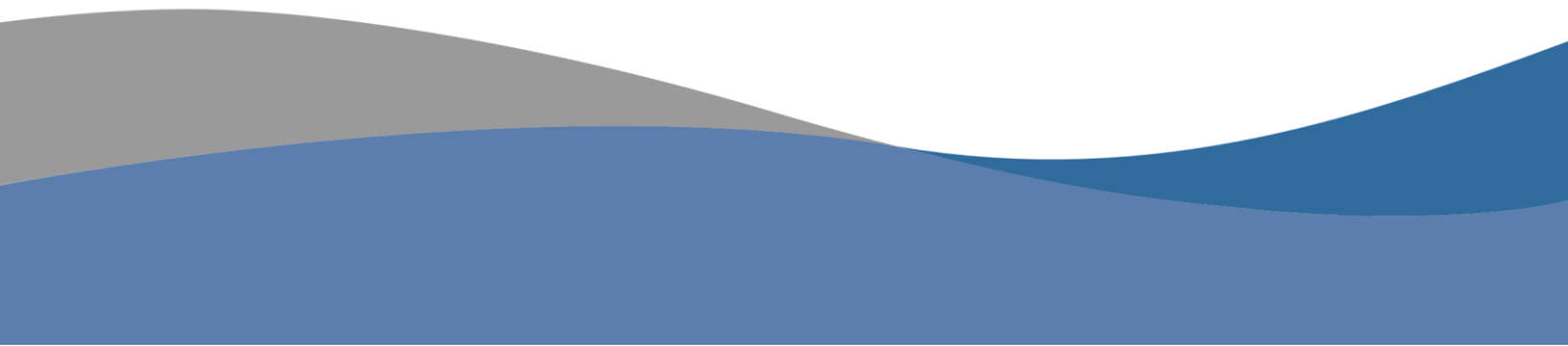




Education Report

Engineering Technologies/Technicians, General

Lexington-Fayette, KY MSA



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Definition of Engineering Technologies/Technicians, General, CIP 15.0000

A program that generally prepares individuals to apply basic engineering principles and technical skills in support of engineers engaged in a wide variety of projects. Includes instruction in various engineering support functions for research, production, and operations, and applications to specific engineering specialties.

Occupation Crosswalk

The below table lists all occupations linked with the program, Engineering Technologies/Technicians, General, CIP 15.0000.

		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
11-9041	Architectural and Engineering Managers	Bachelor's degree	5 years or more	None	2%	4%	3%	46%	45%
17-2199	Engineers, All Other	Bachelor's degree	None	None	2%	4%	4%	49%	41%
17-3021	Aerospace Engineering and Operations Technologists and Technicians	Associate's degree	None	None	23%	24%	20%	25%	7%
17-3022	Civil Engineering Technologists and Technicians	Associate's degree	None	None	23%	25%	19%	26%	7%
17-3023	Electrical and Electronic Engineering Technologists and Technicians	Associate's degree	None	None	17%	27%	30%	21%	5%
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	Associate's degree	None	None	24%	24%	21%	24%	7%

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 Architectural and Engineering Managers (11-9041)

Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields.

Definition of Engineers, All Other (17-2199)

All engineers not listed separately.

Definition of Aerospace Engineering and Operations Technologists and Technicians (17-3021)

Operate, install, adjust, and maintain integrated computer/communications systems, consoles, simulators, and other data acquisition, test, and measurement instruments and equipment, which are used to launch, track, position, and evaluate air and space vehicles. May record and interpret test data.

Definition of Civil Engineering Technologists and Technicians (17-3022)

Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.

Definition of Electrical and Electronic Engineering Technologists and Technicians (17-3023)

Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.

Definition of Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024)

Operate, test, maintain, or adjust unmanned, automated, servomechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment to observe or record visual information at sites such as oil rigs, crop fields, buildings, or for similar infrastructure, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.

Occupation Details

As of 2022Q4, total employment for occupations linked to Engineering Technologies/Technicians, General in the Lexington-Fayette, KY MSA was 1,063. Over the past three years, linked occupations shed 26 jobs in the region and are expected to need in aggregate approximately 651 newly trained workers over the next seven years.

Snapshot of Occupations Linked to Engineering Technologies/Technicians, General in the Lexington-Fayette, KY MSA¹

SOC	Occupation	Empl	Mean Ann Wages ²	Current			Online Job Ads ³	3-Year History	Total Demand	7-Year Forecast			
				LQ	Unempl	Unempl Rate		Ann %		Exits	Transfers	Empl Growth	Avg Ann Growth %
17- 3022	Civil Engineering Technologists and Technicians	361	\$54,900	3.09	6	1.7%	2	-0.5%	244	88	156	-1	0.0%
11- 9041	Architectural and Engineering Managers	290	\$139,900	0.81	3	0.8%	174	1.1%	151	41	103	7	0.3%
17- 2199	Engineers, All Other	195	\$86,300	0.64	2	0.6%	4	-1.9%	91	33	55	3	0.2%
17- 3023	Electrical and Electronic Engineering Technologists and Technicians	180	\$58,300	0.95	1	0.8%	24	-2.7%	139	64	72	2	0.2%
17- 3021	Aerospace Engineering and Operations Technologists and Technicians	22	\$69,000	0.93	0	n/a	n/a	-1.5%	15	5	10	1	0.4%
17- 3024	Electro-Mechanical and Mechatronics Technologists and Technicians	16	\$71,100	0.71	0	n/a	8	-2.9%	10	4	7	0	-0.2%
Total - Linked Occupations		1,063	\$84,900	1.05	12	1.1%	212	-0.8%	651	235	403	12	0.2%
Total - All Occupations		288,978	\$54,100	1.00	8,586	3.1%	19,305	0.1%	250,239	100,163	139,958	10,119	0.5%

Source: [JobsEQ®](#)

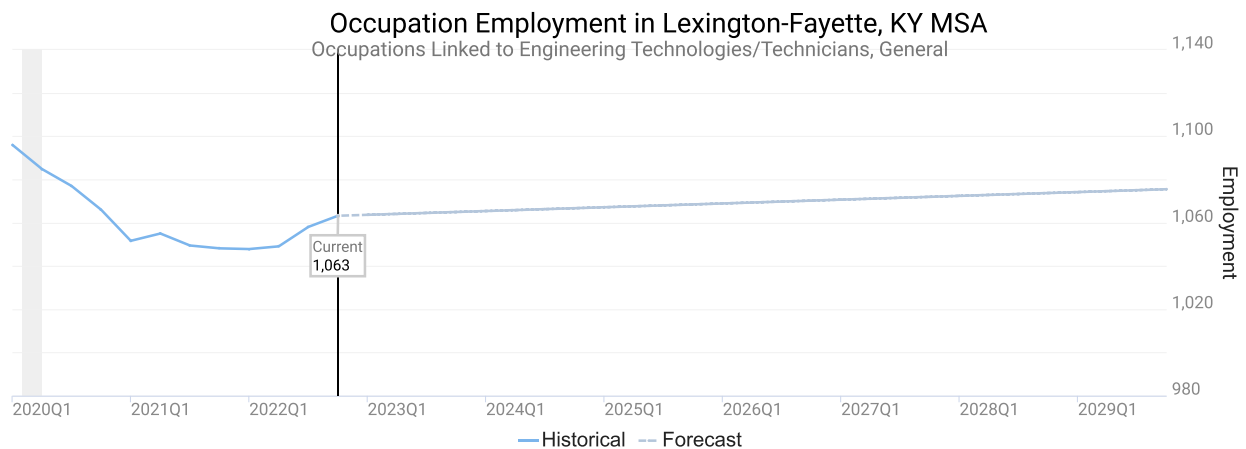
Data as of 2022Q4 unless noted otherwise

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 the Lexington-Fayette, KY MSA which most employ occupations linked to Engineering Technologies/Technicians, General. The single industry most employing these occupations in the region is Architectural, Engineering, and Related Services, NAICS 5413. This industry employs 411 workers in the linked occupations—employment which is expected to decrease by 4 jobs over the next ten years; furthermore, 360 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 Engineering Technologies/Technicians, General in Lexington-Fayette, KY MSA

NAICS Code	Industry Title	Current			10-Year Demand		
		% of Occ Empl	Empl	Exits	Transfers	Empl Growth	Total Demand
5413	Architectural, Engineering, and Related Services	38.7%	411	130	231	-4	356
3364	Aerospace Product and Parts Manufacturing	4.8%	51	14	25	-1	38
9211	Executive, Legislative, and Other General Government Support	4.5%	48	17	29	1	46
3361	Motor Vehicle Manufacturing	4.3%	46	16	26	11	53
3341	Computer and Peripheral Equipment Manufacturing	4.2%	44	13	22	0	35
6113	Colleges, Universities, and Professional Schools	3.6%	38	13	20	3	36
9221	Justice, Public Order, and Safety Activities	3.0%	32	10	17	-1	26
5511	Management of Companies and Enterprises	2.3%	25	6	12	1	19
3363	Motor Vehicle Parts Manufacturing	1.8%	19	5	10	2	17
3353	Electrical Equipment Manufacturing	1.8%	19	7	10	0	17
5613	Employment Services	1.7%	18	6	9	1	15
9261	Administration of Economic Programs	1.6%	17	6	10	-1	15
3344	Semiconductor and Other Electronic Component Manufacturing	1.6%	17	7	9	0	15
5416	Management, Scientific, and Technical Consulting Services	1.6%	17	5	9	2	16
5415	Computer Systems Design and Related Services	1.6%	17	6	9	3	18
9231	Administration of Human Resource Programs	1.4%	15	5	9	-1	13
5417	Scientific Research and Development Services	1.3%	14	4	7	1	12
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1.2%	13	3	6	-1	8
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	1.0%	11	3	5	-1	7
2382	Building Equipment Contractors	1.0%	11	4	6	0	10
	All Others	17.0%	180	57	94	5	157

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.

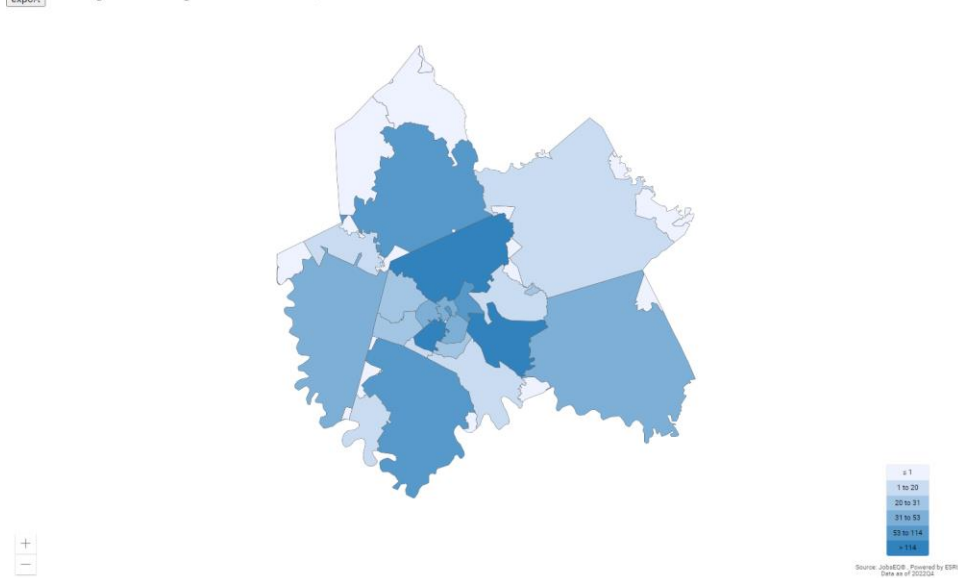
Note: Figures may not sum due to rounding.

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.

Geographic Distribution

The map below illustrates the ZCTA-level distribution of employed workers in the Lexington-Fayette, KY MSA in occupations linked to Engineering Technologies/Technicians, General. Employment is shown by place of work.

Lexington-Fayette, KY MSA, Occupation Concentration by Place of Work for Occupations Linked to Engineering Technologies/Technicians, General



Top ZCTAs with Employment Linked to Engineering Technologies/Technicians, General, 2022Q4

Region	Employment
ZCTA 40511 (Fayette County, KY portion)	185
ZCTA 40509	119
ZCTA 40503	115
ZCTA 40324 (Scott County, KY portion)	105
ZCTA 40507	91
ZCTA 40505	55
ZCTA 40356	53
ZCTA 40508	53
ZCTA 40391	49
ZCTA 40504	46

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 the Lexington-Fayette, KY MSA was 514,273 per American Community Survey data for 2016-2020.

Of individuals 25 to 64 in the Lexington-Fayette, KY MSA, 39.9% 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 5,234 students enrolled in grade 12.

Summary¹

	Percent		Value	
	Lexington-Fayette, KY MSA	USA	Lexington-Fayette, KY MSA	USA
Demographics				
Population (ACS)	—	—	514,273	326,569,308
Male	48.8%	49.2%	250,845	160,818,530
Female	51.2%	50.8%	263,428	165,750,778
Median Age ²	—	—	36.5	38.2
Under 18 Years	21.9%	22.4%	112,652	73,296,738
18 to 24 Years	12.0%	9.3%	61,759	30,435,736
25 to 34 Years	14.3%	13.9%	73,534	45,485,165
35 to 44 Years	13.0%	12.7%	66,908	41,346,677
45 to 54 Years	12.4%	12.7%	63,862	41,540,736
55 to 64 Years	12.1%	12.9%	62,273	42,101,439
65 to 74 Years	8.6%	9.4%	44,246	30,547,950
Population Growth				
Population (Pop Estimates) ⁴	—	—	520,391	329,484,123
Population Annual Average Growth ⁴	1.0%	0.6%	4,697	2,015,698
People per Square Mile	—	—	352.1	92.9
Educational Attainment, Age 25-64				
No High School Diploma	8.2%	10.5%	21,767	17,929,220
High School Graduate	22.6%	25.4%	60,374	43,289,555
Some College, No Degree	20.6%	20.5%	54,912	34,959,338
Associate's Degree	8.6%	9.3%	23,058	15,776,790
Bachelor's Degree	23.8%	21.6%	63,422	36,888,244
Postgraduate Degree	16.1%	12.7%	43,044	21,630,870
Social				
Poverty Level (of all people)	14.5%	12.8%	71,868	40,910,326
Households Receiving Food Stamps/SNAP	9.5%	11.4%	19,477	13,892,407
Enrolled in Grade 12 (% of total population)	1.0%	1.3%	5,234	4,358,865
Disconnected Youth ³	1.6%	2.5%	437	433,164
Children in Single Parent Families (% of all children)	32.6%	34.0%	33,997	23,628,508
Uninsured	6.0%	8.7%	30,631	28,058,903
Speak English Less Than Very Well (population 5 yrs and over)	4.2%	8.2%	20,353	25,312,024

Source: [JobsEQ®](#)

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

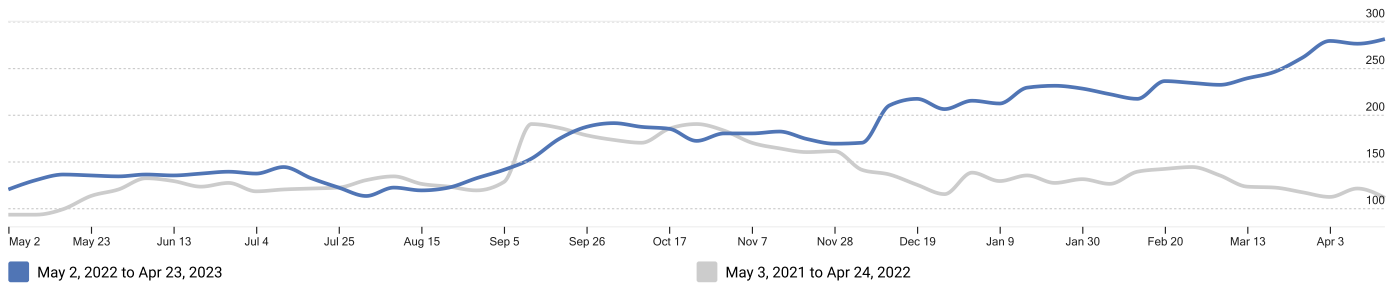
2. Median values for certain aggregate regions (such as MSAs) may be estimated as the weighted averages of the median values from the composing counties.

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 2020, annual average growth rate since 2010.

RTI (Job Postings)

Active Job Ads by Date



Occupations

SOC	Occupation	Active Job Ads
11- 9041.00	Architectural and Engineering Managers	1,092
17- 3023.00	Electrical and Electronic Engineering Technologists and Technicians	130
17- 3024.00	Electro-Mechanical and Mechatronics Technologists and Technicians	26
17- 3022.00	Civil Engineering Technologists and Technicians	19
17- 2199.08	Robotics Engineers	14
17- 3024.01	Robotics Technicians	12
17- 2199.03	Energy Engineers, Except Wind and Solar	11
17- 2199.07	Photonics Engineers	9
17- 3021.00	Aerospace Engineering and Operations Technologists and Technicians	9
17- 2199.06	Microsystems Engineers	3

Locations

Location	Active Job Ads
Lexington, Kentucky	382
Frankfort, Kentucky	356
Georgetown, Kentucky	83
Lexington, KY 40507	39
Lexington, KY 40506	27
Georgetown, Kentucky 40324	25

Locations

Location	Active Job Ads	
Lexington, Kentucky 40502	25	
Mount Sterling, Kentucky	25	
Lexington, KY 40598	19	
Winchester, Kentucky	18	

Employers

Employer Name	Active Job Ads	
LOCKHEED MARTIN	91	
University of Kentucky	44	
Actalent	41	
gpac	33	
Meta	27	
Aerotek	25	
Intel	24	
Black & Veatch	21	
Siemens	18	
Commonwealth of Kentucky	17	

Certifications

Certificate Name	Active Job Ads	
Project Management Professional (PMP)	66	
Secret Clearance	65	
Driver's License	32	
Licensed Professional Engineer	30	
Engineer in Training (EIT)	11	
Certified Energy Manager (CEM)	9	
Six Sigma Green Belt Certification (SSGB)	8	
Certified Quality Engineer (CQE)	6	
LEED Accredited Professional (not specified)	5	
Certified Information Systems Security Professional (CISSP)	4	

Hard Skills

Skill Name	Active Job Ads	
Microsoft Excel	251	
Microsoft Office	242	
Manufacturing	206	
Autodesk AutoCAD	138	
Microsoft PowerPoint	122	
Microsoft Project	94	
Computer Aided Design Software (CAD Software)	93	
SAP	83	
Lean Six Sigma	77	
JavaScript	65	

Soft Skills

Skill Name	Active Job Ads	
Communication (Verbal and written skills)	821	
Project Management	547	
Cooperative/Team Player	521	
Supervision/Management	334	
Problem Solving	312	
Adaptability/Flexibility/Tolerance of Change and Uncertainty	227	
Self-Motivated/Ability to Work Independently/Self Leadership	196	
Organization	183	
Analytical	178	
Interpersonal Relationships/Maintain Relationships	163	

Job Titles

Job Title	Active Job Ads	
Project Manager	65	
Project Engineer	37	
Quality Engineer	30	
Controls Engineering Technician	15	
Manufacturing Engineering Manager	10	
Engineering Manager	9	
Senior Consultant Engineer - Pulp & Paper Industry Specialist	9	
Senior Quality Engineer	9	
Electrical Engineer	8	
Electrical Technician	8	





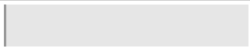

Job Types

Type	Active Job Ads	
Full-Time	666	
Remote	209	
Permanent	91	
Temporary (unspecified)	75	
Part-Time	36	
Temporary (long-term)	14	
Temp-to-Hire	8	
Remote Not Indicated	1,120	

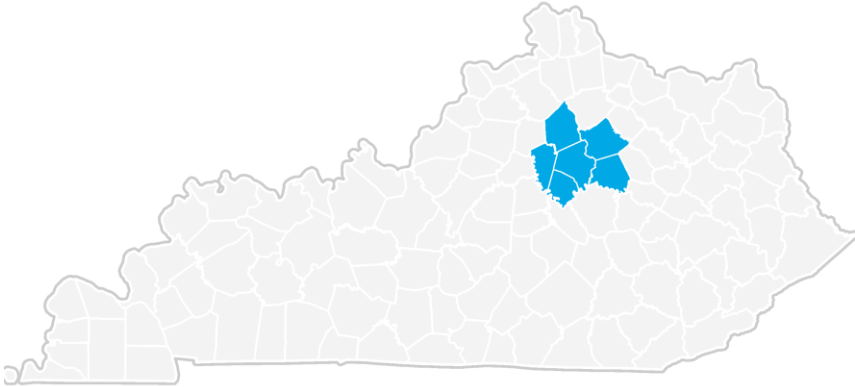
Programs

Program Name	Active Job Ads	
Engineering	300	
Mechanical Engineering	113	
Electrical Engineering	68	
Civil Engineering	59	
Computer Science	52	
Technical	50	
Business	41	
Electrical	39	
Physics	33	
Business Administration	31	

Education Levels

Minimum Education Level	Active Job Ads	
Bachelor's degree	743	
Associate's degree	97	
High school diploma or equivalent	56	
Master's degree	24	
Doctoral or professional degree	8	
Unspecified/other	401	

Lexington-Fayette, KY MSA Regional Map



Region Definition

Lexington-Fayette, KY MSA is defined as the following counties:

Bourbon County, Kentucky

Clark County, Kentucky

Fayette County, Kentucky

Jessamine County, Kentucky

Scott County, Kentucky

Woodford County, Kentucky

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 04/27/2023 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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