Another Hispanic Paradox?
Differences in Socioeconomic Gradients in Health Between Whites and Hispanics

Noreen Goldman[1]
Rachel T. Kimbro[1]
Cassio M. Turra[1]
Anne R Pebley[2]

February 16, 2005

[1] Office of Population Research, Princeton University
[2] Department of Sociology and School of Public Health, UCLA

Paper to be presented at the 2005 Annual Meeting of the Population Association of America, Philadelphia, PA.

ABSTRACT

Objectives. We assess whether the few findings to date suggesting a weak social gradient in health-related variables for Hispanics are indicative of a more widespread pattern.

Methods. We use logistic models to examine education gradients in health behaviors and outcomes for white and Hispanic adults, adolescents and infants, using three data sets that represent distinct populations: the Los Angeles Family and Neighborhood Survey, the Fragile Families and Child Wellbeing Study, and the National Health Interview Survey.

Results. Despite extensive research on the Hispanic paradox, a second, and probably related, paradox has gone virtually unnoticed: education is weakly related, or unrelated, to a broad range of health-related variables among Hispanics. The corresponding gradients are substantially and statistically significantly stronger in the white population Thus, in contrast to whites, Hispanics experience little, if any, improvement in health with increased education.

Conclusions. This unusual pattern may arise from a combination of complex mechanisms that are related to social gradients in health in immigrant sending countries, selection of immigrants by health status and socioeconomic status, and integration of Hispanic immigrants into U.S. society.

Research on ethnic differentials in U.S. mortality demonstrates that Hispanic mortality rates are equal to or better than those of the non-Hispanic white population, despite the much lower socioeconomic status of Hispanics.[1-4] Hispanics have a socioeconomic profile comparable to African-Americans, and are even more likely to lack health insurance and have low health utilization rates. Nevertheless, they have considerably higher life expectancy than African-Americans.[5] This pattern, known as the "Hispanic Paradox," also characterizes some measures of health status and health-related behaviors. For example, numerous studies suggest that Hispanics have higher birth weight and lower smoking and drinking rates than non-Hispanic whites.[6-8] However, there are large variations by national origin and by immigrant status and not all groups display the "paradox." For mortality, Puerto Ricans have the highest rates – above those of non-Hispanic whites – whereas Mexicans, Central Americans, and South Americans generally have rates similar to or below those of the non-Hispanic white population.[2-3,9] In addition, Hispanic immigrants have significantly lower risks of dying compared with the native born.[4,10]

Despite extensive research on the Hispanic paradox, a second, and probably related, paradox has gone virtually unnoticed. A myriad of studies in the U.S. and elsewhere have shown that better social position – typically measured by education, income, and occupational status – is strongly associated with lower mortality and better health at all levels of the socioeconomic ladder. These "social gradients" have been found in a wide range of populations and time periods, and, at least in developed countries, they typically characterize both health-related behaviors and health

outcomes.[11-14] However, as we demonstrate in this paper, one exception appears to be the U.S. Hispanic population, for whom social gradients are either weak or non-existent for numerous health-related variables.

Few researchers have explicitly analyzed SES gradients among Hispanics, although there are a few exceptions. A recent analysis of the National Longitudinal Mortality Study provides estimates of life expectancy by level of education, family income and employment status, separately for Hispanics, non-Hispanic whites and African-Americans. Although the authors do not provide any formal comparison across ethnic categories, the results suggest that there are smaller SES differentials for Hispanics than for the other two groups.[15]

A few studies have observed weaker gradients among Hispanics than non-Hispanic whites, typically for a single variable pertaining to health status or health-related behaviors. For example, relatively weak gradients among Hispanics are reported for obesity,[16] smoking,[17] BMI,[18] low birth weight,[7,19] blood pressure,[20] and a clustering of cardiovascular risk factors.[21] Two very recent studies offer somewhat broader assessments. Crimmins et al.[22] note the absence of education gradients in the prevalence of disease among Hispanics (and blacks), although their analysis is restricted to the elderly. Winkely and Cubbin[8] demonstrate that education and income differentials for nine health-related variables are weaker among Hispanic adults than among whites or blacks. Nevertheless, research on social inequalities in health generally identifies weaker Hispanic gradients only in passing (if at all), fails to recognize the scope of the Hispanic pattern and offers little or no discussion regarding the underlying reasons for the small or nonexistent social gradient in this population.

In this paper, we demonstrate that education level is weakly related, or not related at all, to a broad range of health-related behaviors and health outcomes among Hispanic adults, adolescents and infants. At the same time, we show that the corresponding gradients are substantially and statistically significantly stronger in the non-Hispanic white population (referred to as "whites" in the remainder of the paper). Our results are based on three data sets that represent distinct populations: the Los Angeles Family and Neighborhood Survey, the Fragile Families and Child Wellbeing Study, and the National Health Interview Survey. We discuss several complementary hypotheses that may explain the absence of SES gradients for health behaviors and outcomes for Hispanics.

METHODS

Study Samples

The analysis is based on three data sets collected around 2000: (1) the Los Angeles Family and Neighborhood Survey (L.A. FANS), which was conducted during 2000 and 2001 in Los Angeles County; (2) the first two waves of the Fragile Families and Child Wellbeing Study (FFCWS), which were conducted in 20 U.S. cities during the years 1998-2002; and (3) the National Health Interview Survey (NHIS) for the years 1997 to 2001. For all three data sets, our analysis samples are restricted to whites and Hispanics; ethnic classification is based on respondents' self-identification.

L.A.FANS, which is based on a representative sample of households and neighborhoods in Los Angeles County, collected detailed information from randomly-selected adults, children, siblings and primary caregivers. The sample used for this

analysis comprises 2,908 adults (ages 18-94) and 1,329 adolescents (ages 12-17). The Hispanic adults are foreign-born Mexicans (58%), other foreign-born Hispanics – principally Central Americans – (20%), U.S.-born Mexicans (19%) and other Hispanics born in the U.S. (3%).

FFCWS follows a birth cohort of new parents, most of whom are unwed, and their children in 20 cities throughout the U.S. The baseline interviews were conducted with mothers in the hospital shortly after delivery (interviews with fathers are not included here). We use the sample of mothers who responded to the first re-interview (90.5% of mothers), conducted between 12 and 18 months after the child's birth. The sample comprises 2,357 mothers (ages 14-49) and the same number of infants (ages 12-18 months). The Hispanic sample of mothers includes foreign-born Mexicans (27%), other foreign-born Hispanics (14%), U.S.-born Mexicans (29%), and other Hispanics born in the U.S. (30%) – many of whom are Puerto Ricans.

The NHIS is a nationally representative cross-sectional survey of the civilian, non-institutionalized population of the United States, which has been collected annually since 1957. To cover a time period similar to those in L.A.FANS and FFCWS, we use pooled data for the five annual waves of the NHIS conducted between 1997 and 2001. Although the questionnaire varies from wave to wave, the items used in our analysis are generally the same within this time period – except for depressive symptoms, which were collected only in 1999. The sample used for this analysis comprises 109,089 adults (ages 18-64). The Hispanic sample includes foreign-born Mexicans (32%), other foreign-born Hispanics (26%), U.S.-born Mexicans (25%), and other Hispanics born in the U.S. (17%).

Outcome and Explanatory Variables

The surveys provide information on various dimensions of health including self-rated health status, the presence of specific diseases and conditions, health-related behaviors, and work-limitations. We do not analyze the question on self-rated health status (e.g., "In general, would you say that your health is excellent, very good, good, fair, or poor?") or questions on the presence of diseases and conditions because of well-established reporting biases. There is substantial evidence that, in the presence of controls for "objective" health status, Hispanics report themselves as being in fair or poor health more often than other groups[23-25] and that lower SES persons report poorer health than those of higher status.[26] Similarly, self-reports of diagnosed diseases and conditions depend largely on whether respondents consulted physicians, with Hispanics and the poor much less likely to use health services than other groups.[27]

Outcome variables for the statistical models include both health-related behaviors and health outcomes. For adults in NHIS and L.A.FANS we consider five outcome variables: smoking, heavy drinking, being overweight, having work limitations, and experiencing depressive symptoms. For FFCWS we use only smoking and work limitations (heavy drinking was rare in this sample of mothers and data on the other outcomes were not available from these waves). For adolescents in L.A.FANS, we examine smoking, drinking and being overweight. For the sample of infants in FFCWS, we consider four outcomes (reported by the mother): low birth weight, disability, asthma, and whether the child was never breastfed. All outcomes are binary variables, with the value of one denoting a negative behavior or health outcome.

The smoking variable indicates whether the respondent currently smokes (for adults) or whether he or she ever smoked (for adolescents). The drinking variable denotes whether the respondent is a binge or heavy drinker. Binge drinking is defined as having had at least five drinks on one or more occasions in the past 30 days (L.A.FANS); heavy drinking entails having had at least five drinks during one day, at least once in the past year (NHIS). For adolescents, we also examine whether he or she ever had an alcoholic drink. The body-mass index (BMI) is derived from self-reported height and weight information in L.A.FANS and the NHIS. For adults, values of the BMI $\geq$ 25 indicate that the respondent is overweight or obese; for adolescents, the corresponding cut point is defined as values of BMI $\geq$ 85th percentile, specific for age and sex.[28] The work limitations variable reflects whether the respondent reported having health problems that limited his or her ability to work (the specific wording varies across the surveys; see Table 2). Depressive symptoms are measured by the Composite International Diagnostic Interview Short Form (CIDI-SF), scored to yield a probability that the respondent was depressed during the past 12 months.[29-30]

Information for infants is based on mothers' reports shortly after the birth (for birth weight) or at the first re-interview. Low birth weight is defined as $\leq$ 2500 grams. Additional variables reflect the presence of any physical disability (at 12-18 months), the presence of asthma (at 12-18 months), and whether the mother never breastfed the child.

Explanatory variables include age (in completed years), sex, self-reported ethnicity (Hispanics vs. whites), and completed years of education.

Statistical Analysis

We use logistic regression models to determine the magnitude and statistical significance of the education gradients in health. We estimate separate logistic models for each health behavior or health outcome, for each sample. Each model includes variables for age, sex (except for the female adult sample in FFCWS), years of education, ethnicity (whites vs. Hispanics), and an interaction term between ethnicity and years of education. Education refers to the primary caregiver for the L.A.FANS adolescent sample and the mother for the FFCWS infant sample. Persons missing information on any of the explanatory or outcome variables are excluded from the analysis.

Tables 2-4 present the estimated coefficients only for the variable denoting years of education. Based on the previous literature, we expect to find *negative* coefficients: i.e., higher education should be associated with a lower prevalence of negative health behaviors or outcomes (e.g., less smoking, smaller proportions overweight). To facilitate the interpretation of the interaction term between ethnicity and education, the estimated coefficients are shown separately for Hispanics and whites. The p-value and significance level associated with these estimates are also presented for each ethnic group along with the corresponding values for t-tests of the difference in the estimates between the two groups.

Sample sizes vary slightly across the different outcomes because of differential amounts of missing data. The models for depressive symptoms are derived from much smaller samples, because these data were collected for only one of the five years in the NHIS and for a subset of respondents in L.A.FANS. The maximum sample sizes for each

ethnic group are presented at the bottom of the tables, and the specific sample sizes for each outcome are given in the table notes.

RESULTS

Table 1 presents the sample sizes and average values (unweighted) for each of the variables used in the statistical models, separately by ethnic group and analysis sample (i.e., age group and data set). Tables 2, 3 and 4 provide the results of the statistical analyses for adults, adolescents and infants respectively. All coefficients pertain to the variable designating years of education of the respondent (adults), primary caregiver (adolescents) or mother (infants). Consistent with the literature, all estimates for whites in Table 2 (except that for heavy drinking in the NHIS) are negative and statistically significant ($p<.05$). That is, white adults with more years of education have less risky health behaviors and better health outcomes than less educated whites. For each health variable (again, except for heaving drinking in the NHIS) and in each data set, the estimated coefficient for education is less negative (i.e., closer to zero) for Hispanics than for whites. In many cases, the coefficient for Hispanics is very close to zero or even slightly positive suggesting little or no differential in the health measure by education. As shown in the third column of each panel, for most of these comparisons these differences by ethnicity are statistically significant. Moreover, some are quite large – e.g., the education gradient in smoking is substantial for whites and virtually zero for Hispanics in all three surveys. Despite the different sampling frames and sample compositions, the findings are remarkably consistent across the three data sets.

The estimated coefficients for adolescents in L.A.FANS, shown in Table 3, reveal the same pattern as for adults. For the four outcomes, the education gradients of the primary caregivers for white adolescents are negative and, for three of the measures, statistically significant. For all four measures, the gradients for Hispanic adolescents are very close to zero and not statistically significant. Finally, for all measures except having had an alcoholic drink, the estimates for Hispanics are significantly different from those for whites.

Results for infants in the FFCWS, shown in Table 4, corroborate the findings for the other age groups. For white infants, the association between maternal education and the health outcome is negative and statistically significant for all four measures. The corresponding estimates for Hispanic infants are substantially closer to zero – in some cases positive and in others negative, but not significantly different from zero for any of the four outcomes.

DISCUSSION

This analysis has identified a striking phenomenon in the Hispanic population that has received virtually no attention in the public health and social science literatures: the absence of a notable education gradient for a broad range of health-related variables. In exploratory analyses not presented here, we extended the analysis to alternative measures of SES, namely income, assets, and occupational status. Although these latter gradients are more likely than the education gradients to be statistically significant for Hispanics, they generally remain smaller than the corresponding gradients for whites.

What factors are likely to explain the fact that the health behaviors and health status of Hispanics in the U.S. are only weakly related (or not related at all) to socioeconomic status? We speculate that the answer involves a combination of several complex mechanisms.

One hypothesis is that social gradients in the immigrant-sending countries may be weak or reversed compared to those in the U.S. For example, studies in Latin America have shown that higher SES is associated with higher levels of obesity.[31-33] Research in Mexico reveals that higher SES individuals are more likely to smoke[34-36] and, among teens, to use alcohol[34] than those of lower SES. We speculate that the reason for these flat or reversed social gradients is that the poor in low income countries are unable to afford higher calorie diets, cigarettes, alcohol and other habits and receive more exercise though manual labor. Since health-related habits are often formed by early adulthood, immigrants from Latin America are likely to bring these weak or reverse social gradients with them when they migrate to the U.S. Because parental health behaviors have a substantial influence on the behavior of children and teens,[37] these patterns may also be reproduced, at least in part, in the second generation.

A second hypothesis is related to one known in the literature as the "healthy migrant" hypothesis – a process whereby healthier persons in Mexico and other sending countries are believed to be more likely to immigrate to the U.S. than less healthy individuals.[4] We speculate that this selective migration process is likely to be especially prevalent among the poor. Although this explanation seems plausible given that wealthier potential immigrants have access to many more resources to facilitate their migration than the poor, to our knowledge there is virtually no evidence to support or refute it. If

migration-related selection occurs differentially by SES, we would expect Hispanic immigrants to have weaker social gradients than Hispanic natives and recent immigrants to have weaker gradients than those of long duration. Preliminary tabulations from L.A.FANS reveal that these differences are typically not statistically significant or consistent across health measures, suggesting that additional explanations are required.

A third set of hypotheses, which we refer to broadly as acculturation and assimilation, may also be important. These explanations are linked with a compositional effect: Hispanics with relatively high education are more apt to be second (or higher) generation immigrants and to have resided longer in the U.S. than those with little education. The public health literature suggests that, although immigrants may arrive with relatively healthy values and behaviors, they gradually lose them over time as they adapt to American ways.[24,38] Discrimination and the lack of opportunity faced by some immigrant groups may lead them to adopt detrimental behaviors and to experience the negative health consequences of chronic stress.[23,39] An alternative perspective, known as "segmented assimilation," suggests that immigrants from less-favored ethnic groups have little alternative but to assimilate into disadvantaged segments of U.S. society. As a result, their children adopt the poor health behaviors of others around them and ultimately experience negative health outcomes.[40-41] Taken together, these migration and acculturation hypotheses may account for a pattern observed for numerous health variables whereby less educated Hispanics fare better than their white counterparts and more educated Hispanics fare worse.

Future research that evaluates these hypotheses is likely to increase our understanding of Hispanic health, both in the U.S. and in sending countries. Although

weak social gradients in health may appear to be desirable because they signal the absence of social inequalities, disparities in health within the Hispanic population and between Hispanics and other groups are large. The Hispanic mortality paradox suggests that Hispanics have superior health, but deeper investigation reveals that the advantage is largely restricted to immigrants.[4] Whereas Hispanics overall have better mortality profiles, they have substantially poorer outcomes for some conditions (e.g., obesity and diabetes), low rates of health insurance and health care that foreshadow future health problems, and health-related behaviors that often worsen with duration in the U.S. Health differentials between Hispanics and whites for a given level of SES suggest that Hispanics do not obtain the health benefits of a better education as do members of other ethnic groups.

The patterns of social disparities in health in Mexico and other sending countries are likely to change over the coming decades. Indeed, there is already evidence that some of the reverse social gradients in Latin American countries are changing direction as living standards rise, with those in poverty becoming more disadvantaged relative to their more educated and wealthier counterparts across a broader spectrum of health variables. Given that high rates of immigration from Latin America are likely to continue and that the Hispanic share of the U.S. population is projected to be about one-fourth by 2050, increased attention to these enigmatic patterns is essential.[42]

REFERENCES

1. Elo IT, Turra CM, Kestenbaum B, Ferguson BR. Mortality among elderly Hispanics in the United States: past evidence and new results. *Demography.* 2004;41(1):109-28

2. Hummer RA, Rogers RG, Amir SH, Forbes D, Frisbie WP. Adult mortality differentials among Hispanic subgroups and Non-Hispanic whites. *Soc Sci Q.* 2000;81(1):459.

3. Morales LS, Kington RS, Valdex RO, Escarce JJ. Socioeconomic, cultural, and behavioral factors affecting Hispanic health outcomes. *J Health Care Poor Underserved.* 2002;13(4):477-503.

4. Palloni A, Arias E. Paradox lost: explaining the Hispanic adult mortality advantage. *Demography.* 2004;41(3):385-415

5. Kington RS, Nickens HW. Racial and ethnic differences in health: recent trends, current patterns, future directions. In: Smelser N, Wilson WJ, Mitchell F, eds. *America Becoming: Racial Trends and Their Consequences*, Volume 2, Washington, DC: National Academies Press; 2001:253-310.

6. Lethbridge-Çejku M, Schiller JS, Bernadel L. Summary health statistics for U.S. adults: National Health Interview Survey, 2002. National Center for Health Statistics. Vital Health Stat 10(222). 2004.

7. Collins JW Jr, Shay DK. Prevalence of low birth weight among Hispanic infants with United States-born and foreign-born mothers: the effect of urban poverty. *Am J Epidemiol.* 1994;139(2):184-192.

8. Winkleby MA, Cubbin C. Racial/ethnic disparities in health behaviors: a challenge to current assumptions. In: Anderson NB, Bulatao RA, Cohen B, eds. *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life*. Washington, DC: National Academies Press; 2005:450-491.

9. Rosenwaike I. Mortality differentials among persons born in Cuba, Mexico, and Puerto Rico residing in the United States, 1979-81. *Am J Public Health.* 1987;77(5):603-6.

10. Hummer RA, Rogers RG, Nam CB, et al. Race/ethnicity, nativity, and U.S. adult mortality. *Soc Sci Q.* 1999;1:136-153.

11. Adler NE, Boyce T, Chesney MA, Cohen S, Folkman S, Kahn RL, Syme SL. Socioeconomic status and health: The challenge of the gradient. *Am Psychol.* 1994;49(1):15-24.

12. Adler NE, Ostrove JM. Socioeconomic status and health: what we know and what we don't. *Ann N Y Acad Sci.* 1999;896:3-15.

13. Goldman N. Social inequalities in health: disentangling the underlying mechanisms. *Ann N Y Acad Sci.* 2001 Dec;954:118-139.

14. Marmot M, Ryff CD, Bumpass LL, Shipley M, Marks NF. Social inequalities in health: next questions and converging evidence. *Soc Sci Med.* 1997;44:901-910.

15. Lin CC, Rogot E, Johnson NJ, Sorlie PD, Arias E. A further study of life expectancy by socioeconomic factors in the National Longitudinal Mortality Study. *Ethn Dis*. 2003;13:240-247.

16. Gordon-Larsen P, Adair LS, Popkin BM. The relationship of ethnicity, socioeconomic factors, and overweight in U.S. adolescents. *Obes Res.* 2003;11(1):121-129.

17. Malmstadt JR, Nordstrom DL, Carty DC, Christiansen AL, Chudy NE, Rumm PD, Remington PL. Cigarette smoking in Wisconsin: the influence of race, ethnicity, and socioeconomics. *Wis Med J.* 2001;100(3):29-33.

18. Khan LK, Sobal J, Martorell R. Acculturation, socioeconomic status, and obesity in Mexican Americans, Cuban Americans, and Puerto Ricans. *Int J Obes*. 1997;21:91-96.

19. Franzini L, Ribble JC, Keddie AM. Understanding the Hispanic paradox. *Ethn Dis.* 2001;11:496-518.

20. Sorel JE, Ragland DR, Syme SL, Davis WB. Educational status and blood pressure: the Second National Health and Nutrition Examination Survey, 1976-1980, and the Hispanic Health and Nutrition Examination Survey, 1982-1984. *Am J Epidemiol.* 1992;135(12):1339-48.

21. Sharma S, Malarcher AM, Giles WH, Myers G. Racial, ethnic and socioeconomic disparities in the clustering of cardiovascular disease risk factors. *Ethn Dis.* 2004;14,43-48.

22. Crimmins EM, Mayward M, Seeman TE. Race/ethnicity, socioeconomic status, and health. In: Anderson NB, Bulatao RA, Cohen B, eds. *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life*. Washington, DC: National Academies Press; 2005:310-352.

23. Franzini L, Fernandez-Esquer ME. Socioeconomic, cultural, and personal influences on health outcomes in low income Mexican-origin individuals in Texas. *Soc Sci Med.* 2004;59:1629-1646.

24. Arcia E, Skinner M, Bailey D, Correa V. Models of acculturation and health behaviors among Latino immigrants to the US. *Soc Sci Med*. 2001;53:41-53.

25. Finch BK, Hummer RA, Reindl M, Vega W. Validity of self-rated health among Latino(a)s. *Am J Epidemiol*. 2002;155:755-759.

26. Ferraro KF, Farmer MM. Utility of health data from social surveys: is there a gold standard for measuring mobidity? *Amer Soc Rev*. 1999;64:303-15.

27. U.S. Department of Health and Human Services. National Healthcare Disparities Report. Available at: http://www.qualitytools.ahrq.gov/disparitiesreport/documents/Report%207.pdf July 2003.

28. Kuczmarski RJ, Ogden CL, Guo SS, et al. CDC growth charts for the United States: methods and development. *Vital Health Stat*. 2002;246,1-190.

29. Kessler RC, Andrews G, Mroczek D, et al. The World Health Organization composite international diagnostic interview short-form (CIDI-SF). *Int J Methods Psychiatr Res*. 2003;7(4):171-185.

30. Walters EE, Kessler RC, Nelson RC, Mroczek D. *Scoring the World Health Organization's Composite International Diagnostic Interview Short Form* (CIDI-SF; Dec 2002*)* from http://www.who.int/msa/cici/CICISFScoringMemo 12-03-02.pdf. 2002.

31. Kain J, Vio F, Albala C. Obesity trends and determinant factors in Latin America. *Cad. Saúde Pública.* 2003;19(suppl.1):77-86.

32. Martorell R, Khan LK, Hughes ML, Grummer-Strawn LM. Obesity in Latin American women and children. *J Nutr.* 1998;128(9): 1464-1473.

33. Rivera JA, Sepulveda AJ. Conclusions from the Mexican National Nutrition Survey 1999: translating results into nutrition policy. *Salud Pública Méx.* 2003;45(Suppl 4):S565-575.

34. Caballero R, Madrigal LE, Hidalgo SMA, et al. El consumo de tabaco, alcohol y drogas ilegales, en los adolescentes de diferentes estratos socioeconómicos de Guadalajara" *Salud Mental*. 1999;22(4):1-8.

35. Vázquez-Segovia LA, Sesma-Vázquez S, Hernández-Avila M. El consumo de tabaco en los hogares en México: resultados de la Encuesta de Ingresos y Gastos de los Hogares,1984-2000. *Salud Publica Mex*. 2002;44 supl 1:S76-S81.

36. Antonio-Rincón F, Estrada-Márquez F, García-Ortiz M, et al. Asociación entre nivel socioeconómico y hábito tabáquico en adolescentes de la escuelas públicas del estado de morelos, México. *Archivos en Medicina Familiar.* 2002;4(4):138-145.

37. Wickrama KAS, Conger RD, Wallace LE, Elder GH Jr. The intergenerational transmission of health-risk behaviors: adolescent lifestyles and gender moderating effects. *J Health Soc Behav*. 1999;40(3):258-272.

38. Vega WA, Amaro H. Latino outlook: good health, uncertain prognosis. *Annu Rev Public Health*. 1986;15:39-67.

39. Finch BK, Kolody B, Vega WA. Perceived discrimination and depression among Mexican-origin adults in California. *J Health Soc Behav.* 2000;41:295–313.

40. Portes A, Zhou M. The new second generation: segmented assimilation and its variants. *Ann Am Acad Pol Soc Sci*. 1993;530:74-96.

41. Landale NS, Oropesa RS, Llanes D, Gorman BK. Does Americanization have adverse effects on health? Stress, health habits, and infant health outcomes among Puerto Ricans. *Soc Forces*. 1999;78(2): 613-641.

42. U.S. Census Bureau. U.S. Census Bureau News. Available at: http://www.census.gov/Press-Release/www/releases/archives/population/001720.html. March 18, 2004.

ACKNOWLEDGMENTS

This research was supported in part by the NIA Center for Demography of Aging at the Center for Health and Wellbeing, Princeton University. We would like to thank Maxine Weinstein for helpful comments and Diana Sacke for her assistance with the preparation of the manuscript.

Table 1: Descriptive Statistics (unweighted) for the National Health Interview Survey (NHIS), the Los Angeles Families and Neighborhoods Survey (LAFANS), and the Fragile Families and Child Wellbeing Survey (FFCWS)

	NHIS Adults		LAFANS Adults		FFCWS Mothers		LAFANS Adolescents		FFCWS Infants	
	Whites	Hispanics	Whites	Hispanics	Whites	Hispanics	Whites	Hispanics	Whites	Hispanics
Male %	46	44	35	29	0	0	51	50	52	52
Age (S.D.)	40.7(12.3)	36.4(11.8)	44.1(14.8)	36.2(12.1)	28.1(6.8)	25.8(5.8)	14.6(1.7)	14.5(1.7)	1	1
Years of Education (S.D.)	13.6(2.5)	10.7(3.7)	14.7(3.1)	9.3(4.3)	13.5(2.8)	11.1(2.5)	15.0(2.7)	9.2(4.4)	13.5(2.8)	11.1(2.5)
Smokes %	29	20	16	11	37	18	22	16	–	–
Ever Smoked %	–	–	–	–	–	–	12	19	–	–
Binge/Heavy Drinker %	26	21	12	12	–	–	10	7	–	–
Ever Had Alcoholic Drink %	–	–	–	–	–	–	49	37	–	–
Overweight or Obese %	54	62	42	58	–	–	–	–	–	–
Work Limitations %	10	8	16	10	6	7	–	–	–	–
Depressive Symptoms %	6	5	16	15	–	–	–	–	–	–
Low Birth Weight %	–	–	–	–	–	–	–	–	8	6
Physical Disability %	–	–	–	–	–	–	–	–	2	2
Asthma %	–	–	–	–	–	–	–	–	6	13
Not Breastfed %	–	–	–	–	–	–	–	–	38	43
N	85,003	24,086	877	2,031	1,024	1,333	324	1,005	1,024	1,333

Table 2: Logit Regression Coefficients (p-values) for Years of Education, Adults[a]: NHIS, LAFANS, and FFCWS

	NHIS Adults[b]			LAFANS Adults[c]			FFCWS Mothers[d]		
	Whites	Hispanics	Diff.	Whites	Hispanics	Diff.	Whites	Hispanics	Diff.
Smokes[e]	-0.23***	-0.01**	***	-0.23***	0.01	***	-0.28***	-0.01	***
	(.000)	(.001)	(.000)	(.000)	(.741)	(.000)	(.000)	(.872)	(.000)
Binge/Heavy Drinker[f]	0.01#	0.02**	#	-0.07*	0.01	*	–		
	(.069)	(.001)	(.077)	(.042)	(.518)	(.035)			
Overweight or Obese[g]	-0.06***	-0.05***	**	-0.06**	−0.02#	#	–		
	(.000)	(.000)	(.003)	(.005)	(.088)	(.090)			
Work Limitations[h]	-0.21***	-0.05***	***	-0.15***	-0.06**	*	-0.27***	-0.16***	
	(.000)	(.000)	(.000)	(.000)	(.000)	(.014)	(.000)	(.000)	(.131)
Depressive Symptoms[i]	-0.12***	-0.01	***	-0.09*	0.01	*	–		
	(.000)	(.570)	(.000)	(.049)	(.530)	(.041)			
N (Maximum)	84,093	23,602		870	1,991		941	1,165	

# p<.10; *p<.05; **p<.01; ***p<.001

[a]For each health outcome, the logit model includes years of education, age, sex (except for FFCWS, where respondents are all women), ethnicity (white vs. Hispanic), and an interaction term between years of education and ethnicity.

[b]The samples exclude cases with missing information on the outcome and independent variables. Smokes: 83,968 whites and 23,602 Hispanics; Binge/Heavy Drinker: 81,973 whites and 23,161 Hispanics; Overweight or Obese: 81,583 whites and 22,884 Hispanics; Work Limitations: 84,093 whites and 23,497 Hispanics.

[c]The samples exclude cases with missing information on the outcome and independent variables. Smokes: 868 whites and 1,991 Hispanics; Binge/Heavy Drinker: 862 whites and 1,989 Hispanics; Overweight or Obese: 808 whites and 1,806 Hispanics; Work Limitations: 870 whites and 1,991 Hispanics.

[d]The samples exclude cases with missing information on the outcome and independent variables. Smokes: 941 whites and 1,165 Hispanics; Work Limitations: 940 whites and 1,164 Hispanics.

[e]For NHIS: Respondents who have ever smoked at least 100 cigarettes and who report they currently smoke every day or some days. For LAFANS and FFCWS: Respondents who report that they currently smoke.

[f]Binge drinking is defined as having at least five drinks on one or more occasions in the past 30 days (LAFANS); heavy drinking entails having at least five drinks during one day, at least once in the past year (NHIS).

[g]BMI $\geq$ 25.0

[h]Respondent has the following types of problems that limit the ability to work: physical or psychological problems (LAFANS), physical, mental or emotional problems (NHIS), or serious health problems (FFCWS).

[i]Probability that the respondents was depressed during the past 12 months, based on the CIDI short form. In the NHIS, a depression measure was available only for the year 1999 (15,092 whites and 4,234 Hispanics), and for LAFANS, the question was asked only of primary caregivers (425 whites and 1,162 Hispanics).

Table 3: Logit Regression Coefficients (p-values) for Primary Caregivers' Years of Education[a], Adolescents Ages 12-17[b]: LAFANS

	Whites	Hispanics	Difference
Ever Smoked[c]	-0.13*	0.01	*
	(.019)	(.824)	(.025)
Ever Had Alcoholic Drink	-0.03	0.03	
	(.603)	(.538)	(.315)
Binge Drinking[d]	-0.21*	0.03	*
	(.046)	(.538)	(.038)
Overweight or Obese[e]	-0.17*	-0.01	*
	(.017)	(.625)	(.035)
N (Maximum)	286	824	

#p<.10; *p<.05; **p<.01; ***p<.001

[a]For each health outcome, the logit model includes primary caregiver's years of education, age, sex, ethnicity (white vs. Hispanic), and an interaction term between primary caregiver's years of education and ethnicity.

[b]The samples exclude cases with missing information on the outcome and independent variables. Ever Smoked: 286 whites and 824 Hispanics; Ever Had Alcoholic Drink: 189 whites and 480 Hispanics; Binge Drinking: 189 whites and

[c]Asked of 9-17 year olds.

[d]Adolescent reports having five or more drinks on one or more occasions in the past 30 days.

[e]BMI ≥ 85th percentile, specific for age and sex

Table 4: Logit Regression Coefficients (p-values) for Mothers' Years of Education[a], Infants[b]: FFCWS

	Whites	Hispanics	Difference
Low Birth Weight[c]	-0.17***	0.08#	***
	(.000)	(.069)	(.000)
Physical Disability	-0.21*	0.02	#
	(.014)	(.823)	(.052)
Asthma	-0.19**	-0.06#	
	(.002)	(.075)	(.136)
Never Breastfed	-0.24***	-0.04#	***
	(.000)	(.068)	(.000)
N (Maximum)	1,020	1,325	

#p<.10; *p<.05; **p<.01; ***p<.001

[a]For each health outcome, the logit model includes mother's years of education, age, sex, ethnicity (white vs. Hispanic), and an interaction term between mother's years of education and ethnicity. Health outcomes are reported by the mother.

[b]The final samples exclude cases with missing information on the outcome and independent variables. Low Birth Weight: 998 whites and 1,299 Hispanics; Physical Disability: 936 whites and 1,156 Hispanics; Asthma: 841 whites and 904 Hispanics; Not Breastfed: 1,020 whites and 1,325 Hispanics.

[c]Low Birth weight ≥ 2500 grams