Summer 2021 Volume 3, Issue 2

CAREER QUARTERLY

Career Information, Job Seeking Advice, Labor Market Data, and More!

In This Issue

Virginia's Economy at a Glance

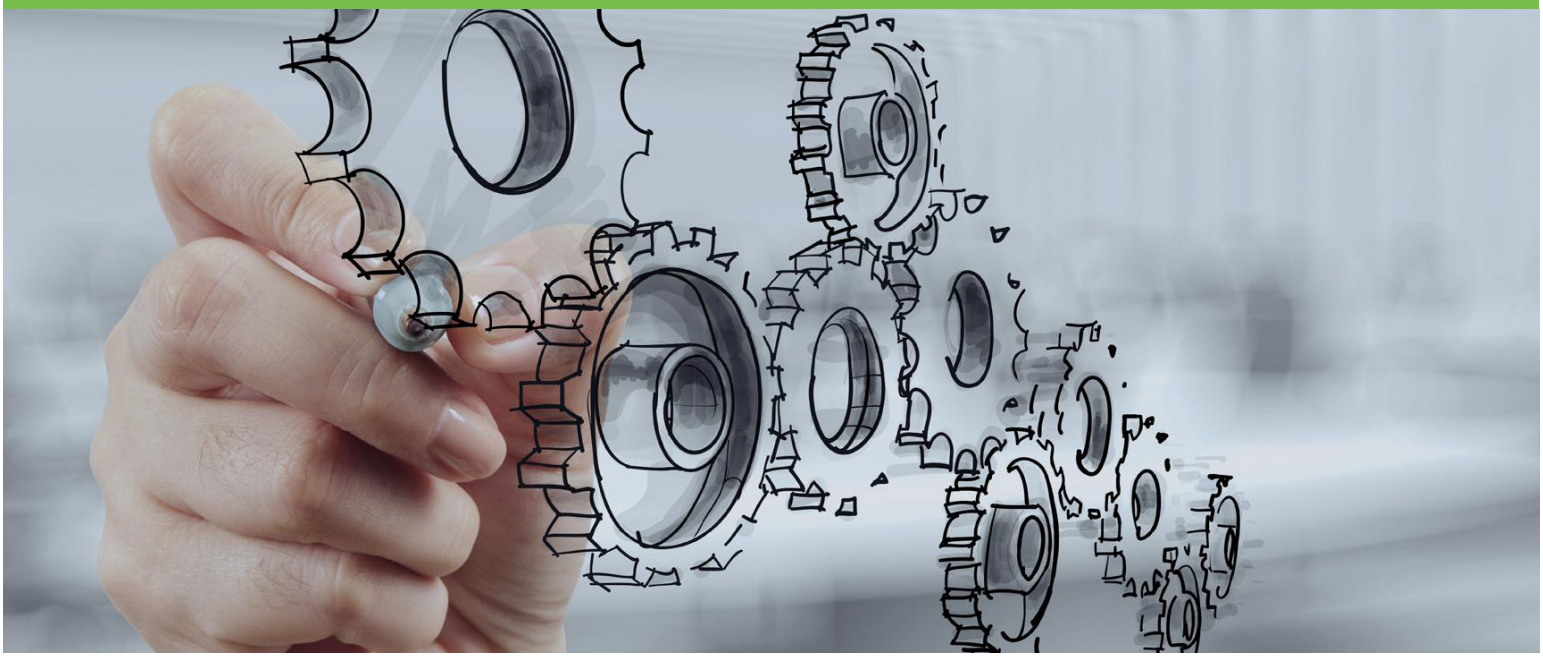
Data Series	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	June 2021
Labor Force Data						
Civilian Labor Force(1)	4,254.1	4,236.6	4,238.0	4,225.8	4,230.0	(P)4,234.4
Employment(1)	4,026.8	4,016.9	4,023.6	4,028.5	4,040.8	(P)4,050.6
Unemployment(1)	227.2	219.7	214.4	197.3	189.2	(P)183.8
Unemployment Rate(2)	5.3	5.2	5.1	4.7	4.5	(P)4.3
Nonfarm Wage and Salary Employment						
Total Nonfarm(3)	3,897.4	3,886.8	3,887.3	3,892.0	3,891.0	(P)3,894.2
12-month % change	-4.7	-5.0	-4.5	7.8	7.1	(P)5.1
Mining and Logging(3)	6.8	6.8	7.4	7.5	7.4	(P)7.5
12-month % change	-11.7	-10.5	-2.6	10.3	7.2	(P)10.3
Construction(3)	207.5	205.7	206.0	204.7	203.5	(P)204.9
12-month % change	0.0	-1.0	-0.6	4.2	2.9	(P)3.2
Manufacturing(3)	235.0	234.7	236.4	237.4	236.7	(P)236.1
12-month % change	-3.4	-3.6	-2.6	5.6	6.3	(P)4.0
Trade, Transportation, and Utilities(3)	655.3	655.6	654.0	657.4	656.9	(P)658.9
12-month % change	-0.7	-0.7	-0.7	11.6	10.2	(P)6.5
Information(3)	65.2	64.4	64.5	65.7	63.9	(P)64.4
12-month % change	-4.3	-6.0	-6.1	2.7	0.2	(P)0.9
Financial Activities(3)	207.7	207.2	206.2	205.7	205.4	(P)204.5
12-month % change	-3.2	-3.3	-3.7	-1.2	-1.1	(P)-1.1
Professional & Business Services(3)	766.8	766.3	767.9	767.8	770.2	(P)768.9
12-month % change	-1.2	-1.3	-1.0	3.8	3.7	(P)3.5
Education & Health Services(3)	530.8	532.8	531.4	531.5	534.7	(P)534.0
12-month % change	-4.6	-4.5	-4.2	7.8	6.3	(P)4.3
Leisure & Hospitality(3)	337.7	331.8	329.8	332.4	334.4	(P)330.4
12-month % change	-19.9	-21.3	-19.0	53.3	46.2	(P)25.5
Other Services(3)	179.5	179.3	180.5	180.4	180.5	(P)181.3
12-month % change	-8.8	-8.7	-7.2	13.5	10.0	(P)5.8
Government(3)	705.1	702.2	703.2	701.5	697.4	(P)703.3
12-month % change	-4.3	-4.7	-4.8	-1.7	-0.3	(P)1.5

Footnotes
(1) Number of persons, in thousands, seasonally adjusted.
(2) In percent, seasonally adjusted.
(3) Number of jobs, in thousands, seasonally adjusted.
(P) Preliminary

Data extracted on: July 30, 2021

Source: https://www.bls.gov/eag/eag.va.htm

Labor Market Research



STEM Majors Earned More Than Other STEM Workers

Jennifer Cheeseman Day and Anthony Martinez

Majoring in science, technology, engineering and math (STEM) does not guarantee a job in a STEM occupation but it typically means a bump in pay.

Among the 50 million employed college graduates ages 25 to 64 in 2019, 37% reported a bachelor's degree in science or engineering but only 14% worked in a STEM occupation, according to the Census Bureau's 2019 American Community Survey 1-year estimates.

This translates into less than a third (28%) of STEM-educated workers actually working in a STEM job.

STEM jobs include computer occupations, mathematicians and statisticians, engineers, life scientists, and physical and social scientists. About half of the STEM jobs were in computer occupations and another 29% in engineering in 2019.

STEM workers who majored in a STEM field in college typically made higher salaries than those who did not: on average, $101,100 vs. $87,600.

The vast majority (62%) of college-educated workers who majored in a STEM field were employed in non-STEM fields such as non-STEM management, law, education, social work, accounting or counseling. In addition, 10% of STEM college graduates worked in STEM-related occupations such as health care.

The path to STEM jobs for non-STEM majors was narrow. Only a few STEM-related majors (7%) and non-STEM majors (6%) ultimately ended up in STEM occupations.

STEM Job Opportunities Differ by Field

About half of workers who majored in engineering (52%) or computer, mathematics, and statistics majors (51%) worked in STEM.

The difference between those who majored in engineering and computer, mathematics, and statistics majors was not statistically significant.

That means that about as many people with a computer or engineering background were just as likely to be employed in non-STEM occupations. Some may have worked in STEM initially but transitioned later to a non-STEM occupation such as management.

Workers who studied other types of STEM majors found employment in STEM occupations at much lower rates.

Just over a quarter of physical science majors (28%), for example, were employed in STEM. The percentages were even lower for STEM majors in biology, environmental, and agricultural science (16%), psychology (10%) and social science (9%).

In addition, STEM jobs attracted more workers with advanced degrees. About 40% of college-educated STEM workers had a graduate degree.

Different Paths for Foreign- and Native-Born Workers

The global contribution to America's economy was especially visible in the STEM workforce: 29% of college-educated STEM workers were foreign-born.

This was most notable in the tech sector, where foreign-born people made up about a third of computer workers with a college degree and about half with a graduate degree.

The high proportion of foreign-born workers in these fields may reflect corporate recruitment for specific positions through the H1B visa program, which is designed to bring in workers to fill positions that require specialized skills.

Workers in these positions tended to earn premium wages. This may account for the higher median earnings of foreign-born workers compared with their native-born counterparts.

Native-born STEM workers (who did not go through the visa screening filter) were less likely than their foreign-born counterparts to have a STEM-major (69% vs 81%).

Majoring in STEM Pays Off

There was an earnings boost for STEM majors in all STEM occupation groups, except for life scientists such as biologists and agricultural and food scientists.

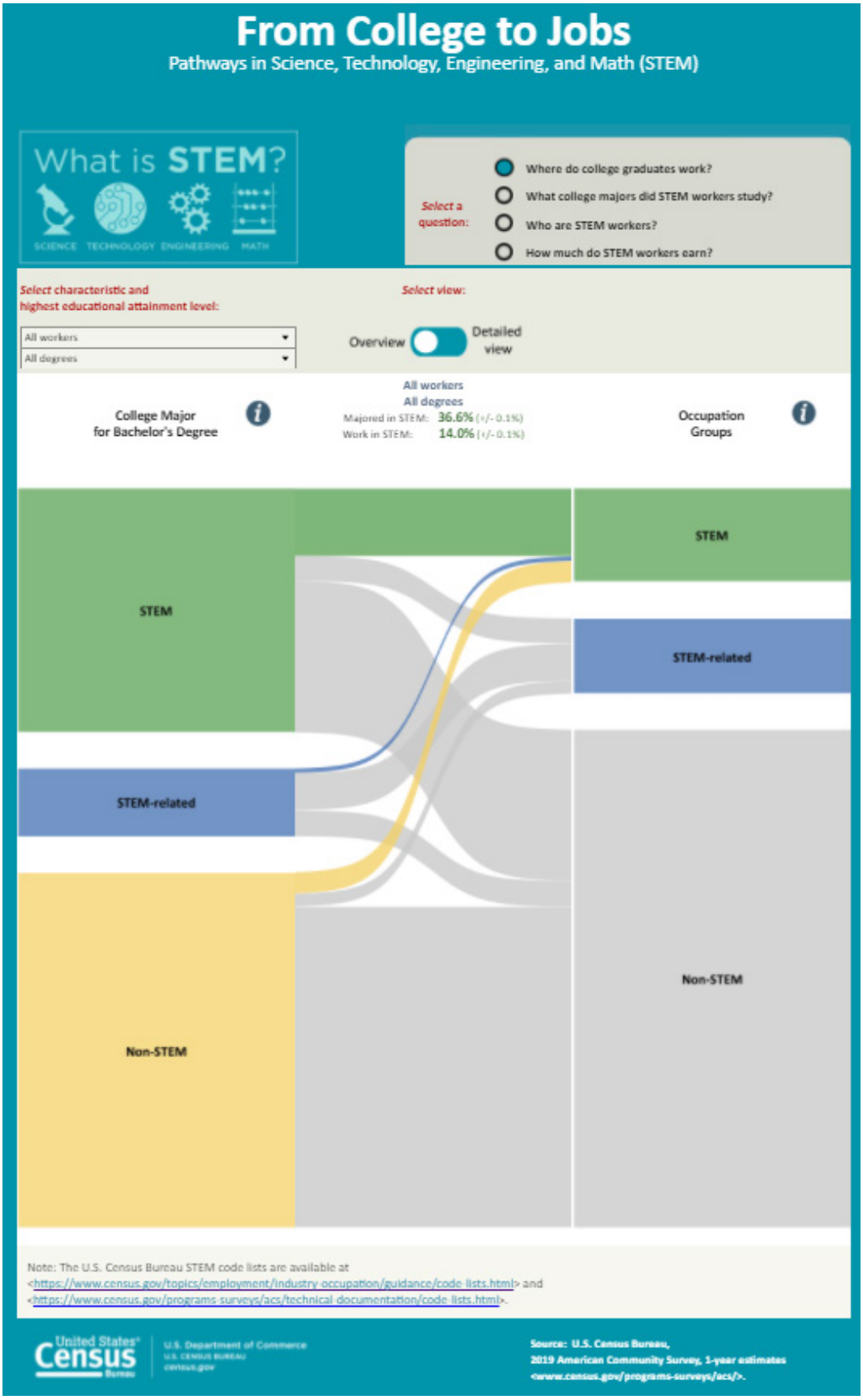
Highest and lowest earners:

- STEM-educated workers in computer occupations had the highest median annual earnings among STEM occupations at $105,300.
- Engineers were a close second, earning a median $102,200 a year.
- Life scientists earned the least, at $66,540 a year.

From College to Jobs

The interactive data visualization below illustrates the dynamic relationship between college major and jobs, with a special focus on STEM workers.

Using occupation data from the American Community Survey, details include bachelor's degree major and occupation group for STEM, STEM-related and non-STEM workers by demographic characteristics: sex, race and Hispanic origin and nativity.



The visualization addresses four questions about the STEM workforce:

- Where do college graduates work?
- What college majors did STEM workers study?
- Who are STEM workers?
- How much do STEM workers earn?

It also provides the option to select by highest educational attainment level; median annual earnings; STEM college major; and non-STEM college major.

Jennifer Cheeseman Day is a demographer in the Census Bureau's Communication Directorate.

Anthony Martinez is a survey statistician in the Social, Economic and Housing Statistics Division.

Source: https://www.census.gov/library/stories/2021/06/does-majoring-in-stem-lead-to-stem-job-after-graduation.html?utm_campaign=20210602msacos1ccstors&utm_medium=email&utm_source=govdelivery

What We Know About the 2019 and 2020 Labor Market: Comparing Labor Supply and Demand

By Kenneth Robertson

The labor market is dynamic: each month millions of jobs are gained and lost. How can measures of job demand and job supply help inform us about the labor market?

The Job Openings and Labor Turnover Survey (JOLTS) provides data on job openings, hires, and separations at the national and regional level. Job openings data, or measures of labor demand, are defined as all positions that are open (not filled) on the last business day of the month.[1]

The Current Population Survey (CPS) produces a wide range of data, including measures that can be used as a gauge of labor supply for the nation.[2] To be counted as unemployed, a person must have actively looked for work in the prior 4 weeks and is currently available for work. Persons who were not working and were waiting to be recalled to a job from which they had been temporarily laid off are also included as unemployed. The number of experienced unemployed, those who had a job and became unemployed, provide a measure of the available supply of experienced workers. Unemployed persons are classified according to their last job. This Beyond the Numbers article examines how these statistics, the demand for and supply of labor, work together to tell us more about the labor market.[3]

Job openings and experienced unemployed, by industry

One way to look at labor supply and labor demand is simply to look at the number of job openings and the number of people looking for work. This can tell us which industries experienced labor shortages or surpluses, and how acute these are in the broader economy. The data used in this article are annual averages from 2019 and 2020. Note that data are also available from each survey on a monthly basis, allowing similar analyses on a more concurrent basis. The data for 2020 reflect the effects of the coronavirus (COVID-19) pandemic and efforts to contain it.

Table 1. Job openings and experienced unemployed, by industry, annual averages (in thousands), 2019–20

Industry	Job openings		Experienced unemployed	
	2019	2020	2019	2020
Mining and logging	27	17	24	85
Construction	318	259	435	838
Manufacturing	437	413	468	1,026
Wholesale trade	212	169	97	192
Retail trade	784	681	706	1,456
Transportation, warehousing, and utilities	322	290	256	688
Information	141	109	89	186
Finance and insurance	268	242	145	218
Real estate and rental and leasing	104	79	71	170
Professional and business services	1,272	1,157	647	1,176
Educational services	121	99	180	405
Health care and social assistance	1,186	1,093	441	988
Arts, entertainment, and recreation	121	103	141	586
Accommodation and food services	875	693	605	1,958

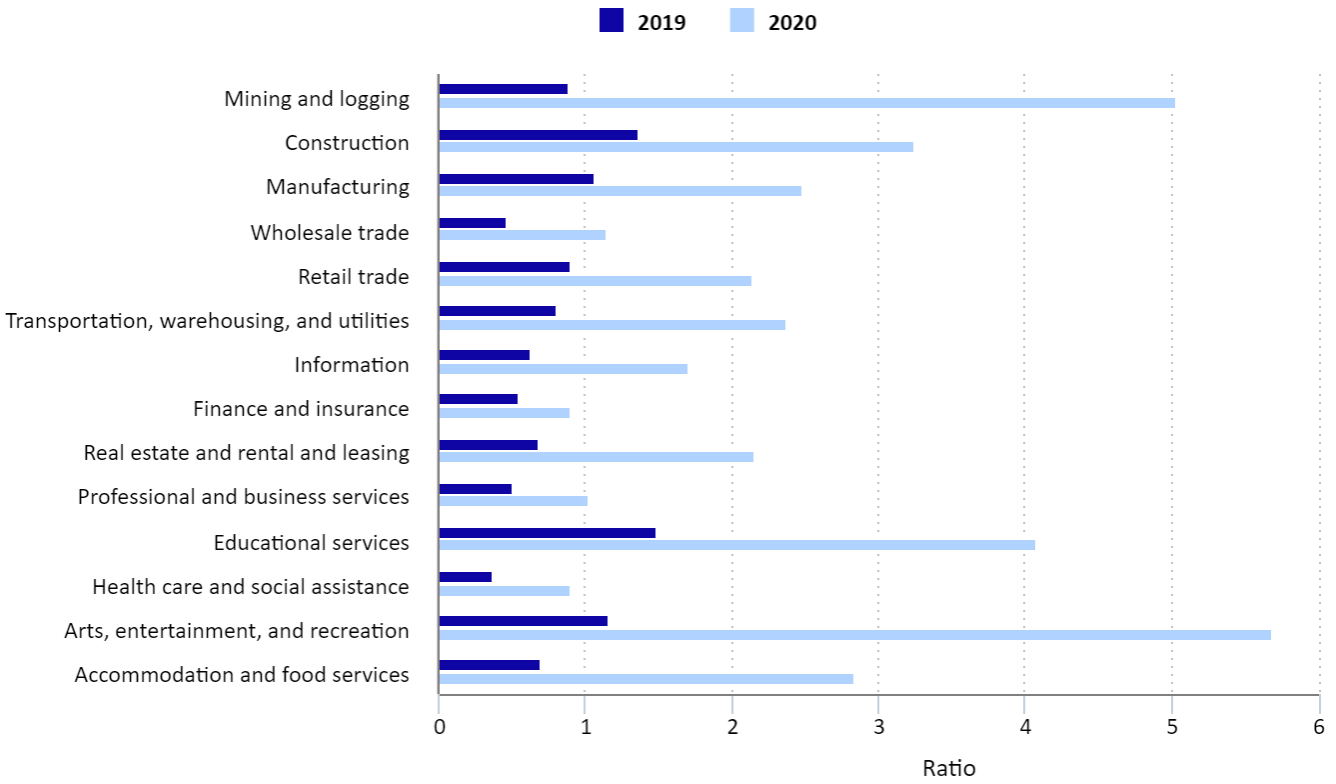
Source: U.S. Bureau of Labor Statistics.

In 2019, 10 of 14 industries had more job openings than experienced unemployed. In those 10 industries, the demand for labor exceeded the available supply of experienced labor. In 2019, annual average job openings were largest in professional and business services (1,272,000), healthcare and social assistance (1,186,000), and accommodation and food services (875,000). These three industries had only about half that number of experienced unemployed.[4] Professional and business services had 647,000 experienced unemployed, healthcare and social assistance had 441,000, and accommodation and food services had 605,000. Cumulatively, these industries had an annual average of 3,334,000 job openings and 1,693,000 experienced unemployed workers. When comparing the number of job openings and experienced unemployed workers, these data tell us that in 2019, there were significant job opportunities in these industries. A few industries in 2019 had more experienced unemployed on average than job openings. These industries were construction (435,000 experienced unemployed and 318,000 job openings); educational services (180,000 and 121,000), manufacturing (468,000 and 437,000); and arts, entertainment, and recreation (141,000 and 121,000). Finding a job in industries where the supply of experienced unemployed labor exceeds the demand for labor is likely more challenging than when the reverse is true.

Ratio of experienced unemployed to job openings

We can also examine these measures over time to determine if the demand or supply of labor for industries has changed as the economy has changed. To facilitate this analysis, we can look at the measures as a ratio (experienced unemployed to job openings). A ratio greater than 1 indicates that the supply of experienced unemployed workers exceeds the demand for labor. A ratio less than 1 indicates that the supply of experienced unemployed workers is less than the demand for labor. This article looks at these ratios at two points in time—2019 and 2020.

Chart 1. Ratio of experienced unemployed to job openings, by industry, annual averages (in thousands), 2019–20



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Comparing the ratios of experienced unemployed workers with job openings for 2019 and 2020, we can clearly see the data are from two vastly different economic periods. The 2019 data reflect a strong economy—closely matched numbers of job openings and people competing for them. Meanwhile, the 2020 data are from an economy in severe distress, reflecting the impact of the

COVID-19 pandemic. The ratio of experienced unemployed workers to job openings is larger in every single industry in 2020 than it was in 2019—indicating high competition among workers for the available jobs. This tells us that the relationship between job openings and the number of experienced unemployed dramatically changed for the worse across the entire U.S. economy from 2019 to 2020.

Let's look a bit closer at the changes from 2019 to 2020. Even though employment is low, the mining and logging industry had one of the largest proportional increases in the number of experienced unemployed workers. This change coincided with a glut in oil reserves and a corresponding decline in employment in support activities for mining, as international and domestic travel abated due to the COVID-19 pandemic. Accommodation and food services also suffered a large increase in the average number of experienced unemployed workers, from 605,000 in 2019 to 1,958,000 in 2020, while the average job openings declined from 875,000 to 693,000. These changes correspond to the reduction in travel and the state shutdowns and seating restrictions at restaurants and bars to combat the pandemic. Arts, entertainment, and recreation experienced a modest decline in job openings, from 121,000 to 103,000 during this time, while the number of experienced unemployed workers increased from 141,000 to 586,000. Retail trade endured a large increase in experienced unemployed from 706,000 in 2019 to 1,456,000 in 2020, while the job openings in the industry declined from 784,000 to 681,000. Similar stories can be told about nearly every industry between 2019 and 2020, as the demand for labor declined by about 13 percent across the economy, while the supply of experienced labor increased by a staggering 132 percent. (See table 1.)

Conclusion

This article has illustrated the value in putting data from several sources together. Analyses such as this can enhance our understanding of the labor market. These data highlight the huge increases in the number of experienced unemployed per job opening by industry from 2019 to 2020. The largest increase in the number of experienced unemployed, by far, was from the accommodation and food services industry. The job openings data are from JOLTS and are not seasonally adjusted. The unemployment data used are from the CPS.

Note that the industry assigned to the experienced unemployed is based on the last job held. The industry of the last job will not always be the industry that an unemployed person is looking for reemployment in. Also note that new entrants to the labor market are also competing for jobs with the experienced unemployed. They add to the labor supply but are not counted in the measures presented in this article since they are not experienced unemployed.[5] In 2019, new entrants were 9.8 percent of the total unemployed; in 2020, they were 4.1 percent of the total unemployed.

Source: Kenneth Robertson, "What we know about the 2019 and 2020 labor market: comparing labor supply and demand ," Beyond the Numbers: Employment & Unemployment, vol. 10, no. 11 (U.S. Bureau of Labor Statistics, May 2021), https://www.bls.gov/opub/btn/volume-10/comparing-labor-supply-and-demand.htm

[1] A job is "open" only if it meets all three of the following conditions:

1. A specific position exists and there is work available for that position. The position can be full-time or part-time, and it can be permanent, short-term, or seasonal.
2. The job could start within 30 days, whether or not the establishment finds a suitable candidate during that time.
3. There is active recruiting for workers from outside the establishment location that has the opening.

[2] The Current Population Survey provides information on the labor force, employment, and unemployment. The survey is conducted monthly for the U.S. Bureau of Labor Statistics by the U.S. Census Bureau using a nationally representative sample of about 60,000 eligible households in all 50 states and the District of Columbia.

[3] Note that the reference period for experienced unemployed is for the week that includes the 12th day of the month, whereas the reference period for job openings is the last business day of the month. The reference period difference may cause comparability issues during periods of substantial economic change.

[4] These data are for private wage and salary workers.

[5] Only experienced unemployed have a known industry of prior employment in the Current Population Survey. Therefore, new entrants to the labor market cannot be placed into a specific industry in order to compare labor supply with the demand. They can, however, be included in an all industry measure; this measure is available and updated on a monthly basis in the JOLTS charts. See https://www.bls.gov/charts/job-openings-and-labor-turnover/unemp-per-job-opening.htm#.

Job Searching

Linking College Majors to Careers

By Elka Torpey

Maybe you've wondered what you can do with a degree in biology. Or math, or English, or any other number of college majors.

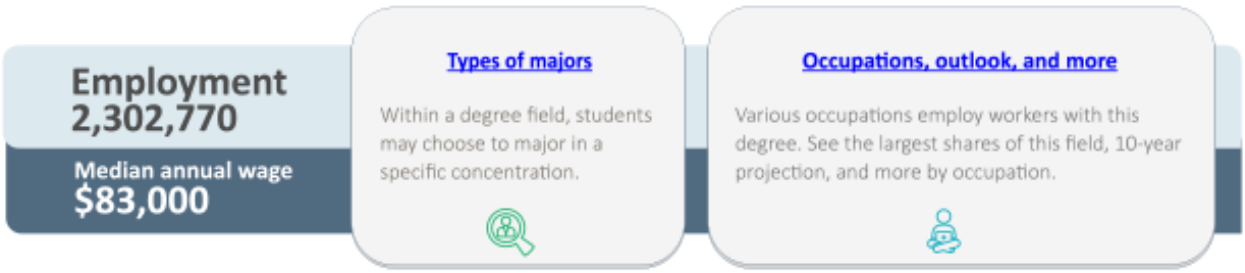
New field of degree pages link to profiles in the Occupational Outlook Handbook (OOH) and help to answer that question for dozens of degree fields ranging from agriculture to transportation.

These pages present data specific to a field of study from the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (BLS). The tables and charts highlight information about people with the degree, such as types of majors; percentage of workers with an advanced degree; and employment, wages, and projected employment growth in 10 occupations. Here are more details about what the data tell you.

Overview

From the list on the field of degree landing page, you can click on any of the 37 academic subject areas to learn more. A banner at the top of each field of degree page gives data on employment and wages for workers with the degree and provides a way to navigate to the detailed information. (See illustration 1.)

Illustration 1. Field of degree: Sample banner for computer and information technology



Under each banner, the first table has facts about workers with a degree in the selected field. For example, the first table for computer and information technology majors shows that there were more than 2 million workers with these degrees in 2018, and their median annual wage was $83,000. (See illustration 2.) The table also shows the rate of part-time employment, along with insights about workers with bachelor's and advanced degrees.

Illustration 2. Sample table for computer and information technology degree, 2018

Table 1. Computer and information technology degree, 2018
A glimpse of workers in this degree field.

	Computer and information technology	All fields
Employment	2,302,770	55,381,020
Median wage	$83,000	$59,000
Percent employed part time	8	15
Percent employed in occupations requiring at least a bachelor's degree	69	59
Percent with an advanced degree	30	37

Source: U.S. Census Bureau, American Community Survey.

These data are useful because they offer a sense of how popular a major is and what employment might look like for someone who chooses it. For example, if you don't plan to get an advanced degree, computer and information technology is a field in which you may not need it: 30 percent of these bachelor's degree holders were employed in occupations that require an advanced degree, as you see in the illustration.

By giving data for workers in all fields, the table also allows you to compare outcomes of workers in one field with those of all workers who have a degree. For example, as illustration 2 shows, the median annual wage for workers with a bachelor's degree in computer and information technology was higher than the $59,000 median for workers with bachelor's degrees in all fields.

Types of majors

The data for this section on the field of degree page are presented in a chart showing some of the largest concentrations within a degree field. For example, illustration 3 shows that the largest percentage of students majoring in fine arts in 2018 chose to focus on commercial art and graphic design.

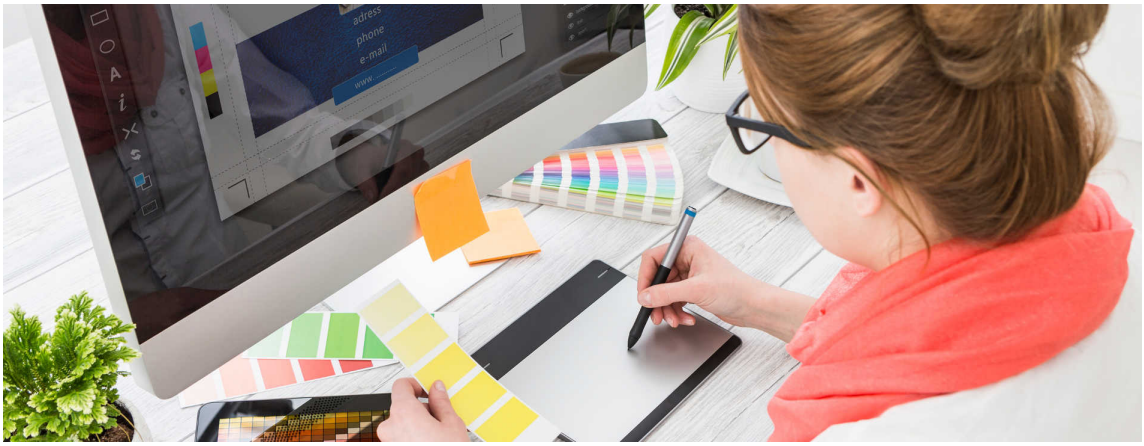
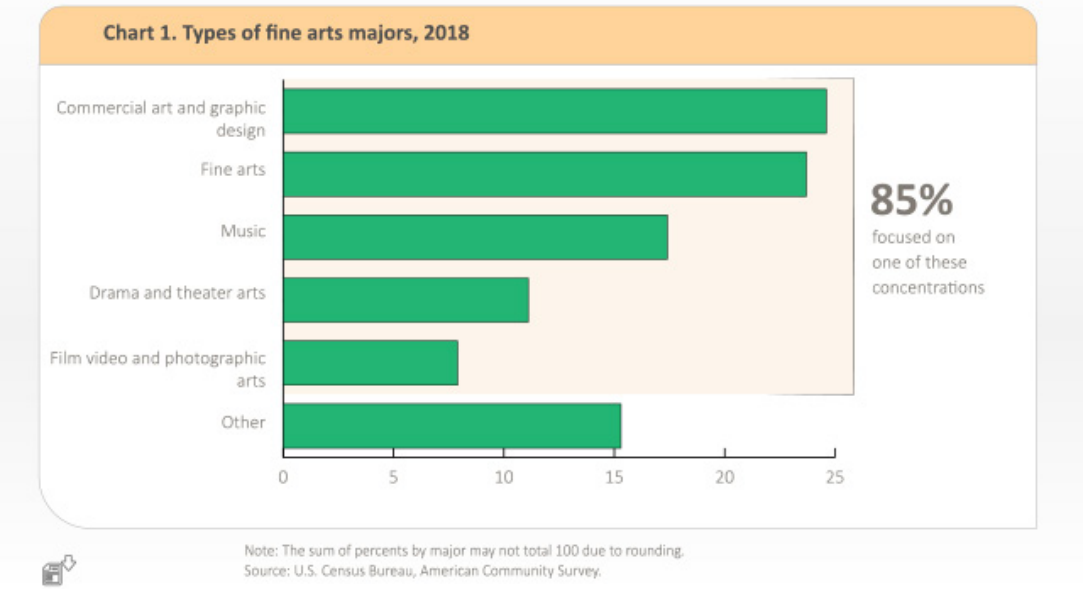


Illustration 3. Sample chart of types of fine arts majors, 2018



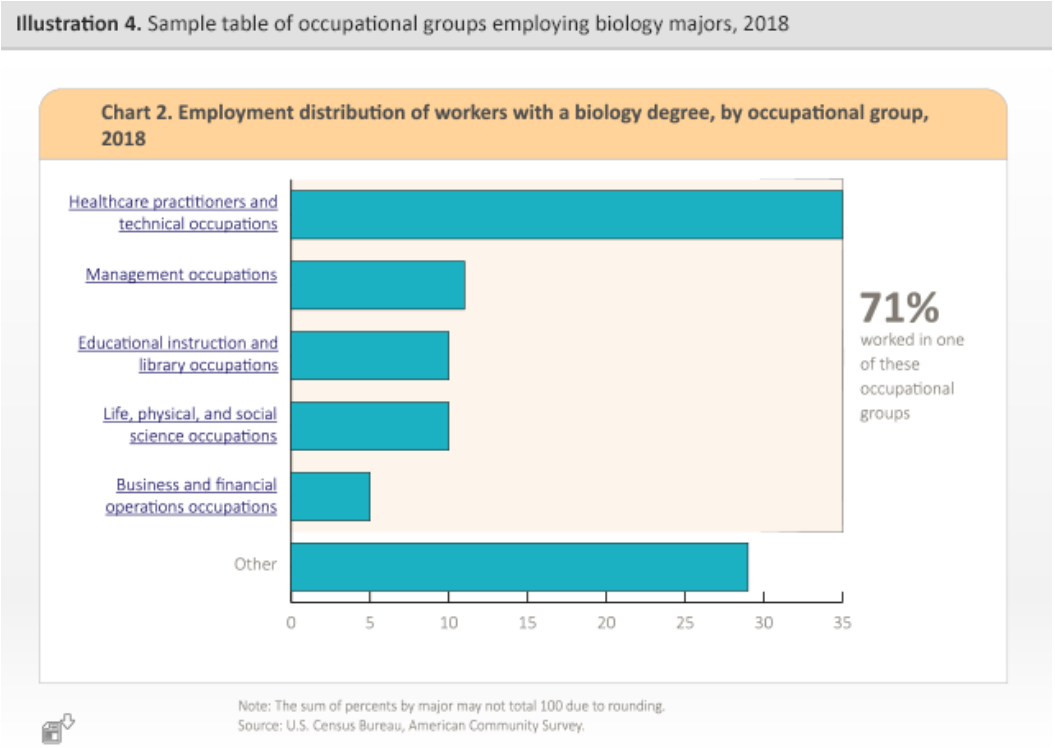
This chart will help you to understand some of the options for people who major in a particular field. And if you're thinking about choosing a college major, this information might help you to narrow your choices.

Occupations, outlook, and more

This section on the field of degree page links degree fields to career fields by way of the Standard Occupational Classification (SOC) system and the OOH. Based on job duties, the SOC provides a framework for classifying occupations into 23 broadly defined groups and 867 detailed occupations. The OOH uses those classifications to present information in 324 occupational profiles describing what workers do, their pay, their job outlook, and more.

Occupations. A chart in this section shows the employment distribution for workers with a given field of degree by occupational group. Illustration 4, for example, shows the groups in which most workers with a biology degree were employed.

Illustration 4. Sample table of occupational groups employing biology majors, 2018



Many people study subjects that interest them, so it's not surprising when they choose an occupational field related to their degree. However, majors don't always tie directly to career choice. For example, illustration 4 shows that biology majors were employed in healthcare and science occupations—but they also worked in management, educational instruction and library, and business and financial occupations. Each occupational group title in these charts links to its corresponding OOH page.

Outlook and more. A second table in this section highlights projected growth and some educational details for occupations in which workers with the degree were employed. As illustration 5 shows in the third column, the top occupations for workers with a biology degree include physicians, postsecondary health specialties teachers, and registered nurses. Employment of postsecondary health specialties teachers is projected to increase 21 percent from 2019 to 2029, the fastest growth rate for occupations in the table and much faster than the 4-percent average for all occupations.

Illustration 5. Sample table of top-employing occupations for workers with a biology degree

Table 2. Top-employing occupations for workers with a biology degree

For more information

Click on the occupations below to see the occupational profile in the Occupational Outlook Handbook (OOH).

The U.S. Bureau of Labor Statistics (BLS) projects employment and designates education typical for entry in about 800 detailed occupations. Table 2 shows projections data and typical education for occupations in which people with this degree were employed. It also shows the percentage of bachelor's degree holders in this field who were employed in the occupation and the percentage of workers in the occupation with an advanced degree in any field.

	Percent growth, projected 2019–29	Typical entry-level education	Percent degree holders in this field, this occupation, 2018	Percent of this occupation with an advanced degree, 2018
Health specialties teachers, postsecondary	21	Doctoral or professional degree	4	74
Clinical laboratory technologists and technicians	7	Bachelor's degree	2	9
Registered nurses	7	Bachelor's degree	3	12
Medical scientists, except epidemiologists	6	Doctoral or professional degree	2	71
Physicians, all other; and ophthalmologists, except pediatric	4	Doctoral or professional degree	15	100
[illegible]	[illegible]	[illegible]	3	[illegible]

Illustration 5 also shows that the occupations accounted for a relatively small percentage of biology degree holders, which indicates that there are other occupations in which workers with a biology degree were employed. For occupations that typically require a doctoral or professional degree to enter, the last column shows that most workers had an advanced degree.

For more information

Visit the field of degree pages to study these data for yourself. And read about hundreds of occupations in the OOH.

Get more data, including projected employment change and average annual openings over the decade, from the BLS Employment Projections program.

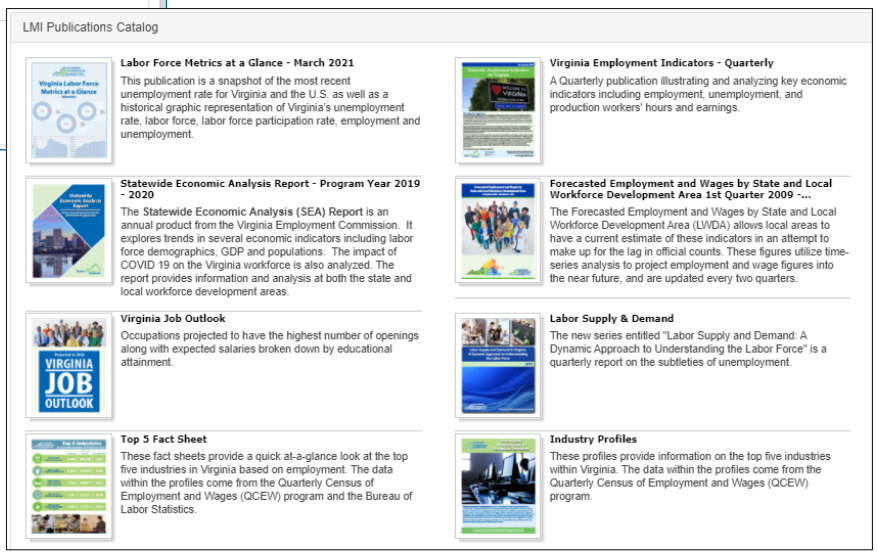
Source: Elka Torpey, "Linking college majors to careers," Career Outlook, U.S. Bureau of Labor Statistics, January 2021. https://www.bls.gov/careeroutlook/2021/article/field-of-degree-and-careers.htm

Career and Labor Market Information Publications

Explore Career possibilities on our Career and Labor Market Information Website at:

https://virginiaworks.com/publications

The Virginia Employment Commission Labor Market Information division is proud to offer a number of quality publications available to view and download at on our website.



These products provide labor market information, job tips, career planning, and more.

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ECONOMIC INFORMATION & ANALYTICS
Virginia Employment Commission