

## Variations in Healthcare Access and Utilization Among Mexican Immigrants: The Role of Documentation Status

Arturo Vargas Bustamante · Hai Fang · Jeremiah Garza ·  
Olivia Carter-Pokras · Steven P. Wallace · John A. Rizzo ·  
Alexander N. Ortega

© The Author(s) 2010. This article is published with open access at Springerlink.com

**Abstract** The objective of this study is to identify differences in healthcare access and utilization among Mexican immigrants by documentation status. Cross-sectional survey data are analyzed to identify differences in healthcare access and utilization across Mexican immigrant categories. Multivariable logistic regression and the Blinder-Oaxaca decomposition are used to parse out differences into observed and unobserved components. Mexican immigrants ages 18 and above who are immigrants of California households and responded to the 2007 California Health Interview Survey (2,600 documented and 1,038 undocumented immigrants). Undocumented immigrants from Mexico are 27% less likely to have a doctor visit in

the previous year and 35% less likely to have a usual source of care compared to documented Mexican immigrants after controlling for confounding variables. Approximately 88% of these disparities can be attributed to predisposing, enabling and need determinants in our model. The remaining disparities are attributed to unobserved heterogeneity. This study shows that undocumented immigrants from Mexico are much less likely to have a physician visit in the previous year and a usual source of care compared to documented immigrants from Mexico. The recently approved Patient Protection and Affordable Care Act will not reduce these disparities unless undocumented immigrants are granted some form of legal status.

---

A. Vargas Bustamante (✉)  
Department of Health Services, UCLA School of Public Health,  
650 Charles E. Young Drive South Room 31-299C,  
P.O. Box 951772, Los Angeles, CA 90095-1772, USA  
e-mail: avb@ucla.edu

H. Fang  
Department of Health Systems, Management and Policy,  
Colorado School of Public Health, University of Colorado  
Denver, 13001 East 17th Avenue, Room E3312,  
Campus Box B119, Aurora, CO 80045, USA  
e-mail: hai.fang@ucdenver.edu

J. Garza  
UCLA School of Public Health, 650 Charles E. Young Drive  
South, Box 951772, Los Angeles, CA 90095, USA  
e-mail: j.garza1@ucla.edu

O. Carter-Pokras  
Department of Epidemiology and Biostatistics,  
School of Public Health, University of Maryland College Park,  
2234G SPH Bldg, College Park, MD 20742, USA  
e-mail: opokras@umd.edu

S. P. Wallace  
UCLA Center for Health Policy Research, UCLA  
School of Public Health, 10960 Wilshire Blvd,  
Suite 1550, Los Angeles, CA 90024, USA  
e-mail: swallace@ucla.edu

J. A. Rizzo  
Preventive Medicine and Economics, Department of Economics,  
Stony Brook University, Stony Brook, NY 11794, USA  
e-mail: jrjz@optonline.net

A. N. Ortega  
Health Services and Psychiatry & Bio-behavioral Sciences,  
UCLA, 650 Charles E. Young Drive South Room 31-299A,  
Box 951772, Los Angeles, CA 90095, USA  
e-mail: aortega@ucla.edu

**Keywords** Delivery of health · Quality of health care · Health care quality, access, and evaluation · Emigrants and immigrants · Mexican Americans · Hispanic Americans · Healthcare disparities · Health care reform · Undocumented immigrants

## Introduction

Latinos of Mexican ancestry represent the majority of Latinos (65%) in the United States (US). In 2007, approximately 30 million Latinos of Mexican origin resided in the US. A considerable share of this population is foreign-born (12 million), and the majority of them (7.2 million) arrived after 1990 [1]. Almost 83% of Mexican immigrants are concentrated in ten states, and 37% reside in California alone [2].

Although Mexican immigrants represent the largest immigrant group residing in the US, only 22% of them are US citizens [1]. Among non-citizen immigrants from Mexico, 2.3 million are lawful permanent residents (25%) and the remaining 6.9 million are undocumented [1, 2]. The number of undocumented immigrants from Mexico has been growing rapidly since the early 1990s. For instance, undocumented Mexican immigrants in the US currently represent the majority of all undocumented immigrants (57%) [2]. Understanding healthcare access and utilization in this large and growing population is relevant for both healthcare and immigration reform.

The presence of millions of immigrants in a period of deep economic recession and increased unemployment in the US has renewed the debate over the social and economic effects of immigration. It is highly contested whether the economic benefit of immigration, including all the taxes and contributions they pay, are enough to compensate for the immigrant use of public services such as healthcare. Evidence suggests that overall economic contributions from immigration exceed public expenditures on immigrants for services. Although the taxes and contributions to public programs is positive at the federal level, and it is more often negative at the local level due to the types of taxes and services for each level of government [3]. This uneven distribution of immigration costs and benefits has sparked a series of policy proposals to restrict healthcare and other services to immigrants, especially for those who lack documentation.

One of the main shortcomings in this debate is how little is known about healthcare access and utilization among immigrants and the effects of documentation status, particularly after time in the US and English proficiency are taken into consideration. When immigrants arrive in the US, they are often exposed to a healthcare system that frequently differs from that in their native countries. Accessing

this system is likely to pose particular challenges for immigrants with low incomes and education who may encounter economic and systematic barriers to care.

Previous studies provide evidence that Mexican immigrants are less likely to access and utilize healthcare than US-born Mexican-Americans, non-Mexican Latinos and non-Latino Whites [4–8]. The same is true for healthcare access and utilization among children of Mexican immigrants [9–11]. The literature has also documented geographical differences and positive community effects on access to care among Mexican immigrants [12, 13]. Most of this work, however, focuses on the role of English proficiency, time in the US, and socio-demographic factors to explain poor access and utilization. Less is known about the effects of legal status due to measurement challenges. Most studies focused on undocumented immigrants have used small samples, have had inadequate measures of access and utilization of healthcare services, and have typically grouped all Latinos together to analyze the effect of documentation status on access and utilization [14–20].

To help bridge this gap in the literature, our study compares healthcare access and utilization between Mexican-born undocumented and documented immigrants who are naturalized citizens or lawful permanent residents, in a large population-based study, the 2007 California Health Interview Survey (CHIS). In contrast to previous research, our study not only describes differences in access and utilization across Mexican immigrants, but it also explores the mechanisms for these disparities. We employ the Blinder-Oaxaca decomposition technique [21, 22] to identify specific factors explaining healthcare disparities among Mexican immigrants. Considering how little information exists about healthcare access and utilization among immigrants with longer residency in the US, our study provides useful and timely evidence for the ongoing debate on the likely effects of healthcare reform in the US.

## Methods

### Data

We use data from the 2007 California Health Interview Survey (CHIS). CHIS is a random-digit telephone population-based study conducted every other year since 2001. Households are drawn from each county in California and stratified to produce sufficient sample sizes for stable estimates in many smaller counties. The 2007 survey also included a random sample of 825 cell phone owners who live in households without a landline. The final sample includes 51,048 adult respondents who are representative of the non-institutionalized household population in California. CHIS data are collected in English, Spanish,

and several Asian languages. The overall screener response rate is 35.5%, and the overall adult response rate of completed extended interviews is 52.8%. These response rates are consistent with those of general telephone surveys and similar to other recent major telephone health surveys in California [23, 24]. An in-person follow-up interview survey with a sample of non-respondents of CHIS found that almost all characteristics of respondents and non-respondents were statistically similar after weighting [25].

An earlier national survey showed that 94% of undocumented immigrants had a landline telephone or cell phone, and this rate is marginally lower than the overall rate in California [26]. Sample weights reflect the total number of Mexican undocumented immigrants, which is consistent with alternative estimates of Mexican undocumented immigrants in California [2]. The translation, cultural adaptation process and data collection methods have been detailed elsewhere [27, 28].

### Healthcare Access and Utilization

Measures include three dichotomous variables of healthcare access, and two dichotomous variables of utilization. Healthcare access measures include: i) whether an individual had a usual place to go when sick, ii) whether an individual experienced a delay in obtaining healthcare, and iii) whether an individual experienced a delay in receiving a prescription drug. The health utilization measures identify whether an individual had at least one physician visit during the previous year and whether an individual had at least one emergency department (ED) visit during the previous year. These five variables are commonly used in the literature to measure healthcare access and utilization [4, 29, 30].

### Documented and Undocumented Immigrants

All CHIS respondents were first classified as being Hispanic/Latino and by their respective national origin (e.g., Mexican). Among immigrants from Mexico, permanent residency status was determined by responses to the question “Are you a citizen of the United States?” If the response was no, they were asked, “Are you a permanent resident with a green card [permanent residence authorization]? We classify as undocumented immigrants all foreign-born individuals from Mexico who are not US citizens or green cardholders. A dichotomous variable of undocumented ( $n = 1,038$ ) versus Mexico-born documented immigrants ( $n = 2,600$ ) was constructed.

Our population estimates are consistent with independent estimates of the number of undocumented immigrants based on national and state data [31]. According to census estimates, 93% of immigrants from Mexico in California

are undocumented immigrants [4]. The remaining 7% correspond to refugees and asylum seekers who have not yet attained legal residency, temporary visitors on student or working visas and individuals in pending categories (i.e., under color of law) from Mexico. We do not expect these individuals to attenuate differences between documented and undocumented immigrants in our study. Visa holders from Mexico may choose to use health care in the US selectively, deferring care until they return to Mexico. Refugees and those in pending categories are expected to have better access to care since they are eligible for Medicaid and the Refugee Medical Assistance Program [5].

### Explanatory Variables

The analyses include a number of explanatory variables that the literature has identified as predisposing, enabling and need determinants of healthcare access and utilization [32, 33]. Predisposing factors in our models include characteristics such as age, sex, marital status and education. Language and time in the US are also predisposing factors predicting immigrant healthcare access and utilization [7]. Enabling factors include health insurance status (i.e., currently insured), employment status and urban residence. Need factors are captured by self-perceived health status and poverty status.

### Statistical Analyses

We initially provide descriptive statistics of study variables, and bivariate analyses comparing undocumented and documented immigrants from Mexico. Chi-square tests are used to determine whether undocumented immigrants have less healthcare access and utilization. We then estimate multivariable logistic regression models to determine whether disparities in healthcare access and utilization persist among undocumented immigrants after controlling for the explanatory variables described above. The Blinder-Oaxaca decomposition is implemented to parse healthcare disparities between undocumented and documented immigrants from Mexico into two components: disparities due to observed characteristics and those related to unobserved heterogeneity. We used Stata 9 for the statistical analyses [34].

### Decomposition Model

The Blinder-Oaxaca decomposition method has been used extensively to assess mean outcome differences in the discrimination and labor economics literature [21, 22]. This method has been employed to study racial/ethnic disparities in health insurance coverage, healthcare access and utilization [29, 30, 35–39].

We are interested in estimating the magnitude of mean outcome differences for observed and unobserved parts of the decomposition model. The first part of the outcome differential is explained by group differences in levels of observed explanatory variables across the two categories. The second part represents differences that can be interpreted as unobserved heterogeneity. Since our outcome variables are dichotomous, we use the non-linear decomposition methods proposed by Fairlie and Bartus [40, 41].

## Results

Table 1 shows descriptive statistics for Mexican immigrants by documentation status. Compared to documented immigrants from Mexico, undocumented immigrants are more likely to be young, single, poor, uninsured, with fewer years of schooling, lower English proficiency and less time in the US. With respect to healthcare access and utilization, documented immigrants (76%) are more likely to report at least one doctor visit in the previous year compared to undocumented immigrants from Mexico (56%,  $P < 0.01$ ) and this difference is strongly statistically significant. The average number of physician visits for documented immigrants is 3.24, which is significantly greater than that of 2.26 for undocumented immigrants from Mexico. An additional relevant difference relates to having a usual source of care when sick in the last year. Documented immigrants (68%,  $P < 0.01$ ) are significantly more likely to have a usual place to go when sick than undocumented immigrants from Mexico (47%). In contrast, differences in ED utilization and delay in prescription drugs and for other healthcare services are not statistically significant. Differences in reporting between the English and Spanish questionnaires may account for the similar share of permanent residents in fair or poor health in the two categories.

### Multivariate Analyses

The results of a logistic regression that controls for potential confounders are shown in Table 2, using documented immigrants as the reference group. After confounding factors are taken into account, undocumented immigrants from Mexico still face lower odds (OR = 0.73,  $P < 0.05$ ) of a doctor visit. Undocumented immigrants are also less likely to have a usual source of care than documented immigrants (OR = 0.65,  $P < 0.01$ ). The main determinants of these two healthcare access and utilization measures are sex, education, health insurance coverage, English proficiency and self-perceived poor health status. ED visits, delay in prescription drugs, and delay for other medical services are not statistically significant.

### Decomposition Analyses

The main objective of our study is to parse out differences into observed and unobserved factors that affect healthcare access and utilization. Table 3 shows the results of the decomposition analysis and provides the probability of accessing and utilizing healthcare for our sample of documented and undocumented immigrants from Mexico, once we account for all the explanatory variables in the model. Since doctor visits and having a usual source of care are the two measures where statistically significant differences between documented and undocumented immigrants from Mexico are observed, the decomposition analysis concentrates on these two measures.

Table 3 shows that 78% of documented and 60% of undocumented immigrants from Mexico had a doctor visit. Similarly, 73% of documented and 52% of undocumented immigrants from Mexico had a usual source of care. The main determinants of these two healthcare access and utilization measures are sex, marital status, education, poverty status and health insurance coverage. Our findings confirm that English proficiency and time in the US are highly significant in explaining differences in healthcare access and utilization.

Observed factors explain 88% (16.06/18.17%) of the differences in doctor visits and 87% (18.43/21.17%) of differences for usual source of care. Unobserved heterogeneity still plays an important role, however, as it accounts for approximately 12% and 13%, respectively, of group differences. Our findings are consistent with previous research [4] and imply that socio-economic factors, English Proficiency and time in the US explain a large share of disparities in healthcare access and utilization.

## Discussion

Our findings quantify the adverse effects of undocumented status on healthcare access and utilization among Mexican immigrant adults. According to our analyses, approximately 88% of the disparities between undocumented and documented immigrants from Mexico can be traced to socioeconomic and demographic characteristics such as sex, marital status, education, poverty status, health insurance coverage, time in the US and English proficiency.

We find that if all undocumented immigrants from Mexico had the same characteristics of the documented population, they would enjoy a 27% higher probability of having a doctor visit and a 35% increased probability of having a usual source of care. Consequently, if undocumented immigrants from Mexico resembled documented immigrants in socioeconomic and demographic

**Table 1** Weighted characteristics of Mexican immigrants in California (values expressed as %)

Variables	Permanent resident		P value <sup>a</sup>
	Documented (n = 2,600)	Undocumented (n = 1,038)	
<i>Healthcare utilization and access in the past year</i>			
Access			
Had a usual place to go when sick	68.27	46.61	<0.01
Delay of prescription drug	7.60	5.70	0.23
Delay of other medical services	8.10	7.82	0.85
Utilization			
Had at least one doctor visit	76.31	56.75	<0.01
Had at least one emergency department visit	14.10	12.24	0.29
Number of doctor visits	3.24	2.26	<0.01
Predisposing factors			
Male	49.79	53.58	0.19
Married	68.48	49.75	<0.01
Education			
Less than high school	56.18	67.06	
High school graduate	23.71	24.11	
College	20.11	8.83	
English use and proficiency			
Speak English very well/well	42.58	14.30	<0.01
Speak English not well/not at all	57.42	85.70	
Age in years			
18–29	14.10	31.83	<0.01
30–39	25.63	44.23	
40–49	29.13	18.64	
≥50	31.14	5.30	
Employment			
Employed	67.45	69.10	0.52
Not employed	32.55	30.90	
Years in the U.S.			
0–4	2.54	16.00	<0.01
5–9	6.12	28.88	
10–19	24.78	46.69	
20 and above	66.56	8.43	
Enabling factors			
Health insurance	75.00	46.82	<0.01
Poverty level			
0–99%	28.98	54.98	<0.01
100–199%	36.32	32.59	
200% and above	34.70	12.43	
Locality of residence			
Urban	78.67	79.34	0.95
Suburban	11.08	10.64	
Rural	10.25	10.02	
Need factors			
Self-reported health status			
Excellent	12.35	8.31	<0.01
Very good	15.79	10.63	
Good	35.92	44.78	
Fair	30.18	34.35	
Poor	5.76	1.93	

Date source: California Health Interview Survey (CHIS) 2007  
<sup>a</sup> P values are based on chi-square test for categorical variables and student's t test for continuous variables (linearized standard error is in parenthesis) comparing documented and undocumented immigrants from Mexico residing in California (≥18 years)

**Table 2** Multivariable analyses (weighted)

Variables	Logistic estimation (odds ratio)					Negative binomial estimation, Number of doctor visits
	Doctor visit <sup>a</sup>	ED visit <sup>b</sup>	Usual place <sup>c</sup>	Delay drugs <sup>d</sup>	Delay others <sup>e</sup>	
Undocumented immigrants	0.73**	1.03	0.65***	1.14	1.24	-0.19*
<b>Predisposing</b>						
Male	0.39***	0.72**	0.59***	0.72*	0.60***	-0.55***
Married	1.03	1.04	1.56***	1.17	1.05	-0.01
<b>Education</b>						
Less than high school (reference)	-	-	-	-	-	-
High school graduate	1.07	1.04	1.06	1.11	1.65**	0.24**
College	1.18	1.07	1.56**	1.39	1.82***	0.25**
<b>English use and proficiency</b>						
Speak English very well/well (reference)	-	-	-	-	-	-
Speak English not well/not at all	0.97	0.67**	0.85	0.46***	0.53***	-0.07
<b>Age in years</b>						
18-29 (reference)	-	-	-	-	-	-
30-39	0.90	0.67*	0.96	1.76	1.43	-0.04
40-49	1.30	1.09	1.31	1.76	1.31	0.09
≥50	1.06	0.99	1.26	1.47	1.20	0.18
<b>Employment</b>						
Employed (reference)	-	-	-	-	-	-
Not employed	1.26	1.14	1.24	1.60**	1.02	0.34***
<b>Years in the U.S.</b>						
0-4 (reference)	-	-	-	-	-	-
5-9	0.47***	1.05	1.66*	0.57	0.97	-0.12
10-19	0.75	1.19	2.12***	0.68	0.97	0.03
20 and above	0.89	0.85	1.46	0.75	0.99	0.02
<b>Enabling</b>						
Health insurance	3.22***	2.33***	2.67***	1.51*	1.03	0.73***
<b>Poverty level</b>						
0-99% (reference)	-	-	-	-	-	-
100-199%	1.09	0.81	1.23	0.83	0.94	-0.26***
200% and above	1.07	0.77	1.24	0.76	0.74	0.26**
<b>Locality of residence</b>						
Urban (reference)	-	-	-	-	-	-
Suburban	0.94	0.91	1.34*	1.54	0.75	-0.08
Rural	0.95	1.01	0.93	1.23	1.10	-0.07
<b>Need</b>						
<b>Self-reported health status</b>						
Excellent (reference)	-	-	-	-	-	-
Very good	1.19	1.50	1.22	1.02	1.16	0.12
Good	1.06	1.83**	1.22	1.26	1.23	0.12
Fair	1.33	2.67***	1.60*	1.83	1.81	0.42***
Poor	1.73	5.87***	1.92**	3.42***	3.33***	1.26***
Constant	-	-	-	-	-	0.43

\* Significant at the 10% level;

\*\* significant at the 5% level;

\*\*\* significant at the 1% level

<sup>a</sup> Had at least one doctor visit in the past year<sup>b</sup> Had at least one emergency department visit in the past year<sup>c</sup> Had a usual place to go when sick in the past year<sup>d</sup> Delay of prescription drug in the past year<sup>e</sup> Delay of other medical services in the past year

characteristics, differences in healthcare access and utilization would narrow significantly.

We find that differences between documented and undocumented immigrants from Mexico with respect to

utilization of ED visits, number of doctor visits, delay in drugs receipt and delays for other healthcare services are not statistically significant. These results suggest that the adverse effect of legal status on healthcare access and

**Table 3** Decomposition estimates between documented and undocumented immigrants from Mexico (values expressed as %)

Variables	Logistic estimation					Negative binomial estimation, Number of doctor visits
	Doctor visit <sup>a</sup>	ED visit <sup>b</sup>	Usual place <sup>c</sup>	Delay drugs <sup>d</sup>	Delay others <sup>e</sup>	
<b>Predicted probability</b>						
Documented immigrant	77.62	16.58	73.00	9.73	10.31	3.83
Undocumented immigrant	59.44	13.78	51.83	5.39	9.06	2.64
<b>Difference in predicted probability</b>						
Total difference	18.17	2.80	21.17	4.34	1.25	1.19
Differences due to observed part	16.06	3.15	18.43	3.77	0.67	0.93
Differences due to unobserved heterogeneity	2.11	-0.35	2.74	0.57	0.58	0.26
<b>Predisposing</b>						
Male	0.33**	0.02	0.37***	-0.01	0.17*	0.01**
Married	0.92***	-0.01	0.74***	-0.01	-0.08	-0.01
<b>Education</b>						
Less than high school	-	-	-	-	-	-
High school graduate	-0.08	-0.06	-0.11	-0.05	-0.12	0.01
College	1.34***	-0.11	1.84***	0.88**	1.27***	0.09***
<b>English use and proficiency</b>						
Speak English very well/well (reference)	-	-	-	-	-	-
Speak English not well/not at all	-0.74	0.66	1.91***	1.53**	1.31**	0.13***
<b>Age in years</b>						
18-29 (reference)	-	-	-	-	-	-
30-39	0.73	1.36***	-0.84	-0.15	-0.79	0.17
40-49	-0.07	-0.31	0.78**	0.12	0.23	-0.06***
≥50	0.73	-1.54	3.08***	0.24	0.34	-0.09*
<b>Employment</b>						
Employed (reference)	-	-	-	-	-	-
Not employed	-0.01	-0.01	0.08	-0.02	-0.01	-0.01***
<b>Years in the U.S.</b>						
0-4 (reference)	-	-	-	-	-	-
5-9	-1.58	-1.81	-2.05	-4.07	-1.30	-0.44***
10-19	-3.08***	-1.98	-3.58***	-5.13	-1.61	-0.23**
20 and above	10.04***	3.94	9.31***	10.01	3.61	0.73
<b>Enabling</b>						
Health insurance	7.48***	3.04***	6.32***	0.40	-1.72***	0.54***
<b>Poverty level</b>						
0-99% (reference)	-	-	-	-	-	-
100-199%	0.01	-0.11	0.11	-0.03	0.02	-0.01
200% and above	-0.10	-0.92*	0.49	-0.45	0.98**	-0.09***
<b>Locality of residence</b>						
Urban (reference)	-	-	-	-	-	-
Suburban	-0.01	-0.04	0.01	0.03	-0.01	-0.01
Rural	-0.14	0.01	0.01	0.10	0.08	-0.01
<b>Need</b>						
<b>Self-reported health status</b>						
Excellent (reference)	-	-	-	-	-	-
Very good	0.39*	0.15	0.28	0.09	0.24	0.08***
Good	-0.31	-0.53*	-0.77**	-0.35	-0.24	-0.13

**Table 3** continued

Variables	Logistic estimation					Negative binomial estimation, Number of doctor visits
	Doctor visit <sup>a</sup>	ED visit <sup>b</sup>	Usual place <sup>c</sup>	Delay drugs <sup>d</sup>	Delay others <sup>e</sup>	
Fair	-0.26*	-0.62	0.34	-0.06	-0.50	-0.10
Poor	0.34***	1.33***	0.35**	0.73***	0.66***	0.36***

\* Significant at the 10% level; \*\* significant at the 5% level; \*\*\* significant at the 1% level

<sup>a</sup> Had at least one doctor visit in the past year

<sup>b</sup> Had at least one emergency department visit in the past year

<sup>c</sup> Had a usual place to go when sick in the past year

<sup>d</sup> Delay of prescription drug in the past year

<sup>e</sup> Delay of other medical services in the past year

utilization is heterogeneous across healthcare services. English proficiency while more widespread among documented immigrants was not always a predictor of healthcare utilization in all measures. Healthcare providers should be aware that lack of English proficiency is not necessarily a predictor of undocumented status.

More limited healthcare access and utilization among undocumented immigrants is likely to aggravate undiagnosed health problems compared to documented immigrants. Undocumented immigrants arriving to the ED with health conditions that progressed unchecked may require costly treatments that could have been avoided if they were encouraged to use less invasive forms of healthcare without restrictions [42]. Undocumented immigrant status discourages doctor visits and having a usual source of care that could reduce the utilization of the ED among this population [43, 44].

Our study also finds that approximately 12–13% of healthcare access and utilization differences are due to unobserved heterogeneity. As has been argued in the literature, this unobserved component helps to account for behavioral and idiosyncratic factors that are often difficult to measure in large-scale surveys although they remain important policy targets. [4, 5, 7] The most relevant factor in this component affecting undocumented immigrants is possibly the fear of deportation as a deterrent of healthcare access and utilization [45, 46]. This deterrent, however, may not be as effective for critical health conditions that would lead patients to the ED.

Additional factors that may explain some of the unobserved components are peer effects, safety net availability and lack of familiarity with the US healthcare system. Recent evidence suggests that immigrants with strong social networks in the US benefit from better information about healthcare services. Ultimately, better information leads to increased healthcare access and utilization [13]. The clustering of Latinos in certain urban areas with different levels of healthcare supply may also contribute to unobserved differences. Some studies have found evidence

of different rates of healthcare access and utilization across counties based on the availability of a social safety net [12, 47]. Unobserved differences may also account for heterogeneous attitudes and perceptions of healthcare among undocumented immigrants [48, 49].

Healthcare for undocumented immigrants is often a contentious issue in both healthcare and immigration reforms. Although proponents of restrictive policies have argued that immigrants overuse services, our study shows the contrary. Undocumented immigrants use fewer healthcare for socioeconomic, demographic, idiosyncratic and behavioral reasons. Any policy that addresses the legal status of Mexican immigrants in the US would tackle the share of the unobserved (12–13%) health care disparities estimated in the decomposition analyses.

The recently approved Patient Protection and Affordable Care Act will likely benefit documented immigrants. In this legislation, they are treated similarly to US citizens since they are mandated to obtain health insurance, are eligible to purchase insurance through the health insurance exchanges and are eligible for the premium and cost-sharing subsidies [50]. By contrast, undocumented immigrants are exempted from the mandate to have health insurance coverage and they are not eligible to purchase insurance through the health insurance exchanges or to receive any subsidies [50]. If present trends continue, it is likely that healthcare access and utilization disparities will diverge between documented and undocumented immigrants.

The Patient Protection and Affordable Care Act, however, will increase funding for community health centers [50]. These centers could somewhat increase the integration of undocumented immigrants into primary care, which could partially ameliorate healthcare access and utilization disparities between undocumented and documented immigrants. However, it is unlikely that it will be as effective as health insurance coverage at increasing access and utilization according to our analyses. Future policies that grant some form of legal status to undocumented immigrants could be the most effective to



reduce healthcare disparities between undocumented and documented immigrants.

While this study compares two different groups of Mexican immigrants, immigrants often face problems with insurance coverage and may need more social support to apply for coverage if they are eligible [8]. Future research could use the present study as a baseline to compare the effect of excluding undocumented immigrants from the Patient Protection and Affordable Care Act. The outcomes of this study could also be replicated among other US immigrant groups.

### Limitations

Our study uses a cross-sectional design, which limits the analyses of differences over time. Previous research shows that undocumented immigrants are more susceptible to declines in insurance coverage due to employment instability [51]. Healthcare access and utilization will be affected by these changes in insurance and employment status. Self reported data might underestimate levels of need for those with impaired access to care. In addition, migrant farm workers will be underrepresented in these data since data were predominantly collected by landline telephones.

### Conclusion

This paper is among the first to examine healthcare access and utilization disparities between documented and undocumented immigrants from Mexico using a large database. Previous studies have used small samples, limited healthcare measures and have grouped Latinos together to analyze the effect of documentation status in healthcare access and utilization [14, 16, 17, 19, 20, 45]. Our study shows that significant differences exist among Mexican immigrants, with undocumented immigrants from Mexico facing a lower likelihood of having a doctor visit in the previous year or having a usual source of care. Documented and undocumented immigrants from Mexico face the same probability of using the ED, and experiencing delays in accessing drugs and other healthcare services.

Sex, marital status, education, poverty status and health insurance coverage are the most relevant observable characteristics that explain these differences. We also found that time in the US and English proficiency are important predictors of healthcare access and utilization. Other significant determinants may be behavioral and idiosyncratic factors, such as deportation fears, peer effects, safety net availability and lack of familiarity with the US healthcare system. Excluding undocumented immigrants from the

Patient Protection and Affordable Care Act is likely to make healthcare access and utilization more inequitable between documented and undocumented immigrants. Even if increased funding for community health centers could slightly ameliorate health care disparities among immigrants, the ultimate solution would be to provide some form of legal status to currently undocumented immigrants.

**Acknowledgments** Partly supported by the National Institute of Mental Health (NIMH) Grant R01 MH069849 (Ortega) and NIA Grant P30AG021684 (Wallace). We are grateful for valuable comments from Hector Rodriguez.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

### References

1. PEW Hispanic Center. Hispanics of Mexican origin in the United States, 2008. College Park, MD: Pew Hispanic Center; 2009.
2. Batalova J. Mexican immigrants in the United States. Migration Information Source, Migration Policy Institute; 2008.
3. Ottaviano G, G. Peri. Rethinking the gains from immigration: theory and evidence from the US. CEPR discussion paper, Social Science Research Network; 2005.
4. Ortega AN, Fang H, Perez VH, et al. Health care access, use of services, and experiences among undocumented Mexicans and other Latinos. *Arch Intern Med.* 2007;167:2354–60.
5. Ku L, Matani S. Left out: immigrants' access to health care and insurance. *Health Aff (Millwood).* 2001;20:247–56.
6. Wallace SP, Gutierrez VF, Castaneda X. Access to preventive services for adults of Mexican origin. *J Immigr Minor Health.* 2008;10:363–71.
7. Leclere FB, Jensen L, Biddlecom AE. Health care utilization, family context, and adaptation among immigrants to the United States. *J Health Soc Behav.* 1994;35:370–84.
8. Carter-Pokras O, Zambrana RE, Yankelovich G, et al. Health status of Mexican-origin persons: do proxy measures of acculturation advance our understanding of health disparities? *J Immigr Minor Health.* 2008;10:475–88.
9. Durden TE. Nativity, duration of residence, citizenship, and access to health care for Hispanic children. *Int Migr Rev.* 2007; 41:537–45.
10. Durden TE. Usual source of health care among Hispanic children: the implications of immigration. *Med Care.* 2007;45:753–60.
11. Perez VH, Fang H, Inkelas M, et al. Access to and utilization of health care by subgroups of Latino children. *Med Care.* 2009; 47:695–9.
12. Berdahl TA, Kirby JB, Stone RA. Access to health care for nonmetro and metro Latinos of Mexican origin in the United States. *Med Care.* 2007;45:647–54.
13. Gresenz CR, Rogowski J, Escarce JJ. Community demographics and access to health care among U.S. Hispanics. *Health Serv Res.* 2009;44:1542–62.
14. Goldman DP, Smith JP, Sood N. Legal status and health insurance among immigrants. *Health Aff (Millwood).* 2005;24: 1640–53.
15. Nandi A, Galea S, Lopez G, et al. Access to and use of health services among undocumented Mexican immigrants in a US urban area. *Am J Public Health.* 2008;98:2011–20.

16. Berk ML, Schur CL, Chavez LR, et al. Health care use among undocumented Latino immigrants. *Health Aff (Millwood)*. 2000; 19:51–64.
17. Hubbell FA, Waitzkin H, Mishra SI, et al. Access to medical care for documented and undocumented Latinos in a southern California county. *West J Med*. 1991;154:414–7.
18. Fuentes-Afflick E, Hessol NA. Immigration status and use of health services among Latina women in the San Francisco Bay Area. *J Womens Health (Larchmt)*. 2009;18:1275–80.
19. Fuentes-Afflick E, Hessol NA, Bauer T, et al. Use of prenatal care by Hispanic women after welfare reform. *Obstet Gynecol*. 2006; 107:151–60.
20. Goldman DP, Smith JP, Sood N. Immigrants and the cost of medical care. *Health Aff (Millwood)*. 2006;25:1700–11.
21. Blinder AS. Wage discrimination—reduced form and structural estimates. *J Hum Resour*. 1973;8:436–55.
22. Oaxaca RL, Ransom MR. On discrimination and the decomposition of wage differentials. *J Econ*. 1994;61:5–21.
23. Keeter S. The impact of cell phone noncoverage bias on polling in the 2004 presidential election. *Pub Opin Q*. 2006;70: 88–98.
24. CHIS. Methodology series. In: 4 R. Los Angeles: UCLA Center for Health Policy Research; 2009.
25. CHIS. CHIS 2007 area probability sample to assess nonresponse bias. CHIS working paper series. Los Angeles CA: UCLA Center for Health Policy Research; 2008.
26. MMP. The legalized population survey. Mexican Migration Project; 2007.
27. CHIS. California Health Interview Survey. Survey methodology. 2008.
28. Ponce NA, Lavarreda SA, Yen W, Brown ER, DiSogra C, Satter DE. The California Health Interview Survey 2001: translation of a major survey for California's multiethnic population. *Public Health Rep*. 2004;119:388–95.
29. Vargas Bustamante A, Fang H, Rizzo JA, et al. Understanding observed and unobserved health care access and utilization disparities among U.S. Latino adults. *Med Care Res Rev* 2009.
30. Weinick RM, Zuvekas SH, Cohen JW. Racial and ethnic differences in access to and use of health care services, 1977 to 1996. *Med Care Res Rev*. 2000;57(Suppl 1):36–54.
31. UCLA. American Indian Research Program: Undocumented residents make up small share of California's uninsured population. In: Methodology. Los Angeles: UCLA Center for Health Policy Research; 2007.
32. Aday LA, Andersen R. A framework for the study of access to medical care. *Health Serv Res*. 1974;9:208–20.
33. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav*. 1995;36:1–10.
34. Stata. College Station, Texas: Stata Corporation; 2007.
35. Zuvekas SH, Taliaferro GS. Pathways to access: health insurance, the health care delivery system, and racial/ethnic disparities, 1996–1999. *Health Aff (Millwood)*. 2003;22:139–53.
36. Waidmann TA, Rajan S. Race and ethnic disparities in health care access and utilization: an examination of state variation. *Med Care Res Rev*. 2000;57(Suppl 1):55–84.
37. Vargas Bustamante A, Fang H, Rizzo JA, et al. Heterogeneity in Health Insurance Coverage among U.S. Latino Adults. *J Gen Intern Med* 2009.
38. Hargraves JL, Hadley J. The contribution of insurance coverage and community resources to reducing racial/ethnic disparities in access to care. *Health Serv Res*. 2003;38:809–29.
39. Gaskin DJ, Briesacher BA, Limcangco R, et al. Exploring racial and ethnic disparities in prescription drug spending and use among Medicare beneficiaries. *Am J Geriatr Pharmacother*. 2006;4:96–111.
40. Bartus T. Estimation of marginal effects using margeff. *Stata J*. 2005;24:1–24.
41. Fairlie R. An extension of the Blinder-Oaxaca decomposition technique to logit and probit models. *J Econ Soc Meas*. 2005;30:305–16.
42. Footracer KG. Immigrant health care in the United States: what ails our system? *JAAPA* 2009;22:33–6, 60.
43. Coustasse A, Lorden AL, Nemarugommula V, et al. Uncompensated care cost: a pilot study using hospitals in a Texas county. *Hosp Top*. 2009;87:3–11.
44. Pitkin Derose K, Bahney BW, Lurie N, et al. Review: immigrants and health care access, quality, and cost. *Med Care Res Rev*. 2009;66:355–408.
45. Berk ML, Schur CL. The effect of fear on access to care among undocumented Latino immigrants. *J Immigr Health*. 2001;3: 151–6.
46. Asch S, Leake B, Gelberg L. Does fear of immigration authorities deter tuberculosis patients from seeking care? *West J Med*. 1994;161:373–6.
47. Haas JS, Phillips KA, Sonneborn D, et al. Variation in access to health care for different racial/ethnic groups by the racial/ethnic composition of an individual's county of residence. *Med Care*. 2004;42:707–14.
48. Carter-Pokras O, Brown P, Martinez I, et al. Latin American-trained nurse perspective on Latino health disparities. *J Transcult Nurs*. 2008;19:161–6.
49. Martinez IL, Carter-Pokras O. Assessing health concerns and barriers in a heterogeneous Latino community. *J Health Care Poor Underserved*. 2006;17:899–909.
50. KFF. Summary of new health reform law. Focus on health care. Kaiser Family Foundation; 2010.
51. Prentice JC, Pebley AR, Sastry N. Immigration status and health insurance coverage: who gains? who loses? *Am J Public Health*. 2005;95:109–16.