LinkedIn Workforce Report | United States | August 2018

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in Economic Graph Team

With over 150 million LinkedIn members in the United States, we have unique insight into the real-time dynamics of Americans starting new jobs, learning new skills, and moving to new cities. This month's LinkedIn Workforce Report looks at our latest national data on hiring, skills, and migration trends through July 2018. For more insight into localized employment trends in 20 of the largest U.S. metro areas, check out this month's reports for: *Atlanta*, *Austin*, *Boston*, *Chicago*, *Cleveland-Akron*, *Dallas-Ft. Worth*, *Denver*, *Detroit*, *Houston*, *Los Angeles*, *Miami-Ft. Lauderdale*, *Minneapolis-St. Paul*, *Nashville*, *New York City*, *Philadelphia*, *Phoenix*, *San Francisco Bay Area*, *Seattle*, *St. Louis*, and *Washington, D.C.*

Our vision is to create economic opportunity for every member of the global workforce. Whether you're a worker, an employer, a new grad, or a policymaker, we hope you'll use these insights to better understand and navigate the dynamics of today's economy.

these sectors is running strong today, but they are also among the most vulnerable to a trade war escalation.

- **Skills Gaps | Demand for data scientists is off the charts** – In 2015, there was a national surplus of people with data science skills. An employer in **Dallas** or **Atlanta** who wanted to hire data scientists had plenty of options; aside from in a few tech or finance-heavy cities like **San Francisco**, **New York City** and **Boston**, there weren't many local shortages. But today, 3 years later, the picture has changed markedly: data science skills shortages are present in almost every large U.S. city. Nationally, we have a shortage of 151,717 people with data science skills, with particularly acute shortages in **New York City** (34,032 people), the **San Francisco Bay Area** (31,798 people), and **Los Angeles** (12,251 people). As more industries rely on big data to make decisions, data science has become increasingly important across all industries, not just tech and finance. In that sense, it's a good proxy for how today's cutting-edge skills like AI & machine learning may spread to other industries and geographies in the future.

- **Migration | Austin's job market has never been hotter** – In July, hiring in **Austin, TX**, was up 14.3% from last year. The strong job market is drawing people from all over the country, bringing **Austin** to #1 on our ranking of U.S. cities attracting the most workers. For every 10,000 LinkedIn members in **Austin** today, 105 arrived in the past 12 months. Of those arrivals, 10.5% are from **Houston**, 7.6% are from **San Francisco**, and 4.8% are from **New York**. **Austin**'s thriving tech scene is a big magnet, as indicated by large skills shortages in development tools and data storage technologies. But the city also has severe shortages in non-domain-specific skills like oral communication and digital literacy.

Hiring | Summer of strong hiring continues through July

The LinkedIn hiring rate is a measure of gross hires divided by LinkedIn membership. Nationally, across all industries, gross hiring in the U.S. was 4.6% higher than in July 2017.

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(Note: This month we updated our industry taxonomy from 13 industry groupings to 24 industry groupings, in order to provide more granular insights. Let us know if you have any feedback on the new format!)

Table 1: Hiring on LinkedIn, by Industry, through July 2018

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Industry	LinkedIn Hiring Rate	July 2017	...	April 2018
Agriculture	Non-seasonally Adjusted	0.97	...	1.29
	Seasonally Adjusted	1.08	...	1.20
Arts	Non-seasonally Adjusted	0.91	...	0.76
	Seasonally Adjusted	0.92	...	0.92
Construction	Non-seasonally Adjusted	1.10	...	1.21
	Seasonally Adjusted	1.12	...	1.17
Consumer Goods	Non-seasonally Adjusted	1.04	...	1.02
	Seasonally Adjusted	1.02	...	1.04
Corporate Services	Non-seasonally Adjusted	1.03	...	0.95
	Seasonally Adjusted	0.99	...	1.08
Design	Non-seasonally Adjusted	0.94	...	0.90
	Seasonally Adjusted	0.93	...	0.98
Education	Non-seasonally Adjusted	1.37	...	0.62
	Seasonally Adjusted	1.03		1.06

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	Adjusted			
	Seasonally Adjusted	1.02	...	1.08
Hardware & Networking	Non-seasonally Adjusted	1.03	...	0.90
	Seasonally Adjusted	0.97	...	0.92
Health Care	Non-seasonally Adjusted	1.16	...	0.96
	Seasonally Adjusted	0.99	...	1.02
Legal	Non-seasonally Adjusted	0.86	...	0.86
	Seasonally Adjusted	0.97	...	1.00
Manufacturing	Non-seasonally Adjusted	1.06	...	1.11
	Seasonally Adjusted	1.06	...	1.14
Media & Communications	Non-seasonally Adjusted	0.89	...	0.89
	Seasonally Adjusted	0.94	...	0.97
Nonprofit	Non-seasonally Adjusted	1.02	...	0.84
	Seasonally Adjusted	1.01	...	1.02
Public Administration	Non-seasonally Adjusted	0.92	...	0.82
	Seasonally Adjusted	0.94	...	1.03
Public Safety	Non-seasonally Adjusted	1.20	...	0.95
	Seasonally Adjusted	1.00	...	1.06
Real Estate	Non-seasonally Adjusted	1.12	...	1.26

	Seasonally Adjusted	1.00	...	1.03
Software & IT Services	Non-seasonally Adjusted	1.09	...	1.07
	Seasonally Adjusted	1.02	...	1.07
Transportation & Logistics	Non-seasonally Adjusted	1.13	...	1.20
	Seasonally Adjusted	1.11	...	1.20
Wellness & Fitness	Non-seasonally Adjusted	1.08	...	1.01
	Seasonally Adjusted	1.05	...	1.08

Methodology: "Hiring Rate" is the count of hires (LinkedIn members in each industry who added a new employer to their profile in the same month the new job began), divided by the total number of LinkedIn members in the U.S. By only analyzing the timeliest data, we can make accurate month-to-month comparisons and account for any potential lags in members updating their profiles. This number is indexed to the average month in 2015-2016 for each industry; for example, an index of 1.05 indicates a hiring rate that is 5% higher than the average month in 2015-2016.

Skills Gaps | Demand for data scientists is off the charts

In 2015, there was a national surplus of people with data science skills. An employer in **Dallas** or **Atlanta** who wanted to hire data scientists had plenty of options; aside from in a few tech or finance-heavy cities like **San Francisco**, **New York City** and **Boston**, there weren't many local shortages.

But today, 3 years later, the picture has changed markedly: data science skills shortages are present in almost every large U.S. city. Nationally, we have a shortage of 151,717 people with data science skills, with particularly acute shortages in **New York City** (34,032 people), the **San Francisco Bay Area** (31,798 people), and **Los Angeles** (12,251 people). As more industries rely on big data to make decisions, data science has become increasingly

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1	New York City, NY	+4,132	+34,032	+29,900
2	San Francisco Bay Area, CA	+10,995	+31,798	+20,803
3	Los Angeles, CA	+425	+12,251	+11,826
4	Boston, MA	+1,667	+11,276	+9,609
5	Seattle, WA	+1,182	+9,688	+8,506
6	Chicago, IL	-1,826	+5,925	+7,751
7	Washington, D.C.	+735	+7,686	+6,951
8	Dallas-Ft. Worth, TX	-2,496	+3,641	+6,137
9	Atlanta, GA	-2,301	+3,350	+5,651
10	Austin, TX	+26	+4,949	+4,923

Methodology: This table ranks U.S. metro areas by the intensification of their skills gap for data science skills between July 2015 and July 2018, and shares the shortage (+) or surplus (-) of people with data science skills in each metro area, and the associated delta over three years. A skills gap is a mismatch between the skills employers need (demand) and the skills workers have (supply). Skill supply is calculated as the number of members in a city who have listed a certain skill on their profiles. Our skill demand measure comes from a weighted combination of the skills that appear in job postings on LinkedIn and the frequency that members in a city with a certain skill are hired relative to members without that skill.

This shortage of people with data science skills is smaller, but growing faster, than the national shortage of software development skills (which includes programming languages, like C++ and Java). Today there's a shortage of 212,838 people with software development skills. But 3 years ago, software development skills were already in shortage nationally—so the "intensification" of the shortage for data science is actually larger than that for software development.

There are still cities in the U.S. today with surpluses of data science skills, where an employer could potentially find and recruit from untapped talent pools, but they are few and far between. The ten biggest cities with data science skills surpluses are **Cleveland-Akron** (1,206 people), **Minneapolis** (832 people), Cincinnati (770 people), Greensboro-Winston

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A skills gap is the gap between supply and demand for a specific skill, in a specific local labor market, at a specific point in time. That means that skills gaps are fundamentally local, and specific to the supply and demand of individual skills within a labor market. The U.S. cities with the largest skills gaps overall are **New York City**, **San Francisco Bay Area**, and **Los Angeles**.

New York City, the **San Francisco Bay Area**, and **Los Angeles** also see the greatest shortages across all skills. To see which skills are driving these massive shortages, check out our localized reports.

The cities with the greatest surpluses across all skills are **New York City**, **Chicago**, and **Philadelphia**. You'll notice that **New York City** has the biggest shortages and surpluses; because it is the most populous city, its shortages and surpluses have greater magnitudes.

Check out our localized reports for **Atlanta**, **Austin**, **Boston**, **Chicago**, **Cleveland-Akron**, **Dallas-Ft. Worth**, **Denver**, **Detroit**, **Houston**, **Los Angeles**, **Miami-Ft. Lauderdale**, **Minneapolis-St. Paul**, **Nashville**, **New York City**, **Philadelphia**, **Phoenix**, **San Francisco Bay Area**, **Seattle**, **St. Louis**, and **Washington, D.C.**, to see top skills in demand locally and other insights.

Migration | Austin's job market has never been hotter

In July 2018, hiring in **Austin** was up 14.3% from a year prior. The strong job market is drawing people from all over the country, bringing **Austin** to #1 on our ranking of U.S. cities attracting the most workers.

For every 10,000 LinkedIn members in **Austin, TX**, 105 arrived in the past 12 months. Of those arrivals, 10.5% are from **Houston**, 7.6% are from **San Francisco**, and 4.8% are from **New York**. **Austin**'s thriving tech scene is a big magnet, as indicated by large skills

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cities in America, have the 4th and 5th largest difference to the previous quarter.

The cities losing the most people are Wichita, Bryan-College Station, and Urbana-Champaign. For every 10,000 LinkedIn members in Wichita, 280 left in the past 12 months.

Austin, **Denver**, and San Diego are the U.S. cities experiencing the most total migration (workers moving into and out of a city). This list captures the most transient cities. For every 10,000 LinkedIn members in **Austin**, 681.3 arrived in or left the city in the last 12 months.

Check out our reports for **Atlanta**, **Austin**, **Boston**, **Chicago**, **Cleveland-Akron**, **Dallas-Ft. Worth**, **Denver**, **Detroit**, **Houston**, **Los Angeles**, **Miami-Ft. Lauderdale**, **Minneapolis-St. Paul**, **Nashville**, **New York City**, **Philadelphia**, **Phoenix**, **San Francisco Bay Area**, **Seattle**, **St. Louis**, and **Washington, D.C.**, to see which skills are in shortage in those cities, and which jobs are open.

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