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The relationship between educational attainment and health care access and use among Mexicans, Mexican Americans, and U.S.-Mexico migrants

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Abstract

Background—The aim of the study was to assess the relationship between educational attainment and health care access and use among Mexican-origin populations.

Methods—Data from the 2012 Mexican National Health and Nutrition Study, the 2013 Project Migrante Health Care Access and Utilization Survey, and the 2013–2014 California Health Interview Survey were used to examine educational gradients in health insurance, medical home, and hospitalization among Mexicans in Mexico, northbound, southbound, and deported migrants, and U.S.-and foreign-born Mexican Americans.

Results—College graduates had greater odds of being insured relative to those with less than a high school degree among Mexicans (AOR=1.48, $p<0.001$), northbound migrants (AOR=3.69, $p<0.001$), and the foreign-born (AOR=2.01, $p<0.01$), and of having a medical home among Mexicans (AOR=1.95, $p<0.001$) and the foreign-born (AOR=2.14, $p<0.05$).

Discussion—Eliminating differences by educational attainment in the U.S. will require policy changes like making immigrants eligible for public insurance. In Mexico, it will require targeted outreach to enroll underserved populations in existing public insurance programs.

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Keywords

Healthcare Disparities; Educational Status; Mexican Americans; Insurance, Health; Health Services Accessibility

BACKGROUND

Despite evidence that education is a fundamental social determinant of health (1–3), some Latino groups demonstrate uncharacteristically weak educational gradients in several health behaviors and outcomes (4–6). Educational gradients refer to the typically positive relationship between educational attainment and a range of health behaviors and outcomes (1–3). Weak gradients, characterized by little or no association between educational attainment and health, have been observed among foreign-born Mexican Americans in smoking, alcohol use, mental health, self-reported general health, and mortality (4–8). Documenting educational gradients across Latino sub-groups and health and health care outcomes can improve understanding of the varying pathways through which social and structural factors impact health and inform policies and interventions to reduce education-based health disparities.

Rationale

To our knowledge, no studies have compared educational gradients in health care access and use among Mexican-origin populations in the U.S., the general population in Mexico, or active migrants crossing the U.S.-Mexico border. There are several plausible reasons why educational gradients may differ between these populations. First, publicly-subsidized health insurance programs in the U.S. and Mexico differ in the services and the populations they cover. In the U.S., undocumented and recent immigrants are ineligible for Medicare and Medicaid in most states and cannot receive tax credit subsidies to purchase private insurance through health insurance exchanges (9). This may lead to educational gradients among immigrants, because those with high levels of educational attainment are most likely to have jobs that provide employer-sponsored insurance or pay high enough wages to purchase private insurance. Educational gradients among native Mexican Americans are likely to be flatter because those without employer-sponsored insurance are still eligible for publicly-subsidized insurance programs.

In Mexico, health insurance is a three-tiered system (10, 11). Private sector workers receive mandatory coverage via the Mexican Social Security Institute (IMSS), and many receive supplemental private insurance through their employers. Public sector employees receive coverage through one of several systems, depending on the sector and branch of government. Unemployed and informal sector workers have traditionally had high rates of uninsurance, so the federal government implemented the “Seguro Popular” program in 2003 to provide a basic level of coverage (10, 12–14). Seguro Popular provides free or subsidized coverage to over 50 million Mexicans (15), and covers 294 treatments and interventions in the areas of prevention and health promotion (e.g., vaccination), general and specialist services (e.g., mental health services, chronic disease care), urgent care, general surgery, and obstetric care

(16). Since most Mexicans are eligible for coverage in one of the systems, educational gradients are likely weak.

Health insurance systems likely have implications for educational gradients in health care use. In both countries, provider choice is typically limited based on a patient's insurance coverage. In the U.S., provider networks are narrower in lower-cost plans (e.g., Medicaid and many exchange plans) than in Medicare and most employer-sponsored insurance plans (17), which can result in limited provider choice, lower appointment availability, and longer wait times (18, 19). In Mexico, people with private insurance or who pay out of pocket can receive care at private providers, while people with public insurance are limited to providers in their system. For example, Seguro Popular coverage only extends to providers affiliated with Seguro Popular. Differences in quality, capacity, and infrastructure across these systems may contribute to educational gradients, since the distribution of the population across these systems is highly patterned by educational attainment.

Mexican-origin populations in the U.S. may also face barriers to care that contribute to educational gradients. Navigating the highly complex system of care in the U.S. may be particularly difficult for those with low educational attainment (9, 20, 21). Lack of linguistic and cultural competency among providers is also a barrier that may disproportionately affect those with low educational attainment (22, 23).

This study

In this study, we used data from three representative surveys to explore the relationship between educational attainment and health care access and use among Mexicans living in Mexico, U.S.- and foreign-born Mexican Americans living in California, and active migrants making northbound or southbound trips across the U.S.-Mexico border at San Diego-Tijuana.

METHODS

Data Sources

We conducted a series of parallel analyses using the 2012 Encuesta Nacional de Salud y Nutrición (National Health and Nutrition Survey; ENSANUT); the 2013 Project Migrante Health Care Access and Utilization Survey; and the 2013–2014 California Health Interview Survey (CHIS). Data collection protocol for each of the studies were approved by the appropriate institutional review boards. The analyses were conducted using de-identified datasets for each study and did not meet the definition of human subjects research. Each survey was based on a stratified probability sample of its larger population; our analyses were weighted to be representative.

We did not exclude participants from the analyses based on health status or other conditions that affect health service use (e.g., pregnancy). We defined adults based on the age cutoffs for each study (i.e., ≥21 years of age for ENSANUT, ≥18 for Project Migrante and CHIS). For ENSANUT and Project Migrante, we excluded participants with missing data for any of the health outcomes or educational attainment. For CHIS, all missing data are multiply imputed prior to release of the public use data files.

The 2012 ENSANUT was a nationally-representative, in-person survey conducted by the Mexican National Institute of Public Health (24). The ENSANUT sample included 46,277 primary adult respondents ≥21 years of age. ENSANUT data collection protocols were approved by the Ethics Committee of the Mexican National Institute of Public Health.

The 2013 Project Migrante Health Care Access and Utilization Survey (PM-HCAU) was one in a series of cross-sectional probability sample surveys of Mexican migrant flows in Tijuana, Mexico, conducted between 2007 to 2015 (25–27). The surveys employed a multi-stage probability sampling design at key transit points in Tijuana to yield representative samples across four migrant "flow" strata traveling through the Tijuana – San Diego border region: northbound, southbound, deported, and border. We excluded participants in the border flow stratum, because these migrants were mostly internal migrants that differ in important ways from the larger Mexican-origin populations moving between Mexico and the U.S. After excluding the border flow, we used data from 1,987 (82.4%) of the 2,412 total participants in the PM-HCAU sample. The Health Sciences Minimal Risk Institutional Review Board at the University of Wisconsin-Madison and the institutional review board of the Mexico Section of the US–Mexico Border Health Commission approved the Project Migrante data collection protocol.

The 2013–2014 CHIS was a population-based telephone survey representative of California's population living in households (28). We used data from 6,452 adult (≥18 years old) participants that self-identified as being Mexican descent, from a total adult sample size of 40,240 (16.0%). We used data from CHIS rather than a nationally-representative survey to improve comparability with the Project Migrante data, since most southbound and deported migrants crossing into Tijuana resided in California. CHIS data collection protocols were approved by the University of California, Los Angeles IRB and the California Committee for the Protection of Human Subjects.

Health Care Outcomes

We examined insurance coverage, having a medical home, and hospitalization in the previous year. The text of each item is included in Supplemental Table 1.

Insurance coverage—Among Mexicans in Mexico, we created a dichotomous measure indicating whether participants were enrolled in any health insurance program at the time of the interview. Among northbound, southbound, and deported migrants and among U.S.-born Mexican Americans and Mexican immigrants living in the U.S., we created a dichotomous variable indicating whether participants were continuously insured for the entire previous year.

Medical home—For all survey participants, we created a dichotomous variable indicating whether they had a provider where they usually seek care. One group consisted of all participants that reported having any type of provider where they usually seek care, regardless of the specific type of provider. The other group consisted of participants that reported having no regular provider.

Hospitalization—We created a dichotomous variable indicating whether participants had at least one hospital stay in the previous 12 months.

Educational Attainment

In each survey, participants were asked to report the highest level of education completed. We classified educational attainment as: 1) non-high school graduates, 2) high school graduates, or 3) college graduates from a college, technical, or professional school.

Analyses

We conducted parallel but separate analyses for each data set rather than pooling data sets. For CHIS data, we present all analyses stratified by participants' self-reported country of birth, either the United States or Mexico. For Project Migrante data, we stratify by migrant flow (i.e., northbound, southbound, or deported).

We present descriptive statistics for participants in each survey and stratum, including means and 95% confidence intervals for continuous variables and percent distributions and 95% confidence intervals for dichotomous and categorical variables. To examine the relationship between educational attainment and health care across surveys and strata, we conducted a series of strata-specific unadjusted and adjusted logistic regressions of health care outcomes on educational attainment. In brief, we conducted one unadjusted and one adjusted logistic regression per stratum for every health care outcome. Goodness of fit statistics suggested that the adjusted models were better able to explain variance in the health care outcomes than were the unadjusted models. Unadjusted models included only the categorical measure of educational attainment as predictor variables; adjusted models further adjusted for age (in years), gender (male vs female), marital status (married, never married, divorced/widowed/separated), employment (employed, unemployed, retired, student other), and urban residence (large urban, urban, rural). In general, independent variables were assessed using similar measures across studies. The main exception was urbanicity, which was based on definitions of urbanicity used in each country. Multivariable models did not adjust for employment status among deported participants in Project Migrante because almost all (>90%) were employed, which led to estimation issues. Similarly, we excluded results for deported migrants that were college graduates due to small sample size (i.e., only 13 deported migrants, or 2.8%, were college graduates). To assess the relationship between educational attainment and health care outcomes within each stratum, we present p-values based on the t-statistics for each regression coefficient.

RESULTS

In Table 1, we present descriptive statistics for the independent and dependent variables, stratified by phase of the migration continuum. In Table 2, we present unadjusted and adjusted odds ratios of the relationship between educational attainment and each health care outcome.

Mexicans in Mexico

The unadjusted results suggest that, among Mexicans in Mexico, college graduates had moderately yet significantly (OR=1.19; p<0.001) greater odds of continuous insurance and a medical home (OR=1.59; p<0.01) in the previous 12 months relative to non-high school graduates. There was no association between education and hospitalization. Differences by education in insurance (AOR=1.48; p<0.001) and having a medical home (AOR=1.95; p<0.001) among Mexicans in Mexico persisted after adjustment for age, gender, marital status, employment status, and urbanicity. After adjustment for these other factors, significant differences in both outcomes (AOR=1.24 for insurance and 1.66 for medical home; p<0.01 for both) emerge between non-high school graduates and high-school or college graduates.

Northbound Mexican Migrants

Unadjusted results suggest that northbound Mexican migrants with a college education have significantly greater odds (OR = 3.64; p<0.001) of having insurance relative to their counterparts with less than a high school education. The difference in insurance coverage between college graduates and those with less than a high school education remained effectively the same (AOR=3.69; p<0.001) after adjustment for age, gender, marital status, employment status, and urbanicity.

U.S.-born Mexican Americans

There were no significant differences in health insurance coverage, medical home, or hospitalization by education among U.S.-born Mexican Americans.

Foreign-born Mexicans in the U.S.

Unadjusted models showed foreign-bom Mexicans in the U.S. that were college graduates had increased odds of having insurance (OR=1.67; p<.001) and a medical home (OR=1.98; p<.05) relative to non-high school graduates. The unadjusted models also showed that high school graduates had lower odds of having been hospitalized in the previous year relative to non-high school graduates (OR=0.57; p<.05). In adjusted analyses, differences by educational attainment persisted, with college (OR=2.01; p<0.01) and high school graduates (OR=1.52; p<0.01) having higher odds of being insured relative to non-high school graduates. Similarly, college graduates had greater odds of having a medical home than non-high school graduates (AOR=2.14; p<.05), after adjustment for age, gender, marital status, employment status, and urbanicity.

Southbound Mexican Migrants

Unadjusted analyses showed no association between education and health insurance coverage, medical home, or hospitalization among Southbound migrants returning from the U.S. to Mexico. After adjustment for age, gender, marital status, employment status, and urbanicity, southbound college graduates were less likely to have been hospitalized than non-high school graduates (AOR=0.14; p<0.01).

Deported Mexican Migrants

There were no significant differences in health insurance coverage, medical home, or hospitalization between deported migrants with less than a high school education and those that had graduated high school.

DISCUSSION

This is the first study of which we are aware to compare the relationship between educational attainment and health care access and use among Mexican-origin populations in different phases of the migration continuum. Consistent with other research, we found greater odds of having health insurance and a medical home among more educated Mexicans in Mexico (29). Differences in health insurance coverage by educational attainment were also present among northbound Mexican migrants. Low rates of coverage among the lowest educational strata suggest that Seguro Popular, which was explicitly developed to address uninsurance and cover return migrants (30), likely reduced but did not completely eliminate coverage gaps across socioeconomic strata (11). While eligibility for health insurance is nearly universal among all Mexicans, actual enrollment has lagged in the lowest educational strata. Eliminating these differences will require targeted enrollment outreach for those with low educational attainment, including return migrants (29, 30). An additional approach may be to expand Seguro Popular facilities and services in areas with an inadequate supply of health professionals (31). As others have suggested, development of a binational insurance program that covers migrant populations in both Mexico and the U.S. could help reduce differences by educational attainment among active and recent migrants (32).

As we expected, we found little evidence of a relationship between educational attainment and health care access and use among U.S.-born Mexican Americans living in the U.S. The uniformly high levels of insurance coverage among this group likely reflect their eligibility for both Medi-Cal, the state's Medicaid program, and for subsidized coverage through Covered California, the state's health insurance exchange. These programs have been key in improving coverage among low-income populations, many of whom have low educational attainment (9, 33).

As we hypothesized, we observed a direct association between level of educational attainment and access to care among foreign-born Mexicans in the U.S. This relationship likely reflects intersectionality between nativity, documentation status, and occupation. An estimated 2.35 million undocumented immigrants lived in California in 2014, about 20% of the total immigrant population (34). Undocumented immigrants are less likely than legal immigrants to have jobs that offer employer-sponsored insurance (35, 36), and eligibility for public insurance is often contingent on documentation status. In California, legal, non-citizen immigrants who meet income eligibility thresholds are eligible for Medi-Cal coverage or subsidized coverage through Covered California with no waiting period (33, 37). In contrast, most undocumented immigrants are ineligible for Medi-Cal and cannot buy coverage through Covered California.

We also found evidence of a relationship between educational attainment and having a medical home among foreign-born Mexican Americans. This likely reflects the aforementioned differences in insurance coverage, as well as the undersupply of both Spanish-speaking providers (22, 23) and providers that offer free or low-cost services (36).

In general, we found a stronger relationship between educational attainment and health care among active migrants and immigrants in the U.S. than among native Mexican Americans and among the general Mexican population. Regardless of education, insurance rates were much higher in Mexico and among U.S.-born Mexican Americans than among either the foreign-born in the U.S. or active migrants. This may reflect negative selection (i.e., Mexicans without insurance are more likely to migrate) or differences in the composition or health status of the migrant and non-migrant populations (e.g., migrants are more likely to be young adults and male and healthier)(38).

This study has important strengths and limitations. Data from the Project Migrante allowed us to assess the relationship between educational attainment and health care across migration stages and compare to those in source populations in the U.S. and Mexico; however, Project Migrante may be underpowered for assessing differences between educational strata (e.g., few deported migrants had a college degree or were unemployed). The three studies did not use the same items to assess insurance coverage, medical home, and hospitalization; this is an important potential source of bias. Nevertheless, measures of medical home and hospitalization used across surveys were similar enough as to allow an exploration of differences by educational attainment across groups. The exception was the measures of insurance coverage, which we considered to be substantively different (see Supplemental Table 1). For this reason, we assessed differences by educational attainment within surveys, as opposed to comparison of the levels of outcomes across surveys. Measures are based on participant self-report and may be subject to recall bias or other forms of reporting bias. The logistic regression models that we conducted did not adjust for differences between educational strata in language proficiency; in the U.S., English proficiency has been shown to be associated with health care access and patient satisfaction (39, 40). We did not adjust for language proficiency because we believe it is likely on the causal pathway between educational attainment and health care (i.e., educational attainment increases foreign language proficiency) and it was not available for some of the groups included in our analyses (e.g. Northbound migrants). Furthermore, the language in which it is important for an immigrant to be proficient is likely the dominant language used in the health care setting in the country where they received the majority of their care (i.e., for those receiving care in Mexico, Spanish proficiency is most important).

Eliminating educational disparities in health care access and use among immigrants and migrant populations will require substantive policy changes in the U.S. and Mexico. In the U.S., one approach would be to expand public insurance programs to include immigrants, including eligibility for Medicaid and subsidized coverage through the health insurance exchanges. As described elsewhere, this approach may be financially justifiable as undocumented immigrants pay a range of federal, state, and local taxes, are general younger and in better health than other U.S. populations, and use less care (9, 21, 36, 40). As described by Wallace and colleagues (2013), other potential policy approaches for

addressing barriers to care among underserved immigrant populations include creating free- or low-cost insurance plans that cover specific high-value services (e.g., preventive services), or directly providing services by increasing funding for safety-net providers that offer free and low-cost care (e.g., community health centers) (36). In Mexico, where eligibility for public insurance is nearly universal, addressing differential access and use of health care by educational attainment will require some combination of targeted enrollment outreach, increased infrastructure in medically-underserved areas, and novel insurance programs that are both affordable and provide bi-national coverage for active migrants.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Cutler DM, Lleras-Muney A. Education and health: evaluating theories and evidence. National Bureau of Economic Research; 2006.
2. Link BG, Phelan J. Social conditions as fundamental causes of disease. Journal of Health and Social Behavior. 1995:80–94. [PubMed: 7560851]
3. Winkleby MA, Jatulis DE, Frank E, Fortmann SP. Socioeconomic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. American Journal of Public Health. 1992;82(6):816–20. [PubMed: 1585961]
4. Kimbro RT, Bzostek S, Goldman N, Rodríguez G. Race, ethnicity, and the education gradient in health. Health Affairs. 2008;27(2):361–72. [PubMed: 18332490]
5. Acevedo-Garcia D, Soobader M-J, Berkman LF. Low birthweight among US Hispanic/Latino subgroups: The effect of maternal foreign-born status and education. Social Science & Medicine. 2007;65(12):2503–16. [PubMed: 17764796]
6. Goldman N, Kimbro RT, Turra CM, Pebley AR. Socioeconomic Gradients in Health for White and Mexican-Origin Populations. American Journal of Public Health. 2006;96(12):2186–93. [PubMed: 17077396]
7. Buttenheim A, Goldman N, Pebley AR, Wong R, Chung C. Do Mexican immigrants “import” social gradients in health to the US? Social Science & Medicine. 2010;71(7):1268–76. [PubMed: 20692753]
8. Turra CM, Goldman N. Socioeconomic Differences in Mortality Among U.S. Adults: Insights Into the Hispanic Paradox. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2007;62(3):S184–S92.
9. Ortega A, Rodriguez H, Vargas Bustamante A. Policy dilemmas in Latino health care and implementation of the Affordable Care Act. Annual Review of Public Health. 2015;36:525–44.
10. Pfutze T The Effects of Mexico’s Seguro Popular Health Insurance on Infant Mortality: An Estimation with Selection on the Outcome Variable. World Development. 2014;59:475–86.
11. Knaul FM, González-Pier E, Gómez-Dantés O, García-Junco D, Arreola-Ornelas H, Barraza-Lloréns M, et al. The quest for universal health coverage: achieving social protection for all in Mexico. The Lancet. 2012;380(9849):1259–79.
12. Knaul FM, Frenk J. Health Insurance In Mexico: Achieving Universal Coverage Through Structural Reform. Health Affairs. 2005;24(6):1467–76. [PubMed: 16284018]
13. Knox M Health insurance for all: an evaluation of Mexico’s Seguro popular program. Unpublished manuscript, Department of Economics, University of California Berkley. 2008.

14. Barraza-Lloréns M, Bertozzi S, González-Pier E, Gutiérrez JP. Addressing inequity in health and health care in Mexico. Health Affairs. 2002;21(3):47–56. [PubMed: 12026003]
15. Knaul FM, Bhadelia A, Atun R, Frenk J. Achieving Effective Universal Health Coverage And Diagonal Approaches To Care For Chronic Illnesses. Health Affairs. 2015;34(9):1514–22. [PubMed: 26355053]
16. Comisionado Nacional de Protección Social en Salud. Catálogo Universal de Servicios de Salud (CAUSES): 2018: Secretaría de Salud; 2018.
17. Polsky D, Candon MK, Chatterjee P, Chen X. Scope Of Primary Care Physicians' Participation In The Health Insurance Marketplaces. Health Affairs. 2018;37(8):1252–6. [PubMed: 30080470]
18. Basseyn S, Saloner B, Kenney GM, Wissoker D, Polsky D, Rhodes KV. Primary Care Appointment Availability for Medicaid Patients. Medical care. 2016;54(9):878–83. [PubMed: 27517123]
19. Grande D, Zuo JX, Venkat R, Chen X, Ward KR, Seymour JW, et al. Differences in Primary Care Appointment Availability and Wait Times by Neighborhood Characteristics: a Mystery Shopper Study. Journal of general internal medicine. 2018:1–3.
20. Bustamante AV, Fang H, Rizzo JA, Ortega AN. Understanding Observed and Unobserved Health Care Access and Utilization Disparities Among U.S. Latino Adults. Medical Care Research and Review. 2009;66(5):561–77. [PubMed: 19556553]
21. Vargas Bustamante A, Fang H, Garza J, Carter-Pokras O, Wallace SP, Rizzo JA, et al. Variations in Healthcare Access and Utilization Among Mexican Immigrants: The Role of Documentation Status. Journal of Immigrant and Minority Health. 2012;14(1):146–55. [PubMed: 20972853]
22. Cooper LA, Powe NR. Disparities in patient experiences, health care processes, and outcomes: the role of patient-provider racial, ethnic, and language concordance: Commonwealth Fund New York, NY; 2004.
23. Flores G Language barriers to health care in the United States. New England Journal of Medicine. 2006;355(3):229–31. [PubMed: 16855260]
24. Gutiérrez J, Rivera-Dommarco J, Shamah-Levy T, Villalpando-Hernández S, Franco A, Cuevas-Nasu L. Encuesta Nacional de Salud y Nutrición: ENSANUT 2012 Resultados Nacionales. Cuernavaca, México: Instituto Nacional de Salud Pública; 2012.
25. Martinez-Donate AP, Hovell MF, Rangel MG, Zhang X, Sipan CL, Magis-Rodriguez C, et al. Migrants in Transit: The Importance of Monitoring HIV Risk Among Migrant Flows at the Mexico–US Border. American Journal of Public Health. 2015;105(3):497–509. [PubMed: 25602882]
26. Diaz CJ, Koning SM, Martinez-Donate AP. Moving Beyond Salmon Bias: Mexican Return Migration and Health Selection. Demography. 2016;53(6):2005–30. [PubMed: 27848222]
27. Amuedo-Dorantes C, Puttitanun T, Martinez-Donate AP. How Do Tougher Immigration Measures Affect Unauthorized Immigrants? Demography. 2013;50(3):10.1007/s13524-013-0200-x.
28. UCLA Center for Health Policy Research. CHIS 2013–2014 Methodology Report Series. 2016.
29. Wassink J Uninsured Migrants: Health Insurance Coverage and Access to Care Among Mexican Return Migrants. Demographic research. 2018;38:17. [PubMed: 29657545]
30. Wassink JT. Implications of Mexican Health Care Reform on the Health Coverage of Nonmigrants and Returning Migrants. Am J Public Health. 2016;106(5):848–50. [PubMed: 26985598]
31. Bleich SN, Cutler DM, Adams AS, Lozano R, Murray CJL. Impact of insurance and supply of health professionals on coverage of treatment for hypertension in Mexico: population based study. BMJ. 2007;335(7625):875. [PubMed: 17954519]
32. Vargas Bustamante A, Laugesen M, Caban M, Rosenau P. United States-Mexico cross-border health insurance initiatives: Salud Migrante and Medicare in Mexico. Revista Panamericana de Salud Pública. 2012;31:74–80. [PubMed: 22427168]
33. Bustamante AV, McKenna RM, Viana J, Ortega AN, Chen J. Access-To-Care Differences Between Mexican-Heritage And Other Latinos In California After The Affordable Care Act. Health Affairs. 2018;37(9):1400–8. [PubMed: 30179559]
34. Pew Research Center. U.S. unauthorized immigration population estimates. In: Pew Research Center, ed; 2016.

35. Prentice JC, Pebley AR, Sastry N. Immigration Status and Health Insurance Coverage: Who Gains? Who Loses? American Journal of Public Health. 2005;95(1):109–16. [PubMed: 15623869]

36. Wallace SP, Torres J, Sadegh-Nobari T, Pourat N. Undocumented and uninsured: Barriers to Affordable Care for immigrant population. 2013.

37. Derose KP, Escarce JJ, Lurie N. Immigrants And Health Care: Sources Of Vulnerability. Health Affairs. 2007;26(5):1258–68. [PubMed: 17848435]

38. Rendall MS, Parker SW. Two Decades of Negative Educational Selectivity of Mexican Migrants to the United States. Popul Dev Rev. 2014;40(3):421–46. [PubMed: 25995526]

39. Derose KP, Baker DW. Limited English proficiency and Latinos' use of physician services. Medical Care Research and Review. 2000;57(1):76–91. [PubMed: 10705703]

40. Ortega A, Fang H, Perez V, et al. Health care access, use of services, and experiences among undocumented mexicans and other latinos. Archives of Internal Medicine. 2007;167(21):2354–60. [PubMed: 18039995]

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Table 1:

Descriptive statistics for Mexican-origin populations living in Mexico, actively migrating between Mexico and the U.S., and living in the U.S.

	Mexicans in Mexico	Northbound Migrants	Southbound Migrants	Deported Migrants	Foreign-born Mexicans in the U.S.	U.S.-born Mexican Americans
	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)
Sample Size	46,277	695	826	466	3,474	2,978
Educational Attainment						
<High School	65.6 (64.5–66.8)	44.7 (40.3–49.2)	64.4 (58.5–69.9)	79.9 (75.4–83.7)	56.8 (54.4–59.1)	10.5 (8.7–12.6)
High School	14.1 (13.5–14.7)	16.4 (13.4–20.0)	17.9 (14.3–22.3)	17.4 (13.8–21.7)	30.5 (28.4–32.8)	55.0 (52.0–58.0)
Coll./Tech./Prof.	20.3 (19.3–21.2)	38.9 (34.7–43.2)	17.7 (13.2–23.2)	2.8 (1.6–4.7)	12.7 (10.9–14.7)	34.5 (31.5–37.6)
Age (y)	42.0 (41.7–42.3)	43.9 (42.7–45.2)	44.6 (42.9–46.2)	34.7 (33.6–35.7)	45.0 (44.3–45.7)	36.1 (35.3–36.8)
Gender						
Female	52.7 (52.0–53.5)	30.8 (26.8–35.1)	25.0 (20.7–29.8)	11.3 (8.5–14.9)	50.3 (48.0–52.6)	50.5 (47.9–53.1)
Male	47.3 (46.6–48.0)	69.2 (64.9–73.2)	75.1 (70.2–79.3)	88.7 (85.1–91.5)	49.7 (47.4–52.0)	49.5 (46.9–52.1)
Marital Status						
Married	67.6 (66.8–68.4)	61.7 (55.7–67.4)	62.6 (58.2–66.9)	48.4 (43.0–53.8)	61.2 (58.5–63.8)	34.2 (31.2–37.4)
Never Married	20.1 (19.4–20.8)	28.5 (23.4–34.3)	31.2 (27.2–35.5)	49.3 (43.9–54.7)	14.8 (13.2–16.7)	45.7 (43.0–48.4)
Div/Wid/Sep	12.3 (11.8–12.7)	9.7 (6.8–13.8)	6.2 (4.3–9.0)	2.4 (1.3–4.2)	24.0 (21.7–26.5)	20.1 (17.7–22.8)
Employment[1]						
Employed	54.9 (54.1–55.7)	74.6 (70.6–78.2)	78.9 (74.5–82.8)	90.1 (85.5–93.4)	61.6 (58.9–64.1)	60.2 (57.4–63.0)
Unemployed	38.7 (37.9–39.4)	15.2 (12.3–18.5)	10.3 (7.6–13.8)	5.8 (3.4–9.5)	30.9 (28.3–33.6)	27.9 (25.2–30.9)
Retired	3.5 (3.2–3.8)	3.7 (2.5–5.5)	5.6 (3.9–7.9)	0 (–)	6.6 (5.5–7.9)	6.4 (5.4–7.6)
Student	3.0 (2.7–3.3)	3.6 (2.1, 6.0)	2.1 (1.1–3.8)	1.4 (0.5–3.7)	0.9 (0.6–1.3)	5.4 (4.1–7.0)
Other	--	3.0 (1.9–4.8)	3.2 (1.8–5.6)	2.8 (1.2–6.3)	--	--
Urban						
Large Urban	60.1 (59.3–60.9)	70.8 (66.5–74.7)	65.6 (59.4–71.1)	62.5 (56.8–67.9)	80.0 (77.7–82.2)	77.4 (74.9–79.7)
Urban	18.8 (18.3–19.3)	11.0 (8.4–14.1)	17.7 (14.1–21.9)	24.8 (20.4–29.9)	9.1 (7.6–10.8)	14.4 (12.2–16.8)
Rural	21.1 (20.5–21.7)	18.2 (15.0–21.0)	16.9 (12.1–22.9)	12.7 (9.3–17.0)	10.9 (9.2–12.7)	8.3 (6.7–10.1)
Continuous Insurance Prev. 12 Months	75.1 (74.3–75.9)	42.0 (36.2–48.1)	54.4 (49.7–59.1)	15.2 (11.5–19.8)	57.1 (53.8–60.3)	71.5 (68.6–74.1)
Medical Home	97.7 (97.5–98.0)	60.1 (53.2–66.6)	66.4 (61.0–71.5)	60.9 (54.8–66.8)	78.3 (75.5–80.9)	79.0 (75.9–81.7)

	Mexicans in Mexico	Northbound Migrants	Southbound Migrants	Deported Migrants	Foreign-born Mexicans in the U.S.	U.S.-born Mexican Americans
	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)	% or Mean (95% CI)
Hospitalization Prev. 12 Months	5.0 (4.7–5.3)	5.4 (3.1–8.4)	6.9 (4.6–10.4)	8.2 (3.1–8.4)	6.9 (5.6–8.3)	9.2 (7.6–1.1)

Data sources: Mexicans in Mexico = 2012 Encuesta Nacional de Salud y Nutrición; northbound, southbound, and deported migrants = 2013 Project Migrante Health Care Access and Utilization Survey; Foreign-born Mexicans in the U.S. and U.S.-born Mexican Americans = 2013–2014 California Health Interview Survey

[1]Employment refers to typical employment status in the previous week for ENSANUT

Table 2:

Unadjusted odds ratios of health care access and use indicators across educational strata among Mexican-origin populations living in Mexico, actively migrating between Mexico and the U.S., and living in the U.S.

	Continuous Insurance Prev. 12 Months OR (95% CI)	Medical Home OR (95% CI)	Hospitalization Prev. 12 Months OR (95% CI)
Mexicans in Mexico			
<High School	Ref.	Ref.	Ref.
High School	0.90 (0.81–1.01)	1.27 (0.94–1.72)	0.92 (0.75–1.11)
Coll./Tech./Prof.	1.19*** (1.09–1.31)	1.59** (1.17–2.17)	0.95 (0.81–1.10)
Northbound Migrants			
<High School	Ref.	Ref.	Ref.
High School	1.13 (0.64–2.00)	1.02 (0.47–2.23)	0.78 (0.27–2.27)
Coll./Tech./Prof.	3.64*** (2.35–5.64)	1.15 (0.70–1.91)	0.82 (0.31–2.15)
Southbound Migrants			
<High School	Ref.	Ref.	Ref.
High School	1.34 (0.75–2.37)	0.88 (0.47–1.66)	0.70 (0.26–1.93)
Coll./Tech./Prof.	1.42 (0.70–2.88)	0.76 (0.33–1.75)	0.31 (0.05–2.15)
Deported Migrants			
<High School	Ref.	Ref.	Ref.
High School	1.71 (0.82–3.57)	1.05 (0.55–2.00)	0.75 (0.21–2.66)
Coll./Tech./Prof.	—	—	—
U.S.-born Mexican Americans			
<High School	Ref.	Ref.	Ref.
High School	0.90 (0.55–1.48)	1.02 (0.55–1.90)	0.56 (0.29–1.10)
Coll./Tech./Prof.	0.93 (0.53–1.63)	1.12 (0.58–2.13)	0.55 (0.25–1.21)
Foreign-born Mexicans in the U.S.			
<High School	Ref.	Ref.	Ref.
High School	1.15 (0.88–1.49)	1.11 (0.77–1.60)	0.57* (0.38–0.88)
Coll./Tech./Prof.	1.67** (1.15–2.42)	1.98* (1.08–3.64)	0.81 (0.42–1.56)

* p <0.05

** p<0.01

*** p<0.001

Notes: OR = Odds ratios. Data sources: Mexicans in Mexico = 2012 Encuesta Nacional de Salud y Nutrición; northbound, southbound, and deported migrants = 2013 Project Migrante Health Care Access and Utilization Survey; Foreign-born Mexicans in the U.S. and U.S.-born Mexican Americans = 2013–2014 California Health Interview Survey

Table 3:

Adjusted odds ratios of health care access and use indicators across educational strata among Mexican-origin populations living in Mexico, actively migrating between Mexico and the U.S., and living in the U.S.

	Continuous Insurance Prev. 12 Months	Medical Home	Hospitalization Prev. 12 Months
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Mexicans in Mexico			
<High School	Ref.	Ref.	Ref.
High School	1.24** (1.10–1.39)	1.66** (1.21–2.30)	1.10 (0.89–1.35)
Coll./Tech./Prof.	1.48*** (1.33–1.66)	1.95*** (1.39–2.74)	1.17 (0.99–1.38)
Northbound Migrants			
<High School	Ref.	Ref.	Ref.
High School	1.03 (0.57–1.87)	1.53 (0.66–3.55)	0.74 (0.23–2.43)
Coll./Tech./Prof.	3.69*** (2.18–6.22)	1.63 (0.85–3.13)	0.61 (0.18–2.09)
Deported Migrants			
<High School	Ref.	Ref.	Ref.
High School	1.23 (0.67–2.27)	0.86 (0.45–1.65)	0.65 (0.18–2.33)
Coll./Tech./Prof.	1.40 (0.72–2.70)	0.69 (0.32–1.53)	0.14** (0.04–0.46)
Migrante Deported			
<High School	Ref.	Ref.	Ref.
High School	1.54 (0.72–3.32)	1.04 (0.53–2.01)	0.94 (0.25–3.56)
Coll./Tech./Prof.	—	—	—
U.S.-born Mexican Americans			
<High School	Ref.	Ref.	Ref.
High School	1.32 (0.72–2.41)	1.49 (0.7–2.90)	0.75 (0.35–1.61)
Coll./Tech./Prof.	0.99 (0.52–1.89)	1.16 (0.57–2.35)	0.78 (0.33–1.85)
Foreign-born Mexicans in the U.S.			
<High School	Ref.	Ref.	Ref.
High School	1.52** (1.15–2.02)	1.38 (0.94–2.03)	0.73 (0.48–1.12)
Coll./Tech./Prof.	2.01** (1.33–3.03)	2.14* (1.10–4.17)	1.08 (0.56–2.08)

* p <0.05

** p<0.01

*** p<0.001

Notes: AOR = Adjusted odds ratios. Models adjust for age, gender, marital status, employment status, and residence in an urban, suburban, or rural area. Data sources: Mexicans in Mexico = 2012 Encuesta Nacional de Salud y Nutrición; northbound, southbound, and deported migrants = 2013 Project Migrante Health Care Access and Utilization Survey; Foreign-born Mexicans in the U.S. and U.S.-born Mexican Americans = 2013–2014 California Health Interview Survey.