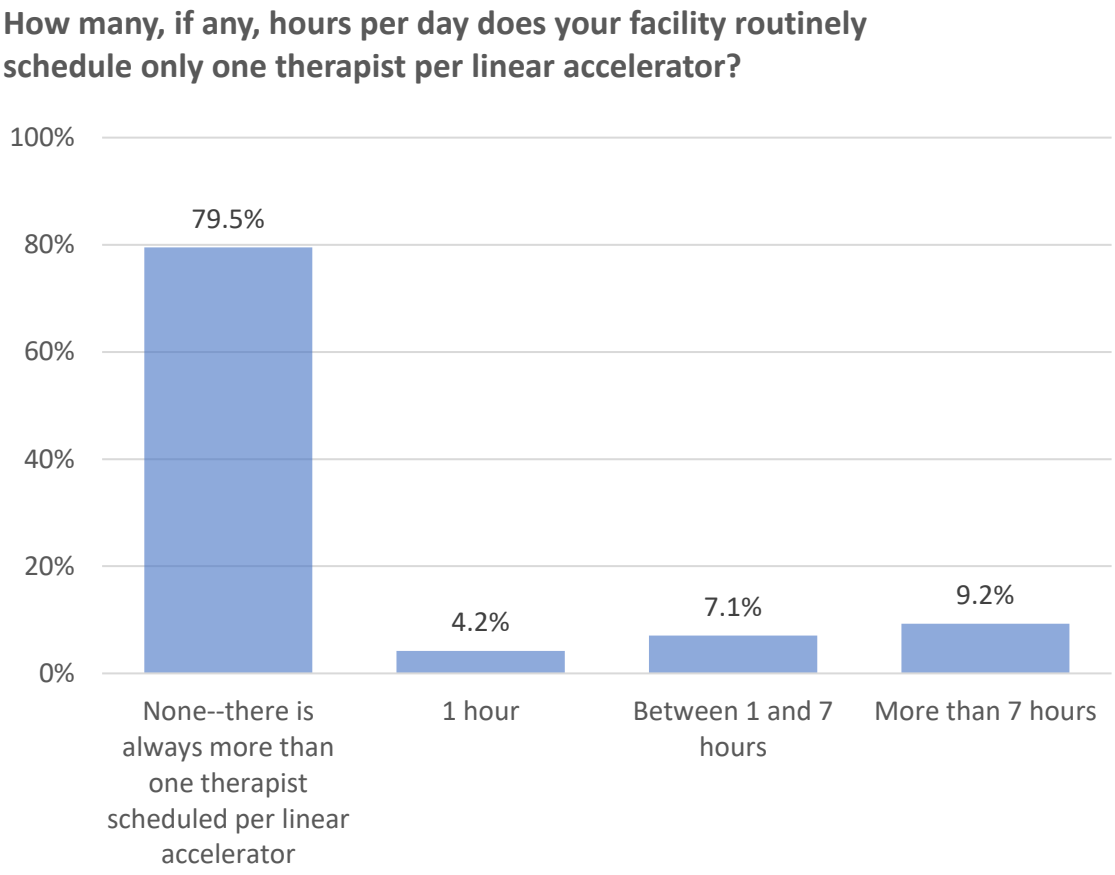


How many, if any, hours per day does your facility routinely schedule only one therapist per linear accelerator?

	N	Percent	Cumulative Percent
None--there is always more than one therapist scheduled per linear accelerator	473	79.5%	79.5%
1 hour	25	4.2%	83.7%
Between 1 and 7 hours	42	7.1%	90.8%
More than 7 hours	55	9.2%	100.0%
Total	**595**	**100.0%**	

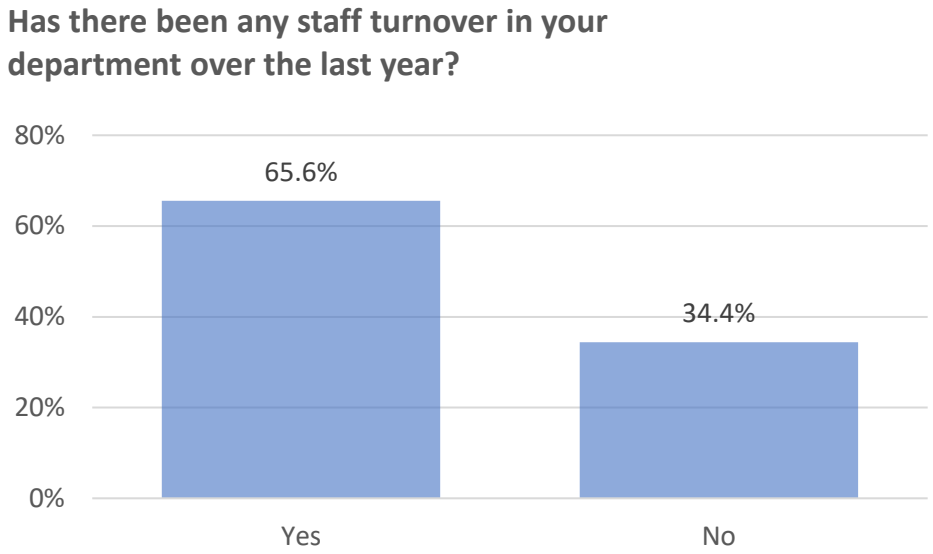
Descriptive Statistics

Mean	**1.2** (*SD* = 3.4)
Percentiles	5th = 0.0, 25th = 0.0, 50th = 0.0 75th = 0.0, 95th = 8.0



Has there been any staff turnover in your department over the last year?

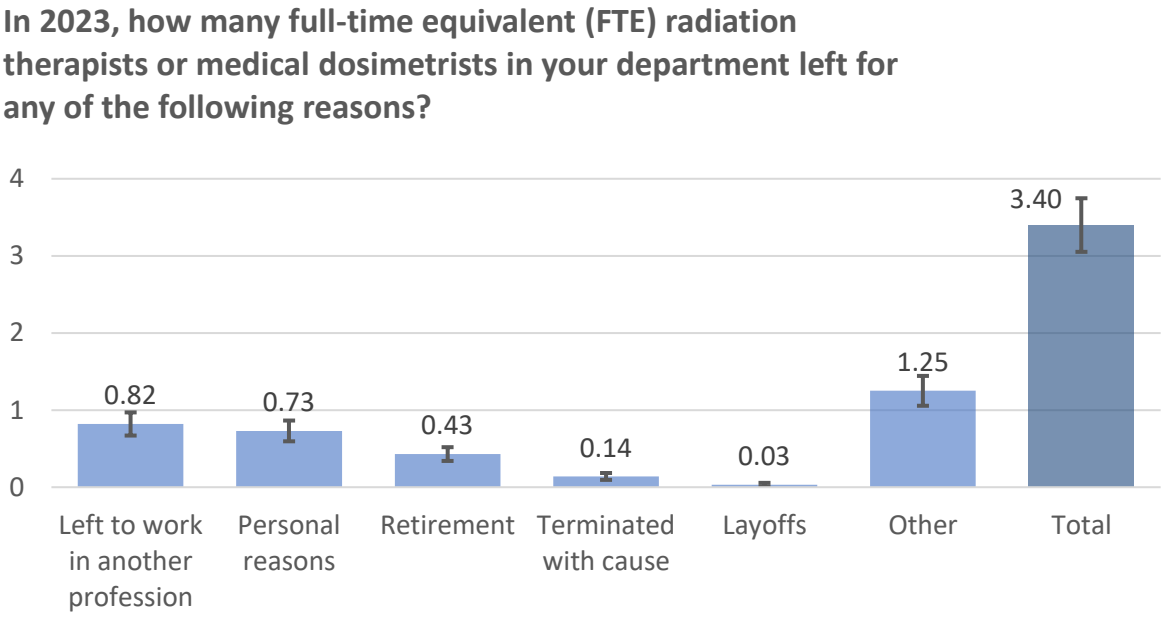
	N	Percent
Yes	423	65.6%
No	222	34.4%
Total	**645**	**100.0%**



In 2023, how many full-time equivalent (FTE) radiation therapists or medical dosimetrists in your department left for any of the following reasons?

	N	Mean	*SD*	95% Confidence Interval
Left to work in another profession	374	0.82	1.48	± 0.15
Personal reasons	374	0.73	1.33	± 0.13
Retirement	374	0.43	0.88	± 0.09
Terminated with cause	374	0.14	0.44	± 0.04
Layoffs	374	0.03	0.26	± 0.03
Other	374	1.25	1.91	± 0.19
Total	**374**	3.4	3.43	± 0.35

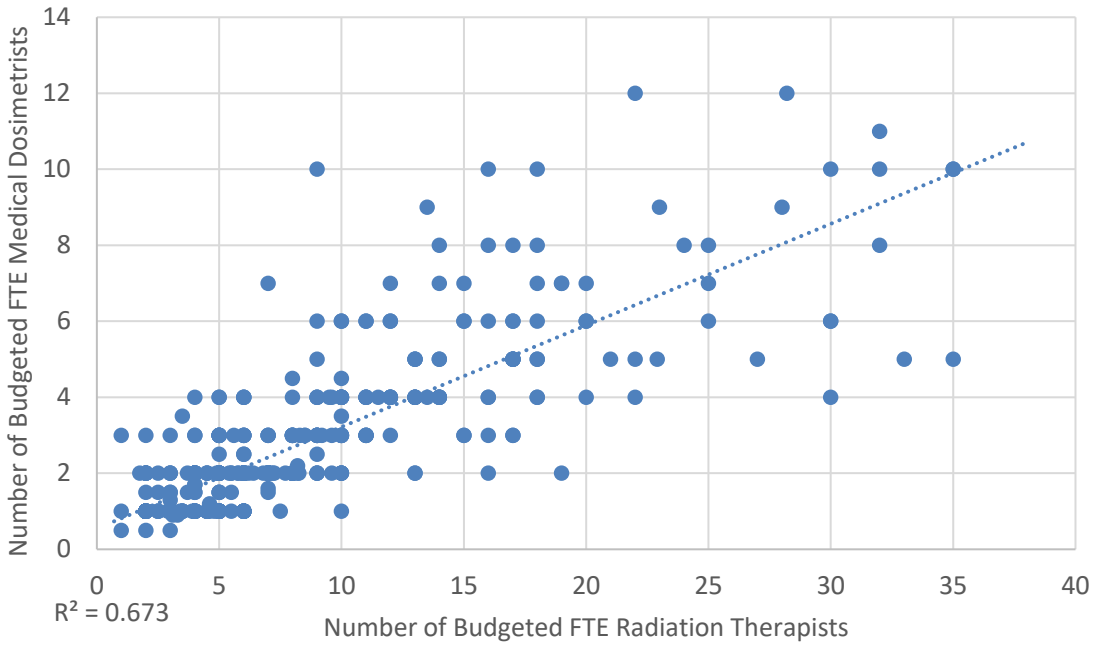
Note. Only respondents who indicated that their department had experienced turnover received this question, [N = 423].



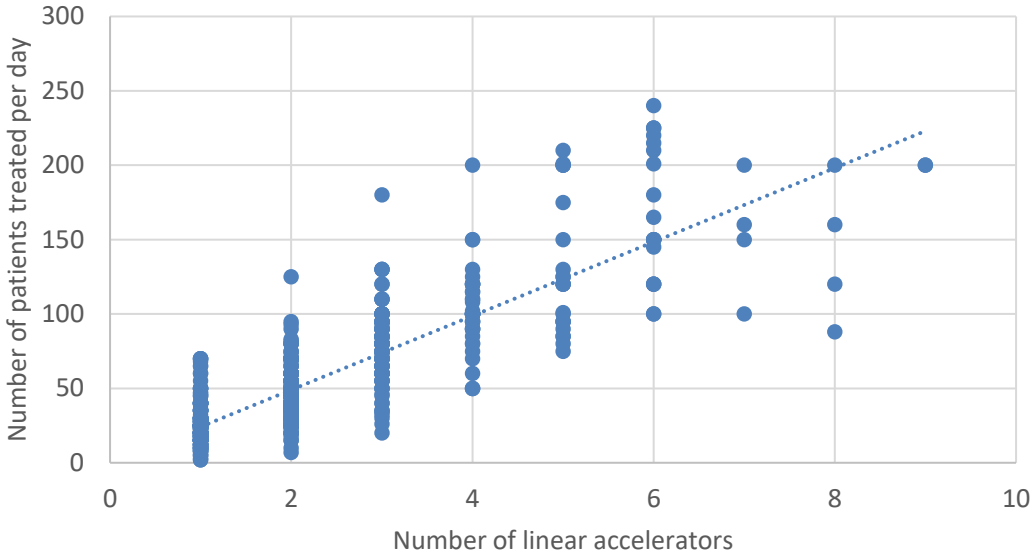
Appendix A. Scatterplots

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.

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

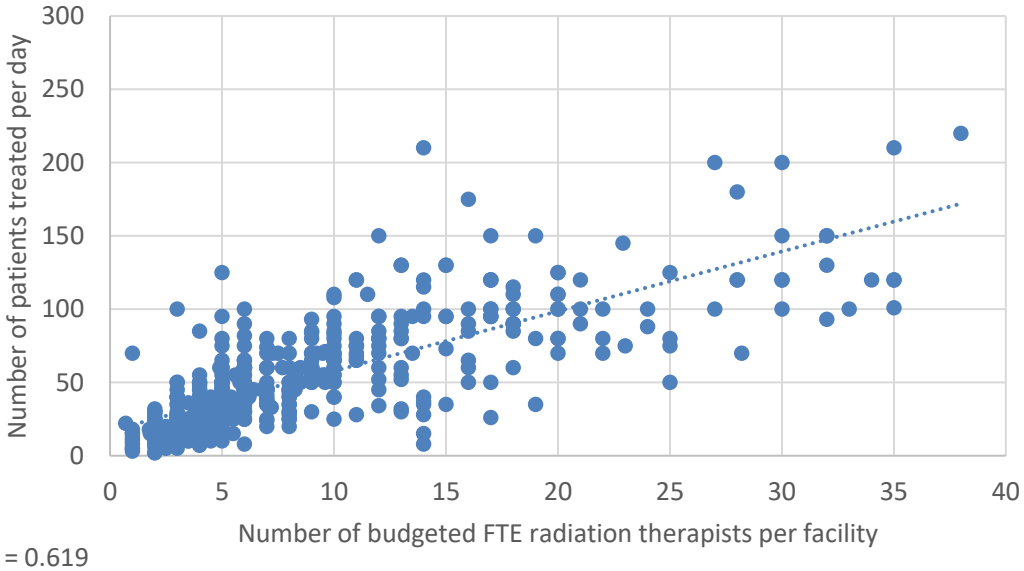


Number of patients treated per day by linear accelerators used at facility



$R^2 = 0.715$

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



$R^2 = 0.619$

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