

The Skills Gap:

A National Issue That Requires A Regional Focus

Supply-and-Demand Analysis of Middle-Skill Occupations for the 100 Largest Metros

Introduction

The skills gap has been a constant source of conversation and debate in the U.S., and for good reason – it’s a national issue, with implications for employers, educators, and the competitive standing of the country itself. The U.S. economy, however, is complex and consists of hundreds of metropolitan and rural areas, with different regions facing different workforce challenges. Thus, the most effective approach to overcoming the skills gap is the development of regional strategies grounded in local data and local context about education providers, workers, and the needs of businesses.

To provide a region-oriented picture of potential skill gaps across the U.S., EMSI narrowed in on the supply-and-demand outlook for the 100 most populous metros in three sectors: technology and engineering, the skilled trades, and business and finance. For each of these sectors, we focused on middle-skill, middle-wage jobs – those that typically require less than a bachelor’s degree or pay between \$13.83 and \$21.13 per hour.¹ These jobs have generally been in decline but still play a vital role in improving many Americans’ prospects for upward mobility.

Approach and Note on Data

EMSI’s analysis illuminates the supply-and-demand picture for the 100 most populous metro areas by comparing 2012 graduates in regional educational programs to EMSI’s estimated annual job openings in each metro from 2013 to 2015. Although some workers in these fields, especially those in the skilled trades, rely on on-the-job training and don’t receive formal job training, the number of graduates in programs tied to these occupations serves as an approximation of **estimated supply**, while annual job openings serves as **projected labor market demand**. Further, we looked at the age of workers in the skilled trades, as well as in health care and transportation – two other in-demand sectors with large shares of mid-skill workers – to get a better grasp on potential shortages in particular metros.

Data on graduates by classified educational program comes from the National Center for Education Statistics, via its Integrated Postsecondary Educational System (IPEDS), which contains data on all public and most private institutions in the United States. The occupation data used in this report comes from EMSI’s 2013.4 dataset for salaried employees. Estimated annual job openings through 2015 are a combination of projected new jobs and turnover.

Defining the Skills Gap

What exactly is the skills gap? Simply put, it’s the perceived mismatch between the needs of employers for skilled talent and the skills possessed by the available workforce. While more than 11 million Americans are unemployed and millions more are underemployed or have dropped out of the workforce, businesses routinely say they can’t find the skilled workers they need.

Some refer to the skills gap as a *compensation* gap, claiming that employers are unwilling to bump up wages to bring in the talent they need. Others call it a training gap, claiming that employers aren’t doing enough on-the-job training, or that educational institutions aren’t in tune with employers’ needs. Regardless of the name given to this phenomenon, 39% of employers in the U.S. have difficulty filling jobs, according to Manpower’s 2013 Talent Shortage Survey.² Further, a recent study by CareerBuilder found that an even higher percentage of HR managers (45% of those surveyed) can’t find qualified candidates to fill their open positions.

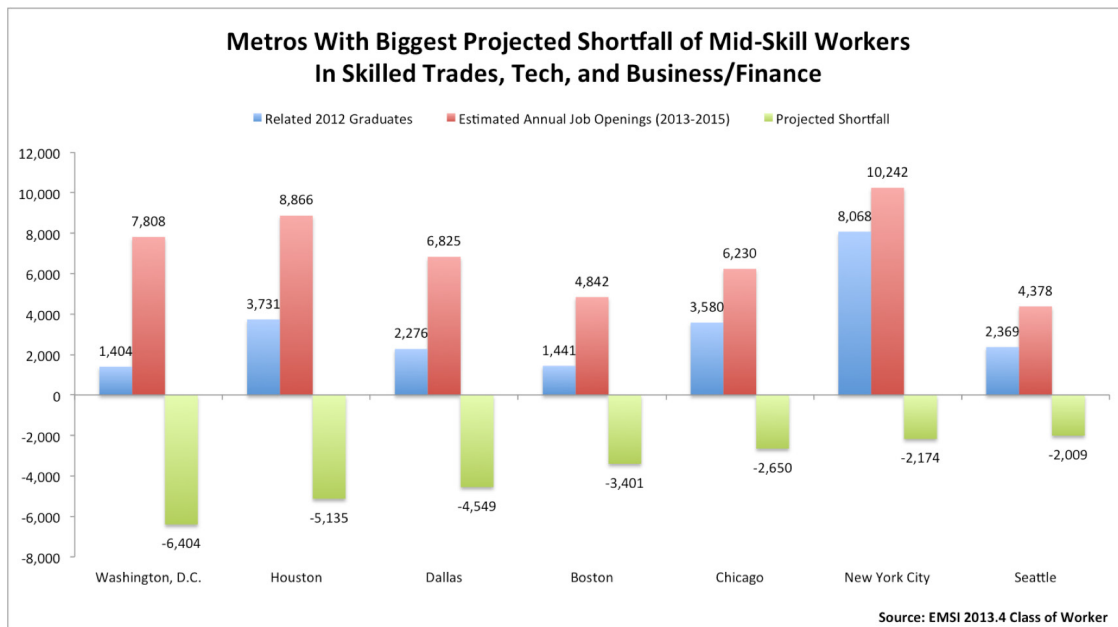
Major Findings

1. Three Metros Have Particularly Large Projected Mid-Skill Talent Shortages

Washington, D.C., Houston, and Dallas have a projected shortfall of close to or more than 5,000 middle-skill workers in technology and engineering, the skilled trades, and business and finance over the next two years. After these three metros, Boston, Chicago, New York City, and Seattle are poised to face the next-largest deficits of these critical middle-skill workers. All have an estimated gap of at least 2,000 workers per year.

The projected shortfall is most pronounced in D.C., where estimated job openings outnumber graduates in these fields by 6,404. Nearly two-thirds of the projected gap is in business and finance occupations. It’s important to note that a sizable portion of Washington D.C.’s potential workforce is trained outside of the District of Columbia. However, the figures in this analysis correspond to the expansive D.C. metro, which includes Alexandria and Arlington in Virginia, as well as parts of Maryland and West Virginia.

In Houston, the gap of mid-skill workers is projected to be 5,135 each year – mostly in the skilled trades and business and finance. In Dallas, the projected gap of 4,549 is evenly distributed between all three sectors.



Unemployment in Washington, D.C. (5.4%), Dallas (6%), and Houston (6.1%) is lower than the national rate.³ Still, more than 170,000 people in D.C. are unemployed, and in even more are out of work in Dallas (189,600) and Houston (205,600), all while 5,000 or more mid-skill jobs are projected to go unfilled each year through 2015 in the three sectors we've analyzed. The gaps, and their impact on unemployment, are likely to be much larger across all hard-to-fill sectors in each of the metros.

Looking more broadly, 20 metros have projected mid-skill worker shortages of at least 1,000 annually through 2015. This includes smaller metros (e.g., Salt Lake City and Austin), as well as metros that struggled through the recession (e.g., Detroit and Tampa-St. Petersburg).

2. Regional Industry Drivers Help Indicate Potential Shortages

Skill gaps might be hard to diagnose at the national level, but look closely at particular regions and examine the industries that they specialize in, and talent shortages begin to emerge.

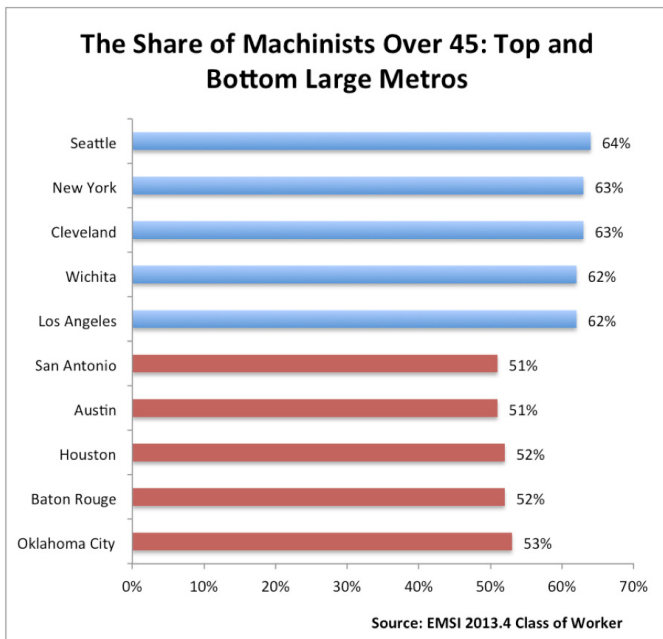
The San Francisco economy, for example, is driven by technology and professional services. Sure enough, the most acute projected labor shortage among the occupation groups analyzed for the San Francisco metro are in mid-level technology and engineering technician occupations, where demand is expected to outstrip supply by nearly 1,000. Skilled trades workers, meanwhile, are not expected to be nearly in such high demand in San Francisco, but more of them are projected to be needed in manufacturing-oriented Chicago and energy-driven Oklahoma City.

3. The Aging Workforce Is Exacerbating The Issue

If the skills gap has yet to be felt in some regions, it could just be a matter of time – especially in a number of key sectors (such as skilled trades, health care, and transportation) that rely on an increasingly aging middle-skill workforce. The issue is twofold: a large number of older workers in middle-class jobs are nearing retirement, and many high school graduates are not pursuing the vocational or two-year training needed to enter many of these mid-skill fields.

There are many examples of metros where the effects of an aging workforce are already or will soon be felt:

- In Seattle, New York City, and Cleveland, more than 60% of all machinists – an in-demand skilled trades occupation – are at least 45 years old. Meanwhile in Chicago, nearly a third (29%) of machinists are 55 and older. As these workers begin to leave the workforce and a disproportionately small number of students or displaced workers train to become machinists, the manufacturing firms that rely on these workers could struggle to find talent.
- In Houston, 51% of tractor-trailer truck drivers are 45 or older, while 45% of skilled trades workers are 45-plus. Employers in Houston will be hard-pressed to replace retiring skilled trades workers, given the small pipeline of new entrants into the workforce in these occupations and the perception among students that they're not stable, well-paying careers. .
- In the Washington, D.C. metro, 15% of mid-skill health care workers are 55 or older, and another 22% are 45 to 54. That's a large segment of an in-demand group of workers who are on the verge of retirement.



- In Boston, 20% of skilled trade workers are 55-plus, and another 30% are 45 to 54. Among tractor-trailer truck drivers, more than half (52%) are 45 and older.

4. Not Every Metro Is Facing A Deficit of Mid-Skill Workers

EMSI's metro-by-metro analysis identified large cities that will soon be hurting for new mid-skill workers. But we also found a number of metros on the other side of the ledger; cities with a projected surplus of workers in the skilled trades, technology and engineering, and business and finance.

Two metros among the 100 largest have a projected oversupply of at least 500 potential new workers per year – Tulsa, Okla. (632 more graduates than openings) and Baton Rouge, La. (524). Both metros are large-scale producers of certificate holders in the skilled trades, specifically in welding. Note that a portion of these grads will move elsewhere for jobs, specifically since there are much bigger skilled trade labor markets than Tulsa's or Baton Rouge's.

Beyond Tulsa and Baton Rouge, five metros have a surplus of at least 200 graduates across the three sectors: McAllen-Edinburg-Mission, Texas (384); Los Angeles (349); Dayton, Ohio (328); Toledo, Ohio (314); and Jacksonville, Fla. (211). We excluded the Phoenix metro from this list because the presence of the University of Phoenix skews the regional graduate total, specifically for programs (e.g., computer programming) in which a large number of online degrees are awarded nationally but are counted in Phoenix.

Some metros, meanwhile, have a projected excess of graduates in one or two of the sectors analyzed, but undersupplies in others. St. Louis, for instance, produced more than 1,100

skilled-trade graduates in 2012, while EMSI estimates just 727 new graduates will be needed each year through 2015. But St. Louis is expected to have a significant shortage of mid-level business and finance graduates (604 more openings than graduates) and a slightly smaller projected gap of technology and engineering graduates (202).

Conversely, in Rochester, N.Y., educational institutions produced twice as many mid-level tech and engineering graduates as the projected need indicates for the next two years. But in the skilled trades (particularly machinists and electricians), Rochester faces a substantial undersupply of new workers entering the job market.

The Consequences of the Skills Gap on Regional Economies

As we've shown, focusing in on local data reveals clear shortages of mid-skill workers in Houston, Dallas, Washington D.C., et al. The important question raised by this is the impact on affected metro economics. What are the economic consequences of the skill gaps in these regions? And how does filling a skills gap affect the overall level of income in their area?

The most obvious effect of a local skills gap is that local industries can't perform at their full potential. And when key industries aren't operating at peak potential, the regional economy suffers, both because of the loss of sales revenues and because of the reduction in local supply-chain purchases.

From a microeconomic perspective, the impact of a skills shortage depends on the degree to which the gap reflects an efficiency constraint (i.e., employers are operating in a less than optimally efficient manner because they can't find necessary talent) or an output constraint (i.e., opportunity exists for a firm to expand output and perhaps market share, if it were not for a shortage of key workers). Either way, a skills gap has consequences for employers, local industries, and the region itself.

To illustrate the effects of a local skills gap, let's examine the outlook for machinists – a growing mid-skill occupation – in Houston. Although the number of machinists has declined 4% nationally since 2007, the machinist workforce in Houston has grown 21% over that time. From 2013 to 2015, Houston is expected to have 745 annual job openings for machinists based on growth and turnover, while Houston-area educational institutions produced just 62 machinist graduates in 2012 – a gap of 683 workers if educational output and labor market demand hold. In addition, more than half of the 14,500 machinists in Houston are at least 45 years old, and nearly 25% are 55 and over.

What would be the economic impact of filling the projected shortfall of machinists in Houston? Here are a few estimates:

- The average machinist salary in Houston is \$41,000 per year, while experienced machinists make over \$60,000. Unskilled workers in Houston make perhaps \$20,000 per year, so filling the skill gap by training one new machinist increases regional income by at least \$21,000 (\$41,000 - \$20,000). We say “at least” because there will be some occupational movement among unskilled workers (e.g., when a waiter takes a machinist job, it creates another waiter opening).
- Close to 45% of machinists in Houston work in two industries – machine shops and oil and gas field machinery and equipment manufacturing. The jobs multiplier for these two industries is 2.34 and 3, respectively, meaning that at a minimum each job added in these industries leads to the addition of 1.34 to 2 jobs in other industries in Houston. We say “at a minimum” because filling the machinist gap provides new revenues at least equal to the machinists’ salaries and the added input purchases that result. But the effect could be higher. If it permits a general expansion of output, then machinist-employing firms expand output generally, and the added multiplier effects apply not only to newly hired machinists but to all the newly hired employees.

Examples of Regional Strategies To Combat Skills Gaps

With its shortage of skilled trades workers, Rochester, N.Y., serves as a good example of a city whose leaders have worked to address a specific, local skills gap in a meaningful way. Hit hard by layoffs at Kodak, Xerox, and Bausch & Lomb, the Rochester area has lost much of its once-large manufacturing base. But dozens of smaller manufacturers have surfaced in recent years, many of which have trouble filling open machinist positions. Monroe Community College in Rochester, after conducting two comprehensive surveys of local businesses and looking at local data, identified the particular gap and developed an accelerated machining certificate program to produce as many as 15 additional entry-level machinist graduates every six months.⁴

Other examples of regional strategies to combat skills gaps are plentiful:

- **SIEMENS** has established successful apprenticeship programs throughout the U.S. to develop a qualified workforce where the German-based company is located. In Charlotte, Siemens partnered with local colleges and universities, including Central Piedmont Community College, to help staff a new gas

turbine plant. “This is really helping to fill the skills gap that we’ve seen,” Eric Spiegel, president and CEO of Siemens USA, told Bloomberg Television.⁵

- **SOUTHWIRE COMPANY** developed a cooperative education program called 12 for Life in Carrollton, Ga., where it is headquartered. The program works to equip high school students with manufacturing skills, give them real-world job experience, and reverse the local high school dropout trend. Since the program started in 2007, 635 students have earned high school diplomas as a result of its efforts.⁶

Conclusion

EMSI’s analysis shows that middle-skill gaps do indeed exist, and it’s vitally important to understand them at the local level. With 1,100 classified industries spread across more than 300 metro areas, the U.S. economy is too diverse and unwieldy to fully assess skill gaps for the entire country. But particular metros and particular sectors (e.g., the skilled trades in Houston and Dallas, technology and engineering in San Francisco, business and finance in Miami) have significant shortages of middle-skill graduates to meet estimated demand. This trend in some sectors, especially the skilled trades, transportation, and health care, will likely worsen because of a rapidly aging workforce.

Regions that are confronted with significant skill shortages face potentially damaging effects to their economies if they can’t close the gaps. Employers that are unable to fill key positions aren’t as efficient as they would be otherwise, and their output suffers. This means the industries they’re associated with aren’t operating at full potential, and the regions they’re located in are losing out on additional local income and the benefits to other industries that result from the spike in hiring.

¹ The middle-wage range was derived from the National Employment Law Project. Some selected occupations pay above this range but typically require an associate’s degree, while others typically require a bachelor’s but pay in the middle-wage range.

² manpowergroup.us/campaigns/talent-shortage-2013

³ Preliminary August 2013 numbers. bls.gov/news.release/metro.t01.htm

⁴ economicmodeling.com/2013/10/08/new-yorks-monroe-community-college-takes-steps-to-identify-and-address-regional-skills-gap/

⁵ bloomberg.com/news/2013-02-05/siemens-tackles-u-s-skills-gap-with-apprenticeships.html

⁶ 12forlife.com/results.html