

# Immigrants: Skills, Occupations and Locations

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In a previous *Regional Economist* article, we remarked that in order to assess the costs and benefits of immigration (both legal and illegal) one has to consider the distribution of skills in the foreign-born population and compare it with the distribution of skills among U.S.-born workers.<sup>1</sup> Although an influx of low-skilled immigrants tends to negatively affect the wages of similarly skilled U.S.-born workers, this influx could increase the productivity of medium-skilled workers, who comprise the majority of U.S.-born workers, if their skills complement each other's.

Not only is the distribution of skills among the foreign-born population widely different from that of their U.S.-born counterparts, but the choices these immigrants make when deciding where to live in the U.S. also differ considerably from those choices made by natives. Furthermore, for similar levels of skill or education, immigrant workers tend to choose different occupations than native workers do.

Identifying the differences in the composition of skills across local markets can help analyze the impact of immigration because an increase in the number of immigrants may have different effects across locations. There may also be effects unrelated to the effects on wages. For example, low-skilled immigrants have had a positive impact on the labor supply decisions of high-skilled U.S.-born women. For another example, high-skilled immigrants have boosted the innovation rate in the U.S.

## Geographic Distribution

A recent report by the Brookings Institution that uses data from the 2009 American Community Survey summarized the skills composition among the foreign-born and U.S.-born populations across the 100 largest metropolitan statistical areas (MSAs).

Foreign-born workers have, for the most part, either low or high levels of skills; therefore, the ratio of high-skilled individuals (those with a bachelor's degree or higher) to low-skilled individuals (those with less than high school education) of working age provides a concise, representative measure of their skills distribution. Across the largest 100 metropolitan areas, the study found, the ratio of high-skilled to low-skilled individuals among the foreign born varied considerably.

The table presents a list of the top and bottom 10 MSAs ranked in terms of the skill ratio among the foreign-born population for 2009. The average skill ratio among the top metro areas was 275, indicating that high-skilled workers outnumbered low-skilled workers by 2.75 to 1. Among the bottom 10 metro areas, the average ratio was 29. Among the top metro areas, St. Louis, Mo.-Ill., with a skill ratio of 305, ranked in third place. Its ratio indicates that a very large proportion of foreign-born workers in this city are high-skilled and outnumber low-skilled immigrants by about 3 to 1. Immigrants, however, represent only a small proportion of the overall population in the top 10 MSAs, 5.4 percent on average. The bottom 10 MSAs, in contrast, have a substantially larger proportion of immigrants, 19.4 percent on average. The 10 MSAs with the lowest skill ratio among the foreign-born are almost all located in California, New Mexico or Texas, while the 10 MSAs with the highest skill ratio among the foreign-born are scattered mostly across the Northeast and Midwest.

The skill composition of immigrants does not necessarily line up with the skill composition of U.S.-born workers. Among the bottom 10 MSAs, the skill ratio among the foreign-born population is substantially lower than that for the native population, while among the top 10 MSAs, the ratios are more

similar. Also, the 10 metropolitan areas with the lowest skill ratios among foreign-born workers had larger population growth overall than areas with higher skill ratios.

## Occupational Choices

The skill ratios discussed above were computed in terms of educational attainment levels, but immigrant workers differ from the native population also in terms of their occupation choices. Even within similar education levels, foreign-born workers choose very different occupations than native workers do.

A recent study by economist Todd Schoellman analyzed the connection between immigrants' skills and their occupational choices. He defined skills broadly in terms of education, training and experience, cognitive ability, physical skills, and language and communication skills. Immigrants are more likely than natives to work in manual occupations that are intensive in physical ability skills; immigrants are also more likely than natives to work in occupations that are intensive in cognitive ability, particularly in science and engineering. In contrast, natives are more likely to work in communications-intensive occupations, such as management, and in experience- and training-intensive occupations, such as repair services.


A similar study by economists Giovanni Peri and Chad Sparber focused only on immigrants and native workers with graduate degrees. Categorizing skills into two broad types, they found that immigrants and native workers choose different occupations. Highly educated immigrants specialize in occupations that require quantitative and analytical skills, while highly educated natives specialize in occupations that require interactive and communication skills.

## Unexpected Effects of Immigration

Economists Patricia Cortés and José Tessada recently found that the rise in low-skilled immigration during the 1980-2000 period increased the hours that highly educated U.S.-born women devote to work outside the home and decreased the amount of time that these women devote to household work (and consequently increased the amount they spend on housekeeping services contracted in the market).

The reason for this effect is not too surprising: Low-skilled immigrants work disproportionately in sectors that provide services that are close substitutes for services that would otherwise be produced in the home (such as gardening, housekeeping and child care). The recent waves of low-skilled immigration have caused the prices of these services to fall. This price decline, in turn, has led women to reduce their own time spent producing these services at home and to instead purchase them in the market at reduced prices. It turns out that women at the top quartile of the wage distribution are most likely to benefit from the exchange because their time in the workplace is more valuable than what it costs them to hire out household services. In fact, the authors found only reduced effects for women with wages above the median wage but below the top quartile and no effect for women with wages below the median.

Looking at the opposite end of the skill spectrum, economists Jennifer Hunt and Marjolaine Gauthier-Loiselle assessed the impact of high-skilled immigrants on the rate of innovation in the U.S., as measured by the count of patents for each person in the U.S. Understanding this connection is important because the rate of innovation has been linked in other studies to the rate of technological progress, productivity and, ultimately, economic growth. The authors analyzed the rise in the share of population of college-graduate immigrants during the period 1990-2000 and found that it led to an increase in patents per capita of up to 21 percent. Focusing only on the rise in the share of population of immigrant scientists and engineers with post-college degrees, the authors found an increase in patents per capita of up to 32 percent. Their estimates account for the possibility of positive and negative spillover effects.

The ways high-skill immigrants increase the patent rate include direct effects, through the greater concentration of the foreign-born in science and engineering occupations relative to U.S.-born individuals with similar levels of education, and via indirect effects, by making natives move innovative through collaboration. Even immigrants who do not get patents themselves, the authors explain, may provide support to U.S.-born scientists by providing complementary skills or by founding high-tech companies. Of course, a larger presence of immigrant scientists may have negative effects if it discourages natives from working in science and engineering, but that does not seem to be the case. 

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## ENDNOTE

<sup>1</sup> See Hernández-Murillo, 2006.

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Skill Ratios in the 100 Largest Metropolitan Statistical Areas (MSAs)	MSA Population Size Ranking	Percent Foreign-born Population	Native Skill Ratio	Foreign-born Skill Ratio	MSA Total Population Growth: 2005-2009
<b>Top 10 MSAs by Skill Ratio of Foreign-born</b>					
Pittsburgh, Pa.	22	3.01%	305.8	391.3	1.73%
Dayton, Ohio	61	3.02	212.7	330.2	2.17
St. Louis, Mo.-Ill.	18	4.03	257.7	304.9	3.69
Baltimore-Towson, Md.	20	8.28	294.1	278.8	4.14
Cincinnati-Middletown, Ohio-Ky.-Ind.	24	3.76	226.7	274.9	7.14
Madison, Wis.	88	6.26	808.5	259.1	9.76
Virginia Beach-Norfolk-Newport News, Va.-N.C.	36	5.84	260.1	231.7	5.70
Harrisburg-Carlisle, Pa.	96	4.49	255.2	230.7	7.31
Jacksonville, Fla.	40	7.99	233.4	223.4	8.49
Albany-Schenectady-Troy, N.Y.	57	6.92	367.2	221.8	5.09
<b>Average for the Top 10</b>		<b>5.36%</b>	<b>322.1</b>	<b>274.7</b>	<b>5.52%</b>
<b>Bottom 10 MSAs by Skill Ratio of Foreign-born</b>					
Providence-New Bedford-Fall River, R.I.-Mass.	37	12.54%	247.4	42.1	2.21%
Albuquerque, N.M.	58	9.69	336.5	38.8	9.22
Riverside-San Bernardino-Ontario, Calif.	14	21.32	169.1	38.6	8.23
Lakeland-Winter Haven, Fla.	87	10.25	121.4	37.0	10.05
Stockton, Calif.	78	23.74	134.5	32.6	4.43
El Paso, Texas	68	25.35	175.4	26.3	6.07
Fresno, Calif.	54	21.43	149.5	22.5	6.56
Modesto, Calif.	100	20.90	119.7	21.3	2.53
McAllen-Edinburg-Mission, Texas	70	28.98	90.2	18.1	10.30
Bakersfield, Calif.	63	19.72	95.6	13.3	11.49
<b>Average for the Bottom 10</b>		<b>19.39%</b>	<b>163.9</b>	<b>29.1</b>	<b>7.11%</b>

Data are from the 2005 and 2009 American Community Survey. The skill ratio is defined as the ratio of those with a bachelor's degree or higher to those with less than a high school degree, multiplied by 100.