GRAY
ASSOCIATES

Demand for Higher Education Programs

Results through July 2022
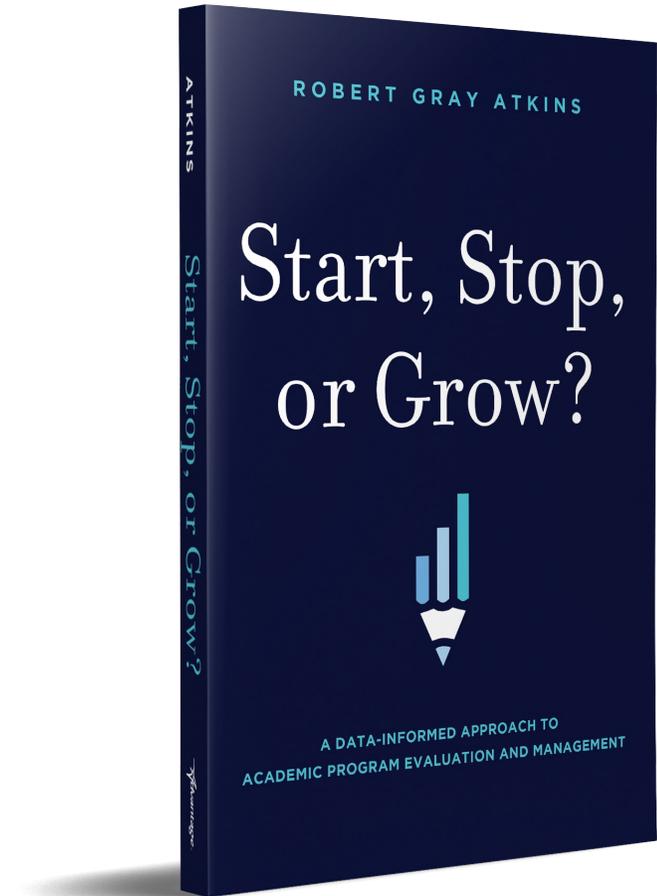
Gray has developed a complete Program Evaluation System.

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.

Agenda

Google Search Trends: Programs

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

U.S. Google Search Volume

■ 2021 ■ 2022

2022

2021

20,000,000

15,000,000

10,000,000

5,000,000

0

Jan   Feb   Mar   Apr   May   Jun   Jul   Aug   Sep   Oct   Nov   Dec

Source: Gray's Keyword Search Data Dashboard

GRAY ASSOCIATES

Google Search Trends: Programs

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

U.S. Google Search Volume

Google

■ 2021 ■ 2022

+16% YoY
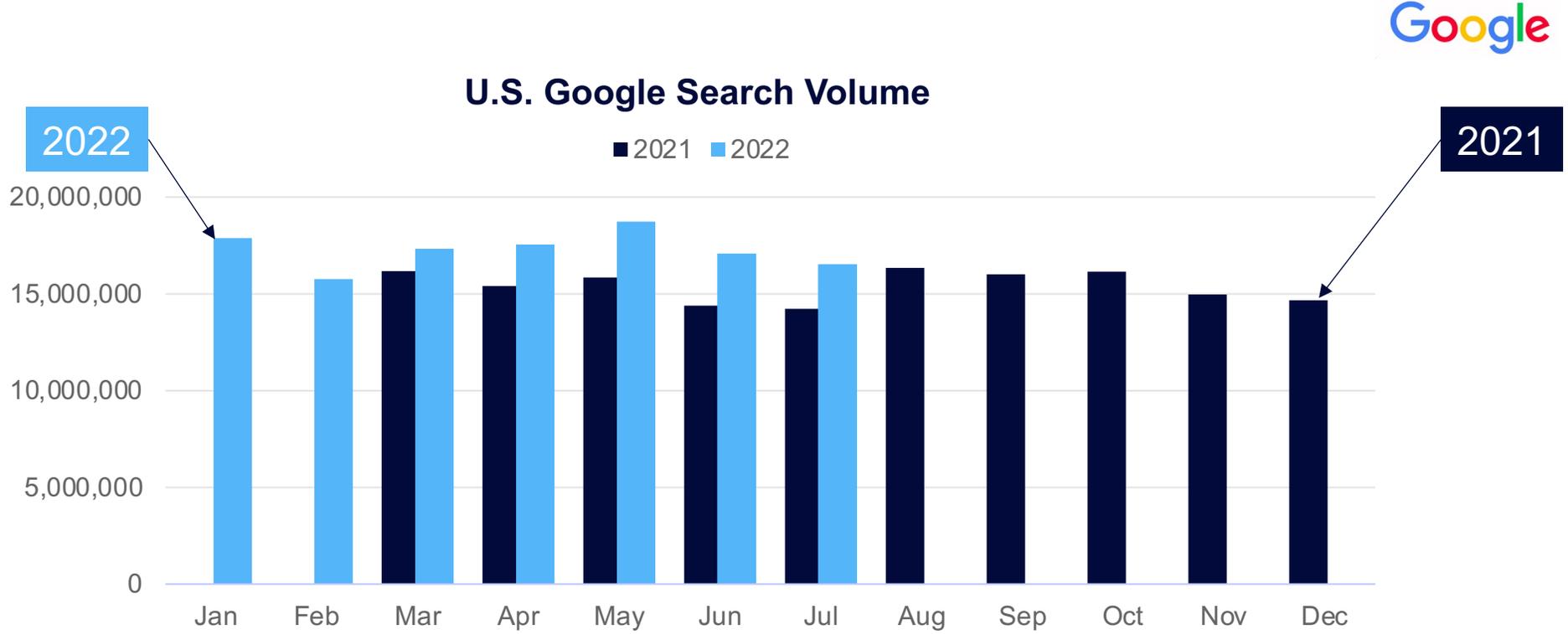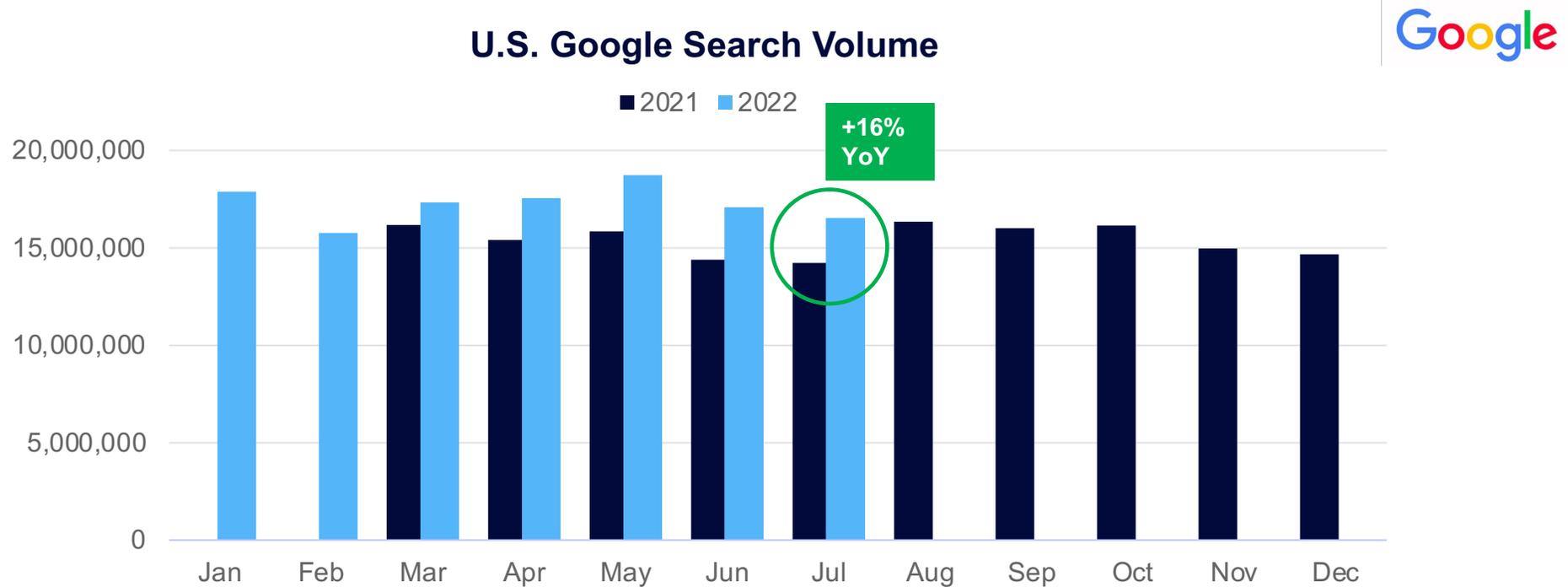
Source: Gray's Keyword Search Data Dashboard

Google: U.S. Top Bachelor's Programs

In July, Registered Nursing had the highest search volume.

Google

Programs with the Highest Volume of Keyword Searches
July 2022
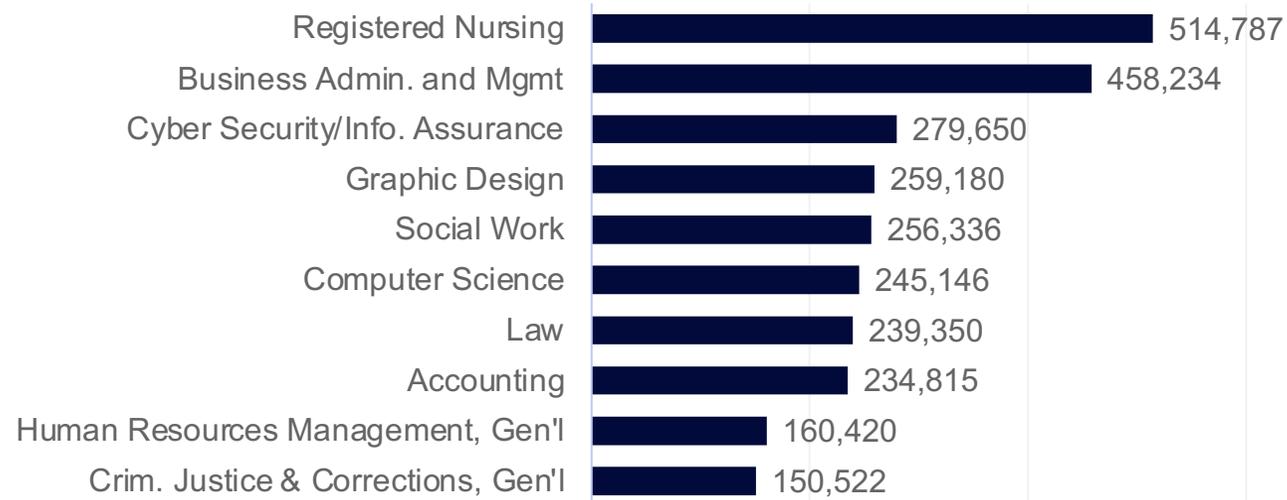
| Program	Searches
Registered Nursing	514,787
Business Admin. and Mgmt	458,234
Cyber Security/Info. Assurance	279,650
Graphic Design	259,180
Social Work	256,336
Computer Science	245,146
Law	239,350
Accounting	234,815
Human Resources Management, Gen'l	160,420
Crim. Justice & Corrections, Gen'l	150,522

Google search volume for standardized sets of academic keywords for community college programs.
Source: Gray's Keyword Search Data Dashboard

Google: U.S. Fastest-Growing Programs

In July, searches for Cyber Security programs increased 140%.
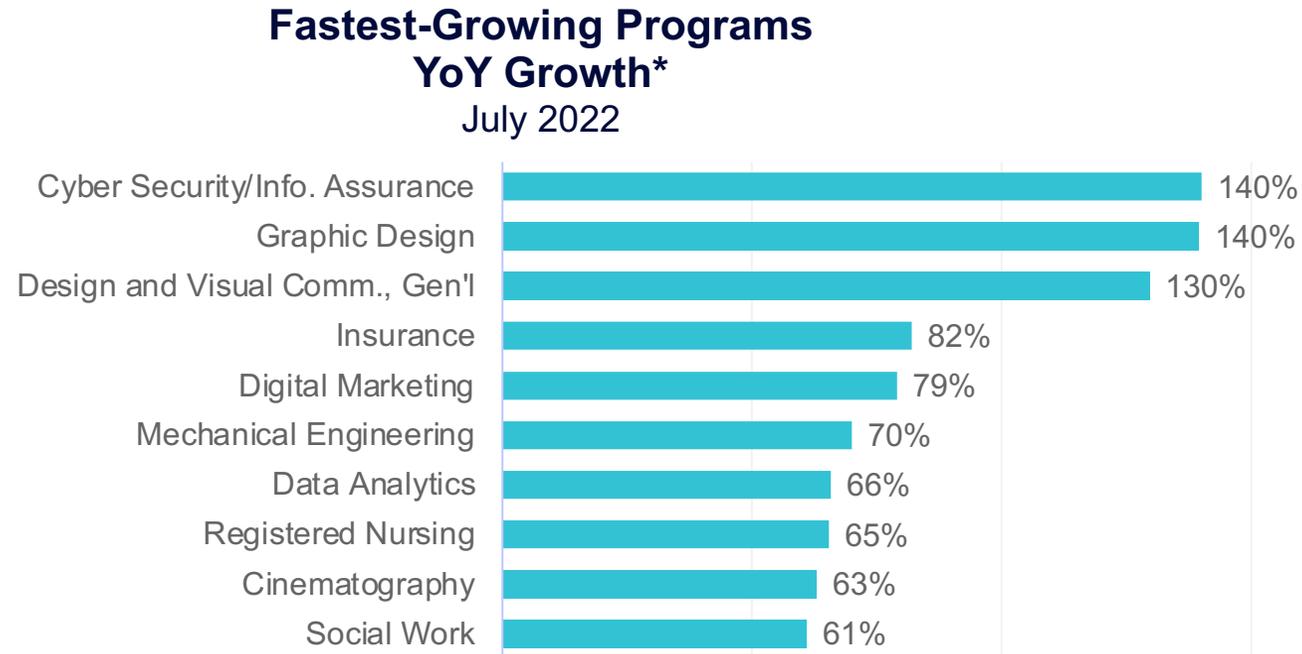
**Fastest-Growing Programs
YoY Growth***
July 2022

Program	Growth
Cyber Security/Info. Assurance	140%
Graphic Design	140%
Design and Visual Comm., Gen'l	130%
Insurance	82%
Digital Marketing	79%
Mechanical Engineering	70%
Data Analytics	66%
Registered Nursing	65%
Cinematography	63%
Social Work	61%

Google search volume for standardized sets of academic keywords for community college programs.
Source: Gray's Keyword Search Data Dashboard   *Minimum 10,000 searches 2021

Agenda

International Student Demand

In July, international student interest in U.S. programs increased 19 percent YoY.

International Page Views

■2020 ■2021 ■2022

+19% YoY

The most-viewed programs were Business and Computer Science.
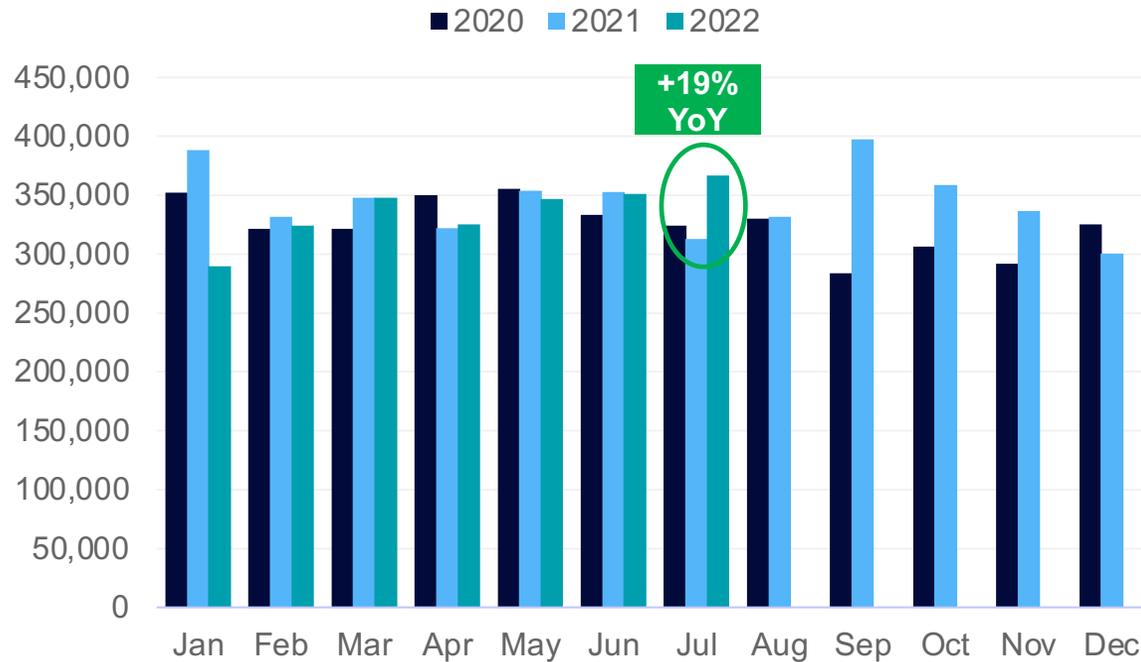
Top 10 Programs
International Page Views

| Program	Views
Business Admin	28,659
Computer Science	13,467
Engineering	13,095
Data Science	10,323
Health Services/Allied Health	8,504
Marketing/Marketing Management	6,150
Public Health	5,581
Biology	5,555
Information Technology	5,481
Linguistics	5,402
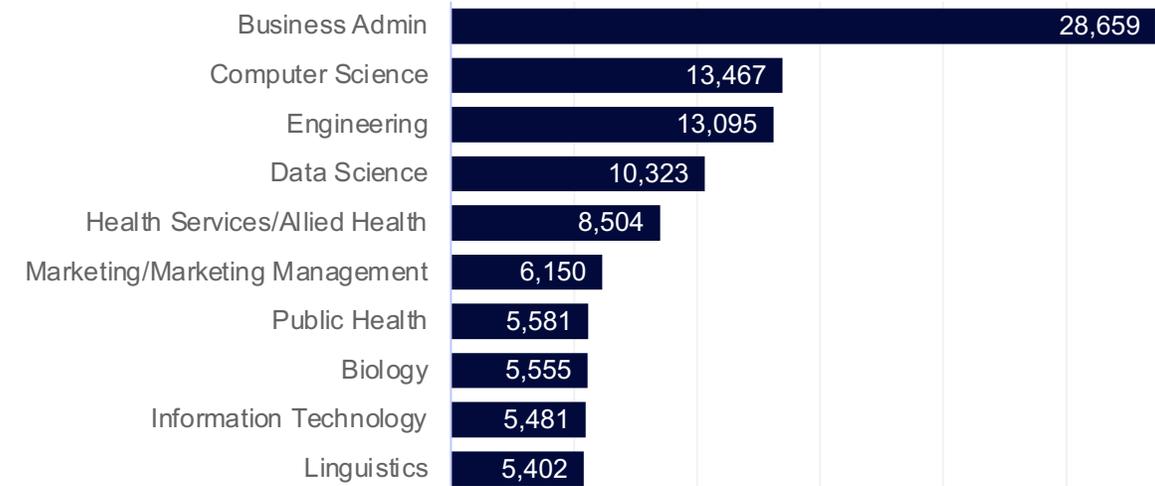
Source: Gray's International Student Demand Data Dashboard

International Page Views: Allied Health (Fifth in Highest Views)

India led in page views for Allied Health.

International Page Views by Originating Country
Allied Health, July 2022

California was the most popular destination, followed by Massachusetts.
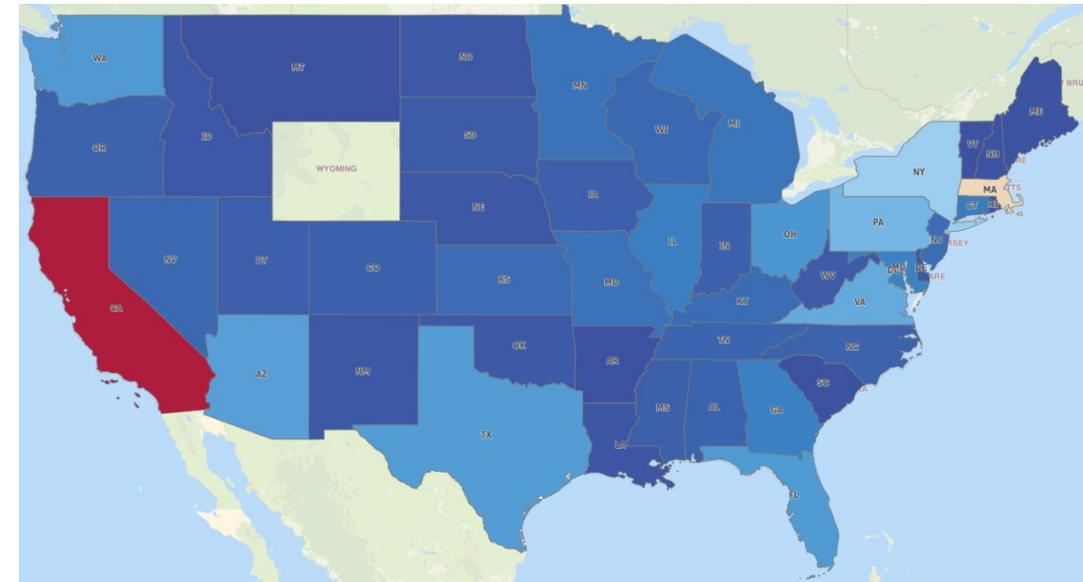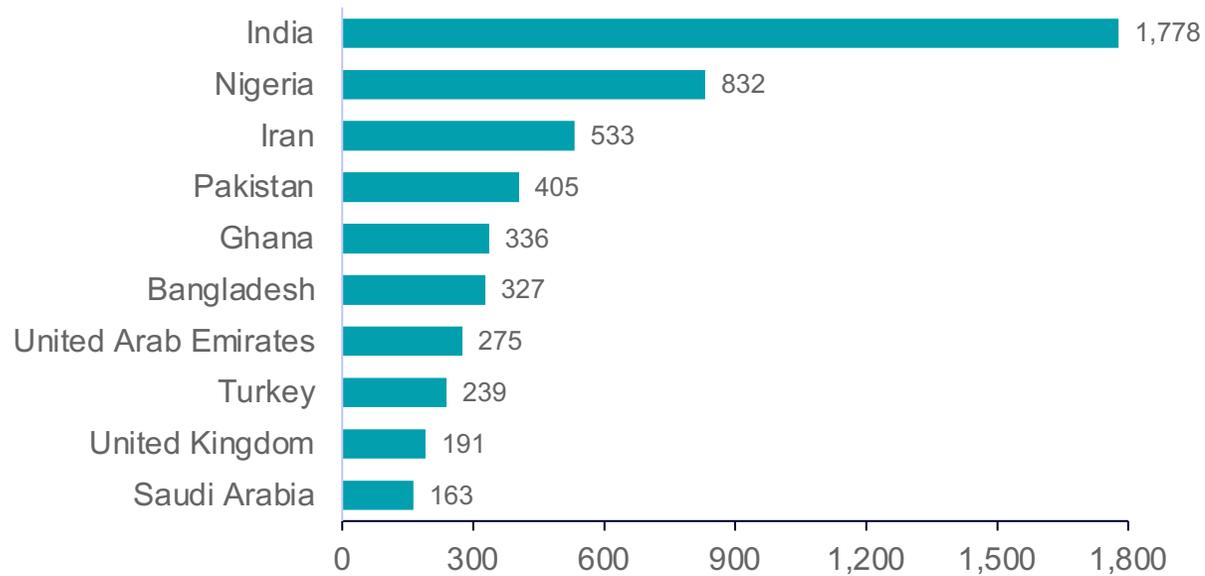
Source: Gray's International Student Demand Data Dashboard

# Agenda

First-Time Enrollment, Bachelor's and Master's Programs

Fall 2021 first-time enrollment is bouncing back from the pandemic.

Fall Bachelor's Enrollment, First-Time Students
2019 - 2021

-11%   +6%

961,447   858,143   911,200

Fall 2019   Fall 2020   Fall 2021
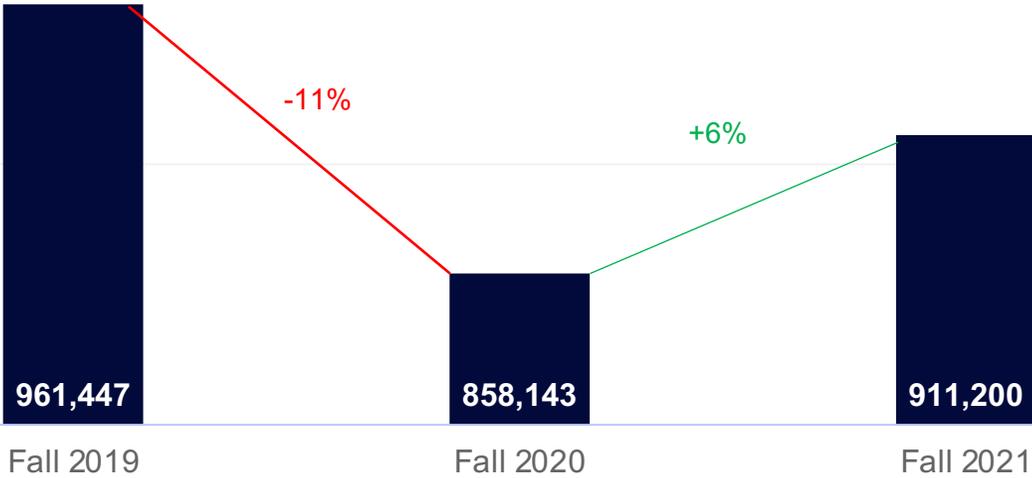
Fall Master's Enrollment, First-Time Students
2019 - 2021

-59%   +217%

57,347   23,632   74,874

Fall 2019   Fall 2020   Fall 2021
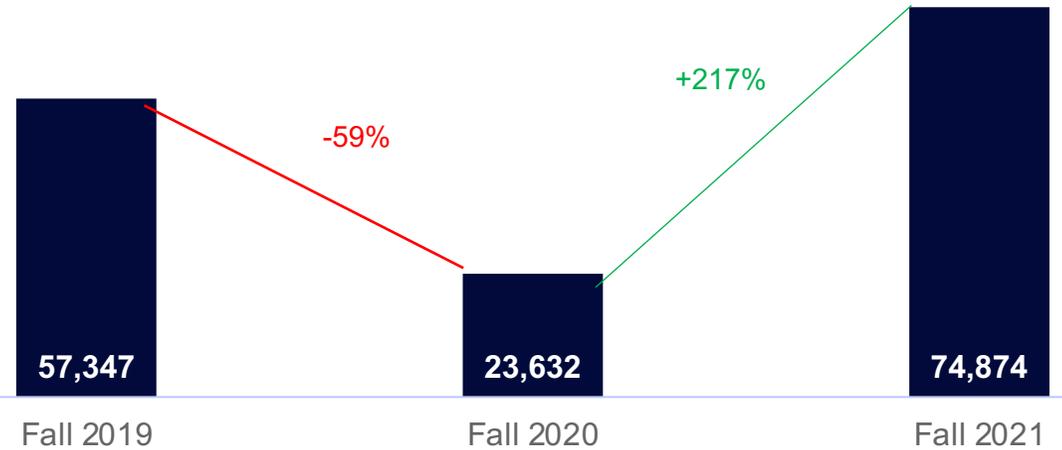
In Fall 2021, Computer Science had the highest first-time enrollment of all master's degree programs.

Highest First-Time Enrollment
Master's Programs
Fall 2021

Program	Enrollment
Computer Science	15,872
Business Analytics	7,409
Business Admin. and Mgmt	4,723
Electrical/Electronics Engin'g	2,835
Information Science/Studies	2,287
Information Technology	2,111
Computer Engineering	1,452
Mechanical Engineering	1,438
Industrial Engineering	1,370
Financial Analytics	1,177
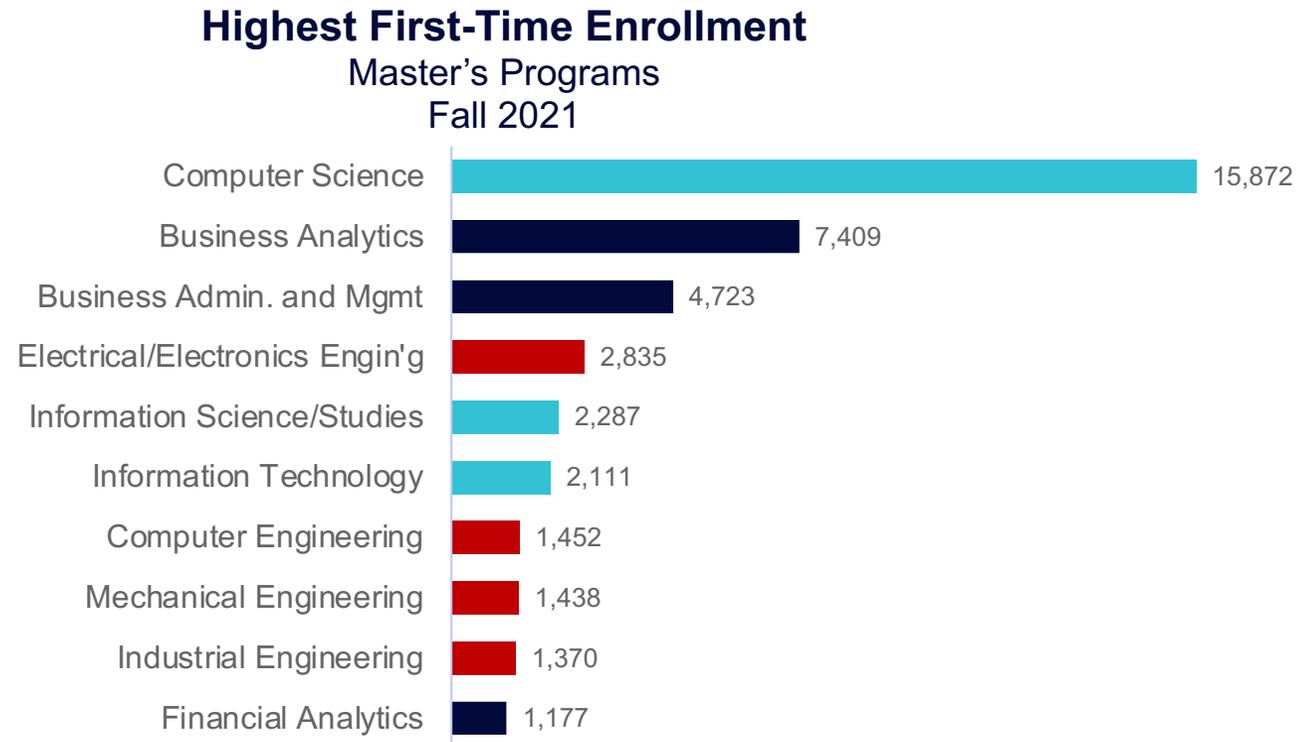
Info Tech
Business
Engineering

*Excluded General Studies and Liberal Arts.
Source: National Student Clearinghouse, Gray Analysis

Computer Science grew 923% year-over-year.*

Fall 2021 Year-Over-Year Change**
First-Time Enrollment
Master's Programs
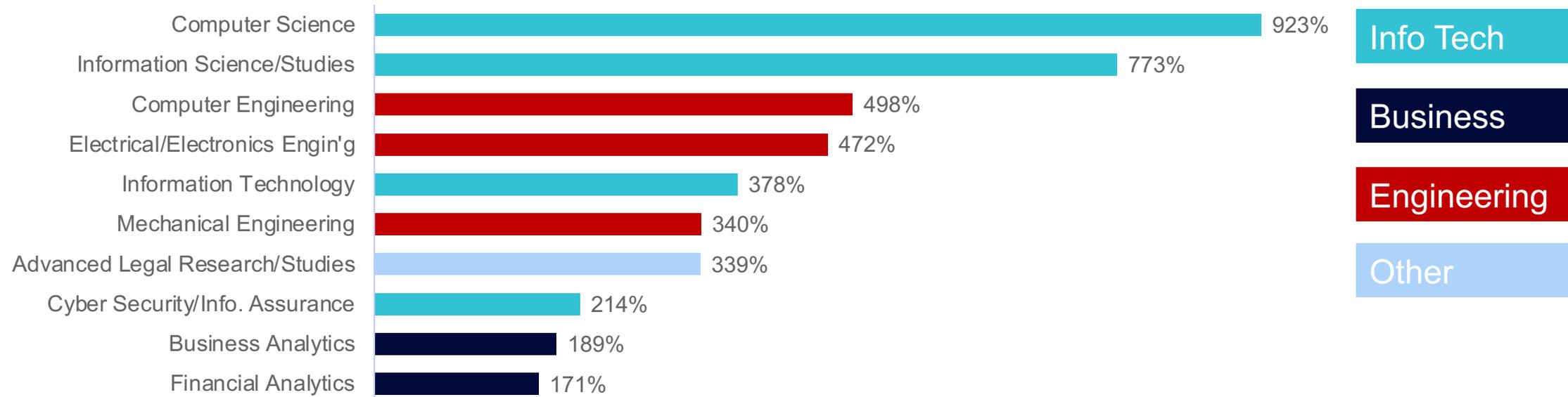
Program	YoY Change
Computer Science	923%
Information Science/Studies	773%
Computer Engineering	498%
Electrical/Electronics Engin'g	472%
Information Technology	378%
Mechanical Engineering	340%
Advanced Legal Research/Studies	339%
Cyber Security/Info. Assurance	214%
Business Analytics	189%
Financial Analytics	171%

Info Tech

Business

Engineering

Other

*Excluded General Studies and Liberal Arts.
Source: National Student Clearinghouse, Gray Analysis

*Minimum 200 first-time enrollees Fall 2020

In Fall 2021, Business had the highest first-time enrollment of all bachelor's degree programs.*
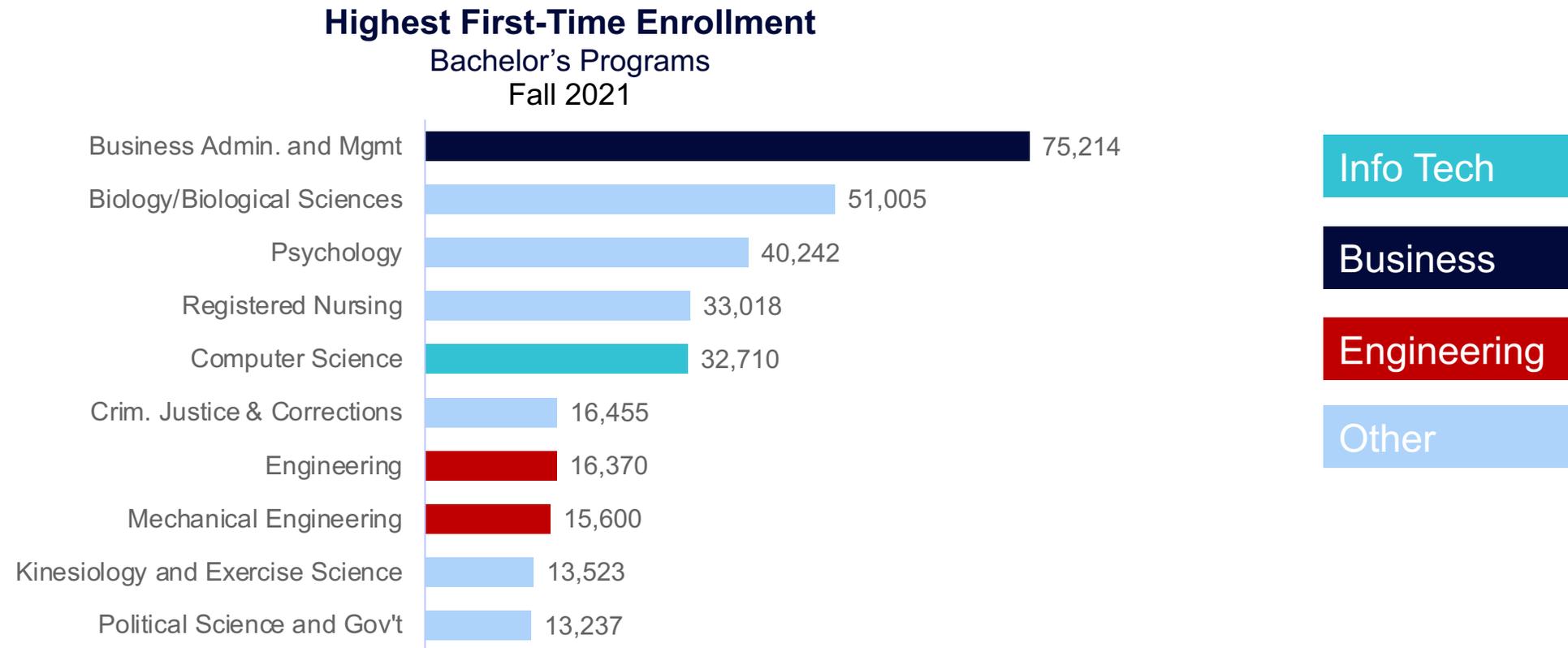
Highest First-Time Enrollment
Bachelor's Programs
Fall 2021

Program	Enrollment
Business Admin. and Mgmt	75,214
Biology/Biological Sciences	51,005
Psychology	40,242
Registered Nursing	33,018
Computer Science	32,710
Crim. Justice & Corrections	16,455
Engineering	16,370
Mechanical Engineering	15,600
Kinesiology and Exercise Science	13,523
Political Science and Gov't	13,237

Info Tech
Business
Engineering
Other

*Excluded General Studies and Liberal Arts.
Source: National Student Clearinghouse, Gray Analysis

Business Analytics grew the fastest.*
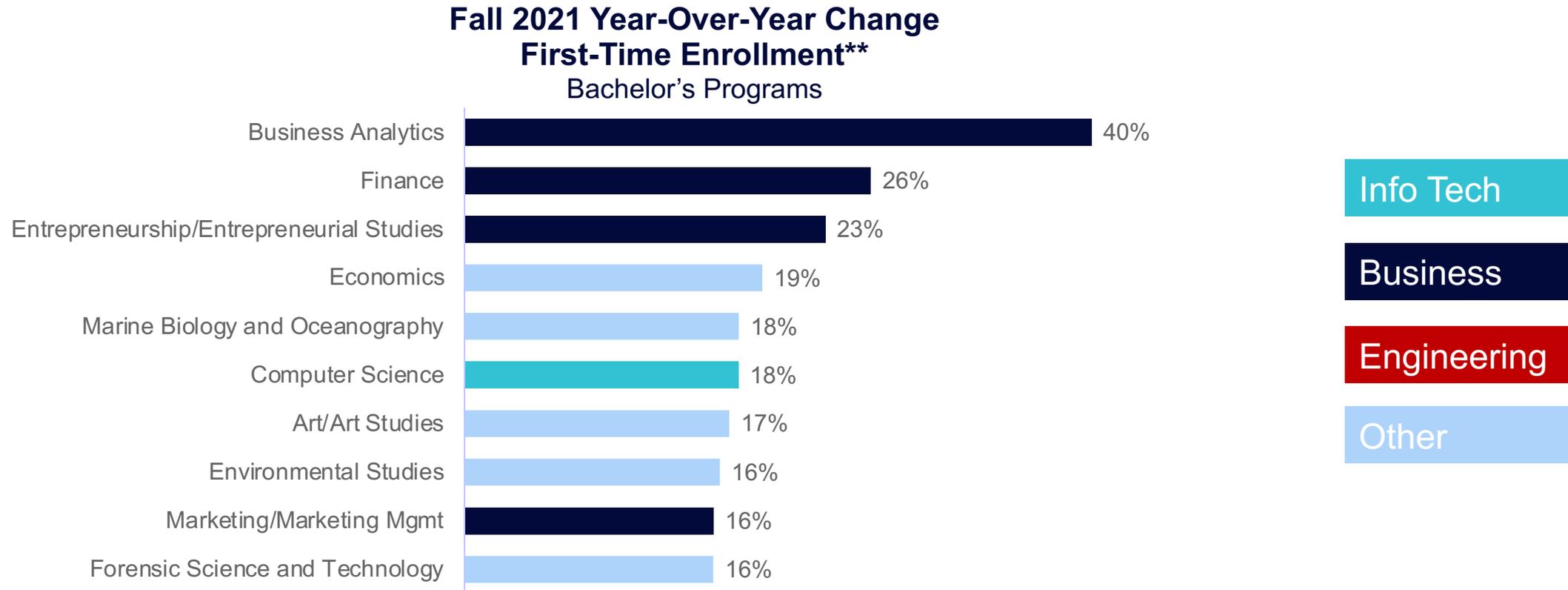
**Fall 2021 Year-Over-Year Change
First-Time Enrollment****
Bachelor's Programs

Program	%
Business Analytics	40%
Finance	26%
Entrepreneurship/Entrepreneurial Studies	23%
Economics	19%
Marine Biology and Oceanography	18%
Computer Science	18%
Art/Art Studies	17%
Environmental Studies	16%
Marketing/Marketing Mgmt	16%
Forensic Science and Technology	16%

Info Tech
Business
Engineering
Other

*Excluded General Studies and Liberal Arts.
Source: National Student Clearinghouse, Gray Analysis

**Minimum 1,000 first-time enrollees Fall 2020

Agenda

In July 2022, job posting volume for bachelor's and above-holders dropped 25% year-over-year. However, postings are still 68% higher than in March 2020 (just before COVID).

U.S. Job Postings by Month
Bachelor's and Above

-25% YoY

Legend: ■ 2020 ■ 2021 ■ 2022
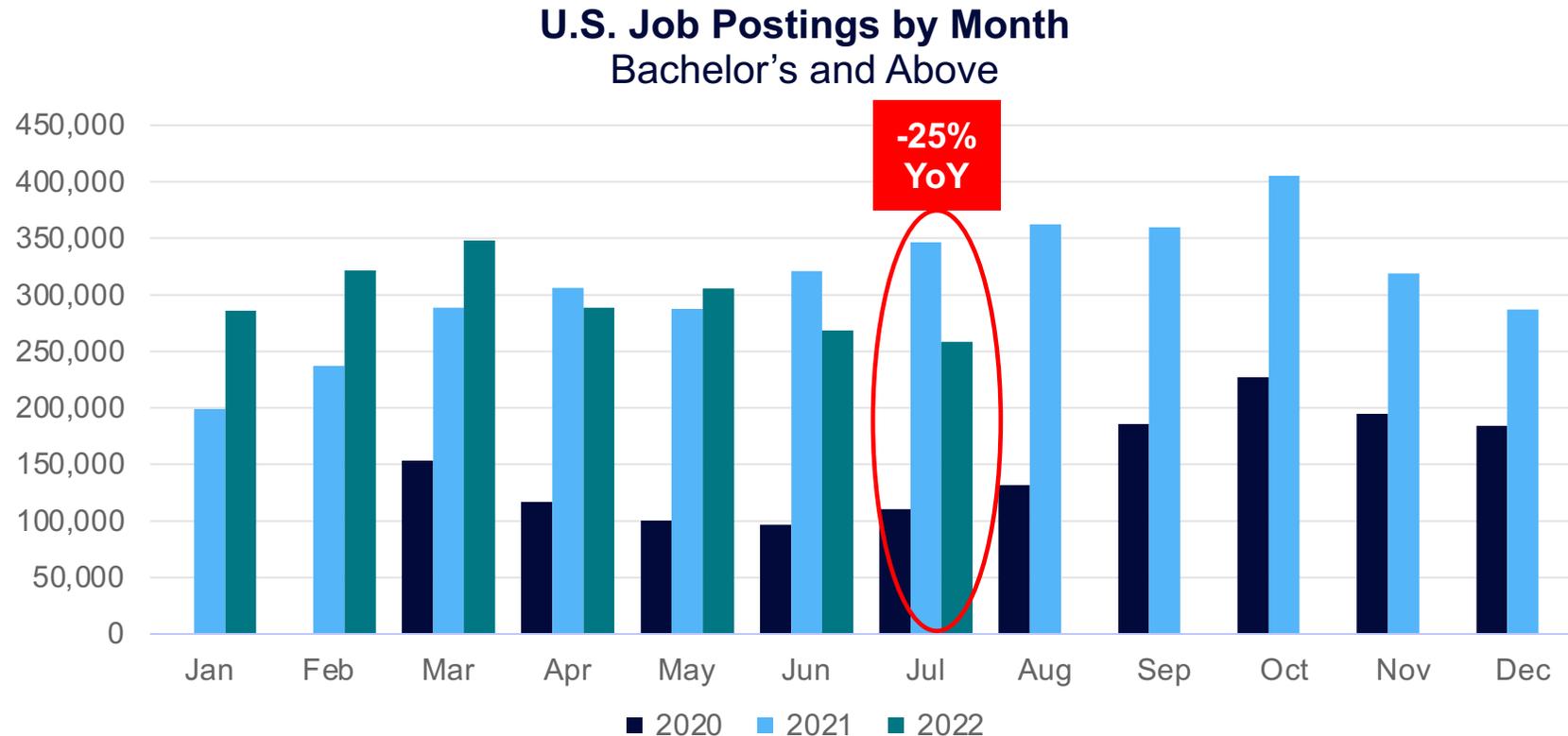
Source: Gray's Job Postings Data Dashboard

July 2022, U.S. Job Postings Trends, Bachelor's and Above Levels

Registered Nurses had the highest volume of postings.

July 2022 Highest Job Postings
By Standard Occupational Code

Registered Nurses	30,388
Software Developers	10,879
Engineers, All Other	9,325
Tax Preparers	7,772
Managers, All Other	7,391
Pharmacists	7,186
General and Operations Managers	5,051
Computer Systems Engineers/Architects	4,828
Marketing Managers	4,341
IT Project Managers	3,727

Managers

.
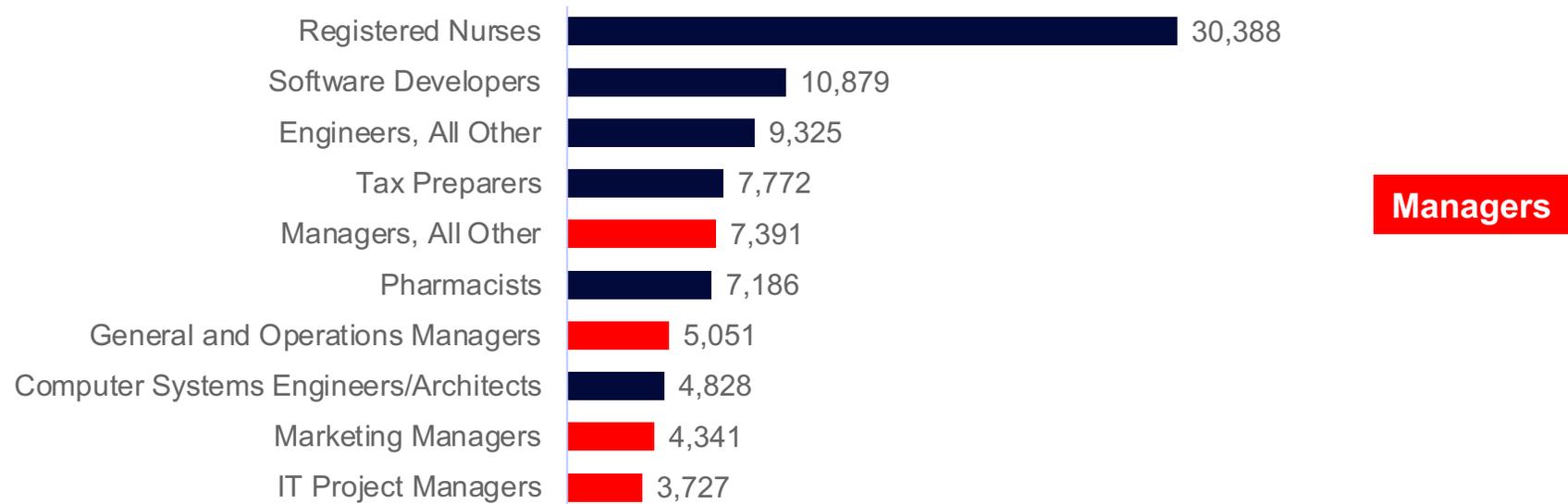
Source: Gray's Job Postings Data Dashboard

In July, jobs for Pharmacists increased 89% year-over-year.

July 2022 Job Postings by Year-over-Year Growth
By Standard Occupational Code

Value	Occupation
89%	Pharmacists
38%	Media Technical Directors/Managers
16%	Auditors
13%	Civil Engineers
2%	Aerospace Engineers
0%	Electrical Engineers
-2%	Tax Preparers
-7%	Architectural and Engineering Managers
-7%	Electronics Engineers, Except Computer
-8%	Surgical Technologists
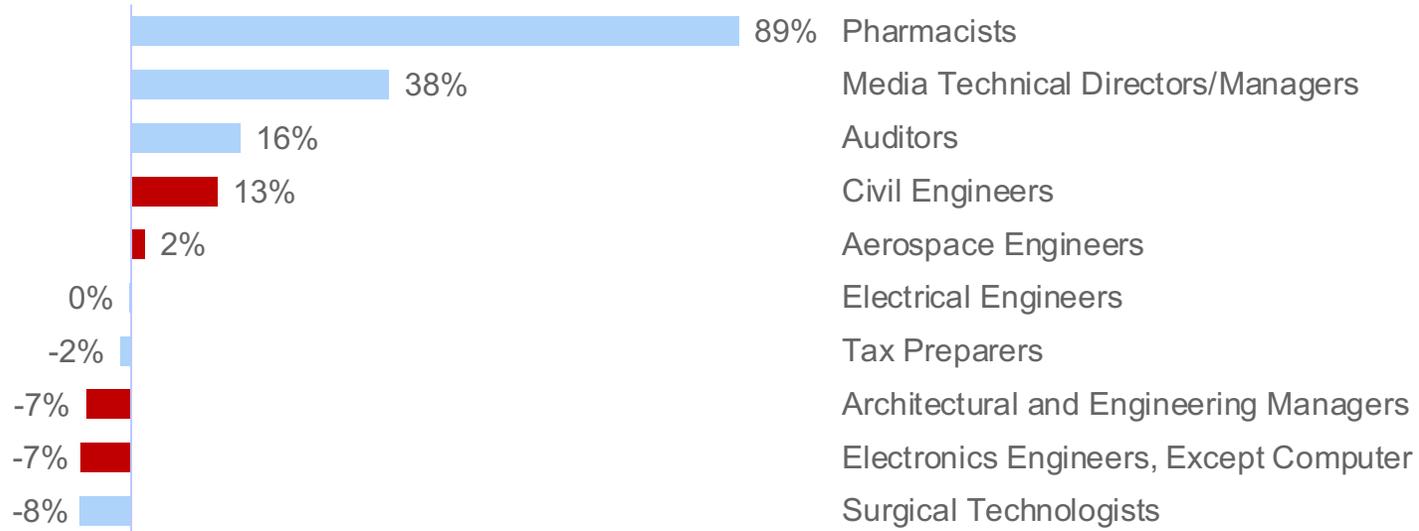
Info Tech

Business

Engineering

Other

Source: Gray's Job Postings Data Dashboard

*Minimum 1,000 jobs prior year.

Agenda

Coursera: Top Categories

Data Analysis has the highest cumulative enrollment and is growing the fastest.

Highest Cumulative Enrollment
July 2022

Category	Enrollment
Data Analysis	14,511,757
Software Development	14,157,578
Personal Development	12,155,006
Business Essentials	8,993,151
Leadership and Management	8,754,221
Learning English	8,027,738
Machine Learning	6,992,237
Music and Art	6,787,761
Finance	6,114,728
Mobile and Web Development	5,625,958

Fastest Cumulative Enrollment Growth
Year-Over-Year Unit Change, July 2022

Category	Unit Change
Data Analysis	5,826,148
Leadership and Management	4,110,263
Software Development	4,105,349
Personal Development	2,831,506
Business Essentials	2,305,083
Marketing	2,233,126
Finance	2,192,226
Design and Product	2,081,055
Education	2,044,829
Cloud Computing	2,026,146

Source: Gray's Non-Degree Demand: Coursera

Coursera: Top Categories

Software Development has the highest cumulative enrollment, but Data Analysis and Leadership Management are growing faster.

Highest Cumulative Enrollment
July 2022

Category	Enrollment
Software Development	10,052,229
Personal Development	9,323,500
Data Analysis	8,685,609
Business Essentials	6,688,068
Learning English	6,075,215
Machine Learning	5,425,949
Music and Art	4,936,424
Leadership and Management	4,643,958
Mobile and Web Development	4,282,108
Finance	3,922,502
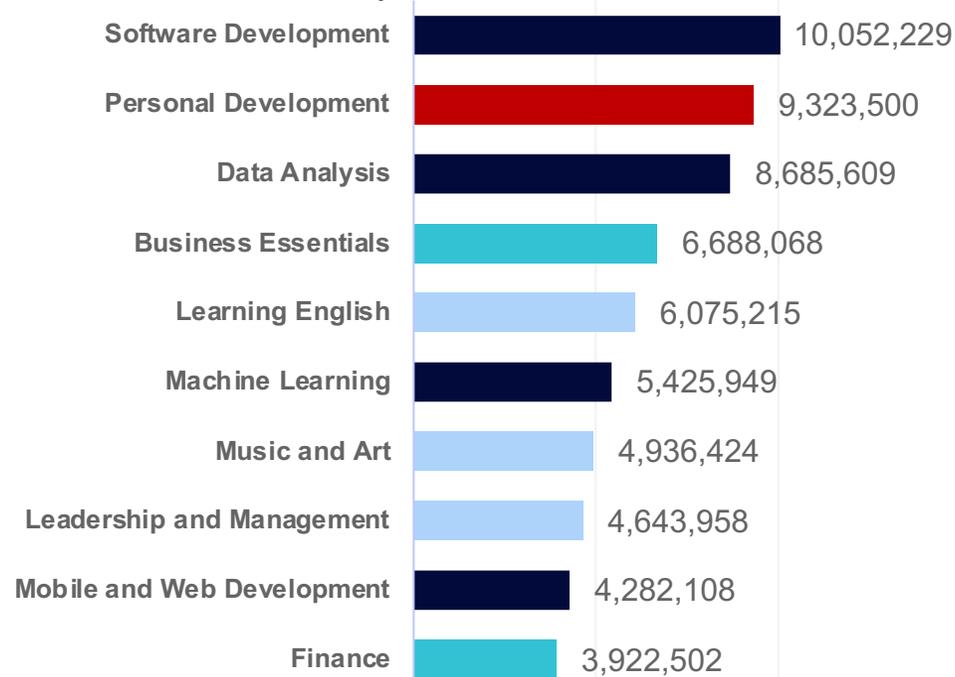
Legend:
- Business
- Info Tech
- Pers. Dev.
- Other

Fastest Cumulative Enrollment Growth
Year-Over-Year Unit Change, July 2022

Category	Change
Data Analysis	5,826,148
Leadership and Management	4,110,263
Software Development	4,105,349
Personal Development	2,831,506
Business Essentials	2,305,083
Marketing	2,233,126
Finance	2,192,226
Design and Product	2,081,055
Education	2,044,829
Cloud Computing	2,026,146

Source: Gray's Non-Degree Demand: Coursera

GRAY ASSOCIATES
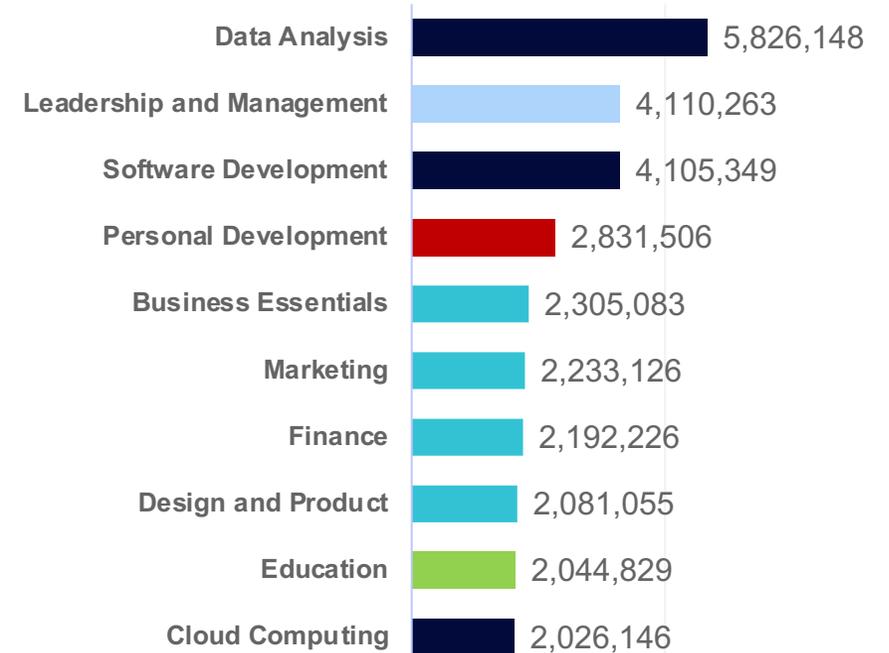
Skills taught in Rutgers' Supply Chain Excellence certificate on Coursera appear frequently in job postings.

The Business Essentials category grew by 2,305,083 enrollments in the past year.

Certificates > **MasterTrack® Certificate** > Supply Chain Excellence

RUTGERS   MasterTrack® Certificate

Supply Chain Excellence

In this 3-course program, you will learn to design and manage the primary flows of a supply chain—products, information, and finances.
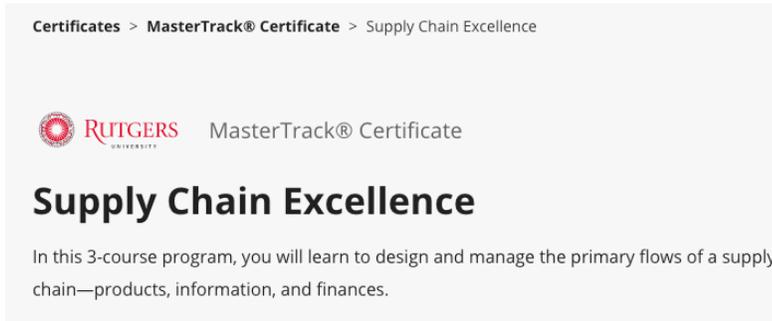
Sample Skills Taught in the Certificate:
- Inventory
- Logistics
- Supply Chain
- Supply Chain Risk Management

Supply Chain
July 2022 Job Posting Skills

Job Postings

Bar chart values:
- INVENTORY CONTROL: 764
- INVENTORY MANAGEMENT: 768
- LOGISTICS: 1,548
- SUPPLY CHAIN MANAGEMENT: 2,176
- SUPPLY CHAIN: 4,813
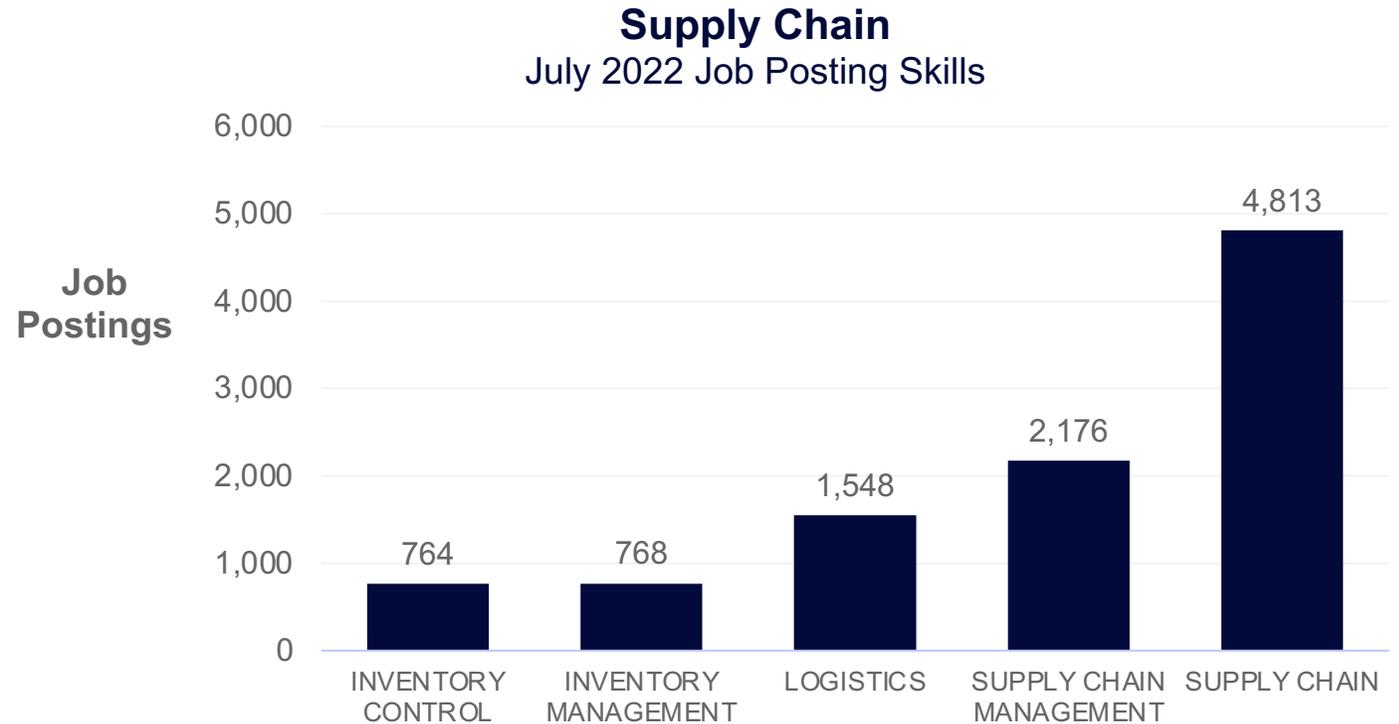
Udemy: July Top Courses

Largest 15 Courses by Cumulative Enrollment

Course	Enrollment
Microsoft Excel	1,064,921
Python Programming	1,045,478
Machine Learning A-Z™:Python and R	895,608
The Web Developer Bootcamp	806,680
Java Programming: Java 11 and Java 17	700,557
The Complete Digital Marketing Course	694,282
The Complete JavaScript Course	655,771
Angular - The Complete Guide (Edition)	608,391
React (incl Hooks, React Router, Redux)	602,830
Ultimate AWS Certified Solutions Architect	595,616
The Complete Python 3 Course	576,501
Python for Data Science and ML	561,540
100 Days of Code: Python Pro Bootcamp	558,713
The Complete SQL Bootcamp	543,358
Java Programming: Complete	515,153

Business

Info Tech

Pers. Dev.

Other

15 Fastest-Growing Courses (Unit Change)
Trailing Six Months
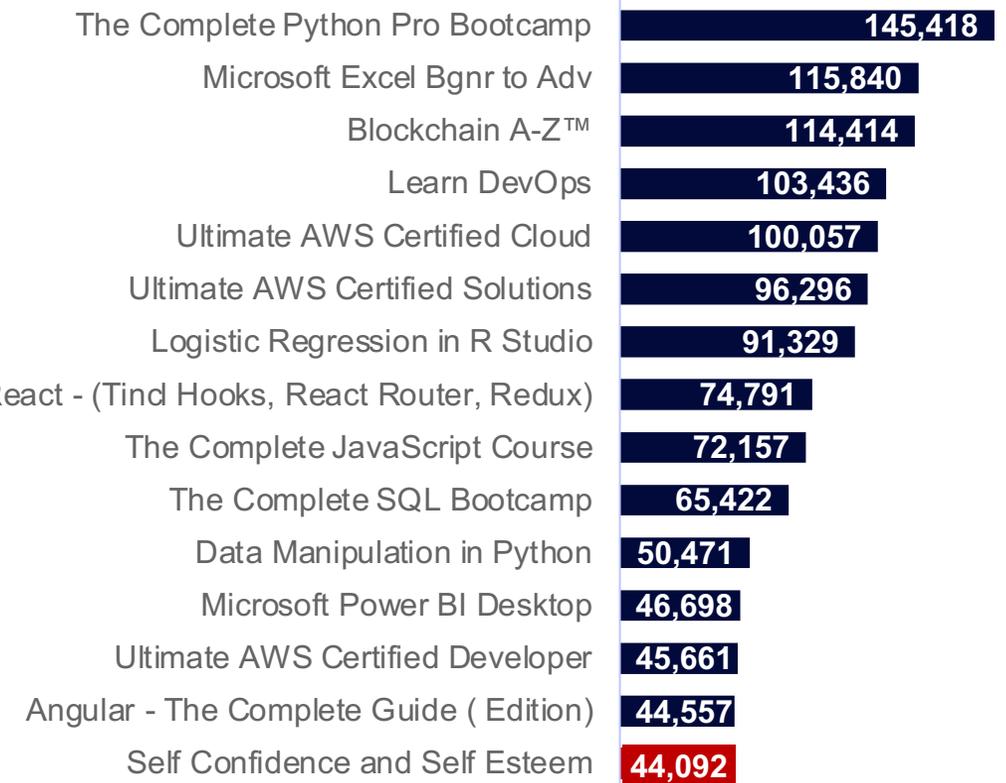
Course	Unit Change
The Complete Python Pro Bootcamp	145,418
Microsoft Excel Bgnr to Adv	115,840
Blockchain A-Z™	114,414
Learn DevOps	103,436
Ultimate AWS Certified Cloud	100,057
Ultimate AWS Certified Solutions	96,296
Logistic Regression in R Studio	91,329
React - (Tind Hooks, React Router, Redux)	74,791
The Complete JavaScript Course	72,157
The Complete SQL Bootcamp	65,422
Data Manipulation in Python	50,471
Microsoft Power BI Desktop	46,698
Ultimate AWS Certified Developer	45,661
Angular - The Complete Guide (Edition)	44,557
Self Confidence and Self Esteem	44,092

Source: Gray's Non-Degree Demand: Udemy

Agenda

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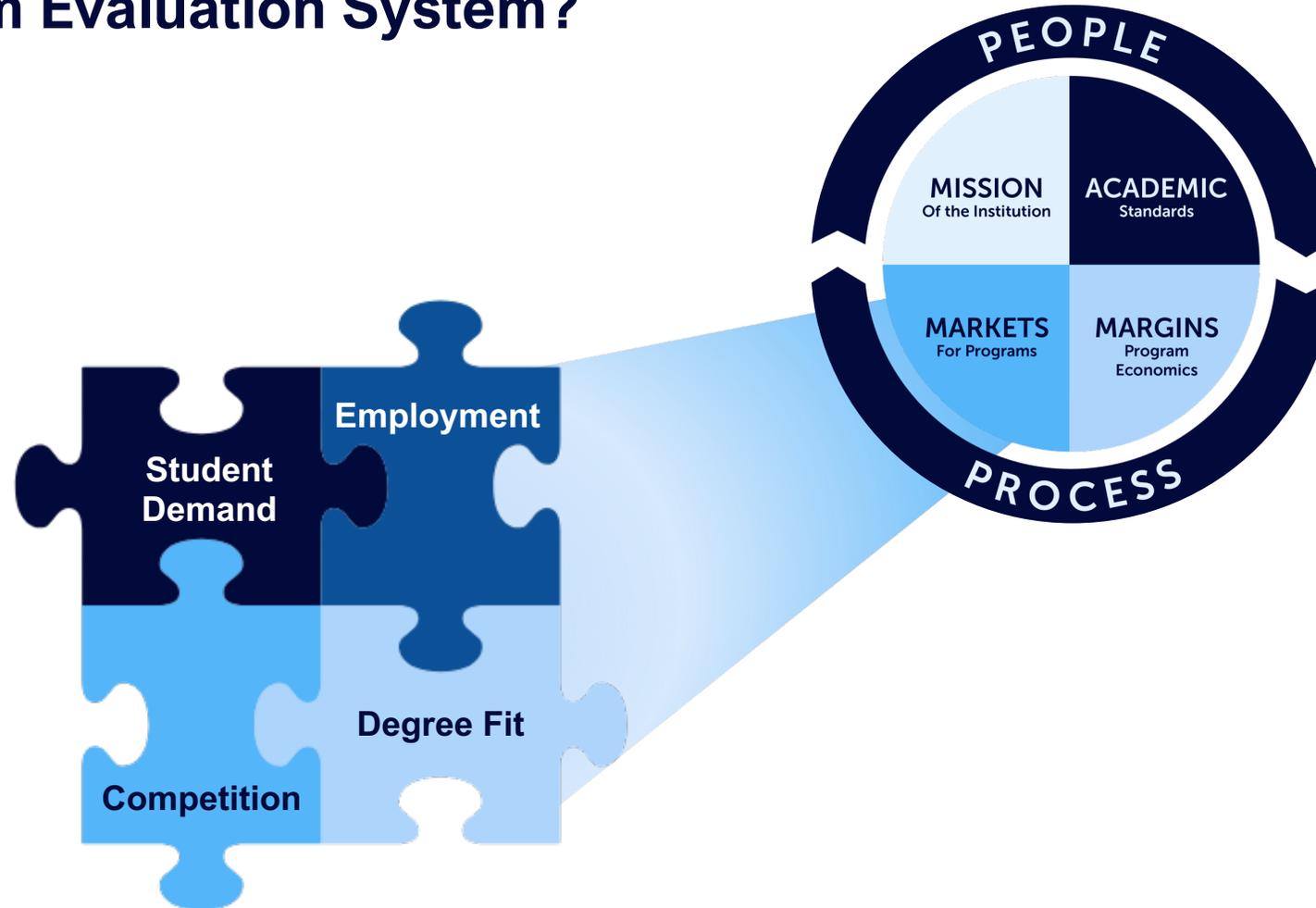
Program Markets: Program Rank

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

- Let's focus on the national market for Criminal Justice and Corrections.

US Program Ranking
Bachelor's Programs

CIP	Total Percentile	Student Demand Percentile	Competitive Intensity Percentile	Employment Percentile	Degree Fit Percentile
42.0101 Psychology, General	97	99	84	11	50
54.0101 History, General	97	99	3	33	50
52.1101 International Business/Trade	97	97	14	88	50
49.0101 Aviation/Aero Science/Tech, Gen'l	97	96	21	90	50
14.0101 Engineering, General	97	96	5	94	50
04.0201 Architecture	97	95	50	88	50
04.0902 Architectural & Building Sciences/Tech	97	94	93	88	50
52.1201 Management Info. Systems, General	97	94	21	96	50
14.0601 Ceramic Sciences and Engineering	97	50	98	97	50
14.2801 Textile Sciences and Engineering	97	6	99	97	50
51.2099 Pharmacy/Pharm Sciences/Admin, Other	97	6	98	98	50
43.0100 Crim. Justice & Corrections, Gen'l	96	99	8	19	50
51.0000 Health Svcs/Allied Health, Gen'l	96	99	5	33	50
52.1001 Human Resources Management, Gen'l	96	98	8	82	50
26.0202 Biochemistry	96	98	0	92	50
52.0299 Business Admin/Mgmt/Oper., Other	96	95	14	90	50
26.0908 Exercise Physiology	96	94	95	80	50
27.0301 Applied Mathematics, General	96	94	14	94	50
14.9999 Engineering, Other	96	94	8	97	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%+
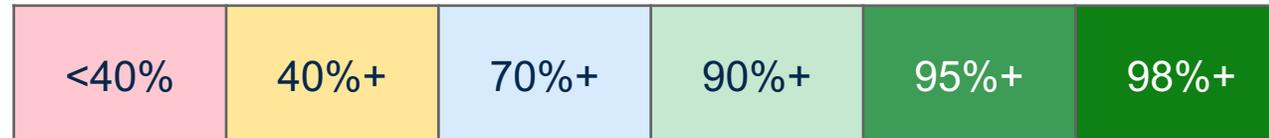
Program Scorecard: Student Demand

Criminal Justice scores in the 99th percentile for Student Demand.

- This is a very large program.

- Student Demand may be falling.
  - Completions dropped 2% year-over-year.
  - Enrollment dropped 5%.
  - But Google is up 34%.

- 22% of completions are online.

Student Demand
Score: 30 Percentile: 99

Catego...	Pctl	Criterion	Value	Score
Size	98	Google Search Volume (3 Months)*	580,179	8
	0	International Page Views (12 Months)	0	NS
	99	New Student Enrollment Volume (12 Mo.)	22,180	8
	99	On-ground Completions at In-Market Institutions	35,658	4
	99	Online Completions by In-Market Students	10,208	4
	99	Sum of On-ground and Online Completions	45,865	4
Growth	98	Google Search YoY Change (Units)*	147,541	3
	0	New Student Enrollment Vol. YoY Change (Units)	-1,104	-1
	0	Completion Volume YoY Change (Units)	-1,121	-1
	89	Google Search YoY Change (%)*	34%	1
	43	New Student Enrollment Vol. YoY Change (%)	-5%	0
	43	Completion Volume YoY Change (%)	-2%	0

Source: Gray's PES+ Markets

Program Scorecard: Employment

Criminal Justice ranks in the 19th percentile for Employment.

- Job volume is at or above the 90th percentile.
  - Job postings are at the 90th percentile.
  - BLS current employment is in the 97th percentile.
  - Over the past three years, BLS jobs decreased by .6%.

- Employer demand is flat to down.

- There are more graduates than jobs.
  - 0.5 job postings per graduate

- Wages are below the 50th percentile.

Employment*
Score: -3 Percentile: 19

Category	Pctl	Criterion	Value	Score
Size: Direct Prep	90	Job Postings Total (12 Months)*	38,698	1
	97	BLS Current Employment*	933,860	1
	96	BLS Annual Job Openings*	68,282	NS
Size: ACS Bach. Outcomes	97	Job Postings Total (12 Months)*	100,172	NS
	98	BLS Current Employment*	658,188	NS
Growth (Direct Prep)	59	BLS 1-Year Historical Growth*	-2.5%	NS
	49	BLS 3-Year Historic Growth (CAGR)*	0.6%	-1
	24	BLS 10-Year Future Growth (CAGR)*	0.3%	-1
Saturation (Direct Prep)	32	Job Postings per Graduate*	0.5	-1
	62	BLS Job Openings per Graduate*	0.8	NS
Wages (Direct Prep)	60	BLS 10th-Percentile Wages*	$42,857	NS
	49	BLS Mean Wages*	$62,043	NS
National American Community Survey Bachelor's Degree Outcomes	42	Wages (Age < 30)	$40,874	0
	34	Wages (Age 30-60)	$78,878	0
	24	% with Any Graduate Degree	24%	NS
	24	% with Masters	18%	NS
	41	% with Doct/Prof Degree	6%	NS
	65	% Unemp. (Age <30)**	3%	-1
	73	% Unemp. (Age 30-60)**	2%	-1
	86	% in Direct Prep Jobs	25%	NS

Source: Gray's PES+ Markets

In July, job postings for a Bachelor's in Criminal Justice and Corrections increased 119% year-over-year.

They have increased 251% since March 2020, before Covid.

Job Posting Volume, Criminal Justice

■ 2020 ■ 2021 ■ 2022
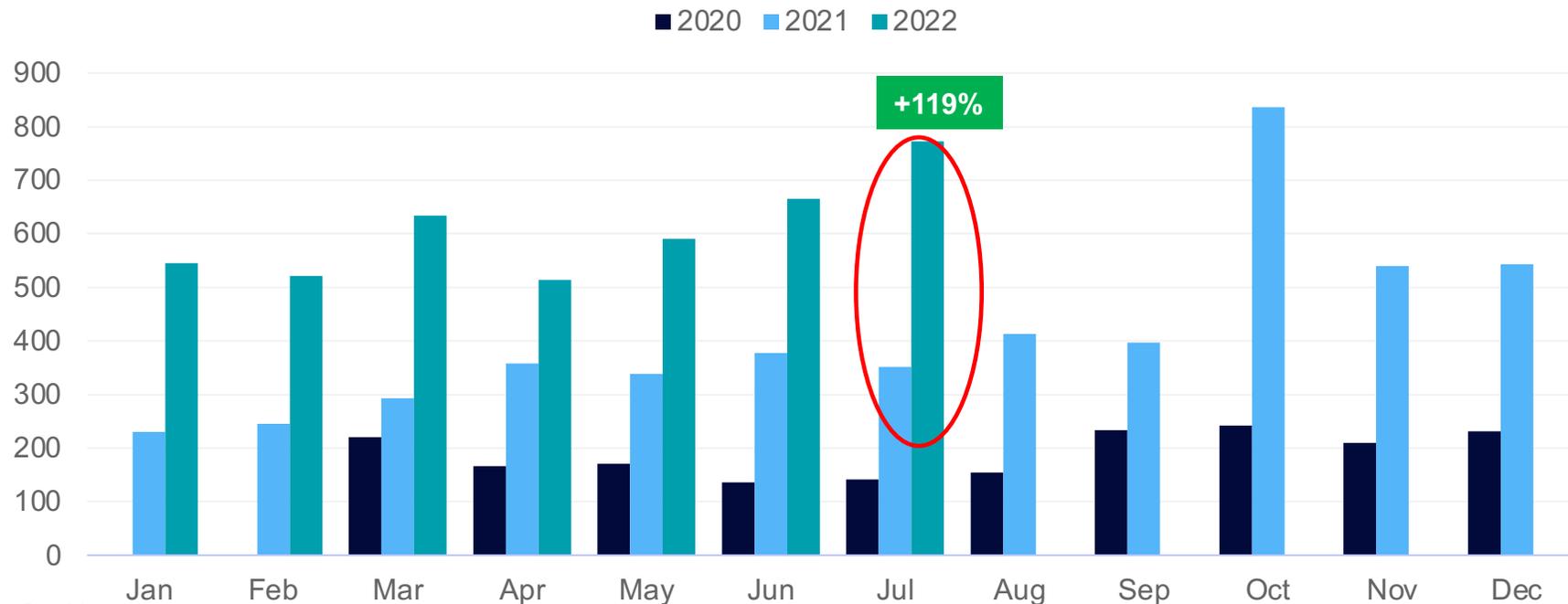
Source: Gray's Job Postings Data Dashboard

Job Postings: Criminal Justice and Corrections

In July, Criminal Investigators and Intelligence Analysts were in high demand.

Highest Volume Job Postings Criminal Justice
July 2022

Job Title	Postings
Criminal Investigators and Special Agents	202
Intelligence Analysts	197
Immigration and Customs Inspectors	186
First-Line Supervisors of Police and Detectives	51
Probation Officers and Correctional Treatment Specialists	41
Sheriffs and Deputy Sheriffs	35
Private Detectives and Investigators	18
Police Patrol Officers	15
First-Line Supervisors of Correctional Officers	12
Correctional Officers and Jailers	7

Most-Requested Skills, Criminal Justice
July 2022

Skill	Count
EXCEL	173
PROBLEM SOLVING	145
HTTPS	119
INFORMATION SYSTEMS	103
LINUX	96
AWS	90
WEB SERVICES	87
PROGRAMMING	86
UNIX	80
PROGRAMMING LANGUAGES	75

Source: Gray's Job Postings Data Dashboard
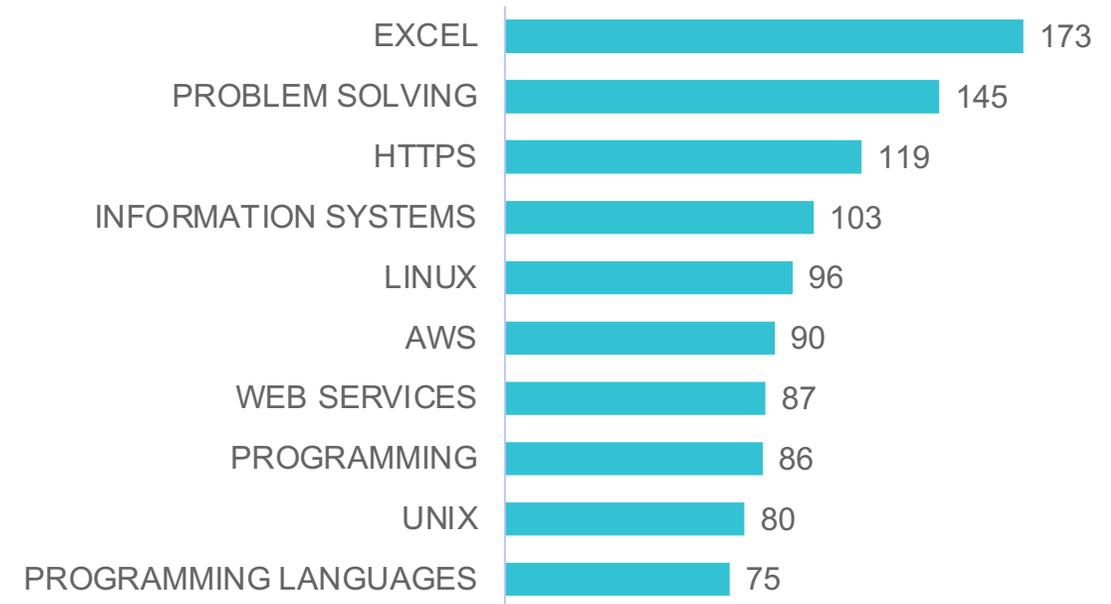
Program Scorecard: Competitive Intensity

Criminal Justice scores in the 8th percentile for Competitive Intensity.

- 829 institutions offer Criminal Justice.
  - 29% of programs are online.
  - Year-over-year drop reflects a CIP code re-assignment in 2020.

- Median program size is healthy but is down 5% year-over-year.

- Marketing costs are high.

Competitive Intensity
Score: -7 Percentile: 8

Category	Pctl	Criterion	Value	Score
Volume of In-Market Competition	99	Campuses with Graduates**	829	-8
	0	Campuses with Grads YoY Change (Units)**	-41	2
	99	Institutions with Online In-Market Students**	284	NS
In-Market Program Sizes	92	Average Program Completions	45	2
	84	Median Program Completions	20	0
	51	YoY Median Prog. Compl. Change (Units)	-1	0
	53	YoY Median Prog. Compl. Change (%)	-5%	0
In-Market Saturation	95	Google Search * Cost per Click**	$22	-3
	62	Google Competition Index**	0.44	0
National Online Competition	99	National Online Institutions (Units)**	299	NS
	93	Nat'l Online % of Institutions	29%	NS
	88	Nat'l Online % of Completions	22%	NS

Source: Gray's PES+ Markets

GRAY ASSOCIATES

Program Scorecard: Degree Fit

Bachelor's degrees are unusual in this workforce.

- 57% of completions are at the bachelor's level.

- However, only 8% of the national workforce have a bachelor's degree.

Degree Fit:
Score: 0 Percentile: 50

National Completions by Level
Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)
Certificate	9%	9%	2%
Associates	25%	25%	31%
Bachelors	57%	57%	66%
Postbaccalaureate Certificate	1%	1%	0%
Masters	7%	7%	0%
Post-masters Certificate	0%	0%	0%
Doctoral	0%	0%	0%
Unknown	0%	0%	0%

National Workforce Ed. Attainment
Score: 0

Award Level	BLS Educational Attainment
No College	58%
Some College	25%
Associates	7%
Bachelors	8%
Masters	1%
Doctoral	0%

Source: Gray's PES+ Markets

Demographics

In 2020, six percent more females than males completed this program.

- After White, Hispanics had the highest completions.

2020 Completions by Demographic Group

Demographic Group	Percentage
Female	53%
Male	47%
White	45%
Hispanic or Latino	26%
Black	18%
All Others	6%
Two or More Races	3%
Asian	2%

Source: Gray's PES+ Markets

Program Scorecard: Criminal Justice ranks in the 96th percentile.

Source: Gray's PES+ Markets

Agenda

GRAY ASSOCIATES

Summary

- In July, U.S. Google searches for academic programs increased 16% year-over-year.

- In Fall 2021, Computer Science had the fastest year-over-year bachelor's degree enrollment growth.
  - At the master's level, Business Analytics grew the fastest.

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

- Demand for Criminal Justice programs at the bachelor's level is high.
  - Student demand is very high.
  - Jobs per graduate and wages are low.

- 57% of Criminal Justice completions are at the bachelor's level, but only eight percent of the national workforce have a bachelor's degree.

Upcoming Webinars

Topic	Date
Demand Trends Webcast: Community Colleges	*Wednesday* September 28th at 2 pm ET
Demand Trends Webcast: Bachelor's and Above	*Thursday* September 29th at 2 pm ET

Contact:
Robert Atkins
RobertGrayAtkins.com