

## 2023

## Bioscience INDUSTRY PROFILE

Colorado Urban Front Range

Arapahoe/Douglas WORKFORCE BOARD
C O L O R A D O

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## Geographical Area

The geographical area for this industry profile includes the 15 counties that make up Colorado's Urban Front Range.


The geographic region includes the following metropolitan areas:

Boulder
Colorado Springs
Denver-Aurora-Lakewood
Fort Collins
Greeley

In 2022, this 15 county region employed nearly 2.7 million people across all industries, and made up $84 \%$ of Colorado's total employment.
In 2022, the Gross Regional Product (GRP) for the Front Range region was $\$ 416.3$ billion, which made up just under $1.7 \%$ of the national Gross Domestic Product (GDP). GDP is the total market value of all goods and services in the nation, and GRP is the total market value of all goods and services in the region.


## Bioscience

1.1\%

Total Jobs in CO Urban Front Range

|  |
| :---: |
|  |  |

Total Jobs

The bioscience sector employs 28,708 people in 2,144 establishments. An 'establishment’ is one facility in which people work. For example, a business in the sector may have several locations, and each one of those locations counts as an 'establishment.'

In 2022, the sector had $\$ 11.1$ billion in sales, and contributed $\$ 7.4$ billion to the region's GRP. The bioscience sector in the region has been experiencing significant growth in recent years. The region is home to a cluster of research institutions, universities, and biotech companies, fostering innovation in areas such as biopharmaceuticals, medical devices, and digital health solutions. This dynamic ecosystem is attracting talent and investment, make the region a promising hub for advancements in the field.

## Bioscience Sector

Employment concentration measures the concentration of employment in an industry in the local region against the average employment concentration in that industry nationwide. For example, we would read, "Medicinal and Botanical Manufacturing is 3.29 times more concentrated than the national average for this industry." The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.


NAICS
325411

## Numbers to Know

- 2,356 jobs
- 114 establishments
- 3.29 employment concentration
- $\$ 837$ million in sales
- 9.4\% change to 2027
- \$73,844 average wage
- $\$ 21,926$ average employer paid benefits

Pharmaceutical Preparation Manufacturing

NAICS
325412

## Numbers to Know

- 2,417 jobs
- 72 establishments
- 0.64 employment concentration
- $\$ 1$ billion in sales
- 8.5\% change to 2027
- \$93,222 average wage
- \$27,692 average employer paid benefits



## In-Vitro Diagnostic Substance Manufacturing

## NAICS

325413

## Numbers to Know

- 52 jobs
- 4 establishments
- 0.10 employment concentration
- $\$ 15.6$ million in sales
- $20.5 \%$ change to 2027
- \$58,324 average wage
- \$16,953 average employer paid benefits

Biological Product (except Diagnostic) Manufacturing

## NAICS

325414

## Numbers to Know

- 549 jobs
- 10 establishments
- 0.73 employment concentration
- $\$ 441$ million in sales
- 9.8\% change to 2027
- \$106,463 average wage
- \$31,544 average employer paid benefits


## Electromedical $\&$ Electrotherapeutic Apparatus Manufacturing <br> NAICS <br> 334510

## Numbers to Know

- 2,988 jobs
- 28 establishments
- 2.38 employment concentration
- $\$ 1.4$ billion in sales
- (4.3\%) change to 2027
- \$114,652 average wage
- \$20,870 average employer paid benefits


## Analytical Laboratory

Instrument Manufacturing
NAICS
334516

## Numbers to Know

- 1,595 jobs
- 24 establishments
- 1.96 employment concentration
- $\$ 655$ million in sales
- $2.3 \%$ change to 2027
- \$171,919 average wage
- \$20,372 average employer paid benefits


## Irradiation Apparatus

 Manufacturing
## NAICS

334517

## Numbers to Know

- 16 jobs
- 4 establishments
- 0.07 employment concentration
- $\$ 9.4$ million in sales
- $12.9 \%$ change to 2027
- \$116,218 average wage
- $\$ 21,155$ average employer paid benefits


## Surgical \& Medical Instrument

 ManufacturingNAICS
339112

## Numbers to Know

- 3,331 jobs
- 45 establishments
- 1.41 employment concentration
- $\$ 1.2$ billion in sales
- (3.5\%) change to 2027
- \$105,299 average wage
- \$35,755 average employer paid benefits


## Dental Equipment \& Supplies

 Manufacturing
## NAICS

339114

## Numbers to Know

- 66 jobs
- 9 establishments
- 0.23 employment concentration
- \$19 million in sales
- (27.9\%) change to 2027
- \$68,508 average wage
- \$17,626 average employer paid benefits

Ophthalmic Goods
Manufacturing
NAICS
339115

Numbers to Know

- 112 jobs
- 9 establishments
- 0.28 employment concentration
- $\$ 25$ million in sales
- $4.3 \%$ change to 2027
- \$57,297 average wage
- \$16,442 average employer paid benefits

Surgical Appliance \& Supplies Manufacturing

NAICS
339113

## Numbers to Know

- 1,848 jobs
- 49 establishments
- 1.05 employment concentration
- $\$ 575$ million in sales
- 9.7\% change to 2027
- \$74,239 average wage
- $\$ 24,947$ average employer paid benefits

Dental Laboratories

NAICS
339116

## Numbers to Know

- 783 jobs
- 100 establishments
- 0.93 employment concentration
- \$100 million in sales
- (7.0\%) change to 2027
- \$57,887 average wage
- \$13,653 average employer paid benefits


Medical, Dental, \& Hospital Equipment \& Supplies Merchant Wholesalers

## NAICS

423450

## Numbers to Know

- 7,621 jobs
- 992 establishments
- 1.52 employment concentration
- $\$ 3.2$ billion in sales
- $14.5 \%$ change to 2027
- $\$ 143,099$ average wage
- \$19,310 average employer paid benefits


## Testing Laboratories

## NAICS

541380

## Numbers to Know

- 2,115 jobs
- 225 establishments
- 0.73 employment concentration
- \$370 million in sales
- 0.7\% change to 2027
- \$75,854 average wage
- \$9,547 average employer paid benefits


Research \& Development in Nanotechnology

NAICS
541713

## Numbers to Know

- 170 jobs
- 46 establishments
- 0.39 employment concentration
- $\$ 87.5$ million in sales
- $18.0 \%$ change to 2027
- \$205,669 average wage
- \$26,722 average employer paid benefits

Research \& Development
in Biotechnology (except Nanobiotechnology)

NAICS 541714

## Numbers to Know

- 2,696 jobs
- 414 establishments
- 0.56 employment concentration
- $\$ 7.1$ billion in sales
- $15.8 \%$ change to 2027
- \$166,697 average wage
- $\$ 21,729$ average employer paid benefits



## Historical <br> Trends

## Colorado Urban Front Range

The first graph shows the growth in jobs (maroon bars), and the growth in the number of
establishments (green line) in the sector between 2013 and 2022. The second graph shows the growth in wages, salaries and proprietor earnings (maroon bars) and in employer-paid benefits, including the employer portions of both Social Security and Medicare payroll deductions (green line) for the same period.



## Employment Concentration Map

## Colorado Urban Front Range

The overall employment concentration in this sector is 1.47 times the national average, which suggests the region has a good supply of skilled labor. Concentration also varies by county, with the heaviest sector employment concentrations in Boulder and Jefferson counties.

## Sector Employment Concentration

Employment concentration in the sector is shown here within each of the 15 counties making up the region. Note that the current wages, salaries, and proprietor earnings, as well as the current employer-paid benefits are different within each county. This is because each county has a different mix of sector industries. For example, the highest average wage per worker is in research and development in nanotechnology, while the lowest is in opthalmic goods manufacturing. Thus, a county that has a concentration of opthalmic goods manufacturing will have a lower average wage per worker.

## ADAMS

- Jobs - 1,037
- Employment Concentration - 0.39
- Current Wages, Salaries, \& Proprietor Earnings - \$75,019 - Benefits - \$13,088
- Top Businesses - Marquis Dental Manufacturing Co., Yuscience, MBC Pharma Inc.


## BROOMFIELD

- Jobs - 368
- Employment Concentration - 0.78

Current Wages, Salaries, \& Proprietor Earnings \$178,520

- Benefits - \$35,345

Top Businesses - Zoll Medical Corp., Swisshog Healthcare, Aktivax

## ARAPAHOE

- Jobs - 3,231
- Employment Concentration - 0.87
- Current Wages, Salaries, \& Proprietor Earnings \$102,240
- Benefits - \$19,047

Top Businesses - Allosource, Conmed, Fare Surgical Inc.

## CLEAR CREEK

- Jobs - 32
- Employment Concentration - 0.83
- Current Wages, Salaries \& Proprietor Earnings \$70,950
- Benefits- \$17,666
- Top Businesses - Electra Enterprises, Advance Dental Technology


## BOULDER

- Jobs - 7,473

Employment Concentration $-3.42$
Current Wages, Salaries, \& Proprietor Earnings \$131,895
Benefits- $\$ 25,076$
Top Businesses - Particle Measuring Systems, Cordon Pharma Colorado, Personal Care

## DENVER

- Jobs - 3,698
- Employment Concentration - 0.61
- Current Wages, Salaries, \& Proprietor Earnings \$131,642
- Benefits - \$21,737
- Top Businesses - Hearthero Colorado Serum Company, Katzson Bros. Inc.
- Jobs - 2,224
- Employment Concentration - 7.37
- Current Wages, Salaries, \& Proprietor Earnings - \$172,713
- Benefits - \$19,081
- Top Businesses - Zynex

Medical, Cochlear Americas Corp., Viveve Medical Inc.

## GILPIN

- Jobs - < 10
- Employment Concentration - 0.22
- Current Wages, Salaries, \& Proprietor Earnings - Insf. Data
- Benefits- Insf. Data
- Top Businesses - Insf. Data


## PARK

- Jobs - <10
- Employment Concentration - 0.13
- Current Wages, Salaries, \& Proprietor Earnings - Insf. Data
- Benefits - Insf. Data
- Top Businesses - M \& K Biomedical Repair


## JEFFERSON

- Jobs - 5,043
- Employment Concentration - 1.85

Current Wages, Salaries, \& Proprietor Earnings \$105,167

- Benefits - $\$ 25,452$ Top Businesses - Terumo BCT, Liva Nova, Mesa Laboratories Inc.


## TELLER

- Jobs - 18
- Employment Concentration - 0.19
- Current Wages, Salaries \& Proprietor Earnings \$123,158
- Benefits- \$16,392
- Top Businesses - Ron Enders LLC, Stera Inc


## LARIMER

- Jobs - 2,436
- Employment Concentration - 1.23
- Current Wages, Salaries, \& Proprietor Earnings \$101,260
Benefits - $\$ 22,880$
Top Businesses - Wasson-e
C E Instrumentation Inc.
Growcentia, The Sequencing
Center


## WELD

- Jobs - 693
- Employment Concentration - 0.53
- Current Wages, Salaries, \& Proprietor Earnings - \$85,910 Benefits- \$14,390
Top Businesses - Medcom
Group Ltd., Columbine
Medical Equipment
Eurofins Test America



## Where Core Workforce Lives

## Commute Map



Every sector has a group of occupations it needs to fulfil its mission. This is called a staffing pattern, and generally includes managers, business and finance people, sales and administrative support, computer and mathematical occupations. There is also a core set of occupations that are primarily responsible for producing the good or services that industry provides. In biosciences, this core set of occupations is made up of production occupations. Examples of these occupations include assemblers and fabricators, quality assurance testers, and dental laboratory technicians. This map shows where persons employed in these occupations live (orange areas) and where they work (blue areas).

## Where Core Workforce Lives

## | Commute Patterns

The table shows net commuters. For example, 5,532 workers in these core occupations live in Arapahoe County, while there are 4,733 biosciences production jobs there. This means there are 799 more of these core workers living in Arapahoe County than there are production jobs in biosciences there. Note the latest commuter data available is from 2022.

| County | Net Commuters | Resident Workers | Jobs |
| :---: | :---: | :---: | :---: |
| Denver | 3,323 | 5,841 | 9,164 |
| Boulder | 1,940 | 4,050 | 5,990 |
| Broomfield | 228 | 1,138 | 1,365 |
| Clear Creek | 44 | 38 | 82 |
| Park | (44) | 97 | 52 |
| Teller | (71) | 170 | 99 |
| Elbert | (104) | 169 | 65 |
| Larimer | (241) | 4,888 | 4,647 |
| El Paso | (273) | 5,611 | 5,338 |
| Jefferson | (442) | 7,263 | 6,821 |
| Adams | (676) | 6,374 | 5,698 |
| Arapahoe | (799) | 5,532 | 4,733 |
| Douglas | $(1,352)$ | 2,814 | 1,462 |
| Weld | $(1,748)$ | 6,179 | 4,432 |
| Gilpin | Insf. Data | 37 | $<10$ |



## | Comparative Retirement Risk



Retirement risk in biosciences is higher than that across all industries in the region. This reflects an older labor force with $23.8 \%$ of bioscience workers aged 55 and older, while only $4.8 \%$ are aged 24 and younger.

## | Comparative Racial Diversity



This bar chart shows the racial and ethnic diversity in the industry versus across all industries in the 15 county region. This is measured by a concept called 'total diversity,' which is the percent of racial or ethnic minorities employed in the sector versus the percent of racial and ethnic minorities employed across all industries. Biosciences is significantly less diverse than the average within the region, with overall diversity at only $24.2 \%$ of the sector's workforce versus $30.2 \%$ across all industries



## I Comparative Gender

Percent of WorkforceBioscience Industry
All Industries




## Telework and Automation Strategies

## Remote Work Potential

31.4\% Remote Work capobilit for sececor

In a scarce labor market, a valid strategy for employers might be to review their staffing pattern and determine which positions, if any, can be employed remotely or on a hybrid work schedule. Approximately $31.4 \%$ of the workforce in biosciences has at least partial teleworking capacity, mostly in back-office functions.


## Automation Index

## 95.3

Another valid strategy employers can use in today's scarce labor market is automation. Automation seldom replaces workers 1:1. Rather, automation leverages the productive capacity of fewer workers to allow for higher output. Examples of automation in biosciences are robotics and repetitive, monotonous tasks like centrifugation, decapping and colony counting.


Advertised Wage Trends
The scarce labor market has driven wages up over time. This line graph shows movement in advertised wages in jobs posted in the sector over the last year.


Competitive Wage Analysis
The following table shows the top 20 occupations by percentage of total employment in the sector, as well as total employment across industries. For example, the biosciences sector employs 478 project management specialists, but there are 26,738 employed across all industry sectors. This is important because the biosciences sector must compete with other sectors for critical talent, such as software developers, sales representatives, and assemblers. Average annual openings for each occupation is estimated according to known attrition (people leaving the occupation or retiring) as well as expected national and local growth in the occupation.

Median posted wage levels can be compared to estimated entry and experienced level wages, and the typical entry level education, as well as the typical on-the-job training (OJT) are shown to illustrate the potential for apprenticeships and OJT to supplement shortfalls in the traditional training pipeline.

The Standard Occupational Classification (SOC) system is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data.

## Competitive Wage Analysis

| SOC | Description | Jobs in Sector | \% of Total Employment in Sector | Jobs Across all Industries | Average Annual Openings | Median Posted Wage | Entry Level Wage | Median Wage | Highly Experienced Level Wage | $\qquad$ | Typical Entry Level Education |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 17-1021 | General \& Operations Managers | 599 | 2.1\% | 43,782 | 4,781 | \$39.82 | \$41.46 | \$60.66 | \$88.23 | None | Bachelor's degree |
| 17-9199 | Managers, All Other | 399 | 1.4\% | 20,867 | 1,974 | \$50.58 | \$29.47 | \$67.12 | \$84.34 | None | Bachelor's degree |
| 13-1082 | Project Management Specialists | 478 | 1.7\% | 26,738 | 2,583 | \$46.89 | \$35.72 | \$47.08 | \$61.90 | None | Bachelor's degree |
| 13-1761 | Market Research Analysts \& Marketing Specialists | 451 | 1.6\% | 26,670 | 3,351 | \$28.25 | \$25.69 | \$36.06 | \$48.71 | None | Bachelor's degree |
| 13-1199 | Business Operations Specialists, All Other | 621 | 2.2\% | 42,410 | 4,428 | \$34.83 | \$29.44 | \$38.93 | \$51.78 | None | Bachelor's degree |
| 15-1252 | Software Developers | 998 | 3.4\% | 43,195 | 4,546 | \$58.95 | \$48.40 | \$62.08 | \$76.85 | None | Bachelor's degree |
| 17-2031 | Bioengineers \& Biomedical Engineers | 391 | 1.4\% | 1,383 | 91 | \$43.20 | \$43.05 | \$50.41 | \$65.54 | None | Bachelor's degree |
| 17-2712 | Industrial Engineers | 672 | 2.4\% | 4,931 | 400 | \$47.88 | \$37.72 | \$47.02 | \$60.28 | None | Bachelor's degree |
| 19-2031 | Chemists | 566 | 2.0\% | 1,785 | 170 | \$37.05 | \$30.04 | \$47.10 | \$57.75 | None | Bachelor's degree |
| 19-4021 | Biological Technicians | 472 | 1.6\% | 2,716 | 392 | \$23.45 | \$19.35 | \$23.21 | \$25.73 | None | Bachelor's degree |
| 41-4017 | Sales Representatives, Wholesale \& Manufacturing, Technical \& Scientific Products | 722 | 2.4\% | 4,768 | 576 | \$43.20 | \$34.25 | \$46.32 | \$68.70 | Moderate-term OJT | Bachelor's degree |
| 41-4012 | Sales Representatives, Wholesale \& Manufacturing, Except Technical \& Scientific Products | 1,057 | 3.6\% | 27,310 | 2,999 | \$30.22 | \$23.53 | \$33.95 | \$48.29 | Moderate-term OJT | High school diploma or GED |
| 43-4051 | Customer Service Representatives | 665 | 2.3\% | 45,102 | 6,653 | \$19.38 | \$16.39 | \$19.48 | \$23.69 | Short-term OJT | High school diploma or GED |
| 43-5071 | Shipping, Receiving, \& Inventory Clerks | 490 | 1.7\% | 14,830 | 1,661 | \$19.51 | \$16.98 | \$19.29 | \$22.97 | Short-term OJT | High school diploma or GED |
| 57-1017 | First-Line Supervisors of Production \& Operating Workers | 553 | 2.0\% | 7,749 | 884 | \$30.83 | \$25.06 | \$32.62 | \$40.95 | None | High school diploma or GED |
| 51-2028 | Electrical, Electronic, \& Electromechanical Assemblers, Except Coil Winders, Tapers, \& Finishers | 557 | 2.0\% | 4,517 | 561 | \$20.00 | \$17.47 | \$19.74 | \$23.95 | Moderate-term OJT | High school diploma or GED |
| 51-2098 | Miscellaneous Assemblers \& Fabricators | 829 | 3.0\% | 11,336 | 1,369 | \$20.00 | \$16.00 | \$18.55 | \$21.49 | Moderate-term OJT | High school diploma or GED |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, \& Weighers | 555 | 1.9\% | 4,952 | 680 | \$25.05 | \$18.28 | \$22.68 | \$29.30 | Moderate-term OJT | High school diploma or GED |
| 51-9081 | Dental Laboratory Technicians | 619 | 2.2\% | 694 | 98 | \$21.48 | \$18.63 | \$23.65 | \$29.14 | Moderate-term OJT | High school diploma or |
| 57-9171 | Packaging \& Filling Machine Operators \& Tenders | 436 | 1.5\% | 3,979 | 532 | \$17.54 | \$16.05 | \$18.62 | \$23.83 | Moderate-term OJT | High school diploma or GED |



## Top Occupations

These figures use information from unique job postings across the sector to show the number of jobs posted in the 15 county region during the last year and median posted salary. It is also important when planning staffing strategy to look at hires, separations and turnover rate for each of the occupations, whether the occupation is apprenticeable or not, and the top skills demanded over the prior 12-month period.

Discover more about each occupation by simply clicking on the respective icon

## Top <br> Occupations

Top 20 Occupations Currently Listed in the Colorado Urban Front Range


Miscellaneous Assemblers \& Fabricators


Median Salary
Hires
Separations
Turnover Rate
Apprenticeable Yes
Top Skills: Hand Tools, Soldering Development Environment


Sales Representatives Wholesale \& Manufacturing, Technical \& Scientific Products

Unique Postings 2,249 Median Salary \$43.20 Hires - Separations - Turnover Rate 2,485 2,003 3.5 Apprenticeable Yes Top Skills: Selling Techniques, Pharmaceuticals, Medical Devices


## Customer Service <br> Representatives


. Unique Postings 22,781

| - Median Salary | $\$ 47.88$ |
| :--- | :--- |
| - Hires | 1,621 |
| - Separations | 1,394 |
| . Turnover Rate | $29.1 \%$ |
| Apprenticeable | Yes |

Top Skills: Project Management, Good Manufacturing Practices, Medical Devices

## Dental Laboratory

 Technicians

## Business Operations

 Specialists, All Other| - Unique Postings | 2,400 |
| :--- | :--- |
| - Median Salary | $\$ 34.83$ |
| - Hires | 24,611 |
| - Separations | 24,781 |
| - Turnover Rate | $59.4 \%$ |
| - Apprenticeable | No |
| Top Skills: Risk Management, |  |
| Project Management, Vlookups |  |



Inspectors, Testers, Sorters, Samplers, \& Weighers
Unique Postings 2764
Median Salary \$25.05
Hires
Separations

Turnover Rate
Apprenticeable Yes
Top Skills: Good Manufacturing Practices, Quality Management, Auditing


## Shipping, Receiving, \&

 Inventory ClerksUnique Postings 2,33
-Median Salary \$19.51

- Hires

Separations 11,748

Turnover Rate $\quad 86.4 \%$

- Apprenticeable N

Top Skills: Warehousing,
Shipping and Receiving, Forklift
Truck

|  | General \& Operations <br> Managers | Electrical, Electronic, <br> \& Electromechanical <br> Assemblers, Except Coil |
| :--- | :--- | :--- | :--- |
| Winders, Tapers, \& Finishers |  |  |



## Biological Technicians

| . Unique Postings | 8,043 |
| :--- | :--- |
| - Median Salary | $\$ 46.89$ |
| - Hires | 13,693 |
| . Separations | 13,132 |
| - Turnover Rate | $50.4 \%$ |

Top Skills: Project Management Project Planning, Medical Devices

First-Line Supervisors of Production \& Operating

## Workers

- Unique Postings 2,389
- Median Salary \$30.83
- Hires

Turnover Rate 52.7\%

- Apprenticeable

Top Skills: Good Manufacturing
Practices, Corrective and
Preventive Action (CAPA),
Performance Managemen

## General \& Operations Managers

Unique Postings 13,091
Median Salary \$39.82

Separations
Turnover Rate 54.4\%
Top Skills: Project Management
Finance, Pharmaceuticals


Market Research Analysts \& Marketing Specialists

Unique Postings 5,968 Median Salary \$28.25 Hires 16,674 Separations 14,205 Turnover Rate 55.3\% Apprenticeable Ye Top Skills: Marketing, Social Media, Medical Devices

Packaging \& Filling Machine Operators \&

## Tenders

Unique Postings 506
Median Salary \$17.54

- Hires 3,557
-Separations 3,246
Turnover Rate 84.4\%
- Apprenticeable No

Top Skills: Cannabis,
Post-Production, Production Process

Bioengineers \& Biomedical Engineers

Unique Postings 65

- Median Salary \$43.20

Hires 406
Separations 412
-Turnover Rate 30.4\%

- Apprenticeable No

Top Skills: Biomedical
Engineering, Mechanical Engineering, Process Improvement

## Let's Talk!

There are a number of strategies you can employ to enhance employee recruitment and retention. The Arapahoe/Douglas Works! Business Services Team can help you strategize and implement these tactics. Get started by calling (303) 636-1359 or visiting https://bit.ly/ADWBusinessServices.


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