

WHAT ACCOUNTS FOR HEALTH DISPARITIES?

***FINDINGS FROM THE
HOUSTON SURVEYS
(2001-2013)***

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INTRODUCTION

This report seeks to identify the forces that account for health disparities in the Houston region. It makes use of questions asked in the past 13 years of the annual “Kinder Institute Houston Area Survey” (KIHAS), buttressed by findings from the third of the institute’s three focused surveys, known as the SHEA studies (“Surveys of Health, Education, and the Arts”). Supported by a grant from Houston Endowment Inc., the studies were designed to assess the experiences, beliefs, and attitudes of Harris County residents with regard specifically to these important areas of urban life. The three separate surveys and the reports¹ presenting their central findings complement the Kinder Institute’s continuing annual studies (the KIHAS), which have been tracking, through 33 years of systematic surveys (1982-2014), the demographic patterns, experiences, attitudes, and beliefs of Houston area residents during a period of remarkable change.²

In the process of developing the survey instrument to be used for the SHEA “Houston Area Health Survey” (HAHS), the research team at the Kinder Institute met periodically during 2011 and 2012 with local and national public health experts to fashion the questions we would ask of a scientifically-selected representative sample of 1,200 Harris County residents. The goal was to measure systematically area residents’ self-reported health status, their experience with Houston’s health care delivery systems, and the health-related characteristics of their neighborhoods. The actual telephone interviews were conducted by the Survey Research Institute at the University of Houston between June 6 and July 17, 2012, with 70 percent of the respondents reached by landline and 30 percent by cell phone.

After the interviews were completed, the data were “weighted” to correct for variations in the likelihood of selection and to align the sample more closely with known population characteristics, such as gender, age, education, race and ethnicity, home ownership, and county population and density.

The weighting procedures provide a more accurate and reliable reflection of the actual attitudes and experiences to be found within the Harris County population as a whole. As in previous surveys, the final (weighted) sample distributions still slightly overrepresent respondents aged 60 and older and underrepresent those aged 30 to 44, but they mirror almost perfectly the census figures for Harris County with regard to the distributions by gender, ethnicity, and educational attainment. Unless otherwise indicated, the findings presented in the following charts and discussed below are based on the weighted data. Appendix A provides additional information about these and other aspects of the survey methodology.

Listed in Appendix B are the local advisors who helped the research team develop the survey instrument and offered comments on the preliminary findings and on earlier drafts of this report. The survey instrument that was used in the HAHS and the responses given by Harris County residents on all the questions can be found on the institute’s website at kinder.rice.edu/shear.

We begin this report with an analysis of the findings from both the HAHS and the past 13 years of the KIHAS in an effort to identify empirically the most important structural forces (such as age, education, income, and ethnicity) that demonstrably underlie and help to account for the wide disparities in the health and well-being of Harris County residents. We go on to explore the bases for individual differences in area residents’ access to quality health care and to assess the importance of the relationship between health insurance coverage and self-reported health status. Finally, we ask about the health effects of environmental pollution and of the social characteristics of neighborhoods, and we briefly mention some of the initiatives under way in the Houston area that may make a significant difference in shaping the overall health of this community. ■

SOCIAL STRUCTURES AND HEALTH DISPARITIES

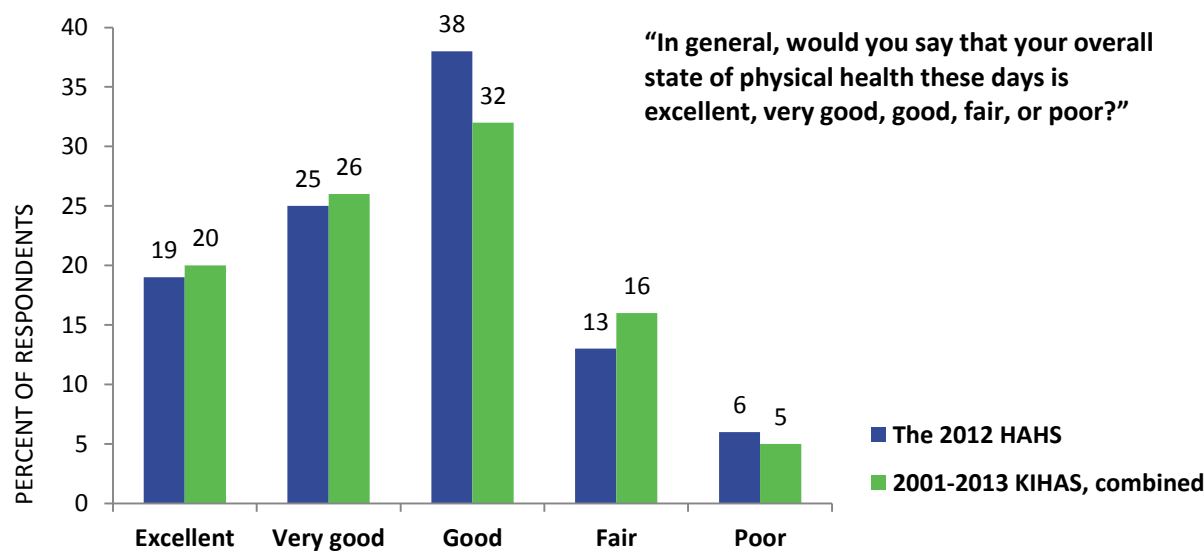
Measuring Self-Rated Health

Early in the Houston Area Health Survey (HAHS), the respondents were asked: “In general, would you say that your overall state of physical health these days is excellent, very good, good, fair, or poor?” This simple measure of self-reported health has been found to be a remarkably reliable indicator of a person’s actual state of health. Responses on this question closely correlate with the results of physical examinations by health professionals,³ and they are strong predictors of mortality.⁴

That same question was included in each of the past 13 years (2001-2013) of the annual Kinder Institute Houston Area Survey (KIHAS), which has reached more than 20,000 Harris County residents during those years. When asking about the role of demographic or structural factors in accounting for individual differences in self-rated health, we will make use of that more extensive set of data. We will draw on the HAHS for its rich additional measures of various environmental and neighborhood characteristics and their impact on health outcomes.

Figure 1 presents the responses on this question from both sources: the HAHS and the combined 13 years of the KIHAS (2001-2013). A plurality of all Harris County residents (32 to 38 percent) said that they were in “good” health; another 44 to 46 percent reported that their health was either “excellent” or “very good.” Fully one-fifth (19 to 21 percent) of the survey participants rated their current state of health as “fair” or “poor.” The “2010 Health of Houston Survey,” conducted by the School of Public Health at the University of Texas, also found that 20 percent of Harris County residents reported their health status as fair or poor.⁵ The close correspondence among these various data sources strengthens confidence in the reliability of the findings. We will be particularly interested to learn what the surveys can tell us about those 20 percent of area residents who indicate that their current state of health is only fair or poor.

Figure 1 - Self-Rated Health Status in Harris County, from Two Data Sources



Aging and Health

Not surprisingly, age is significantly associated with self-reported health status: The older survey participants were consistently more likely than the younger respondents to give negative ratings when asked about their current state of health. In the HAHS, 24 percent of those who were over the age of 60 reported that their overall physical health was fair or poor, compared to just 15 percent of respondents aged 18 to 29. Figure 2 shows that this relationship is confirmed by the more extensive KIHAS data: Over the 13 years of surveys, 32 percent of all the respondents aged 60 or older at the time of the interviews said they were in fair or poor health, but this was true of just 16 percent of the survey participants who were under the age of 30.

The HAHS asked the respondents if they had “any physical health problems right now that prevent you from doing any of the things people your age normally can do?” More than a third (34 percent) of the survey participants who were over the age of 60 said they did indeed have a physical problem of that sort, but this was true for just 5 percent of the respondents under age 30. Not surprisingly, those of any age who said their health was fair or poor were far more likely to report having a physical problem that affected their daily lives.

It is interesting to note that people’s assessments of their overall state of physical health seem to be based on different considerations at different ages. Looking just at the one-fifth of all the respondents who rated their current state of health as fair or poor, Figure 3 shows the percent in each of the four age groups who also said they had a physical health problem that prevented them from engaging in normal activities. Fewer than a tenth (8 percent) of the younger respondents who said they were in generally poor health also indicated that they were currently dealing with a debilitating health problem, but the number for whom this is true increased consistently with age to reach 69 percent among those aged 60 and older.

As other research has shown,⁶ younger people are more likely to evaluate their current health status on the basis of their participation in risky behaviors (e.g., smoking, poor diet, lack of exercise). In contrast, older adults overwhelmingly refer to functional limitations and specific physical problems when assessing their state of health.

Figure 2 - Self-Rated Health Status by Age Group (2001-2013 KIHAS, Combined)

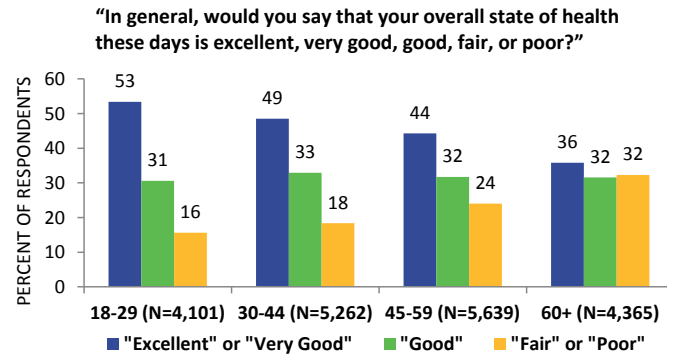
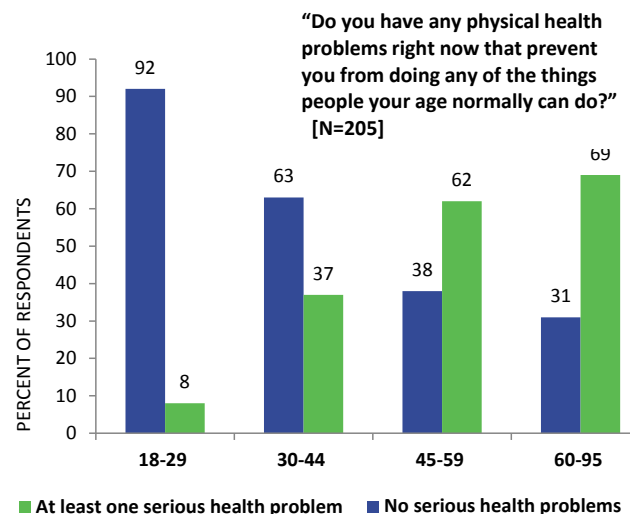


Figure 3 - The Prevalence of Serious Health Problems by Age Group among the Respondents Who Reported Fair or Poor Health (HAHS)



The Relationship between Inequality and Health

Table 1 shows the data from the 2013 Behavioral Risk Factor Surveillance System (BRFSS) presenting the proportion of residents in the nation's ten most populous urban counties (not including the New York boroughs) who indicated that they were in only fair or poor health.⁷ When compared to the other large urban regions, Harris County ranks in the middle, with 18 percent of Houston area residents in this study reporting fair or poor health, compared to 23 percent in Los Angeles and 14 percent in San José.

The GINI coefficients listed in the right-hand column of Table 1 provide a standard measure of income inequality within each of these urban counties: If all households in the region had exactly the same level of income, the GINI coefficient would be zero; a value of one would mean that a single household had all the income, and all others had no income at all. The localities with a high GINI coefficient are those with a disproportionate number of rich and poor residents; lower GINI coefficients reflect populations with more even income distributions. The table shows clearly that the differences in self-rated health across these metropolitan areas tend to mirror their differences in income inequality.

Table 1 - Self-Rated Health Status across Major Metropolitan Counties (2013 PRFSS, Excluding NYC Boroughs, Ranked by Their GINI Coefficients (2011 American Community Survey 5-Year Estimates)

Major U.S. City	County	County Population	Percent in Fair or Poor Health (2013 BRFSS)	GINI Coefficient (2007-2011 ACS five-year estimates)
Philadelphia, PA	Philadelphia	1,536,471	20	0.497
Los Angeles, CA	Los Angeles	9,889,056	23	0.494
Dallas, TX	Dallas	2,416,014	17	0.493
Houston, TX	Harris	4,180,894	18	0.491
Chicago, IL	Cook	5,217,080	17	0.491
San Antonio, TX	Bexar	1,756,153	17	0.466
San Diego, CA	San Diego	3,140,069	16	0.455
Phoenix, AZ	Maricopa	3,880,244	15	0.454
San José, CA	Santa Clara	1,809,378	14	0.452

Figure 4 - The Percent of Residents in Fair or Poor Health, by the GINI Coefficients of Their Counties (2013 BRFSS)

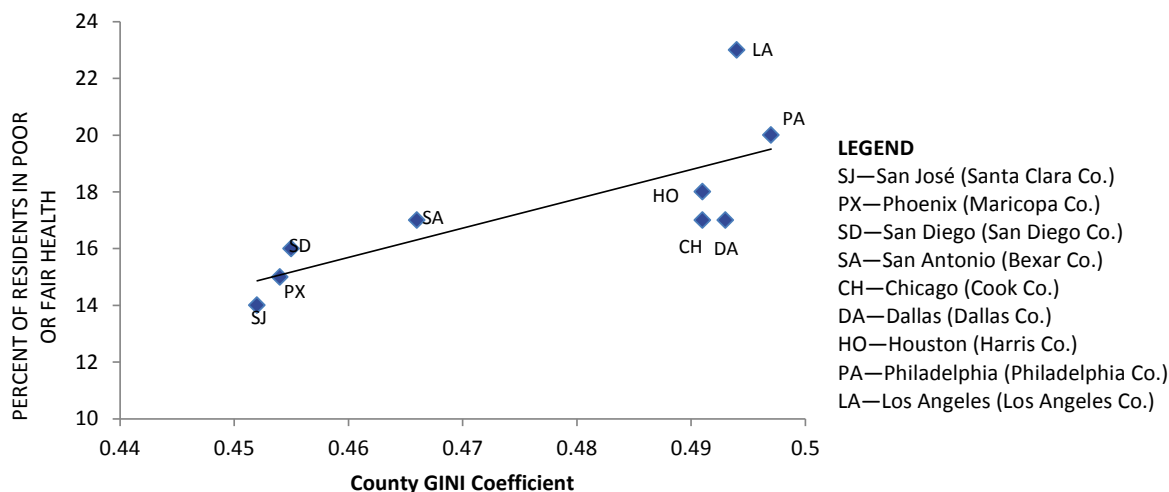


Figure 4 illustrates the positive linear relationship between the levels of income inequality in each metro area and the proportion of residents reporting that they were in fair or poor health. The localities where the levels of inequality are lower than they are in Houston (e.g., San José, Phoenix) tend to have healthier populations, whereas those with higher levels of inequality (Philadelphia, Los Angeles) have more residents reporting that their health was only fair or poor. Lopez (2004) examined metropolitan areas across all 50 states and found that, with each 0.1 point rise in the GINI index, the proportion of individuals in the area who reported fair or poor health increased by 4 percent.⁸ Socioeconomic factors are strongly linked to health outcomes.

The Individual Contributions of Education, Income, and Ethnicity

The data in Table 1 clearly suggest that income differences contribute importantly to the health disparities that exist across the country. Higher levels of socioeconomic status (SES) generally mean greater household wealth, healthier neighborhood conditions, and more support systems that encourage health-promoting activities.

Each of the separate components that define the structural inequalities in America (education, income, and ethnicity) may be significant individual contributors to the relationship between SES and self-reported health, or they may be associated with health outcomes simply because of their correlation with other more powerful structural variables. Thus, African Americans and Latinos may have worse health outcomes than Anglos or Asians because they also have lower levels of education and income and not because of any distinctive factors (such as wealth disparities, stress, or discrimination) that are specific to ethnic differences. Or does ethnicity independently contribute to the health disparities, even after the separate effects of education and income are statistically controlled?

We will make use of logistic regression to disentangle the degree to which each of these structural components is individually associated with self-reported health. First, we examine the straightforward correlations of health status with education, income, and ethnicity, and consider the reasons why each factor might indeed be a separate and cumulative predictor of health status. Then, with the use of logistic regression, we will be able to test the independent correlation of each separate factor with self-rated health, after controlling for the impact of all the others.



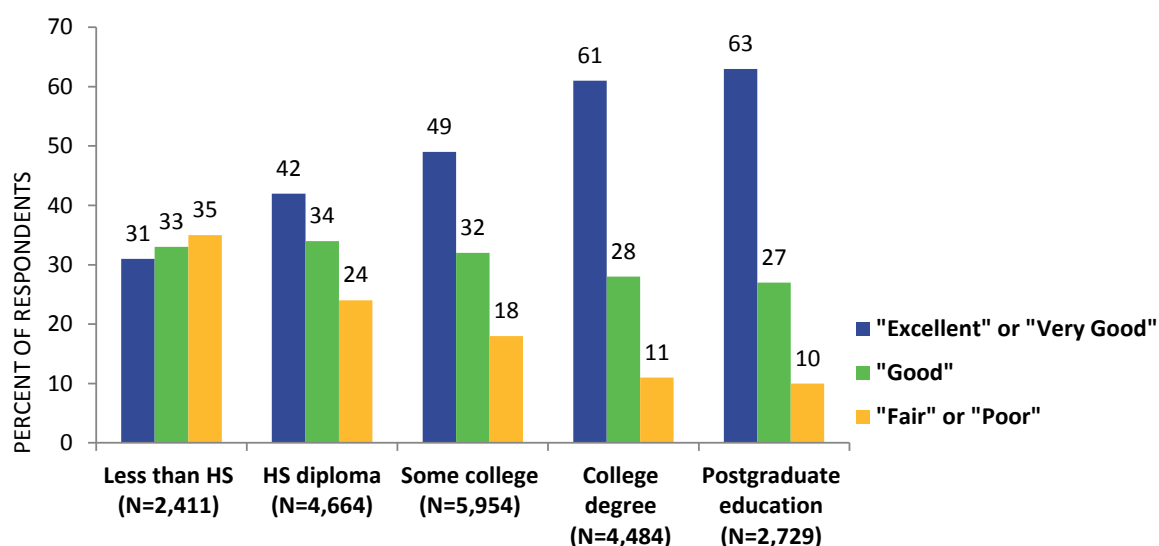
The Role of Education. A person's educational attainment can influence health in a variety of ways. Several national studies suggest that more education in and of itself, even when controlling for its close association with income, enhances life expectancy and fosters better health.^{9,10} Educational attainment, at all levels of income, increases access to basic health information and the likelihood of engaging in healthy behaviors, such as regular physical exercise and scheduling check-ups on a regular basis.¹¹ The 2003 National Assessment of Adult Literacy found that education is highly correlated with measures of "health literacy," the ability to obtain, process, and understand basic health information and services in order to make appropriate health decisions.¹²

Education is also associated with important psychological factors, such as the sense of efficacy, or the belief in personal control over one's life circumstances: The extent to which individuals are confident that they can influence what happens in their lives has been shown to be linked with higher levels of self-rated health.¹³ Educational attainment, even beyond its relationship with income, may improve health by reducing overall stress and promoting healthier lifestyle choices.

Making use of the rich data from 13 years of the KIHAS (2001-2013), Figure 5 reveals a powerful linear relationship between educational attainment and self-reported health status. Over one-third (35 percent) of area residents who had less than a high school education said their current state of health was fair or poor, but this was the case for just 11 percent of the respondents with college degrees. Fully 63 percent of the survey participants who had post-graduate educations reported their health as excellent or very good, compared to just 31 percent of those who had dropped out of high school. Clearly, as education levels increase, health status improves. We will explore below whether this relationship continues to hold even after rigorously controlling for the separate effects of income, ethnicity, gender, and age.



Figure 5 - Self-Rated Health Status by Educational Attainment (2001-2013 KIHAS, Combined)



"What is the highest grade of school or year of college that you've completed?"

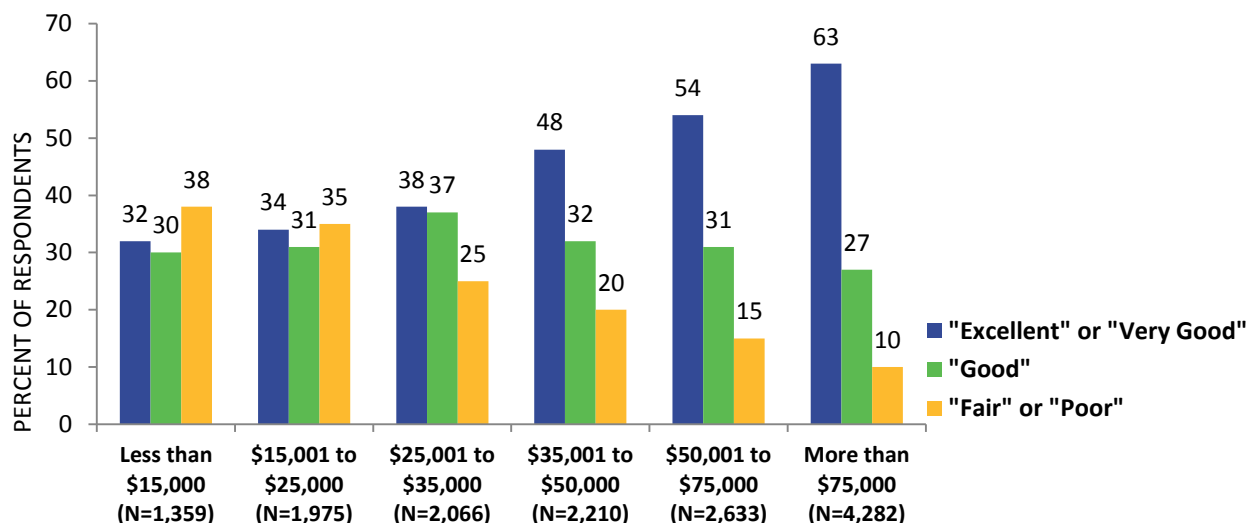
The Importance of Income. The direct impact of income on health seems likely to be at least as powerful as the relationship with education. People with higher household incomes typically live longer, healthier lives than less affluent individuals, since their higher earnings are associated with access to resources that influence health and mortality,^{14,15} and foster healthier lifestyle choices.¹⁶ Higher-paying jobs are more likely to have health-related employee benefits and employer-sponsored health insurance. Beyond their greater access to quality health care, more affluent individuals are likely to experience less stress and to live in neighborhoods with higher levels of social cohesion, greater access to nutritious foods and ample opportunities for physical activity and recreation. In this era of growing inequalities, income differences in health and well-being are likely to be particularly stark.

Figure 6 shows the relationship between self-reported health status and household incomes in the KIHAS surveys. Of all area residents who reported household incomes of \$15,000 or less (below the poverty level for a family of two), considerably more than a third (38 percent) said they were in fair or

poor health. As income levels rise above \$25,000, the percent of respondents reporting poor health declines, while the number saying that their current physical health is excellent or very good increases in a stepwise fashion. At the highest levels (the households reporting incomes of more than \$75,000), only 10 percent of the survey participants said their current state of health was fair or poor, and 63 percent reported that they were in very good or excellent health.ⁱ

Again, we need to ask whether this relationship is due specifically to differences in household income: Does the connection between income and health exist because respondents with higher incomes are also likely to have higher levels of educational attainment, or are education and income separate and independent contributors to a person's state of health? Meanwhile, of course, both education and income are closely tied to differences in ethnic backgrounds, so we also need to consider the role of ethnicity as we seek to identify the specific social structural forces that independently account for health disparities among Houston-area residents.

Figure 6 - Self-Rated Health Status by Annual Household Income (2001-2013 KIHAS, Combined)



"Please stop me when I reach the category that includes your total household income in the past year; that is, the income for all members of the household during the past year."

ⁱAlmost 30 percent of the respondents in the 2001-2013 KIHAS declined to report their household incomes. There were no significant differences between these individuals and the rest of the respondents in their distributions on education, ethnicity or age.

The Impact of Ethnicity. The recent unprecedented immigration streams into this country since the 1965 reform of the previously restrictive laws have transformed the ethnic composition of the Houston and American populations. Throughout almost all of its history, Houston was essentially a bi-racial, Anglo-dominated Southern city. In the course of the past 30 years, after the oil-boom collapse in 1982, it has been transformed into the single most ethnically diverse large metropolitan region in the country. In 2010 the U.S. Census counted 4.1 million people living in Harris County, of whom just 33 percent were Anglos (or non-Hispanic whites). Harris County's population was now 41 percent Hispanic, 18 percent African-American, and 8 percent Asian or other.

Figure 7 utilizes the combined data from the KIHAS (2001-2013) to show the distributions of household income across Harris County's five major ethnic groups, with Hispanics divided into U.S.-born and immigrant communities. Among the U.S.-born Anglo respondents, 43 percent reported total household incomes of more than \$75,000; this was true for 38 percent of the Asians, but for just 20 percent of the U.S.-born Hispanics, 16 percent of U.S.-born blacks, and 7 percent of the Hispanic immigrants. Fully 35 percent of the African-American respondents and 45 percent of the Hispanic immigrants reported total household incomes of less than \$25,000 (which would put them just above the poverty level for a family of four); only 14 percent of Anglos and 19 percent of Asians had incomes below \$25,000.

The social and economic disadvantages associated with being black or Latino will inevitably generate differences in health status. Moreover, the ethnic disparities in life circumstances have been shown to accumulate over the life course, and they are typically transferred across generations, impacting the education and health outcomes of children and grandchildren as well.¹⁷ Such ethnic differences may well be strong predictors of health disparities in and of themselves, even beyond their close relationship to education and income.

Figure 8 presents the racial and ethnic differences in self-rated health status among the KIHAS respondents. The data make it clear that ethnicity is indeed

closely associated with self-reported health. Well over half (55 percent) of the U.S.-born Anglos said their current state of health these days was excellent or very good; this was the case for 48 percent of the Asians, 46 percent of the U.S.-born Hispanics, 41 percent of the U.S.-born blacks, and just 32 percent of the Hispanic immigrants.

Fully 30 percent of the Hispanic immigrants and 28 percent of the U.S.-born blacks said they were currently in fair or poor health. The U.S.-born Hispanics generally reported better health than blacks or Latino immigrants, but worse health than Anglos or Asians.

Figure 7 - Levels of Household Income in Five Ethnic Communities (2001-2013 KIHAS, Combined)

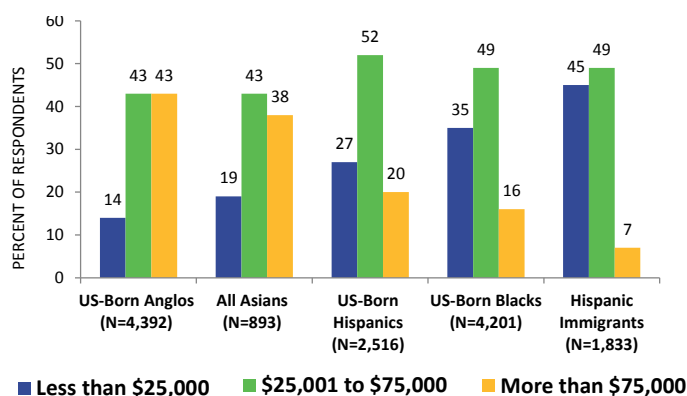


Figure 8 - Differences in Self-Rated Health Status in Five Ethnic Communities (2001-2013 KIHAS, Combined)

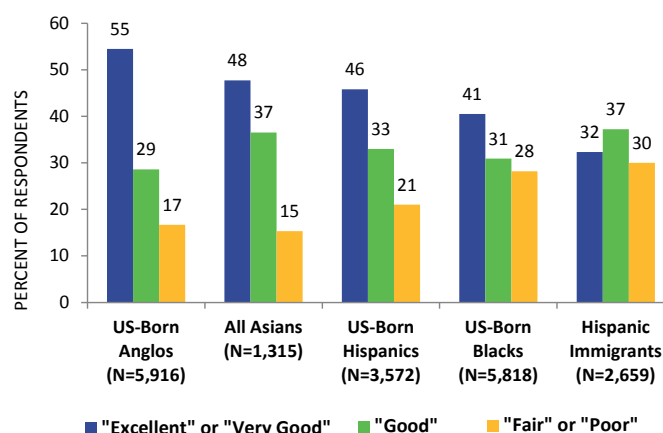
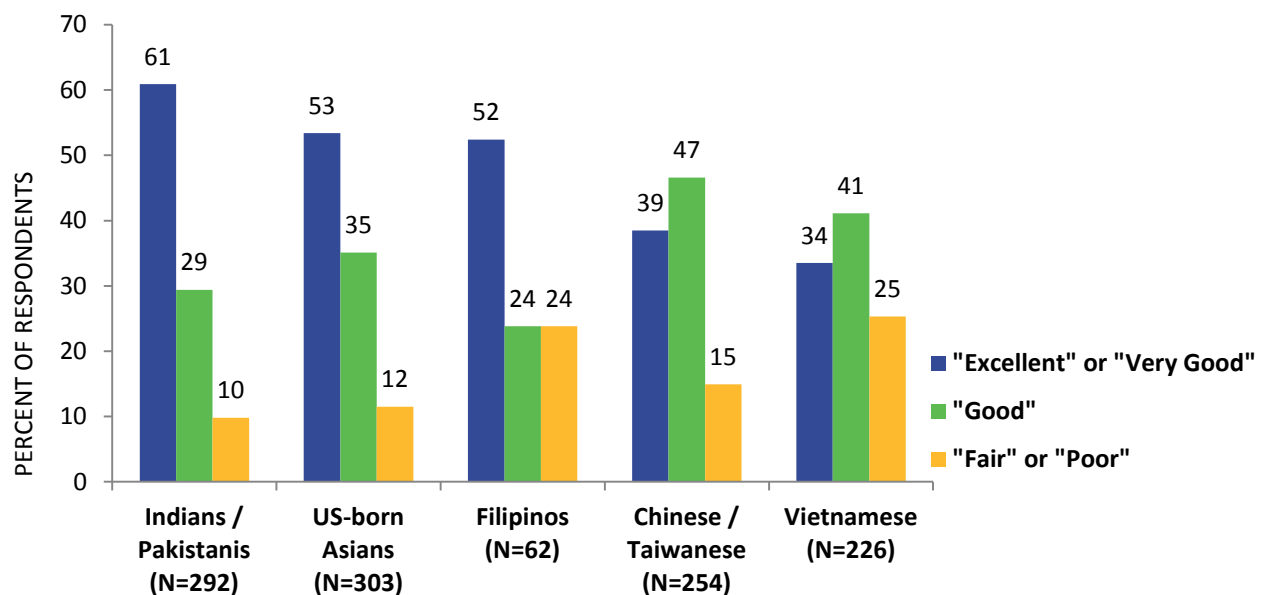


Figure 9 shows the importance of country of origin in accounting for the variability in self-rated health status among Houston's varied Asian-American communities. A clear majority of the immigrants from India, Pakistan, and Bangladesh (61 percent) and from the Philippines (52 percent), along with the U.S.-born Asians (53 percent), said that their current state of health was either excellent or very good. This was true for just 39 percent of the immigrants from China, Taiwan, and Hong Kong, and 34 percent of the Vietnamese immigrants. These contrasts in self-reported health closely parallel the differences among the Asian communities in their overall levels of income and education, and hence in the life circumstances that they experience.ⁱⁱ

Many independent studies confirm that Anglos generally experience the best health and the lowest age-adjusted mortality over the life course,¹⁸ whereas blacks and Hispanics have much higher levels of infant mortality and obesity.¹⁹ Are there forces beyond differences in socioeconomic conditions that account for the racial and ethnic disparities in self-reported health status? The daily lived experiences of blacks and Latinos may well differ from those of Anglos for reasons having to do not only with the well-known contrasts in education and income, but also with the vast discrepancies in family assets, the experience of persistent discrimination, and the continual high levels of stress that result from these realities.

Figure 9 - Differences in Self-Rated Health Status among U.S.-born Asians and in Houston's Four Largest Asian Immigrant Communities (2001-2013 KIHAS, Combined)



ⁱⁱ A comprehensive report on Harris County's Asian communities was released in 2012. It presents the findings from three focused surveys conducted by the Kinder Institute in 1995, 2002, and 2011, reaching more than 500 Asians in each of these three years, with 24 percent of the interviews conducted in Vietnamese, Cantonese, Mandarin, and Korean. The report is available at <http://kinder.rice.edu/reports/>.

The Structural Correlates of Self-Rated Health

The rich data from the KIHAS make possible a rigorous statistical examination of the individual impact on self-reported health of each of these major structural factors, after taking account of the effects of all the others. To test these relationships, we use the unweighted data from the 13 years of pooled random samples of Harris County residents.

Table 2 presents the results of the logistic regression, measuring the separate associations of these distinct structural variables with the odds that Harris County residents will indicate that their current state of health is “fair” or “poor.”

The regression coefficients in the first column of the table indicate the estimated increase (or decrease) in the log odds of reporting fair or poor health. For age, the odds represent the increase in the proportion reporting poor health with each additional year;

Table 2 - Logistic Regression of the Structural Correlates on Self-Rated Health Status (2001-2013 KIHAS, Combined)ⁱⁱⁱ

Independent Variable	Self-Reported “Fair” or “Poor” Health			
	(KIHAS 2001-2013)			
	Coefficient	Standard Error	Odds Ratio (OR)	1-OR
(A) Socioeconomic Status				
(1) Education^a				
High School Diploma	-.189	.105	.828	-.172
Some College	-.366**	.105	.694	-.306
College Degree	-.863***	.116	.422	-.578
(2) Income^b				
\$35,501 to \$50,000	-.462***	.096	.630	-.370
\$50,001 to \$75,000	-.631***	.095	.532	-.468
More than \$75,000	-.958***	.093	.384	-.616
(B) Demographic Characteristics				
(3) Ethnicity^c				
Blacks	+.423***	.083	1.527	+.527
Latinos	+.308***	.086	1.361	+.361
Asians	+.269	.219	1.309	+.309
(4) Age	+.021***	.002	1.022	+.022
(5) Female	-.047	.064	.954	-.046

Constant	-.685***	.111	.504	-.496
N	6,792			
^a Reference group: Less than high school.				
^b Reference group: Less than \$35,000.				
^c Reference group: Anglos.				
*p < .05, **p < .01. ***p < .001 (two-tailed tests).				

ⁱⁱⁱ To determine if there were ethnic differences in the relationships with health of the structural variables, we tested the interaction terms and found that none were statistically significant. We also ran the regressions separately for the years 2001-2007 and 2008-2013; we found no differences between the two models in the nature and strength of the coefficients for age, gender, income, and ethnicity, and only very slight differences for education. We have therefore combined all 13 years in the regression models.

for all the other independent variables in the model the coefficient represents the increase or decrease in the odds of reporting poor health compared to the respondents in the designated reference category.

Thus, after controlling for the effects of income, age, ethnicity, and gender, the regression model shows that the odds of reporting poor health decrease at each higher level of education (high school diploma, some college, college degree), when respondents with that amount of education are compared to those who have less than a high school education (the referent category). The results indicate that it is only when the levels of schooling reach beyond high school that educational attainment is significantly associated with better health.

Just having a high school diploma offers a statistically indistinguishable health advantage over having less than a high school education. In this increasingly global, high-tech, knowledge-based economy, education beyond high school is now a critical determinant of a person's ability to obtain a job that pays more than poverty wages. This new reality is increasingly clear to the general public as well. In the 2013 KIHAS, 73 percent of all Harris County residents agreed with the suggestion that, to succeed in today's world, "it is necessary to get an education beyond high school." Fewer than one in four believed instead that "there are many ways to succeed with no more than a high school diploma."²⁰

The table indicates that respondents with a college degree have an Odds Ratio (OR) of .422 of reporting their health as only fair or poor. This means that they are 42 percent as likely as the respondents without a high school education, or 58 percent less likely (1-OR) than those in the reference category, to report being in fair or poor health. And, again, this relationship holds even after rigorously controlling for the effects of differences among the respondents in their household incomes, ethnic backgrounds, age, and gender. In sum, educational attainment, at least when it entails education beyond high school, does indeed appear to be an independent factor that in and of itself is significantly associated with a person's self-reported health status.

Similarly, each increase in the respondents' levels of household income is significantly associated with decreasing likelihoods that they will report being in fair or poor health. Respondents with incomes between \$35,000 and \$50,000 had 37 percent lower odds (1-OR) of reporting poor health compared to those in households making less than \$35,000. Respondents with incomes above \$75,000 (after controlling for differences in education, ethnicity, and age) were almost 62 percent less likely (1-OR) to report being in poor or fair health. Income, like education, is indeed a separate and significant independent correlate of self-reported health status.

Table 2 indicates further this is also the case for ethnicity. Controlling for differences on all the other variables in the model, the African-American respondents were 53 percent more likely than Anglos (the Latinos were 36 percent more likely) to report being in fair or poor health. With all the other variables controlled, Asians are only slightly, and not significantly, more inclined than Anglos to report being in fair or poor health. For reasons other than, or in addition to, the ethnic differences in socioeconomic status, the black and Latino residents of Harris County are significantly more likely than Anglos to give low evaluations of their current state of health.

Age, too, remains a significant predictor, with the other structural variables controlled: each one-year increase in the respondents' ages, from 18 to 95, raises the odds of their reporting that they are in fair or poor health by an average of 2.2 percent. After considering all these other important factors, men and women have statistically identical odds of reporting poor health.

In sum, the statistical analysis confirms that the separate structural forces captured by measures of educational attainment, household income, ethnicity, and age are indeed significantly associated with the health disparities, and each of these critical factors contributes independently to self-reported health status. We will continue to make use of the regression models to control for the effects of age, ethnicity, education, and income, as we consider the individual importance for self-reported health

of other more subtle factors, such as having health insurance, or engaging in health-related physical activities, or living in areas that are particularly prone to air pollution, or feeling comfortable and engaged in one's neighborhood.

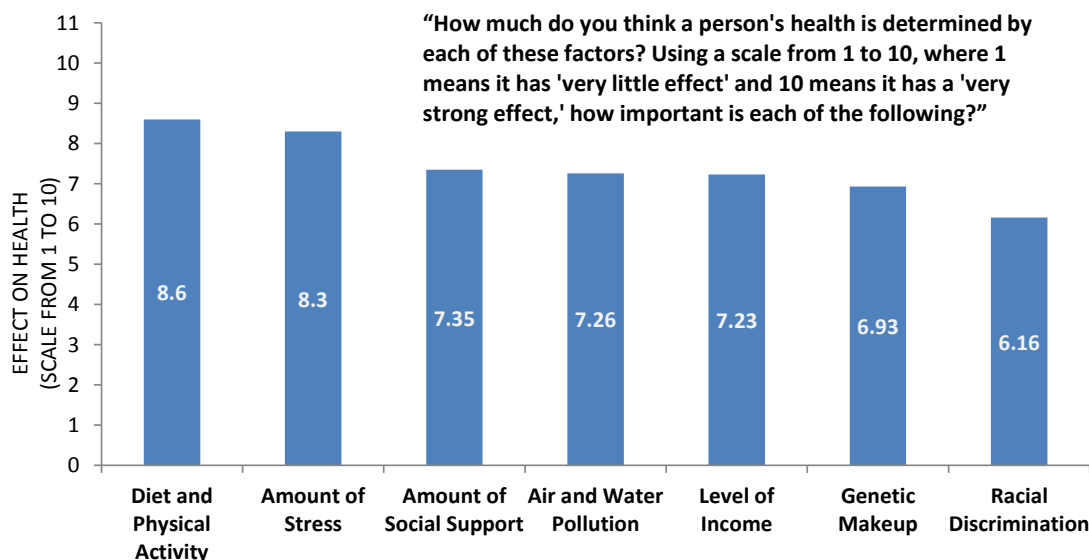
Although (as we shall see) individually-based risk factors such as diet and physical activity may well contribute to health outcomes, the structural forces measured in Table 2 are generally considered by health scholars to be by far the more pervasive and critical forces in accounting for individual differences in self-reported health status.²¹ As the findings from the Houston surveys and numerous other studies confirm, the sharp disparities in health that exist in this country primarily derive from the vast social and economic inequalities that are so deeply ingrained in American society.²² The general public, however, is more likely to view a person's health as primarily a matter of individual volition and specific health-related behaviors.

The respondents in the HAHS were asked how much they thought a person's health is determined by each of several different factors, using a scale from 1 ("very little effect") to 10 ("very strong effect"). As indicated in Figure 10, the survey participants attributed the most powerful effects to individual and behavioral factors, such as "what a person eats and

how much physical activity that person gets" (with an average score of 8.6) or the "amount of stress a person experiences" (at 8.3). They viewed structural inequalities, such as "a person's level of income" (7.2) or "a person's experience with racial or ethnic discrimination" (6.2) as having less impact on that person's health. Not surprisingly, African Americans (at 63 percent) were more likely than Latinos (53 percent), who were more likely than Anglos (45 percent), to assert that living with "racial discrimination" has strong effects on a person's health, giving it a rating of 7 or more on the ten-point scale.

Do the individual and behavior factors that the public identifies really contribute on their own to health outcomes after all the more powerful structural forces are taken into account? Aside from age, socioeconomic status, and institutionalized racial inequalities, is self-rated health status also affected by more immediate and more individualized experiences, such as having health insurance, participating in healthy behaviors, or benefiting from the health-related aspects of the surrounding social and natural environment? We turn next to an assessment of the importance of factors such as these in determining health outcomes, as we seek to assess how well this city is meeting its obligation to provide quality health care and health-promoting resources to all its residents. ■

Figure 10 - The Perceived Determinants of a Person's Health, Average Ratings (HAHS)



ACCESS TO HEALTH CARE

Health Insurance Coverage

The respondents in the HAHS were asked if they were “currently covered by any type of health insurance or health care plan.” One-fifth (19 percent) said that they had no health insurance coverage at all. This figure somewhat underreports the actual number of the uninsured. The 2009-2011 ACS 3-year estimates from the U.S. Census indicated that 27 percent of all Harris County residents and 34 percent of those aged 18 to 64 were uninsured. Nationally, 15.4 percent of the total U.S. population and 21 percent of the population aged 18 to 64 were uninsured, meaning that there were some 48 million uninsured Americans in 2012, according to the Census report.²³

The likelihood of having some kind of health insurance plan differs significantly by ethnic background and increases with age, income, and education. In the HAHS, well over one-quarter (29 percent) of the respondents under age 30 said they were uninsured, as did 21 percent of those aged 30 to 44. The proportion dropped to 18 percent at ages 45 to 59, and to 10 percent among the respondents who were 60 years old and older.

Health insurance coverage also declines at the lower ends of the socioeconomic scale. Nearly 28 percent of the survey respondents whose household incomes were less than \$37,500 said they did not have any type of health insurance or health care plan. Almost 20 percent of those who reported household incomes

between \$37,501 and \$62,500 were uninsured. In addition, close to 34 percent of the respondents who did not have a high school diploma said they had no health insurance, compared to 23 percent of high school graduates, 14 percent of those who had some college education, and just 9 percent of college graduates.

When asked about their source of health insurance or health care coverage, 51 percent of the respondents who were insured said they were covered through an employer, and 21 percent through a government assistance program such as Medicare or Medicaid. Another 6 percent purchased their plan directly from a private insurance company, and 1 percent through a military or veteran program. Fewer than one percent of the respondents reported that they used the Harris County Hospital District’s Gold Card (now known as the “HarrisHealth Program”) as their health care plan; the plan enables these individuals to receive limited subsidized medical care at specified locations, but technically they are not insured.

Figure 11 makes use of the KIHAS data to show the distribution of health insurance coverage in Houston’s five major ethnic communities, among all respondents aged 18 to 64. Remarkably, almost half (48 percent) of the Hispanic immigrants in Harris County said they were uninsured. This was the case for 28 percent of the U.S.-born Hispanics, 21 percent of the U.S.-born blacks, 17 percent of Asians, and 13 percent of native-born Anglos.

Figure 11 - Health Insurance Coverage by Ethnicity among Respondents Aged 18 to 64 (2001-2013 KIHAS, Combined)

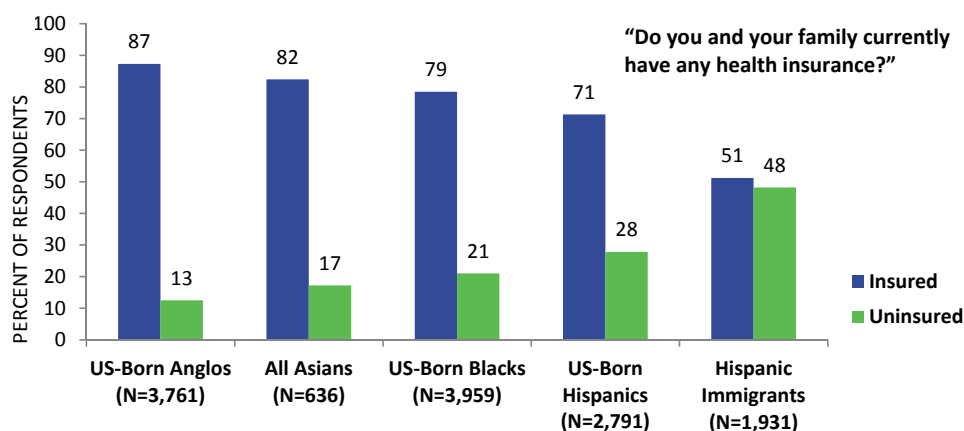


Table 3 uses the KIHAS data and the logistic regression model to test the separate impact of having health insurance on self-reported health status, when the effects of all the key structural factors (age, ethnicity, education, and income) have been entered into the model. When all four of the structural factors are controlled, is the sheer fact that the respondent is or is not insured significantly associated with self-reported health status? The answer is “yes.” The analyses make it clear that having health insurance is indeed independently correlated with reporting better health.

Across all categories of education, income, ethnicity, and age, the respondents who said they were currently covered by some type of health insurance or health care plan had on average 38 percent (1-OR=-.381) lower odds of reporting that their current state of health was fair or poor, compared to those who were uninsured. This suggests that simply expanding

area residents’ access to health insurance may well have a significant positive impact on their overall health status, although the effects of differences in education, income, and ethnicity, not surprisingly, are generally even more important than having insurance in accounting for the health disparities.

The Congressional Budget Office projects that the Affordable Care Act should result in its first year in 14 million previously uninsured Americans being able to obtain health insurance. The data reported here suggest that this expansion in access to health insurance coverage may well have positive effects on the overall health of residents in Harris County and across America. Unfortunately, the benefits of the new act will be less evident in Texas than elsewhere in the nation, since the state government so far has decided not to accept the federal funds that would expand Medicaid to the working poor, leaving a large gap in insurance coverage.

Table 3 - Logistic Regression of Health Insurance Coverage on Self-Rated Health Status, Controlling for the Structural Variables (2001-2013 KIHAS, Combined)

Independent Variable	Self-Reported “Fair” or “Poor” Health (KIHAS 2001-2013)			
	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>1-OR</i>
(A) Socioeconomic Status				
(1) Education ^a				
High School Diploma	-.090	.124	.914	-.086
Some College	-.256*	.123	.774	-.226
College Degree	-.781***	.135	.458	-.542
(2) Income ^b				
\$35,501 to \$50,000	-.383***	.108	.682	-.318
\$50,001 to \$75,000	-.524***	.107	.592	-.408
More than \$75,000	-.777***	.104	.460	-.540
(B) Demographic Characteristics				
(3) Ethnicity ^c				
Black	+.411***	.092	1.508	+.508
Latino	+.216**	.097	1.242	+.242
Asian	+.096	.267	1.100	+.100
(4) Age	+.023***	.002	1.024	+.024
(5) Female	-.068	.072	.935	-.065
(C) Having Health Insurance^d	-.480***	.093	.619	-.381
Constant	-.425**	.139	.654	-.346
N	5,435			

^a Reference group: Less than high school.

^b Reference group: Less than \$35,000.

^c Reference group: Anglos.

^d The question about health insurance coverage was included in the 2001, 2003-2012 surveys.

*p < .05. **p < .01. ***p < .001 (two-tailed tests).

Immigration and health insurance among Hispanics. We have seen (in Figure 8) that, among the participants in the 13 years of the KIHAS, the Hispanic immigrants (at 30 percent) were more likely than the U.S.-born Latinos (21 percent) to report their health as fair or poor. The immigrants were also much more likely than the U.S.-born Latinos (by 47 to 27 percent) to say they had no health insurance. Table 4 tests the relationship between immigrant status and self-reported health among the Latino respondents, first after controlling for age, gender, education, and income, and then with health insurance coverage also entered into the equations.

The first regression model indicates that Latino immigrants, despite their differences from U.S.-born Latinos in age, education, and income, do indeed (by 25 percent) have higher odds than their U.S.-born counterparts of reporting their current health status as fair or poor. The second regression reveals that this relationship is no longer statistically significant when health insurance coverage is entered into the model. The association between being an immigrant and reporting low levels of personal health is largely explained, the data indicate, by the fact that the Latino immigrants are so much less likely to be covered by health insurance. Once again, these analyses reinforce the importance of increasing access to affordable health insurance across the entire Houston community, if the goal is to improve the overall health of area residents.

Table 4 - Logistic Regression of Immigration Status and Insurance Coverage on Self-Reported Health Status among Latinos, Controlling for the Structural Variables (2001-2013 KIHAS, Combined) ^{iv}

Independent Variable	Self-Reported "Fair" or "Poor" Health (Latinos only)							
	(KIHAS 2001-2013)				(KIHAS 2001-2013)			
	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>1-OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>1-OR</i>
(A) Socioeconomic Status								
(1) Education ^a								
High School Diploma	-.307*	.100	.736	-.264	-.319**	.114	.727	-.273
Some College	-.419***	.109	.658	-.342	-.419**	.122	.712	-.288
College Degree	-.815***	.137	.442	-.558	-.815***	.153	.459	-.541
(2) Income ^b								
\$35,501 to \$50,000	-.350***	.108	.705	-.295	-.280*	.120	.756	-.244
\$50,001 to \$75,000	-.788***	.123	.455	-.545	-.727***	.135	.483	-.517
More than \$75,000	-.929***	.135	.395	-.605	-.817***	.147	.442	-.558
(B) Demographic Characteristics								
(3) Age	+.024***	.002	1.025	+.025	+.024***	.003	1.024	+.024
(4) Female	+.144	.077	1.155	+.155	+.128	.085	1.137	+.137
(5) Latino Immigrants^c	+.224**	.082	1.251	+.251	+.180	.092	1.197	+.197
(C) Having Health Insurance^d					-.284**	.097	.753	-.247
Constant	-1.706***	.148	.182	-.818	-1.533***	.167	.216	+.784
N	4,185				3,472			

^a Reference group: Less than high school.

^b Reference group: Less than \$35,000.

^c Reference group: U.S.-born Latinos.

^d The question about health insurance coverage was included in the 2001, 2003-2012 surveys.

*p < .05, **p < .01, ***p < .001 (two-tailed tests).

^{iv} To determine if the relationships of the structural variables with self-reported health differ among the Latinos by their immigrant status, we tested the interaction terms and found that none were statistically significant, so they are not included in the final models.

Access to Quality Health Care in Houston

Houston is home to the largest medical complex in the world and boasts some of the highest standards for patient care and medical research. Despite such resources, too many area residents have difficulty accessing quality health care. Respondents in the HAHS were asked to rate “the quality of health care available to you in the Houston area” as excellent, good, fair, or poor. Over one-third (34 percent) rated the health care they could access as fair or poor.

The same question was asked in the KIHAS on two different occasions. In 1992, 37 percent gave negative ratings to the quality of health care available to them in the Houston area, as did 38 percent in 2009. The data are consistent in suggesting that more than one-third of all area residents rate the health care they can obtain as only fair or poor, and that there has been no improvement over the course of the past two decades in their assessments of the quality of care they can access.

Figure 12 shows the relationship between household incomes and respondents’ ratings of the quality of health care available to them in the Houston area. Over half (51 percent) of the respondents in the 2012 HAHS who reported annual incomes of less than \$37,500 said that the quality of health care available to them was fair or poor. This was true for just one-fifth of those with household incomes of more than \$100,000.

People in higher income brackets can afford better insurance coverage, transportation to better clinics and hospitals, and access to a wider array of medical specialists. The relationship with income is also reflected in ethnic differences: 81 percent of the Anglo respondents in the HAHS said they had access to “excellent” or “good” health care, but this was the case for just 48 percent of blacks and 52 percent of Hispanics.

Having health insurance, not surprisingly, is also strongly correlated with the respondents’ ratings of the quality of health care available to them in the Houston area. As shown in Figure 13, the insured and uninsured respondents differ dramatically on this question. More than 70 percent of the insured respon-

dents said that the quality of care available to them in the Houston area was excellent or good, compared to just 38 percent of the uninsured. Fully 41 percent of the uninsured rated the quality of care they could access in Houston as fair or poor.

Figure 12 - Respondents’ Ratings of the Quality of Health Care Available to Them in the Houston Area, by Household Income (HAHS)

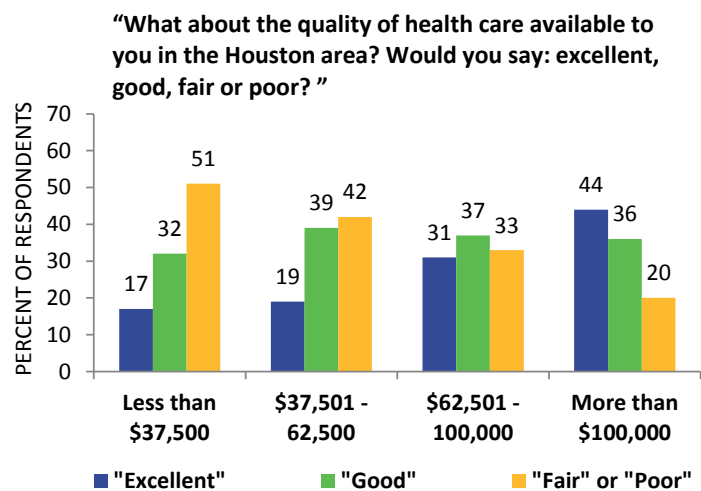
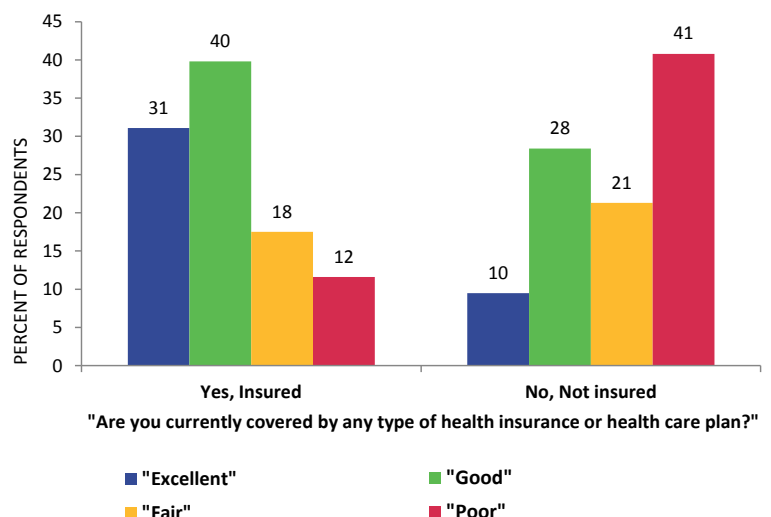


Figure 13 - Respondents’ Ratings of the Quality of Health Care Available to Them in the Houston Area, by Insurance Coverage (HAHS)



This difference in access to quality care is surely one of the reasons why having health insurance is so strongly related to higher ratings of personal health. The logistic regression model (not shown) confirms that having health insurance, even after controlling for the effects of income, education, ethnicity, and age, is indeed significantly associated with the respondents' ratings of the quality of health care available to them in the Houston area.

A second regression (also not shown) indicates that the association between the respondents' assessments of the quality of health care available to them and their self-reported health status is fully explained by the relationships of each of these two variables with socioeconomic status: Area residents with higher levels of age, education and income, and Anglos and Asians more than blacks or Latinos, are better able to access the kind of high-quality health care that results in good health, and they are able to do so, the data suggest, because they are also more likely to be covered by health insurance.

Medical Visits. More than 60 percent of the respondents in the HAHS said they (or someone in their household) had “visited a healthcare provider for medical treatment” at least once in the past 12 months. The majority of the visits (71 percent) were to a doctor’s office to see a primary-care physician; another 21 percent reported visiting clinics, health centers, or hospitals for medical treatment, and 8 percent of the visits were to a hospital emergency room.

Almost all of the respondents (92 percent) said there was “a particular place where you usually go when you’re sick or in need of health care.” The survey participants with children at home said they generally go to the same health care providers when their children are in need of care. Three-fourths (76 percent) of these parents said they most often take their child to a doctor’s office or a primary care physician, and another 21 percent visit a clinic; 2 percent said that they most often take a sick child to the hospital emergency room, and three-fourths of these respondents said they take their child to the ER even for routine or preventive care, such as a physical exam

or check-up. That seemingly small figure translates into some 14,000 (2 percent) of Harris County’s 700,000 or so residents with children, who say they bring their child to an ER for basic health care.

People without adequate insurance are severely limited in the types of health services they can access. Many physicians refuse to accept uninsured patients because of their low rates of payment compared to those with health insurance.²⁴ Harris County has developed a variety of safety-net clinics that offer free or low-cost care to the uninsured and to the Medicaid populations. These include the three publicly-funded Harris Health System (HHS) hospitals (Ben Taub, Lyndon B. Johnson, and Quentin Mease), 16 HHS community health centers, six school-based clinics, and 13 federally qualified health centers (FQHCs).²⁵

A recent University of Texas study found that these providers are able to meet only about 30 percent of the demand for care among Houston’s low-income citizens.²⁶ When such safety net providers are unavailable, many of the uninsured turn to the emergency room for the care they need, even in connection with non-emergency health issues. Patients who rely on the ER as their primary source of health care not only contribute to overcrowding in hospital emergency rooms, but also lose out on the quality and continuity of care that is provided in clinical settings.²⁷

Despite the vast distribution of hospitals, health care facilities, and safety net clinics across Harris County, fully 12 percent of the respondents in the HAHS said that there was a time during the past year when they were unable to get the medical care they needed. More than half (56 percent) of these respondents cited their lack of insurance or inadequate coverage as the main reason they were unable to access medical care. Another 26 percent mentioned cost, unemployment, or lack of transportation as the barrier. In the 2010 BRFSS, 19 percent of all Harris County residents said they were unable to get the health care they needed in the past 12 months because of cost.²⁸ ■

ENVIRONMENTS, NEIGHBORHOODS, AND HEALTH

Aside from the direct effects of age, education, income, ethnicity, and insurance coverage on individuals' overall health outcomes, the characteristics of the neighborhoods in which people live have also been linked to their physical and mental health status, mortality, birth weight, chronic conditions, and other important health issues.^{29,30} The presence, for example, of sidewalks, parks, and trails and the availability of affordable healthy food may encourage health-promoting behaviors and make it easier to maintain them. Exposure to environmental hazards, of course, has obvious health implications: Poor air and water quality and proximity to industrial facilities that emit hazardous substances are likely to have adverse effects on the health of residents.

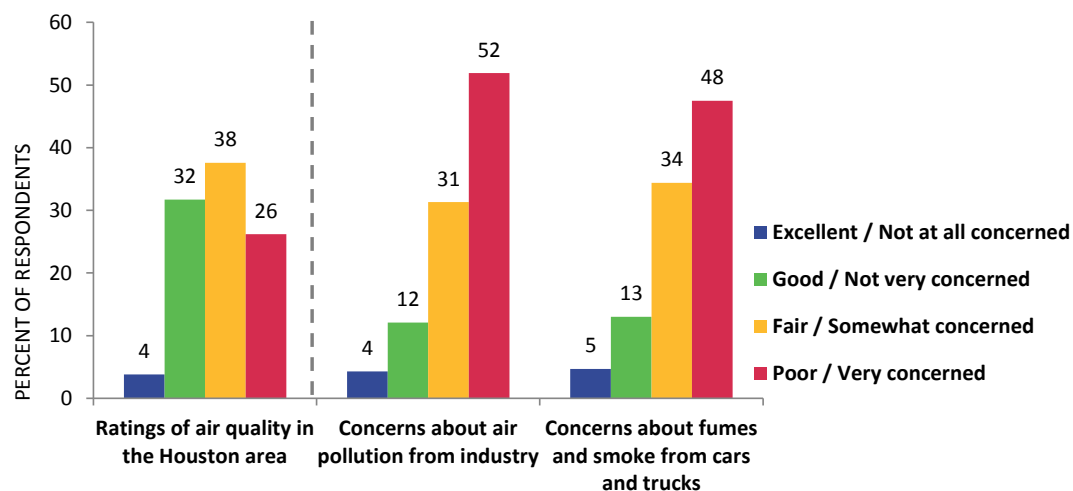
The Importance of Air and Water Quality

Air quality. Air pollution levels in Houston are considered to be unacceptable both by experts and by the general public. The city's problems in this regard were made fully evident on October 7, 1999, when the headline in the *U.S.A. Today* newspaper was, "Houston, cough, cough ... We've got a problem, cough, cough!" As the *Los Angeles Times* proclaimed on that particularly hot and balmy day, "New Smog Capital of America Declared!" For the first time in history, Houston had surpassed Los Angeles in the number of dangerously polluted days recorded during a single year.

Most of Houston's air pollution is due to (a) on- and off-road emissions from motor vehicles, ships, trains, and construction equipment; (b) industrial sources such as the petroleum refineries along the Ship Channel and the Port of Houston; and (c) area sources, such as surface coating processes and dry cleaners.³¹ In 2000 the city announced an ambitious plan to reduce its industrial emissions by 90 percent in order to meet by 2007 the standards established by the Environmental Protection Agency (EPA).³² Houston is still unable to comply with the smog limits set in the 2007 deadline, but air quality has improved overall: The ozone readings across the area have fallen steadily since the late 1980s despite significant population growth, and Houston now ranks as only the seventh most ozone-polluted city in the country.³³

According to EPA measurements, Harris County experienced 23 days during the year 2012 when the air was unhealthy for sensitive groups, three days of "generally" unhealthy air quality, and one day of "very unhealthy" air quality;³⁴ this equates to about one out of every 14 days when the air was demonstrably unhealthy. Poor air quality aggravates respiratory illnesses such as asthma. According to the 2010 BRFSS, five percent of Houston residents suffer from asthma. This was confirmed in the 2006 KIHAS, which found that 7 percent of all Harris County residents said they were currently suffering from asthma, and 11 percent said they had at some point in their lives been diagnosed with the disease.

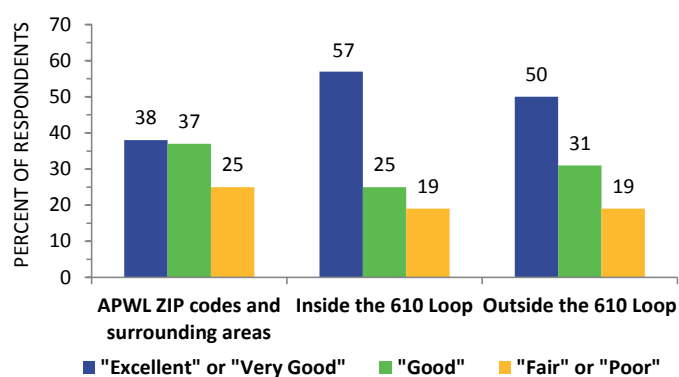
Figure 14 - Ratings of Air Quality and Concerns about Air Pollution (HAHS)



The respondents in the HAHS were asked to evaluate the quality of Houston's air. As indicated in Figure 14, 38 percent ranked Houston's air quality as "fair" and another 26 percent said "poor." A majority (52 percent) of area residents also said they were "very concerned" about the "effects of air pollution from industry on your family's health," with another 31 percent saying that they were "somewhat concerned." In addition, almost half (48 percent) of the survey participants said they were "very concerned" about the health effects of "fumes and smoke from cars and trucks."

In order to heighten public awareness of air quality issues and to encourage efforts to reduce emissions, the Texas Commission on Environmental Quality (TCEQ) maintains an "Air Pollutant Watch List" (APWL), designating the areas in various cities and counties that have elevated concentrations of air pollutants and toxics. In 2012 the TCEQ placed ten of Harris County's ZIP codes on its APWL designation, citing the high levels of benzene in the Galena Park and Pasadena areas and of styrene in the Lynchburg Ferry area,³⁵ all of which are near the Houston Ship Channel in the southeast section of the city.³⁶

Figure 15 - Self-Reported Health Status by Proximity to the APWL ZIP Codes (2001-2013 KIHAS, Combined)



Drawing on the combined data from the 13 years of the KIHAS, Figure 15 compares respondents from three different locations on their self-reported state of health. The three groups are: (a) the survey participants who are living in one of the ten specified APWL ZIP codes, along with the sixteen ZIP codes that are immediately adjacent to them;³⁷ (b) the respondents living in the other ZIP codes located inside the 610 Loop; and (c) those residing in ZIP codes located in Harris County outside the Loop.

As indicated in the Figure, the KIHAS respondents who live in or near the APWL-designated ZIP codes were more likely (at 25 percent) than those living elsewhere in Harris County (19 percent) to report that their current state of physical health was fair or poor. The finding is confirmed in the HAHS data: 26 percent of those living in the APWL ZIP codes and surrounding areas reported that their health was fair or poor, compared to 16 percent of the respondents from other areas inside the Loop and 18 percent of those from other parts of Harris County.

Further confirming the importance of location, the residents in each of these three areas also differed in the extent to which they expressed concern about the impact of air pollution on their family's health. More than half (54 percent) of the survey participants living in or near the APWL ZIP codes said they were "very concerned" about the health effects of air pollution, compared to 50 percent of those living in other ZIP codes inside the 610 Loop, and 42 percent of those living elsewhere in Harris County outside the Loop.

Area residents who are living in the most polluted areas of the city are generally older, less affluent, less educated, and more likely to be minorities than those who are able to live elsewhere in the county. Table 5 makes use of the regression model

to determine if the relationship between the ZIP codes of the respondents' home residences and their self-reported health status remains statistically significant, even after rigorously controlling for the impact of age, income, education, ethnicity, and insurance coverage.

The model indicates that the survey participants living in or near the APWL ZIP codes did indeed (by 28 percent) have significantly greater odds than the respondents living elsewhere in Harris County of reporting that their current state of health was fair or poor, even among all ethnicities and at the same levels of education, income, and age. The ambient air quality in the neighborhood is clearly associated with self-reported health, over and above the existing relationship between residential location and socioeconomic status. Important efforts are under way in these communities, spearheaded by groups such as Air Alliance Houston, to educate residents about local air pollution issues and to advocate for more effective environmental policies.



Table 5 - Logitics Regression of Proximity to the APWL Zip Codes on Self-Reported Health, Controlling for the Structural Variables and for Insurance Coverage (2001-2013 KIHAS, Combined)

Independent Variable	Self-Reported "Fair" or "Poor" Health			
	Coefficient	Standard Error	Odds Ratio (OR)	1-OR
(A) Socioeconomic Status				
(1) Education ^a				
High School Diploma	-.110	.126	.896	-.104
Some College	-.261*	.126	.770	-.230
College Degree	-.781***	.139	.458	-.542
(2) Income ^b				
\$35,501 to \$50,000	-.449***	.112	.638	-.362
\$50,001 to \$75,000	-.522***	.109	.593	-.407
More than \$75,000	-.776***	.106	.460	-.540
(B) Demographic Characteristics				
(3) Ethnicity ^c				
Black	+.423***	.095	1.526	+.526
Latino	+.195*	.100	1.216	+.216
Asian	+.038	.281	1.039	+.039
(4) Age	+.023***	.002	1.023	+.023
(5) Female	-.101	.073	.904	-.096
(C) Having Health Insurance ^d	-.460***	.096	.631	-.369
(D) Living in or near APWL ZIP Codes^e	+.248**	.090	1.281	+.281
Constant	-.457***	.144	.633	-.367
N	5,275			

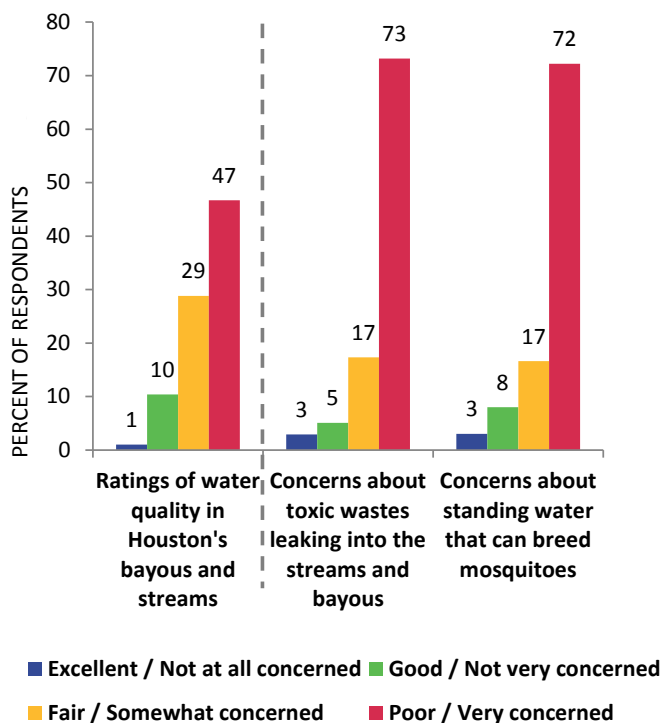
^a Reference group: Less than high school.
^b Reference group: Less than \$35,000.
^c Reference group: Anglos.
^d The question about health insurance coverage was included in the 2001, 2003-2012 surveys. Reference group: Living in areas other than APWL ZIP codes or its surrounding areas.

*p < .05, **p < .01. ***p < .001 (two-tailed tests).

Water quality. Houston's water sources – its rivers, reservoirs, and groundwater – have also been subjected to various forms of pollution. Harris County's increasingly crowded urban centers, its large areas of undeveloped land, and its dense industrial developments present many challenges for water quality management. A study by the Environmental Working Group, a research and advocacy organization specializing in environmental protection, found that the City of Houston's drinking water contains 18 hazardous chemicals in concentrations that exceed federal health guidelines.³⁸ Some of the most serious concerns have to do with high levels of bacteria, dissolved oxygen, nutrients, and PCBS/dioxin compounds, all of which have negative effects on aquatic life and human health.³⁹ The contamination is due primarily to urban and agricultural runoff and to illegal dumping into the sources of the area's water supply.

As indicated in Figure 16, almost half (47 percent) of the respondents in the HAHS rated “the quality of the water in Houston's bayous and streams” as “poor,” and another 29 percent gave it a rating of “fair.” Strikingly, more of the survey respondents were concerned about the health effects of poor water quality than of poor air quality: As indicated earlier, 52 percent said they were “very concerned” about the health effects of “air pollution from industry,” but almost three-fourths (73 percent) expressed that level of concern with regard to “toxic wastes leaking into our streams and bayous.” Another 72 percent said they were “very concerned” about “standing water that can breed mosquitoes in your neighborhood.”

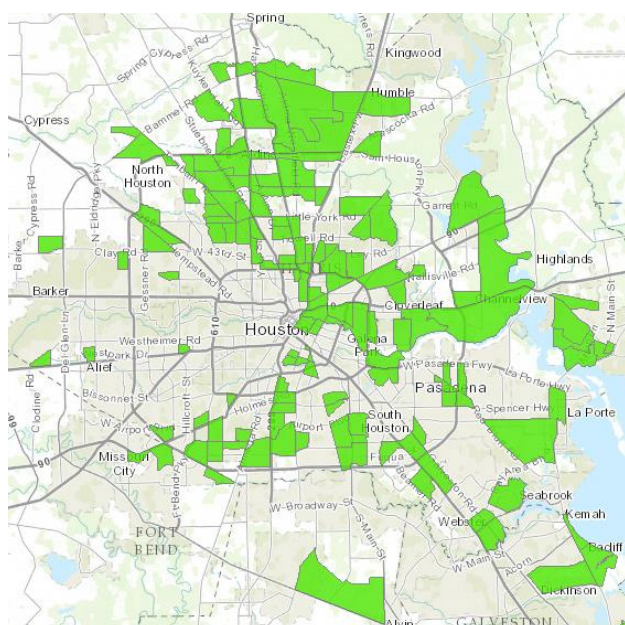
Figure 16 - Ratings of Water Quality and Concerns about Water Pollution (HAHS)



Neighborhood Characteristics and Health-Related Behaviors

Food insecurity. The respondents in the HAHS were asked, “How serious a problem has it been for you in the past year to pay for the groceries to feed your family?” More than one-fourth (27 percent) said that this had been a “somewhat” or “very serious” problem. Not surprisingly, these responses are strongly associated with education, income, and ethnicity, as well as with the respondents’ own self-rated health status: 31 percent of the survey participants who said they had difficulty paying for the groceries to feed their families also reported that their current health status was fair or poor, compared to 14 percent of those who said that paying for food was “not much of a problem.”

Figure 17 - The USDA Map of Houston Area Food Deserts, Reflecting Both Income and Access



Source: USDA Food Access Research Atlas.⁴³ Data are from the 2012 report, “Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data.”

Supermarkets are the main way of providing Americans with fresh and healthy food options, but they are not always readily available. A study conducted in 2011 found that the greater Houston area contains one supermarket for every 12,000 people, whereas the national average is one for every 8,600 people.⁴⁰ Some 440,000 Houston area residents live in areas designated as “food deserts” – neighborhoods that are judged to provide inadequate access to grocery stores and fresh foods.^v Not surprisingly, these are primarily found in historically underserved communities, such as inner-city and rural areas, and particularly in low-income communities of color.⁴¹

The USDA created a helpful tool to capture the location of food deserts and to measure access to healthy and affordable foods nationwide. Figure 17 shows the census tracts in the Houston region that were identified as both low-income and as having inadequate access to healthy foods.^v These underserved areas are heavily concentrated on the eastern side of the city, in the triangle of neighborhoods between U.S. 59 North and the Interstate 10 East; and east of Highway 288 on the south side. Residents in areas that have no large local grocery stores are more likely to experience diet-related health problems such as obesity and diabetes.⁴²

Almost 15 percent of the respondents in the HAHS disagreed with the suggestion that they had “easy access to fresh fruit and vegetables in your neighborhood.” Almost half (48 percent) of those who said they had easy access to fresh foods rated their current health as excellent or good, compared to only 21 percent of those who strongly disagreed with the suggestion that healthy foods were readily accessible in their neighborhoods. In the regression model (not shown), when the cumulative impacts of income, education, and ethnicity are entered into the equation, the relationship between access to healthy foods and self-reported health status disappears. The interconnection, important as it is, exists only because access to healthy foods and self-reported health are both so closely associated with income, education, and ethnicity.

^v The U.S. Department of Agriculture (USDA) defines a “low-income census tract” is as one in which the poverty rate is 20 percent or higher, or the median family income is less than or equal to 80 percent of the metropolitan area’s overall median family income. A “low-access community” is one in which at least 500 people and/or at least 33 percent of the census tract’s population live more than one mile away from a supermarket or large grocery store.

The Urban Health Program at the Kinder Institute for Urban Research has developed a comprehensive guide to all farmers' markets operating within the city of Houston. The report, entitled "A Guide on Local Agriculture for Houstonians," lists all farmers' markets and other local sources of fresh produce in the Houston metropolitan area (inside Beltway 8), and provides a map showing the location of markets where organic or local produce are available and where vendors accept payment via credit/debit cards, SNAP, or WIC.⁴⁴ Many other Houston initiatives (such as CAN DO Houston, Healthy Living Matters,⁴⁵ and the Go Healthy Houston Task Force) are also making important contributions to the ongoing efforts to create more healthy communities.

Physical Activity. Regular physical exercise is another important factor in maintaining vitality, helping to control weight, and reducing the risk of a variety of preventable conditions such as heart disease and diabetes.⁴⁶ Moderate-intensity aerobic activity, for example brisk walking for a total of 150 minutes per week, is highly recommended by the CDC and is safe for most people. As indicated in Figure 18, a third of the HAHS respondents said they were "very satisfied" with "the amount of physical activity you're generally getting these days," and another 40 percent were "somewhat satisfied." Anglos (at 37 percent) were the most likely to be "very satisfied," followed by Hispanics (33

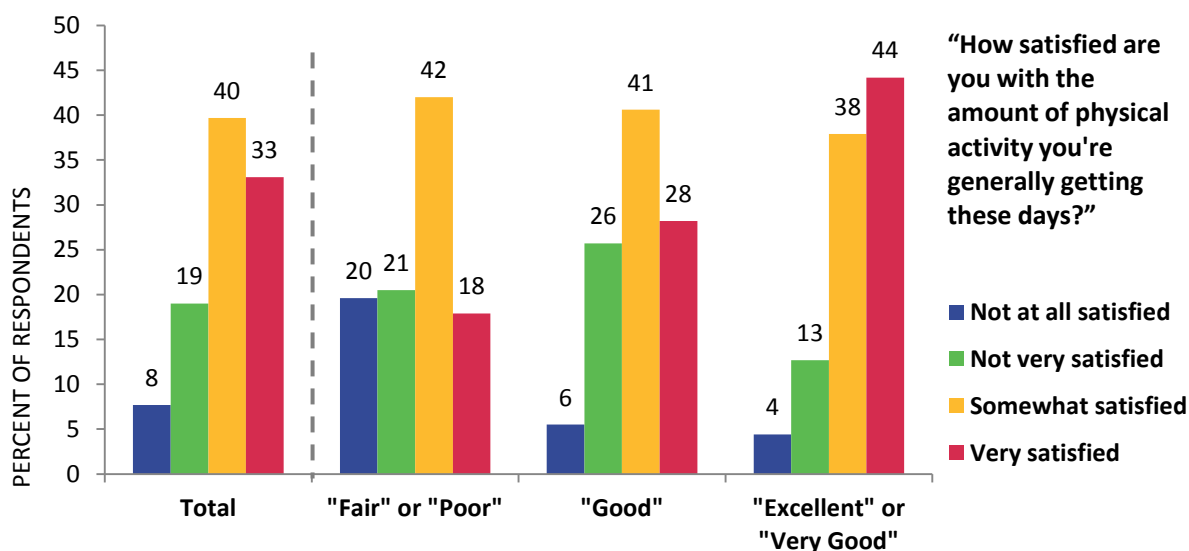
percent). Only 23 percent of the African-American respondents said they were "very satisfied" with their level of physical activity.

Figure 18 also shows the relationship between such satisfaction and self-rated health. One-fifth (20 percent) of the respondents who reported their physical health as fair or poor said they were not at all satisfied with the amount of physical activity they were getting, compared to just 4 percent who said their health was excellent or very good.

When the respondents who were not satisfied with their activity levels were asked in an open-ended question to indicate "the most important reason that kept you from getting the amount of exercise that you would like," more than 40 percent said they were "too busy," had "no time for exercise," or were "too tired after work." Another 16 percent admitted that the main reason was "sheer laziness." Another one-fourth (27 percent) indicated they had existing health problems that prevented them from getting more exercise. Only 5 percent said that there was no convenient place where they could get the physical activity they wanted.

As we have seen, almost three-fourths of the respondents were at least somewhat satisfied with their level of physical activity; 60 percent of those who expressed such satisfaction reported that they

Figure 18 - Respondents' Satisfaction with Their Level of Physical Activity, by Their Self-Rated Health Status (HAHS)



had engaged “in enough vigorous activity (through sports or exercise) to work up a sweat” several times a week during the past month. One-fifth (18 percent) of the survey participants said they had not engaged in any physical activity at all during the past month. Similarly, the 2010 BRFSS found that 22 percent of the Houston respondents reported engaging in no leisure-time physical activity at all during the previous month.⁴⁷ The figure for all Texas adults was 27 percent.

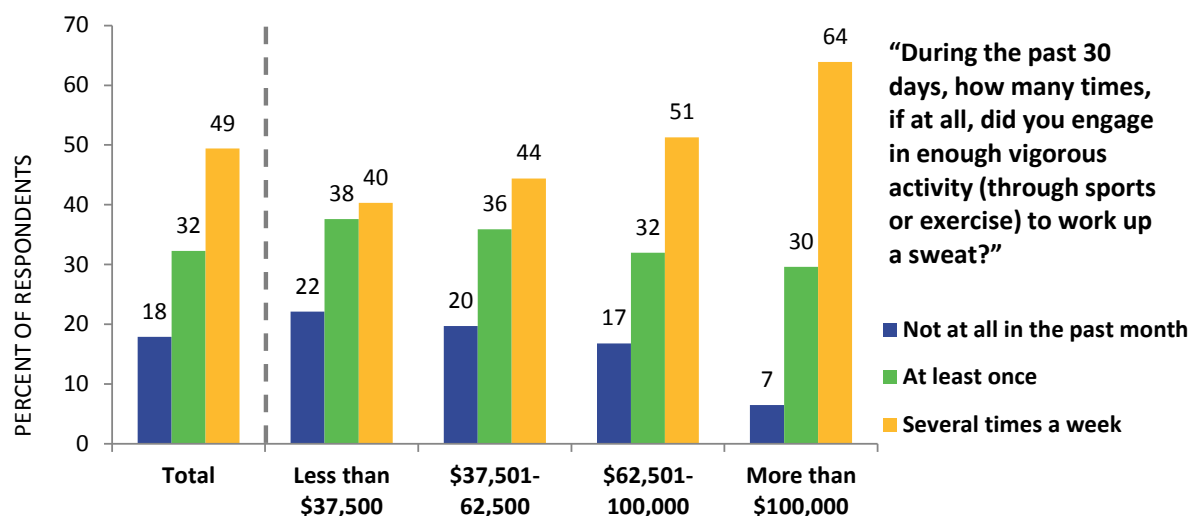
Not surprisingly, as age increases, the likelihood of frequent exercise decreases. Almost two-thirds (63 percent) of the respondents in the HAHS who were under the age of 30 said they exercised several times a week, and just 10 percent said they got no exercise at all. In contrast, 29 percent of area residents aged 60 and older reported no vigorous physical activity at all in the past month.

Household income is also correlated with the reported frequency of physical activity. As indicated in Figure 19, the percent of the survey participants who said they had not engaged in any vigorous physical activity at all during the past week dropped from 22 percent among those with household incomes below \$37,500 to just 7 percent in the highest income bracket. Almost two-thirds (64 percent) of the wealthiest respondents reported exercising multiple times per week, compared to just 40 percent of the low-income respondents.

People who engage in vigorous sports or other activities are less likely to report being in fair or poor health than those who do not get any meaningful exercise. Among all the Anglo respondents in the HAHS who were aged 45 or older and reported household incomes of more than \$62,500, only 7 percent of those who said they had engaged in vigorous activities during the past 30 days said they were in poor health, compared to 14 percent of those who did not get any exercise.

Regression analyses indicate further that engaging in vigorous physical activity is indeed associated with self-reported health even after all the structural components are controlled. Does better health lead a person to engage in more physical activity, or does the exercise itself lead to better health? Both directions of causality are surely at play, and the high correlation with income found for both physical activity and self-reported health may well help to explain why differences in socioeconomic status are so powerfully related to health status.

Figure 19 - The Reported Frequency of Vigorous Physical Activity by Income Level (HAHS)



Walkability. Houston is ranked by “WalkScore.com” as the 23rd most walkable large city in America (i.e., among cities with populations greater than 380,000). The city’s neighborhoods that were identified as the most walkable were all located within the 610 loop; they included the Neartown-Montrose area, the Greenway-Upper Kirby area, and Midtown. When asked about the statement, “my neighborhood has plenty of safe and well-connected sidewalks,” fully 47 percent of the survey participants strongly agreed, and only 24 percent strongly disagreed. As indicated in Figure 20, the respondents who lived outside Houston’s city limits were more likely (at 70 percent) than those residing inside the Loop (at 58 percent) to agree that their neighborhoods have plenty of safe and well-connected sidewalks.

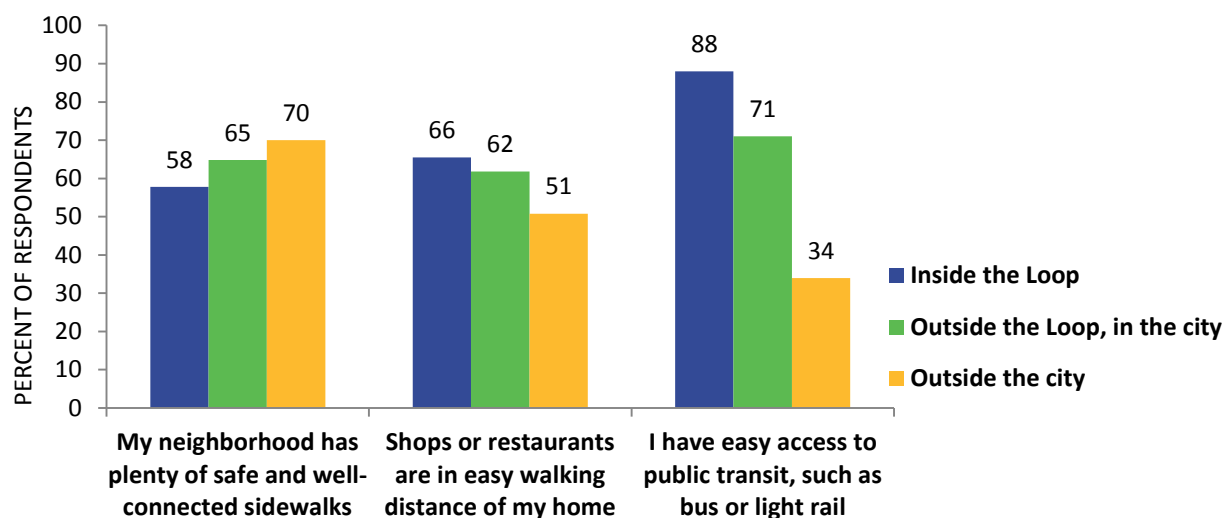
Good sidewalks do not necessarily mean that people can walk to where they need to go, since that depends on proximity to local amenities. Well over half (57 percent) of all the HAHS respondents answered in the affirmative when asked if there were “shops or restaurants within easy walking distance of your home.” Of those living inside the Loop, Figure 20 indicates that 66 percent said they lived within walking distance of shops or restaurants. This was the case for 62 percent of those who lived in the city but outside the Loop and for 51 percent of the respondents

who lived in the surrounding areas of Harris County beyond the city limits. Homes outside Houston may be more likely to have safe and well-connected sidewalks than homes in the city, but they are less likely to have shops or restaurants within easy walking distance.

Walkable neighborhoods with easy access to local amenities offer many health benefits compared to the car-dependent lifestyle that is so much more typical of this low-density, spread-out metropolitan area. The KIHAS has found over the years that increasing proportions of Harris County residents have been expressing a preference for more walkable options. In alternating years since 2008, the survey respondents were asked what type of housing they would prefer if they could live anywhere they wanted.

The numbers opting for “a single-family home with a big yard, where you would need to drive almost everywhere you want to go” dropped from 59 percent in 2008 to 47 percent in 2012. The proportion saying they would choose instead “a smaller home in a more urbanized area, within walking distance of shops and workplaces” increased from 36 percent in 2008, to 39 percent in 2010, and to 51 percent in 2012.⁴⁸ Similarly, one-half of all area residents in the 2013 KIHAS said they would prefer to live in “an

Figure 20 - Neighborhood Amenities in the Houston Area by Location of Home Residence (HAHS)



area with a mix of developments, including homes, shops, and restaurants,” rather than in a “single-family residential area.” Houston developers would be well advised to provide effective responses to these changing demands.

Because using public transit involves some walking to and from stations, transit users generally engage in more physical activity than those who commute only by car.⁴⁹ Houston’s mass transit consists of a large bus system and a well-established 7.5-mile light rail system, which is in the process of expanding to 20 miles. More than a third (36 percent) of the survey respondents strongly agreed with the suggestion that “I have easy access to public transit, such as a bus or light rail, in my neighborhood,” while another third (34 percent) strongly disagreed.

As also shown in Figure 20, there is a strong relationship between reported access to mass transit and the location of the respondents’ residence in the metropolitan area. Fully 88 percent of the survey respondents whose homes were inside Loop 610 agreed that they have easy access to transit, compared to 71 percent of those residing inside the city but outside the Loop, and to just 34 percent of those living in the surrounding areas beyond the city limits. Compared to other large metropolitan areas, this spread-out low-density city is still far behind in the provision and usage of public transit.

In New York City, 31 percent of commuters are public transit users, as are 15 percent in San Francisco and 14 percent in Washington, DC.⁵⁰ The city of Houston has been actively promoting bicycle commuting with the B-cycle program, and it is in the process, through the remarkable “Bayou Greenways 2020” Initiative, of constructing a network consisting of over 250 miles of off-street bike lanes and bayou trails.⁵¹ There is room for growth in this connection: Today, about 0.4 percent of area residents say they bike regularly to work.⁵² According to the 2013 KIHAS, more than 80 percent of all workers in Harris County drive alone when commuting to their jobs.

The respondents in the HAHS were asked how often during the past year they rode “on Houston’s mass transit, such as bus or light rail, to get where you wanted to go?” Among the survey participants living in areas of Harris County beyond the city limits, 86 percent said they had not used any public transit at all during the past year, compared to 63 percent of those living inside the Loop. Fewer than 8 percent of all respondents said they used public transit at least once a week, and one-third of those who said they use public transit on a regular basis actually disagreed when asked if they had easy access to public transit in their neighborhood.

Greater use of alternative modes of transportation might encourage area residents to integrate exercise into their daily routines and help reduce obesity. Only 30 percent of the respondents in the HAHS said they were “very satisfied” with their current weight; 39 percent were “somewhat satisfied,” and 30 percent were either “not very satisfied” or “not at all satisfied.” The 2010 BRFSS estimated that fully 66 percent of Houston area residents were either overweight or obese.⁵³ Close to three of every four Hispanics and blacks were found to be overweight. This condition can have serious consequences for health, including hypertension, diabetes, heart disease, cancer, and many other problems.⁵⁴ In the HAHS, 19 percent of blacks and 18 percent of Latinos said “yes,” when asked if they had “any health issues right now that are affected by your current body weight,” compared to 11 percent of Anglos.



The use of public resources. More than half (58 percent) of the survey respondents said there was “a hike or bike trail within a mile or so of your home.” Yet 57 percent indicated that they had never visited “any of Houston’s bayous or hike and bike trails, whether for exercise, or recreation, or for commuting to work during the past 12 months,” and only 14 percent said they had done so as often as once a week. Living near a hike and bike trail was highly correlated with visiting frequency, but fully 46 percent of those who reported having a nearby hike and bike trail said they had not visited “any of Houston’s bayous or hike and bike trails” during the past year.

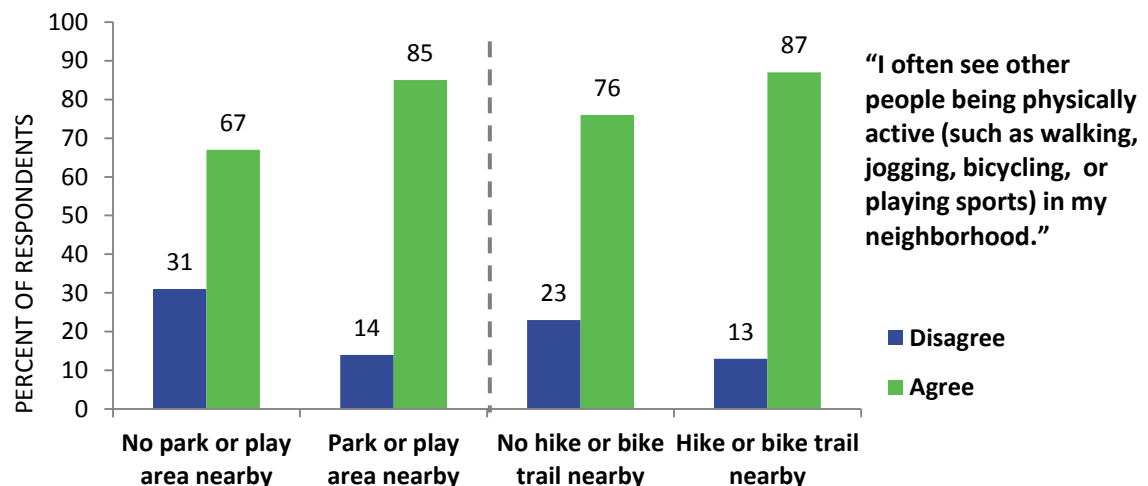
The survey found similar trends with regard to the availability and usage of Houston’s parks. Fully 83 percent of all respondents said there was “a park or play area within a mile or so of your home,” but 38 percent said they had not once visited a park or playground during the past year. Nevertheless, proximity to parks and trails does have a generalized effect on perceptions of the neighborhood as a whole. As indicated in Figure 21, the survey participants who said they lived within a mile of a “park or play area” or a “hike and bike trail” were more likely than those living farther away from these amenities to agree with the suggestion that “I often see other people being physically active (such as walking, jogging, bicycling, playing sports) in my neighborhood.”

Workplaces differ significantly in the degree to which they provide employees not only with health care insurance or paid sick and personal leaves, but also with worksite wellness programs that are designed to lower medical costs and increase productivity by encouraging their employees to engage in more physical activity and healthier behaviors. In a 2012 national survey of 512 large companies (those with 1,000 or more employees), 87 percent were found to have a wellness program in place.⁵⁵ The programs often include financial incentives for healthy behaviors, such as subsidized gym memberships, discounts on insurance premiums, and even cash payouts to encourage regular health screenings or physical activity.⁵⁶

A study by the RAND Corporation found that programs aimed at helping employees with chronic illnesses (e.g., high blood pressure, diabetes) resulted in significant cost savings to the companies. Lifestyle management programs, however, which aim to reduce health risks through weight loss or stress management, did not demonstrably achieve any net savings.⁵⁷

Almost half (44 percent) of the survey respondents in the HAHS who were employed said that their workplace offers “activities that are designed to keep employees healthy.” Of those whose workplaces offered such programs, 40 percent said they participated in such activities at their workplace at least once a week during the past 12 months, 27 percent said they participated at least occasionally, and 32 percent said they made no use at all of those resources.

Figure 21 - The Perceived Physical Activity in the Neighborhood by Proximity to Local Parks and Trails (HAHS)



It is interesting to note that in all these varied areas – having to do with the use of public transit, of nearby parks or hike and bike trails, and of wellness programs at one’s place of work – the surveys suggest that many area residents are failing to take advantage of readily available opportunities for health-enhancing activities.

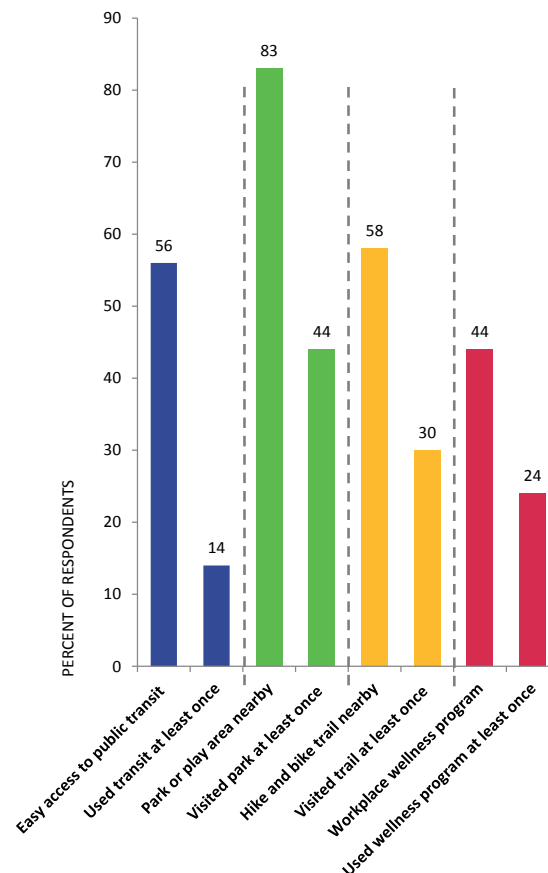
Figure 22 illustrates the discrepancy between resource availability and participation. As was indicated in Figure 10, when asked what determines a person’s overall health, the HAHS respondents attributed the strongest effects to “what that person eats and how much physical activity that person gets,” yet many are simply not motivated enough or are not given sufficient encouragement to take advantage of the available opportunities to engage in the healthy behaviors they recognize to be so important.

Participation and belonging. Because levels of stress are strongly implicated in health outcomes, a person’s overall health and well-being may also be affected by the nature of the social relationships that characterize their neighborhoods. People who live in places with high levels of social capital, interpersonal trust, and a strong sense of belonging have been found to report better physical and mental health.⁵⁸ Conversely, living in neighborhoods with low levels of social cohesion and high degrees of alienation and social disorder has been shown to be related to high levels of anxiety and depression,^{59, 60} and to lower levels of self-rated health. The data from the Houston surveys can help to clarify the degree to which neighborhood characteristics such as these are associated with the health of residents, even after individual differences in age, education, income, and ethnicity are taken into account.

A Pew Research Center study in 2012 reported that, of the ten largest metropolitan areas in the country, Houston is the most segregated by income.⁶¹ The Census estimates that 18.7 percent of all Harris County residents were living in poverty in 2010, with 11 percent residing in extreme-poverty neighborhoods – areas in which at least 40 percent of the residents are living below the poverty line. Almost a fifth (19 percent) of those whose homes were inside the Houston city limits were living in areas of concentrated poverty.⁶² Concentrated poverty is often



Figure 22 - The Availability of Health-Promoting Resources and Their Frequency of Use during the Past Year among Harris County Residents (HAHS)



accompanied by very low levels of social capital as a result of social exclusion and fragile social networks.^{63, 64} Such communities offer far less access to employment opportunities and to public services,⁶⁵ and they are the most likely to suffer when public spending and social services are reduced.⁶⁶

The 2012 KIHAS included a special module of questions measuring the respondents' sense of belonging in their neighborhoods and the extent of their participation in neighborhood activities. The respondents' feeling of connectedness to their neighborhoods was measured by a scale composed of three questions. The survey participants were asked whether they agreed or disagreed with the following statements: (a) "I feel like I belong in my neighborhood"; (b) "Living in my neighborhood gives me a sense of community"; and (c) "I (do not) think of myself as different from most of the other people in my neighborhood." Similarly, four items were combined to measure neighborhood participation: the respondents were asked how often, if at all, they participated in neighborhood activities having to do with (a) arts or cultural activities, (b) neighborhood clubs and associations, (c) non-profit activities, and (d) block parties.

As indicated in Table 6, the logistic regression revealed that both of these composite measures of neighborhood involvement were significant independent correlates of self-reported health, after controlling for the effects of differences in age, gender, education, income, ethnic background, and insurance coverage. The analysis revealed that residents who expressed a greater sense of community and stronger feelings of connectedness in their neighborhoods had significantly lower odds of reporting that they were in fair or poor health (OR=0.962, $p<0.05$).

The composite measure of neighborhood participation was also associated with self-rated health (OR=0.883, $p<0.06$) when controlling for the other variables, including the scale measuring neighborhood belonging. The more actively involved the respondents were in neighborhood activities, the less likely they were to report being in fair or poor health. Here, again, the arrow of causality is likely to point in both directions: better health leads to more participation, and more participation may reduce stress and thus contribute to better health.

Other studies have also found that living in neighborhoods with higher levels of social trust is associated with more positive reports of one's overall state of physical health.⁶⁷ Residents who participate in close relationships of solidarity and trust are more likely to work together for common objectives, such as sustaining clean and safe public spaces, looking out for neighborhood children, and maintaining informal controls that discourage health-damaging or undesirable behaviors such as smoking or littering.⁶⁸ The Houston surveys show clearly that the kinds of neighborhoods in which people live play an important role in fostering or discouraging healthy behaviors, with significant implications for the overall health of the community.■

Table 6 - Logistic Regression of the Composite Measures of Neighborhood Belonging and Participation on Self-Reported Health Status (2012 KIHAS)

Independent Variable	Self-Reported "Fair" or "Poor" Health (KIHAS 2012)			
	Coefficient	Standard Error	Odds Ratio (OR)	1-OR
(A) Socioeconomic Status				
(1) Education ^a				
High School Diploma	-.307	.265	.736	-.264
Some College	-.254	.262	.775	-.225
College Degree	-.944**	.302	.389	-.611
(2) Income ^b				
\$35,501 to \$50,000	-.272	.239	.762	-.238
\$50,001 to \$75,000	-.391	.242	.676	-.324
More than \$75,000	-1.060***	.242	.346	-.654
(B) Demographic Characteristics				
(3) Ethnicity ^c				
Black	+.583**	.209	1.792	+.792
Latino	+.397*	.219	1.488	+.488
(4) Age	+.027***	.005	1.028	+.028
(5) Female	-.069	.164	.934	-.066
(C) Having Health Insurance	-.579**	.200	.561	-.439
(D) Neighborhood Belonging (three items)	-.039*	.019	.962	-.038
(E) Neighborhood Participation (four items)	-.124*	.065	.883	-.117
Constant	-.637	.463	.529	-.471
N	990			

^a Reference group: Less than high school.

^b Reference group: Less than \$35,000.

^c Those indicating their ethnicity as "Asian" or "Other" were omitted because of their small numbers in this one (2012) survey. Anglos make up the reference group.

* $p < .06$, ** $p < .01$, *** $p < .001$ (two-tailed tests).

SUMMARY AND CONCLUSIONS

Introduction. Supported by a grant from Houston Endowment Inc. and aided by an advisory panel of health experts, researchers at Rice University's Kinder Institute for Urban Research developed the 2012 "Houston Area Health Survey" (HAHS). Through systematic interviews with a representative sample of 1,200 Harris County residents, the surveys measured area residents' self-reported health status, their experience with Houston's health care delivery systems, and the health-related characteristics of their neighborhoods. Buttressed by additional rich data from 13 years of the "Kinder Institute Houston Area Survey" (KIHAS), this report seeks to identify the most important forces that demonstrably underlie and help to account for the wide disparities among Harris County residents in their self-reported health and personal well-being.

Social structures and health disparities. In both the HAHS (2012) and the KIHAS (2001-2013), the survey participants were asked to rate their current state of physical health as "excellent, very good, good, fair, or poor." This simple measure of self-reported health has been found to be a remarkably reliable indicator of a person's actual state of health. In all the survey years and from both sources of data, approximately 45 percent of area residents have said that their health was "excellent" or "very good"; another 35 percent were in "good" health, and fully one-fifth (19 to 21 percent) of all Harris County residents said their current state of health was only "fair" or "poor." What are the most important factors that account for these disparities in self-reported health?

Metropolitan areas that have higher levels of income inequality also have higher proportions of residents who report that they are in fair or poor health. In the Houston surveys, sophisticated regression analyses make it clear that each increase in the respondents' level of household income is significantly associated with decreasing odds that they will report being in fair or poor health, even after controlling for the effects of differences in age, education, ethnicity, and gender.

Similarly, at all levels of income and age, and among all ethnicities, educational attainment beyond high school is directly and powerfully associated with better health outcomes. African Americans and Hispanics, with the other structural variables controlled, have significantly higher odds than Anglos and Asians of reporting that they are in poor health. Factors beyond and in addition to the ethnic differences in education and income are contributing to the more negative health outcomes reported by the black and Latino residents of Harris County.

Education, income, ethnicity, and age are thus decisive, pervasive, and independent correlates of the health disparities in Harris County. The sharp differences in health and well-being across the region and throughout America exist in large part because the social and economic inequalities are so deeply ingrained and growing larger in this society. When asked to identify the most important determinants of a person's health, the participants in the HAHS survey were more likely to cite individual and behavioral factors (such as diet and physical activity) than they were to point to the economic and ethnic disparities.

With controls in place for the effects of age, ethnicity, education, and income, we assess the additional importance for self-reported health of these more subtle factors, such as having health insurance, engaging in health-related physical activities, living in areas that are particularly prone to air pollution, or feelings of connectedness and engagement in the neighborhood. Are any of these other factors demonstrably associated with self-reported health status after all the powerful structural forces (age, income, education, and ethnicity) are taken into account?

Access to health care. At all levels of education, income, and age, and among all ethnicities, people with health insurance have readier access to high quality health care. Latino immigrants generally report worse health than the U.S.-born Latinos, but

they are also far less likely to have health insurance. The statistical analyses reveal that the health disparities among Latinos by immigration status disappear when having insurance is entered into the equations. In the general regression model, respondents of all ethnicities and at all levels of age and SES who are covered by health insurance have significantly higher odds of reporting that their state of health is excellent or good, and they are far more likely than those without insurance to give positive ratings to the quality of health care available to them in the Houston area.

Houston is home to the largest medical complex in the world and boasts some of the highest standards for patient care and medical research. At the same time, however, Houston has one of the highest proportions among major American cities of children without health insurance (at 19 percent), and Texas in 2012 had the highest rate of uninsured in the nation (24 percent of the state's population). People without adequate insurance are severely limited in the types of health services they can access.

Fully 12 percent of the HAHS respondents said there was a time during the past year when they were unable to get the medical care they needed, mainly (more than half of them said) because of a lack of adequate health insurance. Providing greater access to affordable health insurance for all area residents might well contribute importantly, the surveys suggest, to improving the health and well-being of the Harris County population as a whole. Unfortunately, the state of Texas so far has chosen not to expand Medicaid to the working poor, leaving a large gap in insurance coverage.

Environments, neighborhoods, and health. Aside from the direct effects on self-reported health of age, socioeconomic status, ethnicity, and insurance coverage, neighborhood characteristics can support or impede health-promoting behaviors, and exposure to environmental hazards has obvious health implications. The TCEQ has placed 10 local ZIP codes on its Air Pollutant Watch List, signaling particularly the high levels of toxic pollutants along the Houston Ship Channel.

In the KIHAS surveys, the respondents who lived in or adjacent to those locations were indeed significantly more likely than those living elsewhere to report that their own state of health was only fair or poor and to say that they were “very concerned” about the effects of air pollution on their family's health. The relationship between health and residence remained statistically significant even after all differences by education, income, age, ethnicity, and insurance coverage were entered into the regression models. The data confirm the strong independent effect of environmental hazards on self-reported health, above and beyond the powerful relationship that also exists between area residents' socioeconomic status and their exposure to pollution.

The HAHS respondents were even more worried about the health effects of poor water quality than of poor air quality. Half of the survey participants said they were “very concerned” about the “effects on your family's health” of air pollution from industry and of smoke and fumes from cars and trucks, but almost three-fourths of all area residents expressed such concerns over toxic wastes leaking into streams and bayous.

Inadequate access to quality food also has obvious health implications. Despite Houston's growing economy and low unemployment rates, the inequalities have only deepened in recent years: More than one-fourth of all the survey participants in the HAHS said they had difficulty during the past year paying for the groceries to feed their families. Houston is undersupplied with supermarkets and oversupplied with “food deserts.” Inadequate access to healthy affordable food is clearly part of the reason why poverty and poor health are so strongly interconnected.

One-third of the HAHS respondents said they were “very satisfied” with their amount of physical activity. Almost half reported that, for at least several times a week during the past month, they had engaged “in enough vigorous activity (through sports or exercise) to work up a sweat.” Regression analyses indicate that engaging in vigorous physical activity is significantly associated with self-reported

good health. The strong correlation of income with both activity levels and self-rated health may be another reason why socioeconomic status is so powerfully and consistently related to health outcomes.

Walkable neighborhoods with easy access to local amenities also offer many health benefits compared to the car-dependent lifestyle more typical of this low-density, spread-out metropolitan area. Harris County residents who live inside the city limits of Houston are less likely than those in the suburbs to say that their neighborhood has plenty of safe and well-connected sidewalks, but they are more likely to say that shops or restaurants are within easy walking distance of their home and that they have ready access to public transit.

The annual KIHAS has found that increasing proportions of Harris County residents in recent years have said that they would prefer more walkable alternatives and would choose localities with a mix of developments over a single-family residential area “where you would need to drive almost everywhere you want to go.” The mayor’s recently formulated “Complete Streets and Transportation Plan” is designed to gradually transform Houston’s roadways into streets that will be safe, accessible and convenient not only for motorists, but also for public transit users, pedestrians, people of different abilities, and bicyclists.⁶⁹

More access to alternative modes of transportation might well result in healthier lifestyles and lower obesity rates. In the 2013 KIHAS, more than 80 percent of all area workers said they drive alone when commuting to their jobs. Fewer than 8 percent said they make use of public transit at least once a week. Given that an estimated two-thirds of all Harris County residents are either overweight or obese, Houston clearly needs to develop more opportunities for area residents to incorporate meaningful exercise into their daily routines. Some interesting efforts are under way to do so. The surveys indicate that Houston needs not only to provide more opportunities for physical exercise, but also to encourage many more area residents to take advantage of them.

Because the amount of stress people experience has powerful implications for health, their physical well-being may also be affected by the nature of the social relationships and support systems that their neighborhoods provide. The 2012 KIHAS developed composite measures of the respondents’ feelings of belonging and connectedness in their neighborhoods and the extent of their participation in neighborhood activities. Both of these separate measures were significantly associated with self-reported health, even after controlling for the impact of individual differences in age, gender, education, income, ethnic background, and insurance coverage. The characteristics of the neighborhoods in which people live are clearly important forces in their own right that foster or discourage the social supports, stress reducers, and healthy behaviors that significantly contribute to physical well-being.

The survey findings reviewed in these pages make it clear that the overall health of Houston area residents is impacted by critical forces operating at many different levels. Individual attributes and inclinations, the quality of the physical environment, the social support systems that neighborhoods provide, the extent of access to affordable health insurance, and above all the stark socioeconomic disparities in an era of burgeoning inequality – all of these factors influence a person’s health in demonstrably significant ways, and all of them need to be taken into account in the ongoing efforts to improve the overall health of the Houston population. It will be important to continue to measure systematically the extent and nature of such improvements through subsequent Houston surveys in the years ahead.



APPENDIX A. THE 2012 HAHS METHODOLOGY

The Survey Research Institute (SRI) at the University of Houston's Hobby Center for Public Policy administered the telephone interviews. Using "back translation" and the reconciliation of discrepancies, the questionnaire was translated into Spanish, and bilingual supervisors and interviewers were assigned to the project at all times. A list of all the survey items included in the questionnaire and the distribution of responses given for each question can be found on the institute's website at kinder.rice.edu/shear.

The SRI conducted the interviews between June 6 and July 17, 2012. Using random digit dialing (RDD), households were sampled in the Harris County area until the goal of 1,200 telephone interviews was achieved, with 840 (70 percent) of the respondents reached by landline and 360 (30 percent) by cell phone. In each household contacted by RDD, a household member aged 18 or over was randomly chosen as the eligible respondent, with initial preference given to adult males.

The response rates (indicating the number of completed interviews in relation to all potentially eligible phone numbers) were 19.1 percent for landlines and 14.5 percent for cell phones. Among all the eligible respondents who were identified and contacted, the survey's cooperation rate (the ratio of completions to interviews plus refusals and break-offs) was 38.6 percent for respondents reached by landline and 27.6 percent for those on cell phones. Social Science Research Solutions (SSRS), the Philadelphia-based research firm, conducted the weighting process, utilizing the 2008-2010 three-year ACS estimates to correct for non-response and coverage biases in the sample, and assigning weights to each case in order to ensure that the final distributions were in close agreement with the actual Harris County distributions with respect to such known population parameters as race and ethnicity, age, gender, education level, home ownership, county population, and density.

The chart below shows the way the weights given to the survey responses resulted in changes that bring the sample figures into closer alignment with the actual distributions, as reported by the 2008-2010 ACS three-year estimates for Harris County. The chart makes it clear that, despite the relatively low response rate, the demographic distributions in the survey sample are very close to the ACS figures. With the exception of a slight overrepresentation of respondents who were 60 and older and an underrepresentation of those aged 30 to 44, the proportions in the sample of males and females, of Anglos, blacks, Hispanics, and Asians, and of various levels of educational attainment are almost identical to the figures recorded in the most recent U.S. Census data. This alignment offers reassurance that the survey data are providing a representative picture of the Harris County population as a whole.

	Survey Sample (N)	Survey Sample (%)	Weighted Sample (%)	ACS 2008- 2010 ACS three-year estimates
Gender: (Adults only)				
Male	549	45.8%	49.0%	49.3%
Female	651	54.3	51	50.7
Race and Ethnicity:				
Non-Hispanic White	464	38.7%	39.0%	37.4%
African American	243	20.3	18.9	18.7
Hispanic, Latino	412	34.3	33.0	36.3
Asian	29	2.4	5.6	6.8
Age:				
18-29	161	13.4%	21.2%	25.7%
30-44	200	16.7	21.4	31.0
45-59	356	29.7	27.5	26.2
60-98	483	40.3	29.8	17.1
Education:				
Less than high school	74	6.2%	15.3%	
High school diploma	215	17.9%	25.8%	45.7%*
Some college	375	31.3	29.9	26.8*
College degree	310	25.8	18.5	18.1*
Postgraduate	209	17.4	9.5	9.5*
Parents:				
Respondents who have children	867	72.3%	68.7%	--
Respondents who have children at home	295	24.6	29.2	--
Respondents who have children under the age of six	115	9.6	12.9	--

*Note: The ACS statistics for educational attainment include only members of the Harris County population who are aged 25 years and over; the margin of error is +/- 0.2 to 0.3.

APPENDIX B. LOCAL HEALTH ADVISORS

Listed here, with deep gratitude, are the advisors and colleagues who helped the research team during 2011-2012 to develop the HAHS survey instrument and to assess the preliminary findings. We are especially grateful to Aileen Beltran, Rosemary Coffey, Justin Denney, Beverly Gor, Necole Irvin, Ken Janda, Rachel Kimbro, Elizabeth Love, Karen Love, John Mendelsohn, and the Health of Houston Survey Research Team at the University of Texas School of Public Health (Stephen Linder, Dritana Marko, Thomas Reynolds, and Jessica Tullar) for their helpful suggestions on earlier drafts of this report.

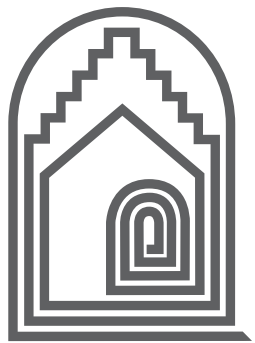
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