Demand for Higher Education Programs

Results through September 2022

ATKINS

ROBERT GRAY ATKINS

Start, Stop, or Grow?

A DATA-INFORMED APPROACH TO
ACADEMIC PROGRAM EVALUATION AND MANAGEMENT
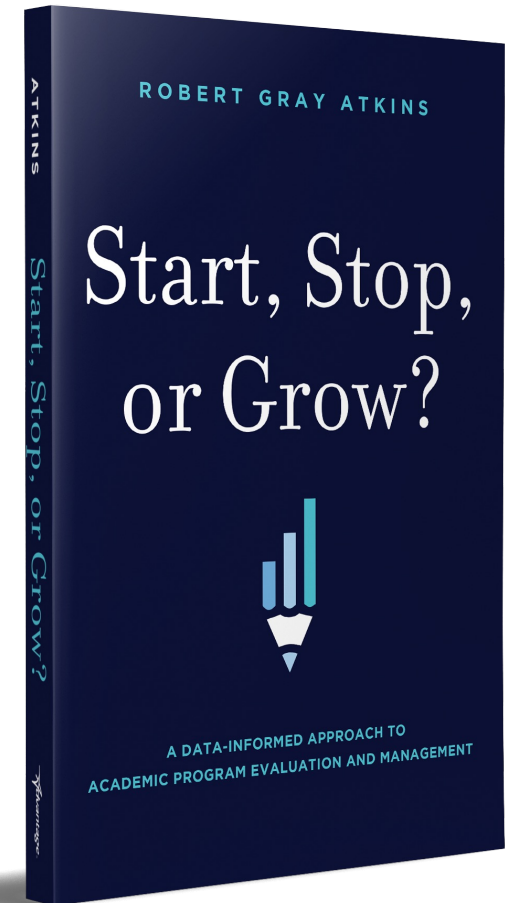
Gray has developed a complete Program Evaluation System.

GRAY ASSOCIATES

We do a few other things, too.

Pricing: Competitive research, discrete choice surveys, and pricing simulators

Location Analysis: AI models to find the best place to add a campus or market your programs

Financial Planning Models: Simulate events and decisions; provide Pro-forma 10-year financials

GRAY ASSOCIATES

Choose a Program

- At the end of my presentation, we'll fire up PES and take requests for program scorecards
- If you have a program in mind, please let us know in the chat.
- However, we may not be able to get to all the requests in this meeting.
- If we don't get to your program, we will email its scorecard to you this week.

Agenda

Google Search

Google Search Trends: Programs

Gray tracks searches for over 900 programs (90% of all US completions).

US Google Search Volume

■ 2021 ■ 2022

2022 →

2021 →
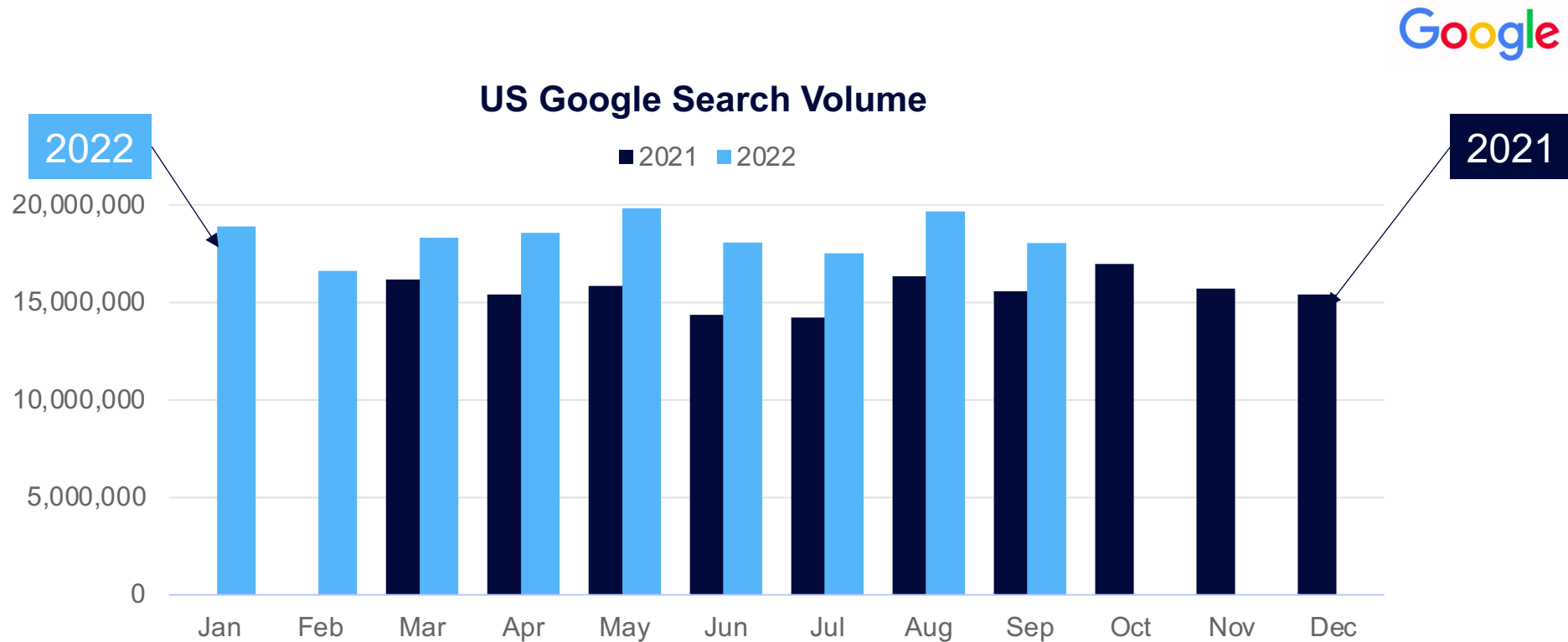
Source: PES Keyword Search Dashboard

Google Search Trends: Programs at the Bachelor's level and higher

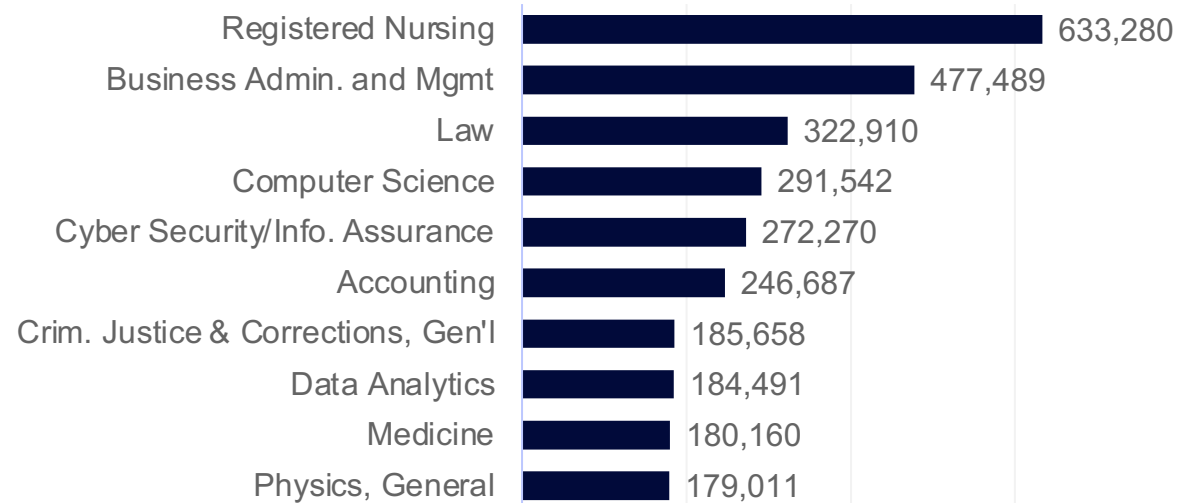## In September, Google searches for B Plus academic programs increased 16% year-over-year.

US Google Search Volume

■ 2021 ■ 2022

2022

2021

+16% YoY

Source: PES Keyword Search Dashboard

7
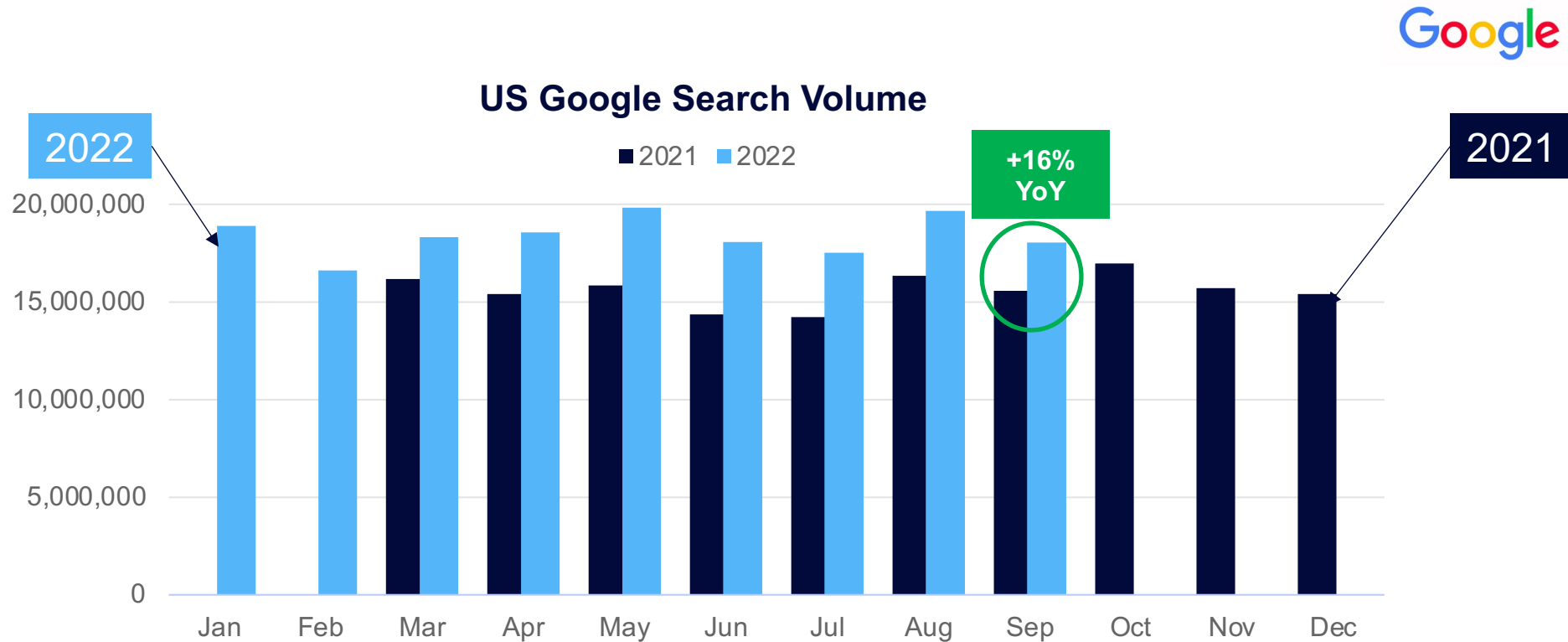
Google: US Top Bachelor's and Higher Degree Level Programs

In September, Registered Nursing had the highest search volume.

Programs with the Highest Volume of Keyword Searches
September 2022

Program	Searches
Registered Nursing	633,280
Business Admin. and Mgmt	477,489
Law	322,910
Computer Science	291,542
Cyber Security/Info. Assurance	272,270
Accounting	246,687
Crim. Justice & Corrections, Gen'l	185,658
Data Analytics	184,491
Medicine	180,160
Physics, General	179,011

Google search volume for standardized sets of academic keywords for academic programs..
Source: PES Keyword Search Dashboard

Google: US Fastest-Growing Programs

In September, searches for Artificial Intelligence programs increased 160%.

**Fastest-Growing Programs
YoY Growth***
September 2022

Program	Growth
Artificial Intelligence	160%
Cyber Security/Info. Assurance	140%
Data Analytics, General	115%
Cinematography and Film/Video Prod	84%
Registered Nursing	73%
Homeland Security	67%
Project Management	64%
Marketing/Marketing Management	60%
Speech Communication and Rhetoric	59%
School Counseling/Guidance Services	42%

*Minimum 10,000 searches 2021

Google search volume for standardized sets of academic keywords for community college programs.

Source: PES Keyword Search Dashboard

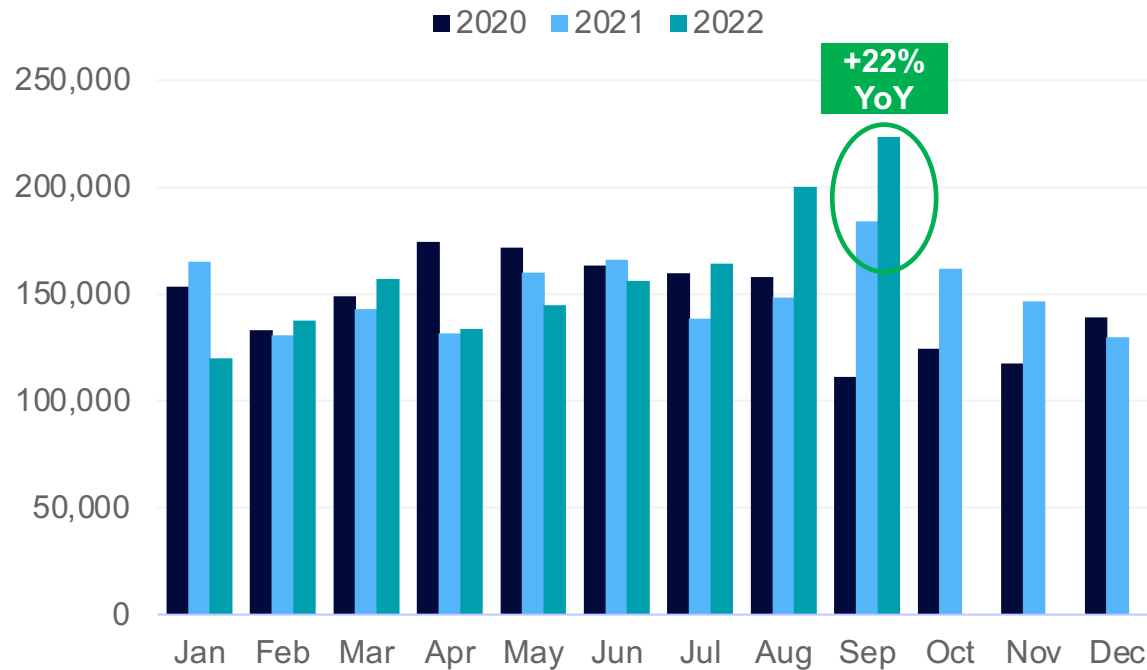# Agenda

International Student Demand

In September, international student interest in US programs increased 22% YoY.

International Page Views

■ 2020　■ 2021　■ 2022

+22% YoY
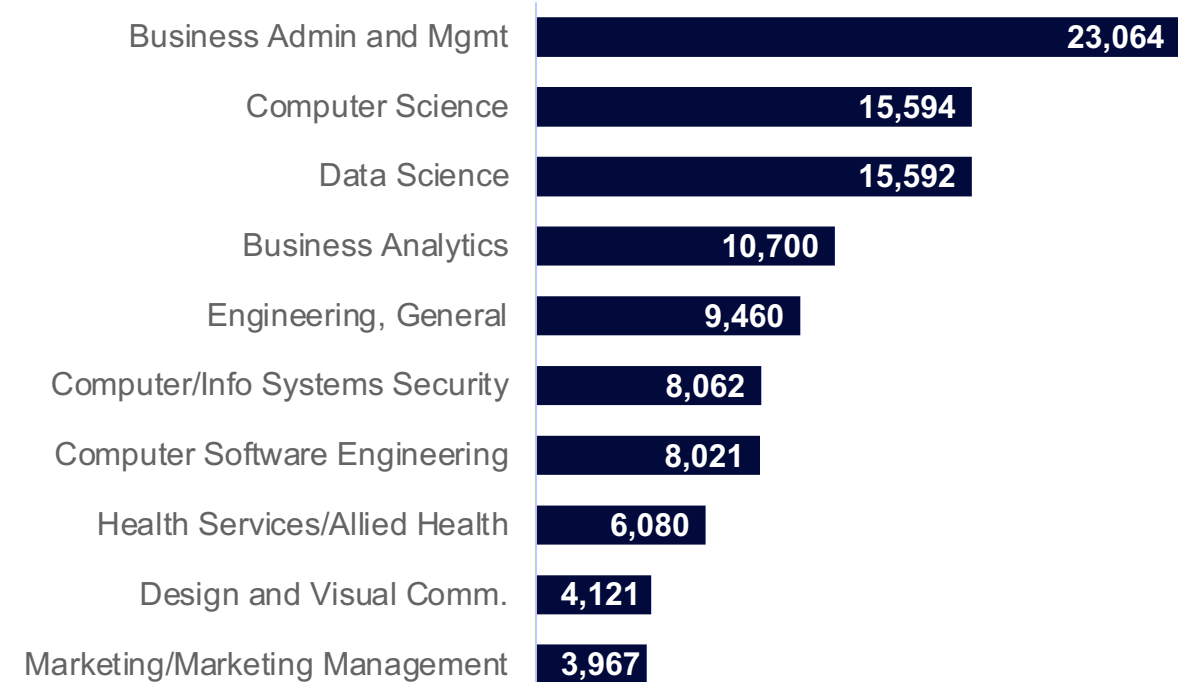
Source: PES International Student Demand Dashboard

In September, the most-viewed programs were Business and Computer Science.

Top 10 Programs

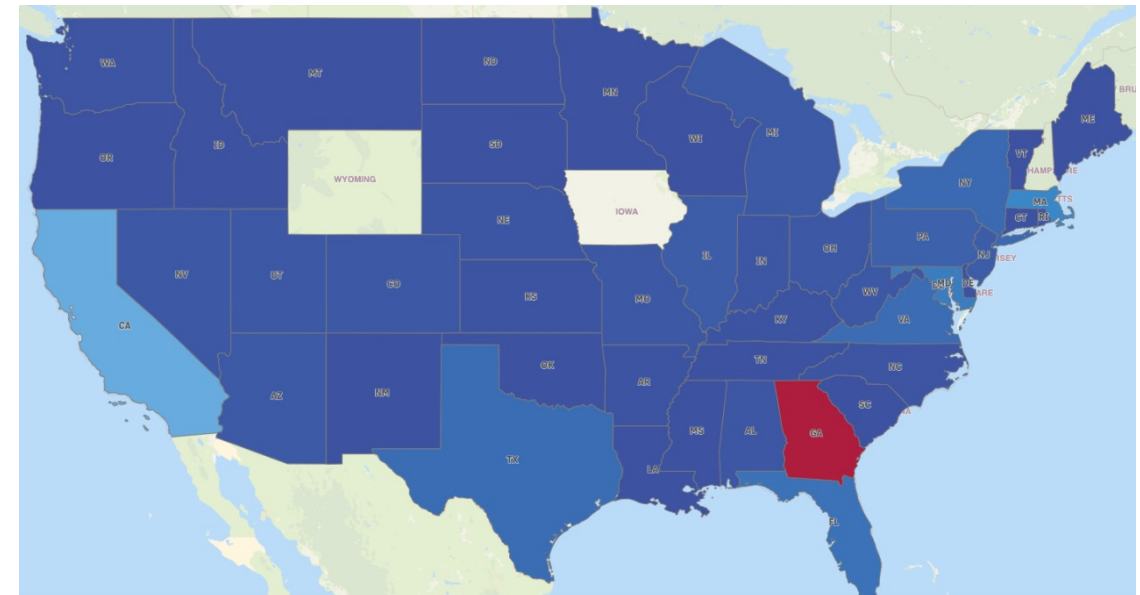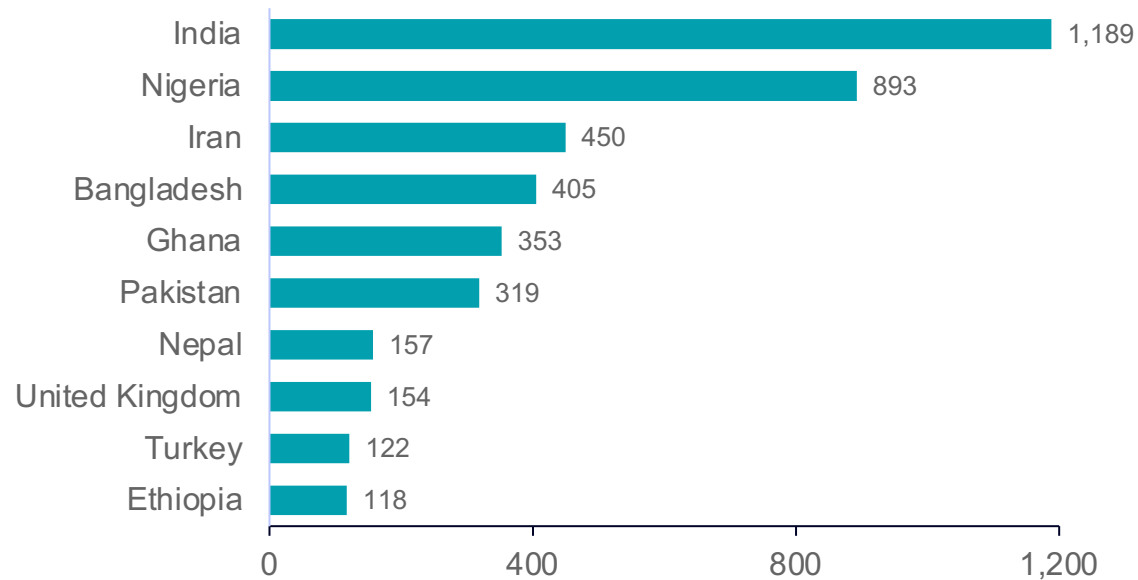| Program	Views
Business Admin and Mgmt	23,064
Computer Science	15,594
Data Science	15,592
Business Analytics	10,700
Engineering, General	9,460
Computer/Info Systems Security	8,062
Computer Software Engineering	8,021
Health Services/Allied Health	6,080
Design and Visual Comm.	4,121
Marketing/Marketing Management	3,967

International Page Views: Computer/Info Security (Sixth in Highest Views)

India led in page views for Computer/Info Systems Security

International Page Views by Originating Country
Computer/Info Systems Security, September 2022

Country	Page Views
India	1,189
Nigeria	893
Iran	450
Bangladesh	405
Ghana	353
Pakistan	319
Nepal	157
United Kingdom	154
Turkey	122
Ethiopia	118

Curiously, Georgia was the most popular destination for this program.

Source: PES International Student Demand Dashboard

Agenda

New Student Enrollment, Bachelor's and Master's Programs

Spring 2022 new student enrollment was down.

Bachelor's New Student Enrollment
Spring 2020-2022
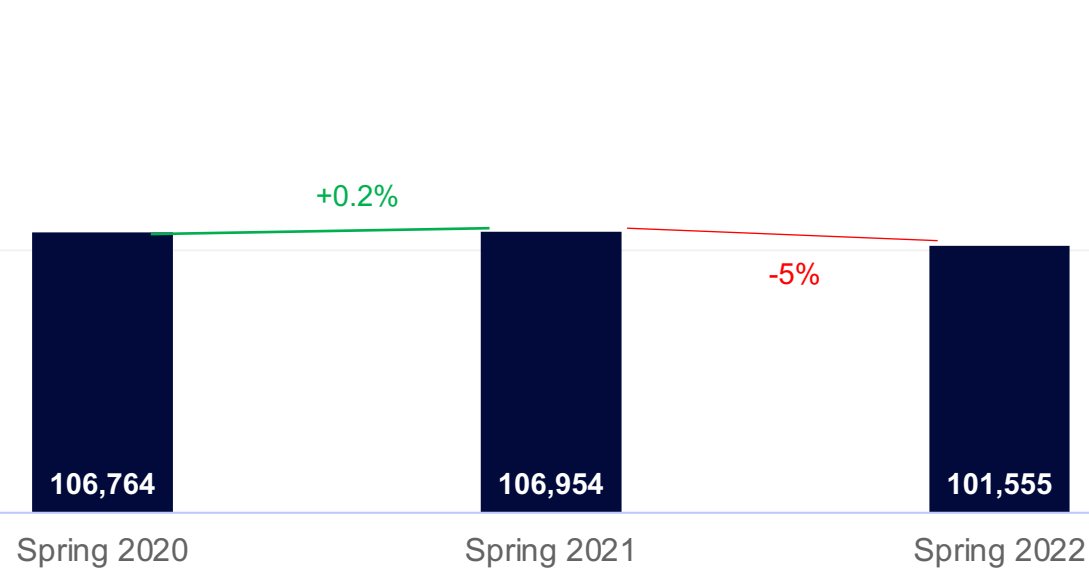
Spring 2020	Spring 2021	Spring 2022
106,764	106,954	101,555

+0.2% -5%

Master's New Student Enrollment
Spring 2020-2022

Spring 2020	Spring 2021	Spring 2022
155,136	189,608	177,074

+22% -7%
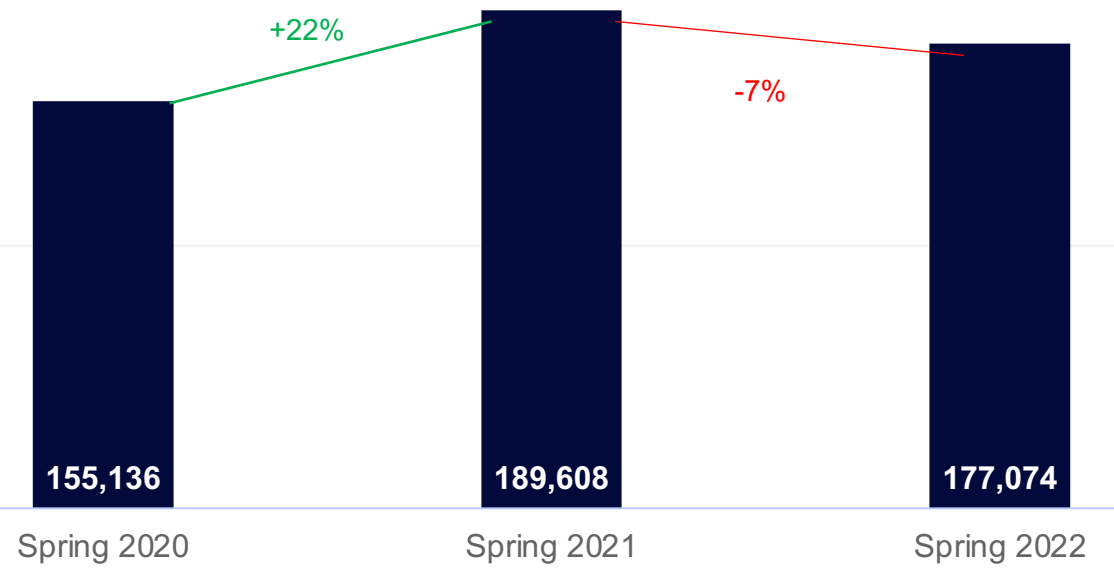
Source: PES Program Enrollment Dashboard

In Spring 2022, Business had the highest new student enrollment of all master's programs.

Highest New Student Enrollment
Master's Programs
Spring 2022

Education

Program	Enrollment
Business Admin. and Mgmt, General	28,404
Computer Science	12,342
Business Analytics	6,938
Registered Nursing	6,301
Social Work	4,686
Education, General	3,893
Accounting	3,733
Curriculum and Instruction	3,528
Special Ed. and Teaching, General	3,521
Teacher Educ., Multiple Levels	2,968
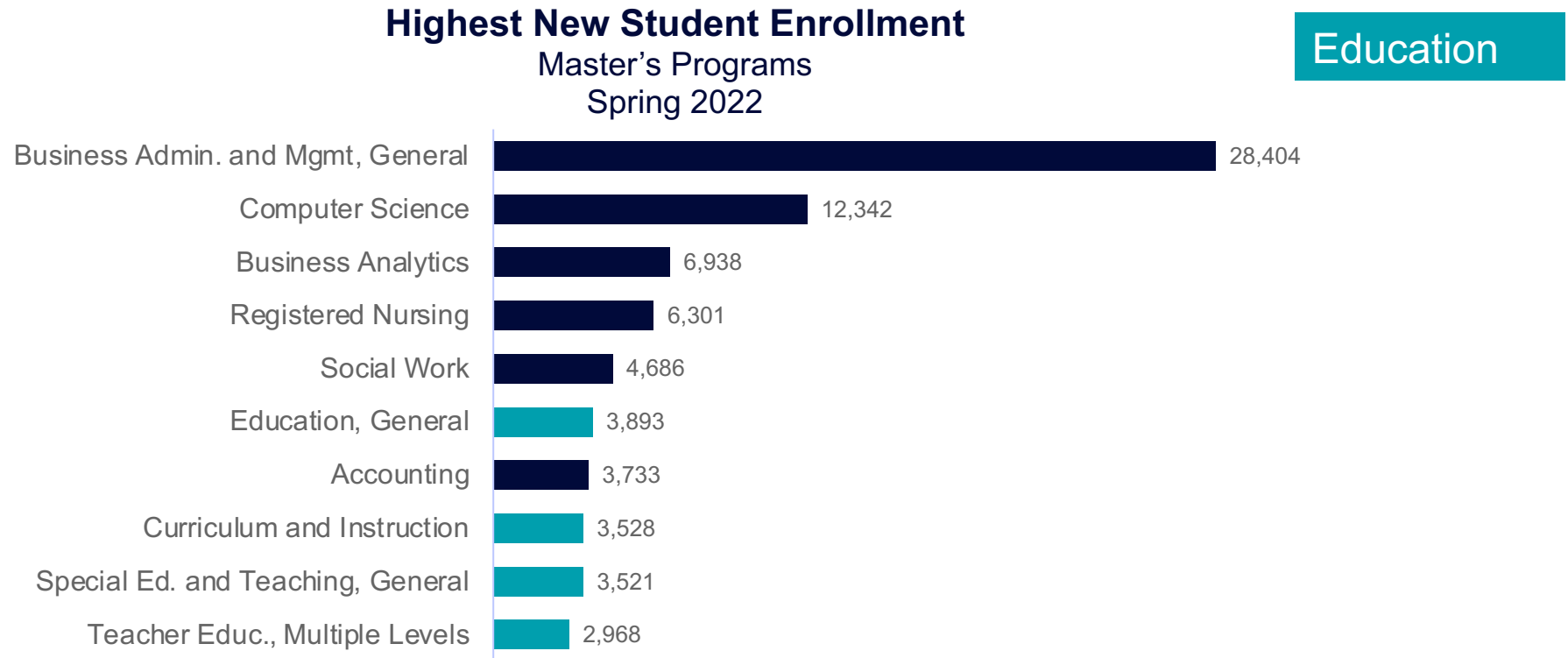
Source: PES Program Enrollment Dashboard

Information Technology enrollment grew 48% year-over-year.

Spring 2022 Year-Over-Year Change*
New Student Enrollment
Master's Programs

Program	Change
Information Technology	48%
Computer Science	25%
Engineering/Industrial Management	21%
Information Science/Studies	16%
Business Analytics	11%
Psychology, General	8%
Applied Behavior Analysis	6%
Physician Assistant	5%
Mental Health Counseling/Counselor	5%
Education, General	1%
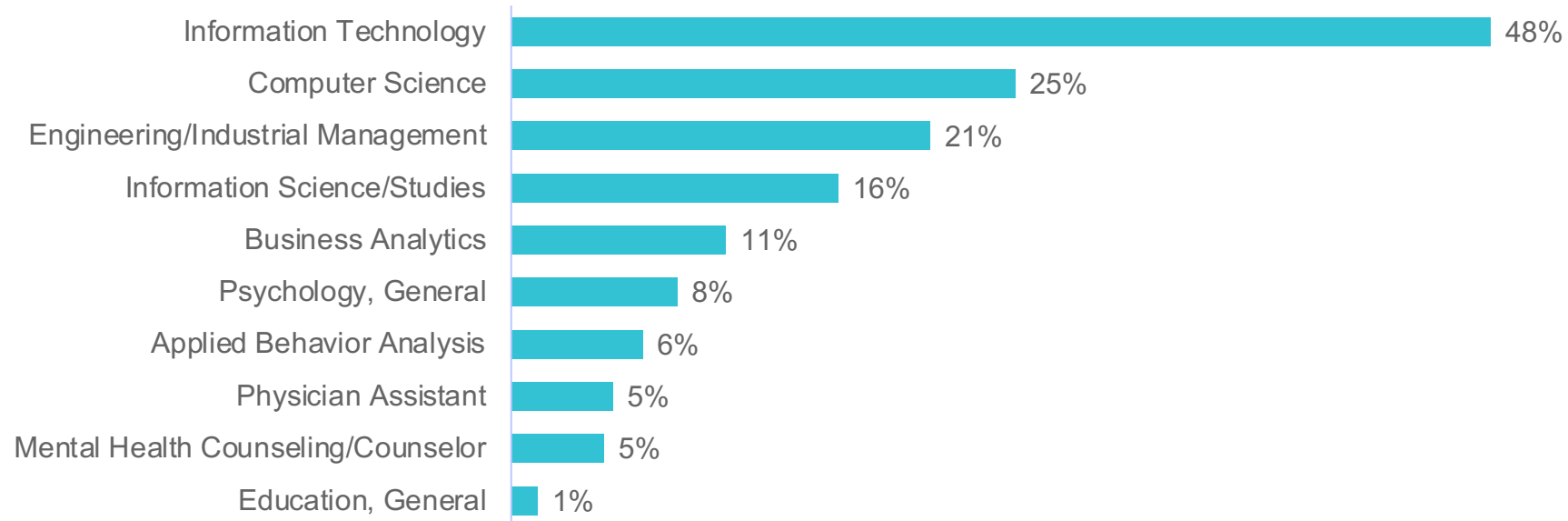
Source: PES Program Enrollment Dashboard

*Minimum 1,000 enrollees in Spring 2021

In Spring 2022, Business had the highest new student enrollment of all bachelor's programs.

Highest New Student Enrollment
Bachelor's Programs
Spring 2022

Program	Enrollment
Business Admin. and Mgmt, General	16,622
General Studies	11,708
Psychology, General	5,378
Computer Science	4,442
Crim. Justice & Corrections, Gen'l	3,800
Registered Nursing	3,083
Biology/Biological Sciences, Gen'l	2,757
Liberal Arts/Sciences/Studies	2,587
Information Technology	2,479
Accounting	1,918
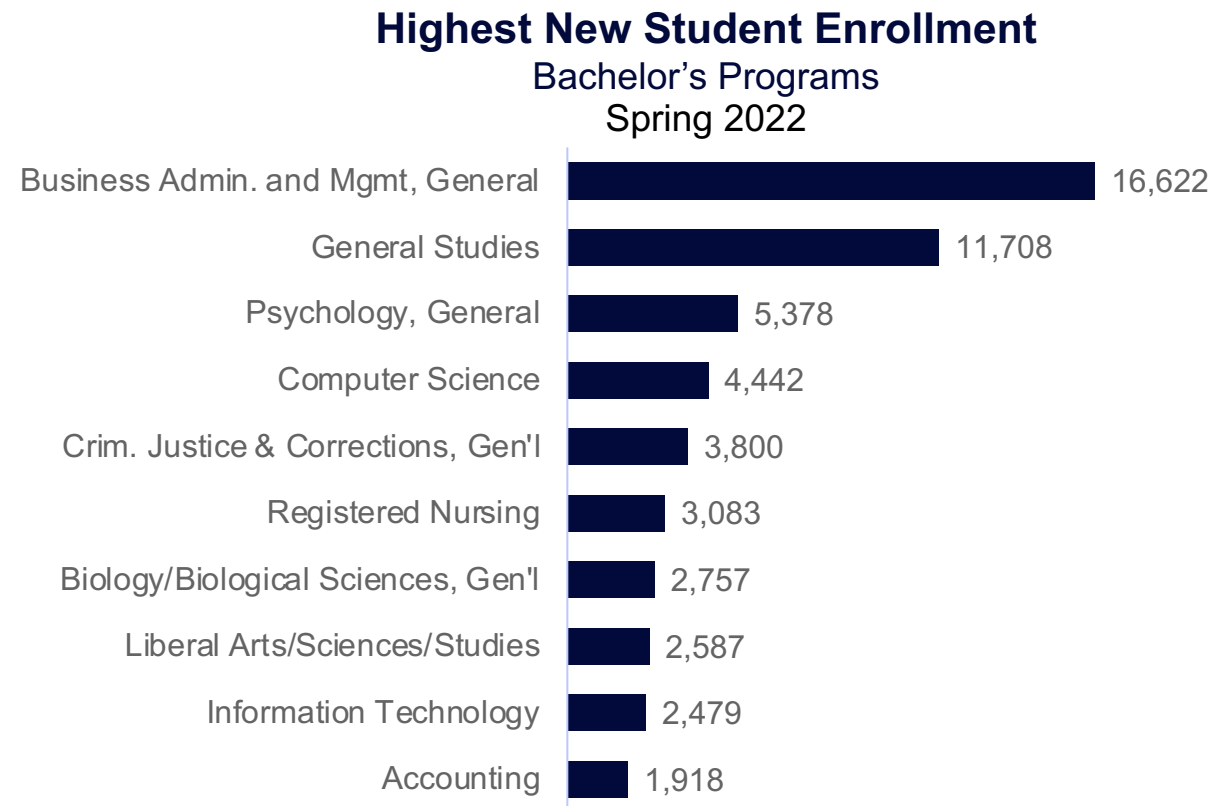
Source: PES Program Enrollment Dashboard

Among bachelor's programs, Computer Science grew the fastest.

**Spring 2022 Year-Over-Year Change
New Student Enrollment***
Bachelor's Programs

30%	Computer Science
22%	Cyber Security/Info. Assurance
18%	Marketing/Marketing Mgmt., General
7%	English Language and Lit., Gen'l
6%	Human Services, General
6%	Human Resources Management, Gen'l
5%	Finance, General
4%	Elementary Education and Teaching
3%	General Studies
1%	Business Admin. and Mgmt, General
-1%	Education, General
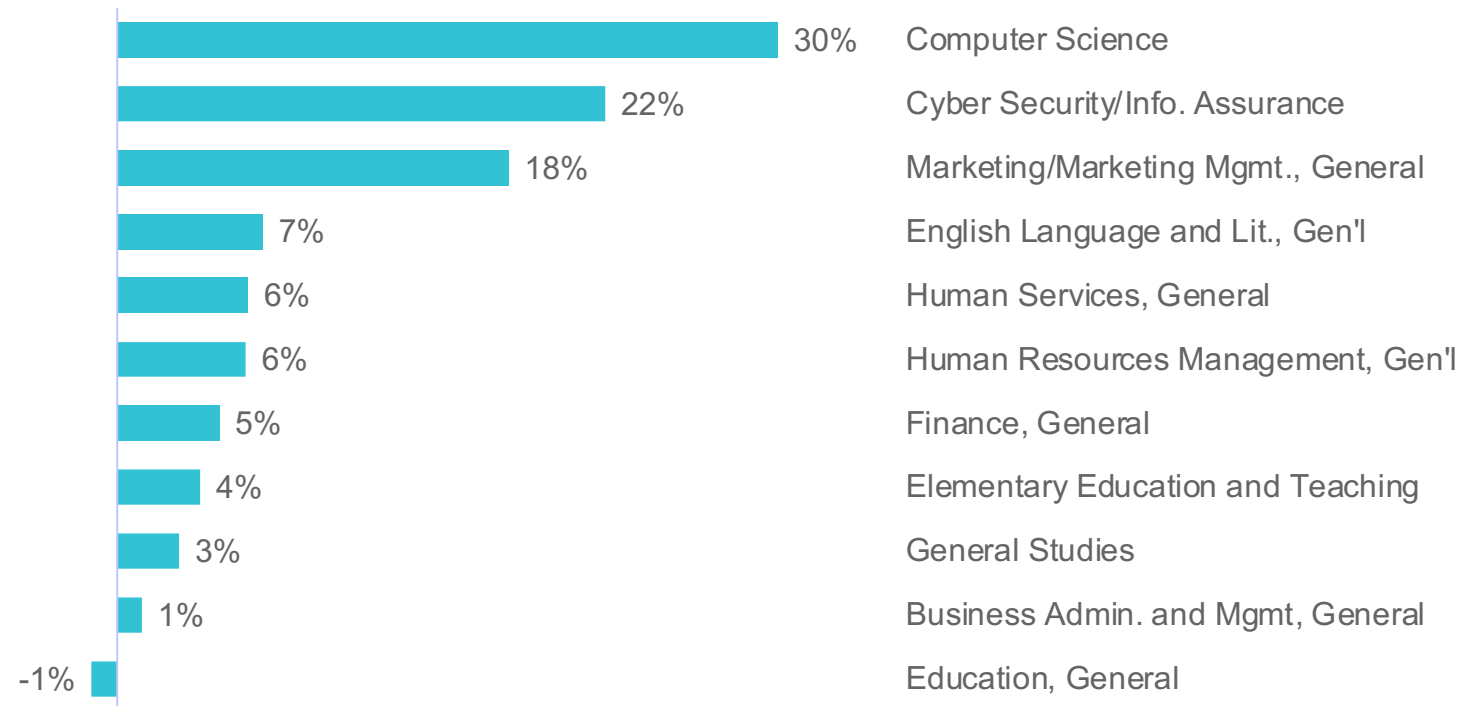
Source: PES Program Enrollment Dashboard

**Minimum 500 enrollees Spring 2021

Agenda

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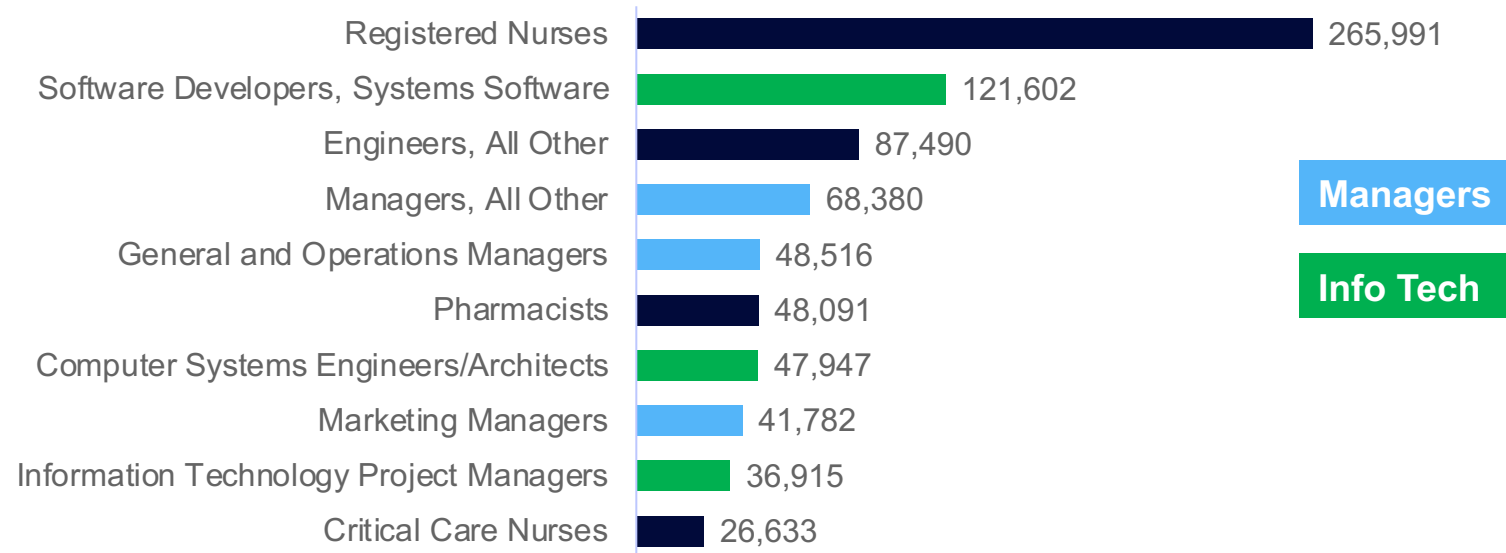# In September 2022, job postings volume dropped 39% year-over-year.

- However, postings are still 18% higher than in March 2020 (just before COVID).

US Job Postings by Month
Bachelor's and Above

-39% YoY

Legend: ■ 2020 ■ 2021 ■ 2022

Source: PES Job Postings Dashboard
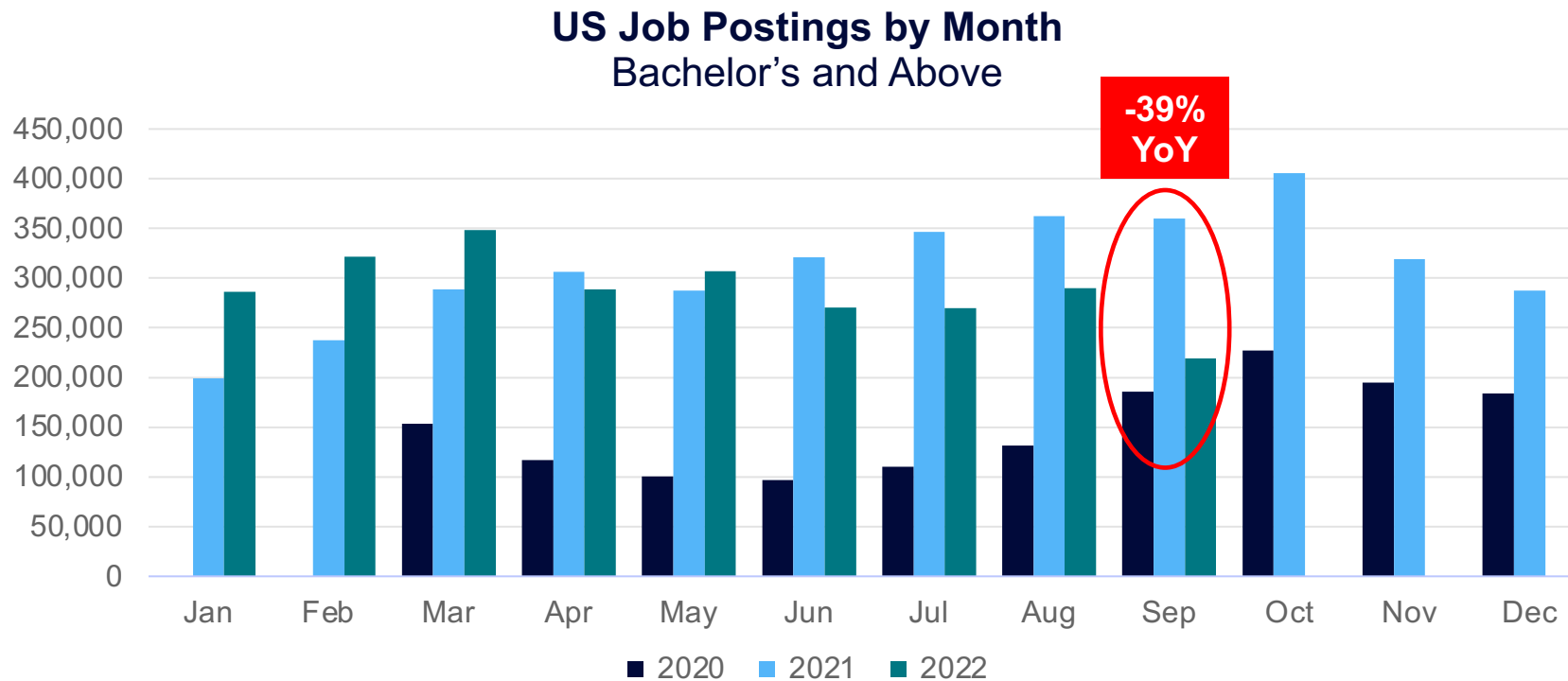
In 2022 year-to-date, Registered Nurses had the highest volume of job postings for bachelor's and above degree-holders.*

2022 Highest Job Postings
By Standard Occupational Code

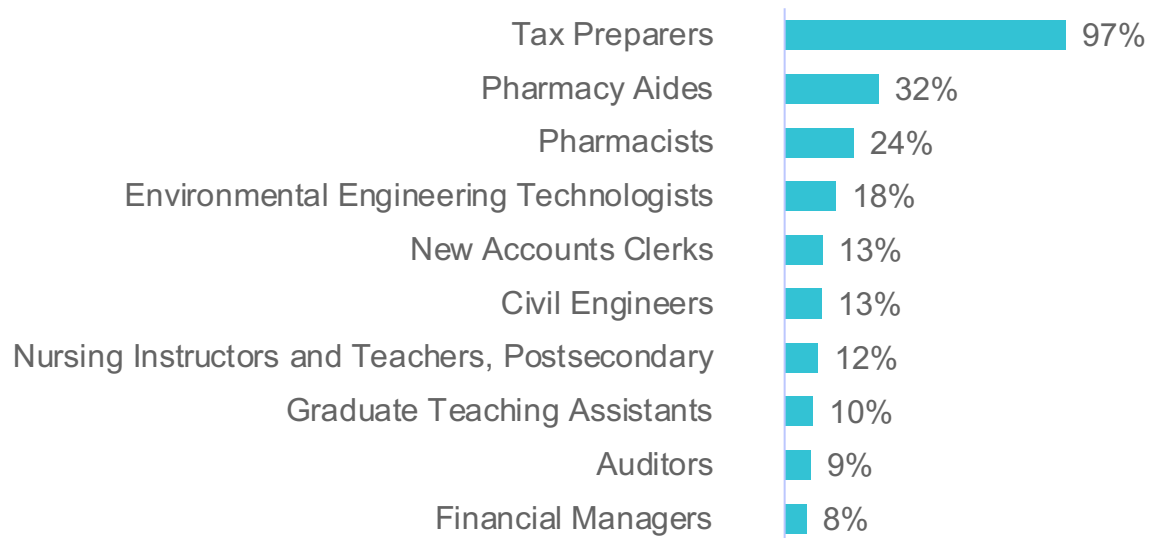| Occupation	Postings
Registered Nurses	265,991
Software Developers, Systems Software	121,602
Engineers, All Other	87,490
Managers, All Other	68,380
General and Operations Managers	48,516
Pharmacists	48,091
Computer Systems Engineers/Architects	47,947
Marketing Managers	41,782
Information Technology Project Managers	36,915
Critical Care Nurses	26,633

Managers

Info Tech

. *January – August 2022

Source: PES Job Postings Dashboard

Trailing three months, jobs for Tax Preparers increased 97% year-over-year.

**Trailing Three Months Job Postings Year-over-Year Growth
Bachelor's Degree and Above**
By Standard Occupational Code

Tax Preparers	97%
Pharmacy Aides	32%
Pharmacists	24%
Environmental Engineering Technologists	18%
New Accounts Clerks	13%
Civil Engineers	13%
Nursing Instructors and Teachers, Postsecondary	12%
Graduate Teaching Assistants	10%
Auditors	9%
Financial Managers	8%

. *June – August 2022

Source: PES Job Postings Dashboard

*Minimum 1,000 jobs prior year.

Agenda

Coursera: Top Parent Categories

Since Coursera's inception, the Data Analysis category has had the highest enrollment.

Highest Cumulative Enrollment
September 2022

Category	Enrollment
Data Analysis	17,325,786
Learning English	15,779,842
Machine Learning	15,238,724
Basic Science	14,757,354
Personal Development	12,843,793
Software Development	11,695,529
Leadership and Management	8,763,906
Business Essentials	8,691,430
Design and Product	7,310,412
Music and Art	6,967,311

Info Tech

Source: Gray's Non-Degree Demand: Coursera
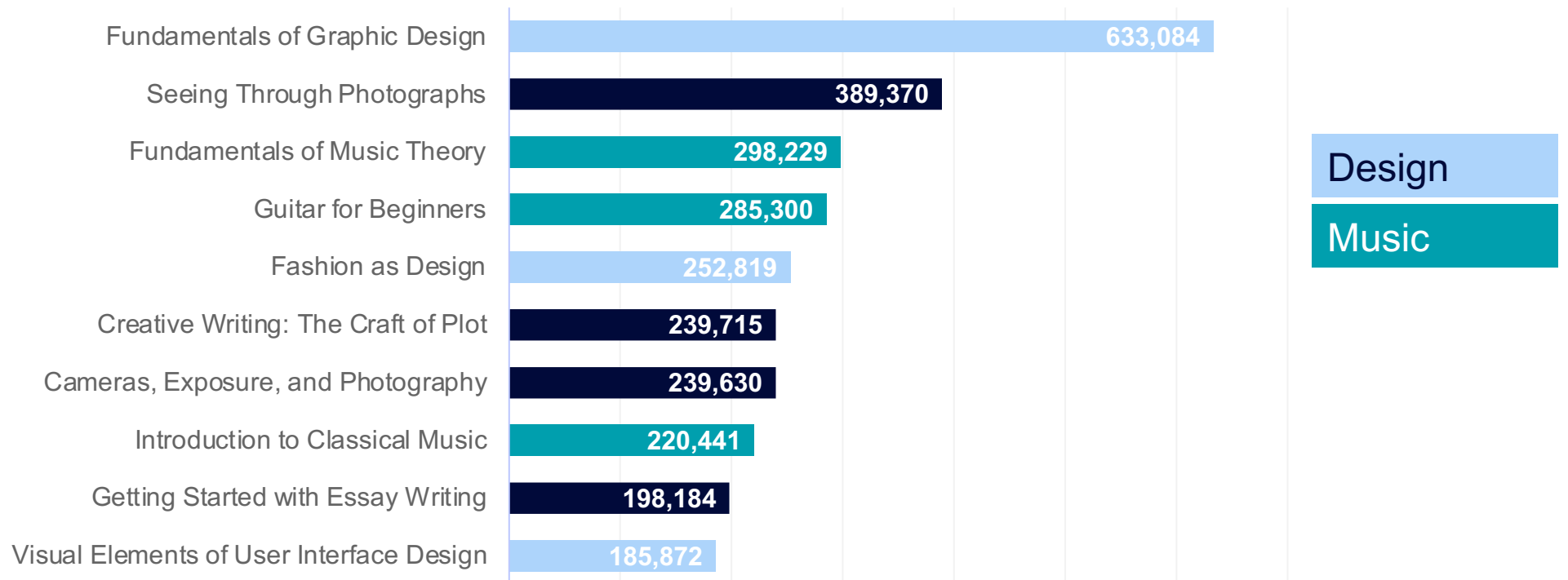
Coursera Category: Music and Arts (10th Highest Cumulative Enrollment)

Graphic Design has had the largest enrollment in the music and arts category,.

Highest Cumulative Enrollment, Music and Arts Category
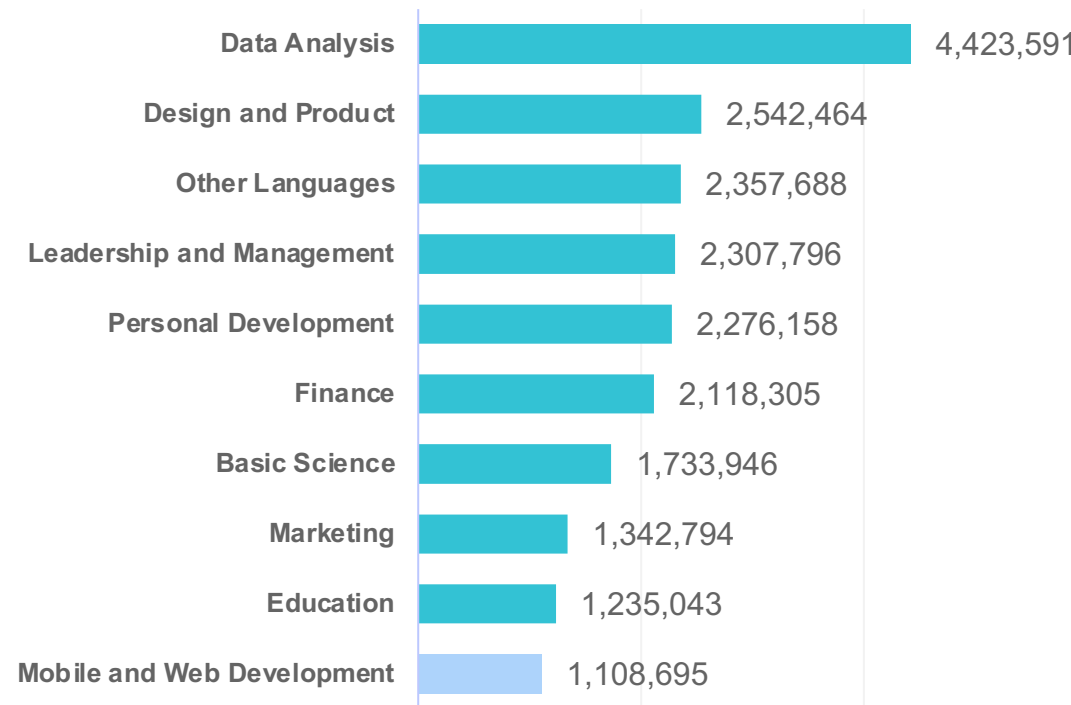September 2022

Course	Enrollment
Fundamentals of Graphic Design	633,084
Seeing Through Photographs	389,370
Fundamentals of Music Theory	298,229
Guitar for Beginners	285,300
Fashion as Design	252,819
Creative Writing: The Craft of Plot	239,715
Cameras, Exposure, and Photography	239,630
Introduction to Classical Music	220,441
Getting Started with Essay Writing	198,184
Visual Elements of User Interface Design	185,872

Design
Music

Source: Gray's Non-Degree Demand: Coursera

Coursera: Fastest-Growing Categories

Only two tech categories are among the 10 fastest-growing.

Fastest Cumulative Enrollment Growth
September 2022 Year-over-Year Unit Change

Category	Unit Change
Data Analysis	4,423,591
Design and Product	2,542,464
Other Languages	2,357,688
Leadership and Management	2,307,796
Personal Development	2,276,158
Finance	2,118,305
Basic Science	1,733,946
Marketing	1,342,794
Education	1,235,043
Mobile and Web Development	1,108,695

Source: Gray's Non-Degree Demand: Coursera

Agenda

What is a Program Evaluation System?
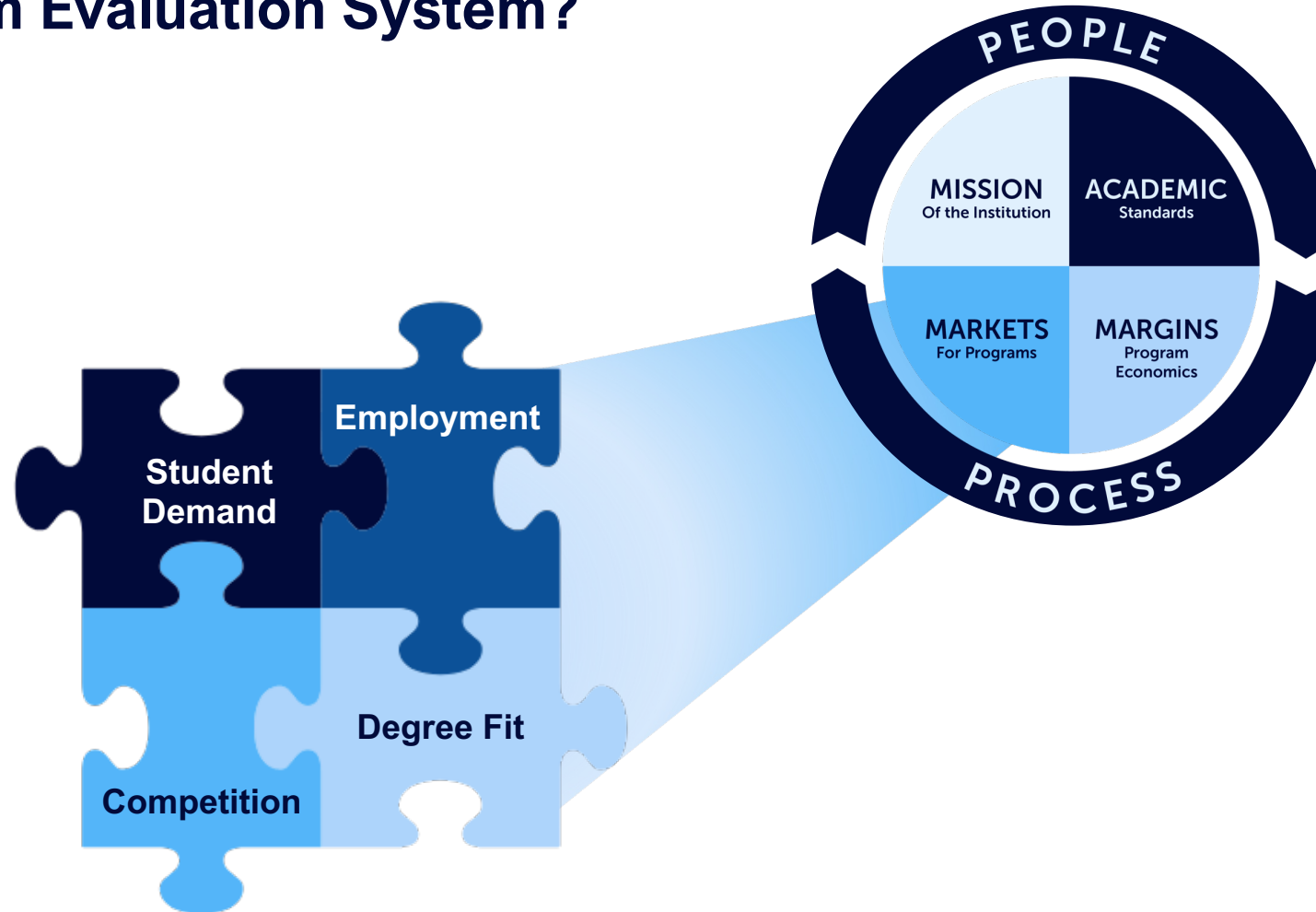
Program Markets: Program Rank

We score on Student Demand, Employment, Competitive Intensity, and Degree Fit.

- Let's focus on the national market for Animal Sciences

US Program Ranking
Bachelor's Programs

CIP	Total Percentile	Student Demand Percentile	Competitive Intensity Percentile	Employment Percentile	Degree Fit Percentile
51.3801 Registered Nursing	100	100	96	97	50
11.0701 Computer Science	99	100	21	92	50
14.1901 Mechanical Engineering	99	99	84	99	50
52.0201 Business Admin. and Mgmt, General	99	99	84	92	50
26.0101 Biology/Biological Sciences, Gen'l	99	99	84	88	50
52.0801 Finance, General	99	99	40	99	50
11.0103 Information Technology	99	99	21	92	50
52.0301 Accounting	99	99	8	98	50
52.1401 Marketing/Marketing Mgmt, General	99	99	3	84	50
14.0501 Bioengineering and Biomedical Engineering	99	98	93	94	50
14.0801 Civil Engineering, General	99	98	84	99	50
45.0601 Economics, General	99	98	32	96	50
14.1001 Electrical/Electronics Engin'g	99	98	21	98	50
01.0901 Animal Sciences, General	99	96	99	82	50
14.0201 Aero/Astro/Space Engineering	99	96	98	99	50
45.0603 Econometrics and Quantitative Economics	99	96	97	95	50
14.0701 Chemical Engineering	99	92	98	96	50
11.1003 Cyber Security/Info. Assurance	98	99	1	76	50
45.1001 Political Science and Gov't, Gen'l	98	98	14	84	50

Source: Gray's PES Markets

Program Scorecard: Percentiles

All data are color-coded by their percentile rank in the local market compared to over 1,400 IPEDS programs (CIP codes).

Percentile Color-Code:

<40%	40%+	70%+	90%+	95%+	98%+
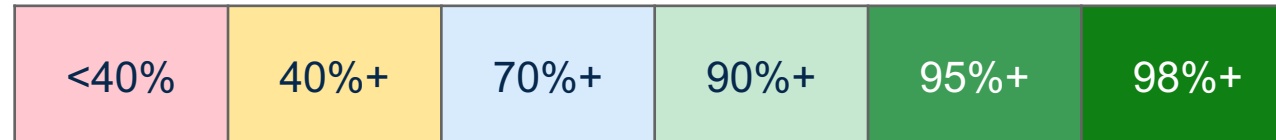
Program Scorecard: Student Demand

Animal Sciences scores in the 96th percentile for Student Demand.

- New student enrollment and completions are high and growing.
  - Enrollment grew six percent year-over-year.
  - Completions grew four percent.

- International demand for Animal Sciences is in the 94th percentile.

- Google search volume is fair.
  - It grew 11% year-over-year.

Student Demand
Score: 20 Percentile: 96

Catego...	Pctl	Criterion	Value	Score
Size	74	Google Search Volume (3 Months)*	40,770	0
	94	International Page Views (12 Months)	635	NS
	97	New Student Enrollment Volume (12 Mo.)	5,751	6
	96	On-ground Completions at In-Market Institutions	6,453	3
	83	Online Completions by In-Market Students	43	1
	95	Sum of On-ground and Online Completions	6,496	3
Growth	75	Google Search YoY Change (Units)*	4,180	1
	98	New Student Enrollment Vol. YoY Change (Units)	340	3
	96	Completion Volume YoY Change (Units)	248	3
	59	Google Search YoY Change (%)*	11%	0
	62	New Student Enrollment Vol. YoY Change (%)	6%	0
	62	Completion Volume YoY Change (%)	4%	0

Source: Gray's PES Markets

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Program Scorecard: Employment

Animal Sciences ranks in the 82nd percentile for Employment.

- Job volume is moderate for direct prep opportunities but strong as reported by the American Community Survey.
  - Over the past three years, BLS jobs increased by 2%.

- Job postings per graduate are low.

- Wages are poor.

Source: PES Markets

Employment*
Score: 4 Percentile: 82

Category	Pctl	Criterion	Value	Score
Size: Direct Prep	64	Job Postings Total (12 Months)*	3,813	0
	65	BLS Current Employment*	17,397	0
	67	BLS Annual Job Openings*	1,902	NS
Size: ACS Bach. Outcomes	91	Job Postings Total (12 Months)*	18,906	NS
	92	BLS Current Employment*	87,611	NS
Growth (Direct Prep)	36	BLS 1-Year Historical Growth*	-5.0%	NS
	62	BLS 3-Year Historic Growth (CAGR)*	1.6%	0
	73	BLS 10-Year Future Growth (CAGR)*	0.9%	0
Saturation (Direct Prep)	32	Job Postings per Graduate*	0.5	-1
	41	BLS Job Openings per Graduate*	0.3	NS
Wages (Direct Prep)	23	BLS 10th-Percentile Wages*	$31,778	NS
	17	BLS Mean Wages*	$46,815	NS
National American Community Survey Bachelor's Degree Outcomes	23	Wages (Age < 30)	$38,833	0
	54	Wages (Age 30-60)	$90,016	2
	53	% with Any Graduate Degree	40%	NS
	16	% with Masters	16%	NS
	88	% with Doct/Prof Degree	23%	NS
	19	% Unemp. (Age <30)**	2%	2
	19	% Unemp. (Age 30-60)**	1%	1
	67	% in Direct Prep Jobs	13%	NS

For the three months ending in September, job postings for a Bachelor's in Animal Sciences decreased 11%.*
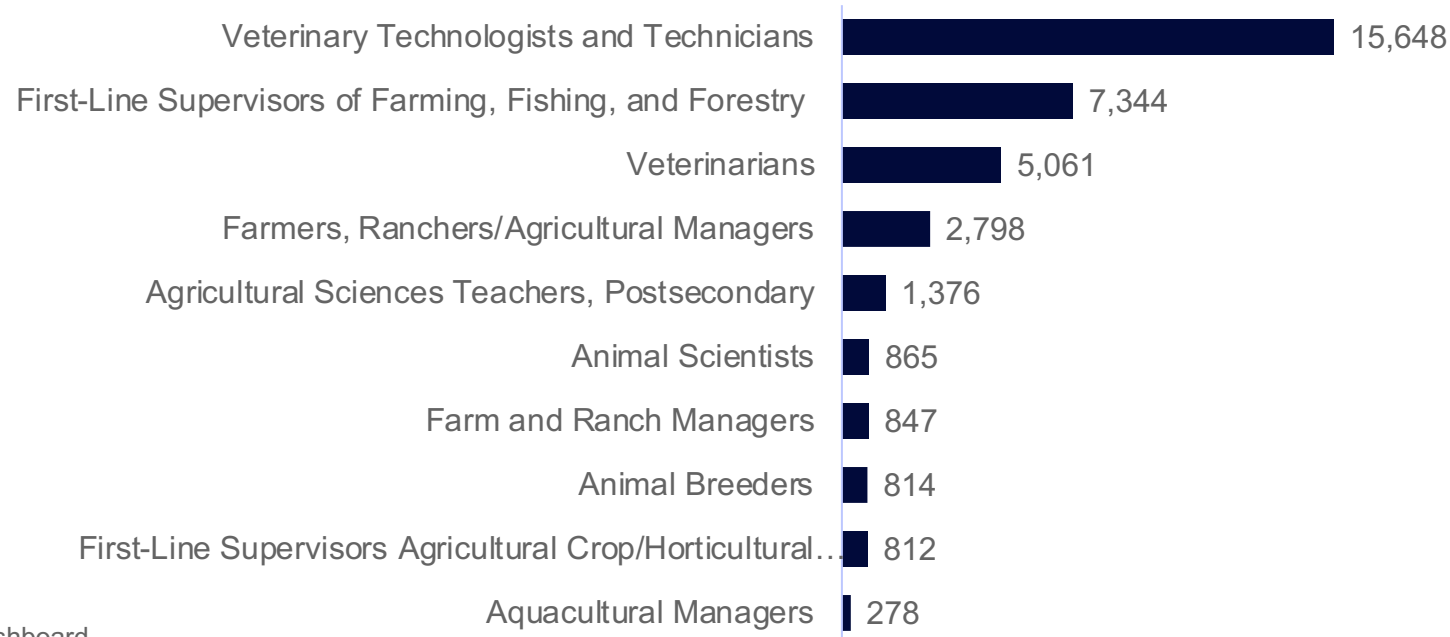
Job Postings Volume, Animal Science
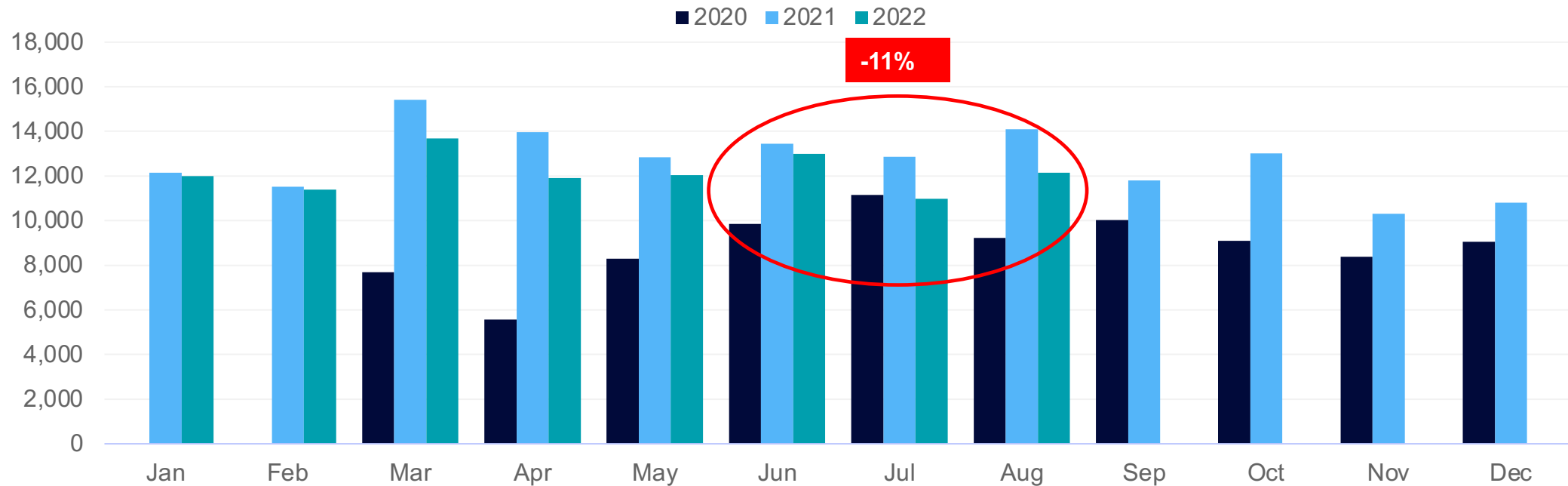
. *June – August 2022
Source: PES Job Postings Dashboard

Job Postings: Animal Sciences

Vet techs and supervisors of farming, fishing, and forestry were in high demand.

Highest Volume Job Postings
Animal Sciences
Trialing Three Months 2022

Veterinary Technologists and Technicians	15,648
First-Line Supervisors of Farming, Fishing, and Forestry	7,344
Veterinarians	5,061
Farmers, Ranchers/Agricultural Managers	2,798
Agricultural Sciences Teachers, Postsecondary	1,376
Animal Scientists	865
Farm and Ranch Managers	847
Animal Breeders	814
First-Line Supervisors Agricultural Crop/Horticultural…	812
Aquacultural Managers	278

. *June – August 2022
Source: PES Job Postings Dashboard

Education Crosswalks

Direct Prep is a common fallacy.

- NCES and many analysts presume that graduates go into fields for which they are directly prepared. However,

"The [NCES] CIP SOC Crosswalk is not based on actual empirical data."[1]

- For 893 programs, fewer than 20% of graduates go into fields for which they were directly prepared.

- There is only one program where over 80% of graduates work in the fields for which they were directly prepared.

Count of Programs by Percentage of Graduates Entering Fields for Which They Were Directly Prepared[2]
(Programs with over 100 Completions)

Percent of Graduates in Direct Prep Fields
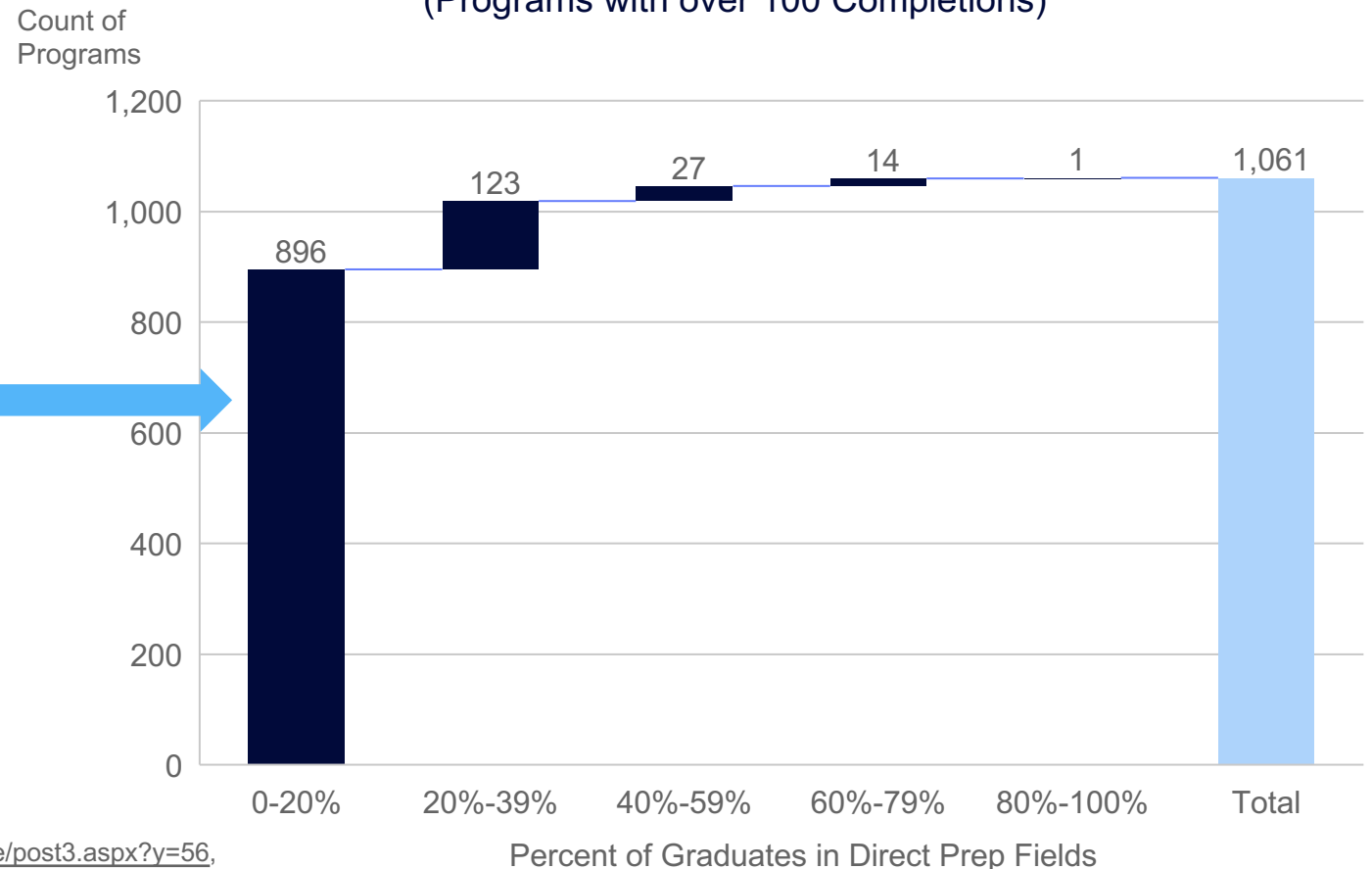
1. Source: IES NCES: "CIP SOC Crosswalk", July, 2021 https://nces.ed.gov/ipeds/cipcode/post3.aspx?y=56,
2. US Census, American Community Survey, Gray Analysis

NCES CIP 2020 to SOC 2018 Crosswalk

What NCES thinks Animal Sciences majors do…

Animal Sciences,
General

CIP 01.0901

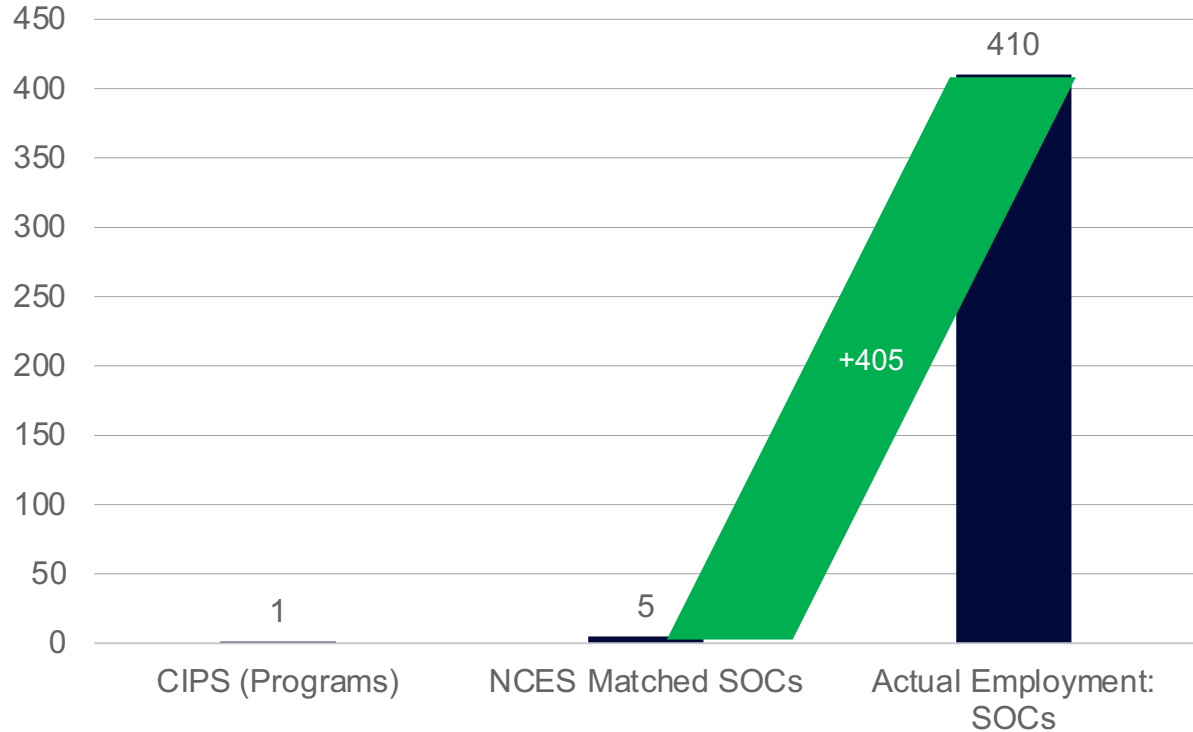Farmers, Ranchers, and Other Agricultural Managers

Animal Scientists

Agricultural Technicians
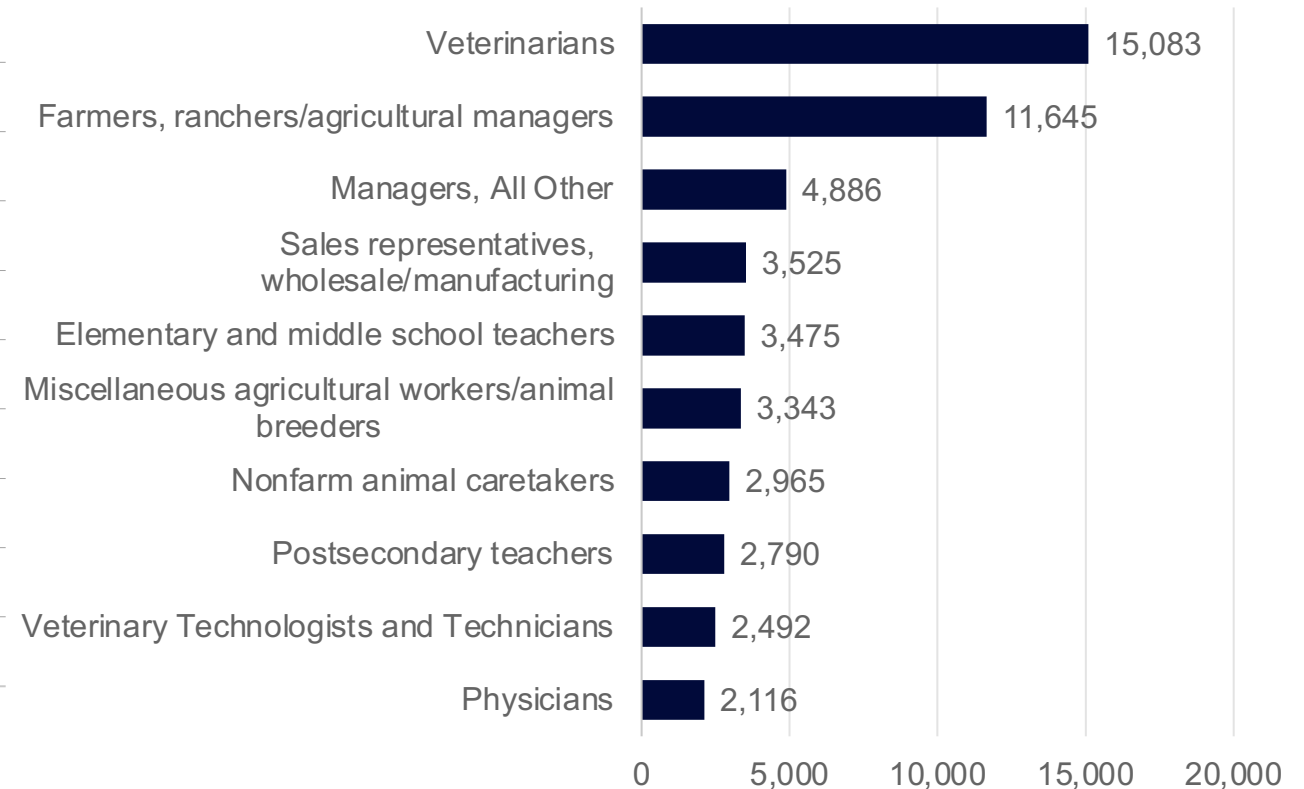
Agricultural Sciences Teachers, Postsecondary

Farm and Home Management Educators

Source: IES NCES: "CIP SOC Crosswalk", July, 2021
https://nces.ed.gov/ipeds/cipcode/post3.aspx?y=56,

Reality: Animal Sciences majors work in 410 SOCs and earn $87,163 on average.

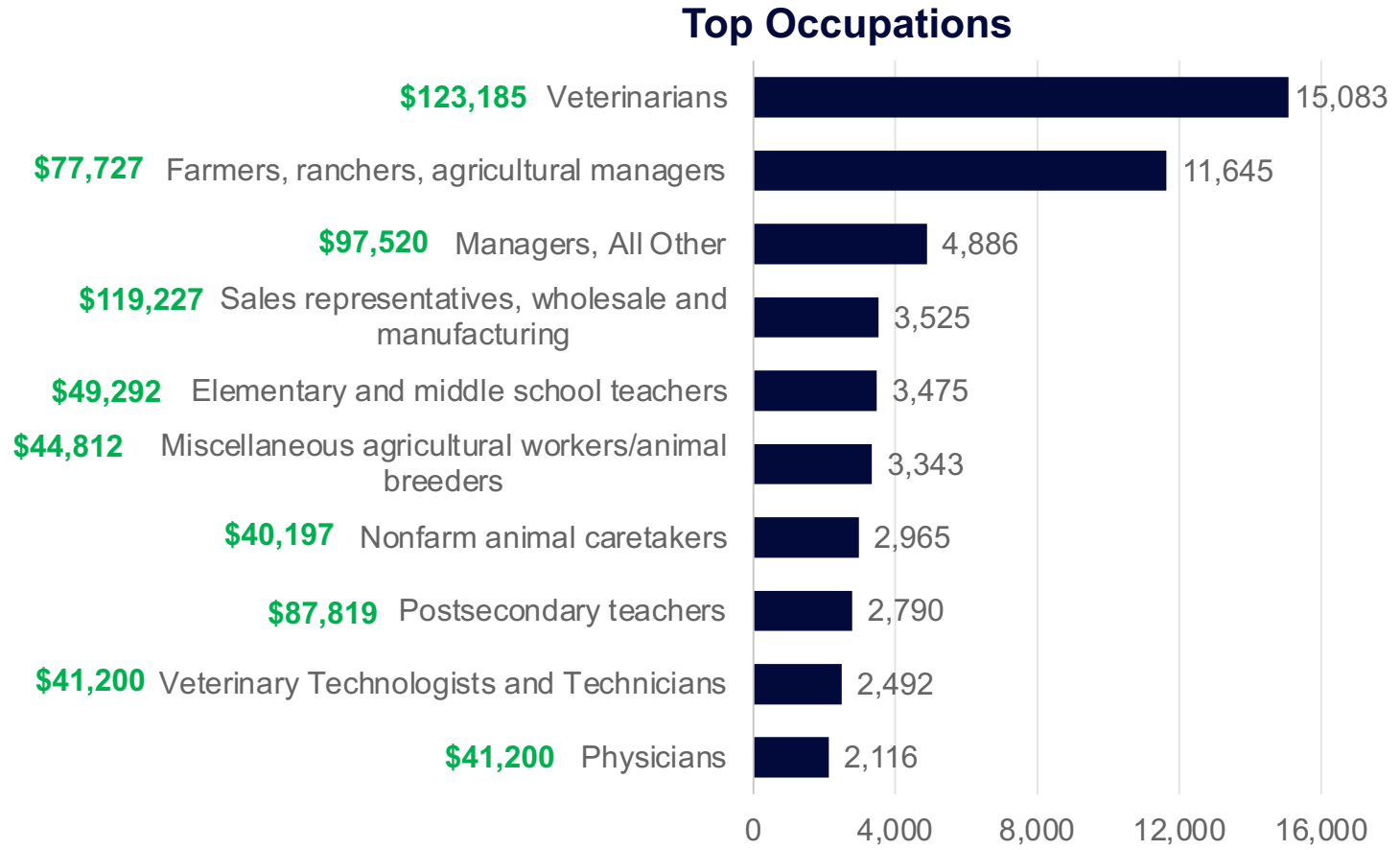## Count of Programs and Occupations
CIP 01.0901 Animal Sciences

Top Occupations, Animal Sciences Majors, Ages 30-60

Occupation	Value
Veterinarians	15,083
Farmers, ranchers/agricultural managers	11,645
Managers, All Other	4,886
Sales representatives, wholesale/manufacturing	3,525
Elementary and middle school teachers	3,475
Miscellaneous agricultural workers/animal breeders	3,343
Nonfarm animal caretakers	2,965
Postsecondary teachers	2,790
Veterinary Technologists and Technicians	2,492
Physicians	2,116

Source: U.S. Census, American Community Survey

Animal Sciences Top Occupations with Average Mid-Life Income

Top Occupations

Average Income

Average Income	Occupation	Count
$123,185	Veterinarians	15,083
$77,727	Farmers, ranchers, agricultural managers	11,645
$97,520	Managers, All Other	4,886
$119,227	Sales representatives, wholesale and manufacturing	3,525
$49,292	Elementary and middle school teachers	3,475
$44,812	Miscellaneous agricultural workers/animal breeders	3,343
$40,197	Nonfarm animal caretakers	2,965
$87,819	Postsecondary teachers	2,790
$41,200	Veterinary Technologists and Technicians	2,492
$41,200	Physicians	2,116

Program Scorecard: Competitive Intensity

Animal Sciences has relatively low Competitive Intensity.

- 85 institutions graduate Animal Sciences students.
  - Only one institution offers this program online.

- Average and median program sizes are very high, although median size dropped by 2 year-over-year.

- The Google Competition Index is favorable.

Competitive Intensity
Score: 9 Percentile: 99

Category	Pctl	Criterion	Value	Score
Volume of In-Market Competition	89	Campuses with Graduates**	85	-2
	13	Campuses with Grads YoY Change (Units)**	-2	0
	83	Institutions with Online In-Market Students**	2	NS
In-Market Program Sizes	98	Average Program Completions	76	6
	99	Median Program Completions	66	6
	34	YoY Median Prog. Compl. Change (Units)	-2	0
	54	YoY Median Prog. Compl. Change (%)	-3%	0
In-Market Saturation	62	Google Search * Cost per Click**	$6	-1
	29	Google Competition Index**	0.28	0
National Online Competition	76	National Online Institutions (Units)**	1	NS
	57	Nat'l Online % of Institutions	1%	NS
	60	Nat'l Online % of Completions	1%	NS

Source: PES Markets

Program Scorecard: Degree Fit

A bachelor's degree is an appropriate award level for Animal Sciences.

- 88% of completions are at the bachelor's level.

- 21% of the national workforce have a bachelor's degree.

- However, a doctoral degree is required to become a vet.

National Completions by Level
Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)
Certificate	1%	1%	0%
Associates	3%	3%	4%
Bachelors	88%	88%	94%
Postbaccalaureate Certificate	0%	0%	0%
Masters	6%	6%	1%
Post-masters Certificate	0%	0%	0%
Doctoral	2%	2%	1%
Unknown	0%	0%	0%

National Workforce Ed. Attainment
Score: 0

Award Level	BLS Educational Attainment
No College	33%
Some College	18%
Associates	18%
Bachelors	21%
Masters	6%
Doctoral	5%

Source: PES Markets

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Demographics

In 2020, women made up 82% percent of completions for Animal Sciences.
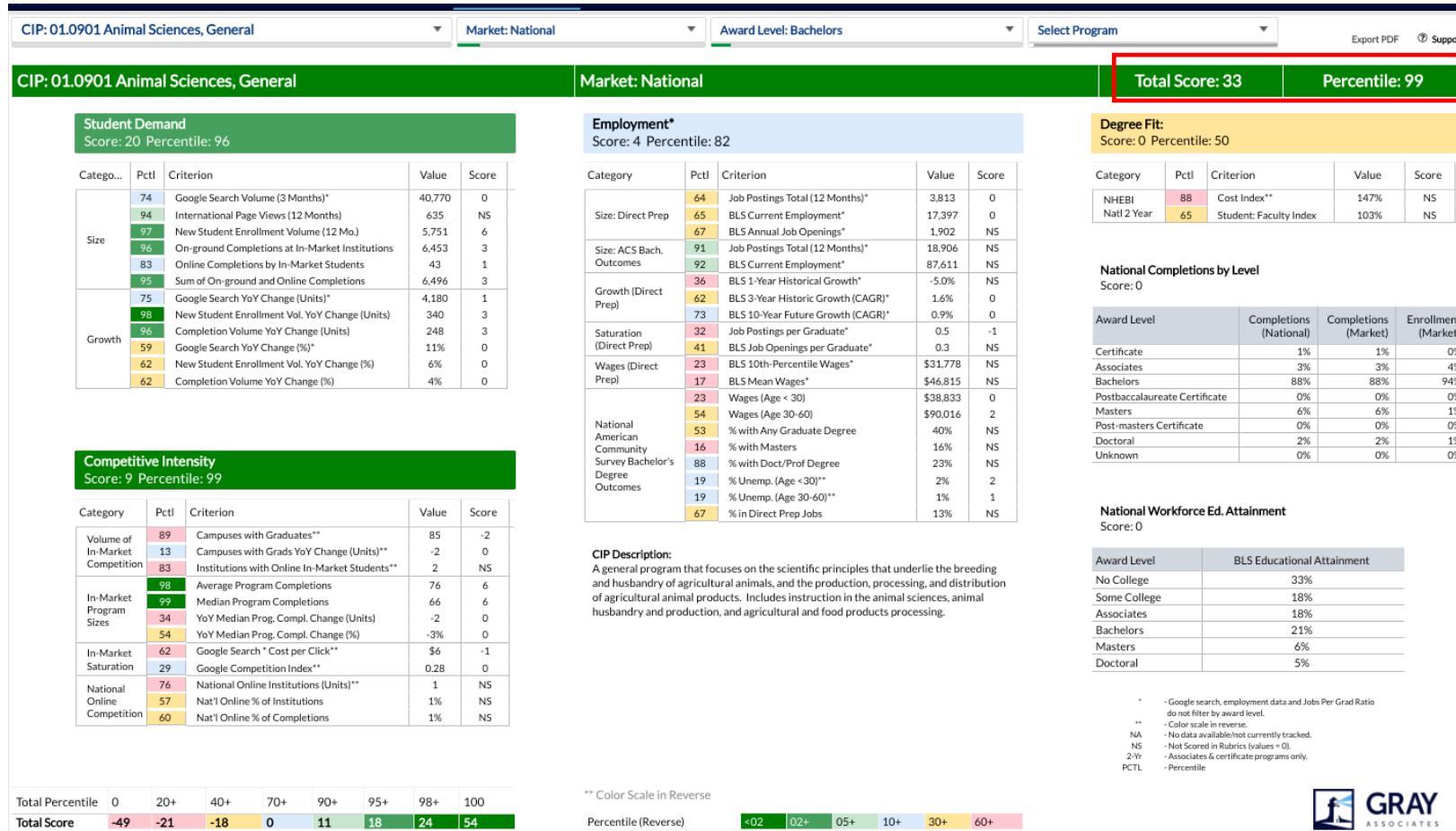
- After Whites, Hispanics had the highest percentage of completions.

2020 Completions by Demographic Group
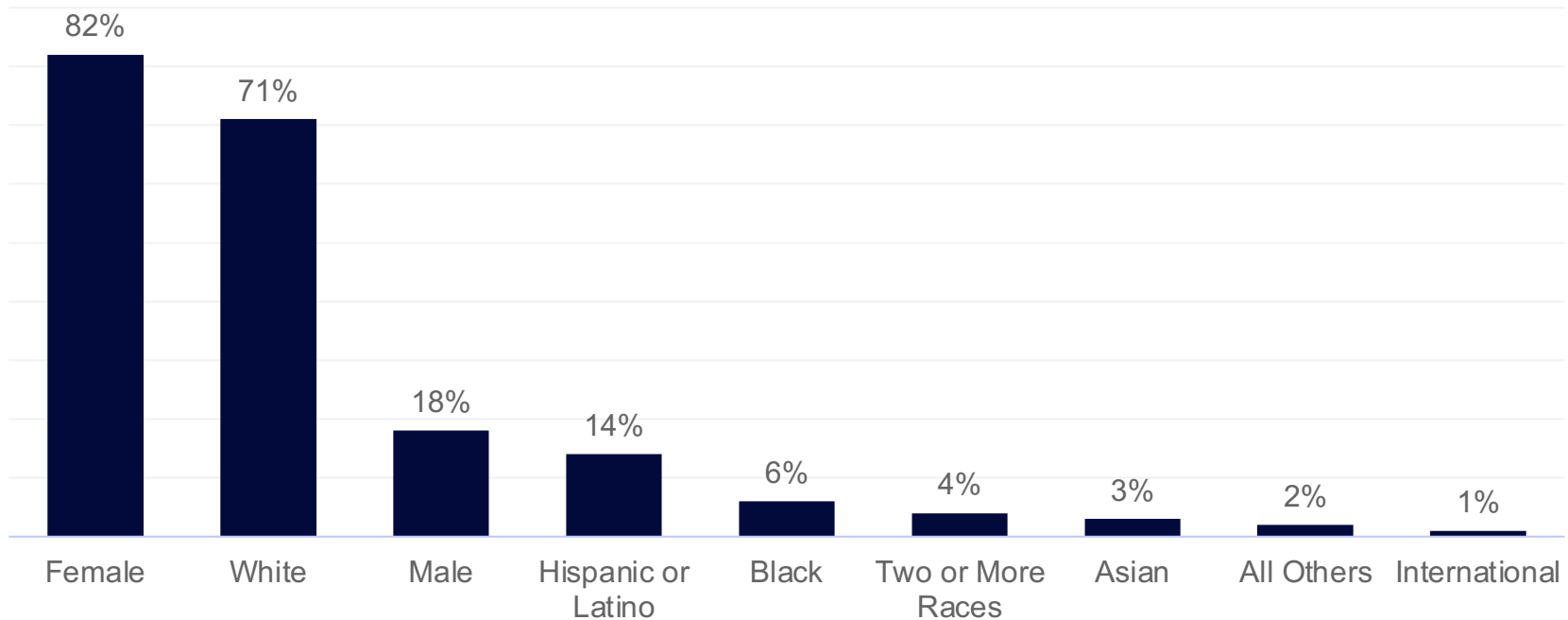
Source: Gray's PES Markets

Program Scorecard: Animal Sciences ranks in the 99th percentile.

Source: Gray's PES Markets

Agenda

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Summary

- In September, US Google searches for academic programs increased 16% year-over-year.

- However, enrollment declined 5-7% (bachelor's and master's programs)
  - This could suggest weak near-term growth, but strong longer-term growth as searchers become students.

- In Spring 2022, Computer Science had the fastest year-over-year bachelor's degree enrollment growth.
  - At the master's level, Information Science grew the fastest.

- Registered Nurses had the highest volume of job postings for bachelor's and above graduates.
  - Tax Preparers grew the fastest year-over-year.

- Demand for Animal Sciences programs at the bachelor's level is high.
  - Student demand is very high.
  - Jobs per graduate and wages are very low, however, many Animal Sciences graduates go into other fields.
  - There are signs that the market for this program is not saturated.

Upcoming Webinars

Topic	Date
Demand Trends Webcast: Community Colleges	*Wednesday* November 16th at 2 pm ET
Demand Trends Webcast: Bachelor's and Above	*Thursday* November 17th at 2 pm ET

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