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Journal

Journal of General Internal Medicine, 24(3)

ISSN

1525-1497

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Publication Date

2009-11-01

DOI

10.1007/s11606-009-1069-7

Peer reviewed

Heterogeneity in Health Insurance Coverage Among US Latino Adults

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OBJECTIVE: We sought to determine the differences in observed and unobserved factors affecting rates of health insurance coverage between US Latino adults and US Latino adults of Mexican ancestry. Our hypothesis was that Latinos of Mexican ancestry have worse health insurance coverage than their non-Mexican Latino counterparts.

METHODS: The National Health Interview Survey (NHIS) database from 1999–2007 consists of 33,847 Latinos. We compared Latinos of Mexican ancestry to non-Mexican Latinos in the initial descriptive analysis of health insurance coverage. Disparities in health insurance coverage across Latino categories were later analyzed in a multivariable logistic regression framework, which adjusts for confounding variables. The Blinder-Oaxaca technique was applied to parse out differences in health insurance coverage into observed and unobserved components.

RESULTS: US Latinos of Mexican ancestry consistently had lower rates of health insurance coverage than did US non-Mexican Latinos. Approximately 65% of these disparities can be attributed to differences in observed characteristics of the Mexican ancestry population in the US (e.g., age, sex, income, employment status, education, citizenship, language and health condition). The remaining disparities may be attributed to unobserved heterogeneity that may include unobserved employment-related information (e.g., type of employment and firm size) and behavioral and idiosyncratic factors (e.g., risk aversion and cultural differences).

CONCLUSIONS: This study confirmed that Latinos of Mexican ancestry were less likely to have health insurance than were non-Mexican Latinos. Moreover, while differences in observed socioeconomic and demographic factors accounted for most of these disparities, the share of unobserved heterogeneity accounted for 35% of these differences.

KEY WORDS: health insurance coverage; health-care disparities; access to health care; Hispanic Americans; Latinos.
J Gen Intern Med 24(Suppl 3):561–6
DOI: 10.1007/s11606-009-1069-7
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INTRODUCTION

The number of Latinos in the US doubled during the past decade, boosted by an above-average fertility rate and intensive migratory flow from Latin America.¹ Latinos now represent 15.5% of total US residents, constituting the largest ethnic minority group in the country. Despite this growth, Latinos still experience the lowest health insurance coverage rate among major racial and ethnic groups in the US. According to recent estimates by the US Census, 34% of native and foreign-born Latinos are uninsured, compared to 10% of non-Latino Whites, 20.5% of African Americans and 15.5% of Asians.² Lack of health insurance coverage among Latinos has been associated with uncertainty over family health-care expenditures, potentially ruinous out-of-pocket payments and lower health-care access and utilization.^{3–7} Previous studies have shown that citizenship, employment status, firm size, type of employment, income and English proficiency are major factors associated with low health insurance coverage rates among Latinos.^{8–14} Most of this work, however, pools Latinos together when they compare different racial and ethnic groups. Only a small handful of studies have examined differences in health insurance coverage across distinct groups of Latinos in national and regional settings.^{15–19}

Regression-based decomposition methods, commonly used in the labor economics literature, have been employed to estimate the share of observed and unobserved factors that explain health-care disparities.^{4–6,19,35} Differences in observed characteristics such as income, employment, type of employment, firm size, English proficiency, age, health condition and legal status in the US can explain some differences in health insurance coverage. However, unobserved heterogeneity that accounts for idiosyncratic factors such as risk aversion and cultural traits may also be relevant.

The previous literature that employed regression-based decomposition methods to analyze differences in health insurance coverage among Latinos found that Mexican Americans have significantly lower coverage than Cuban Americans and Puerto Ricans, and approximately 55% of these differences are explained by observable factors such as income, type of employment, firm size and education in the US.¹⁹ Our study adds important health insurance determinants such as self-reported health status, poverty and citizenship status that can be helpful to explain a share of the unobserved heterogeneity component found in the previous literature.

The present study compared health insurance coverage among six groups of US Latino adults: Mexican, Puerto Rican, Cuban, Dominican, Central/South American and other Latinos using a large national database, the National Health Interview Survey (NHIS). We estimated the probability of having health insurance coverage between Latinos of Mexican ancestry and non-Mexican Latinos. A second stage of the analysis used Blinder-Oaxaca decomposition methods^{21,22} to identify specific factors explaining different rates of health insurance coverage among the Latino categories. We further analyzed and discuss estimated differences in health insurance coverage that were explained by observed characteristics and unobserved heterogeneity.

METHODS

Data

We used data on US Latino adults extracted from the National Health Interview Survey (NHIS). To have a sufficient sample size and enough power for each Latino category, we combined observations between the years 1999 and 2007. The NHIS is a large-scale household survey of a representative sample of the US civilian population. It collects data from approximately 100,000 individuals each year. The survey reports information on a broad range of health-care topics and socioeconomic and demographic characteristics of survey respondents.²³

Health Insurance Coverage

We used a dichotomous outcome variable to compare rates of health insurance coverage across Latino groups. This measure identifies whether an individual had health insurance coverage during the previous year. Most studies of health-care disparities across different racial/ethnic groups have used measures of health-care access and utilization as their outcome variables.^{4,5,20,35} A few studies have also used health insurance coverage in gauging health-care disparities.^{6,7,19}

Latino Cohorts

We used US Latinos of Mexican ancestry and US non-Mexican Latinos as comparison categories. In the former category, we included all US Latinos who either reported being born in Mexico or who self-identified themselves as native-born Latinos of Mexican ancestry living in the US. Our analyses included Puerto Ricans and Latino adults of Cuban, Dominican, Central/South American ancestry and other native and foreign-born Latinos ages >18 years in the category of non-Mexican Latinos. Throughout the rest of the paper, US designation is eliminated but is inferred for both Latinos of Mexican ancestry and non-Mexican Latinos.

Explanatory Variables

The analysis includes a number of explanatory variables that the literature has identified as determinants of health insurance coverage.^{6,7,19} These include socioeconomic and demographic variables (e.g., age, sex, income, education, marital status, poverty status, employment and region of residence), self-reported health status, language of interview to proxy for

native language and legal status in the US. We also included fixed effects for survey years to adjust for any possible annual events that could have an effect on the dependent variable, with 1999 as the reference year.

Statistical Analyses

A bivariate analysis comparing Latinos by insurance status provides initial descriptive statistics for the study variables. Chi-square tests were used to determine the general associations between Latino sub-ethnicity and insurance coverage. We then examined whether differences in health insurance coverage among Latino groups remained after controlling for confounding variables in multivariable logistic regression models. The multivariable models included separate binary indicators for the following Latino groups: Mexican, Puerto Rican, Cuban, Dominican, Central/South American and other Latinos. We used Stata 9.0 for our statistical analyses.

Decomposition Model

We implemented the Blinder-Oaxaca decomposition technique to parse out observed and unobserved differences in health insurance coverage between US Latinos of Mexican ancestry and Latinos of non-Mexican ancestry. The Blinder-Oaxaca decomposition method has been used extensively to assess mean outcome differences in the discrimination and labor economics literature.^{21,22} In health services research, this method has been employed to study racial/ethnic disparities in different measures of health-care access and utilization and health insurance coverage.^{4-7,24-26,35}

Our decomposition analysis compared two exclusive categories, Latinos of Mexican ancestry and non-Mexican Latinos. We combined non-Mexican Latinos into one general comparison group for the decomposition estimates. Our main outcome variable was a dichotomous measure of health insurance coverage. We also included a series of explanatory variables as described above. In all categorical variables, Latinos of Mexican ancestry constituted the reference group. We were interested in estimating the magnitude of mean outcome differences for the 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 we interpret as unobserved heterogeneity between the reference and comparison groups. Since our outcome variable is dichotomous, we used the non-linear decomposition methods proposed by Fairlie²⁷ and Bartus.²⁸

RESULTS

Latinos of Mexican ancestry comprised nearly 70% of uninsured Latinos in the US in the NHIS data (Table 1). In contrast, they represented <57% of the number of insured Latinos, suggesting that Latinos of Mexican ancestry have a higher probability of lacking health insurance coverage compared to Latinos of non-Mexican ancestry. Table 1 illustrates that uninsured Latinos are more likely to be male, single, young, foreign-born, employed, to have fewer years of schooling, to have income below the federal poverty line, to answer the interview in Spanish, to report good health and to live in the

Table 1. Characteristics of Latino Study Population from the National Health Interview Survey (1999–2007)

Sample	Latino origin		P value*
	Uninsured (%)	Insured(%)	
Sample size	12,048	21,799	
Latino origin			<0.01
Mexican	69.99	56.58	
Puerto Rican	4.91	13.33	
Cuban	3.44	7.08	
Dominican	2.38	3.45	
Central/South American	16.72	13.06	
Other Latino	2.56	6.50	
Other explanatory variables			
Male	49.70	41.93	<0.01
Married	49.66	51.07	0.01
Interviewed in English	41.77	67.40	<0.01
Citizenship and immigration status			<0.01
Citizen, US born	26.44	49.06	
Citizen, naturalized	13.45	27.88	
Non-citizen	60.11	23.06	
Age			<0.01
18–34	57.67	38.44	
35–49	30.57	31.40	
50–64	11.03	16.66	
65–74	0.46	8.48	
75 or older	0.27	5.02	
Education			<0.01
Less than high school	54.24	34.35	
High school graduate	23.04	24.79	
More than high school	22.72	40.86	
Health status			<0.01
Excellent	28.62	27.55	
Very good	29.21	28.01	
Good	31.47	26.89	
Fair	9.05	13.06	
Poor	1.65	4.49	
Employment status			<0.01
Not in labor force	25.17	33.69	
Employed	68.20	63.98	
Unemployed	6.63	2.33	
Federal poverty level (FPL)			<0.01
less than 100 FPL	34.46	21.35	
100–200 FPL	39.34	25.53	
More than 200 FPL	26.20	53.12	
US region			<0.01
Northeast	10.53	16.84	
Midwest	6.60	7.93	
South	43.48	34.10	
West	39.39	41.13	
Survey year			<0.01
1999	9.73	11.22	
2000	11.00	12.02	
2001	11.80	12.50	
2002	10.93	11.34	
2003	12.13	10.97	
2004	11.74	11.54	
2005	12.56	11.46	
2006	9.85	8.62	
2007	10.26	10.33	

Data source: National Health Interview Survey (NHIS) 1999–2007
 *Chi-square tests between uninsured and insured US residents of Latino origin

Southern region of the US. Chi-square tests indicate that each of these differences is statistically significant ($P < 0.01$).

The results in Table 1 do not account for confounding factors that may have effects on health insurance coverage among Latino adults. Consequently, we estimated multivari-

able logistic regression models to control for these factors. Table 2 shows odds ratios predicting health insurance coverage for each Latino category, using Latinos of Mexican ancestry as the reference group. Compared to Latinos of Mexican ancestry, non-Mexican Latinos consistently observe higher rates of health insurance coverage ($OR > 1.0$). Latinos of

Table 2. Predictors of Health Insurance Coverage for Each Latino Group*

Variables	Health insurance is the dependent variable		
	Odds ratio	P value	95 CI
Latino origin			
Mexican	Reference		
Puerto Rican	1.90	<0.01	(1.69, 2.14)
Cuban	2.21	<0.01	(1.93, 2.53)
Dominican	2.08	<0.01	(1.75, 2.48)
Central/South American	1.13	0.01	(1.04, 1.22)
Other Latino	1.19	0.01	(1.04, 1.38)
Other explanatory variables			
Male	0.72	<0.01	(0.69, 0.77)
Married	1.40	<0.01	(1.33, 1.48)
Interviewed in English	1.55	<0.01	(1.45, 1.66)
Citizenship and immigration status			
Citizen, US born	Reference		
Citizen, naturalized	0.88	<0.01	(0.81, 0.95)
Non-citizen	0.36	<0.01	(0.33, 0.39)
Age			
18–34	Reference		
35–49	1.37	<0.01	(1.29, 1.45)
50–64	1.68	<0.01	(1.55, 1.83)
65–74	28.27	<0.01	(21.40, 37.34)
75 or older	30.01	<0.01	(20.87, 43.15)
Education			
Less than high school	Reference		
High school graduate	1.20	<0.01	(1.12, 1.29)
More than high school	1.74	<0.01	(1.62, 1.87)
Health status			
Excellent	Reference		
Very good	0.97	0.46	(0.91, 1.04)
Good	0.95	0.17	(0.89, 1.02)
Fair	1.29	<0.01	(1.17, 1.43)
Poor	2.20	<0.01	(1.82, 2.64)
Employment status			
Not in labor force	Reference		
Employed	0.89	<0.01	(0.83, 0.96)
Unemployed	0.36	<0.01	(0.31, 0.41)
Family poverty level			
less than 100 FPL	Reference		
100–200 FPL	1.06	0.11	(0.99, 1.13)
More than 200 FPL	2.57	<0.01	(2.39, 2.76)
US region			
Northeast	Reference		
Midwest	1.20	0.01	(1.05, 1.37)
South	0.58	<0.01	(0.52, 0.64)
West	1.11	0.05	(1.00, 1.23)
Survey year			
1999	Reference		
2000	0.94	0.27	(0.84, 1.05)
2001	0.97	0.59	(0.87, 1.08)
2002	0.89	0.04	(0.79, 1.00)
2003	0.87	0.01	(0.78, 0.97)
2004	0.90	0.06	(0.80, 1.00)
2005	0.87	0.02	(0.78, 0.98)
2006	0.81	<0.01	(0.72, 0.91)
2007	0.93	0.25	(0.83, 1.05)

*Referent = Latinos of Mexican ancestry

Mexican ancestry are more likely to be uninsured, in contrast with Latino adults of Cuban and Dominican ancestry who have the highest probabilities of having health insurance coverage.

For the remaining explanatory variables in Table 2, we can confirm that insured Latinos are more likely to be married, to have been born in the US and to be interviewed in English. Latinos with health insurance coverage are more likely to have finished high school, to be above the 35 years of age and to have income above the federal poverty line. With respect to health status and geographic distribution, Latinos with health insurance coverage are more likely to report their health as fair or poor and to live in the Midwest and Western regions of the US. The relative homogeneity of fixed effects control variables for survey years does not suggest any important disturbance from a time shock.

The main objective of our study was to parse out differences into observed and unobserved factors that affect health insurance coverage. Table 3 shows the results of the decomposition analysis and provides the probability of having health insurance coverage for our reference and comparison groups, once we account for all the explanatory variables in the model. Latinos of Mexican ancestry were approximately 13% less likely to be insured than were non-Mexican Latinos (59.4% vs 72.4%, respectively). Also shown in Table 3, approximately 65% (8.5 percentage points of the of 13 percentage point difference) of the difference in health insurance coverage between Latinos of Mexican ancestry and non-Mexican Latinos can be explained by observed characteristics. The results in Table 3 show that Latinos of Mexican ancestry are more likely to be young, to report better health status, to live in the Western region of the US and to be below the poverty line compared to non-Mexican Latinos. Unobserved heterogeneity still plays an important role, however, as it accounted for approximately 35% of the difference between the reference and comparison categories. Our findings are consistent with previous research^{5,18} and imply that socio-demographic, health status and economic differences among Latinos explain a large share of disparities in health insurance coverage.

Latinos of Mexican ancestry were the population of interest in our analysis. However, it could be argued that the rest of the Latino population that was grouped into the comparison category for the decomposition analysis also differed substantially from each other, even if the multivariable logistic regression reported that each group of non-Mexican Latinos had a higher chance of getting health insurance coverage than Latinos of Mexican ancestry. For instance, all Puerto Ricans have similar entitlements to those of mainland citizens, since they are US citizens by birth. Therefore, they may not face the same restrictions to obtaining health insurance as undocumented immigrants from Latin American countries. Likewise, the majority of Cuban immigrants have immediate access to health insurance for a period of time when they first enter the US, as most of them arrive as political refugees. They also benefit from a relatively affluent and well-organized social network that smoothes their transition to the US.^{29,30}

We thus tested the robustness of our results by estimating two additional decomposition models that (1) excluded Puerto Ricans and (2) excluded both Puerto Ricans and Cubans (Table 4). This sensitivity analysis is helpful in determining whether particular subgroups of Puerto Rican and/or Cuban Latinos who may be more likely to have health insurance benefits can account for a substantial share of differences

Table 3. Decomposition Estimates Between US Latinos with Mexican Ancestry and Non-Mexican Latinos

Decomposition			
Predicted probability			
Non-Mexican Latino origin	72.36%		
Mexican origin	59.40%		
Difference in predicted probabilities			
Total differences	12.96%		
Differences due to observed component	8.48%		
Differences due to unobserved component	4.48%		
Explanatory variables	Coefficient	P value	95 CI
Male	0.27	<0.01	(0.20, 0.34)
Married	-0.51	<0.01	(-0.67, -0.36)
Interviewed in English	0.32	<0.01	(0.21, 0.44)
Citizenship and immigration status			
Citizen, US born	Reference		
Citizen, naturalized	-0.16	0.45	(-0.58, 0.26)
Non-citizen	2.48	<0.01	(2.21, 2.74)
Age			
18-34	Reference		
35-49	0.12	<0.01	(0.06, 0.18)
50-64	0.33	<0.01	(0.21, 0.45)
65-74	0.41	<0.01	(0.33, 0.48)
75 or older	0.44	<0.01	(0.37, 0.51)
Education			
Less than high school	Reference		
High school graduate	0.06	0.04	(0.00, 0.11)
More than high school	1.74	<0.01	(1.38, 2.11)
Health status			
Excellent	Reference		
Very good	0.01	0.44	(-0.01, 0.03)
Good	0.11	0.03	(0.01, 0.21)
Fair	0.08	<0.01	(0.03, 0.12)
Poor	0.11	<0.01	(0.06, 0.16)
Employment status			
Not in labor force	Reference		
Employed	0.00	0.88	(-0.04, 0.04)
Unemployed	-0.07	<0.01	(-0.10, -0.05)
Family poverty level			
Less than 100 FPL	Reference		
100-200 FPL	0.26	<0.01	(0.13, 0.39)
More than 200 FPL	1.10	<0.01	(0.85, 1.35)
US region			
Northeast	Reference		
Midwest	0.11	0.12	(-0.03, 0.26)
South	-0.21	<0.01	(-0.27, -0.14)
West	1.44	<0.01	(0.84, 2.03)
Survey year			
1999	Reference		
2000	0.00	0.98	(-0.04, 0.04)
2001	0.00	0.96	(-0.01, 0.01)
2002	0.00	0.63	(-0.01, 0.01)
2003	0.04	0.03	(0.00, 0.08)
2004	0.02	0.14	(-0.01, 0.05)
2005	0.00	0.98	(-0.01, 0.01)
2006	0.00	0.53	(-0.01, 0.01)
2007	0.00	0.88	(-0.01, 0.01)

between Latinos of Mexican ancestry and non-Mexican Latinos. We examined whether the same pattern of differences between Latinos of Mexican ancestry and non-Mexican Latinos persisted after excluding these groups. The results confirmed our hypothesis: Latinos of Mexican ancestry were still more likely to be uninsured, although the difference in the probability of lacking coverage narrows from 13% for all non-Mexican Latinos to 9% when we excluded Puerto Ricans and

Table 4. Alternative Decomposition Estimates Between US Latinos with Mexican ancestry and Non-Mexican Latinos, Excluding Puerto Ricans and Puerto Ricans/Cubans

	Decomposition	
	Excluding Puerto Rican	Excluding Puerto Rican and Cuban
Predicted probability		
Non-Mexican Latino origin	68.44%	65.77%
Mexican origin	59.40%	59.40%
Difference in predicted probabilities		
Total differences	9.04%	6.37%
Differences due to observed component	4.91%	3.86%
Differences due to unobserved component	4.13%	2.51%

to 6.3% when we excluded Puerto Ricans and Cubans. The size of the gap explained by observed factors also decreased somewhat, from 65% when we considered all non-Mexican Latinos to 54% when we excluded Puerto Ricans and to 60% when we excluded Puerto Ricans and Cubans.

DISCUSSION

Age and poverty status appear to be the most relevant observable characteristics explaining differences in health insurance coverage among Latinos. Interestingly, the adverse selection problem in the US health-care system, where health insurance coverage attracts individuals that are more likely to use health services, seems to be replicated in this population. Uninsured Latinos are more likely to be younger and to report their health as good, very good or excellent. The odds of having health insurance increased for individuals aged 35 years or more who report their health as fair or poor, which also suggests an adverse selection problem among Latinos. Although we do not analyze this possible selection problem in our study, it is an interesting issue for further research. If Latinos are partly selecting into health insurance as happens among other racial/ethnic groups, it would justify mandated programs that could collect contributions from young and relatively healthy Latinos into health insurance plans that would pay for their health-care utilization later in life.

Previous research on disparities in health insurance coverage using decomposition methods found that most differences are explained by observable characteristics.^{6,7,19} These studies, however, either compared Latinos with other racial groups (predominantly non-Latino Whites and African Americans) or they used only three Latino categories: Mexican American, Cuban and Puerto Rican. Our analysis was more comprehensive as it included a national and updated sample of all Latinos. Our results suggest that if Latinos of Mexican ancestry resembled non-Mexican Latinos in terms of income, education, age and employment, differences in health insurance coverage among Latinos would narrow considerably. These differences persist even when we exclude Puerto Ricans and Cubans from our decomposition analysis.

Other factors, however, could also help account for the unobserved component in the decomposition model. Discussion of these unobserved factors is speculative since these

variables are difficult to measure and often unavailable in surveys. The literature, however, has argued that they are important determinants of health insurance coverage. For example, Latino groups may differ in their attitudes toward risk; this is what economists and psychologists term one's degree of risk aversion.³⁴ This concept refers to the tolerance of risk by individuals under conditions of uncertainty. Risk aversion can also help explain why certain Latinos who are young and healthy are more likely to be uninsured in spite of their eligibility for some public programs. Likewise, it could help explain why older and probably more risk-averse Latinos may look for health insurance coverage through public programs or jobs that offer this benefit.

Cultural familiarity with the health insurance system in the US may also be another unmeasured factor contributing to higher rates of uninsured individuals, especially among recent immigrants.¹ Some Latinos of Mexican ancestry may be more reluctant to seek health insurance coverage for cultural reasons once we account for other factors. Almost half of current Latinos of Mexican ancestry have immigrated recently to the US, and the majority of them are first- or second-generation immigrants.³² Perhaps recent immigration influences their perception, trust and degree of familiarity with the US health system. Recent immigrants may expect to use health services without the intermediation of a health insurer. They may also expect to pay modest fees out-of-pocket for health services in the US since they were used to doing so in Mexico.

Risk aversion and cultural familiarity with health insurance coverage may also be linked. Previous research has shown that Latinos of Mexican ancestry with insured relatives living in Mexico are more willing to pay for basic health insurance coverage in the US.³² Some Latinos who immigrated recently to the US but who previously had health insurance in their country of origin may seek coverage options through public programs or by moving into jobs that offer this benefit. In contrast, those individuals who lacked health insurance coverage before they arrived to the US may be more willing to cope without coverage in the US.^{2,33}

LIMITATIONS

Some of the unobserved differences (35% according to our decomposition analysis) may reflect differences in employment and undocumented status in the US, two variables that were not recorded in our database but that are likely to be important determinants of health insurance coverage.³¹ Employment is a common determinant of health insurance coverage since the majority of health insurance coverage in the US is provided through employer-sponsored plans. Employees in small businesses, part-time positions, day laborers and informal jobs are less likely to have health insurance coverage. Latinos of Mexican ancestry could be overrepresented in these job categories compared to non-Mexican Latinos, contributing to heterogeneous rates of health insurance coverage.

While the NHIS recorded if Latinos were US-born, citizens or non-citizens, it did not identify undocumented individuals. Latinos of Mexican ancestry are likely to be overrepresented among undocumented immigrants compared to other foreign-born Latinos, since immigration costs for undocumented immigrants coming from Mexico may be lower. The inclusion

of type of employment, firm size and undocumented status in the US might have increased the share of differences in health insurance coverage explained by observed socio-demographic and economic factors.

CONCLUSION

This study provides an updated assessment of differences in health insurance coverage among Latinos residing in the US. Previous studies have either analyzed differences in health insurance coverage among Latinos, African Americans and non-Latino Whites or have focused on fewer Latino groups: Mexican Americans, Cubans and Puerto Rican.^{6,7,19} Our analyses show that significant differences in health insurance coverage exist across different categories of Latinos, with Latinos of Mexican ancestry demonstrating the worst patterns of health insurance coverage. These differences are unlikely to be explained fully by the typical socioeconomic (income, age, education, type of employment), health status and geographic factors that the literature points to as main determinants of health insurance coverage. Other significant determinants are likely to be related to attitudes, perception of need and preference for health insurance coverage. Risk aversion and cultural familiarity with the health insurance system in the US may also be important variables included in the unexplained component of our decomposition model.

Acknowledgments: This project was partly supported by the Network for Multicultural Research on Health and Healthcare, Department of Family Medicine—UCLA David Geffen School of Medicine, funded by the Robert Wood Johnson Foundation. Additional support by the National Institute of Mental Health (NIMH) Grant R01 MH069849 to Dr. Ortega.

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