



Education Report

Physics, General

California



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Definition of Physics, General, CIP 40.0801

A general program that focuses on the scientific study of matter and energy, and the formulation and testing of the laws governing the behavior of the matter-energy continuum. Includes instruction in classical and modern physics, electricity and magnetism, thermodynamics, mechanics, wave properties, nuclear processes, relativity and quantum theory, quantitative methods, and laboratory methods.

Awards

The table below is a list of postsecondary awards in CIP 40.0801 that were granted by institutions located in California in the 2021 academic year.

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
University of California-Santa Barbara		151	48	\$17,333
University of California-Berkeley		129	68	\$17,652
University of California-Los Angeles		79	44	\$13,393
Pasadena City College	100			\$6,466
University of California-Santa Cruz		75	20	\$19,615
University of California-Irvine		64	25	\$11,633
University of California-Riverside		48	35	\$13,502
Irvine Valley College	81			\$4,860
University of California-Davis		40	34	\$16,640
Moorpark College	69			\$4,856
University of California-San Diego		31	23	\$15,632
California Institute of Technology		23	29	\$30,162
Stanford University		28	23	\$14,402
College of the Canyons	50			\$6,400
University of Southern California		31	19	\$26,021
California State University-Long Beach		37	11	\$9,171
Santa Barbara City College	45			\$14,000
El Camino Community College District	44			\$13,296
Golden West College	41			\$5,433
California Polytechnic State University-San Luis Obispo		37		\$20,708
Saddleback College	37			\$7,918
California State University-Fullerton		28	7	\$4,939
Norco College	34			\$7,404
Chaffey College	32			\$13,939
Santiago Canyon College	28			\$5,879
Antelope Valley Community College District	27			\$6,203
California State University-Northridge		14	13	\$8,708
College of San Mateo	27			\$5,427
Los Angeles Valley College	27			\$11,833
University of California-Merced		21	5	\$11,586

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
California State Polytechnic University-Pomona		25		\$12,942
Cypress College	25			\$7,951
Glendale Community College	25			\$7,823
San Francisco State University		12	13	\$13,641
Los Angeles City College	24			\$10,898
Los Medanos College	24			\$7,231
Napa Valley College	24			\$18,440
California State University-Sacramento		23		\$7,778
Hartnell College	23			\$7,721
Los Angeles Pierce College	23			\$12,995
Bakersfield College	22			\$6,989
Cerritos College	22			\$9,557
Diablo Valley College	22			\$8,878
Allan Hancock College	21			\$6,629
Cabrillo College	21			\$18,139
California State University-Chico		21		\$13,749
Clovis Community College	21			\$6,305
Merced College	21			\$13,426
Orange Coast College	21			\$6,836
San Jose State University		13	8	\$14,603
Oxnard College	20			\$3,441
Cuyamaca College	19			\$6,460
Imperial Valley College	19			\$2,300
Reedley College	19			\$7,089
Rio Hondo College	19			\$7,873
Grossmont College	18			\$5,999
Skyline College	18			\$4,885
East Los Angeles College	17			\$12,028
Folsom Lake College	17			\$8,276
Los Angeles Harbor College	17			\$12,787
San Diego State University		11	6	\$6,867
American River College	16			\$8,101
Monterey Peninsula College	16			\$12,007
Sierra College	16			\$5,921
California State University-Los Angeles		8	7	\$2,695
Pomona College		15		\$17,000

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
Solano Community College	14			\$5,950
Citrus College	13			\$8,852
San Diego Mesa College	13			\$7,663
Sonoma State University		13		\$7,055
West Valley College	13			\$6,890
College of the Sequoias	12			\$5,205
Foothill College	12			\$9,820
Laney College	12			\$16,494
Ohlone College	12			\$12,787
Santa Ana College	12			\$6,351
Fresno City College	11			\$6,391
Fullerton College	11			\$11,191
Loyola Marymount University		11		\$40,180
San Bernardino Valley College	11			\$9,621
California State Polytechnic University-Humboldt		10		\$13,904
Crafton Hills College	10			\$20,456
Modesto Junior College	10			\$14,421
San Diego Miramar College	10			\$7,880
Butte College	9			\$10,736
California State University-Fresno		5	4	\$6,336
California State University-San Bernardino		9		\$3,254
Chapman University		9		\$40,451
Los Angeles Trade Technical College	9			\$10,495
Riverside City College	9			\$7,161
University of San Diego		9		\$34,155
Evergreen Valley College	8			\$15,650
Harvey Mudd College		8		\$33,838
Occidental College		8		\$43,047
Pepperdine University		8		\$40,945
San Joaquin Delta College	8			\$17,503
California State University-East Bay		7		\$12,631
Los Angeles Southwest College	7			\$8,651
Mission College	7			\$6,727
Santa Clara University		7		\$48,469
California Lutheran University		6		\$24,065
Claremont McKenna College		6		\$21,663

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
Columbia College	6			\$10,735
Cosumnes River College	6			\$7,223
Cuesta College	6			\$14,586
University of the Pacific		6		\$21,311
California State University-Dominguez Hills		5		\$4,500
California State University-Stanislaus		5		\$7,230
College of the Desert	5			\$14,179
Compton College	5			\$10,875
Gavilan College	5			\$8,705
Santa Rosa Junior College	5			\$9,220
Scripps College		5		\$44,770
University of Redlands		5		\$21,578
West Los Angeles College	5			\$10,259
Concordia University-Irvine		4		\$25,640
Long Beach City College	4			\$6,550
Saint Mary's College of California		4		\$25,022
University of San Francisco		4		\$39,825
Whittier College		4		\$22,091
Azusa Pacific University		3		\$27,112
Chabot College	3			\$8,576
Contra Costa College	3			\$9,405
Mt San Jacinto Community College District	3			\$7,704
San Diego City College	3			\$8,370
University of La Verne		3		\$22,538
West Hills College-Lemoore	3			\$13,571
Westmont College		3		\$33,554
Biola University		2		\$29,123
College of the Redwoods	2			\$8,618
Las Positas College	2			\$7,675
Pitzer College		2		\$19,153
Southwestern College	2			\$6,789
Canada College	1			\$5,923
College of Marin	1			\$7,717
College of the Siskiyous	1			\$11,340
La Sierra University		1		\$25,230
California State University-Bakersfield				\$7,368

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
City College of San Francisco				\$9,261
Coastline Community College				\$8,953
Madera Community College				
MiraCosta College				\$6,946
Naval Postgraduate School				
Pacific Union College				\$22,767
Point Loma Nazarene University				\$34,851
Shasta College				\$7,973
Total	1,516	1,136	442	

1. Undergraduate certificates and associate's degrees

2. Bachelor's degrees and post-baccalaureates

3. Master's, post-master's, and doctorates

4. Average net price represents full-time beginning undergraduate students who paid the in-state or in-district tuition rate and were awarded grant or scholarship aid from federal, state or local governments, or the institution. Data as of the 2020-2021 academic year.

Awards data are per the National Center for Education Statistics (NCES) and JobsEQ for the 2021 academic year. Any programs shown here reflect only data reported to the NCES; reporting is required of all schools participating in any federal finance assistance program authorized by Title IV of the Higher Education Act of 1965, as amended—other training providers in the region that do not report data to the NCES are not reflected in the above.

Occupation Crosswalk

The below table lists all occupations linked with the program, Physics, General, CIP 40.0801.

		Education and Training Requirements			Educational Attainment				
		Typical Education Needed for Entry	Work Experience in a Related Occupation	Typical On-the-Job Training Needed to Attain Competency in the Occupation	No College	Some College, No Degree	Associate's Degree	Bachelor's Degree	Postgraduate Degree
11-9121	Natural Sciences Managers	Bachelor's degree	5 years or more	None	1%	2%	2%	31%	63%
19-2012	Physicists	Doctoral or professional degree	None	None	0%	0%	0%	16%	84%
25-1054	Physics Teachers, Postsecondary	Doctoral or professional degree	None	None	1%	1%	1%	14%	83%
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	Bachelor's degree	None	None	0%	2%	1%	41%	56%

Education and training requirements are from the Bureau of Labor Statistics (BLS); educational attainment mix are regional data modeled by Chmura using Census educational attainment data projected to 2022Q4 along with source data from the BLS

Definition of Natural Sciences Managers (11-9121)

Plan, direct, or coordinate activities in such fields as life sciences, physical sciences, mathematics, statistics, and research and development in these fields.

Definition of Physicists (19-2012)

Conduct research into physical phenomena, develop theories on the basis of observation and experiments, and devise methods to apply physical laws and theories.

Definition of Physics Teachers, Postsecondary (25-1054)

Teach courses pertaining to the laws of matter and energy. Includes both teachers primarily engaged in teaching and those who do a combination of teaching and research.

Definition of Secondary School Teachers, Except Special and Career/Technical Education (25-2031)

Teach one or more subjects to students at the secondary school level.

Occupation Details

As of 2022Q4, total employment for occupations linked to Physics, General in California was 123,670. Over the past three years, linked occupations shed 430 jobs in the region and are expected to need in aggregate approximately 64,554 newly trained workers over the next seven years.

Snapshot of Occupations Linked to Physics, General in California¹

SOC	Occupation	Current						3-Year History	7-Year Forecast				
		Empl	Mean Ann Wages ²	LQ	Unempl	Unempl Rate	Online Job Ads ³	Ann %	Total Demand	Exits	Transfers	Empl Growth	Avg Ann Growth %
25- 2031	Secondary School Teachers, Except Special and Career/Technical Education	105,321	\$100,400	0.85	2,531	2.4%	1,989	-1.0%	52,871	21,638	29,100	2,132	0.3%
11- 9121	Natural Sciences Managers	12,225	\$200,000	1.31	276	2.3%	1,059	6.5%	7,714	2,219	4,792	703	0.8%
19- 2012	Physicists	5,252	\$177,400	2.29	14	0.3%	111	5.4%	3,413	1,025	1,813	576	1.5%
25- 1054	Physics Teachers, Postsecondary	873	\$150,100	0.59	16	1.9%	39	-1.3%	556	282	238	36	0.6%
Total - Linked Occupations		123,670	\$113,900	0.90	2,838	2.3%	3,198	-0.1%	64,554	25,164	35,943	3,447	0.4%
Total - All Occupations		19,219,968	\$71,900	1.00	797,161	4.1%	547,112	0.6%	17,029,863	6,722,656	9,379,252	927,955	0.7%

Source: JobsEQ®

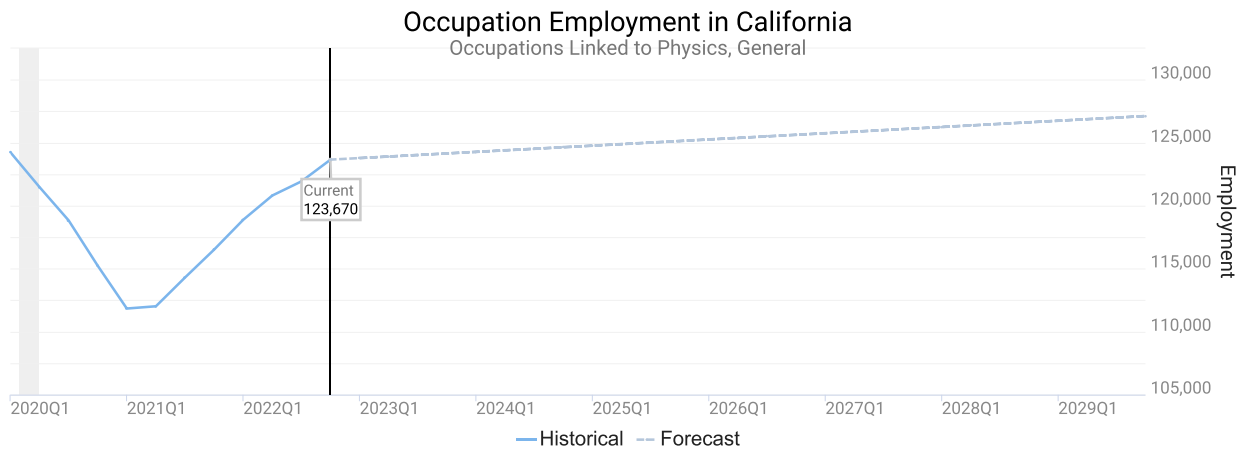
Data as of 2022Q4 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.

2. Wage data represent the average for all Covered Employment

3. Data represent found online ads active within the last thirty days in the selected region. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list). Ad counts for ZCTA-based regions are estimates.



Source: JobsEQ®, Data as of 2022Q4. The shaded areas of the graph represent national recessions.

Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2022Q3, imputed where necessary with preliminary estimates updated to 2022Q4. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns. Occupation unemployment figures are imputed by Chmura.

Employment by Industry

The table illustrates the industries in California which most employ occupations linked to Physics, General. The single industry most employing these occupations in the region is Elementary and Secondary Schools, NAICS 6111. This industry employs 103,776 workers in the linked occupations—employment which is expected to increase by 2,934 jobs over the next ten years; furthermore, 71,415 additional new workers in these linked occupations will be needed for this industry due to separation demand, that is, to replace workers in this occupation and industry that retire or move into a different occupation.

Industry Distribution for Occupations Linked to Physics, General in California

NAICS Code	Industry Title	Current			10-Year Demand		
		% of Occ Empl	Empl	Exits	Transfers	Empl Growth	Total Demand
6111	Elementary and Secondary Schools	83.9%	103,776	30,457	40,959	2,934	74,350
5417	Scientific Research and Development Services	8.6%	10,594	2,860	5,772	1,500	10,132
6113	Colleges, Universities, and Professional Schools	1.2%	1,539	548	694	122	1,363
3254	Pharmaceutical and Medicine Manufacturing	0.6%	753	196	422	65	682
8131	Religious Organizations	0.6%	727	215	292	38	546
	All Others	5.1%	6,281	1,684	3,225	310	5,219

Source: JobsEQ®

Data as of 2022Q4 except wages which are as of 2021. Note that occupation-by-industry wages represent adjusted national data and may not be consistent with regional, all-industry occupation wages shown elsewhere in JobsEQ.

Note: Figures may not sum due to rounding.

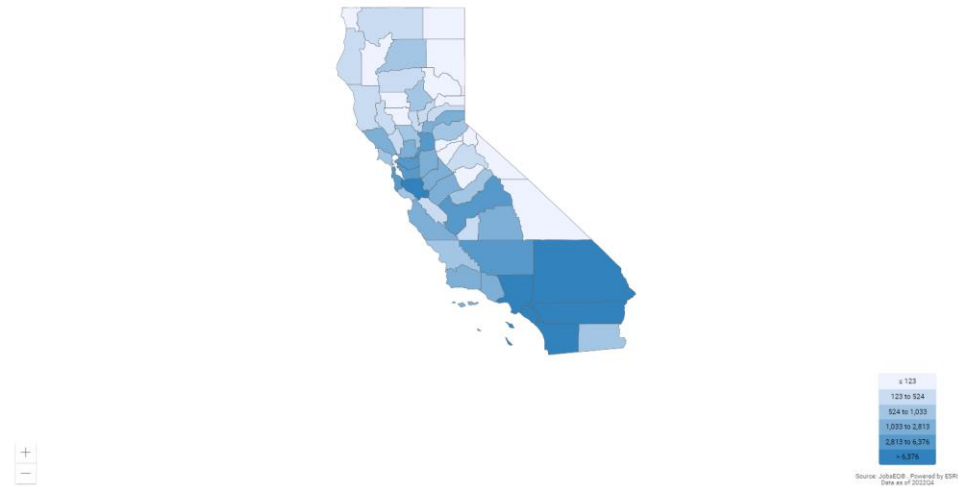
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Geographic Distribution

The map below illustrates the county-level distribution of employed workers in California in occupations linked to Physics, General. Employment is shown by place of work.

California, Occupation Concentration by Place of Work for Occupations Linked to Physics, General

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Top Counties with Employment Linked to Physics, General, 2022Q4

Region	Employment
Los Angeles County, California	28,451
San Diego County, California	11,931
Orange County, California	9,263
Santa Clara County, California	6,699
Riverside County, California	6,554
San Bernardino County, California	6,376
Alameda County, California	5,930
Sacramento County, California	4,729
San Mateo County, California	3,902
Fresno County, California	3,607

Source: JobsEQ®

Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2022Q3, imputed where necessary with preliminary estimates updated to 2022Q4.

Demographic Profile

The population in California was 39,346,023 per American Community Survey data for 2016-2020.

Of individuals 25 to 64 in California, 35.4% have a bachelor's degree or higher which compares with 34.3% in the nation. Per American Community Survey 2016-2020 estimates, the region has about 576,714 students enrolled in grade 12.

Summary¹

	Percent		Value	
	California	USA	California	USA
Demographics				
Population (ACS)	—	—	39,346,023	326,569,308
Male	49.7%	49.2%	19,562,882	160,818,530
Female	50.3%	50.8%	19,783,141	165,750,778
Median Age ²	—	—	36.7	38.2
Under 18 Years	22.8%	22.4%	8,956,641	73,296,738
18 to 24 Years	9.5%	9.3%	3,724,239	30,435,736
25 to 34 Years	15.3%	13.9%	6,007,913	45,485,165
35 to 44 Years	13.3%	12.7%	5,233,903	41,346,677
45 to 54 Years	12.8%	12.7%	5,039,155	41,540,736
55 to 64 Years	12.0%	12.9%	4,739,675	42,101,439
65 to 74 Years	8.3%	9.4%	3,270,380	30,547,950
Population Growth				
Population (Pop Estimates) ⁴	—	—	39,029,342	333,287,557
Population Annual Average Growth ⁴	0.3%	0.6%	108,479	1,940,990
People per Square Mile	—	—	250.4	94.3
Educational Attainment, Age 25-64				
No High School Diploma	15.2%	10.5%	3,199,850	17,929,220
High School Graduate	20.4%	25.4%	4,282,776	43,289,555
Some College, No Degree	21.0%	20.5%	4,412,172	34,959,338
Associate's Degree	8.0%	9.3%	1,678,082	15,776,790
Bachelor's Degree	22.6%	21.6%	4,741,354	36,888,244
Postgraduate Degree	12.9%	12.7%	2,706,412	21,630,870
Social				
Poverty Level (of all people)	12.6%	12.8%	4,853,434	40,910,326
Households Receiving Food Stamps/SNAP	9.0%	11.4%	1,183,873	13,892,407
Enrolled in Grade 12 (% of total population)	1.5%	1.3%	576,714	4,358,865
Disconnected Youth ³	1.9%	2.5%	38,451	433,164
Children in Single Parent Families (% of all children)	32.8%	34.0%	2,796,858	23,628,508
Uninsured	7.2%	8.7%	2,806,173	28,058,903
Speak English Less Than Very Well (population 5 yrs and over)	17.4%	8.2%	6,432,102	25,312,024

Source: [JobsEQ®](https://www.chmuraecon.com/jobseq)

1. American Community Survey 2016-2020, unless noted otherwise

2. Median values for certain aggregate regions (such as MSAs) may be estimated as the weighted averages of the median values from the composing counties.

3. Disconnected Youth are 16-19 year olds who are (1) not in school, (2) not high school graduates, and (3) either unemployed or not in the labor force.

4. Census Population Estimate for 2022, annual average growth rate since 2012. Post-2019 data for Connecticut counties are imputed by Chmura.

RTI (Job Postings)

Active Job Ads by Date



Occupations

SOC	Occupation	Active Job Ads
25- 2031.00	Secondary School Teachers, Except Special and Career/Technical Education	7,721
11- 9121.01	Clinical Research Coordinators	4,986
19- 2012.00	Physicists	524
11- 9121.02	Water Resource Specialists	379
11- 9121.00	Natural Sciences Managers	186
25- 1054.00	Physics Teachers, Postsecondary	153

Locations

Location	Active Job Ads
Los Angeles, California	697
University of California San Francisco	549
Los Angeles, CA, 90095, US	369
San Diego, California	363
University of California Davis	293
Oakland, CA 94607	210
School of Medicine, Stanford, California, United States	206
San Francisco, California	186
University of Southern California (USC)	176
Sacramento, California	148

Employers

Employer Name	Active Job Ads	
San Francisco, California	550	
UCLA HEALTH	550	
Oakland Unified School District	521	
Cedars-Sinai	368	
Kaiser Permanente	349	
Stanford University	258	
Davis, California	179	
Los Angeles, California	174	
Sacramento, California	157	
Irvine, California	148	

Certifications

Certificate Name	Active Job Ads	
Driver's License	284	
Certification in Cardiopulmonary Resuscitation (CPR)	234	
First Aid Certification	232	
Certified Research Administrator (CRA)	190	
Basic Life Support (BLS)	100	
Certified Clinical Research Coordinator (CCRC)	100	
National Phlebotomy Association Certified Phlebotomist	89	
Certified Clinical Research Associate (CCRA)	66	
Medical Physics	65	
Secret Clearance	42	

Hard Skills

Skill Name	Active Job Ads	
Teaching/Training, School	5,208	
Clinical Research	3,207	
Microsoft Excel	1,363	
Microsoft Office	1,361	
Spanish	1,078	
Medical Terminology	967	
Microsoft Word	792	
Mathematics	764	
Microsoft PowerPoint	611	
Bilingual	579	

Soft Skills

Skill Name	Active Job Ads	
Communication (Verbal and written skills)	6,172	
Cooperative/Team Player	3,841	
Organization	2,338	
Interpersonal Relationships/Maintain Relationships	1,833	
Self-Motivated/Ability to Work Independently/Self Leadership	1,714	
Problem Solving	1,562	
Detail Oriented/Meticulous	1,517	
Supervision/Management	1,414	
Adaptability/Flexibility/Tolerance of Change and Uncertainty	1,293	
Prioritize	1,197	

Job Titles

Job Title	Active Job Ads	
Clinical Research Coordinator	372	
Intern I - High School	171	
Assistant Clinical Research Coordinator	141	
English Teacher	114	
Research Coordinator I	100	
Clinical Research Associate	97	
Research Coordinator	78	
Array	73	
High School Teacher	69	
Clinical Research Assistant	57	

Job Types

Type	Active Job Ads	
Full-Time	7,890	
Part-Time	2,131	
Permanent	854	
Temporary (unspecified)	788	
Remote	495	
Temporary (long-term)	289	
Temporary (short-term)	39	
Temp-to-Hire	12	
Remote Not Indicated	13,454	

Programs

Program Name	Active Job Ads	
Science	605	
Biology	504	
Physics	283	
Psychology	252	
Mathematics	235	
Chemistry	233	
Education	229	
Engineering	220	
Public Health	198	
Health	191	

Education Levels

Minimum Education Level	Active Job Ads	
Bachelor's degree	5,167	
Associate's degree	632	
High school diploma or equivalent	585	
Master's degree	519	
Doctoral or professional degree	252	
Unspecified/other	6,794	

California Regional Map



FAQ

What is CIP?

The 2010 Classification of Instructional Programs (CIP) is taxonomy of instructional program classifications and descriptions. It was developed and has been updated by the U.S. Department of Education's National Center for Education Statistics (NCES).

What is SOC?

The Standard Occupational Classification system (SOC) is used to classify workers into occupational categories. All workers are classified into one of over 804 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 22 major groups, 95 minor groups, and 452 occupation groups. Each occupation group includes detailed occupations requiring similar job duties, skills, education, or experience.

What is the source of the job ads?

Job ads data are online job posts from the Real-Time Intelligence (RTI) data set, produced wholly by Chmura and gleaned from over 40,000 websites. Data reflect ads active during the last twelve month period ending 07/05/2023 and advertised for any Zip Code Tabulation Area in or intersecting with the region for which this report was produced. Historical ad volume is revised as additional data are made available and processed. Since many extraneous factors can affect short-term volume of online job postings, time-series data can be volatile and should be used with caution. All ad counts represent deduplicated figures.

What is the program-to-occupation crosswalk?

Training programs are classified according to the Classification of Instructional Programs (CIP codes). For relating training programs, this report uses a modified version of the CIP to SOC crosswalk from the National Center for Education Statistics (NCES). While this is a very helpful crosswalk for estimating occupation production from training program awards data, the crosswalk is neither perfect nor comprehensive. Indeed, it is hard to imagine such a crosswalk being perfect since many training program graduates for one reason or another do not end up employed in occupations that are most related to the training program from which they graduated. Therefore, the education program analyses should be considered in this light.

As an example of the many scenarios that may unfold, consider a journalism degree that crosswalks into three occupations: editors, writers, and postsecondary communications teachers. Graduates with a journalism degree may get a job in one of these occupations—and that may be the most-likely scenario—but a good number of these graduates may get a job in a different occupation altogether (the job may be somewhat related, such as a reporter, or the job may be totally unrelated, such as a real estate agent). Furthermore, a graduate may stay in school or go back to school for a degree that will lead to other occupation possibilities. Still another possibility includes the graduate not entering the labor market (maybe being unemployed, being a non-participant, or moving to another region).

What is separation demand?

Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand does not include all turnover—it does not include when workers stay in the same occupation but switch employers. The total projected demand for an occupation is the sum of the separation demand and the growth

demand (which is the increase or decrease of jobs in an occupation expected due to expansion or contraction of the overall number of jobs in that occupation).

What is a location quotient?

A location quotient (LQ) is a measurement of concentration in comparison to the nation. An LQ of 1.00 indicates a region has the same concentration of an occupation (or industry) as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment in comparison to the nation.

What is NAICS?

The North American Industry Classification System (NAICS) is used to classify business establishments according to the type of economic activity. The NAICS Code comprises six levels, from the “all industry” level to the 6-digit level. The first two digits define the top level category, known as the “sector,” which is the level examined in this report.

About This Report

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