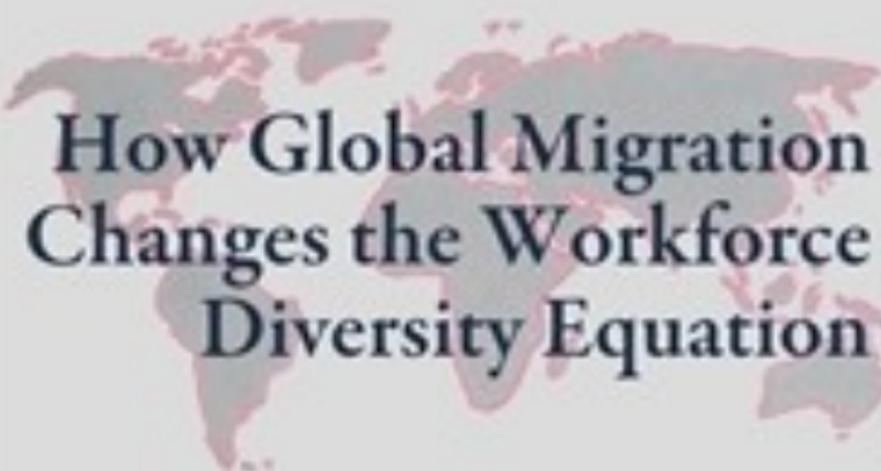


ADAPT LABOUR STUDIES BOOK-SERIES



# How Global Migration Changes the Workforce Diversity Equation

Massimo Pilati  
Hina Sheikh  
Francesca Sperotti  
Chris Tilly

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# How Global Migration Changes the Workforce Diversity Equation

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# How Global Migration Changes the Workforce Diversity Equation

Edited by

Massimo Pilati, Hina Sheikh,  
Francesca Sperotti  
and Chris Tilly

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# OCCUPATIONAL LICENSURE AND CHANGING BARRIERS TO IMMIGRANT WORKFORCE INCORPORATION<sup>1</sup>

KOJI CHAVEZ AND BETH RED BIRD

Over the past few decades, occupational regulation, and particularly licensing, has engulfed the American occupational structure. As of 2012, nearly thirty-two percent of all U.S. workers were required to hold a license in order to work in their chosen occupation, an increase of 50 percent over the last 30 years. Where licensing was once reserved primarily for professionals, such as lawyers, doctors, and engineers, today the practice governs a much wider range of workers, including carpet layers, massage therapists, agricultural inspectors and legal document assistants. Occupational licensing has increased the most in the less skilled occupations. Since 1983, the proportion of workers required to hold a license in order to work in jobs requiring no higher education has expanded by almost 75 percent, while the licensing rate of occupations requiring a college degree has increased at a much slower rate (Figure 12-1).

Occupational licensing creates a legal right to practice, legislatively demarcating tasks that can only be performed by authorized practitioners and reserving specific occupational titles for the sole use of licensed practitioners. The authority to practice must be obtained only from the state, and unauthorized practice results in criminal and civil penalties. Since 2009, massage therapists in the state of California have been required to register with the California Massage Therapy Council. Any person who self-identifies as a massage therapist or practitioner, or

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<sup>1</sup> This project has been funded, in part, with Federal funds from DOL/ETA, under Contract Number DOLJ111A21738. Direct correspondence to Koji Chavez, Department of Sociology, Building 120—Room 160, Stanford, CA 94305-2047. E-mail: [kchavez@stanford.edu](mailto:kchavez@stanford.edu).

engages in the practice of massage therapy, without registration, has engaged in an “unfair business practice” and may be subject to jail time.<sup>2</sup>

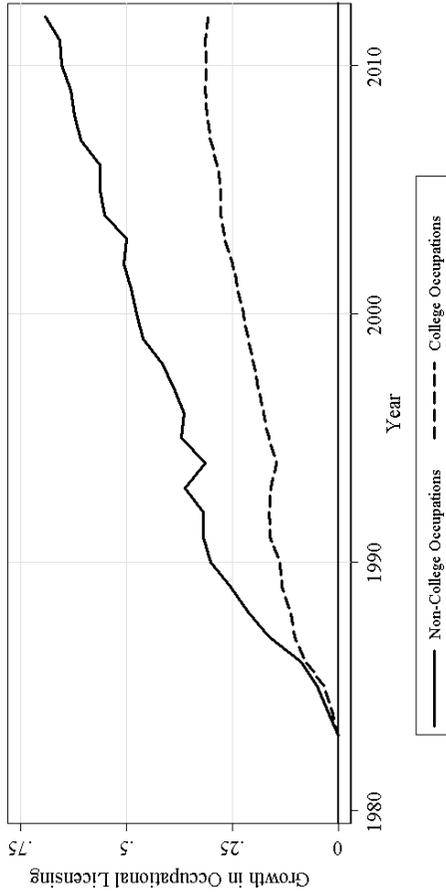


Fig. 1. – Growth in licensed occupation-states, by occupational education requirements, 1983-2012.  
 Note. – Categories based on modal occupational education 2010-2012.

The requirements necessary to obtain licensing vary by occupation, but generally include some combination of: (1) professional or academic educational requirements; (2) on-the-job apprenticeship or tenure; (3) formal examination; (4) good moral character; and (5) citizenship or

<sup>2</sup> For regulations governing massage therapy in California, see *California Business & Professions Code*, Division 2, Chapter 10.5, Sections 4600-20, adopted 1 January 2009. <http://leginfo.legislature.ca.gov/>.

residency.<sup>3</sup> Additionally, licensing authorities may set further terms for attainment and maintenance of a license, including periodic fees and ongoing educational requirements. California massage therapists must pay one hundred fifty dollars every two years in licensing renewal fees and submit for “recertification”, during which they are screened for misconduct, disciplinary violations, and criminal activity. Registration will be revoked if they fail to pay fees and pass screening.

Requirements to obtain a license typically mirror general market trends in the workforce. Obtaining a food handler card in California, a prerequisite to waiting tables, requires less than twenty dollars and a short online exam—certainly, no formal education is demanded of would-be servers.<sup>4</sup> In contrast, a licensed educational psychologist must have, at a minimum, “a master’s degree in psychology, educational psychology, school psychology, counseling and guidance, or a degree deemed equivalent” from an approved educational institution.<sup>5</sup>

The prevailing view of licensing is of a tool employed by professional occupations. However, occupational licensing is now one of the most prominent labor-market institutions across the occupational spectrum. The number of American workers required to hold a license has surpassed the number of workers who were members of unions during the heyday of trade shops.

The dominant view among economists is that licensing creates an artificial scarcity in the supply of labor, because licensing creates a minimum quality standard, below which entry is prohibited. Since not everyone who wishes to obtain a license is able, the net result is a decrease in the supply of labor within that occupation. The ability of licensing to limit supply will therefore vary with regulatory requirements, and licenses with more stringent entry requirements should limit supply more significantly.<sup>6</sup>

Much of the recent growth in licensing has taken place in states with high rates of immigrant entry. While there is no obvious causal link, the

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<sup>3</sup> Kleiner, M. 2006. *Licensing Occupations: Ensuring Quality or Restricting Competition?* Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research.

<sup>4</sup> See *California Health & Safety Code*, Division 104, Part 7, Chapter 3, Article 2, Section 113947.1, adopted 1 January 2007. <http://leginfo.legislature.ca.gov/>.

<sup>5</sup> See *California Business & Professions Code*, Division 2, Chapter 13.5, Article 2, Section 4989.20, adopted 1 January 2007. <http://leginfo.legislature.ca.gov/>.

<sup>6</sup> Holen, A.S. 1965. “Effects of Professional Licensing Arrangements on Interstate Labor Mobility and Resource Allocation,” *Journal of Political Economy* 73, No. 5:492-498.

correlation between high occupational regulation and immigrant labor force participation is 0.6 and has increased over time (Figure 8-2). Unfortunately, we know very little about how this growing trend impacts immigrant incorporation into the labor force with little available theory to guide speculation. This paper examines the impact of this changing occupational landscape on the economic incorporation of U.S. immigrants. Successful incorporation is an important issue for more than the foreign-born population, as successful integration allows immigrants to contribute to the economy, increases regional wealth, enhances a local area tax-base, reduces drain on local welfare programs, and decreases the negative effects affiliated with occupational segregation and secondary labor markets.<sup>7</sup>

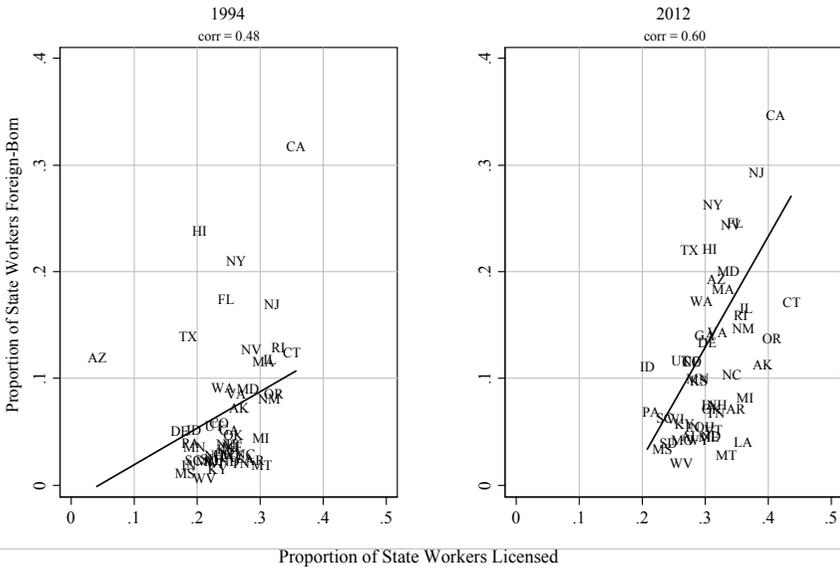


Fig. 2. – Correlation between proportion of state workforce required to hold a license and foreign-born immigrant proportion of workforce in 1994 & 2012

<sup>7</sup> Saxenian, A. 1999. *Silicon Valley's New Immigrant Entrepreneurs*. San Francisco: Public Policy Institute of California.

## 1. The Push-Pull Effect of Occupational Regulation

The concept of “immigrant incorporation” embodies the extent to which immigrants are similar to other Americans, and primarily includes socioeconomic standing, spatial concentration, intermarriage, and language use.<sup>8</sup> Here, we focus on economic integration, and particularly on occupational patterns and job entry.

An immigrant’s ability to fully integrate into the domestic labor force is a function of both the context of exit from their home country and the context of entry into the host country.<sup>9</sup> Resources and capital possessed by immigrants upon exit from their countries of origin, including financial, human, social and cultural capital, is an important determinant of the speed and ease of integration into the host country. Accordingly, the type of occupation chosen by an immigrant is in part determined by education, work experience and language skill obtained prior to entry.<sup>10</sup> The primary motivation of migration is also an important determinant, as employment-seeking immigrants are more successful in achieving economic incorporation, compared to those driven by family reunification objectives.<sup>11</sup> Additionally, immigrants migrating into high-skill occupations have an easier time entering the labor force.<sup>12</sup> This is partially due to the high level of H-1B

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<sup>8</sup> Gordon, M. 1964. *Assimilation in American Life: The Role of Race, Religion, and National Origins*. U.S.A.: Oxford University Press.

Waters, M., and T. Jiménez. 2005. “Assessing Immigrant Assimilation: New Empirical and Theoretical Challenges,” *Annual Review of Sociology* 31, No. 1:105–125.

<sup>9</sup> Portes, A, and R. Rumbaut. 2006. *Immigrant America: A Portrait*. Berkeley: University of California Press.

<sup>10</sup> Becker, G. 1964. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: University of Chicago Press.

Chiswick, B. 1978. “The Effect of Americanization on the Earnings of Foreign-Born Men,” *Journal of Political Economy* 86, No. 5:897–921.

Borjas, G. 1990. *Friends or Strangers: The Impact of Immigrants on the U.S. Economy*. New York: Basic Books.

Chiswick, B., and P. Miller. 2002. “Immigrant Earnings: Language Skills, Linguistic Concentrations and the Business Cycle,” *Journal of Population Economics* 15, No. 1:31–57.

Bean, F., and G. Stevens. 2003. *America’s Newcomers and the Dynamics of Diversity*. New York: Russell Sage Foundation Publications.

<sup>11</sup> Jasso, G, and M. Rosenzweig. 1995. “Do Immigrants Screened for Skills Do Better Than Family Reunification Immigrants,” *International Migration Review* 29, No. 1:85–111.

<sup>12</sup> Jasso, G, and M. Rosenzweig. 1995. “Do Immigrants Screened for Skills Do Better Than Family Reunification Immigrants,” *International Migration Review*

workers, on temporary visas for specific employment purposes. These workers engage in skilled occupations and, by definition, are highly integrated into the American economy, both in participation and in earnings, due to federal law requiring employers to pay H-1B workers at rates equivalent to their native counterparts.<sup>13</sup>

The economic and political context of the host country is also important in determining integration. Contexts include: government policy; conditions of the host labor market, including phenomena such as discrimination and labor market segmentation; and the co-ethnic community into which the immigrant settles.

Immigration policy is often discussed on a national scale, as reflective of deeply-held cultural and historical traditions.<sup>14</sup> Nonetheless, when policy affects immigrant involvement in labor markets, the affect on incorporation is subject to substantial differentiation at the local level, since labor markets are often local or regional. A single policy may both help and hinder immigrant incorporation, depending on its interactions with state and local factors.<sup>15</sup> The practical enforcement of American immigration policy is constantly subject to variation at the state level, and over the course of the Twentieth Century many states acted to reduce barriers to immigrant economic integration, both formally through legislative and administrative action, and informally through differential enforcement strategies. As Plasencia and co-authors notes:

“Although the federal government is the key player in fashioning policies governing immigration, the states have always been and continue to be critical in determining the potential for successful settlement and full incorporation of immigrants.”<sup>16</sup>

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29, No. 1:85–111.

<sup>13</sup> Luthra, R. 2009. “Temporary Immigrants in a High-Skilled Labour Market: A Study of H-1Bs,” *Journal of Ethnic and Migration Studies* 35, No. 2:227–250.

<sup>14</sup> Brubaker, W. 1990. “Immigration, Citizenship, and the Nation-State in France and Germany: A Comparative Historical Analysis,” *International Sociology*, No. 5:379–407.

<sup>15</sup> Freeman, G. 2004. “Immigrant Incorporation in Western Democracies,” *International Migration Review* 38, No. 3:945–969.

Portes, A, and R. Rumbaut. 2006. *Immigrant America: A Portrait*. Berkeley: University of California Press.

<sup>16</sup> Plasencia, L., G. Freeman, and M. Setzler. 2003. “The Decline of Barriers to Immigrant Economic and Political Rights in the American States: 1977-2001,” *International Migration Review* 37, No. 1:5–23.

Similarly, local labor market conditions vary widely and can substantially alter immigrant outcomes, independent of national or state policy. When immigrants enter a local workforce, they participate in an occupational structure that existed prior to their incorporation, and thus may experience differential rates of segregation into low-status and low-earning occupations within the secondary sector.<sup>17</sup> The interaction between local labor markets and changing federal and state policies makes it important to examine the effects that local conditions, shaped by larger forces, have on immigrant economic incorporation.

To the extent that the foregoing discussion covers forces, derived either from policy or labor markets, that direct immigrants into certain occupations, an alternative process is also ongoing. Specifically, migrants will, to some degree, choose their markets. Immigrants may choose State A over State B because of favorable immigration policies, fewer exclusionary laws, better market conditions, or any other factor perceived by workers as distinguishing the two states.<sup>18</sup> Direct analysis of these factors is beyond the scope of this study, but we attempt a correction designed to prevent factors of migrant selection from biasing results.

## 2. Immigrant Sensitivity to Scarcity of Supply

Occupational licensure research typically offers theoretical arguments suggesting that regulation limits the supply of labor into an occupation, and subsequently increases wages.<sup>19</sup> Additionally, even in the most lenient

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<sup>17</sup> Piore, M. 1979. *Birds of Passage: Migrant Labor and Industrial Societies*. New York: Cambridge University Press.

Waldinger, R., and M. Lichter. 2003. *How the Other Half Works: Immigration and the Social Organization of Labor*. Berkeley: University of California Press.

Rodriguez, N. 2004. "Workers Wanted": Employer Recruitment of Immigrant Labor," *Work and Occupations* 31, No. 4:453–473.

<sup>18</sup> Borjas, G. 2001. "Does Immigration Grease the Wheels of the Labor Market?," *Brookings Papers on Economic Activity*, No. 1:69–119.

<sup>19</sup> Rottenberg, S. 1962. "The Economics of Occupational Licensing," in *Aspects of Labor Economics*, ed. National Bureau of Economic Research, (Princeton: Princeton University Press), 3–20.

Akerlof, G. 1970. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *Quarterly Journal of Economics* 84, No. 3:488-500.

Gellhorn, W. 1976. "The Abuse of Occupational Licensing," *The University of Chicago Law Review* 44, No. 1: 6-27.

Leland, H. 1979. "Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards," *Journal of Political Economy* 87, No. 6: 1328-46.

Moore, W., D. Peach, and R. M. Wilson. 1981. "The Regulation of Occupations

form, the process of compliance with licensing standards will require some resources, typically in the form of a time investment necessary to obtain the appropriate qualifications and a monetary outlay for expenses such as filing and educational fees.<sup>20</sup> For migrants arriving with little financial capital, this may prove to be a substantial barrier.<sup>21</sup>

Such supply-side arguments are only occasionally coupled with an empirical presentation.<sup>22</sup> In a study of progressive-era licensing legislation, Law and Kim found that licensing restricted entry into only four professional occupations, of eleven occupations studied.<sup>23</sup> Kleiner found no statistically significant relationship between licensing and growth of occupational employment rates.<sup>24</sup>

Immigrants may be more sensitive to labor market conditions such as: the structure of wages; the business cycle; and regional differences in opportunity.<sup>25</sup> In this vein, the nature of licensing suggests that immigrants

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and the Earnings of Women,” *The Journal of Human Resources* 16, No. 3: 366-83.  
Shaked, A, and J. Sutton. 1981. “The Self-Regulating Profession,” *The Review of Economic Studies* 48, No. 2: 217-34.

Gross, S. 1984. *Of Foxes and Hen Houses: Licensing and the Health Professions*. Westport, Conn: Quorum Books.

Shapiro, C. 1986. “Investment, Moral Hazard, and Occupational Licensing,” *The Review of Economic Studies* 53, No. 5: 843-62.

<sup>20</sup> Weeden, K. 2002. “Why Do Some Occupations Pay More than Others? Social Closure and Earnings Inequality in the United States,” *American Journal of Sociology* 108, No. 1: 55-101.

<sup>21</sup> Dorsey, S. 1983. “Occupational Licensing and Minorities,” *Law and Human Behavior* 7, No. 2/3: 171-81.

<sup>22</sup> Weeden, K. 2002. “Why Do Some Occupations Pay More than Others? Social Closure and Earnings Inequality in the United States,” *American Journal of Sociology* 108, No. 1: 55-101.

Kleiner, M. 2006. *Licensing Occupations: Ensuring Quality or Restricting Competition?* Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research.

<sup>23</sup> Law, M., and S. Kim. 2005. “Specialization and Regulation: The Rise of Professionals and the Emergence of Occupational Licensing Regulation,” *The Journal of Economic History* 65, No. 3: 723-56.

<sup>24</sup> Kleiner, M. 2006. *Licensing Occupations: Ensuring Quality or Restricting Competition?* Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research.

<sup>25</sup> LaLonde, R., and R. Topel. 1997. “Economic Impact of International Migration and the Economic Performance of Migrants.” in *Handbook of Population and Family Economics*, eds. Mark R. Rosenzweig and O. Startk., (New York and Oxford: Elsevier Science North-Holland), 799–850.

Chiswick, B., and P. Miller. 2002. “Immigrant Earnings: Language Skills,

may also be more susceptible to any supply-limiting effects. Many licensing structures include a residency requirement as a direct condition of practice, thus limiting the ability of new migrants to gain occupational access. As with many other barriers to incorporation, the impact of such regulation will most likely decline as more time is spent by the immigrant in the host country.<sup>26</sup>

Acquisition of the requisite credentials may also be difficult. Many licenses have very specific educational requirements that frequently can only be met by educational institutions within the United States, and in some cases may require attendance at a school within the state of licensure. For example, California massage therapists must attend 500 class hours designed specifically to meet the California requirement.

Education received prior to entry may not meet such requirements. This is consistent with evidence that foreign education is not as effective as native-based education in securing positive immigrant economic outcomes.<sup>27</sup> Local educational requirements and licensing exams also place an additional burden on individuals with limited language skills. States may denote specific international credentials that do or do not meet licensing criteria, but such reciprocity arrangements are much more prominent in high-skilled occupations, compared to the lower-skilled occupations that have experienced the most rapid growth in licensing.

Additionally, educational requirements place a disproportionately heavy burden on immigrants arriving as adults, after the acquisition of education credentials in their countries of origin. Without legal reciprocity agreements, they are forced to choose between completing (and funding) the same education twice, versus losing some (or all) of that education's value by switching occupations upon arrival.

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Linguistic Concentrations and the Business Cycle," *Journal of Population Economics* 15, No. 1:31–57.

Butcher, K., and J. DiNardo. 2002. "The Immigrant and Native-Born Wage Distributions: Evidence from the United States Censuses," *Industrial and Labor Relations Review* 56, No. 1:7–12.

Bratsberg, B., E. Barth, and O. Raaum. 2006. "Local Unemployment and the Relative Wages of Immigrants: Evidence from the Current Population Surveys," *Review of Economics and Statistics* LXXXVIII, No. 2:243–263.

<sup>26</sup> Bean, F. 2004. "Immigrant Job Quality and Mobility in the United States," *Work and Occupations* 31, No. 4:499–518.

<sup>27</sup> Zeng, Z., and Y. Xie. 2004. "Asian-Americans' Earnings Disadvantage Reexamined: The Role of Place of Education," *American Journal of Sociology* 109, No. 5:1075–1108.

Akresh, I. 2006. "States, Occupational Mobility among Legal Immigrants to the United," *International Migration Review* 40, No. 4:854–884.

### **3. Licensing as an Institutional Process**

Past studies of occupational regulation focus primarily on the monopolistic aspects of licensing. Yet, modern licensing regulations include processes that undermine this understanding of licensing economics. These include state-administered exams, school or training requirements, criminal background checks, and a variety of other impersonal processes. These processes may actually function to aid incorporation in two ways.

First, licensing delineates, codifies, and publicizes uniform standards for occupational entry. Thus, even if licensing establishes high cost barriers to entry, it removes the problems of uncertainty as to the path to access and disparities of training. Where, in the past, informal entry mechanisms required network connections and the right demographic make-up, the modern formalization of entry structures provides an education and certification path that is more equally open to all comers.

Licensing mechanisms include standardized exams, school or training requirements, criminal background checks, and a variety of other impersonal processes. While these systems create barriers, they also standardize access, creating a codified and publicized method of entry.

This potentially “color-blind” path into the occupation may have the effect of enhancing accessibility for immigrants, and particularly recent arrivals, who may lack the occupational social networks necessary to find and obtain jobs, and the cultural capital to know how occupational entry is typically achieved.

Second, licensing defines the “proper” way to practice, and thus enhances the credibility of the practitioner, since license requirements can be viewed as comprehensive lists of ways to be excluded or removed. This provides enhanced credibility for individuals who might otherwise appear to be occupationally mismatched. Where foreign educational credentials, language barriers, and other immigrant characteristics might decrease the likelihood of employment when considered independently, the state endorsement provided by licensure provides an indicator of credibility and competency, thus offsetting the perceived lower competence of the foreign worker.

### **4. The Effect of Licensing on Immigrant Incorporation**

Above, we posit two conflicting processes through which occupational licensing may impact immigrant incorporation. In the first, licensing manifests primarily as a set of barriers to entry. These barriers are larger

(and more costly) in occupations requiring a significant amount of education. Even if high skilled occupations tend to have reciprocity exceptions, there are plenty of other occupations that require education, particularly non-college vocational training, but have no such arrangements. This may place a more substantial burden on immigrants, particularly those who have recently arrived, or achieved an educational credential prior to migrating.

Conversely, licensing creates a very specific set of uniform standards that delineate the process through which entry is gained. The development of licensing is frequently accompanied by the development of educational institutions designed to cater to potential entrants, and these institutions provide social networks, recruiting offices, opportunities for cultural socialization, and other mechanisms by which incorporation may be facilitated during the course of achieving a credential. Also, much of the mystery is taken out of occupational entry, thus giving immigrants access to a “color-blind” process that doesn’t depend on preexisting cultural knowledge or social connections. This is particularly advantageous for recently-arrived immigrants or those who lack the pre-existing skills to gain labor market access through other means.

It is possible that both processes occur simultaneously, thus complicating the task of empirically disentangling the two. To assess the impact of licensing on immigrant occupational entry, we employ a fixed effects approach that exploits the longitudinal nature of the data set, examining changes that occur in the occupation, *within the same state*, in the years following enactment of licensing legislation. The result is a quasi-experimental analysis that assesses the impact of occupational regulation on immigrant occupational entry when an unlicensed occupation becomes licensed for the first time, and measures the lasting impact of that transition.

## 5. Data and Method

The outcome of interest is the percent of the occupation that is foreign-born within the state and year. The dataset contains 341 occupations resulting in 256,051 cells (as some cells are empty). This analysis employs two general models. The first is a fixed effects model, the general form of which is:

$$Y_{ost} = \alpha + \gamma LICENSE_{ost} + \beta' W'_o + \beta' X'_s + \beta' Z'_t + \varepsilon_{ost} \quad (1)$$

where  $Y_{ost}$  is the percent foreign-born for occupation  $o$  in state  $s$  and year  $t$ . Of interest is  $\gamma$ , a coefficient indicating the effect of licensure on the percentage of the occupation that is foreign-born. Licensure is measured as a dummy variable indicating that workers are required by their state to hold a license in order to work in their occupation in that year. The model also contains fixed effects for occupation, state, and year. The benefit of a fixed effects structure is the ability to control for time-invariant, geographically-constant characteristics of an occupation, even if those characteristics are correlated with  $\varepsilon_{ost}$ . Thus, the effect of licensure can be interpreted as the change in worker composition licensed occupations experience compared to the unlicensed version of *that same occupation*.

Because the comparison of interest is between licensed and unlicensed occupations, analyses are limited to occupations that are licensed in some states, but not all states, in any given year (107,658 cells).

It is also not possible to include other measures of occupational characteristics in fixed effects models, in order to look at differences across education. However, it is possible to interact licensure with other occupational measures, and thus we interact licensure with a categorical measure of education indicating whether the occupation generally requires a college degree. College, as measured here, includes any 2- or 4-year degree granting institution, and excludes vocational schooling and training aimed at providing occupation specific skills. Categories are based on the modal level of education held by incumbents within the occupation, measured 2010 to 2012. This categorization is applied, retroactively, to all respondents 1994 to 2012.

## 6. Longitudinal Models

Of course, one of the most significant concerns of fixed effects modeling is geographic heterogeneity. If there is something unique about the occupational characteristics of a state that licenses the occupation, compared to states that do not, then that distinction may pervade estimates and bias conclusions. To account for this we examine changes in each occupation's composition longitudinally, by analyzing changes in the outcome variable for that same occupation within that state in the years following enactment, while controlling for changes that simultaneously occur in unlicensed jurisdictions. The goal is to remove any heterogeneity caused by differences between states at the time licensing legislation is adopted, while taking into account changes that occur in the whole occupation over time.

The longitudinal model is multi-level and takes the form:

$$Y_{ost} = \alpha_o + \zeta_o YEAR_t + \varphi_o LICENSE_{ost} + \psi'_o YEAR_t * LICENSE_{ost} + \varepsilon_{ost} \quad (2)$$

where  $Y_{ost}$  is again the percent foreign-born for occupation  $o$  in state  $s$  and year  $t$ . The first-level model also contains a dummy variable for licensed status and each year, as well as a license-by-year interaction. The model is estimated separately on each occupation. Of interest is the matrix of coefficient  $\psi'_o$ , which can be interpreted as the change in the licensing premium over time for that particular occupation. The second-level equation then forces these license-by-year terms to be a function of the amount of time the occupation has been licensed in a given state-year. It takes the form:

$$\psi'_o = \alpha + \tau TIME ENACT_{ost} + \mu_{ost} \quad (3)$$

where  $\tau$  estimates changes in the licensing premium in the years since legislation enactment. Time since enactment is treated as a vector of dummy variables in order to avoid assumptions about the structure of the licensing change.

## 7. Individual-Level Data

Occupation, immigrant status, and other individual-level data comes from the 1994 through 2012 Current Population Survey (CPS) monthly sample, a nationally representative survey which captures income from employment sources. Since Census occupational codes changed twice during the sample period, codes from different years were “crosswalked” using a specially constructed composite of occupational code crosswalks from the Census Bureau and the National Crosswalk Service Center.<sup>28</sup> After crosswalking, CPS contains data on 341 occupations.

To test hypotheses as to the impact of licensing of different types of immigrant incorporation, we examine three groups of immigrants. In general, “immigrant” refers to all individuals born outside the United States and its territories, whether naturalized or not. References to “recent arrivals” denote individuals who report arrival in the United States within

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<sup>28</sup> For more information, see “Code Lists and Crosswalks”, in the “Industry and Occupation” Section, U.S. Census Bureau.

<http://www.census.gov/people/io/methodology/> (accessed 2 January 2013).

And “Crosswalks”, National Crosswalk Service Center.

<http://www.xwalkcenter.org/index.php/classifications/crosswalks> (accessed 28 December 2013).

the five years immediately preceding survey response. Because CPS does not indicate where education was completed, we analyze individuals who obtained their educational credentials outside the United States by referring to those who arrived in the United States as adults (age 25 or older), and thus past the age where they would be likely to complete K-12 education or a standard college degree program after arrival. Other outcome variables include the percentage of the occupation-state-year that is a recent-entry or adult-entry immigrant.

A rather substantial barrier to immigrant incorporation is document status.<sup>29</sup> Undocumented workers have a much harder time entering many occupations, and face particular challenges with respect to licensed occupations, which require interaction with regulation-driven processes and government oversight. Unfortunately, CPS contains no data on the documentation status of immigrant respondents. The extent to which undocumented status blocks employment opportunity in the labor market is unclear, though there is some evidence that employers prefer undocumented immigrants for the low status jobs in the secondary labor market that Americans are loath to take.<sup>30</sup> While CPS provides a nationally-representative sample of the United States population, and thus undoubtedly contains at least some undocumented workers, they are most likely undercounted in this data set. As a result, if such workers gravitate towards unlicensed occupations, this will upwardly bias any apparent effect of licensing in the fixed-effect models. On the other hand, since undocumented workers will not be grandfathered into the new licensing structure, results will be downwardly biased as to any apparent effect of licensing in the longitudinal models. Results should be interpreted judiciously.

The final weighted sample contains 11,990,336 civilian workers of ages 18 to 64. A summary of the sample is presented in Table 1.

## 8. Licensing Data

Licensing data was derived from an exhaustive census of actual occupational regulations, reviewing statutes and codes from all fifty states.<sup>31</sup> Observations are left-censored at 1970, due to limitations in the availability of older legislative materials. Each worker is categorized as

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<sup>29</sup> Hall, M., E. Greenman, and G. Farkas. 2010. "Legal Status and Wage Disparities for Mexican Immigrants," *Social Forces* 89, No. 2:491–513.

<sup>30</sup> Waldinger, R., and M. Lichter. 2003. *How the Other Half Works: Immigration and the Social Organization of Labor*. Berkeley: University of California Press.

<sup>31</sup> Licensing data is available for download at <http://www.BethRedBird.com>.

“licensed” if workers in their occupation were required to hold a license in that state and year.

Unfortunately, licensing legislation does not correspond perfectly with Census occupational categories. In some cases, occupations that are licensed share a Census category with unlicensed workers. For example, California regulates “welding contractors,” but the corresponding Census category includes “welding, soldering, and brazing workers.” Fortunately, legislators tend to draft licensing regulations with a broad scope, and thus most licenses map neatly onto Census occupation categories. Nonetheless, a state-level measure will overestimate licensing to the extent that the CPS scheme combines licensed practitioners with unlicensed ones. This “slippage” will dilute any effects of migrant status on occupational entry but should have no effect on within-state comparisons over time. Only 4.88 percent of respondents are affected by slippage issues.

Native workers tend to be licensed at a slightly higher rate than foreign-born workers. In 2012, about 32 percent of native workers held an occupational license, compared to about 29 percent of immigrant workers. Licensing growth rates also differ by worker status.

Because not every interested worker is able to meet licensing requirements, regulation can create an underground market for services provided by unlicensed workers. The effect of such markets on wages can be difficult to discern. Rottenberg argued that underground markets are more likely to develop in high-paying occupations.<sup>32</sup> However, because such occupations require skill, this may make unlicensed practitioners easier to detect. These conflicting processes suggest that occupations in the middle of the skill-spectrum may be most likely to suffer from underground markets. To the extent that immigrants, and particularly undocumented immigrants, are more likely than their native counterparts to engage in unlicensed practice, this may blunt the effect of licensure on immigrant entry.

Finally, many of the processes discussed differ across the occupational skill-spectrum. Specifically, educational barriers to entry are larger (and more costly) for occupations requiring a significant amount of education. Conversely, these occupations are also the most likely to have reciprocity stipulations, decreasing the educational burden on immigrants.

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<sup>32</sup> Rottenberg, S. 1962. “The Economics of Occupational Licensing.” in *Aspects of Labor Economics*, ed. National Bureau of Economic Research, Princeton: Princeton University Press, 3–20.

Table 12-1. Descriptive Statistics for Individual and Occupational-Level Variables<sup>33</sup>

Variable	Unlicensed Occupations	Licensed Occupations	Full Sample
	Mean (SD)	Mean (SD)	Mean (SD)
<i>Individual-Level Variables</i>			
Foreign-Born	0.133	0.115	0.128
Adult-Entry (of all Foreign-Born)	0.049	0.042	0.047
Recent-Entry (of all Foreign-Born)	0.022	0.015	0.020
Female	1.511	1.436	1.489
<i>Race</i>			
White	0.092	0.077	0.087
Black	0.113	0.084	0.104
Hispanic	0.042	0.044	0.043
Asian	0.017	0.015	0.016
Other	0.494	0.490	0.493
Married, Spouse Present	0.563	0.648	0.588
Age	38.948 (12.262)	40.777 (11.279)	39.488 (12.010)
Years of Education	13.266 (2.456)	14.606 (2.407)	13.661 (2.517)
Union Member	0.114	0.185	0.135
<i>Occupation-Level Variables</i>			
<i>Occupational Education Requirement</i>			
Non-College Occupation	0.743	0.288	0.609
College Occupation	0.257	0.712	0.391
<i>Outcome Variables</i>			
Proportion Occ-St-Yr Foreign-Born	0.133	0.115	0.128
Proportion Occ-St-Yr Adult-Entry	0.049	0.042	0.047
Proportion Occ-St-Yr Recent-Entry	0.022	0.015	0.020
Number of Respondents	8,452,554 0.705	3,537,782 0.295	11,990,336

<sup>33</sup> Means are based on respondents included in the sample who have no missing values on all other covariates. Sample is limited to individuals over age 18 and currently employed.

## 9. Findings

Looking at Table 12-1, it is immediately clear that immigrants are less likely to be licensed than native workers. This change may be the result of two processes: immigrants occupying different occupations; and licensing affecting the occupation's composition. To assess this second effect, we first examine differences in composition across different versions of the same occupation.

### 9.1. Differences in Licensing Composition

The question remains: does occupational regulation enhance or hinder immigrant entry into an occupation? To address this question, we employ a fixed effects model, which compares the composition of an occupation's workforce in the years following licensure enactment with the composition of that same workforce at the time of enactment. As such, each occupation functions as its own control for occupational characteristics, and any bias caused by omitted state, occupation, or time characteristics is removed.

The results of a fixed effects model are surprising. Table 12-2 shows that the number of foreign-born workers is nearly 0.5% higher in licensed occupations than in their unlicensed counterparts. The interaction of license with college-requiring occupations reveals that the entire positive effect is due to non-college occupations, which have nearly one percent more foreign-born workers. This might seem like a small increase.

However, since unlicensed non-college occupations average 14.5% foreign-born workers, an increase of 0.82% represents a change of more than five percent. In contrast, college occupations experience a nearly one percent decline. This is a 10.1% decrease from the unlicensed college average of 10.0% foreign-born workers.

In the theoretical discussion above, we posit that licensing may erect more substantial barriers for immigrants who enter the country after age 25, when they have arguably achieved educational credentials elsewhere. Figure 6 shows the change in adult-entry workers, following enactment. Table 12-2 suggests that this is the case, as the proportion of adult-entry foreign-born workers is slightly smaller than the unlicensed counterpart.

We also posited above that, to the extent that licensing creates pathways into an occupation, this might be most effective for recently-arrived immigrants who lack the cultural and social capital to find other ways into an occupation. Table 12-2 shows that this is not the case. To the contrary, licensing provides very little benefit to recent immigrants overall and seems to decrease immigrant entry for college occupations.

The evidence thus far suggests that, to whatever extent licensing requirements erect legal and economic barriers to occupational entry, the scarcity of supply effect is far outweighed by the institutional effect of a codified, uniform process of admission. However, this benefit would seem to be missing or ineffective for immigrants with low levels of social or cultural capital.

Table 12-2 Fixed Effect Models of the Percent of the Occupation-State-Year that is Foreign-Born, Adult-Entry, or Recent-Entry.<sup>34</sup>

Coefficient	Fixed Effect Models					
	Foreign-Born		Adult-Entry		Recent-Entry	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
-License	0.4300	** (0.1500)	-0.0300	(0.0900)	0.0000	(0.0600)
-Constant	-0.7000	(2.2200)	-0.0600	(1.3300)	0.3000	(0.9600)
Observations	107,658		107,658		107,658	
Adj. R <sup>2</sup>	0.274		0.149		0.094	
Coefficient	Fixed Effect Models with Educational Category Interaction					
	Foreign-Born		Adult-Entry		Recent-Entry	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
-License	0.8200	*** (0.1900)	0.0400	(0.1100)	0.0900	(0.0800)
-License x College Occupation	-0.9900	*** (0.3000)	-0.1900	(0.1800)	-0.2400	(0.1300)
-Constant	-0.0900	(2.2300)	0.0600	(1.3300)	0.4500	(0.9600)
Observations	107,658		107,658		107,658	
Adj. R <sup>2</sup>	0.274		0.149		0.094	

## 9.2. Effect of Licensing on Occupational Entry

We now turn to the effect that licensing has on an occupation within the state, in the years following enactment. Since 1994, 435 new licenses have been created across 109 distinct occupations. An initial concern here was that states which regulate occupations may do so as a result of the demographic composition of the particular occupation within the state, thus biasing results of the fixed effect models. Longitudinal analysis corrects for such bias by limiting analysis to the percent *change* since enactment, compared to the percent *change* among unlicensed occupations during the same years.

<sup>34</sup> Models also contain fixed effects for occupation, state, and year. Eicker-Huber-White robust standard errors are included in parentheses to account for clustering at the state level. \*  $\leq 0.05$ ; \*\*  $\leq 0.01$ ; \*\*\*  $\leq 0.001$

Figure 12-3 presents the years following enactment, in which immigrant participation in licensed occupations drops slightly before expanding significantly among non-college occupations.<sup>35</sup> Within 20 years following enactment, immigrant participation in college occupations will increase by nearly 2 percent. Thus, if a non-college occupation is 14 percent immigrant in the year of enactment, the proportion of foreign workers expands to be nearly 16 percent over two decades. The effect varies over time because, like many institutional changes, it takes time to filter broadly across society. The initial drop following enactment shows that the benefit to immigrants does not accrue immediately, suggesting that it takes time for subsidiary institutions, such as vocational schools and boards, to develop.

Figure 12-4 depicts the change in adult-entry immigrants in the years following enactment. The effect is similar to that of all foreign-born workers. The magnitude is smaller, in part because the proportion of adult-entry immigrants in unlicensed non-college occupations is only 5.3%, compared with 14.5% for all immigrants. This means that 1.2% increase that immigrants experience near the 20-year mark would increase the adult-entry percentage from 5.3% to more than 6.5%, an increase of 22.6%. Figure 12-5 shows that the level of recent-entry foreign-born workers increases at a much lower rate in the years following enactment.

This may be, in large part, because many non-college licensing regulations have a requirement that the applicant reside in the state for one or two years prior to application. This might blatantly exclude recent-entry workers, blunting any benefit of licensing. Additionally, educational and other requirements might impose a *de facto* residential requirement, by demanding completion of time-consuming mechanisms that can only be accomplished while in the state, and thus further diminish the ability of recent-entry workers to obtain the license.

Interestingly, there is no increase across immigrant group for college occupations. This suggests that entry for skilled workers is not bolstered by licensure and its subsidiary institutions. This may be due to the high rate of H-1B visas among this population. Such workers enter the country with their employment situation settled and have no need of the tools created by the licensing process.

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<sup>35</sup> Noise increases in the graph as the years since enactment increases, due to smaller sample sizes. This is because this portion of the analysis does not consider any license with an enactment date prior to 1971, since such dates are left-censored. Thus, the only respondents who might be able to show a time since enactment of thirty years are in years 2001 through 2012; the only respondents who might report twenty years are in 1991 through 2012; and so forth.

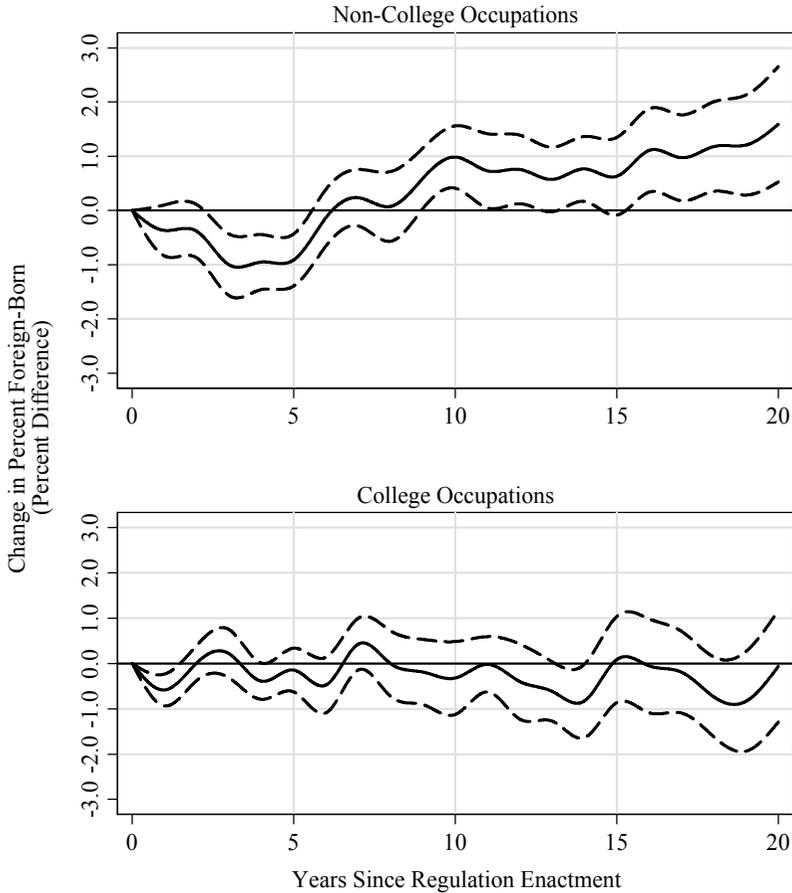


Fig. 3. – Change in percent Foreign-Born between the licensed and unlicensed occupation (with 95% CI), as percent, since enactment.

NOTE. – Line is smoothed.

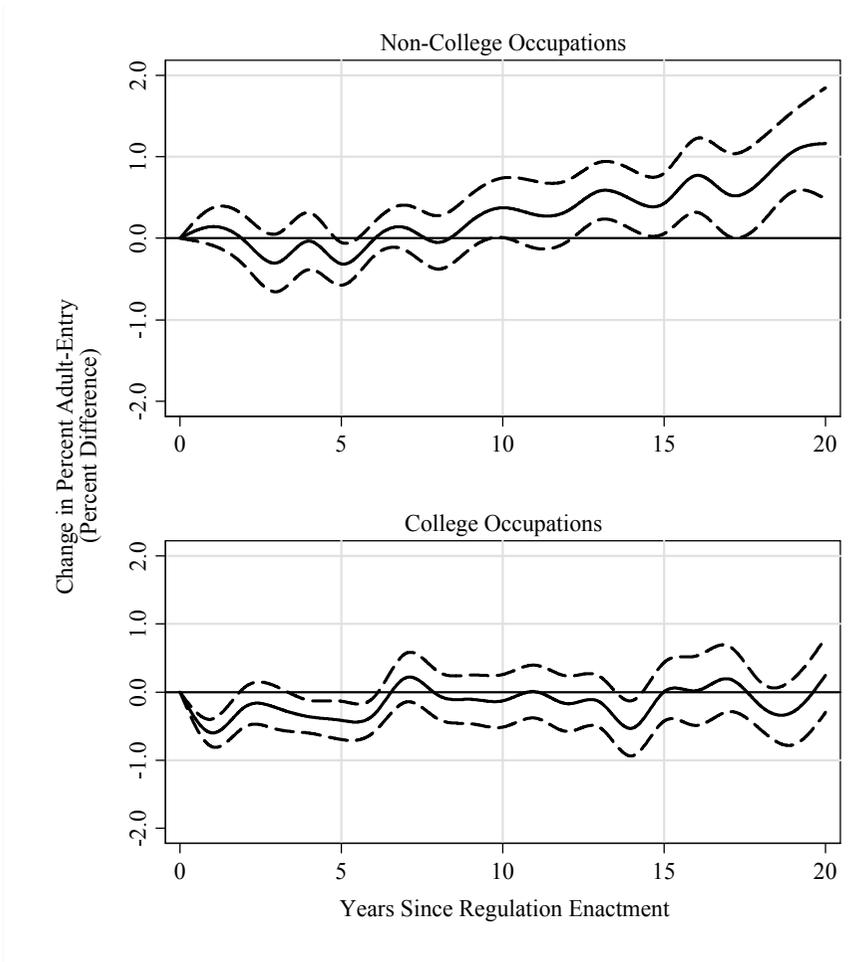


Fig. 4. – Change in percent Adult-Entry Foreign-Born between the licensed and unlicensed occupation (with 95% CI), as percent, since enactment.

NOTE. – Line is smoothed.

It is also important to note that none of our results suggest a reduction of supply. At most, we present evidence of *no increase* of supply across certain occupations and immigrant groups, and thus offer no empirical support for the scarcity of labor hypothesis.

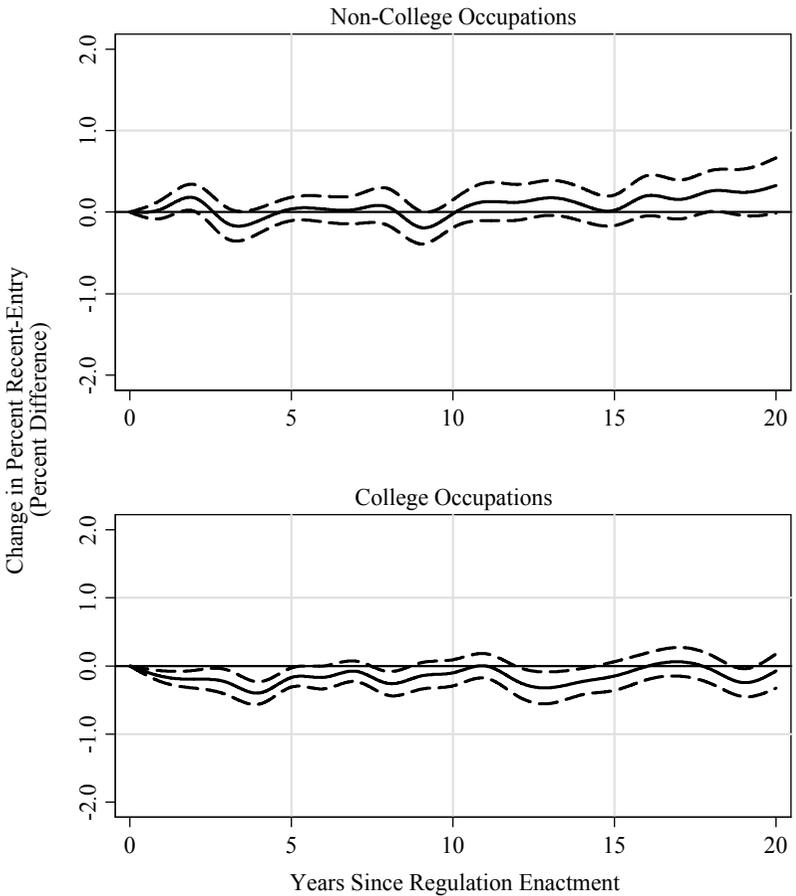


Fig. 5. – Change in percent Recent-Entry Foreign-Born between the licensed and unlicensed occupation (with 95% CI), as percent, since regulation enactment.

NOTE. – Line is smoothed.

## 10. Conclusions and Discussion

Our findings suggest that licensing simultaneously manifests two countervailing processes. First, by erecting barriers to entry, such as fees, educational credentialing requirements, and residency restrictions,

licensing pushes immigrants out of an occupation. At the same time, by creating uniform, delineated institutional processes, licensing establishes a pathway to occupational entry which can be particularly helpful for immigrants, who may lack social and cultural connections within the occupation.

The strength of the two processes depends on the context of exit from the home country and the context of entry into the United States. For example, an immigrant who arrived in the United States after the age of 25, and thus ostensibly completed an education elsewhere, is significantly less likely to benefit from the pathways opened by the licensing requirements. Similarly, an immigrant who entered the country within the last five years also has difficulty accessing pathways to entry, primarily because of steep educational requirements and a personal context that makes educational engagement particularly difficult. However, both of these contrast sharply with the remainder of their cohort, those who have been in the country longer or entered younger, for whom licensing eases access into a vast array of occupational options. These benefits are missing for high-skilled college occupations, possibly because entrants rely on other mechanisms to obtain employment and may arrive in the U.S. already employed. Additionally, licenses for high-skilled occupations are much more likely to have reciprocity agreements and accept education completed in another country.

Separate from the effect on individual immigrants, the effect of licensing may impact the overall way that foreign-born workers are integrated into a state's labor market. It is well documented that immigrants occupy the low-wage, low-skilled secondary sector.<sup>36</sup> Thus, based on the findings presented here, we would expect that a state regulatory structure can drive immigrants *into* certain occupations. This is supported by the large positive impact of regulation on the rate of foreign-born employment in non-college occupations. We might, therefore, expect that states with a substantial amount of secondary sector regulation would experience less immigrant unemployment. The extensive growth in

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<sup>36</sup> Piore, M. 1979. *Birds of Passage: Migrant Labor and Industrial Societies*. New York: Cambridge University Press.

Portes, A., and R. Bach. 1980. "Immigrant Earnings: Cuban and Mexican Immigrants in the United States," *International Migration Review* 14, No. 3:315–341.

Massey, D. et al. 1993. "Theories of International Migration: A Review and Appraisal," *Population and development review* 19, No. 3:431–466.

Waldinger, R., and M. Lichter. 2003. *How the Other Half Works: Immigration and the Social Organization of Labor*. Berkeley: University of California Press.

licensing over the past thirty years is presenting incredible opportunities to study the interaction of policy and local labor markets and the impact on immigrant incorporation.

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