IMMIGRATION POLICY CENTER
AMERICAN IMMIGRATION COUNCIL

May 2013

REBUILDING LOCAL ECONOMIES:
Innovation, Skilled Immigration, and H-1B Visas in U.S. Metropolitan Areas

Although immigration policy is debated at the national level, its impact is most often felt in local and regional communities. This is certainly true for the H-1B program, which is routinely studied at the national level,[1] but cannot be fully understood without driving down to examine the role of H-1B workers at the metropolitan and local levels. New research at this more specific level of analysis suggests that current H-1B policies must be made both flexible and nuanced. There is no "one size fits all" approach to the recruitment, hiring, and retention of high-skilled foreign workers. As lawmakers consider changes to the H-1B program, including the creation of a High Skilled Jobs Demand Index,[2] it is essential to remember that demand for H-1B workers in many metropolitan areas is high, varies by industry, and has ripple effects throughout a regional economy. Thus, predicting and calculating the need for H-1B workers requires an understanding of the dynamics at the metropolitan level.

Metropolitan Area Demand for High-Skilled Workers is High, Especially in Innovation Industries

Innovation-intensive metropolitan areas tend to have higher rates of patenting, lower unemployment rates, and higher demand for high-skilled workers since patenting growth is correlated with job growth, population growth, and increases in educational attainment.[3]

- In 2010 there were seven job openings in computer occupations for every graduate from a relevant computer major at the national level.[4] Yet in high-tech metro areas the demand was even greater: 25 to 1 in San Francisco, 19 to 1 in San Jose, and nearly as great in places such as Austin; Seattle; Washington, D.C.; Des Moines; Charleston; and Charlotte.[5]
    - Of the 381 metropolitan areas in the U.S., 106 had at least 250 requests for H-1B workers during the 2010-2011 period. This group accounts for 91 percent of all requests. However, there is variation among metropolitan areas in terms of the number of employers using the H-1B program, as well as the employers' cap status.[6]
    - Science, technology, engineering, and mathematics (STEM) occupations accounted for over half of H-1B requests in 92 of the 106 high-demand metropolitan areas.[7]
- A 2013 report finds that H-1B STEM job vacancies are more difficult to fill than other job openings.[8]

- Employers have difficulty filling STEM positions. On average, in the 100 largest metropolitan areas in the United States, 46 percent of job openings requiring significant STEM knowledge go unfilled for one month or longer.[9]

- In San Jose, California, for example, two-thirds of job vacancies that remain unfilled after one month, despite advertising the positions, are for STEM occupations with H-1B requests. And in many other metropolitan areas, that share remains close to half.[10]

Innovation Industry Multiplier Effects Lead to Job Creation in Metropolitan Areas

Most jobs have multiplier effects for a local economy. In part, this is because workers are producers as well as consumers, and many jobs require the creation or expansion of other support and complementary jobs. In many U.S. metropolitan areas, the innovation economy and the high-skilled jobs related to it drive prosperity for a broader base of workers living in the region, and with greater than average multiplier effects.[11]

- Multiplier effects are particularly large for occupations requiring high levels of human capital and in high-tech industries.[12] In addition to bringing more jobs and higher salaries to communities where they cluster, the impact of innovative industries in localities has a profound multiplier effect.[13] That is, they create additional job opportunities in other occupations across the skills spectrum in a metro area.

  - An analysis of 11 million American workers in 320 metropolitan areas in the United States shows that each new high-tech job in a metro area creates five additional long-term local jobs outside of the high-tech sector across the skills spectrum.[14]

  - Furthermore, the five new jobs created for each new high-tech job benefit a diverse group of workers: two new jobs for professional workers such as attorneys and doctors, and three new positions in nonprofessional occupations such as service industry jobs.[15] In other words, every innovation industry job that goes unfilled may mean the lost opportunity for the creation of five other jobs.

High-Skilled Immigration Strengthens Wages in Metropolitan Areas

- Recent research examining 219 U.S. cities from 1990, when H-1B was first implemented, to 2010 shows that H-1B-driven increases in STEM workers are associated with significant increases in wages for college-educated U.S.-born workers (generally and specifically for STEM) in those particular places.[16]

  - H-1B-driven increases in STEM workers in a city were associated with significant increases in wages paid to both STEM and non-STEM college-educated natives, while non-college educated workers show no significant wage or employment effects.[17]

  - A one percent increase in the foreign-born STEM worker share of total employment in a city over a decade increased the wages of both STEM and non-STEM native-born college-educated workers by 4 to 6 percent.[18]

- Growth in STEM workers spurred technological growth by increasing demand for (and productivity of) college-educated workers. Furthermore, STEM workers introduced technologies between 1990 and 2010 that increased total production and the productivity of college-educated workers.[19]

- In the metropolitan areas with the largest number of H-1B requests, the average wages for STEM occupations with H-1B requests are extremely high.[20]

  - In particular, wage growth in the Computer Systems Design and Related Services industry, the industry with the largest number of H-1B requests, is large and positive in metropolitan areas with high numbers of H-1B requests.[21]

Endnotes

[1] Madeline Zavodny, "Immigration and American Jobs" (Washington, DC: American Enterprise Institute for Public Policy Research and the Partnership for a New American Economy, 2011); Marshall Fitz, "Immigration for Innovation: How to Attract the World's Best Talent While Ensuring America Remains the Land of Opportunity for All" (Washington: Center for American Progress, 2012); Jennifer Hunt, "Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa" (Cambridge, MA: National Bureau of Economic Research, 2009); Alex Nowrasteh, "H-1B Visas: A Case for Open Immigration of Highly Skilled Foreign Workers" (Washington, DC: Competitive Enterprise Institute, 2010); Stuart Anderson, "The Global Battle for Talent and People" (Washington, DC: Immigration Policy Center, 2003).; Darrell M. West, *Brain Gain: Rethinking U.S. Immigration Policy* (Washington, DC: The Brookings Institution, 2010); B. Lindsay Lowell, "H-1B Temporary Workers: Estimating the Population," Working Paper 12 (La Jolla, CA: The Center for Comparative Immigration Studies, 2000); William R. Kerr and William F. Lincoln, "The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Invention," Working Paper 09-005 (Boston: Harvard Business School, 2008); Hal Salzman, Daniel Kuehn, and B. Lindsay Lowell, "Guestworkers in the High-Skill U.S. Labor Market: An Analysis of Supply, Employment, and Wage Trends" (Washington, DC: Economic Policy Institute, 2013).

[2] U.S. Senate. 113th Congress. S.744, Border Security, Economic Opportunity, and Immigration Modernization Act. ONLINE GPO Access. Available: http://www.gpo.gov/fdsys/pkg/BILLS-113s744is/pdf/BILLS-113s744is.pdf [16 April 2013].

[3] Jonathan Rothwell, Jose Lobo, Deborah Strumsky, and Mark Muro *Patenting Prosperity: Invention and Economic Performance in the United States and its Metropolitan Areas* (Washington, DC: The Brookings Institution, 2013).

[4] Jonathan Rothwell, "The Need for More STEM Workers" (Washington, DC: Brookings Institution, 2012).

[5] Ibid.

[6] Neil G. Ruiz, Jill H. Wilson, and Shyamali Choudhury, *The Search for Skills: Demand for H-1B Immigrant Workers in U.S. Metropolitan Areas* (Washington, DC: The Brookings Institution, 2012).

[7] Ibid.

[8] Jonathan T. Rothwell and Neil G. Ruiz, "H-1B Visas and the Stem Shortage: A Research Brief" (Washington, DC: The Brookings Institution, 2013).

[9] Ibid.

[10] Ibid.

[11] Jonathan Rothwell, "Regional Inequality and 'The New Geography of Jobs'" (Washington, DC: The Brookings Institution, 2012).

[12] Enrico Moretti and Per Thulin, "Local Multipliers and Human Capital in the United States and Sweden," *Industrial and Corporate Change*, 22, 1, 2013, pp. 339-362.

[13] Mark Muro, "Multiplier Effects: Connecting the Innovation and Opportunity Agendas" (Washington, DC: The Brookings Institution, 2012).

[14] Enrico Moretti, *The New Geography of Jobs* (New York, NY: Houghton Mifflin, 2012).

[15] Ibid.

[16] Giovanni Peri, Kevin Shih, and Chad Sparber, "STEM Workers, H1B Visas and Productivity in US Cities," (London: Norface Migration, 2013).

[17] Ibid.
[18] Ibid.
[19] Ibid.
[20] Jonathan T. Rothwell and Neil G. Ruiz, "H-1B Visas and the Stem Shortage: A Research Brief" (Washington, DC: The Brookings Institution, 2013).
[21] Ibid.