The Physical and Emotional Health of the Older Mexican-origin Population:

A Comparison of the U.S. and Mexico

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The life spans of older Mexican-origin men and women in the United States have increased along with that of the population at large, yet this group suffers disproportionately from a number of illness conditions that can seriously compromise health and result in disability (Markides and Eschbach 2005). Older Mexican-origin individuals face an elevated risk of type-2 diabetes that some evidence suggests may reflect a genetic predisposition (Haffner et al. 1991; Lorenzo et al. 2001). They also face a higher risk of suffering the consequences of diabetes, including circulation and foot problems, and they are more likely than non-Hispanic white older individuals to fall victim to heart disease, stroke, and hypertension (Black, Ray, and Markides 1999). The risk of developing these conditions is increased by obesity, which is common among individuals of Mexican origin in the U.S. (Centers for Disease Control 2004).

For older Mexican-origin individuals elevated rates of diabetes and related chronic conditions translate directly into higher rates of disability than that found in the non-Hispanic elderly population (Markides et al. 2005). Chronic physical illness not only compromises functioning, it has negative emotional consequences as well. Data from the Hispanic Established Populations for the Epidemiologic Studies of the Elderly study (H-EPESE) reveal a great deal of depression among older Mexican-origin diabetics (Black 1999). Although the older Mexican-origin population faces a generally elevated risk of diabetes and other conditions, the relative risks of specific health conditions differ within this population as a function of more specific factors, including nativity. For many conditions, including the risk of death and dementia resulting from the complications of type-2 diabetes, the native-born face a higher risk than the foreign-born (Haan et al. 2003).

Such evidence of nativity differentials in morbidity and mortality, as well as evidence of a significant impact of the age of migration on physical functioning and mental health in later life, give rise to questions concerning selection, the role of culture and cultural change, and the impact of economics and medical system factors on health and its measurement (Angel and Angel and Angel 2003; Angel and Williams 2000; Bulatao and Anderson, 2004; Jasso et al. 2004; Palloni and Arias, 2004). They also raise the possibility that the accuracy of estimates of the prevalence of illness conditions among groups that differ greatly in nativity, culture, and wealth may differ significantly. In order to begin to isolate the impact of culture, social class, and other demographic factors from those of other structural factors we employ similar health-related data collected among older Mexican-origin individuals in the Southwestern U.S. and older individuals in Mexico. Although these individuals share similar cultural roots, they differ in terms major health-related risk factors such as migration selectivity, education, income, and the medical environment in which they find themselves.

As in the U.S., Mexico's epidemiological profile increasingly reflects the health problems associated with an aging population (Frenk 2005). Improved nutrition and living conditions have increased life expectancies at all ages, and although Mexico remains young as the result of high fertility the population over the age of 60 is growing rapidly; between 1993 and 2003 it increased from 6.1% to 7.4% of the population (World Health Organization 2005). Between 1970 and 2003 life expectancy at birth increased from 79.8 to 82.1 for men and 80.6 to 83.6 for women (OECD 2005a). As a consequence, chronic and degenerative diseases such as heart disease and cancer have become leading causes of death (Frenk 2005).

Despite improvements in general health levels in both the U.S. and Mexico, access to preventive and acute care remains problematic for many older Mexican-origin individuals in the U.S., as well as for older Mexicans, although access to the full range of health care services is clearly superior in the U.S. than in Mexico. In Mexico high rates of poverty and a fragmented health care system place poor elderly individuals at risk of inadequate care. In the United States, despite nearly universal Medicare coverage, poor elders without supplemental Medigap policies often lack full access to high-quality health care. At all ages, the Mexican-origin population is the most inadequately insured subgroup in the country (Angel, Lein, and Henrici 2006). A large body of research clearly shows that adequate coverage is associated with better health and a lack of coverage with negative health outcomes (Hargraves and Hadley 2003; Institute of Medicine 2001). A comparison of the health levels of individuals with roughly similar socioeconomic and cultural profiles in Mexico and the U.S. allows us to begin to determine how structural factors relate to overall socioeconomic well-being and access to health care affect the health of the elderly.

Difficulties in Comparative Research

Comparative health and health services research introduces a set of problems to which epidemiologists and health system researchers are increasingly sensitive (Rogler 1999). A growing body of literature makes it clear that individual health-related behaviors, including the propensity to seek various forms of treatment and compliance with prescribed regimes, are influenced by predispositions and beliefs that reflect cultural factors, as well as individual experiences and personal capacities (Angel and Williams 2000). Translation presents only one set of problems that are part of the complex task of assessing and insuring reasonable

comparability of the information obtained for individuals in very different cultural, social, and economic situations. Understanding the response task involves much more than the direct application of cognitive models and theories derived from one culture to another culture (Angel forthcoming; Angel and Thoits 1987; Angel and Williams 2000). In most comparative research, cultural and linguistic factors are inextricably intertwined with structural factors. Although migrants represent a select group from their nation of origin, in most cases they are not the most affluent members of the sending society. The massive migration of Mexicans to the U.S. for the purpose of employment results directly from the fact of restricted opportunities and a generally lower level of living in Mexico.

Yet individual-level factors make up only part of the explanation for differential health levels. Individual decisions concerning seeking health care are also constrained by economics and higher-level institutional factors related to the organization and financing of health care. One might conceptualize an individual's or a family's decisions concerning seeking health care in terms of a rational choice model in which options are chosen on the basis of culturally-based beliefs and perceived constraints from a limited set of structurally determined alternatives based on economic and organizational factors. To fully understand the forces that influence individual behavior related to health care and health outcomes, therefore, it is necessary to specifically model the influence of such contextual factors. The failure to do so runs the risk of misattributing structural influences to individual characteristics.

A key initial step in understanding the impact of structural factors on individual behavior and outcomes then is to understand the health care system in which individuals and families choose among whatever options are available. We begin then with an examination of the health

care systems of the U.S. and Mexico, with particular focus on the options available to older individuals in both countries.

Health Care Access in the U.S.

Since its introduction in 1965 Medicare has become the major source of health care coverage for elderly and disabled Americans. Medicare is the largest government health care entitlement program with expenditures of 333 billion in 2005, a figure that represented 2.7 percent of gross domestic product (GDP) (Congressional Budget Office 2006). In 2001 the annual program expenditures per beneficiary were approximately $7,310 (Congressional Budget Office, 2005). Although the elderly, including the Mexican-origin elderly, enjoy nearly universal coverage, Medicare includes premiums, deductible, and other uncovered expenditures that for older minority Americans living on limited incomes can represent a serious economic burden (Angel, Angel, and Lein, 2004). Only recently has coverage for part of the cost of prescription drugs become available as Medicare Part D, but even with this added coverage older individuals with few assets and limited incomes face serious financial burdens and the possibility of having to do without needed care.

For middle class Americans privately purchased Medigap policies or coverage from an employer that is part of a retirement package cover what Medicare does not. In addition, a growing number of middle-class elderly individuals have long-term care insurance to partially offset the massive expenses incurred for nursing home care. The impoverished elderly do not have access to such supplemental coverage and for those elderly individuals with no assets Medicaid serves as the safety net to pay for nursing home care and the other expenditures for which they are responsible. Yet only a third (36 percent) of the poor older individuals receive Medicaid (Rowland and Lyons 1996). Older Mexican-origin individuals, and especially the

foreign born, groups characterized by low incomes, few assets, and no Medigap coverage frequently find themselves completely reliant Medicare, which means that they are at elevated risk of not receiving the full range of services and supports they need (Angel and Angel 2005).

Health Care Access in Mexico

The Mexican health care is quite different than that of the United States. Because it is less wealthy than the U.S., Mexico simply cannot provide all of the services the elderly need at public expense. Although health care spending has increased in recent years, Mexico spends a relatively small fraction of GDP on public health care compared to other Organization for Economic Cooperation and Development countries (OECD 2005b). The Mexican health care system is fragmented and consists of a number of subsystems of insurers and providers that serve different segments of the population and provide different quality services (OECD 2005b). Although in theory all Mexicans have a right to health care, access as well as the quality of care one receives, depends upon one's employment status and income. Those with the most complete access, approximately half of the population, are individuals in salaried jobs in which they are covered by various health funds that make up the Social Security System which also includes smaller funds or other plans such as those sponsored by the military or PEMEX, the Mexican petroleum monopoly (OECD 2005b). An almost insignificant fraction of the population is covered by private health insurance.

The fifty percent of the Mexican population that is not covered by the Social Security System, which includes individuals who are self-employed and those who work in the informal economy, have access to care through a number of public programs administered by the federal and state governments (Frenk, Lozano, González-Block, 1994; OECD 2005b). The public system for the poor receives less funding and is clearly inferior to the system for salaried

employees. Even with what is nearly universal health care coverage in theory, over half of health care expenditures in Mexico are paid for out-of-pocket. Because of extensive poverty and inadequate coverage, many Mexicans, including the elderly, face serious barriers to health care. Formal long-term care is unavailable and the infirm elderly must rely on their families when they can no longer care for themselves. Many of the most seriously underserved Mexicans live in rural areas or in the poorer states of the South.

In recent years Mexico has introduced various programs to improve access for the uninsured and low-income individuals (Knaul and Frenk 2005; OECD 2005b). These new programs have increased access to medical services and will hopefully further increase coverage for the unemployed and those who work in the informal sector (Frenk et al. 2003; OECD 2005a). Although, overall levels of health care coverage in Mexico are low for all age groups individuals aged 60 or older have higher rates of coverage than younger age groups (Wallace and Gutierrez 2005). The most recent data available indicate that slightly over half of those over age 60 have health care coverage of some sort (Wong, Díaz, and Espinoza in press). Women tend to receive more health benefits than men in later life, possibly because they are more likely to live with family members who have coverage (Wong and Parker 1999). The health consequences of these differential levels of coverage are as yet poorly understood (Wong, Díaz, and Espinoza in press). Combined with Mexico's high levels of poverty and its less developed health care system, one would be surprised if these access differences did not parallel different levels of health and functioning.

Given our interest in the relative importance of individual health related behaviors and predispositions and of economic and system-level factors, in the following analyses we focus on the specific implications of nation of residence and migration on various survey-based measures

of health. Although in the data that we report elderly Mexican individuals in Mexico tend to report worse health than their U.S. Mexican-origin counterparts, assessing the extent to which these differentials reflect cultural differences, reporting artifacts, or other factors independent of actual health levels can only be done indirectly and inferentially. Few studies provide true objective assessments or diagnoses of specific conditions. The analyses we employ offer indirect evidence of the relative roles of cultural and system factors. In the sort of comparison we employ here, complete equivalence of samples is not possible. Older individuals who have migrated to the U.S. are potentially quite different than individuals who never migrated or those who returned to Mexico. Comparative research, even of a quantitative sort, remains highly interpretive and requires a sensitive understanding of the cultural groups studied and the economic, political, and social context in which they live.

Samples and Methods

In order to begin to understand how responses to health probes in surveys are affected by cultural, as well as structural factors, including those related to the financing and organization of health care for the elderly we employ the Hispanic Establish Epidemiologic Study of the Elderly (H-EPESE) to assess health levels in the United States and the Mexican Health and Aging Study (MHAS) with similar, but not identical, data in Mexico. Both surveys include detailed information on demographics, socioeconomic characteristics, migration history where applicable, and physical and mental health and functioning (Wong and Espinoza 2004). Although they provide useful comparative information the two data sets differ in important respects and we focus more on similarities or differences in general patterns rather than on specific prevalence rates.

The H-EPESE is a longitudinal study based on an original probability sample of 3,050 Mexican-origin individuals aged 65 and over in the five southwestern states of Arizona, California, Colorado, New Mexico, and Texas who were first interviewed in 1993/1994. The baseline H-EPESE response rate was 86%. The MHAS consists of a national probability sample of 15,186 Mexicans aged 50 and over interviewed in Mexico in 2001. The baseline MHAS response rate was 90%. In order to compare MHAS respondents with H-EPESE respondents, we have selected MHAS respondents aged 65 and over. In both surveys information on respondents who could not answer for themselves was provided by proxy respondents. These cases have been deleted from the analyses because of missing or invalid responses on selected outcome variables (MHAS, n=449; H-EPESE, n=316). H-EPESE respondents were given the option of taking the survey in Spanish and more than three quarters (77.8%) did so.

From these two data sources we created five groups: (a) Mexican residents with no history of residence in the U.S. (MHAS, n = 3,875); (b) U.S. residents who were born in Mexico and migrated to the U.S. between the ages of 1 and 19 (H-EPESE, n = 383); (c) U.S. residents who were born in Mexico and migrated to the U.S. between the ages of 20 and 49 (H-EPESE, n = 578); (d) U.S. residents who were born in Mexico and migrated to the U.S. between the ages of 50 and 90 (H-EPESE, n = 232); and (e) U.S. residents who were born in the U.S. (H-EPESE, n = 1,541). We excluded 578 individuals in the MHAS who reported that they had lived or worked in the United States in order to isolate the MHAS reference group from significant exposure to US systems and culture. Spanish and English versions of the health questions are presented in Appendix A.

Dependent Variables

Psychological Distress

We use measures adapted from the Center for Epidemiologic Studies Depression scale (CES-D) that were administered in both surveys to assess psychological distress (see Radloff, 1977). The original CES-D contains twenty items. In order to more accurately compare rates of psychological distress across groups, subsequent analyses are limited to seven items that appear in both surveys. Both H-EPESE and MHAS (denoted in brackets) respondents were asked to indicate whether during the past week they had felt (a) depressed; (b) that everything they did was an effort; (c) their sleep was restless; (d) they felt unhappy; (e) they felt lonely; (f) they did not enjoy life; or (g) they felt sad. The response categories for each survey are different. H-EPESE respondents were asked whether they experienced these symptoms (1) rarely or none of the time, (2) some of the time, (3) occasionally, and (4) most or all of the time. MHAS respondents were asked to indicate whether or not they had experienced any symptoms during the "majority" of the past week and the potential responses were (1) yes and (0) no. In order to increase the comparability of the CES-D between the two samples the H-EPESE items were re-coded (1) most or all of the time and (0) otherwise. The final psychological distress measure represents a summed index of the seven items.

Health Risk Factors

Our measurement of health risk factors includes body mass, smoking, and drinking behavior. Using the standard formula and documented thresholds provided by the Centers for Disease Control, we coded body mass as (1) for obese**,** a BMI of 30 or over, and (0) otherwise. In the MHAS, height and weight were reported by the respondent whereas in the H-EPESE respondents were measured and weighted by the interviewer. Smoking behavior is

operationalized as pack years. We measure pack years by multiplying the number of years the respondent smoked by the average number of packs (20 cigarettes per pack) during that time.

To measure heavy drinking and drinking problems we use items adapted from the CAGE instrument (the first letter of a key word in each question spells CAGE**,** e.g., cut down, annoyed, guilty, eye opener) (Ewing 1984). H-EPESE respondents were asked: (a) "Have you ever felt you should cut down on your drinking?" (b) "Have people annoyed you by criticizing your drinking?" (c) "Have you ever felt bad or guilty about your drinking?" (d) "Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (Eye opener)?" In the MHAS all respondents were asked about their drinking behavior: (a) "(When you were drinking), Have you ever felt you should (have) cut down on the quantity of drinks you have (had)?" (b) "(When you were drinking), have (did) people ever annoyed you by criticizing your drinking?" (c) "Have you ever felt bad or guilty about drinking?" (d) "Have you ever had an alcoholic drink when you woke up in the morning in order to calm your nerves or to get rid of a hangover?" Following the work of Saitz et al. (1999), in both surveys respondents who answered "yes" to any of the four questions were coded (1) for problem drinker and (0) otherwise, including individuals without any drinking problem and those who never drink.

Chronic Conditions

Our assessment of chronic conditions is based on six self-reported items that asked whether the respondent had ever been told by a doctor or other medical personnel that he or she had any of the conditions. H-EPESE respondents were asked whether they had ever had (a) arthritis or rheumatism; (b) diabetes, sugar in your urine or high blood sugar; (c) high blood pressure; (d) a heart attack, or coronary, or myocardial infarction, or coronary thrombosis; (e) a stroke, a blood clot in the brain, or brain hemorrhage; or (f) cancer or a malignant tumor of any

type. MHAS respondents were asked if they had ever received a diagnosis of (a) arthritis or rheumatism; (b) diabetes or a high blood sugar; (c) hypertension or high blood pressure; (d) a heart attack; (e) a stroke, possible stroke or transient ischemic attack; or (f) cancer or a malignant tumor, excluding minor skin cancer. Response categories for these items were coded (1) for yes and (0) otherwise.

Self-rated Health

Self-rated health was measured with single items in both surveys. MHAS respondents were asked to rate their health as excellent, very good, good, fair, or poor. H-EPESE respondents were asked to rate their health as excellent, good, fair, or poor. In order to compare self-rated health across surveys, we recoded these items (1) fair or poor and (0) otherwise.

Independent Variables

English Language Ability

We measure English language ability with a single item. H-EPESE respondents were asked, "In your opinion, how well do you speak English?" The original response categories for this item ranged from (1) not at all, (2) not too well, (3) pretty well, and (4) very well. MHAS respondents were asked, "Do you speak English?" The original response categories for this item were coded (1) yes; (2) yes, some; and (3) no. For our purposes the H-EPESE item was recoded (1) for not at all and (0) otherwise and the MHAS item was recoded (1) for no and (0) otherwise. English proficiency increases with length of residence in the U.S, but we include only those with no history of U.S. residence. As a result only six percent of the Mexican sample speaks any English. The variable then is really an interaction term and tests for the extent to which those individuals in the U.S. who do not speak English resemble Mexicans. Given that language is such an important indicator of culture we include it in the analyses. In the U.S. the inability to

speak English is a clear practical handicap to gaining access to health care, in addition to reflecting a low level of acculturation. It is also an indicator of social class. We include the variable in our analyses because the majority of the H-EPESE respondents chose to take the interview in Spanish and a significant number of U.S. residents reported that they did not speak English at all.

Insurance Status

H-EPESE respondents were classified as having health insurance if they reported having any of the following forms of coverage: Medicare, Medicaid, and private insurance. H-EPESE respondents were also classified as having health insurance if they reported receiving Social Security or Supplemental Security Income, which qualifies respondents for Medicare. MHAS respondents were classified as having health insurance if they reported receiving coverage from any of the following sources: Mexican Social Insurance Institute (IMSS), Social Services and Security Institute for State Employees (ISSSTE), Petróleos Mexicanos (PEMEX), private insurance, or some other form of insurance.

Sociodemographic Characteristics

We control for several known sociodemographic correlates of health status, including age, sex, marital status, educational attainment, and personal income. Age is coded into three categories: (a) 65-69; (b) 70-79; and (c) 80 and over. Sex is coded (1) for females and (0) for males. Marital status is coded (1) for currently married and (0) otherwise. Education is coded into three categories: (a) no formal years of education; (b) 1-5 years of formal education; and (c) 6 or more years of formal schooling. Since the income distributions in the United States and Mexico are so different personal income is divided into three categories in each country in order

to capture relative income levels. We label these (a) lowest third; (b) middle third; and (c) highest third.

Results

In the following analyses we examine the influence of country of residence and of life course stage at migration on various measures of physical and emotional health. Table 1 provides baseline descriptive statistics for Mexican residents and the four H-EPESE groups. The modal age category for all but the group that came to the U.S. in early to mid adulthood (20-49) is 70 to 79 years. The five groups are roughly similar in terms of sex composition, and approximately half of each group is married. Again those who immigrated to the U.S. in mid to late adulthood stand out as having the highest proportion married. Low levels of education in Mexico are revealed by the over 73% of Mexicans with no history of residence in the U.S. have fewer than six years of education. Well over a third (36.3%) report no education at all. Among Mexicans in the U.S., younger age at migration is associated with higher their levels of education. Yet over half of even native born Mexican Americans report less than six years of education. In light of the well-documented health risks associated with low educational levels, all of these groups are at elevated risk.

Income is clearly not directly comparable between the two countries since income levels are higher in absolute terms in the U.S. than in Mexico. As a partial control for relative resources we compute approximate income terciles for the two samples. By construction, then, approximately one-third of the sample falls into each tercile in Mexico. In the U.S., since the distribution is based on the whole sample the proportion in each tercile for each age at migration group varies and the relative income disadvantage of later-life migration is revealed. Over half

of those who migrated in mature adulthood (50-90) fall into the lowest income tercile, while only 36 percent of those who immigrated in childhood or adolescence have incomes this low.

The health insurance vulnerability of Mexicans is clearly revealed by the fact that only 63% report any coverage. What is somewhat surprising is that in the Hispanic-EPESE over 15% of those who immigrated in mature adulthood report no coverage. Among the native born coverage is basically universal. Finally, our English language variable reflects a clearly predictable pattern. A relatively small proportion of Mexicans speak English. English language ability increases with younger ages of migration. What is notable, though, is that even among native-born Mexican Americans nearly 20% do not speak English.

Table 2 presents descriptive data on the health measures for the five groups and reveals that Mexicans in Mexico report a substantially higher number of depressive symptoms than any of the U.S. resident groups. Along with U.S. residents who migrated after age 50 they were also more likely than U.S. residents who migrated at earlier aged or who were native born to rate their general physical health as fair or poor. On the other hand, Mexicans had somewhat lower average BMI scores and they were far less likely to be obese (BMI over 30) than any of the other four groups. We must repeat, though, that the BMI is based on self reports of height and weight in the MHAS and on interviewer measurements in the H-EPESE and this fact no doubt introduces error. Older Mexicans reported fewer pack-years of smoking that any of the U.S. groups but they were roughly similar to the highest U.S. resident groups to report problem drinking. Immigrants who arrived in childhood or adolescence or in early adulthood had the lowest average CAGE scores. The bottom panel of table 2 presents information on the six chronic physical health conditions. For all but hypertension, a lower percentage of older Mexicans report having received a diagnosis. Far lower percentages of Mexicans report arthritis,

diabetes, heart attack, or cancer than U.S residents. The table also reveals certain within-group differences among Mexican-origin individuals depending upon their age at migration. The native born and those who immigrated earlier in life have somewhat higher rates of diabetes, heart problems, stroke and cancer than those who immigrated in later life.

The next phase of the analyses includes testing multivariate models that assess the impact of nation of residence and age at migration on various physical and mental health measures. For these analyses we merged the H-EPESE and MHAS data sets for exploratory purposes. Clearly, such pooling of separate samples is not in keeping with the strictest requirements for pooled analyses. Yet our argument is that even if one were to translate the same instrument into the target language and interview in both countries at the same time the samples would be radically different. Given the large differences in income, education, labor market structure, health care systems, and everything else related to health risks and health care access, strict comparability is not possible using any statistical sampling procedure. The contexts in which health outcomes are produced is simply too different. In comparative research of this sort one looks for similarities or differences in associations among variables and focuses on structural patterns. The interpretation of those patterns requires an understanding of the culture, society, and health care systems involved.

Tables 3 and 4 present unweighted standardized OLS coefficients for the BMI and Psychological Distress indexes and odds ratios for the remaining dichotomous dependent variables. Each model contrasts each of the age at migration groups to Mexican residents who serve as the reference category. Each model includes age, sex, marital status, education, and personal income. The models predicting problem drinking, psychological distress and self-rated health include English language ability. In Table 4, the models for the six chronic conditions

include insurance status. Because neither English ability nor health insurance is theoretically associated with body mass or smoking behavior we omit these variables from those models.

In Table 3 all four H-EPESE age at migration groups have lower psychological distress scores than Mexican residents. Except for the oldest age at migration group, H-EPESE respondents are less likely than Mexican residents to rate their overall health as fair or poor. The coefficients for English ability are significant in the psychological distress and self-reported health models and indicate that those individuals who do not speak English are more similar to Mexican respondents, the reference category, than those who speak English. In these models the control variables demonstrate the expected association with psychological distress and self-rated health. In general, women report more distress and poorer overall health. Married individuals have lower psychological distress scores, as do those with more education and income. Higher education and income are associated with a lower probability of distress or poor overall health.

Table 3 also reveals that all age of migration H-EPESE groups have higher average BMI scores and are significantly more likely than Mexican residents to be obese. All age of migration groups have higher pack/years of smoking scores than Mexican residents. In contrast, H-EPESE respondents who immigrated in childhood or early adulthood are less likely than Mexican residents, the native born, or those who immigrated in later adulthood to report problem drinking.

In Table 4 we examine the impact of residence and age at migration on the six chronic conditions. Consistent with the descriptive tables, H-EPESE respondents are more likely than Mexican residents to report arthritis, diabetes, and cancer. Those H-EPESE respondents who migrated in late adulthood are similar to Mexican residents in terms of heart attacks and strokes. As in the descriptive table, none of the H-EPESE groups differ from Mexican residents in terms

of hypertension. The coefficients for health insurance are also revealing. If one has insurance the probability of reporting a diagnosis of diabetes, hypertension, or heart attack increases, again suggesting that access and reports of particular chronic conditions are confounded.

Further evidence of the confounding of health insurance and reports of chronic conditions in presented in Table 5 which presents the percentage of MHAS respondents who report each of the six conditions separately for those with and without insurance. Reports of diabetes, hypertension, heart attack, and cancer are significantly higher among those with insurance than those without insurance. Similar patterns emerge in the H-EPESE, although fewer of the differences are statistically significant given the very small number of elderly U.S. residents without insurance. These data make it clear that estimates of the prevalence of chronic conditions are confounded with social, economic, and political factors that influence health care access.

Conclusion

With each new decade understanding how different cultural, economic, political, and social systems influence individuals' world views, beliefs, and behaviors, as well as their health, becomes more imperative. In an increasingly globalized world inequalities in access to the basic necessities of a decent life, including high-quality health care, have profound political implications and draw international attention and the intervention of various multi-lateral governmental and non-governmental organizations. The success of such efforts depends upon the ability to determine how different political, economic, and cultural systems function to influence the situations of individuals in different countries. Yet comparative studies present researchers with serious problems related to understanding how individuals in such different contexts interpret and respond to survey and other information gathering protocols.

The most fundamental of these problems cannot be solved solely by more rigorous statistical techniques; they require the time consuming and difficult procedures that have been developed by the academic disciplines of history, anthropology, and cultural studies. Factor analytic procedures, item analysis, and other techniques for index construction and cross-cultural comparison have proliferated as part of the growth in interest in comparative research. These initiatives have improved everyday practice related to index and scale construction and the cross-cultural use of instruments. Yet statistical techniques can never serve as a substitute for learning the language and understanding the economic, political, and organizational environment in which individuals in the study population make choices about health care and other basic aspects of their lives.

Understanding how health risks and the organization of health care affect health outcomes in different economic, political, and cultural contexts represents a vitally important research agenda for the coming century. The health of elderly individuals reflects a lifetime of exposure to health and mortality risks, as well as their access to health care. Even simple analyses of most comparative health surveys, such as those we presented, makes it clear that economic and system factors, as well as cultural factors, affect reports of symptoms and illness conditions among all age groups. The result is that barriers to health care are likely to result in serious negative biases in estimates of chronic and other health conditions. As we have demonstrated, survey instruments that ask respondents whether they suffer from health conditions that they would be aware of only if told by a doctor produce biased estimates of the prevalence of such conditions in populations with low medical care access. Although Mexico provides high-quality health care to those individuals with regular employment, many Mexicans without such employment and those in rural areas receive inadequate care. For these individuals

chronic conditions, such as diabetes, hypertension, and even heart disease often go undiagnosed and untreated. Although we do not have direct measures of system-level factors, the comparison of Mexico and the U.S. provides indirect evidence of the roles of economics and medical care financing in assessments of heath levels.

Clearly our analysis can only be taken as suggestive and exploratory since it is based on two independent samples collected in different ways at different times. Since we did not employ weights we cannot generalize even within countries, nor can we interpret differences in specific prevalence rates as reflecting reality. As we noted earlier, it is very probable though that even if the studies were directly comparable in terms of sampling and methodology, the differences in economics and health care delivery systems would make such comparisons suspect. In comparative research one can possibly make sense of patterned similarities or difference, but one runs a major risk in assuming that one is measuring the same underlying phenomenon no matter how the translation of the instrument or the study in general is carried out. Comparative findings can only be interpreted in light of the knowledge of the specific economic and health systems factors that affect the frequency and amount of health care individuals receive.

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Table 1: Sample Percentages by Nativity and Age at Migration (MHAS 2001/H-EPESE 1993)

Mexican elderly aged 65 and older:	Mexico Resident (Never lived in US) *n*=3,875	US Resident (Migration age: 50-90) *n*=232	US Resident (Migration age: 20-49) *n*=578	US Resident (Migration age: 1-19) *n*=383	US Resident (Native born) *n*=1,541
Age					
65-69	38.0	32.8	46.5	27.4	43.0
70-79	46.4	44.8	41.5	40.2	45.3
80 and older	15.6	22.4	11.9	32.4	11.7
Sex					
Female	57.4	60.3	56.2	57.2	58.7
Marital Status					
Married	51.0	50.0	61.5	47.5	57.4
Education					
No formal education	36.3	27.2	13.7	20.4	13.8
1 to5 years	37.1	54.4	56.7	46.9	38.3
6 or more years	26.6	18.4	29.6	32.7	47.9
Personal Income					
Low	34.8	52.2	36.7	36.0	31.2
Middle	34.6	41.8	54.2	53.3	50.0
High	30.6	6.0	9.2	10.7	18.8
Insurance Status					
Insured	62.5	84.3	97.3	95.4	99.1
English Proficiency					
Non-English speaker	93.9	65.5	52.9	40.8	18.7

Table 2: Means and Sample Percentages by Nativity and Age at Migration (MHAS 2001/H-EPESE 1993)

Mexican elderly aged 65 and older:	a. Mexico Resident (Never lived in US) *n*=3,875	b. US Resident (Migration age: 50-90) *n*=232	c. US Resident (Migration age: 20-49) *n*=578	d. US Resident (Migration age: 1-19) *n*=383	e. US Resident (Native born) *n*=1,541
Psychological distress					
Distress index	2.7 (b-e)	0.6 (---)	0.6 (---)	0.6 (---)	0.5
Self-rated health					
Fair or poor	70.3 (c-e)	69.8 (c-e)	59.9 (---)	61.8 (e)	58.7
Health risk factors					
Body mass index	26.3 (b-e)	27.8 (---)	28.0 (d)	27.0 (---)	28.1
Obese	18.2 (b-e)	28.0 (---)	30.8 (---)	25.2 (---)	30.7
Smoking	6.0 (b-e)	13.9 (---)	14.5 (---)	15.1 (---)	17.4
Problem drinker	15.4 (c-d)	17.2 (c-d)	11.6 (e)	9.4 (---)	14.7
Chronic conditions					
Arthritis	26.6 (b-e)	40.7 (---)	44.9 (d-e)	37.8 (---)	38.3
Diabetes	17.5 (b-e)	22.5 (---)	27.5 (---)	25.7 (---)	28.3
Hypertension	43.3 (---)	41.5 (---)	43.7 (---)	40.4 (---)	42.8
Heart Attack	4.7 (c-e)	6.9 (---)	8.2 (---)	12.0 (e)	11.0
Stroke	3.5 (d-e)	4.3 (---)	4.7 (---)	6.5 (---)	5.3
Cancer	1.8 (b-e)	3.5 (---)	4.3 (---)	4.5 (---)	6.1

Sample percentages are shown to describe the distribution of obese, problem drinking, all chronic conditions, and self-rated health.
Means are shown to describe the distribution of psychological distress, body mass, and smoking.
Minimum and maximum values for continuous variables are as follows: psychological distress (0.00-7.00), body mass (12.87-71.07), and smoking (0.00-237.00)
Scripts identify significant differences in means or proportions for corresponding groups (two-tailed t-tests, $p < 0.05$).

Table 3: OLS and Binary Logistic Regression Models for Corresponding Outcome by Nativity and Age at Migration (MHAS 2001/H-EPESE 1993)

	Psychological Distress (Index)	Self-Rated Health (1=Fair or poor)	Body Mass (Index)	Body Mass (1=Obese)	Smoking (Pack-years)	Alcohol Use (1=Problem drinker)
Nativity/Migration Group						
MHAS	-	-	-	-	-	-
H-EPESE (50-90)	-0.19***	0.94	0.07***	1.75**	0.06***	1.31
H-EPESE (20-49)	-0.27***	0.72**	0.10***	1.89***	0.10***	0.69*
H-EPESE (1-19)	-0.23***	0.78	0.05***	1.60**	0.08***	0.60*
H-EPESE (US born)	-0.40***	0.88	0.14***	1.89***	0.18***	1.19
English Proficiency						
Non-English speaker	0.03*	1.54***	-	-	-	1.18
Age						
65-69	-	-	-	-	-	-
70-79	0.00	1.15*	-0.07***	0.80**	0.01	0.91
80 and older	0.02	1.29**	-0.13***	0.54***	0.00	0.71**
Sex						
Female	0.10***	1.51***	0.10***	1.86***	-0.32***	0.06***
Marital Status						
Married	-0.08***	1.02	0.01	1.08	-0.03*	0.82*
Education						
No formal education	-	-	-	-	-	-
1 to5 years	-0.05***	0.95	0.03*	1.14	-0.02	0.81*
6 or more years	-0.11***	0.62***	0.01	0.97	-0.00	0.62***
Personal Income						
Low	-	-	-	-	-	-
Middle	-0.01	0.90	0.04*	1.09	0.00	1.02
High	-0.06***	0.68***	0.06**	1.09	0.01	0.93

n = 5,169 (Body mass index and obesity models only)
n = 6,282 (All other models)
Standardized OLS coefficients are shown for psychological distress, body mass index, and smoking.
Odds ratios are shown for self-rated health , obese, and problem drinker.
Asterisks indicate statistical significance: *p<0.05, **p<.01, ***p<.001

Table 4: Binary Logistic Regression Models for Corresponding Outcome by Nativity and Age at Migration (MHAS 2001/H-EPESE 1993)

	Arthritis (1=Yes)	Diabetes (1=Yes)	Hypertension (1=Yes)	Heart Attack (1=Yes)	Stroke (1=Yes)	Cancer (1=Yes)
Nativity/Migration Group						
MHAS	-	-	-	-	-	-
H-EPESE (50-90)	1.90***	1.27	0.85	1.36	1.06	2.17*
H-EPESE (20-49)	2.24***	1.39**	0.91	1.58*	1.22	2.44**
H-EPESE (1-19)	1.59***	1.46**	0.81	2.31***	1.76*	2.20*
H-EPESE (US born)	1.71***	1.52***	0.86	2.07***	1.49*	3.16***
Insurance Status						
Insured	1.14	1.97***	1.46***	2.07***	1.37	1.60
Age						
65-69	-	-	-	-	-	-
70-79	1.25***	0.84*	0.99	1.35*	1.45*	1.00
80 and older	1.26*	0.65***	1.11	1.71***	1.85**	1.25
Sex						
Female	2.08***	1.14	1.92***	0.77*	0.76*	1.34
Marital Status						
Married	0.94	1.14	1.00	1.04	1.10	1.10
Education						
No formal education	-	-	-	-	-	-
1 to5 years	1.05	0.96	1.04	1.01	1.01	0.76
6 or more years	0.97	0.86	1.04	1.30	0.84	1.21
Personal Income						
Low	-	-	-	-	-	-
Middle	0.99	1.13	0.98	0.93	1.01	0.99
High	1.01	1.05	1.04	1.12	1.03	1.38

n = 6,282
Odds ratios are shown for all models.
Asterisks indicate statistical significance: *p<0.05, **p<.01, ***p<.001

Table 5: Sample Percentages for Chronic Conditions by Insurance Status for MHAS Respondents

	Insured	Uninsured
Arthritis	27.3	25.3
Diabetes	20.8*	11.9
Hypertension	46.9*	37.6
Heart Attack	5.8*	2.7
Stroke	3.8	3.1
Cancer	2.1*	1.3
Sample Size	(2,422)	(1,453)

*Refers to statistically significant differences within corresponding data source (chi-square, $p < 0.05$).

Appendix A

	H-EPESE		MHAS	
Elderly of Mexican Ancestry aged 65 and older	ENGLISH	SPANISH	ENGLISH	SPANISH
Psychological distress				
Distress index	Now I have some questions about your feelings during the past week. For each of the following statements, please tell me if you felt that way in the past week rarely or none of the time which is less than 1 day, some or a little of the time which is 1 to 2 days, occasionally or a moderate amount of time which is 3 to 4 days, most or all of the time which is 5 to 7 days? I felt depressed. I felt that everything I did was an effort. My sleep was restless. I was happy. I enjoyed life. I felt sad.	Ahora tengo algunas declaraciónes explicando las maneras que usted se puede haber sentido durante la semana pasada. Por cada de las declaraciones, por favor dígame si se sintió de este modo durante la semana pasada raramente ó en ningún tiempo que sería menos de ún día, algo ó poco del tiempo que sería de uno a dos días, ocasionalmente ó una cantidad de tiempo moderada que sería tres ó cuatro días, ó más de 4 días ó todo el tiemp que sería cinco a siete días. Me sentí deprimido(a). Me sentí que todo lo que hacia me costaba esfuerzo. Dormí sin descansar. Yo estaba feliz. Disfruté de la vida. Me sentí triste.	These questions refer to how you have felt during the past week. For each question please tell me if the majority of the time: You felt depressed. You felt that everything you did was an effort. You felt your sleep was restless. You felt happy. You felt that you enjoyed life. You felt sad.	Estas preguntas se refieren a cómo se ha sentido Usted durante la semana pasada. Para cada pregunta, por favor digame si la mayor parte del tiempo: Se ha sentido deprimido. Ha sentido que todo lo que hacía era un esfuerzo. Ha sentido que su sueño era intranquilo. Se ha sentido feliz. Ha sentido que disfrutaba de la vida. Se ha sentido triste.
Health risk factors				
Body mass index/ Obesity	Now we'd like to get your height and weight. Why don't you slip off your shoes and remove heavy jewelry or	Ahora nos gustaría medirle la estatura y pesarlo(a). Podría usted quitarse los zapatos y cualquier objeto que pese	About how tall are you without shoes? About how much do you weigh now?	¿Como cuánto mide usted sin zapatos? ¿Como cuántos kilos pesa usted ahora?

	clothing. Now stand back against this door with your feet, heels together on the floor and with your heels, hips, back and head directly against the wall. Look straight ahead. HEIGHT (TO NEAREST QUARTER-INCH) Now let's get your weight. WEIGHT (TO NEAREST POUND)	mucho? Ahora párese de espalda hacía la pared y con los pies juntos, los talones juntos. La cadera, y la cabeza directamente tocando la pared. Mire hacía delante. HEIGHT (TO NEAREST QUARTER-INCH) Ahora veamos cúal es su peso. WEIGHT (TO NEAREST POUND)		
Smoking	We are interested in the actual # of cigarettes people smoke each day. How many cigarettes do/did you smoke (when you last smoked regularly)? (ONE PACK EQUALS 20 CIGARETTES.)	Estamos interesados en el numero actual de cigarrillos que las personas fuman en un día. ¿Cuántos cigarrillos por día (fuma/fumaba) usted (cuando fumaba regularmente)? (ONE PACK EQUALS 20 CIGARETTES)	When you were smoking the most, about how many cigarettes or packs did you usually smoke in a day? (PACKS/DAY)	Cuando más fumaba Ud. ¿como cuántos cigarros o cajetillas se fumaba en un día? (Cajetillas/Día)
Problem drinker	Have you ever felt you should cut down on your drinking? Yes No	¿Ha pensado que debería dejar de tomar un poco? Sí No	(When you were drinking), have you ever felt that you should (have) cut down on the quantity of drinks you have (had)? Yes No	(Cuando tomaba), ¿alguna vez considera (ó) Ud. disminuir la cantidad de bebidas alcohólicas que toma (tomaba)? Sí No
	Have people annoyed you by criticizing your drinking? Yes No	¿Se ha sentido molesto cuando la gente lo critica por tomar alcohol? Sí No	(When you were drinking), have (did) people ever annoyed you by criticizing your drinking? Yes No	(Cuando tomaba), ¿Se siente (sintió) Ud. alguna vez mal o culpable porque toma (tomaba)? Sí No
	Have you ever felt bad or guilty about your drinking? Yes No	¿Se ha sentido malo ó culpable por tomar alcohol? Sí No	Have you ever felt bad or guilty about drinking? Yes No	¿ (Cuando tomaba), ¿toma (tomaba) Ud. alguna bebida alcohólica al levantarse por la mañana para calmar sus nervios o para deshacerse de la "cruda"? Sí No
	Have you ever had a drink first	¿Alguna vez ha tomado una	Have you ever had an alcoholic	(Cuando tomaba) ¿toma (tomaba)

	thing in the morning to steady your nerves or to get rid of a hangover? (Eye-opener) Yes No	bebida alcohólica al levantarse en la mañana para calmarse los nervios, ó para "curarse" de una resaca (cruda)? Sí No	drink when you woke up in the morning in order to calm your nerves or to get rid of a "hangover"? Yes No	Ud. alguna bebida alcohólica al levantarse por la mañana para calmar sus nervios o para deshacerse de la "cruda"? Sí No
Chronic conditions				
Arthritis	In the last month, did you wake-up in the morning with stiffness or aching that lasted at least 15 minutes? Yes No	Durante el mes pasado, ¿se ha levantado con algún parte del cuerpo entumida ó tiesa, ó con dolor que le duró por lo menos 15 minutos? Sí No	Has a doctor or medical personnel ever told you that you have arthritis or rheumatism? Yes No	¿Alguna vez le ha dicho un doctor o personal médico que tiene artritis o reumatismo? Sí No
Diabetes	Have you been told by a doctor that you have diabetes, sugar in your urine or high blood sugar? Yes, definite Yes, borderline No	¿Alguna vez le ha dicho un doctor que usted padecía de diabetes, tienes azucar en la orina, ó el azucar alta en la sangre? Sí, definitivamente Sí, dudoso No	Has a doctor or medical personnel ever told you that you have diabetes or a high blood sugar level? Yes No	¿Alguna vez le ha dicho un doctor o personal médico que usted tiene diabetes o un nivel alto de azúcar en la sangre? Sí No
Hypertension	Has a doctor ever told you that you have high blood pressure? Yes Suspect or possible No	¿Alguna vez le ha dicho un doctor que tiene la presión alta? Sí Posiblemente No	Has a doctor or medical personnel ever told you that you have hypertension or high blood pressure? Yes No	¿Alguna vez le ha dicho un doctor o personal médico que tiene Usted hipertensión o la presión alta? Sí No
Heart Attack	Has a doctor ever told you that you had a heart attack, or coronary, or myocardial infarction, or coronary thrombosis? Yes Suspect or possible No	¿Alguna vez le ha dicho un doctor que Ud. había sufrido un ataque cardíaco, un ataque del corazón, un coronario, sufrido un infarto ó trombosis coronario? Sí Posiblemente No	Has a doctor or medical personnel ever told you that you have had a heart attack? Yes No	¿Alguna vez le ha dicho un doctor o personal médico que usted ha tenido un ataque al corazón? Sí No
Stroke	Did a doctor ever tell you that you had a stroke, a blood clot	¿Alguna vez le ha dicho un doctor que había sufrido una	Has a doctor or medical personnel ever told you that you	¿Alguna vez le ha dicho un doctor o personal médico que ha tenido una

	in the brain, or brain hemorrhage? Yes Suspect or possible No	aploplejía cerebral, ó embolia cerebral? Sí Posiblemente No	have had a stroke? Yes No	embolia cerebral? Sí No
Cancer	Has a doctor ever told you that you had a cancer, or a malignant tumor of any type? Yes Suspect or possible No	¿Alguna vez le ha dicho un doctor que usted tenía cancer ó un tumor maligno de cualquier tipo? Sí Posiblemente No	Has a doctor or medical personnel ever told you that you have cancer or a malignant tumor, excluding minor skin cancer? Yes No	¿Alguna vez le ha dicho un doctor o personal médico que tiene cáncer o un tumor maligno, excluyendo cáncer menor de la piel? Sí No
Self-rated health	Now I would like to ask you some questions about your health. Overall, how would you rate your health – excellent, good, fair, or poor?	Ahora me gustaría hacerle preguntas acerca de su salud. ¿Diría usted que su salud en general es excelente, muy buena, regular, ó mala?	Now I have some questions about your health. Would you say your health is: Excellent, Very Good, Good, Fair, or Poor?	Ahora tengo algunas preguntas sobre su salud. ¿Diría Ud. que su salud es excelente, muy buena, buena, regular, ó mala?