



LABOR
MARKET
INFORMATION

1ST EDITION

POSTSECONDARY SUPPLY GAP ANALYSIS

PREPARED FOR THE
**COORDINATING COUNCIL
FOR WORKFORCE DEVELOPMENT**

by the Labor Market Information Division of the South Carolina
Department of Employment and Workforce (DEW).

1ST EDITION
POSTSECONDARY SUPPLY GAP
ANALYSIS REPORT

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EXECUTIVE SUMMARY

In order to better understand South Carolina’s workforce needs, the Statewide Education and Workforce Development Act (Act No. 67 of 2023) directs the development of an annual statewide workforce supply gap analysis. This report will help improve the understanding of the workforce climate and inform education decisions in order to align the supply of graduates with changes in demand from employers. For a condensed version of this analysis, refer to the [Post Secondary Supply Gap Analysis Overview](#).

The information in this document provides a snapshot of the opportunities and challenges the state will face in meeting the needs of businesses in the coming years. While the primary focus of this report, the “supply gap,” is the difference between the number of adjusted postsecondary graduates qualified for a given occupation and the amount of new annual demand within the occupation, this report also contains the demand supply ratio: the amount of new annual demand in an occupation divided by the number of qualified postsecondary graduates. Whereas the supply gap indicates the overall change in need that is unmet by the higher education system within an occupation in the state, the demand supply ratio shows how the output of the postsecondary education compares to changes in need.

As the inaugural South Carolina workforce supply gap analysis under Act No. 67 of 2023, this report covers the postsecondary supply gap. Future versions of this analysis are planned to incorporate additional categories of skilled workers as requisite data becomes available.

The supply gap across all occupations in South Carolina is about 29,000 annual workers.

- The supply gap for occupations with a bachelor’s degree among the minimum requirements accounts for about half (15,593) of the total supply gap statewide.
- Approximately 16 percent (4,759) of the supply gap is for occupations with an associate degree as the minimum requirement.
- Another 15 percent (4,330) represents occupations requiring a minimum of a master’s degree.
- An additional 8 percent (2,390) of the supply gap represents gaps in occupations requiring only a postsecondary credential, such as a certificate, to meet minimum education requirements.
- Occupations that require a doctoral or professional degree make up the remaining 8 percent (2,335) of the supply gap.
 - Although occupations requiring a doctoral or professional degree make up a small portion of the supply gap, occupations requiring this level of education have the highest demand supply ratio (3.30—approximately one graduate for every three openings).

At the career cluster level, the largest supply gaps are:

- Health Science (6,951),
- Education and Training (3,827), and
- Business Management and Administration (3,216).

The Transportation, Distribution, and Logistics cluster had a demand supply ratio more than double any other cluster, 8.95, based on only 201 graduates for 1,798 openings. The next highest demand supply ratio among clusters was for Finance, which had a ratio of 3.82 based on 880 graduates for 3,360 openings.

The clusters with the smallest supply gaps are:

- Agriculture, Food, and Natural Resources (206);
- Government and Public Administration (281); and
- Arts, Audio/Video Technology, and Communications (394).

At the occupation level, the largest supply gaps across all occupations requiring a postsecondary credential are:

- Accountants and Auditors (1,255)
- Software Developers (1,061)
- Nursing Assistants (988)
- Market Research Analysts & Marketing Specialists (983)
- Human Resources Specialists (964)
- Medical Assistants (917)
- Elementary School Teachers, Except Special Ed. (879)
- Substitute Teachers, Short-Term (663)
- Paralegals and Legal Assistants (621)
- Medical and Health Services Managers (565)
- Automotive Service Technicians and Mechanics (559)
- Registered Nurses (537)

Among these occupations, the largest demand supply ratios were found among:

- Paralegals and Legal Assistants (8.14—87 graduates for 708 openings),
- Human Resources Specialists (7.60—146 graduates for 1,110 openings), and
- Automotive Service Technicians and Mechanics (5.82—116 graduates for 675 openings).

However, while Software Developers had a demand supply ratio of 3.53 (419 graduates for 1,480 openings), lower than some of the other occupations, the number of job openings for that occupation in the state (currently 12,106) was projected to grow in ten years by nearly 70% (8,430 openings).

Looking to the future, computer science related occupations are just one category with growth that suggests potential future shortages in graduates to meet demand. Other occupations with growth that could result in shortages include industrial engineers, data scientists, logisticians, and several medical occupations.

While this report is only one analytical perspective on the state's workforce, this data yields insights into opportunities for investment in alignment of education with employer demand. Data-driven collaboration among policymakers, educators, employers, and other stakeholders to meet present and future demand will ensure the state's workforce remains responsive to evolving industry needs, advances in technology, and continued growth.

HOW TO USE THIS REPORT

Within this report we seek to better understand the workforce needs of the State of South Carolina. Specifically, we seek to understand the **supply gap** in graduates from programs that provide postsecondary credentials. This analysis will inform policymakers, students and their advisors, employers, and the public, facilitating improved coordination between all relevant stakeholders.

The purpose of the next section is to clarify the parameters and uses of this analysis by defining important terminology and identifying gaps in knowledge.

DEFINITIONS, ASSUMPTIONS, AND LIMITATIONS

- The **supply gap** is defined as the difference between the number of **adjusted graduates** who are qualified for a given occupation and the new annual demand within the occupation. The supply gap measures how well SC higher education institutions are able to fulfill the new annual demand for credentialed workers.
- The **demand supply ratio** is calculated by dividing **new annual demand** within an occupation by the number of adjusted graduates with postsecondary credentials that qualify them for the occupation.
- **New annual demand** in this context refers to newly created jobs or positions resulting from occupation growth plus jobs that were formerly filled by individuals who exited the labor force or transferred to a new occupation.
- New annual demand, when referenced in this report, **does NOT include** unfilled jobs resulting from turnover or demand that carried over from previous years. New annual demand in this context therefore **is NOT equivalent to the total number of current job openings or job postings**.
- This report is only concerned with occupations that require a postsecondary degree or certificate. Additionally, new annual demand excludes new jobs or positions that do not require any postsecondary degree or certificate.
- **Graduates** are defined by the **number of completions** from South Carolina universities and colleges that receive federal funding, **adjusted based on the estimated likelihood of workforce participation in South Carolina**.
- Generalized programs of study are not included in this analysis, but we recognize that a graduate of one of these programs could fill an opening in one of the occupations examined in this report.
- We recognize that a graduate of a particular program of study may find employment in an unrelated occupation; however, we are only concerned with the number of qualified graduates produced for each occupation.
- **This analysis only accounts for individuals who graduated from institutions of higher education in South Carolina**. It does not account for credentialed individuals who move to South Carolina.
- Increasing the number of graduates from South Carolina institutions is not the only method of filling the supply gap. It may also be satisfied through other means, such as raising retention among those institutions and bringing in workers from outside of the state.

- Occupations are defined according to the 2018 Standard Occupation Classification system (SOC), which is a federal standard for classifying workers into occupations based on work performed. This report analyzes the supply gap at the most detailed occupation level, and the occupations are aggregated into their corresponding career clusters.

UNDERSTANDING SUPPLY GAP AND DEMAND SUPPLY RATIO

The supply gap is the primary indicator of a change in need for credentialed workers. A positive supply gap suggests that there are not enough new qualified candidates to meet the new annual demand for a given occupation. The greater the supply gap, the greater the increase in need. A negative supply gap suggests that the number of potential candidates for a given occupation exceeds the new annual demand.

The demand supply ratio compares the change in new annual demand to the output of qualified candidates from South Carolina’s higher education system. A demand supply ratio of 1.00 indicates that supply of qualified candidates equals demand exactly. A ratio less than 1.00 implies that supply exceeds demand, and **a ratio greater than 1.00 implies that supply does not meet demand, meaning a supply gap is present.**

EXHIBIT 1: EXAMPLE CASE

Occupation	Total Graduates from SC Institutions	Total SC Graduates That Do Not Enter the SC Workforce	Adjusted Postsecondary Graduates	Total Job Openings	New Annual Demand	Jobs Open Due to Retirements or Transfers to New Occupations	Newly Created Positions	Supply Gap
Occupation A	3	2	1	50	2	1	1	1
Occupation B	150	50	100	4,000	200	150	50	100
Occupation C	1,600	700	900	10,000	1,000	800	200	100

Let us examine Occupation B to better understand how supply gap is calculated. In this hypothetical, Occupation B has 100 adjusted postsecondary graduates. This indicates that at least 100 individuals graduated with a degree or certificate qualifying them to work in this occupation. The true number of qualified graduates from South Carolina institutions is 150, but this number is adjusted based on the percentage expected to leave the state—in this case, about 33 percent, or 50 graduates—resulting in 100 adjusted postsecondary graduates.

The total number of job openings in Occupation B is 4,000; however, we are separating job openings resulting from turnover within the occupation and jobs with different education requirements from this analysis. In the case of Occupation B, 2,300 job openings are the result of turnover, and 1,500 require educational credentials other than a postsecondary one.* New annual demand in Occupation B therefore equals 200 job openings, which are the result of 150 people retiring or transferring to different occupations and the creation of 50 new positions within the occupation.

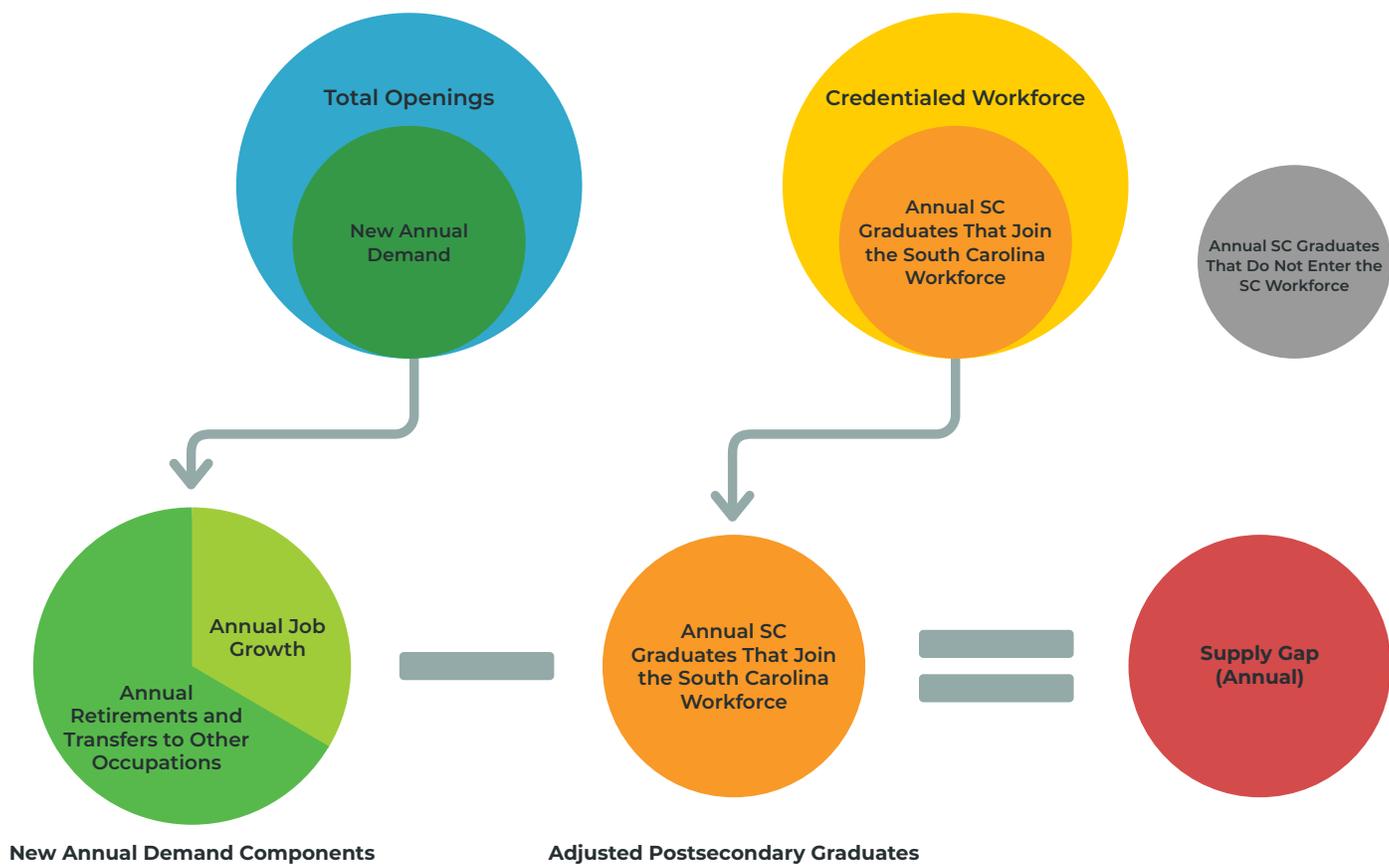
The supply gap is calculated by subtracting the number of adjusted graduates (100) from the new annual demand (200). For Occupation B, this leaves us with a supply gap of 100 graduates. Producing, retaining, or recruiting 100 more credentialed graduates will not cause job openings in Occupation B to fall to zero.

*These numbers are not in the table above but are referenced here to provide greater clarity.

It will only cause the total number of job openings to remain stable rather than increase from the previous year. As a reminder, **this analysis is only concerned with identifying which occupations have a growing need for credentialed workers and to what extent postgraduate programs in the state are able to match that growth.**

For those looking for a more in-depth analysis, demand supply ratio can provide additional information. Let us compare Occupations A, B, and C to better understand demand supply ratio and its limitations. Occupation A and Occupation B have the same demand supply ratio of 2.00, but this does not paint a complete picture of workforce needs. In the case of Occupation A, there are 2 openings and just one qualified graduate, creating a supply gap of 1. Occupation B has 200 openings and 100 graduates. The ratio is the same, but the supply gap is much higher. **Demand supply ratio does not, then, account for scale.** In conjunction with the supply gap, however, the demand supply ratio can provide valuable insight. Occupation C, like Occupation B, has a supply gap of 100, but the ratio is much lower, only 1.11. In order for demand to be met for Occupation B, output must double. Occupation C, in contrast, only requires an 11 percent increase in output to meet demand. In both cases, the state may satisfy demand by increasing the number of qualified graduates, retaining more qualified graduates, or recruiting credentialed workers from outside the state. A diagram representation is provided in **Exhibit 2** as an additional resource to help clarify the supply gap and its components.

EXHIBIT 2: SUPPLY GAP AND COMPONENTS DIAGRAM

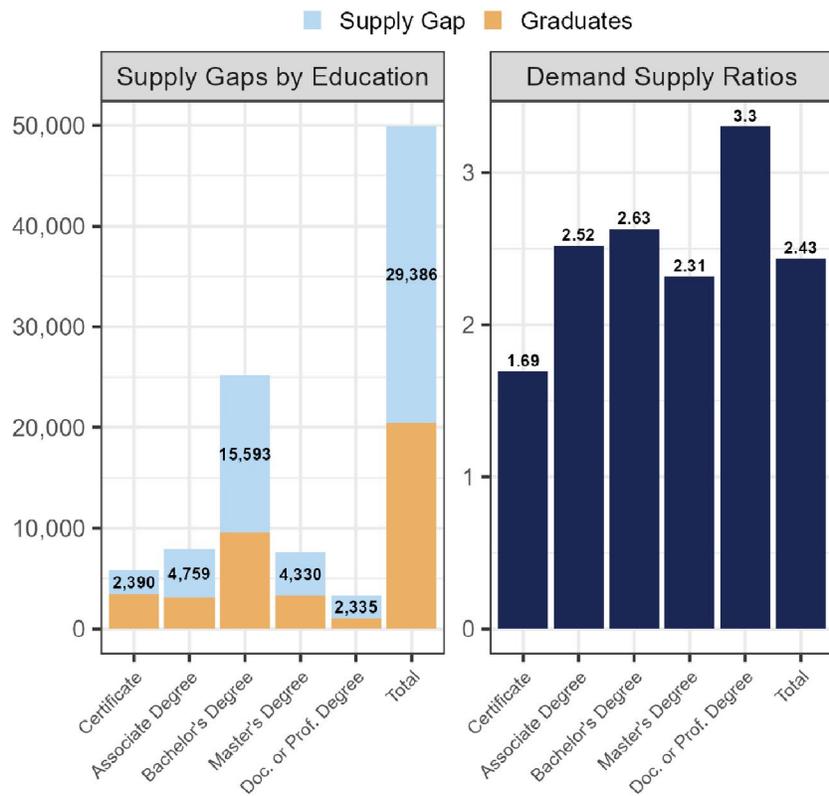


OVERALL SUPPLY GAP

The supply gap across all occupations in South Carolina is about 29,000 annual workers. The supply gap for occupations requiring bachelor's degrees accounts for about half of the total.

These results are shown in **Exhibit 3** below.

EXHIBIT 3: STATE TOTAL SUPPLY GAP BY EDUCATION



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

SUPPLY GAP BY CAREER CLUSTER

Beyond these overall numbers, it is possible to evaluate the supply gap by career cluster, as shown in **Exhibit 4**, to determine areas of the state's economy where this issue is most acute.

At the career cluster level, the largest supply gaps are located in:

1. Health Science
2. Education and Training
3. Business Management and Administration

At the career cluster level, the smallest supply gaps are:

1. Agriculture, Food, and Natural Resources
2. Government and Public Administration
3. Arts, Audio/Video Technology & Communications

EXHIBIT 4: SOUTH CAROLINA SUPPLY GAP BY CAREER CLUSTER

Career Cluster	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Health Science	6,951	2.13	6,167	13,118
Education & Training	3,827	2.04	3,696	7,523
Business Management & Administration	3,216	2.64	1,957	5,173
Finance	2,480	3.82	880	3,360
Information Technology	2,455	3.41	1,018	3,473
Transportation, Distribution & Logistics	2,176	2.40	1,550	3,726
Marketing	1,745	3.00	871	2,616
Human Services	1,597	8.95	201	1,798
Law, Public Safety, Corrections & Security	1,219	3.21	551	1,770
Architecture & Construction	1,138	2.47	775	1,913
Manufacturing	933	1.55	1,695	2,628
Science, Technology, Engineering & Mathematics	766	3.17	353	1,119
Arts, Audio/Video Technology & Communications	394	1.72	546	940
Government & Public Administration	281	3.15	131	412
Agriculture, Food & Natural Resources	206	2.70	121	327
TOTAL	29,386	2.43	20,512	49,898

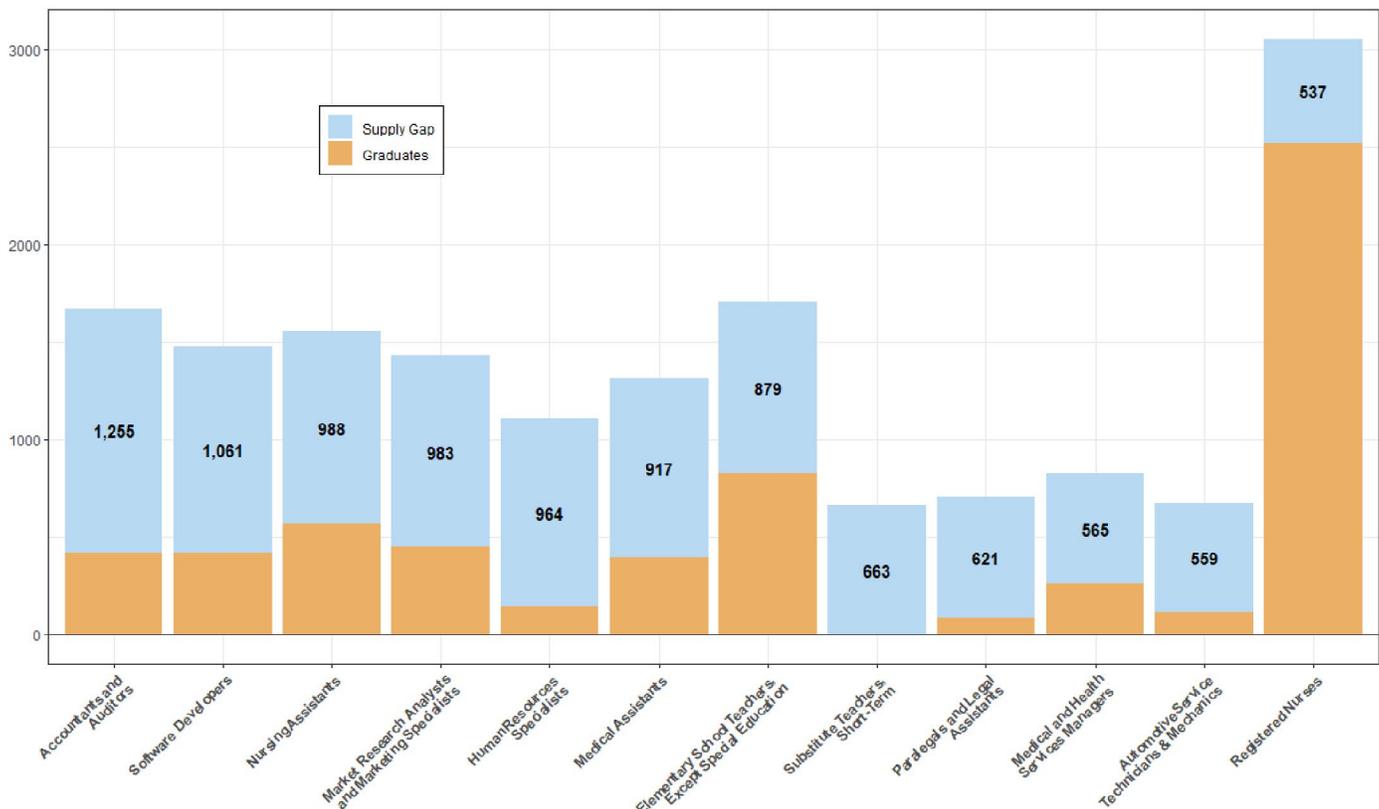
LARGEST SUPPLY GAPS BY OCCUPATION

Complementary to overall and career cluster data, supply gaps are calculated at the occupation level. Across all occupations requiring a post-secondary credential, the largest supply gaps are in these 12:

1. Accountants and Auditors
2. Software Developers
3. Nursing Assistants
4. Market Research Analysts and Marketing Specialists
5. Human Resources Specialists
6. Medical Assistants
7. Elementary School Teachers, Except Special Education
8. Substitute Teachers, Short-Term
9. Paralegals and Legal Assistants
10. Medical and Health Services Managers
11. Automotive Service Technicians and Mechanics
12. Registered Nurses

These data are summarized in [Exhibit 5](#) below.

EXHIBIT 5: LARGEST SUPPLY GAPS BY OCCUPATION



Displayed values are supply gaps. Bars sum to Postsecondary Openings.

CAREER CLUSTERS

AGRICULTURE, FOOD, AND NATURAL RESOURCES

Agriculture, Food, and Natural Resources is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Workers in the agriculture, food, and natural resources cluster produce products and processes—from raising food and textile crops to breeding livestock and hunting wild game; from mining ore below the earth’s surface, to hazardous waste removal and wildlife conservation. Historic trends are giving way to new developments in this cluster.”

There are 13 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 6** below. The three largest supply gaps appear in these occupations:

1. Environmental Science and Protection Technicians, Including Health
2. Biological Technicians
3. Environmental Engineering Technologists and Technicians

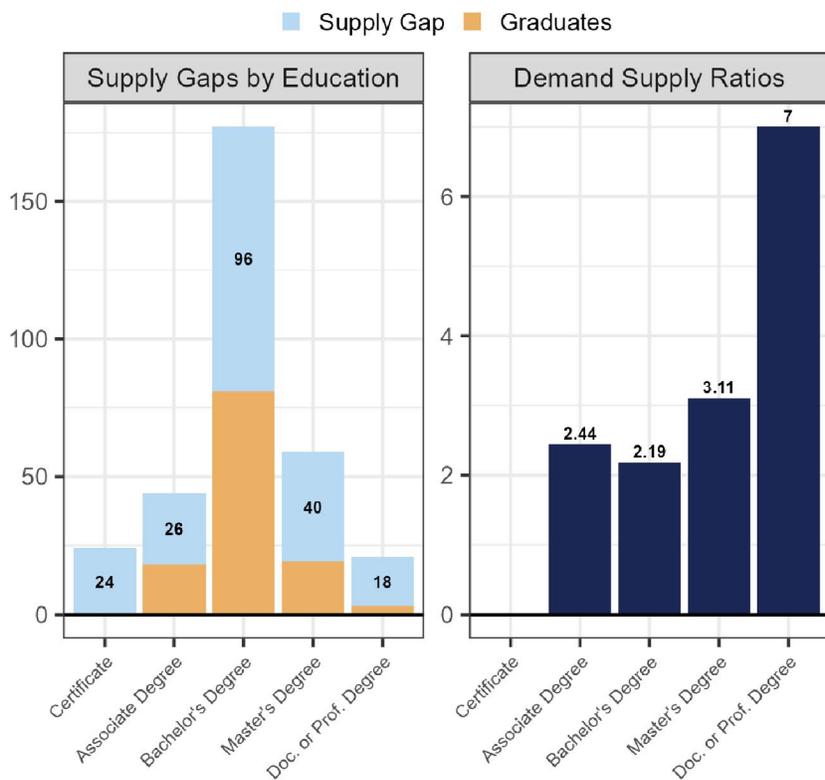
EXHIBIT 6: AGRICULTURE, FOOD AND NATURAL RESOURCES CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Environmental Science and Protection Technicians, Including Health	19-4042	50	51.00	1	51
Biological Technicians	19-4021	36	1.88	41	77
Environmental Engineering Technologists and Technicians	17-3025	34	N/A*	0*	34
Soil and Plant Scientists	19-1013	29	4.22	9	38
Food Scientists and Technologists	19-1012	19	5.75	4	23
Forest and Conservation Technicians	19-4071	16	1.94	17	33
Foresters	19-1032	9	1.39	23	32
Zoologists and Wildlife Biologists	19-1023	6	1.27	22	28
Geological Technicians, Except Hydrologic Technicians	19-4043	4	3.00	2	6
Agricultural Engineers	17-2021	-9	0.10	10	1
Agricultural Technicians	19-4012	-15	0.61	38	23
Food Science Technicians	19-4013	-17	0.37	27	10
Environmental Engineers	17-2081	-51	0.51	105	54

*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, there are enough bachelor's degree graduates being produced to meet current demand. There are modest shortfalls in all other education levels, however. These data are summarized in **Exhibit 7**.

EXHIBIT 7: AGRICULTURE, FOOD & NATURAL RESOURCES CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories. The Certificate Demand Supply Ratio is undefined.

ARCHITECTURE AND CONSTRUCTION

Architecture and Construction is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The purpose of the construction industry is to build and maintain all kinds of structures, including homes, manufacturing plants, office buildings, streets and highways, sewers, irrigation projects, and more. The industry also includes related activities such as painting, electrical work, and plumbing.”

There are 11 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 8** below. The three largest supply gaps appear in these occupations:

1. Heating, Air Conditioning, and Refrigeration Mechanics and Installers
2. Civil Engineers
3. Construction Managers

EXHIBIT 8: ARCHITECTURE AND CONSTRUCTION CLUSTER

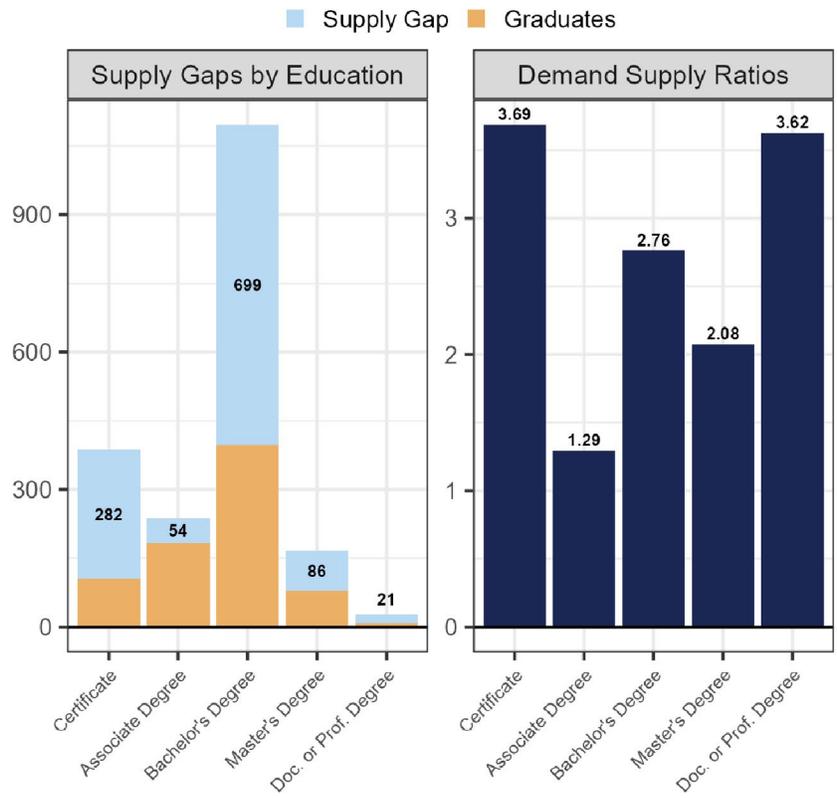
Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Heating, Air Conditioning, and Refrigeration Mechanics and Installers	49-9021	344	6.55	62	406
 Civil Engineers	17-2051	236	2.35	175	411
 Construction Managers	11-9021	124	1.49	252	376
 Cost Estimators	13-1051	116	2.53	76	192
Interior Designers	27-1025	99	8.62	13	112
Architectural and Civil Drafters	17-3011	71	1.96	74	145
Civil Engineering Technologists and Technicians	17-3022	68	2.89	36	104
Architects, Except Landscape and Naval	17-1011	31	1.56	55	86
Surveyors	17-1022	24	2.09	22	46
Landscape Architects	17-1012	14	2.40	10	24
Commercial Divers	49-9092	11	N/A*	0*	11

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, certificates are one of the most in-demand categories with the second largest supply gap and the largest demand supply ratio. These data are summarized in **Exhibit 9**.

EXHIBIT 9: ARCHITECTURE & CONSTRUCTION CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

ARTS, AUDIO/VIDEO TECHNOLOGY, AND COMMUNICATIONS

Arts, Audio/Video Technology, and Communications is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Careers in the Arts, Audio/Video Technology, and Communications cluster focus on designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.”

There are 20 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 10** below. The three largest supply gaps appear in these occupations:

1. Graphic Designers
2. Music Directors and Composers
3. Editors

EXHIBIT 10: ARTS, AUDIO/VIDEO TECHNOLOGY, AND COMMUNICATIONS CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Graphic Designers	27-1024	100	1.78	128	228
Music Directors and Composers	27-2041	53	3.21	24	77
Editors	27-3041	41	1.49	84	125
Audio and Video Technicians	27-4011	41	2.21	34	75
Film and Video Editors	27-4032	33	6.50	6	39
Commercial and Industrial Designers	27-1021	21	2.17	18	39
News Analysts, Reporters, and Journalists	27-3023	17	1.22	77	94
Producers and Directors	27-2012	16	1.14	114	130
Fine Artists, Including Painters, Sculptors, and Illustrators	27-1013	13	7.50	2	15
Prepress Technicians and Workers	51-5111	12	2.50	8	20
Desktop Publishers	43-9031	11	12.00	1	12
Fashion Designers	27-1022	10	2.11	9	19
Sound Engineering Technicians	27-4014	9	5.50	2	11
Camera Operators, Television, Video, and Film	27-4031	8	1.89	9	17
Broadcast Technicians	27-4012	4	1.20	20	24
Broadcast Announcers and Radio Disc Jockeys	27-3011	-3	0.90	30	27
Agents and Business Managers of Artists, Performers, and Athletes	13-1011	-6	0.54	13	7

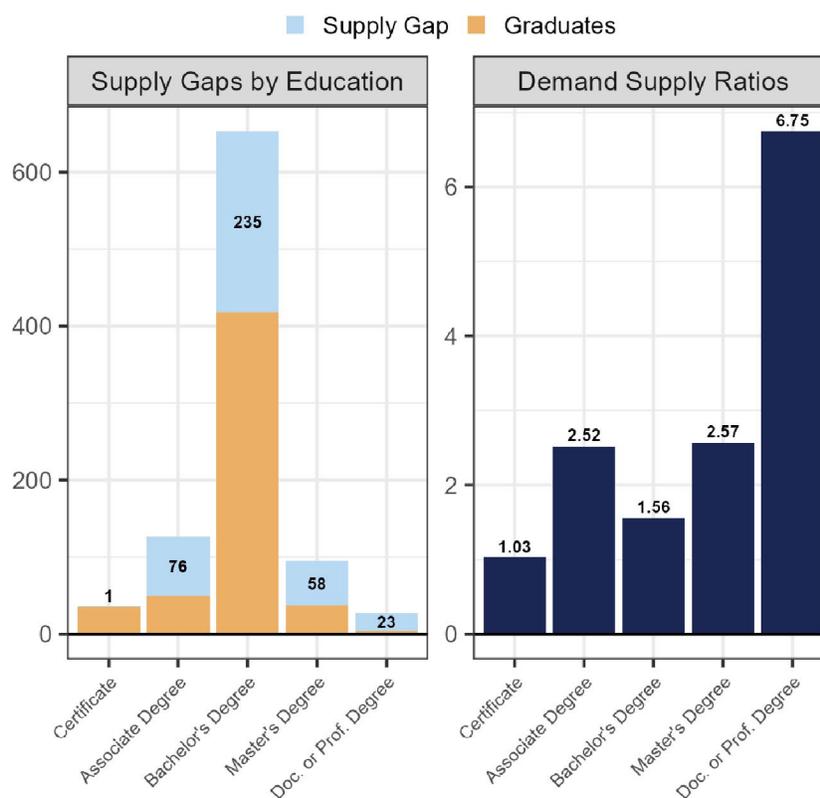
 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

EXHIBIT 10: ARTS, AUDIO/VIDEO TECHNOLOGY, AND COMMUNICATIONS CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Technical Writers	27-3042	-7	0.88	58	51
Special Effects Artists and Animators	27-1014	-19	0.39	31	12
Writers and Authors	27-3043	-62	0.49	121	59

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, graduates from certificate programs are excelling at matching the new annual demand within this cluster. These data are summarized in [Exhibit 11](#).

EXHIBIT 11: ARTS, AUDIO/VIDEO TECHNOLOGY & COMMUNICATIONS CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

BUSINESS MANAGEMENT AND ADMINISTRATION

Business Management and Administration is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Careers in the Business Management and Administration cluster relate to planning, organizing, directing and evaluating business functions essential to efficient and productive business operations. Careers in leadership, management, and support roles are needed by all types of organizations to operate successfully.”

There are 14 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 12** below. The three largest supply gaps appear in these occupations:

1. Human Resources Specialists
2. Management Analysts
3. Project Management Specialists

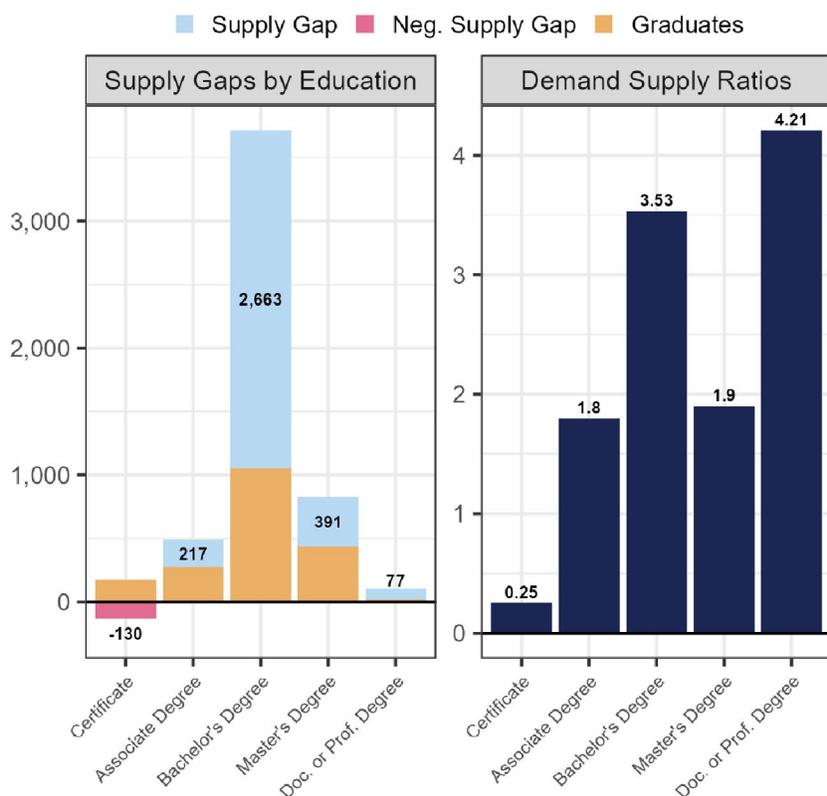
EXHIBIT 12: BUSINESS MANAGEMENT AND ADMINISTRATION CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Human Resources Specialists	13-1071	964	7.60	146	1,110
 Management Analysts	13-1111	526	2.01	520	1,046
Project Management Specialists	13-1082	523	1.93	563	1,086
 Business Operations Specialists, All Other	13-1199	450	2.13	398	848
 Training and Development Specialists	13-1151	398	5.02	99	497
Human Resources Assistants, Except Payroll and Timekeeping	43-4161	125	10.62	13	138
 Meeting, Convention, and Event Planners	13-1121	105	3.14	49	154
Compensation, Benefits, and Job Analysis Specialists	13-1141	69	6.31	13	82
Facilities Managers	11-3013	30	1.48	63	93
Fundraisers	13-1131	26	1.28	93	119
Entertainment and Recreation Managers, Except Gambling	11-9072	-3	0.95	55	52
Labor Relations Specialists	13-1075	-54	0.44	96	42
Operations Research Analysts	15-2031	-75	0.60	187	112
Administrative Services Managers	11-3012	-166	0.68	514	348

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, there are enough certificate graduates being produced to meet current demand. The supply gap among bachelor's degrees is also a relatively larger share of the cluster supply gap. These data are summarized in [Exhibit 13](#).

EXHIBIT 13: BUSINESS MANAGEMENT & ADMINISTRATION CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

EDUCATION AND TRAINING

Education and Training is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The education and training career cluster focuses on the activities, resources, and locations that provide all kinds of learning services. It includes careers at public and private schools at every level—pre-K through high school—as well as colleges and universities. Occupations at libraries, museums and corporate training services are also part of this cluster.”

There are 29 occupations within this cluster under consideration in the supply gap analysis. The results are provided in [Exhibit 14](#) below. The three largest supply gaps appear in these occupations:

1. Elementary School Teachers, Except Special Education
2. Substitute Teachers, Short-Term
3. Middle School Teachers, Except Special and Career/Technical Education

EXHIBIT 14: EDUCATION AND TRAINING CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Elementary School Teachers, Except Special Education	25-2021	392	2.06	828	1,707
Substitute Teachers, Short-Term	25-3031	375	N/A*	0*	663
 Middle School Teachers, Except Special and Career/Technical Education	25-2022	329	2.07	365	757
 Preschool Teachers, Except Special Education	25-2011	202	4.91	96	471
 Teachers and Instructors, All Other	25-3099	181	5.45	74	403
Teaching Assistants, Postsecondary	25-9044	128	N/A*	0*	202
 Secondary School Teachers, Except Special and Career/Technical Education	25-2031	80	1.18	1,026	1,207
Library Technicians	25-4031	69	4.76	34	162
Special Education Teachers, Kindergarten and Elementary School	25-2052	30	2.78	45	125
Coaches and Scouts	27-2022	26	1.27	288	367
Career/Technical Education Teachers, Secondary School	25-2032	77	2.17	66	143

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

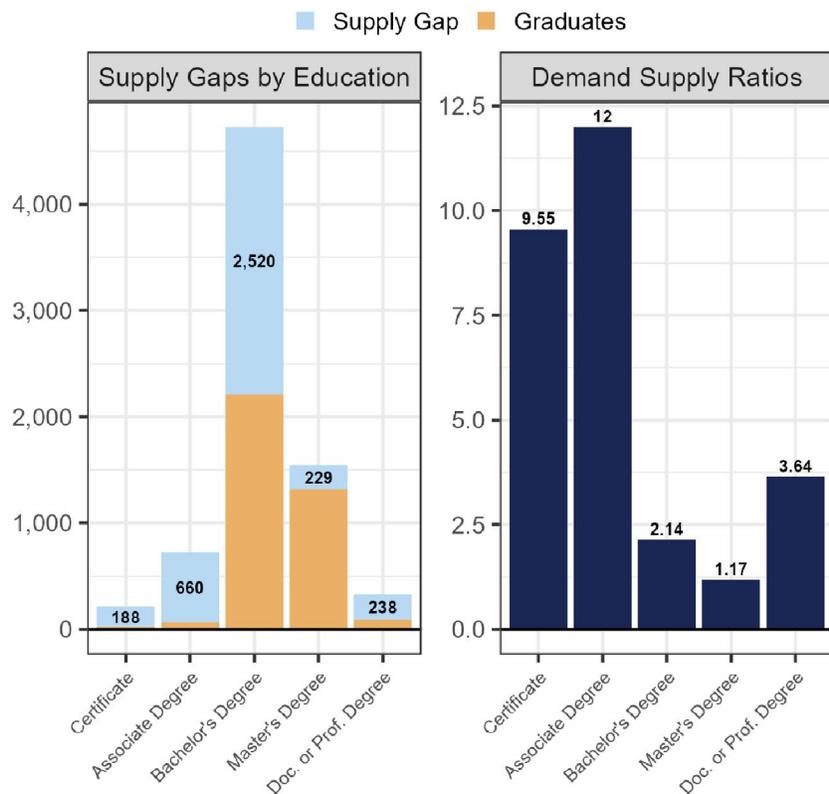
*No relevant programs identified through CIP to SOC crosswalk. Demand Supply Ratio has a zero denominator and is therefore undefined.

EXHIBIT 14: EDUCATION AND TRAINING CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Kindergarten Teachers, Except Special Education	25-2012	67	1.41	164	231
Educational Instruction and Library Workers, All Other	25-9099	61	31.50	2	63
Education Administrators, Postsecondary	11-9033	55	1.19	288	343
Special Education Teachers, Preschool	25-2051	42	4.23	13	55
Career/Technical Education Teachers, Middle School	25-2023	35	8.00	5	40
Special Education Teachers, Middle School	25-2057	35	2.46	24	59
Special Education Teachers, All Other	25-2059	34	5.86	7	41
Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	25-3011	31	1.72	43	74
Special Education Teachers, Secondary School	25-2058	29	1.31	93	122
Education and Childcare Administrators, Preschool and Daycare	11-9031	26	2.08	24	50
Museum Technicians and Conservators	25-4013	15	2.00	15	30
Librarians and Media Collections Specialists	25-4022	12	1.06	196	208
Farm and Home Management Educators	25-9021	-3	0.73	11	8
Interpreters and Translators	27-3091	-5	0.93	75	70
Curators	25-4012	-21	0.49	41	20
Education Administrators, All Other	11-9039	-33	0.55	74	41
Archivists	25-4011	-33	0.57	76	43
Educational, Guidance, and Career Counselors and Advisors	21-1012	-78	0.86	564	486

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, there are few graduates relative to the supply gaps with associate degrees and certificates corresponding with large demand supply ratios. The relative number of graduates are more typical in the remaining categories. These data are summarized in **Exhibit 15**.

EXHIBIT 15: EDUCATION & TRAINING CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

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FINANCE

Finance is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Finance relates to the services involved in financial and investment planning, banking, insurance, and business financial management. The finance and insurance industry are all about managing money and making financial transactions—from a child’s first savings account to multimillion-dollar corporate loans.”

There are 12 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 16** below. The three largest supply gaps appear in these occupations:

1. Accountants and Auditors
2. Loan Officers
3. Personal Financial Advisors

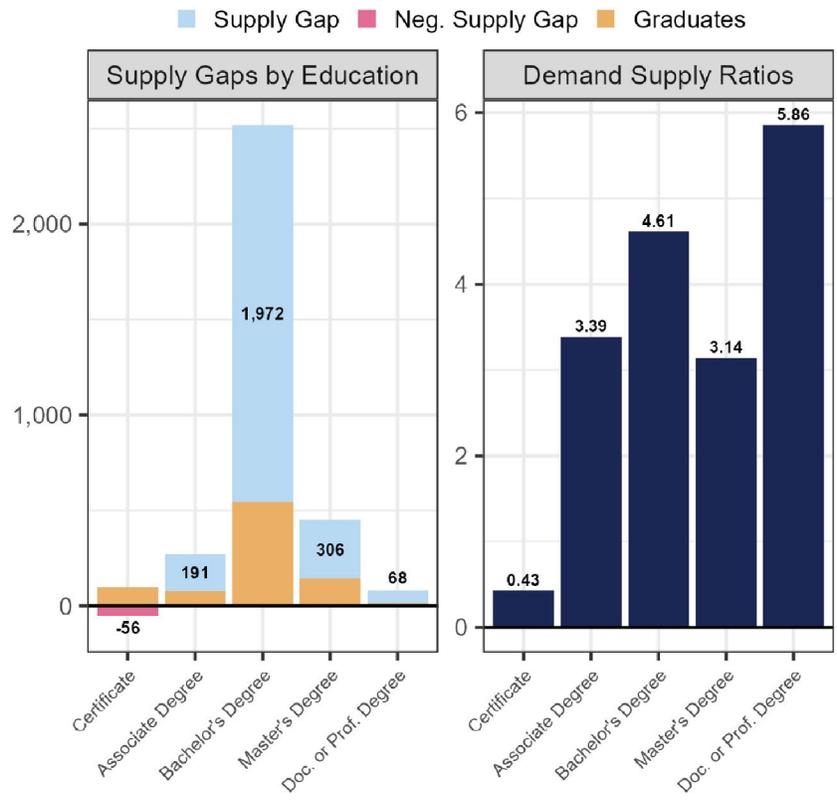
EXHIBIT 16: FINANCE CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Accountants and Auditors	13-2011	1,255	4.00	419	1,674
 Loan Officers	13-2072	265	4.63	73	338
 Personal Financial Advisors	13-2052	226	4.14	72	298
 Securities, Commodities, and Financial Services Sales Agents	41-3031	213	4.44	62	275
 Financial and Investment Analysts	13-2051	164	2.37	120	284
 Insurance Underwriters	13-2053	141	16.67	9	150
Financial Specialists, All Other	13-2099	63	2.31	48	111
Credit Analysts	13-2041	55	3.04	27	82
Budget Analysts	13-2031	44	3.93	15	59
Financial Risk Specialists	13-2054	34	2.48	23	57
Actuaries	15-2011	12	2.09	11	23
Insurance Appraisers, Auto Damage	13-1032	8	9.00	1	9

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, the bachelor's degrees category accounts for a relatively greater portion of the cluster overall supply gap, roughly 79 percent. These data are summarized in **Exhibit 17**.

EXHIBIT 17: FINANCE CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

GOVERNMENT AND PUBLIC ADMINISTRATION

Government and Public Administration is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Careers in Government and Public Administration relate to planning and performing government functions at the local, state and federal levels, including governance, national security, foreign service, planning, revenue and taxation, and regulations. A primary goal of virtually all careers in public service is to help improve the quality of life and livelihood for the citizens represented, while supporting the betterment of the overall community.”

There are 7 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 18** below. The three largest supply gaps appear in these occupations:

1. Occupational Health and Safety Specialists
2. Tax Examiners and Collectors, and Revenue Agents
3. Financial Examiners

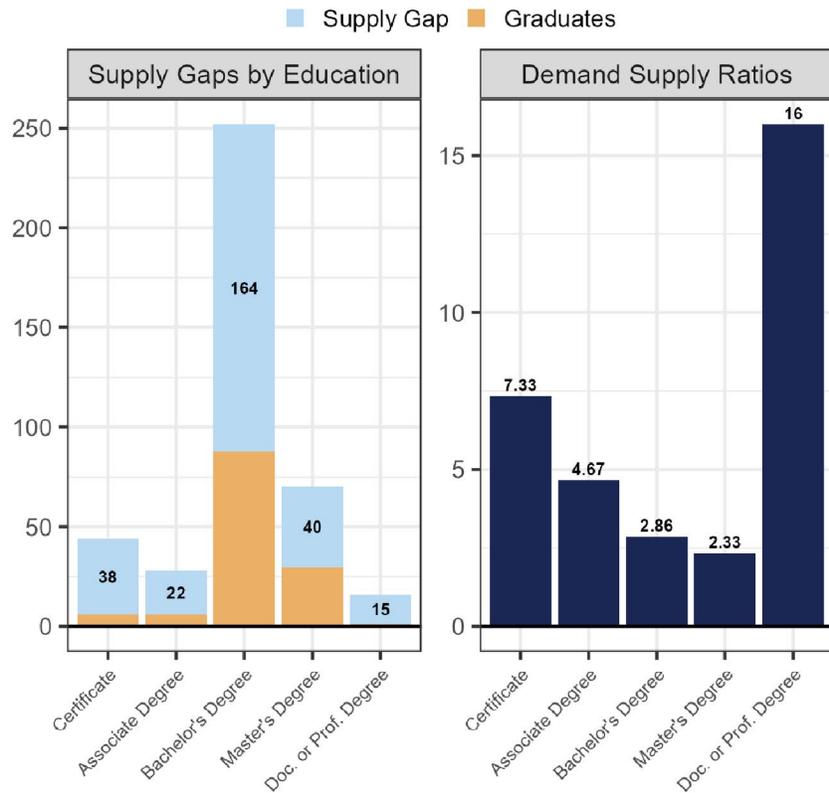
EXHIBIT 18: GOVERNMENT AND PUBLIC ADMINISTRATION CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Occupational Health and Safety Specialists	19-5011	238	8.00	34	272
Tax Examiners and Collectors, and Revenue Agents	13-2081	20	3.86	7	27
Financial Examiners	13-2061	12	1.35	34	46
Statistical Assistants	43-9111	10	11.00	1	11
Urban and Regional Planners	19-3051	1	1.02	41	42
Agricultural Inspectors	45-2011	0	1.00	14	14
Compliance Officers	13-1041	-2	0.99	351	349

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

We can aggregate these data to look at the supply gap by education level. Compared to the state at large, this cluster displays a high relative need. The demand supply ratio of each education category outpaces the ratio across all clusters. These data are summarized in [Exhibit 19](#).

EXHIBIT 19: GOVERNMENT & PUBLIC ADMINISTRATION CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

HEALTH SCIENCE

Health Science is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The primary work of careers in the health science cluster is to treat patients facing illness or injury—whether to cure or rehabilitate from a condition, to maintain wellness, or to provide comfort or palliative care to persons dealing with incurable conditions. The health care industry is booming, and experts predict health care careers will continue to grow rapidly for at least the next decade.”

There are 73 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 20** below. The three largest supply gaps appear in these occupations:

1. Nursing Assistants
2. Medical Assistants
3. Medical and Health Services Managers

EXHIBIT 20: HEALTH SCIENCE CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Nursing Assistants	31-1131	988	2.74	567	1,555
 Medical Assistants	31-9092	917	3.32	395	1,312
 Medical and Health Services Managers	11-9111	565	3.16	262	827
 Registered Nurses**	29-1141	537	1.21	2,518	3,055
 Licensed Practical and Licensed Vocational Nurses	29-2061	449	2.27	353	802
 Nurse Practitioners	29-1171	282	2.52	185	467
 Dental Assistants	31-9091	281	2.58	178	459
 Physicians, All Other	29-1229	257	4.06	84	341
 Physical Therapist Assistants	31-2021	210	2.51	139	349
 Dental Hygienists	29-1292	189	2.99	95	284
 Phlebotomists	31-9097	147	4.59	41	188
 Radiologic Technologists and Technicians	29-2034	116	1.85	137	253
 Veterinarians	29-1131	110	N/A*	0*	110
 Dentists, General	29-1021	109	4.11	35	144
 Medical Records Specialists	29-2072	106	3.36	45	151

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

**Federal data from the Occupational Requirements Survey shows that, on average, the minimum education requirement for nursing is a bachelor's degree. Although we acknowledge that there are other degree paths to this occupation, the report's model calculates the credentialed workforce using bachelor's degree holders.

EXHIBIT 20: HEALTH SCIENCE CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Pharmacists	29-1051	100	1.75	134	234
 Occupational Therapists	29-1122	100	3.50	40	140
 Physical Therapists	29-1123	100	2.12	89	189
Speech-Language Pathologists	29-1127	97	1.92	106	203
Medical Transcriptionists	31-9094	97	49.50	2	99
Veterinary Technologists and Technicians	29-2056	80	3.00	40	120
Health Technologists and Technicians, All Other	29-2099	76	2.12	68	144
Respiratory Therapists	29-1126	55	1.73	75	130
Family Medicine Physicians	29-1215	55	2.45	38	93
Diagnostic Medical Sonographers	29-2032	53	2.39	38	91
Psychiatric Technicians	29-2053	51	52.00	1	52
Ophthalmic Medical Technicians	29-2057	50	N/A*	0*	50
Occupational Therapy Assistants	31-2011	49	1.86	57	106
Dietetic Technicians	29-2051	48	13.00	4	52
Cardiovascular Technologists and Technicians	29-2031	47	3.35	20	67
General Internal Medicine Physicians	29-1216	41	5.56	9	50
Healthcare Practitioners and Technical Workers, All Other	29-9099	36	N/A*	0*	36
Optometrists	29-1041	34	N/A*	0*	34
Physicians, Pathologists	29-1222	34	12.33	3	37
Health Information Technologists and Medical Registrars	29-9021	33	N/A*	0*	33
Surgical Assistants	29-9093	33	N/A*	0*	33
Surgical Technologists	29-2055	32	1.36	88	120
Radiologists	29-1224	30	16.00	2	32
Healthcare Diagnosing or Treating Practitioners, All Other	29-1299	24	N/A*	0*	24
Nurse Anesthetists	29-1151	21	1.49	43	64
Magnetic Resonance Imaging Technologists	29-2035	20	2.25	16	36

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

* Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

• Zero 2022 graduates from relevant programs in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

EXHIBIT 20: HEALTH SCIENCE CLUSTER

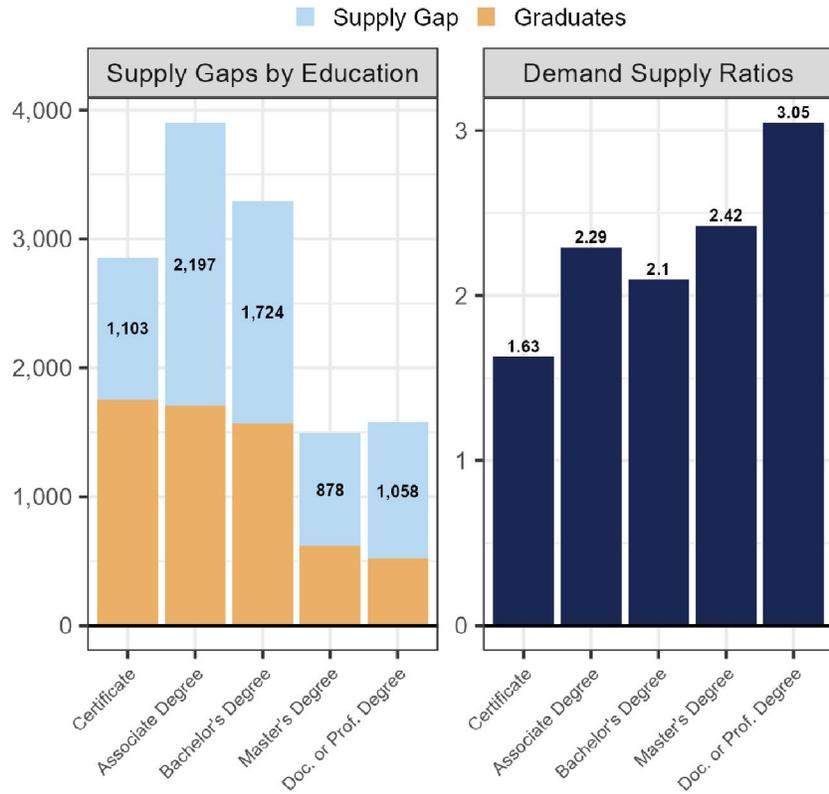
Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Orthotists and Prosthetists	29-2091	17	N/A*	0*	17
Dietitians and Nutritionists	29-1031	15	1.33	45	60
Recreational Therapists	29-1125	15	2.67	9	24
Audiologists	29-1181	13	2.86	7	20
Psychiatrists	29-1223	12	5.00	3	15
Emergency Medicine Physicians	29-1214	11	4.67	3	14
Ophthalmologists, Except Pediatric	29-1241	9	2.80	5	14
Cardiologists	29-1212	8	5.00	2	10
Genetic Counselors	29-9092	8	N/A*	0**	8
Epidemiologists	19-1041	7	3.33	3	10
Dermatologists	29-1213	7	4.50	2	9
Acupuncturists	29-1291	7	N/A*	0*	7
Physician Assistants	29-1071	4	1.03	155	159
Radiation Therapists	29-1124	1	1.04	24	25
Nurse Midwives	29-1161	-3	0.75	12	9
Therapists, All Other	29-1129	-10	0.62	26	16
Nuclear Medicine Technologists	29-2033	-11	0.62	29	18
Chiropractors	29-1011	-21	0.66	62	41
Athletic Trainers	29-9091	-33	0.63	90	57
Medical Scientists, Except Epidemiologists	19-1042	-40	0.64	112	72
Bioengineers and Biomedical Engineers	17-2031	-105	0.15	124	19
Exercise Physiologists	29-1128	-184	0.07	198	14

*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

**Zero 2022 graduates from relevant programs in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, which concentrates the supply gap at the bachelor's degree level, the largest supply gap in this cluster is at the associate degree level. These data are summarized in **Exhibit 21**.

EXHIBIT 21: HEALTH SCIENCE CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

HUMAN SERVICES

Human Services is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The Human Services career cluster relates to meeting human needs through activities such as counseling and mental health services, family and community services, personal care and consumer services.”

There are 26 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 22** below. The three largest supply gaps appear in these occupations:

1. Substance Abuse, Behavioral Disorder, and Mental Health Counselors
2. Directors, Religious Activities and Education
3. Clergy

EXHIBIT 22: HUMAN SERVICES CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Substance Abuse, Behavioral Disorder, and Mental Health Counselors	21-1018	405	4.35	121	526
Directors, Religious Activities and Education	21-2021	320	8.80	41	361
 Clergy	21-2011	274	3.00	137	411
 Child, Family, and School Social Workers	21-1021	250	2.33	188	438
Religious Workers, All Other	21-2099	169	14.00	13	182
Rehabilitation Counselors	21-1015	135	4.55	38	173
 Massage Therapists	31-9011	135	2.26	107	242
Social and Community Service Managers	11-9151	80	1.88	91	171
Hairdressers, Hairstylists, and Cosmetologists	39-5012	71	1.21	344	415
Marriage and Family Therapists	21-1013	49	3.04	24	73
Mental Health and Substance Abuse Social Workers	21-1023	47	1.96	49	96
Community and Social Service Specialists, All Other	21-1099	47	3.24	21	68
Morticians, Undertakers, and Funeral Arrangers	39-4031	47	4.92	12	59
Counselors, All Other	21-1019	33	34.00	1	34
Credit Counselors	13-2071	25	13.50	2	27
Healthcare Social Workers	21-1022	24	1.12	208	232

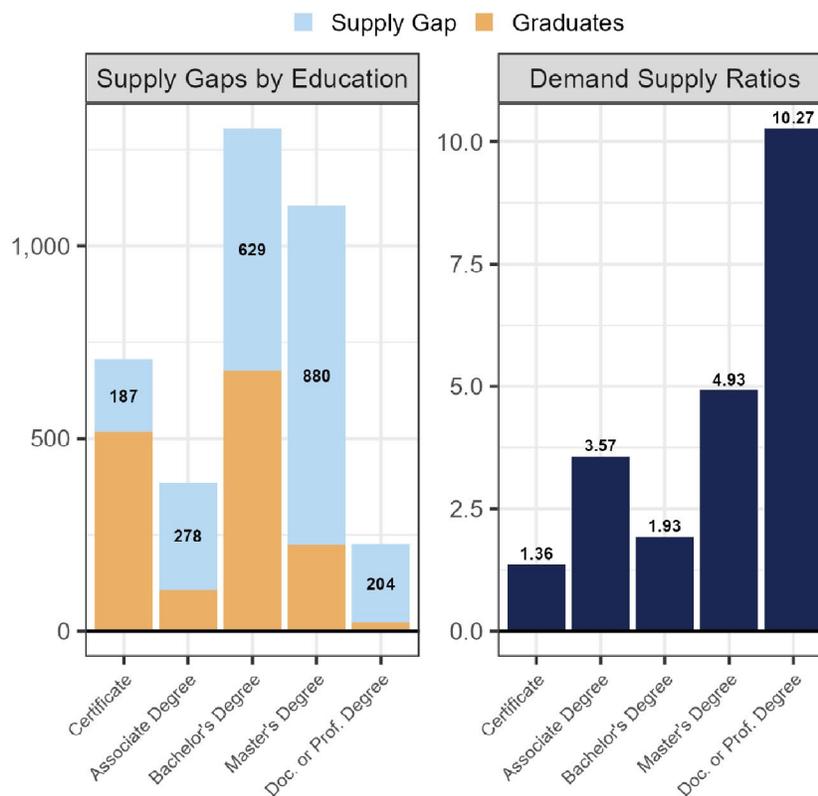
 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

EXHIBIT 22: HUMAN SERVICES CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Health Education Specialists	21-1091	23	1.53	43	66
Funeral Home Managers	11-9171	14	2.27	11	25
Embalmers	39-4011	12	3.00	6	18
Clinical and Counseling Psychologists	19-3033	8	1.19	43	51
School Psychologists	19-3034	8	1.16	50	58
Industrial-Organizational Psychologists	19-3032	-6	0.14	7	1
Barbers	39-5011	-48	0.25	64	16
Psychologists, All Other	19-3039	-53	0.23	69	16
Social Workers, All Other	21-1029	-68	0.50	136	68
Skincare Specialists	39-5094	-514	0.22	661	147

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, master's degree category has the largest supply gap, greater than bachelor's degrees, which is the largest supply gap in the state at large and across most other career clusters. These data are summarized in [Exhibit 23](#).

EXHIBIT 23: HUMAN SERVICES CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

INFORMATION TECHNOLOGY

Information Technology is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Information Technology relates to the design, development, support and management of hardware, software, multimedia, and systems integration services. The United States is the world’s largest technology market, and the IT industry is a major contributor to our overall economy.”

There are 12 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 24** below. The three largest supply gaps appear in these occupations:

1. Software Developers
2. Computer Systems Analysts
3. Computer Network Support Specialists

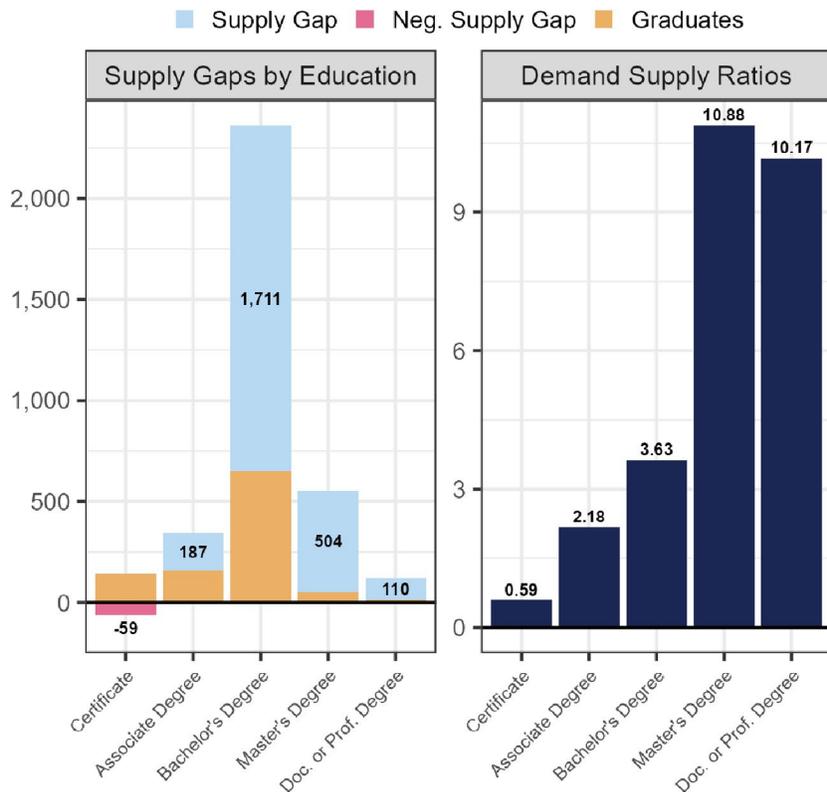
EXHIBIT 24: INFORMATION TECHNOLOGY CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Software Developers	15-1252	1,061	3.53	419	1,480
 Computer Systems Analysts	15-1211	448	3.45	183	631
 Computer Network Support Specialists	15-1231	205	8.59	27	232
 Software Quality Assurance Analysts and Testers	15-1253	157	4.92	40	197
 Network and Computer Systems Administrators	15-1244	153	2.49	103	256
 Web Developers	15-1254	101	4.16	32	133
Information Security Analysts	15-1212	93	1.85	110	203
Web and Digital Interface Designers	15-1255	75	2.92	39	114
Computer Programmers	15-1251	59	3.19	27	86
Database Administrators	15-1242	57	4.00	19	76
Database Architects	15-1243	46	3.42	19	65
Computer Occupations, All Other	15-1299	-96	0.80	484	388

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, there are sufficient certificate graduates being produced to meet new annual demand. These data are summarized in **Exhibit 25**.

EXHIBIT 25: INFORMATION TECHNOLOGY CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

LAW, PUBLIC SAFETY, CORRECTIONS, AND SECURITY

Law, Public Safety, Corrections, and Security is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The law, public safety, corrections, and security career cluster is all about protecting and serving the public. People working in this sector deal with protecting life and property, enforcing laws, providing legal counsel, sentencing defendants, and rehabilitating offenders.”

There are 13 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 26** below. The three largest supply gaps appear in these occupations:

1. Paralegals and Legal Assistants
2. Lawyers
3. Firefighters

EXHIBIT 26: LAW, PUBLIC SAFETY, CORRECTIONS, AND SECURITY CLUSTER

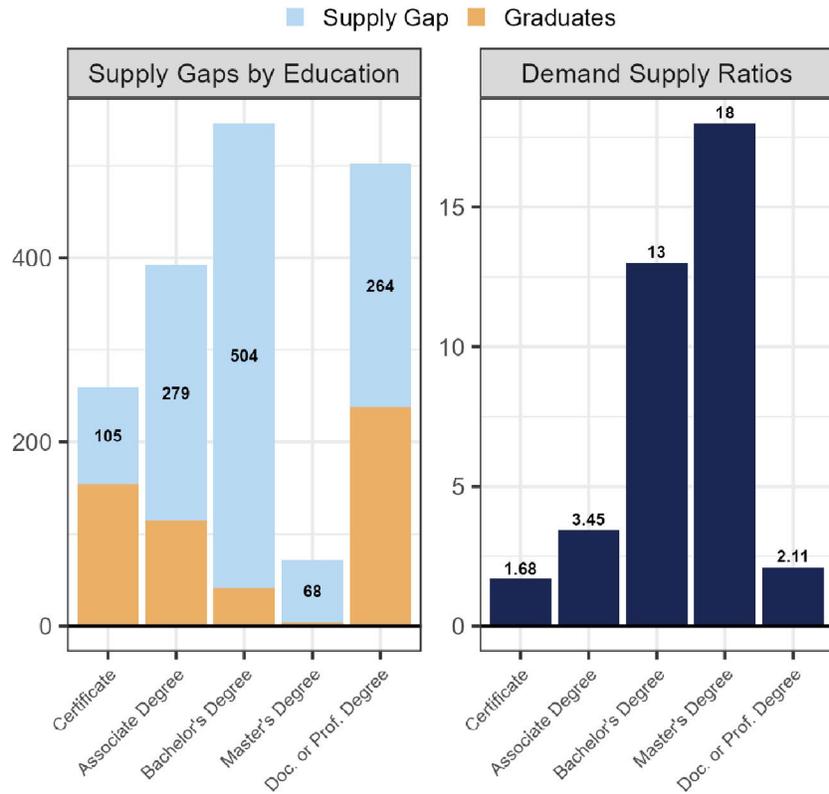
Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Paralegals and Legal Assistants	23-2011	621	8.14	87	708
 Lawyers	23-1011	281	2.08	259	540
 Firefighters	33-2011	135	2.50	90	225
Probation Officers and Correctional Treatment Specialists	21-1092	37	3.85	13	50
Legal Support Workers, All Other	23-2099	28	8.00	4	32
First-Line Supervisors of Firefighting and Prevention Workers	33-1021	28	1.60	47	75
Emergency Medical Technicians	29-2042	25	1.89	28	53
Judicial Law Clerks	23-1012	22	23.00	1	23
Court Reporters and Simultaneous Captioners	27-3092	22	N/A [^]	0 [^]	22
Paramedics	29-2043	11	1.52	21	32
Arbitrators, Mediators, and Conciliators	23-1022	9	10.00	1	10
Fish and Game Wardens	33-3031	-6	0.68	19	13
Forensic Science Technicians	19-4092	-8	0.79	38	30

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

[^] Lone 2022 graduate from relevant program distributed to other occupation. Demand Supply Ratio has a zero denominator and is therefore undefined.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, doctoral and professional degrees are one of the most in-demand categories, just behind associate degrees, the second largest category by supply gap. These data are summarized in [Exhibit 27](#).

EXHIBIT 27: LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

MANUFACTURING

Manufacturing is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Workers in the manufacturing career cluster produce nearly all the products and equipment used in daily life. Manufacturing is the transformation of raw materials or parts into a new product.”

There are 19 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 28** below. The three largest supply gaps appear in these occupations:

1. Chemical Technicians
2. Mechanical Engineering Technologists and Technicians
3. Electrical and Electronics Repairers, Commercial and Industrial Equipment

EXHIBIT 28: MANUFACTURING CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Chemical Technicians	19-4031	135	5.22	32	167
Electrical and Electronics Repairers, Commercial and Industrial Equipment	49-2094	96	8.38	13	109
Mechanical Engineering Technologists and Technicians	17-3027	91	6.35	17	108
Electrical and Electronic Engineering Technologists and Technicians	17-3023	84	2.62	52	136
Tool and Die Makers	51-4111	64	N/A*	0*	64
Medical Equipment Repairers	49-9062	57	12.40	5	62
Computer Numerically Controlled Tool Programmers	51-9162	37	5.11	9	46
Engineering Technologists and Technicians, Except Drafters, All Other	17-3029	31	1.66	47	78
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	49-2095	30	5.29	7	37
Nuclear Technicians	19-4051	26	2.18	22	48
Electrical and Electronics Drafters	17-3012	24	3.18	11	35
Mechanical Drafters	17-3013	18	1.43	42	60
Electro-Mechanical and Mechatronics Technologists and Technicians	17-3024	17	5.25	4	21

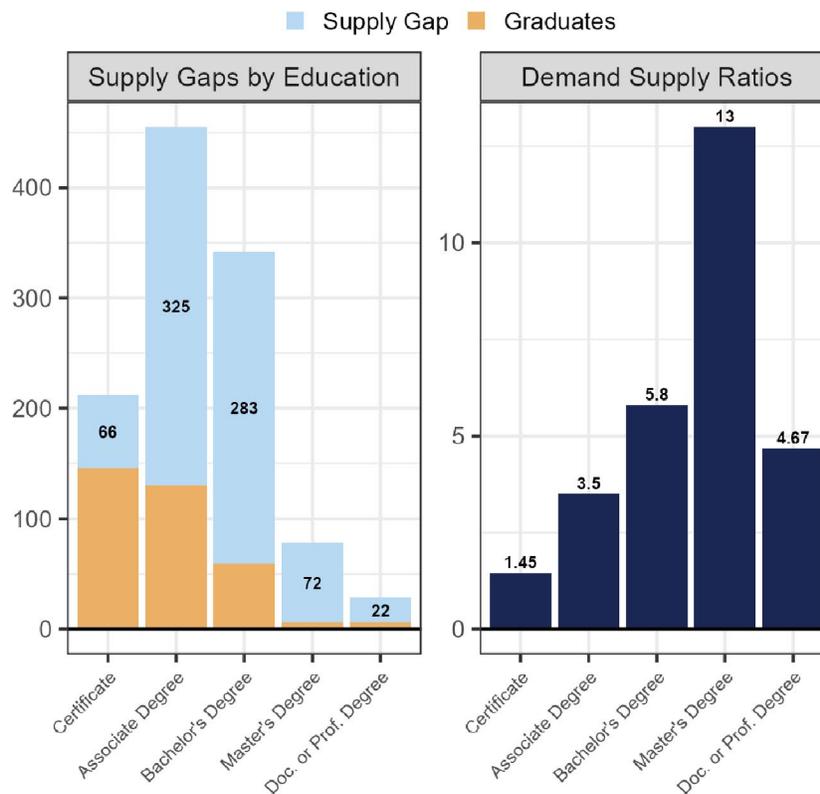
*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

EXHIBIT 28: MANUFACTURING CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Radio, Cellular, and Tower Equipment Installers and Repairers	49-2021	14	3.80	5	19
Industrial Engineering Technologists and Technicians	17-3026	12	1.16	73	85
Calibration Technologists and Technicians	17-3028	9	3.25	4	13
Aerospace Engineering and Operations Technologists and Technicians	17-3021	7	8.00	1	8
Wind Turbine Service Technicians	49-9081	6	7.00	1	7
Drafters, All Other	17-3019	4	1.57	7	11

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, associate degrees are the most in-demand category, surpassing bachelor's degrees for the largest supply gap. These data are summarized in [Exhibit 29](#).

EXHIBIT 29: MANUFACTURING CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

MARKETING

Marketing is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The marketing career cluster includes sales and advertising, and focuses on influencing consumers’ buying behavior and generating sales for products and services. Just about every type of organization, from your corner grocer to regional banks, public universities to multinational corporations, participates in marketing in some way.”

There are 6 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 30** below. The three largest supply gaps appear in these occupations:

1. Market Research Analysts and Marketing Specialists
2. Sales Managers
3. Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products

EXHIBIT 30: MARKETING CLUSTER

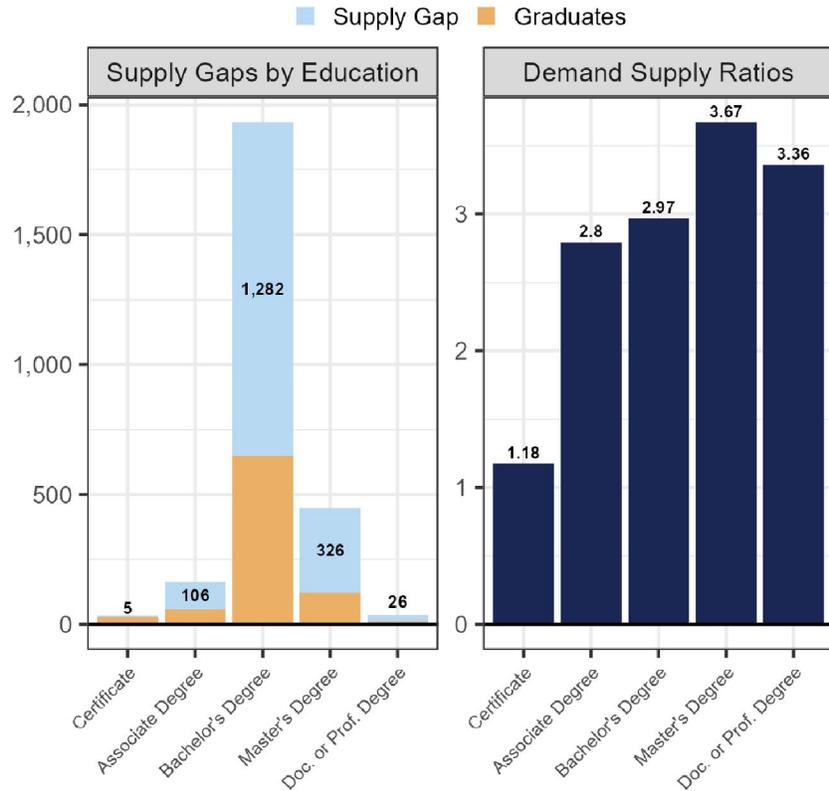
Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Market Research Analysts and Marketing Specialists ⁺	19-4031	135	5.22	32	167
 Sales Managers	11-2022	400	2.20	332	732
 Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	41-4011	278	5.48	62	340
Sales Engineers	41-9031	76	11.86	7	83
Advertising and Promotions Managers	11-2011	8	1.35	23	31
Public Relations Specialists ⁺	27-3031	-203	0.58	479	276

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

⁺ See O*NET (onetonline.org) for in-depth descriptions of occupations.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, the bachelor's degrees category accounts for a relatively greater portion of the cluster supply gap, roughly 73 percent. These data are summarized in [Exhibit 31](#).

EXHIBIT 31: MARKETING CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

Science, Technology, Engineering, and Mathematics is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “Careers in the Science Technology Engineering and Math cluster relate to planning, managing and providing scientific research and professional and technical services such as laboratory and testing services, and research and development services.”

There are 39 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 32** below. The three largest supply gaps appear in these occupations:

1. Industrial Engineers
2. Electrical Engineers
3. Life, Physical, and Social Science Technicians, All Other

EXHIBIT 32: SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Industrial Engineers	17-2112	150	1.37	405	555
 Electrical Engineers	17-2071	136	2.84	74	210
 Life, Physical, and Social Science Technicians, All Other	19-4099	105	36.00	3	108
Data Scientists	15-2051	96	1.82	117	213
Mechanical Engineers	17-2141	61	1.19	320	381
Computer and Information Research Scientists	15-1221	46	4.54	13	59
Chemists	19-2031	44	1.46	96	140
Nuclear Engineers	17-2161	39	2.44	27	66
Computer Hardware Engineers	17-2061	36	4.27	11	47
Aerospace Engineers	17-2011	32	1.94	34	66
Engineers, All Other	17-2199	31	1.25	122	153
Electronics Engineers, Except Computer	17-2072	28	1.36	78	106
Atmospheric and Space Scientists	19-2021	19	7.33	3	22
Geoscientists, Except Hydrologists and Geographers	19-2042	19	2.73	11	30
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	17-2111	17	2.00	17	34
Social Science Research Assistants	19-4061	15	1.19	78	93

 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

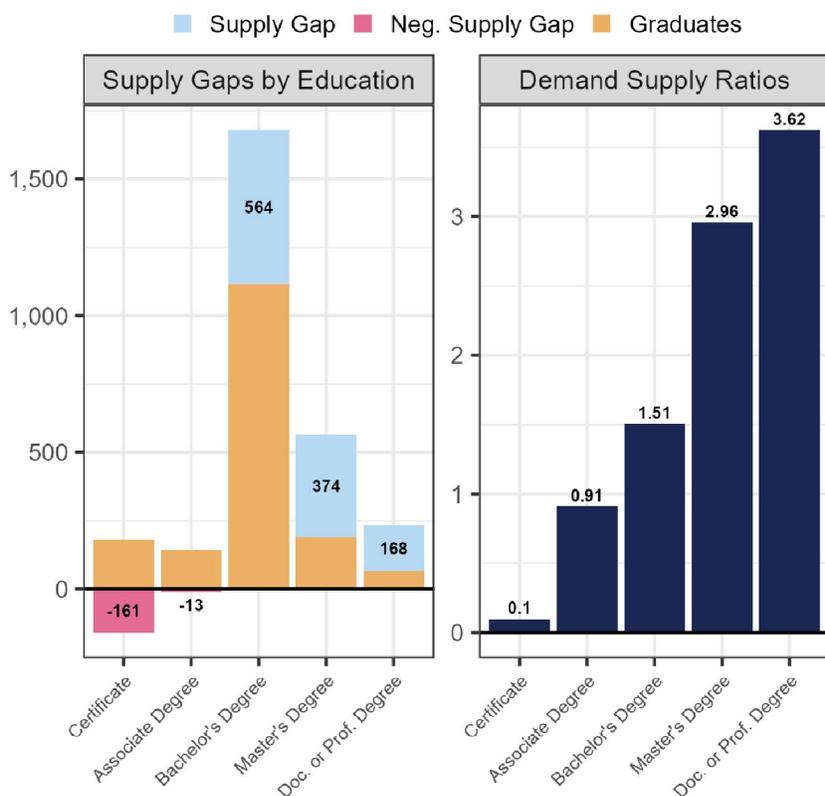
EXHIBIT 32: SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
Physical Scientists, All Other	19-2099	10	4.33	3	13
Marine Engineers and Naval Architects	17-2121	7	N/A*	0*	7
Environmental Scientists and Specialists, Including Health	19-2041	7	1.09	76	83
Conservation Scientists	19-1031	6	1.16	37	43
Hydrologists	19-2043	6	4.00	2	8
Survey Researchers	19-3022	6	3.00	3	9
Statisticians	15-2041	4	1.12	32	36
Physicists	19-2012	4	1.57	7	11
Cartographers and Photogrammetrists	17-1021	2	1.20	10	12
Chemical Engineers	17-2041	2	1.06	34	36
Social Scientists and Related Workers, All Other	19-3099	2	1.09	22	24
Materials Engineers	17-2131	1	1.02	49	50
Materials Scientists	19-2032	0	1.00	7	7
Historians	19-3093	-6	0.45	11	5
Geographers	19-3092	-7	0.12	8	1
Sociologists	19-3041	-9	0.18	11	2
Anthropologists and Archeologists	19-3091	-20	0.33	30	10
Microbiologists	19-1022	-24	0.49	47	23
Political Scientists	19-3094	-24	0.08	26	2
Biochemists and Biophysicists	19-1021	-51	0.26	69	18
Life Scientists, All Other	19-1099	-71	0.14	83	12
Biological Scientists, All Other	19-1029	-88	0.33	132	44
Economists	19-3011	-106	0.13	122	16

*Modest number of graduates from relevant programs in South Carolina distributed to other occupations. Demand Supply Ratio has a zero denominator and is therefore undefined.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, the supply gap is concentrated in bachelor's degrees, master's degrees and doctoral or professional degrees. There are sufficient certificate and associate degree graduates to meet new annual demand. These data are summarized in **Exhibit 33**.

EXHIBIT 33: SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories.

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TRANSPORTATION, DISTRIBUTION, AND LOGISTICS

Transportation, Distribution, and Logistics is one of the 16 career clusters defined by the U.S. Department of Labor. As they describe it, “The Transportation, Distribution, and Logistics cluster is all about moving people and things from one location to another quickly, safely, and at a low cost. Workers in this industry design transportation systems, operate or repair equipment, plan how to move materials, and take care of storing products. Transportation systems included in this cluster include aircraft, railroad, waterways, over the road, and pipelines.”

There are 12 occupations within this cluster under consideration in the supply gap analysis. The results are provided in **Exhibit 34** below. The three largest supply gaps appear in these occupations:

1. Automotive Service Technicians and Mechanics
2. Logisticians
3. Aircraft Mechanics and Service Technicians

EXHIBIT 34: TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CLUSTER

Occupation	SOC Code	Supply Gap	Demand Supply Ratio	Adjusted Postsecondary Graduates	New Annual Demand
 Automotive Service Technicians and Mechanics	49-3023	559	5.82	116	675
 Logisticians	13-1081	421	7.01	70	491
 Aircraft Mechanics and Service Technicians	49-3011	230	24.00	10	240
 Airline Pilots, Copilots, and Flight Engineers	53-2011	93	47.50	2	95
Commercial Pilots	53-2012	92	N/A*	0*	92
Captains, Mates, and Pilots of Water Vessels	53-5021	79	N/A*	0*	79
Avionics Technicians	49-2091	46	1.46	96	47
Motorcycle Mechanics	49-3052	24	N/A*	0*	24
Air Traffic Controllers	53-2021	24	N/A*	0*	24
Ship Engineers	53-5031	15	N/A*	0*	15
Electrical and Electronics Installers and Repairers, Transportation Equipment	49-2093	7	4.50	2	9
Motorboat Operators	53-5022	7	N/A*	0*	7

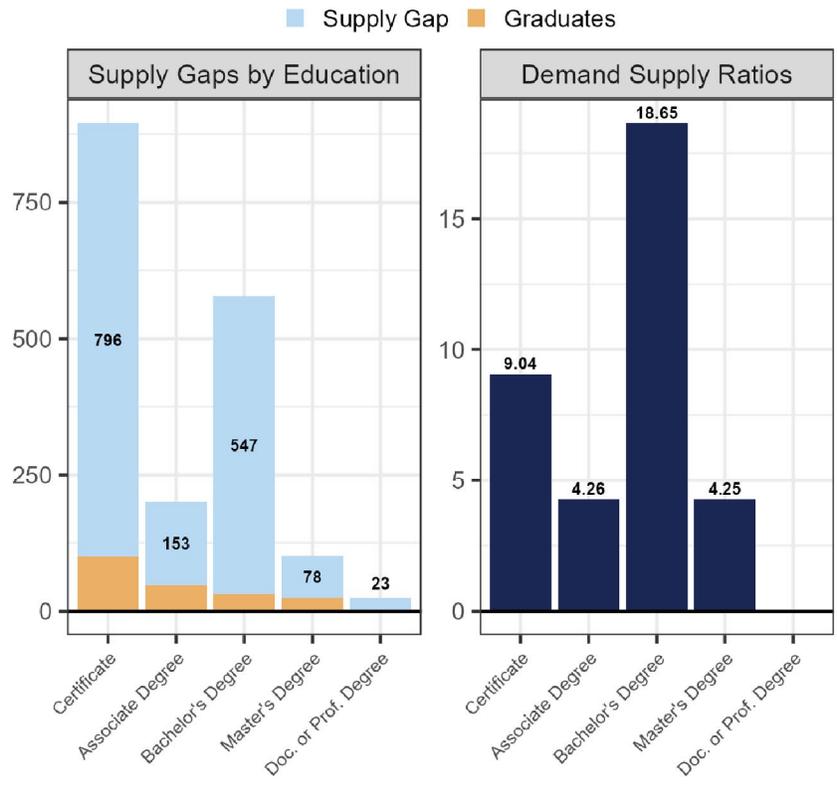
 - Priority Occupation (identified based on current demand, projected growth, viability, and retention).

*Relevant programs not offered in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

•Zero 2022 graduates from relevant programs in South Carolina. Demand Supply Ratio has a zero denominator and is therefore undefined.

We can aggregate these data to look at the supply gap by education level. Unlike in the state at large, certificates are the most in-demand categories, surpassing bachelor’s degrees for the largest supply gap. These data are summarized in [Exhibit 35](#).

EXHIBIT 35: TRANSPORTATION, DISTRIBUTION & LOGISTICS CLUSTER: SUPPLY GAP BY EDUCATION LEVEL



Displayed values are demand supply ratios and supply gaps. Occupations with negative overall supply gaps are excluded. There may be negative supply gaps within education categories. The Doctoral or Professional Degree Demand Supply Ratio is undefined.

CONCLUSION

This analysis leaves little doubt that the labor market has a substantial number of imbalances. Demand for skilled workers far surpasses their availability in many critical jobs. And though a perfect labor market is not achievable in reality, South Carolina is nevertheless taking steps toward one that is more perfect — responsive, resilient, and strongly aligned with the state’s key industries. This report contributes valuable insights about the needs of both employers and workers by spotlighting imbalances and contextualizing their severity. Data like this will be an essential component for policymakers, educators, and the private sector as they work, both collaboratively and independently, to close the gaps.

NOTE: Educational credentials described within the federal data as “postsecondary nondegree awards” are known as “certificates” in South Carolina and are labeled as such in this document.

APPENDIX

DATA SOURCES AND METHODOLOGY

This section outlines the data sources and methods for identifying skilled workforce supply as measured by postsecondary education completions and corresponding new annual demand in occupations that require postsecondary education. One of our primary data sources is Lightcast, a private labor market analytics provider. Therefore, this report is not reproducible via publicly available data. The next section defines the boundaries of the report, including the occupations and academic programs that are excluded from analysis.

DATA BOUNDARIES AND FILTERS

The supply gap is calculated at the occupation level. Career clusters and all occupation totals are aggregate summations of occupations, therefore occupations that are excluded from analysis are also excluded from career cluster and all occupation totals. Similarly, graduates are excluded from analysis if they are not distributed to an included occupation. Because graduate data only covers postsecondary education programs, occupations that typically do not require a postsecondary education are excluded from analysis. By extension, this also excludes about 400 graduates that are distributed, through our methods in subsequent sections, into occupations that do not require a postsecondary education. Occupations with fewer than five jobs contributing to new annual demand and five adjusted postsecondary graduates are excluded from occupation tables, but still counted in aggregated totals. Because occupation credentials may not directly correspond with one another, even within career clusters, occupations with overall negative supply gaps are excluded from career cluster and overall supply gap aggregations.

There are also academic programs that are excluded from analysis because they are not associated with any occupations. Roughly 4,800 graduates, after discounting for expected retention, are excluded because their programs lack corresponding occupations. We use a program to occupation crosswalk table to identify relationships between academic programs and occupations (see the CIP to SOC Crosswalk section for additional details). Some academic programs are not paired in our source crosswalk table. We also removed some program to occupation relationships when specific skills or typical education levels present a mismatch, leaving some programs unpaired after adjustments. As an example, about 700 graduates (after discounting for retention) completed a certificate in a program categorized as Liberal Arts and Sciences/Liberal Studies from the Tri-County Technical College. This program is primarily offered as a credit that easily transfers to four-year universities. Such programs lack specific qualifications and skills that reasonably pair with a specific set of occupations. Our source crosswalk table does have some suggestions. But ranging from Chief Executive and Postsecondary Teachers to Tutors, Real Estate Sales Agents, and Retail Salesperson, the suggestions lack relationships between program knowledge, education level, and job duties, and rather reflect catch-all placement into generalist or non-specific occupation categories. Lacking a direct relationship with any occupations after adjustments, those approximate 700 graduates are then excluded from analysis including supply gap totals.

Finally, we exclude occupations that require five or more years of professional experience as an entry level requirement. Our expectation is that most graduates are entry level workers and a very small number of open positions in such occupations will be filled by recent graduates. Therefore, occupations requiring significant experience as identified either through the BLS Education and Training by Occupation Table or individual O*NET occupations pages, are excluded from analysis.

POSTSECONDARY COMPLETIONS

Postsecondary completions are sourced from the Integrated Postsecondary Education Data System (IPEDS) released by the National Center for Education Statistics (NCES) within the U.S. Department of Education. IPEDS records include a dataset of postsecondary completions of a degree or certificate program by higher education institution, program level, and field of study as defined by Classification of Instructional Programs (CIP) code. Geographic information is obtained by joining the completions dataset with the Institutional Characteristics: Directory Information dataset also available from IPEDS.

Postsecondary completions are of interest to South Carolina's workforce development efforts, as the state's labor supply is largely a function of its education pipeline. However, a significant portion of graduates do not enter the workforce or become employed outside of the state of South Carolina, either by choice or circumstance. Specifically, 37 percent of completers during the 2019-2020 school year, according to data from the Commission on Higher Education (CHE), did not appear in unemployment insurance (UI) wage records housed at the Department of Employment and Workforce (DEW). We use internal records to adjust completion totals down to the expected rate that they are retained as workers for employers within South Carolina based on level of education and CIP code.

Expected retention among completers within a given field of study is computed by dividing the number of graduates present in DEW's wage records in at least one of the four quarters following the completion of the 2019-2020 academic year by the total number of graduates. CIP codes are aggregated at the four-digit and two-digit levels. The expected retention rate at the four-digit CIP level is used when sufficient data are available, see the NCES CIP Code Taxonomy for additional information on the structure of the CIP classification system. If less than thirty graduates are present at the four-digit CIP level, then the expected retention rate is calculated at the two-digit CIP level. However, if the two-digit CIP level also has fewer than thirty graduates, then the total retention rate is calculated across all students at the respective education level. Completions are then multiplied by the expected retention rate to yield an estimate for retained completers.

A weakness of UI wage records as the retention rate source is that there are categories of workers that are employed within South Carolina but will not appear in DEW records. Federal employees and self-employed workers, such as contractors or so-called "gig workers" are not included, for example, nor are South Carolina residents who work in other states. Other employees, such as agricultural or domestic workers, may also be omitted. Overall, however, these categories combine to be a very small fraction of the state's workforce.

In addition to retention rate, we consider co-enrollment, discounting graduates by program specific expected co-enrollment rates. Using South Carolina graduate data, at the 2-digit CIP level, most programs have negligible levels of recurring graduates across the most recent five-year period of 2018-2022. However, manufacturing, the two-digit CIP of 47, served as an extreme outlier with reoccurrences near ten percent. We apply a unique co-enrollment discount only to retained graduates within manufacturing occupations at the observed rate of unique graduates, 89.35 percent.

CIP TO SOC CROSSWALK

This approach has one missing piece, however. Workforce demand is categorized by occupation under Standard Occupational Classification (SOC) codes, and completions — the supply side — are categorized by educational program under CIP codes, necessitating a conversion to align the two sets of codes. We adopt occupations as the unit of analysis, so completers are converted from CIP groups to estimated SOC occupations. For follow-up analysis or research, occupations on the completer side may be walked back to the derivative list of higher education programs.

The relevant occupations associated with individual CIP codes are identified through a Lightcast CIP/SOC Crosswalk modeled after the NCES 2020 CIP/SOC Crosswalk. Through the crosswalk table, CIP codes are associated with a list of occupations that are likeliest to employ someone with a given credential. Some associations represent long term program to occupation pipelines or otherwise present mismatches for our purpose of distributing graduates to the occupations they are most likely to seek employment within.

However, there are no estimations or guidance either within the crosswalk or from other public data sources on the distribution of completers into the relevant occupations as they enter the workforce. Modifiers are constructed within each CIP code to weight the distribution of completions among the relevant occupations. Three factors are considered to calculate the CIP to SOC distribution modifiers (CSDM): new annual demand, average wages, and specialization.

With respect to the modifier formula, new annual demand (ND) is the annual sum of projected growth, exits from the labor market, and transfers to other occupations for the respective SOC code within South Carolina. This reflects the demand for specific types of labor among the state’s businesses. All else being equal, occupations in higher demand should command higher wages in a free labor market and, therefore, more interest from workers. New annual demand is drawn from Lightcast 2020-2030 Annual Projected Openings.

Average wages (W) are a ratio, namely the average wage for a given SOC code among South Carolina workers divided by the comparable figure for the state’s highest paying occupation within the appropriate CIP category. The wage ratio is squared in the modifier formula to account for the importance of compensation in people’s labor market decisions. The effect being, if one occupation pays twice as much as another comparable occupation, then the formula presents prospective workers as preferring the higher paying job at more than a two to one ratio. Average wages are sourced from 2022 Lightcast occupation data.

Finally, specialization (S) reflects the rigidity of the pipeline between an occupation and academic program. Graduates are assumed to prefer specialized fields over generalized ones because specialized fields tend to match the interests and skills of the associated academic program more closely. Further, specialization is associated with improved job security. The adjustment for specialization regarding each SOC category is calculated as one divided by the summed total of graduates across all South Carolina academic programs in a related CIP category by the CIP to SOC crosswalk. This means that the distribution of graduates within an academic program is weighted towards occupations that have a smaller pool of graduates across all academic programs and away from occupations that have a larger pool of graduates. These three components— new annual demand (ND), wages (W), and specialization (S)—are multiplied together to calculate a CIP to SOC weighted preference unique to each program and SOC code. That CIP to SOC weighted preference is finally compared against other SOC code weighted preferences that are associated with the respective CIP code in the CIP to SOC crosswalk. The CIP to SOC distribution modifier (CSDM) makes this comparison by summing the CIP to SOC weighted preferences within the respective CIP code as the denominator for the modifier, while the numerators are the individual SOC code’s CIP to SOC weighted preferences. Because the numerator is always one of the values being summed in the denominator, the CIP to SOC distribution modifier is always ranged from zero to one. In mathematic notation the CIP to SOC distribution modifier for SOC code j and CIP code CIP is represented as:

$$CSDM_j = (ND_j * W_j^2 * S_j) / \left(\sum_{soc \in CIP} ND_{soc} * W_{soc}^2 * S_{soc} \right)$$

A detailed example to better display the step-by-step process of converting IPEDS data to the desired occupation level of analysis: several tech colleges offered certificate programs under the CIP code 513902 titled Nursing Assistant/Aide and Patient Care Assistant/Aide. There were 225 graduates from these programs in 2022. That figure is adjusted down to about 195 retained graduates based on the estimated retention rate of 86.8 percent for Practical Nursing, Vocational Nursing, and Nursing Assistants programs under the four-digit 5139 CIP category. These 195 graduates are distributed across three SOC occupations: 31-1128 Home Health and Personal Care Aides, 31-1131 Nursing Assistants, and 31-1132 Orderlies.

Appendix Exhibit 1 displays the input values for the CSDM ratios used to distribute graduates into occupations. For SOC 31-1128 Home Health and Personal Care Aides, the CSDM numerator is calculated as:

$$\text{CSDM}_{\text{numerator}} = 6,749 * (25,729/32,489)^2 * (1/624)$$

$$\text{CSDM}_{\text{numerator}} = 6,749 * 0.6272 * 0.0016$$

$$\text{CSDM}_{\text{numerator}} = 6.78$$

After each of the CSDM numerators are computed, they are summed to 9.90, the denominator for the CSDM Ratio. The SOC 31-1128 full CSDM is:

$$\text{CSDM} = 6.78/9.90$$

$$\text{CSDM} = 0.68$$

Multiplying the CSDM for 31-1128 Home Health and Personal Care Aides by the number of retained graduates, 195, yields 133.6 graduates allocated to this SOC category by the respective tech college programs. The same process results in 51.7 graduates allocated towards Nursing Assistants, and 9.8 allocated towards Orderlies. Rounding is performed after graduates are allocated from all programs and summed at the occupation level.

APPENDIX EXHIBIT 1

Occupations SOC	New Annual Demand	Average Wage	Sum of All Graduates in Related Programs	CSDM Ratio Numerator	CSDM Ratio	Distributed Graduates
31-1128	6,749	\$25,729	625	6.77	0.68	133.78
31-1131	2,435	\$32,489	928	2.62	0.27	51.81
31-1132	149	\$31,428	281	0.50	0.05	9.80

NEW ANNUAL DEMAND:

New annual demand by occupation is sourced from Lightcast 2020-2030 annual openings by occupation. However, new annual demand needs to be disaggregated to education level, to create an estimate that is directly comparable to graduates. New annual demand is disaggregated in a two-step process to estimate the proportion of demand related to differing levels of education. The first step utilizes education requirements within nationwide job postings aggregated by occupation as a best estimate of the needs and expectations of employers. These data sort requirements into five categories: high school or GED, associate degree, bachelor's degree, master's degree, and PhD or professional degree. (A sixth category includes all jobs where education requirements are not specified.) New annual demand is allocated to the respective categories at the proportion that it is observed within each occupation. The second step uses more detailed education attainment data by occupation to transform posting data into categories that align with the graduate supply data.

The nature of the job posting data above necessitates additional adjustments to produce an estimate for occupations requiring certificates or other non-degree credentials, a category not included in the jobs posting data. Since the lowest level of postsecondary education included in the data is associate degree, the high school

or GED category is assumed to also include demand requiring a certificate. We then disaggregate new annual demand that requires a high school or GED into two education requirement categories, high school and certificates. Additionally, postings that do not list an education requirement need to be accounted for by distributing into valid categories. The purpose of distributing rather than discarding the share of postings with no education listed is to limit the potential for bias, particularly within occupations that are strongly associated with a specific education level. Many occupations with the highest proportion of unlisted education requirements follow a pattern of assumed requirements, such as physicians. In such instances, employers may only feel the need to list an education requirement if it deviates from the typical requirement, leading listed postings to overrepresent outliers in the data. Distributing postings with unlisted education addresses this potential source of bias.

Both the disaggregation of high school new annual demand and the distribution of unlisted education requirements are based on data from the O*NET 28.1 Database, which provide frequency estimates for workers' educational attainment by occupation. In the first case, it is possible to break out the proportion of workers with at least a high school diploma who have postsecondary coursework but not a degree. This allows new annual demand to be apportioned in a way that identifies those requiring such coursework. An updated amount for demand at the high school certificate levels are disaggregated by multiplying the original high school demand by the corresponding ratios.

Distributing demand lacking a listed education requirement follows a similar method to disaggregating high school demand. The twelve educational attainment frequency categories are standardized to percentages, so each modifying ratio is calculated by adding the relevant category data values and dividing by one hundred. In [Appendix Exhibit 2](#) the New Annual Demand Categories column lists the final demand categories that will be compared with corresponding completion categories with each requiring distributing modifiers with respect to no education listed. The O*NET Data Source Categories lists the categories within that data that are summed for each occupation to calculate the numerators for the distributing modifiers. Each modifier if multiplied by the new annual demand without a listed education and the product is then added to the corresponding new annual demand category total. Though education level specific new annual demand is directly comparable to corresponding education level completions, the primary postsecondary supply gap figure for each occupation and geographic area is calculated as the difference between new annual demand of each postsecondary categories and all education level completers reported in the IPEDs dataset. Postsecondary new annual demand is the sum of demand under Certificate, Associate's Degree, Bachelor's Degree, Master's Degree, and PhD or Professional Degree.

SUPPLY GAP METER:

A supply gap meter is provided for each career cluster. The supply gap meter is based upon a standardized comparison value across clusters that is composed of the supply gap and the demand supply ratio. We begin by calculating the z-score of the supply gap and then the demand supply ratio for each career cluster. We then take the average of the z-scores. This rating accounts for both numeric magnitude of need through the supply gap and need relative to current output via the supply demand ratio. A z-score is calculated by subtracting the mean across all clusters from an individual cluster value and dividing that difference by the standard deviation. A z-score of one indicates a value that is one standard deviation above the mean. Career clusters with a wide meter rating are those with a positive average z-score. Clusters with a moderate meter rating are those with an average z-score between zero and negative 0.5. And clusters with a narrow meter rating are those with an average z-score below negative 0.5.

APPENDIX EXHIBIT 2

New Annual Demand Education Categories

O*NET Data Source Categories

High School or GED	<ul style="list-style-type: none"> › Less than a High School Diploma › High School Diploma — or the equivalent
Certificate	Postsecondary Certificate
Associate's Degree	Associate's Degree (sic)
Bachelor's Degree	<ul style="list-style-type: none"> › Bachelor's Degree › Post-Baccalaureate Certificate
Master's Degree	<ul style="list-style-type: none"> › Master's Degree › Post-Master's Certificate
PhD or Professional Degree	<ul style="list-style-type: none"> › First Professional Degree › Doctoral Degree › Post-Doctoral Training

CIP TO SOC CROSSWALK ADJUSTMENTS:

As described in the previous section, CIP to SOC Crosswalk, a program to occupation crosswalk is used to identify which occupation graduates are distributed into by program. However, the directly sourced Lightcast crosswalk required adjustments to ensure that graduates are likely to receive the appropriate education level and comparable specialized knowledge or skills necessary for matched occupations. In a few instances we also added occupations based on alternative CIP to SOC crosswalks or input from educators. These modifications are summarized in [Appendix Exhibit 3](#) below. Our final crosswalk document is available upon request.

APPENDIX EXHIBIT 3

Programs	Occupations	Action	Reason
General Nursing and Pre-Nursing	Nurse Anesthetists	Removed	Lacks specialization
Pre-Nursing	Nurse Practitioner	Removed	Education mismatch
Health/Medical Preparatory Programs, Other	Various surgeon fields	Removed	Education mismatch
Psychology, General	Psychiatrist; Clinical and Counseling Psychologists	Removed	Education mismatch
Exercise Physiology and Kinesiology	Medical Scientists, Except Epidemiologists	Removed	Education mismatch
Health Information/Medical Records Technology/Technician	Computer Systems Analysts	Removed	Education mismatch
Natural Resources/Conservation, General; Environmental Studies; Environmental Sciences	Lawyer	Removed	Education mismatch
Biology/Biological Sciences, General	Biochemists and Biophysicists	Removed	Education mismatch

APPENDIX EXHIBIT 3

Programs	Occupations	Action	Reason
Data Processing and Data Processing Technology/Technician	Database Administrators and Database Architects	Removed	Education mismatch
Several Kinesiology programs	Physicians, All Other	Removed	Education mismatch
All programs that are not related to management	Construction Managers; Financial Managers; Medical and Health Services Managers; Sales Managers; Education and Childcare Administrators; Preschool and Daycare	Removed	Lacks specialization
Pre-med/pre-medical studies	All	Removed	Education mismatch
Experimental Psychology	Psychologists, All Others	Removed	Lacks specialization
Pre-Nursing Studies	Registered Nurses	Removed	Education mismatch
Pre-Nursing Studies	Nursing Assistants	Added	Better education match
Wildlife Biology	Veterinarian	Removed	Education mismatch
Medicine	General Internal Medicine Physician	Added	O*NET crosswalk
Psychology, General	School Psychologists	Removed	Education mismatch
Multi-/Interdisciplinary Studies, Other; Liberal Arts and Sciences/ Liberal Studies, General Studies; Humanities/Humanistic Studies and Liberal Arts and Sciences; General Studies and Humanities, Other	All	Removed	Lacks specialization
Mechatronics Technologist/Technician	Several manufacturing occupations	Added	Following input from SC Tech College administrators
All	Orthopedic Surgeons, Except Pediatric; Oral and Maxillofacial Surgeons; Dentists, All Other Specialists; Orthodontists; Podiatrists; Neurologists; Anesthesiologists; Surgeons, All Other; Pediatricians, General; Obstetricians and Gynecologists	Removed	Post-doctorate residencies and fellowships not covered by graduate data

CAREER CLUSTER ASSIGNMENTS:

The supply gap is reported by career cluster to provide top level results in addition to a coherent organization framework. Additionally, Act No. 67 of 2023 stipulates that results are to be reported by career cluster. Occupations are assigned to career cluster categories in accordance with O*NET Online career cluster information. Several occupations are assigned to multiple career clusters. These occupations are subjectively assigned to the most relevant career cluster to avoid double counting. [Appendix Exhibit 4](#) provides the occupations that are included in

the postsecondary supply gap. The Primary Career Cluster is the category occupations are placed in for the report, while the Secondary Career Cluster is the additional cluster they are associated with in the source O*NET data. Additionally, occupations that are specific to Lightcast must be assigned to career clusters. Most Lightcast specific occupations are themselves aggregations of occupations under the typical SOC codes. Lightcast occupations are assigned to the career cluster of their typical SOC code counterparts or to the career cluster of the largest component occupation when there is a conflict among the counterparts. To provide the most useful information through career cluster level data, occupations with negative supply gaps are dropped prior to aggregating occupations to career clusters. This step is taken because several occupations with large negative supply gaps are not easily transferable to the rest of their respective career cluster. Therefore, these graduates do not ‘offset’ the supply gap observed elsewhere in the respective cluster, as would be implied by including these occupations in career cluster sum totals.

APPENDIX EXHIBIT 4

Occupation	SOC Code	Primary Career Cluster	Secondary Career Cluster
Project Management Specialists	13-1082	Business Management & Administration	Information Technology
Loan Officers	13-2072	Finance	Human Services
Bioengineers and Biomedical Engineers	17-2031	Health Science	Science, Technology, Engineering & Mathematics
Urban and Regional Planners	19-3051	Government & Public Administration	Science, Technology, Engineering & Mathematics
Securities, Commodities, and Financial Services Sales Agents	41-3031	Finance	Marketing

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GLOSSARY

ADJUSTED POSTSECONDARY GRADUATES

Adjusted Postsecondary Graduates are the number of graduates in 2022 from South Carolina universities and colleges. This number is adjusted for workforce participation and distributed into occupations. Graduate data provides raw graduate totals by academic program of study. A portion of graduates are dropped from analysis based on their estimated likelihood to participate in the South Carolina workforce after graduating. This adjusted number of graduates are then distributed into relevant occupations. The distribution formula is available in the methodology section above.

CAREER CLUSTERS

Career Clusters are a career part of a classification system designed at the national level for education policy and curriculum development along with integration between education and workforce analysis. Career clusters are used in this report to organize occupations and aggregate results into relevant broader categories based on shared skills, duties, and related academic curriculum.

DEMAND SUPPLY RATIO

The Demand Supply Ratio is the ratio between postsecondary workforce demand and supply, meaning postsecondary openings are divided by adjusted graduates. The demand supply ratio is a useful complement to the supply gap, providing an indicator of the workforce needs relative to current output.

EMPLOYMENT

Employment is the total number of South Carolina workers employed in an occupation in 2022.

MEDIAN WAGE

Median Wage is the annual wage of the fiftieth percentile South Carolina worker sorted by income.

NEW ANNUAL DEMAND

New Annual Demand is the projected new unmet demand. It is the sum of projected annual growth, worker exits from the labor market, and worker transfers to other occupations. We estimate a percentage that does not require a postsecondary education which is then subtracted from the raw figure sources from Lightcast. New annual demand is disaggregated by education requirements primarily through national job posting data.

SUPPLY GAP

The Supply Gap is the difference between job openings requiring a postsecondary credential and adjusted graduates. This is the most telling measure in this analysis.

THE STANDARD OCCUPATION CLASSIFICATION (SOC)

The Standard Occupation Classification (SOC) system is a standardized occupation classification system designed by the federal government primarily for the purpose of statistical reporting and analyses. Data herein are reported at the six-digit level, the most detailed level in the SOC system.

GLOSSARY

TEN YEAR JOB GROWTH

Ten Year Job Growth is the projected growth in employment in South Carolina from 2020 to 2030.

TYPICAL ENTRY-LEVEL EDUCATION

Typical Entry-Level Education is assigned to individual occupations as the most common education level that employers require for a worker lacking experience.



SOUTH CAROLINA DEPARTMENT OF
Employment and Workforce

POSTSECONDARY SUPPLY GAP ANALYSIS



1ST EDITION