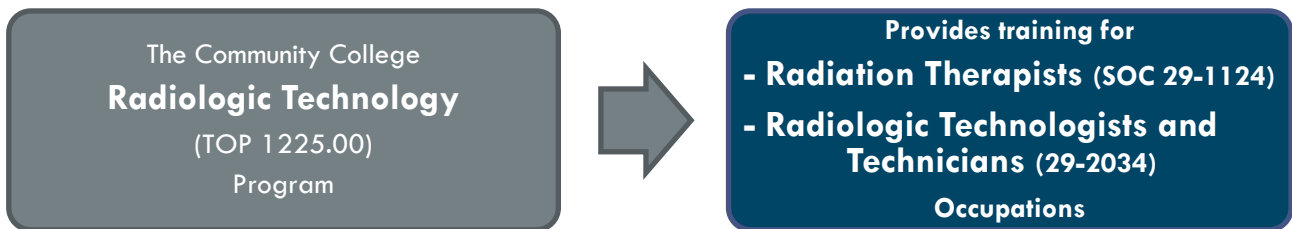


Radiologic Technology

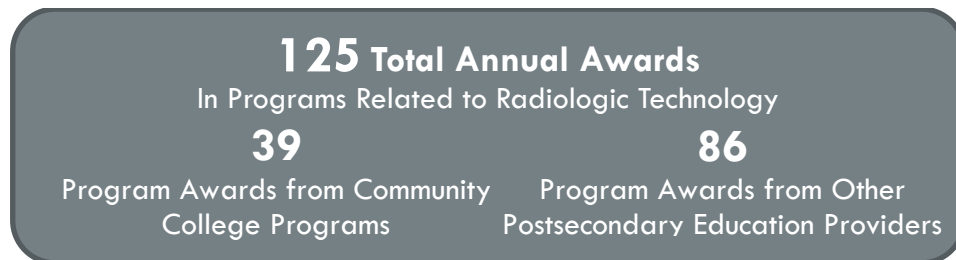
Inland Empire/Desert Region (Riverside and San Bernardino counties)

This workforce demand report uses state and federal job projection data developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.

Summary



Over the next five years (2020-2025), radiologic technology employment is projected to



The Inland Empire/Desert Centers of Excellence

 **Recommends**

Radiologic Technology Program Expansion to meet the need for more workers in the region

Introduction

California Community College radiologic technology (TOP 1225.00) programs prepare students for employment through the instruction of the principles and techniques used in diagnostic radiography. These programs include radiographic techniques, radiation protection, equipment maintenance, film processing, and

darkroom techniques (Taxonomy of Programs, 2012). The knowledge, skills, and abilities trained by radiologic technology programs lead to the following occupations:

- Radiation Therapists (SOC 29-1124)
- Radiologic Technologists and Technicians (29-2034)

Job Counts and Projections

In 2020, there were 1,764 radiologic technology jobs in the Inland Empire/Desert Region. Employment for this occupational group is expected to grow by 12% through 2025. Over this period, 168 annual job openings are projected for the radiologic technology occupational group. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers age 55 years and greater in the region.

Exhibit 1: Inland Empire/Desert five-year projections, 2020-2025

Occupation	2020 Jobs	2025 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Radiologic Technologists and Technicians	1,667	1,856	11%	798	160	19%
Radiation Therapists	97	111	15%	41	8	12%
Total	1,764	1,968	12%	839	168	19%

Source: Emsi 2022.1

An online job advertisement search for radiologic technology jobs was conducted to reveal the details about the employers seeking these workers, including the time it takes to fill positions, earnings information, and in-demand skills. Over the previous 12 months, there were only 42 advertisements posted for radiation therapists in the local region. To ensure there were sufficient advertisements to obtain reliable advertisement information, the job search for this occupation was expanded to include all advertisements posted in California over the last 12 months.

Exhibit 2 shows the number of job ads posted during the last 12 months and the regional and statewide average time to fill this job. On average, regional employers spent 35 days filling online job advertisements, while employers throughout the state spent 32 days. Time to fill information reveals that regional employers likely face similar challenges filling open positions as other employers in California.

Exhibit 2: Job ads and time to fill

Occupation	Job Ads	Regional Average Time to Fill (Days)	Statewide Average Time to Fill (Days)
Radiologic Technologists and Technicians	572	35	32
Radiation Therapists*	463	-	32
Total	1,035	35	32

Source: Burning Glass – Labor Insights

*California job advertisements

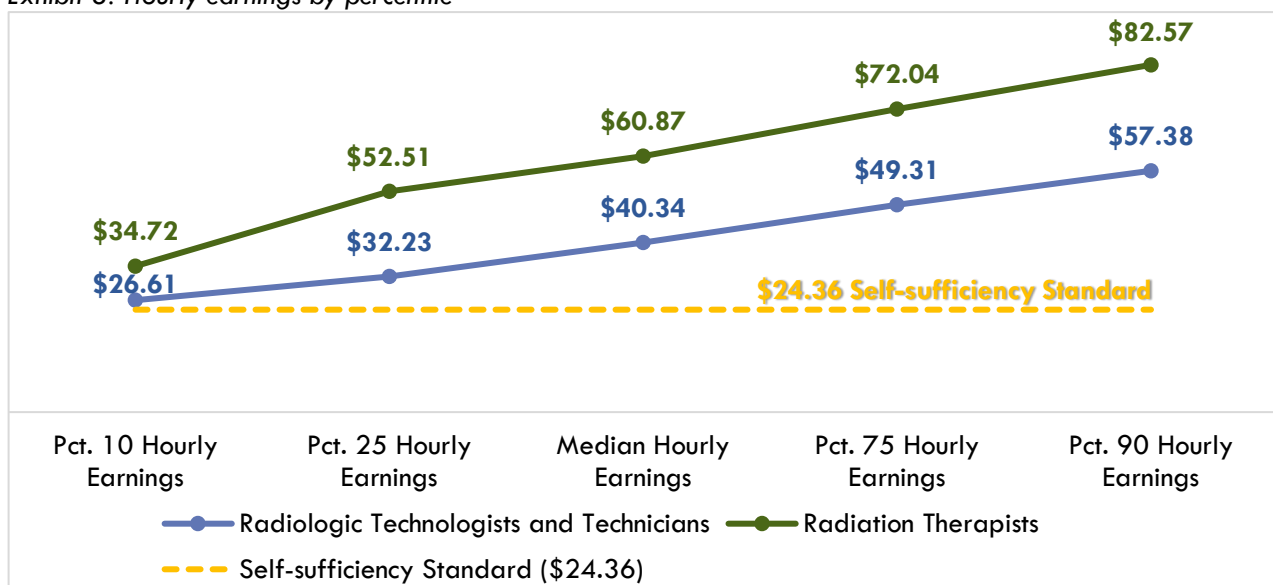
Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide self-sustainable income. The University of Washington estimates that a self-sufficient hourly rate for a single adult with one school-age child is \$24.36 per hour or \$51,452 annually in Riverside County; \$23.73 per hour or \$50,119 annually in San Bernardino County (Pearce, 2021). For this study, the higher hourly earnings requirement in Riverside County is adopted as the self-sufficiency standard for the two-county region.

The 10th percentile hourly earnings for the radiologic technology occupational group are above the regional self-sufficiency rate, indicating that at least 90% of workers in the region earn a self-sustainable wage.

Exhibit 3 displays the hourly earnings for the radiologic technology occupational group in the Inland Empire/Desert Region.

Exhibit 3: Hourly earnings by percentile



Source: Emsi 2022.1

Benefits information, provided by the occupational guides developed by the California Labor Market Information Division, indicates that the radiologic technology occupational group usually has medical, dental, Radiologic Technology in the Inland Empire/Desert Region, March 2022

life, and vision insurance and vacation, sick leave, and retirement plans. Some radiologic technology employers offer sign-on bonuses (Detailed Occupational Guides, 2022).

Advertised Salary from Online Job Ads

Exhibit 4 displays online job ad salary data for the radiologic technology occupational group over the last 12 months. Online job ad salary information reveals that employers are willing to pay the radiologic technology occupational group a median annual salary between \$73,000 and \$115,000, well above the region's \$51,452 annual (\$24.36 hourly) self-sufficiency standard. Consider the salary information with caution since only 13% (133 out of 1,035) of online job advertisements for this occupation provided salary information. The salary figures are prorated to reflect full-time, annual earnings status.

Exhibit 4: Advertised salary information

Occupation	Number of job ads	Real-Time Salary Information				Median Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Radiologic Technologists and Technicians	67	12%	9%	33%	46%	\$73,000
Radiation Therapists*	66	6%	0%	11%	83%	\$115,000

Source: Burning Glass – Labor Insights

*California job advertisements

Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers who posted the most job ads for the radiologic technology occupational group over the last 12 months. Showing employer names provides insight into where students may find employment after completing a program. RadNet, a radiology firm that operates outpatient diagnostic imaging centers, posted 23% of the region's total radiologic technology occupational group jobs ads over the previous 12 months.

Exhibit 5: Employers posting the most job ads for radiologic technology occupational group

Occupations	Employers	
Radiologic Technologists and Technicians (n=572)	<ul style="list-style-type: none"> • RadNet • Concentra • Loma Linda University Health • Healthcare Traveler Allied Health 	<ul style="list-style-type: none"> • Kaiser Permanente • Riverside Community Hospital • St. Bernardine Medical Center • Chino Valley Medical Center • Carbon Health
Radiation Therapists* (n=463)	<ul style="list-style-type: none"> • 21st Century Oncology • Soliant Health • Dignity Health • Sutter Health 	<ul style="list-style-type: none"> • City of Hope • University of Southern California • Kaiser Permanente • Epic Care

Source: Burning Glass – Labor Insights

*California job advertisements

Exhibit 6 lists a sample of specialized and employability skills employers' seek when looking for workers to fill radiologic technology positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

Exhibit 6: Sample of in-demand skills from employer job ads

Occupation	Specialized skills	Employability skills
Radiologic Technologists and Technicians (n=547)	<ul style="list-style-type: none"> • Radiology • X-Rays • Diagnostic Imaging • Mammography • Patient Monitoring 	<ul style="list-style-type: none"> • Communication Skills • Teamwork/Collaboration • Research • Building Effective Relationships • Detail-Oriented
Radiation Therapists* (n=416)	<ul style="list-style-type: none"> • Radiation Oncology • Treatment Planning • Medical Dosimetry • Cancer Knowledge • Patient Treatment 	<ul style="list-style-type: none"> • Communication Skills • Planning • Physical Abilities • Teamwork/Collaboration • Problem Solving

Source: Burning Glass – Labor Insights

*California job advertisements

According to the Bureau of Labor Statistics, between 43% and 68% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree" and an "associate degree." Most job advertisements (98%) for radiologic technologists and technicians sought candidates with an associate degree. In comparison, most employers (80%) posting job advertisements for radiation therapists sought individuals with a bachelor's degree. Exhibit 7 displays the typical entry-level education, educational attainment, and minimum advertised education requirements for the radiologic technology occupational group.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Number of Job Ads	Real-Time Minimum Advertised Education Requirement		
				High school or vocational training	Associate degree	Bachelor's degree or higher
Radiologic Technologists and Technicians	Associate degree	68%	357	-	98%	2%
Radiation Therapists**	Associate degree	43%	178	-	20%	80%

Source: Emsi 2022.1, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework

**California job advertisements

Exhibit 8 displays the work experience typically required and the real-time work experience requirements from employer job ads for the radiologic technology occupational group. Most employers sought candidates with zero to two years of work experience.

Exhibit 8: Work experience required and real-time work experience requirements

Occupation	Work Experience Typically Required	Number of job ads	Real-Time Work Experience		
			0 – 2 years	3 – 5 years	6+ years
Radiologic Technologists and Technicians	None	300	84%	12%	4%
Radiation Therapists*	None	285	68%	29%	3%

Source: Emsi 2022.1, Burning Glass – Labor Insights

*California job advertisements

Certifications

Job advertisements reveal that employers value the Certified Radiologic Technologist (CRT) license issued by the California Department of Public Health Radiologic Health Branch (CDPH-RHB). To obtain the CRT license, individuals must either possess a certificate from a CDPH-RB approved California Radiologic Technology School or possess a current American Registry of Radiologic Technologists credential (License Description, 2022). The American Registry of Radiologic Technologists (ARRT) offers 15 credentials related to CRT specialty areas. Each specialty credential requires the same ethics and examination requirement, which must be completed before earning the ARRT certification (ARRT, 2022). For more information regarding ARRT credentials, please visit the ARRT website (ARRT, 2022). Exhibit 9 displays the most frequently requested certifications by employers in job advertisements.

Exhibit 9: Certifications most frequently required by employers

Occupation	Certification
Radiologic Technologists and Technicians (n=462)	<ul style="list-style-type: none"> American Registry of Radiologic Technologists (ARRT) Basic Life Support (BLS) California Certified Radiologic Technologist (CRT)
Radiation Therapists (n=378)	<ul style="list-style-type: none"> American Registry of Radiologic Technologists (ARRT) Basic Life Support (BLS) California Certified Radiologic Technologist (CRT)

Source: Burning Glass – Labor Insights

Student Completions and Programs Outcomes

Exhibit 10 displays student completions for radiologic technology (TOP 1225.00) programs over the last three academic years. In the previous three academic years, regional community colleges have issued 39 awards annually in California Department of Public Health – Radiologic Health Branch approved radiologic technology programs. Program completion and student outcome methodologies are found in the appendix.

Exhibit 10: 2017-20, Annual average community college awards for radiologic technology programs in the region

TOP 1225.00 – Radiologic Technology	Academic Year 2017-18	Academic Year 2018-19	Academic Year 2019-20	Total CC Annual Average Awards, Academic Years 2017-20
Chaffey				
Associate Degree	23	25	22	23
Crafton Hills*				
Associate Degree	8	8	8	8
Certificate 60+ units	8	8	7	8
Total	39	41	37	39

Source: MIS Data Mart

*Crafton Hills College's program is sponsored by the Arrowhead Regional Medical Center, which is a state-approved CRT education provider

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 11. The outcome methodology is available in the appendix section of this report.

Exhibit 11: 1225.00 – Radiologic technology strong workforce program outcomes

Strong Workforce Program Metrics: 1225.00 – Radiologic Technology Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2019-20)	199	3,268
Completed 9+ career education units in one year (2019-20)	41%	43%
Perkins Economically disadvantaged students	91%	87%
Students who attained a noncredit workforce milestone in a year (2019-20)	58%	45%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	30	428
Transferred to a four-year institution (transfers)	-	46
Job closely related to the field of study (2017-18)	86%	88%
Median annual earnings (all exiters)	\$58,858	\$60,228
Median change in earnings (all exiters)	96%	65%
Attained a living wage (completers and skills-builders)	73%	71%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 12 displays awards reported by other postsecondary education providers in medical radiologic technology/science – radiation therapist (CIP 51.0907) programs. Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years available. On average, two other postsecondary education institutions in the region have issued 37 awards annually over the last three academic years from California Department of Public Health – Radiologic Health Branch approved programs.

Exhibit 12: Other educational providers medical radiologic technology/science – radiation therapist training programs, three-year annual average credentials in the Inland Empire/Desert Region

51.0907 – Medical Radiologic Technology/Science – Radiation Therapist	Academic Year 2016-17	Academic Year 2017-18	Academic Year 2018-19	Other Educational Providers Annual Average Credentials, Academic Years 2016-19
California Baptist University				
Bachelor's Degree	0	0	0	0
Loma Linda University				
Award 1 < 2 academic years	6	0	0	2
Associate Degree	32	33	33	33
Bachelor's Degree	0	2	5	2
Total	38	35	38	37

Source: IPEDS

Exhibit 13 displays awards reported by other postsecondary education providers in radiologic technology/science – radiographer (CIP 51.0911) programs. On average, two other postsecondary education institutions in the region have issued 49 awards annually over the last three academic years from California Department of Public Health – Radiologic Health Branch approved programs.

Exhibit 13: Other educational providers radiologic technology/science - radiographer training programs, three-year annual average credentials in the Inland Empire/Desert Region

51.0911 – Radiologic Technology/Science - Radiographer	Academic Year 2016-17	Academic Year 2017-18	Academic Year 2018-19	Other Educational Providers Annual Average Credentials, Academic Years 2016-19
American Career College-Ontario				
Associate Degree	19	38	41	33
Loma Linda University				
Bachelor's Degree	14	18	11	14
Master's Degree or Higher	3	1	1	2
Total	36	57	53	49

Source: IPEDS

Recommendation

Community college radiologic technology (1225.00) programs provide the knowledge, skills, and abilities that prepare students for employment as radiologic technologists and technicians, and radiation therapists. Employment for the radiologic technology occupational group is expected to increase by 12% through 2025, with 168 job openings expected annually. Most job openings will be for the radiologic technologists and technicians occupations, while relatively few openings are expected for radiation therapists. While the radiation therapist typically requires an associate degree to enter employment, most employers (80%) sought a candidate with a bachelor's degree in online job ads. The hourly earnings for this occupational group are above the regional self-sufficiency standard at the 10th percentile, indicating that at least the top 90% of workers earn a self-sustainable wage.

Regional community colleges have issued 39 awards annually over the last three academic years in radiologic technology programs (TOP 1225.00). Other postsecondary education providers in the region issued 86 total awards annually across two related radiologic technology programs over the last three academic years. Combined, regional education providers issued approximately 125 awards annually.

The Centers of Excellence recommends expanding radiologic technology programs to meet regional demand for the radiologic technology occupational group. Colleges considering this program should partner with applicable employers to document their demand for the radiologic technology occupational group and the skills needed for students to earn self-sustainable earnings after exiting the program.

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Appendix: Occupation definitions, sample job titles, five-year projections, and earnings for radiologic technology occupations

Occupation Definitions (SOC code), Education and Training Requirement, Community College Education Attainment

Radiation Therapists (29-1124)

Provide radiation therapy to patients as prescribed by a radiation oncologist according to established practices and standards. Duties may include reviewing prescription and diagnosis; acting as liaison with physician and supportive care personnel; preparing equipment, such as immobilization, treatment, and protection devices; and maintaining records, reports, and files. May assist in dosimetry procedures and tumor localization.

Sample job titles: Computed Tomography Simulation Therapist (CT Simulation Therapist), Dosimetrist, Medical Dosimetrist, Radiation Therapist (RT), Radiation Therapy Technologist (RTT), Registered Radiation Therapist, Staff Radiation Therapist

Entry-Level Educational Requirement: Associate degree

Work Experience Required: None

Training Requirement: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 43%

Radiologic Technologists and Technicians (29-2034)

Take x-rays and CAT scans or administer nonradioactive materials into patient's bloodstream for diagnostic or research purposes. Includes radiologic technologists and technicians who specialize in other scanning modalities.

Sample job titles: Computed Tomography Technologist (CT Technologist), Mammographer, Radiographer, Radiological Technologist, Radiology Technician (Radiology Tech), Radiology Technologist, Registered Radiographer, X-Ray Technician (X-Ray Tech), X-Ray Technologist (X-Ray Tech)

Entry-Level Educational Requirement: Associate degree

Work Experience Required: None

Training Requirement: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 68%

Appendix: Methodology

Exhibit 10 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2017 and 2020 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variation that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from records provided by California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2021 a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2021 a).

Job advertisement data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job advertisements often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or if they are collecting resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2020 to 2025 job growth, wages, entry-level education, training, and work experience required for the radiologic technology occupational group in the Inland Empire/Desert Region (Riverside and San Bernardino counties combined)

Occupation (SOC)	2020 Jobs	5-Year Change (New Jobs)	5-Year % Change (New Jobs)	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10 th to 90 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Radiologic Technologists and Technicians (29-2034)	1,667	189	11%	160	\$26.61 to \$57.38	\$40.34	\$84,900	Associate degree & None	None
Radiation Therapists (29-1124)	97	15	15%	8	\$34.72 to \$82.57	\$60.87	\$123,600	Associate degree & None	None
Total	1,764	203	12%	168	-	-	-	-	-

Source: Emsi 2022.1