PYTHON ● **CYBERSECURITY** ● CLOUD COMPUTING
DATABASE MANAGEMENT ● ARTICIFICAL INTELLIGENCE

Tech. Skills. Now. is a series of brief pieces by CBRE Labor Analytics meant to spark a conversation about hiring and location trends for today's most sought after technology skills.

ABOUT CYBERSECURITY

Cybersecurity refers to the practice and process of defending computers, servers, mobile devices, electronic systems, networks, and data from unauthorized access or attacks. As data is moving into the cloud and as more tasks are being performed through distributed networks, there has been a rapid increase in demand for employees with Cybersecurity skills.

Hiring demand for these skills is intensifying and has been led in large part by companies within industry sectors such as Defense and Space, IT, Management Consulting, and Computer and Network Security.

As with all volumes of the Tech.Skills.Now series, this piece aims to communicate where to find employees with these highly sought-after skills while also highlighting locations in the United States where employers stand the best chance of gaining a competitive hiring advantage and establishing themselves as an "employer of choice".

INTRODUCTION

As with all volumes of the Tech.Skills.Now series, this aims to communicate:

1. Which **industries** are hiring for professionals with Cybersecurity skills?

2. Which markets have the **deepest talent pools** for this skill set?

3. Where is the **fastest growth** occurring and which markets are **losing talent**?

4. What are **top universities** in the US producing graduates with these skills?

5. Which markets have the most favorable conditions for **recruiting/retaining talent**?

6. Which emerging markets have the **greatest potential to position your company as an "employer of choice"**?

NATIONAL INDICATORS

18%
Annual Growth Rate
All Software Developers = 7%

$134,500
Average Salary
All Software Developers = $131,700

49%
Annual Job Change
All Software Developers = 28%

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Cyber Security

WHICH INDUSTRIES CURRENTLY EMPLOY THESE SKILLS?
Total Professionals with Cybersecurity Skills

Information Technology & Services
106,200 Professionals

Computer & Network Security
39,300 Professionals

Defense & Space
37,300 Professionals
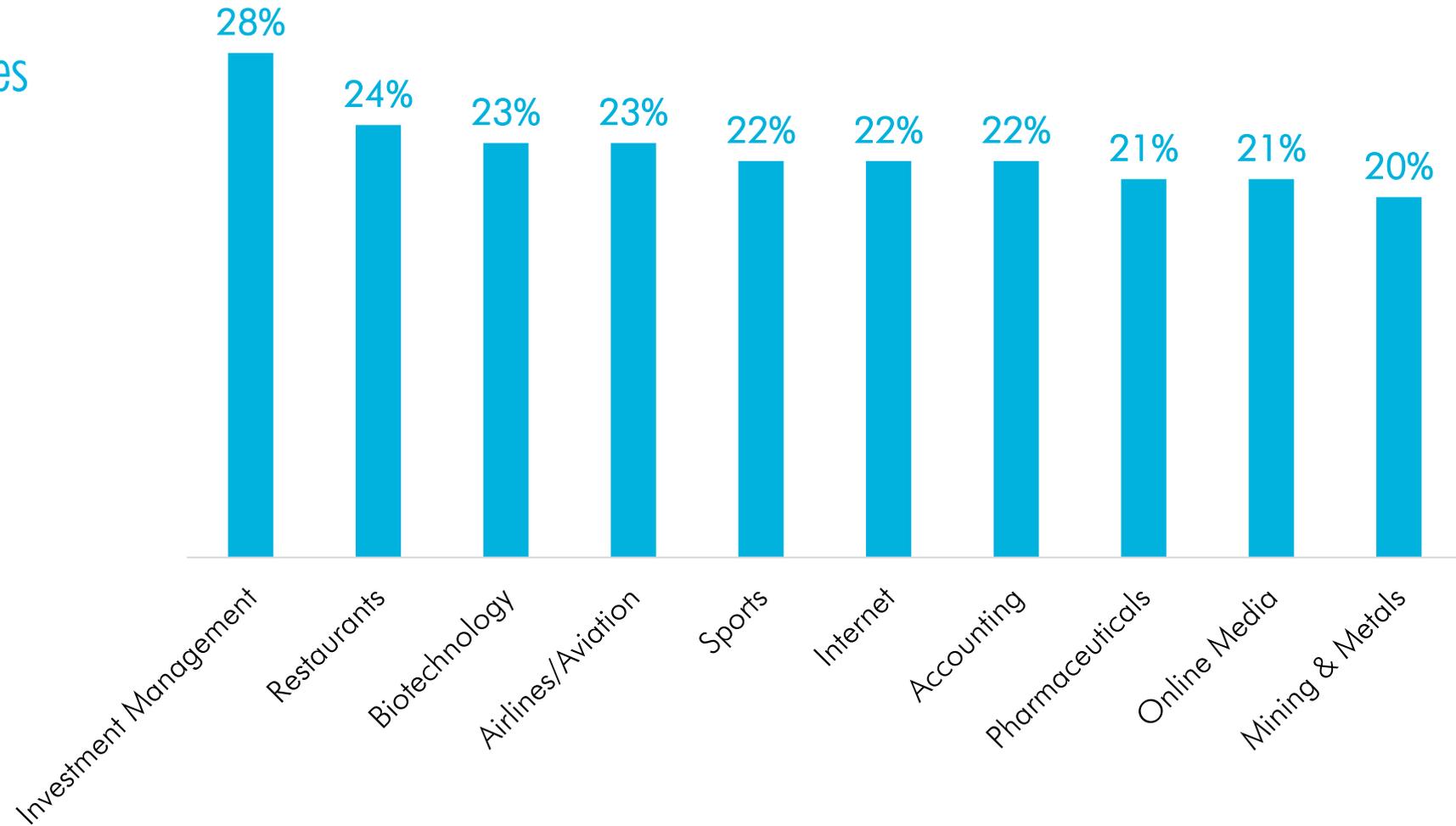
Computer Software
28,800 Professionals

Military
27,800 Professionals

WHICH INDUSTRIES HAVE THE FASTEST GROWING DEMAND?
Percent Change in Professionals with Cybersecurity Skills, Top 100 Industries (2019)

Industry	Percent Change
Investment Management	28%
Restaurants	24%
Biotechnology	23%
Airlines/Aviation	23%
Sports	22%
Internet	22%
Accounting	22%
Pharmaceuticals	21%
Online Media	21%
Mining & Metals	20%

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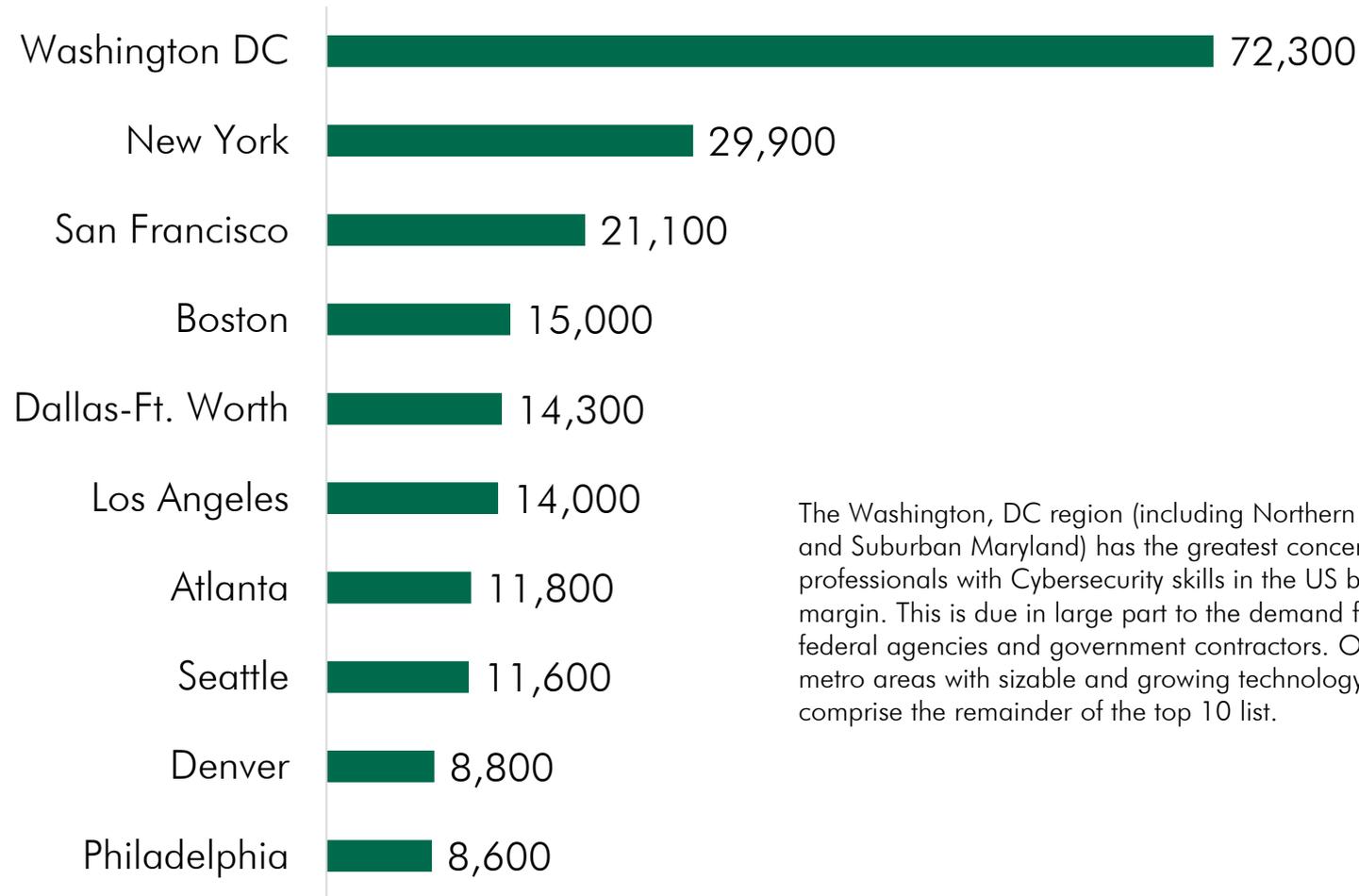
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TOP 10 TALENT MARKETS
Total Professionals with Cybersecurity Skills

Market	Total
Washington DC	72,300
New York	29,900
San Francisco	21,100
Boston	15,000
Dallas-Ft. Worth	14,300
Los Angeles	14,000
Atlanta	11,800
Seattle	11,600
Denver	8,800
Philadelphia	8,600

The Washington, DC region (including Northern Virginia and Suburban Maryland) has the greatest concentration of professionals with Cybersecurity skills in the US by a wide margin. This is due in large part to the demand from federal agencies and government contractors. Other major metro areas with sizable and growing technology sectors comprise the remainder of the top 10 list.

Of the top 10 talent markets, three also ranked among the fastest growing over the last year (i.e., New York City, Dallas-Ft. Worth, and Atlanta). New York State had three total markets among the fastest growing (i.e., New York City, Buffalo, and Albany) while Texas had two (i.e., DFW and Houston). The fastest growing markets tended to be a combination of lower cost major metro areas (e.g., Atlanta, Detroit, Houston) and emerging second tier markets with an above average concentration of technology talent (e.g., Des Moines, Cincinnati, and Albany). Only one high cost major market, New York City, was also among the fastest growing. Robust demand for Cybersecurity skills in NYC is being driven primarily by two of that city's dominant industries – financial services and technology.

TOP 10 GROWTH MARKETS
Annual Change in Professionals with Cybersecurity Skills

Market	1 Yr Growth Rate
Des Moines, IA	+18.2%
New York, NY	+17.6%
Buffalo-Niagara Falls, NY	+16.7%
Chicago, IL	+16.1%
Cincinnati, OH	+16.0%
Dallas-Ft. Worth, TX	+15.7%
Atlanta, GA	+15.7%
Albany, NY	+15.6%
Detroit, MI	+15.6%
Houston, TX	+15.1%

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WHERE'S THE TALENT COMING FROM?
Top 10 Schools by Total Recent Graduates (2016-19)

School	Graduates
Penn State University	1,094
George Mason University	1,013
Northern VA Community College	857
Liberty University	695
Utica University (NY)	625
University of Maryland	602
Webster University (MO)	588
University of South Florida	575
MIT	503
Syracuse University	501
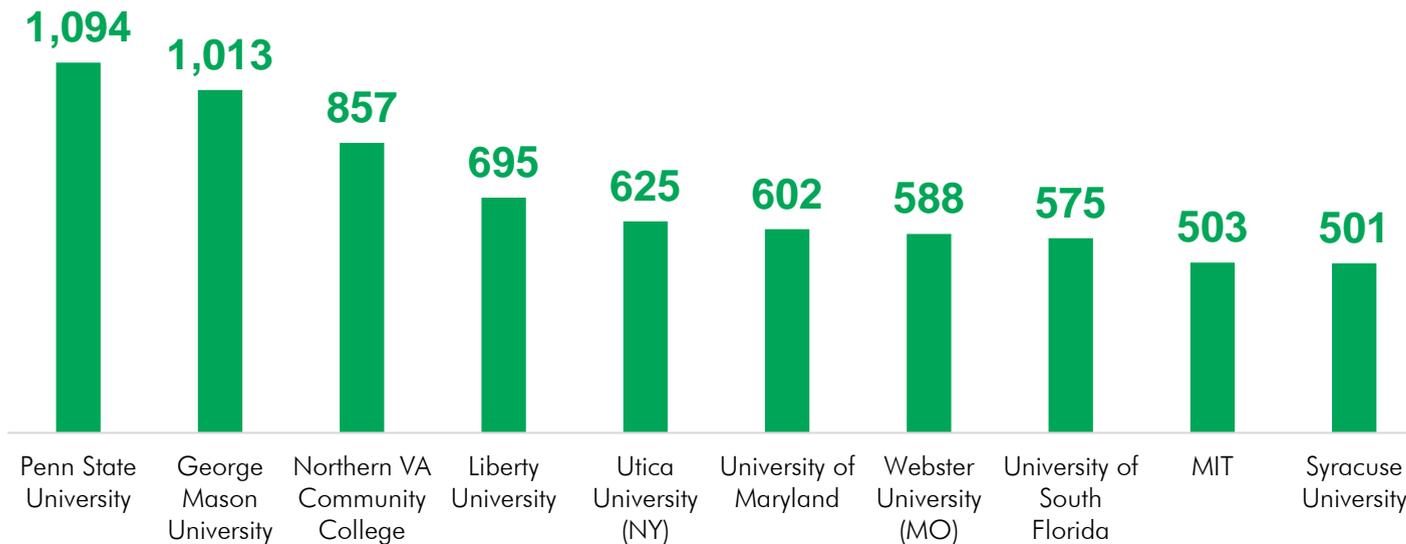
The colleges and universities producing the greatest number of graduates with Cybersecurity skills tend to be co-located in markets with the highest density and/or growth rates for these skills. Primarily, they are clustered in the Northeast and Mid-Atlantic regions of the US. Four of the top 10 schools are located in or around the Washington, DC/Northern Virginia metro area. Upstate New York has two schools in the top 10 which perhaps explains the emerging Cybersecurity clusters in nearby markets such as Buffalo and Albany-Schenectady-Troy.

WHERE'S THE TALENT GOING?

Markets Gaining Cyber Talent
1. NEW YORK, NY
2. HAMPTON ROADS, VA
3. RICHMOND, VA
4. PHILADELPHIA, PA
5. ST. LOUIS, MO

Markets Losing Cyber Talent
1. SAN FRANCISCO, CA
2. SEATTLE, WA
3. LOS ANGELES, CA
4. AUSTIN, TX
5. DENVER, CO

Talent migration trends over the past year for professionals with Cybersecurity skills has also favored markets in the Northeast and Mid-Atlantic. New York City tops the list for net migration gains along with two medium-sized metro areas in Virginia (Hampton Roads and Richmond). Philadelphia and St. Louis round out the top five markets. Once again, these areas tend to be in close proximity to the universities producing the greatest number of Cybersecurity graduates.

The metro areas losing the greatest net number of trained Cybersecurity professionals due to out-migration tend to be more established higher cost technology markets in the western United States. Many of these suffer from rapidly increasing costs of living and housing that may be driving some employees to consider relocation to lower cost markets with extensive job opportunities for professionals with Cybersecurity skills.
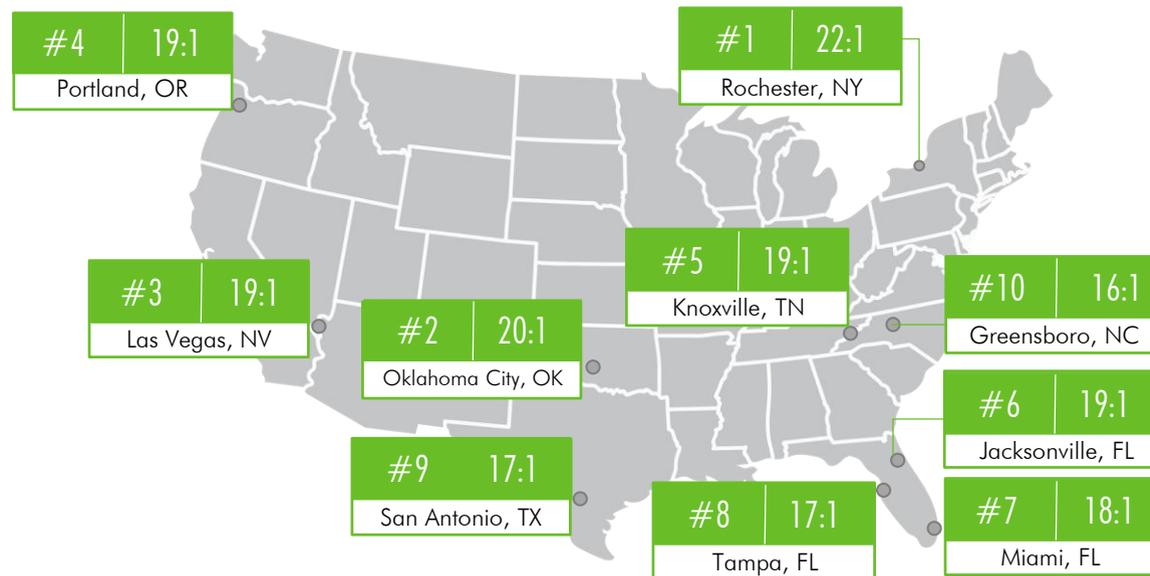
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WHERE'S THE STRONGEST HIRING OPPORTUNITY?
Top 10 Markets Based on Qualified Candidates per Active Job Posting (2020)

	Rank	Ratio
Rochester, NY	#1	22:1
Oklahoma City, OK	#2	20:1
Las Vegas, NV	#3	19:1
Portland, OR	#4	19:1
Knoxville, TN	#5	19:1
Jacksonville, FL	#6	19:1
Miami, FL	#7	18:1
Tampa, FL	#8	17:1
San Antonio, TX	#9	17:1
Greensboro, NC	#10	16:1

Finally, CBRE Labor Analytics examined the ratio of existing professionals with Cybersecurity skills in each US market compared to active job postings for positions requiring an expertise in Cybersecurity. This comparison is one way to identify markets with strong hiring potential. Markets with the highest ratios of qualified candidates to active job postings are likely to provide a lower risk hiring environment with limited competition and below average turnover rates.

Another emerging Upstate New York market, Rochester, tops this list due in part to a high concentration of native talent and the output of graduates from the nearby Rochester Institute of Technology (RIT). Three markets in Florida also make the top ten list. Generally, the greatest hiring opportunities tend to be in non-traditional emerging technology markets with lower cost profiles that are also anchored by major research universities and/or military installations. These areas will likely afford opportunities for new companies to enter the market and establish themselves as an "employer of choice" with access to the market's top Cybersecurity talent.

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