



# Hispanic Community Health Study Data Book

*A Report to the Communities*



**U.S. Department of Health and Human Services**  
National Institutes of Health  
National Heart, Lung, and Blood Institute

# Hispanic Community Health Study

## Study of Latinos

### Data Book

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and Blood Institute

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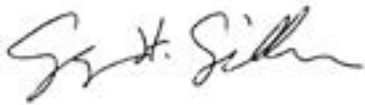


# I. Preface

We are pleased to present a summary of medical research results of the Hispanic Community Health Study/Study of Latinos to the communities and participants from the largest health study of Hispanic/Latino populations in the United States. This study seeks to understand the health issues affecting Hispanic/Latino groups in the United States and includes research on many diseases and conditions of particular importance to the Hispanic/Latino communities.

The participants in this study have understood the value of research on the causes of health conditions to improve the lives of Hispanics/Latinos in particular and all Americans in general. They have contributed many hours participating in a clinical evaluation, responding to many questions about their health status and engaging in other measures after they left the field center. The success of this study is due to their dedication and contribution of time and effort. The sponsoring organizations at the National Institutes of Health, the universities and researchers involved in this study, and all who will benefit from this research thank the participants for their commitment.

This report provides data from the first examination of participants who attended the Hispanic Community Health Study/Study of Latinos. It highlights health areas that are having a positive impact in these communities and those that need greater attention to improve lives. All who have made this study possible deserve the Nation's thanks.



**Gary H. Gibbons, M.D.**

Director

National Heart, Lung, and Blood Institute

National Institutes of Health

# II. Acknowledgments

Special appreciation is extended to the participants who contributed their time and effort and to the extraordinary staff who conducted the study. A list of staff can be seen at <http://www.csc.unc.edu/hchs/>

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The Hispanic Community Health Study/Study of Latinos (HCHS/SOL) is a collaborative study supported by contracts from the National Heart, Lung, and Blood Institute (NHLBI) to the University of North Carolina (N01-HC65233), University of Miami (N01-HC65234), Albert Einstein College of Medicine (N01-HC65235), Northwestern University (N01-HC65236), and San Diego State University (N01-HC65237). The following Institutes/Centers/Offices contributed to the HCHS/SOL through a transfer of funds to the NHLBI: National Institute on Deafness and Other Communication Disorders, National Institute of Dental and Craniofacial Research, National Institute of Diabetes and Digestive and Kidney Diseases, National Institute on Minority Health and Health Disparities, National Institute of Neurological Disorders and Stroke, NIH Office of Dietary Supplements.

## **EDITORIAL ACKNOWLEDGMENT**

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With thanks to Nancy Eng, NHLBI



# III. Introduction

## STUDY DESCRIPTION

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The Hispanic Community Health Study/Study of Latinos (HCHS/SOL), which began in 2006, is a comprehensive longitudinal multicenter community-based cohort study of Hispanic/Latino populations in the United States. Between 2008 and 2011, 16,415 U.S. Hispanic/Latino adults were recruited from a random sample of households in four communities located in the Bronx, Chicago, Miami, and San Diego, and they underwent a baseline clinic examination. Each community had more than 4,000 participants from diverse Hispanic/Latino backgrounds who self-identified as Cuban, Dominican, Puerto Rican, Mexican, Central American, or South American and were of diverse socioeconomic groups. They were selected to be representative of the target population in each community rather than the entire U.S. population. Study participants were selected to obtain approximately one-third between 18–44 years of age and two-thirds between 45–74 years of age (*Lavange et al., 2010; Sorlie et al., 2010*).

The goals of the study are to identify risk factors that may have a protective or harmful role in the development of cardiovascular disease in Hispanics/Latinos and to evaluate the role of acculturation in the prevalence and development of risk factors and disease. Study participants



**ABOVE:** Study recruiter, San Diego

---

underwent an extensive clinic examination to determine baseline cardiovascular prevalence and to identify potential risk and protective factors. The baseline examination was administered in English or Spanish based on the participant's preference. Baseline questionnaires included information on personal and family health, acculturation (including language and cultural food preferences), physical activity, diet, sleep, occupation, and other personal characteristics. Clinical assessments included hearing, vision, and dental exams, and many types of blood tests. Physical activity and sleep were assessed by use of measurement devices that participants took home with them. After the clinic visit, participants were followed regularly by telephone calls to track important health events (*Sorlie et al., 2010*).

## HOW TO READ THIS DATA BOOK – A GUIDE

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This page is a guide on how to understand the numbers and charts included in this book. Questions about health status were asked of all participants. The percentage of persons who responded that they had a disease, condition, or behavior relevant to this research is presented in charts for different groups by age, sex, background, or community.

In this Data Book, percentages and averages for health

outcomes were calculated for sex, age, and background groups. All percentages and averages are “weighted” to account for how households and people were sampled to be comparable to the 2010 U.S. Census population. All percentages and averages were also age-adjusted so that comparisons between sexes and among background groups could be compared equally. Age-adjustment was done because substantial differences exist in age among

backgrounds. For example, Cubans are, on average, older and Mexicans are, on average, younger. The only un-weighted estimates appear in Section V (Description of

Participants), where numbers of participants represent the actual counts of participants in each group.

## DEFINITION OF GROUPS

**Age:** 18 to 44 years, 45 to 64 years, and 65 to 74 years.

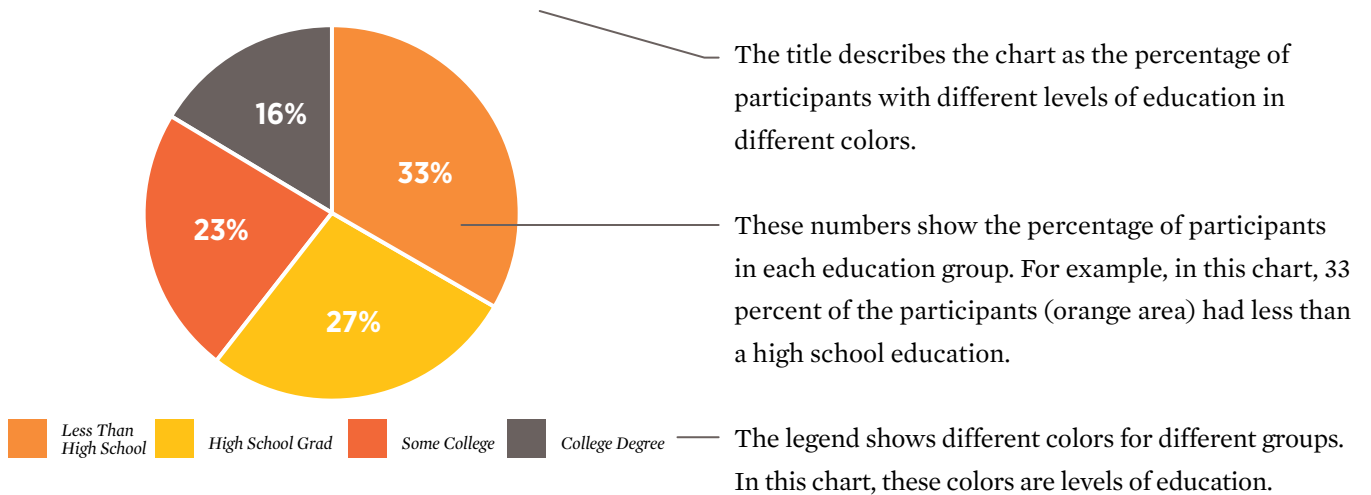
**Sex:** men and women.

**Hispanic/Latino background group:** Central American, Cuban, Dominican, Mexican, Puerto Rican, and South American.

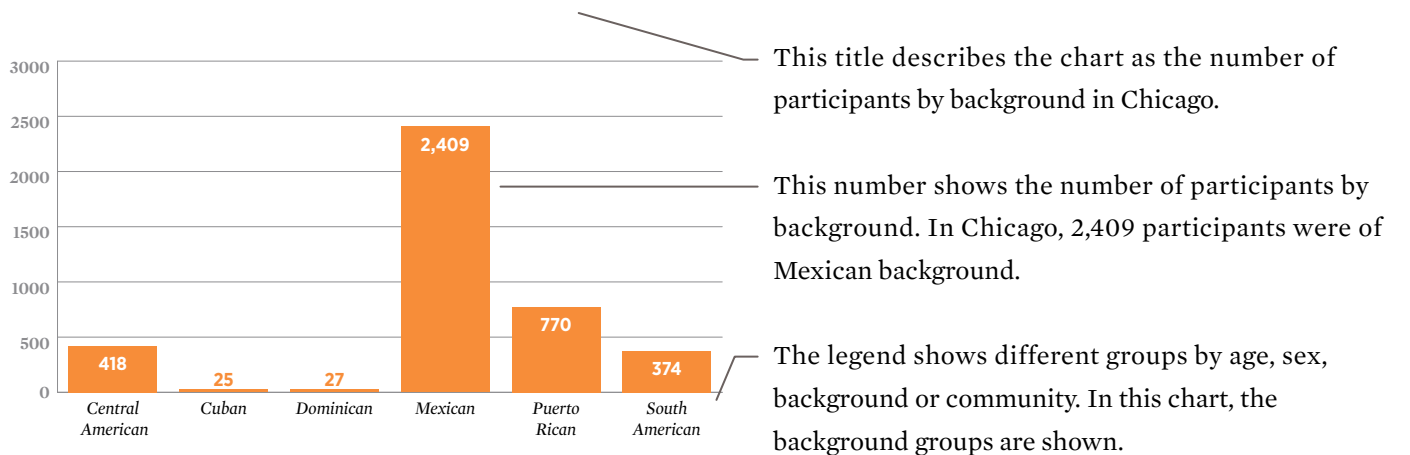
**Community:** Bronx, Chicago, Miami, and San Diego.

## DESCRIPTION OF CHARTS

**Chart 1: Percent of Participants by Level of Education (Pie Chart Example)**



**Chart 2: Number of Participants by Background – Chicago (Bar Chart Example)**



# IV. Field Center Descriptions

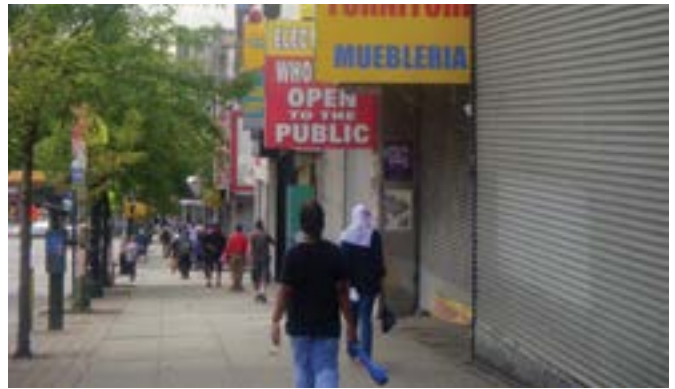
## BRONX FIELD CENTER

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The Bronx Field Center is located in Bronx, New York, which is one of five boroughs of New York City. New York City's Hispanic/Latino population grew by 8.1 percent in the past decade, reaching 2,336,076 in 2010. Hispanics/Latinos now account for 28.6 percent of the overall New York City population (*New York City Department of City Planning [NYCDCP], 2011*). The Bronx has one of the highest concentrations of Hispanic/Latino persons in any U.S. urban area—over half of the 1.4 million residents of the Bronx are of Hispanic/Latino background (*NYCDCP, 2011*).

Puerto Ricans are the largest Hispanic/Latino background group in the Bronx, followed by Dominicans, Mexicans, and Central and South Americans. While the Bronx Hispanic population has tended to concentrate in the southern and western portions of the borough, the greatest population gains over recent years in the Hispanic/Latino population were in neighborhoods outside these areas (*NYCDCP, 2011*).

The Bronx has played an important role in shaping Hispanic/Latino history in the United States. Sonia Sotomayor, who in 2009 became the first person of Hispanic/Latino heritage to serve on the U.S. Supreme Court, was born and raised in the Bronx. Dr. Helen Rodriguez-Trias, a public health and human rights activist who was the first Latina to head the American Public Health Association, was on the faculty of Albert Einstein College of Medicine in the Bronx. The Bronx also popularized both salsa and hip-hop music.



**TOP TO BOTTOM:** Fordham Road; Bronx-Manhattan skyline; Fordham Plaza

## A Bronx Participant

*“I started this program in 2008, I am participating until now, 2013. I believe this study is very important so that they could find solutions for the sickness of the Spanish people, and at the same time they can prevent all the sickness such as diabetes, high blood pressure, obesity, and more. I congratulate the people that created the program, it’s very important. Thank you very much!”*

## CHICAGO FIELD CENTER



**LEFT TO RIGHT:** Mural on a private residence; Chicago skyline; East end of Paseo Boricua, Humboldt Park

In 2010, nearly 2.7 million people were living in Chicago and 29 percent were of Hispanic/Latino background (*U.S. Census Bureau, 2010*). Chicago has the third largest concentration of Mexicans/Mexican-Americans in the United States and the second largest concentration of Puerto Ricans. Although the vast majority of Hispanics/Latinos (74 percent) living in Chicago are Mexicans/Mexican-Americans, many other ethnic groups, including individuals from Central and South America and the Caribbean (*Ready & Brown–Gort, 2005*), also reside here.

Participants were recruited from six Chicago communities (Albany Park, Belmont–Cragin, Hermosa, Humboldt Park, Irving Park, and Logan Square) located on the north/northwest side of the city. These communities reflect the diversity of Hispanics/Latinos in terms of socioeconomic status, national origins and backgrounds, language use,

and immigration status. These are vibrant communities with high concentrations of businesses (e.g., ethnic food restaurants and *bodegas/tiendas de abarrotes*), *botánicas* (folk medicine pharmacies), and a diversity of other establishments. Devotion to religious practices and an emphasis on family ties are prevalent, with individuals frequently living in an extended family system where many generations (grandparents, parents, and siblings) live together on different levels of a multi-unit building.

The Hispanic/Latino communities of Chicago are well organized and have a tradition of caring and problem-solving leaders who have established health, human services, and educational organizations and community coalitions to respond to community needs. In addition, the Hispanic/Latino communities in Chicago are rich in culture and arts. Ethnic pride and nationalism are



expressed through public murals at almost every corner of the Hispanic/Latino neighborhoods in the city. These murals tell stories of social justice (or injustice), political

struggles, or religious beliefs and practices and serve to inspire all members of the diverse communities from which Chicago HCHS/SOL participants were recruited.

### A Chicago Participant

“The study is superb and I enjoyed my visit to the clinic.”

## MIAMI FIELD CENTER



**CLOCKWISE FROM TOP LEFT:** Mosaic tiles in Maximo Gomez/Domino Park; City of Hialeah entrance; Miami Freedom Tower Building



In 2010, more than 2.5 million people were living in Miami-Dade County, located in southeastern Florida. Within the county, 51 percent of the residents are foreign born and 64 percent report speaking Spanish at home (*U.S. Census Bureau, 2010*). The percent of persons of Hispanic/Latino background has continued to increase over the past decade and today accounts for 65 percent of the population (*U.S. Census Bureau, 2010*).

Participants in the Miami Field Center were recruited from Miami, Hialeah, and Coral Gables. Miami is the largest community with almost 400,000 residents of which 70 percent are of Hispanic/Latino background (*U.S. Census Bureau, 2010*). The city of Hialeah has 225,000 residents with 95 percent of them Hispanic/Latino, and the city

of Coral Gables has 47,000 residents with 54 percent Hispanic/Latino (*U.S. Census Bureau, 2010*). In each of these areas, the majority background group is Cuban, with the next being Central American. These communities represent a diversity of education and income.

Miami has played a unique role in the history of immigration in the United States. In the 1960s, substantial immigration occurred from Cuba to the Miami area in three waves and included many persons who were well educated or who had high skill levels. In 1980, another wave of Cuban immigration occurred followed more recently by immigration from Central and South America. The Freedom Tower in Miami was the “Ellis

Island” of Florida and stands today as a memory of the waves of immigration. The Spanish language is spoken by more persons in Miami than in any other U.S. city. Little Havana, a neighborhood in Miami, once almost exclusively the residence of Cubans, now has immigrants from other Latin American countries. It is still the center of social, cultural and political activity for Cubans (*Wikipedia, Miami*).

### *A Miami Participant*

*“This is an excellent study because many people need to know about our health, and this was a good opportunity given to us.”*

## SAN DIEGO FIELD CENTER



**CLOCKWISE FROM TOP LEFT:** Third Avenue, Chula Vista; San Diego trolley; Murals in Chicano Park

San Diego is California’s most southern city and is located next to the northern border of Mexico. San Diego is the birthplace of California and home to a rich multicultural heritage. The San Diego–Tijuana bordercrossing is the busiest in the world (*Becker & Armendariz, 2012*), which makes it a unique and vibrant bi–national community. According to the 2010 Census, around one–fourth of San Diegans are Mexican or Mexican American (*U.S. Census Bureau, 2010*).

Recruitment of the San Diego HCHS/SOL participants focused on communities that have higher concentrations

of Hispanic/Latino residents than other regions in San Diego. San Diego is locally known as “the South Bay” and includes the communities of San Ysidro, Chula Vista, National City, Imperial Beach, and Bonita.

Mexico’s influence on San Diego County is cultural, political, spiritual, and economic. Culturally, Mexican influences can be found in local artwork in murals at college campuses and Chicano Park. Politically, community property and water rights were based on Spanish and Mexican traditions that considered water a community resource to be divided as the community decided.

Spiritually, the Mexican religious traditions are evident in San Diego churches that celebrate Día de Guadalupe and La Posada. San Diego is home to the first Church in California, the Mission Basilica San Diego de Alcalá, which was founded in 1769. Economically, Mexican labor plays a

major role in the development and maintenance of San Diego's agricultural economy. The influence of Mexican culture is undeniable and continues to shape the development of San Diego (Kucher, 2010).

***A San Diego Participant***

*“The program was very good and I feel that what I did will be very useful for future generations. Thank you very much.”*

**Field Center Locations**

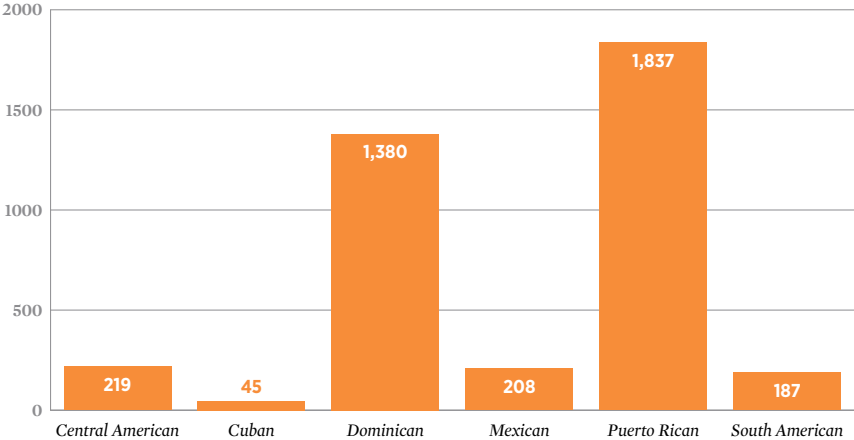


# V. Description of Participants

## PARTICIPANTS BY BACKGROUND

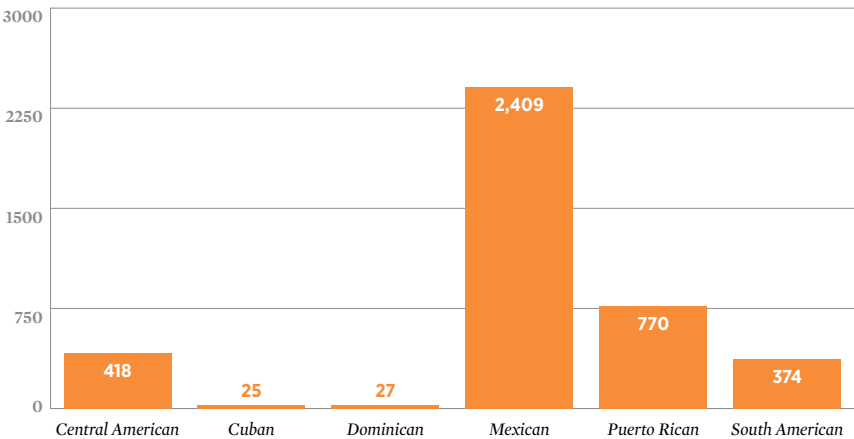
Background was determined by participants’ self-report of heritage or descent. The very few participants who described their background as mixed/other or who didn’t describe a specific background are not shown.

**Chart 3: Number of Participants by Background – Bronx**



In the Bronx Field Center, most participants are of Puerto Rican background, followed by those of Dominican background.

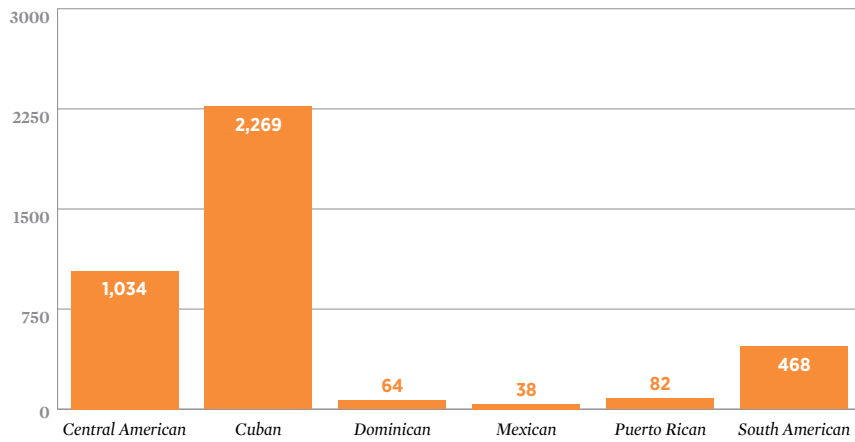
**Chart 4: Number of Participants by Background – Chicago**



In the Chicago Field Center, most participants are of Mexican background, followed by those of Puerto Rican, Central American and South American background.

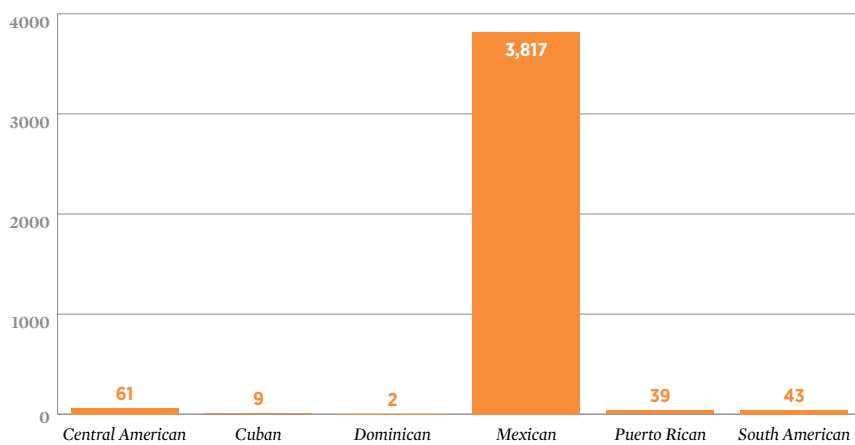


**Chart 5: Number of Participants by Background – Miami**



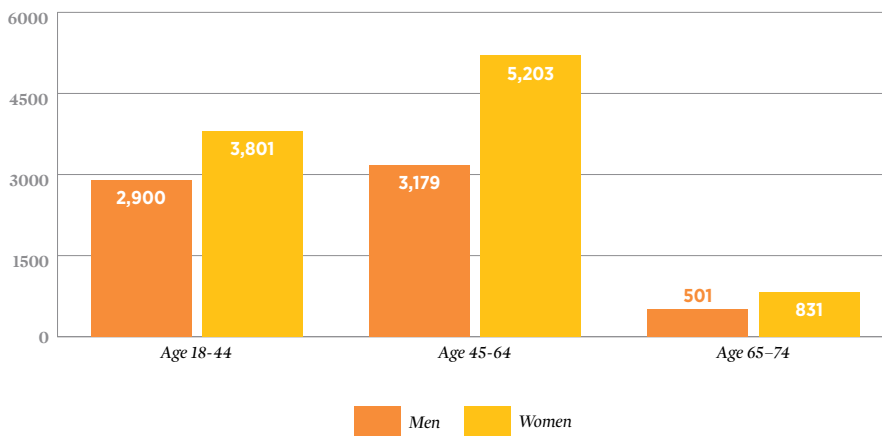
In the Miami Field Center, most participants are of Cuban background, followed by those of Central American and South American background.

**Chart 6: Number of Participants by Background – San Diego**



In the San Diego Field Center, the vast majority of participants are of Mexican background.

**Chart 7: Number of Participants by Age and Sex**



In the study, 6,701 participants are in the 18 to 44 age group, 8,382 are in the 45 to 64 age group, and 1,332 are in the 65 to 74 age group.

Sixty percent of the participants are women and 40 percent are men.

## PARTICIPANTS BY EDUCATION AND INCOME LEVELS

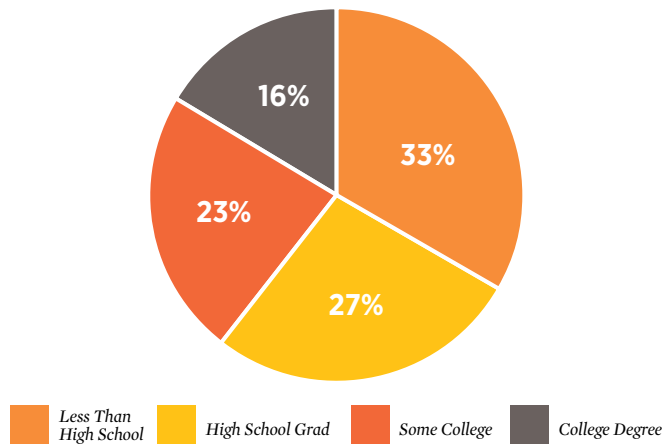
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Participants reported their highest level of education. Education levels were grouped into four categories: less than high school, high school graduate, some college, and college degree or more.

Participants reported their annual household income. They were grouped into four categories: \$20,000 or less, \$20,001 to \$50,000, \$50,001 or more, and unknown. A small number of participants did not provide information on annual income and are included in the unknown group.

**Chart 8: Percent of Participants by Level of Education**

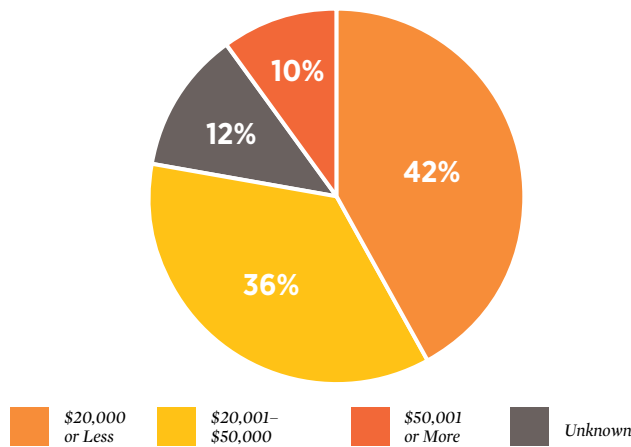
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Most participants completed some high school or graduated from high school. Sixteen percent graduated from college with a degree, and another 23 percent attended at least some college. Thirty-three percent have less than a high school education.

**Chart 9: Percent of Participants by Yearly Household Income**

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Forty-two percent of the participants have a yearly household income of \$20,000 or less.

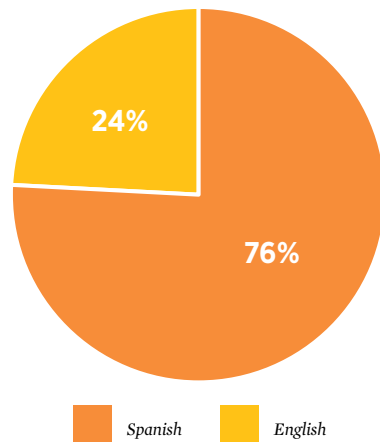
## PARTICIPANTS BY PREFERRED LANGUAGE USE

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At the examination visit, each participant was asked which language he or she preferred to use during the visit.

**Chart 10: Percent of Participants by Language Preference**

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The majority, about 3 of every 4 persons, requested the use of Spanish instead of English.

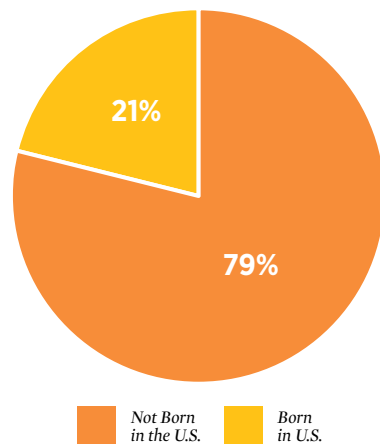
## PARTICIPANTS BY PLACE OF BIRTH AND TIME LIVING IN THE UNITED STATES

---

Participants reported their place of birth. They also reported the number of years they lived in the 50 States or District of Columbia. Responses were grouped into three categories: less than 10 years, 10 to 19 years, and 20 or more years.

**Chart 11: Percent of Participants by Place of Birth**

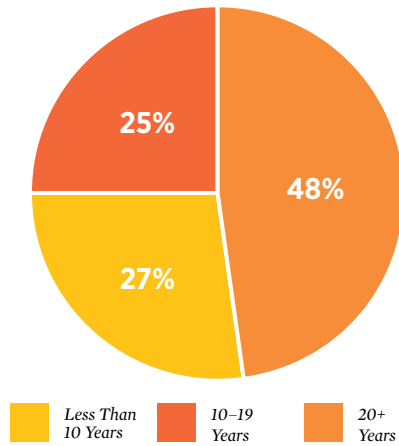
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Approximately three-fourths of the participants were not born in the 50 States or District of Columbia.

In this chart, participants from Puerto Rico are reported among those born outside the 50 States or District of Columbia.

## Chart 12: Percent of Participants by Number of Years Living in the United States



Almost half of all participants lived at least 20 years in the 50 States or District of Columbia. One-fourth lived in the United States less than 10 years and approximately one-fourth lived in the United States 10-19 years.



**CLOCKWISE FROM TOP LEFT:** Dietary interview; Height measurement; Lung function test; Measurement of ankle blood pressure

# VI. Disease Conditions

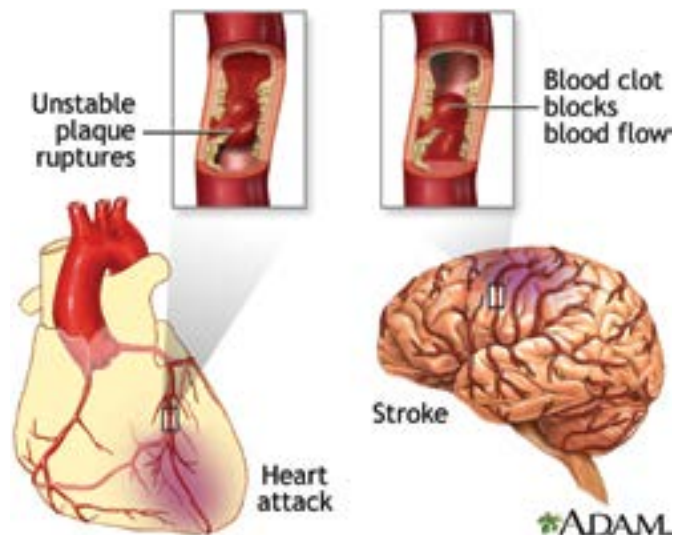
## CORONARY HEART DISEASE AND STROKE

Coronary Heart Disease (CHD) is a broad term used to describe certain conditions that affect the heart. These conditions produce narrowed or blocked arteries that lead to a lack of blood flow to the heart muscle which can lead to damage to the heart. This is called a heart attack (*Mayo Clinic, Heart disease*). A stroke occurs when blood flow to a part of the brain is partially or totally blocked. This blockage of blood to the brain can lead to brain cell death, causing permanent damage (*Pub Med Health, Stroke, 2012*).

CHD and stroke can be prevented by maintaining a healthy lifestyle (*Mayo Clinic, 5 medication-free strategies to help prevent heart disease*). This includes:

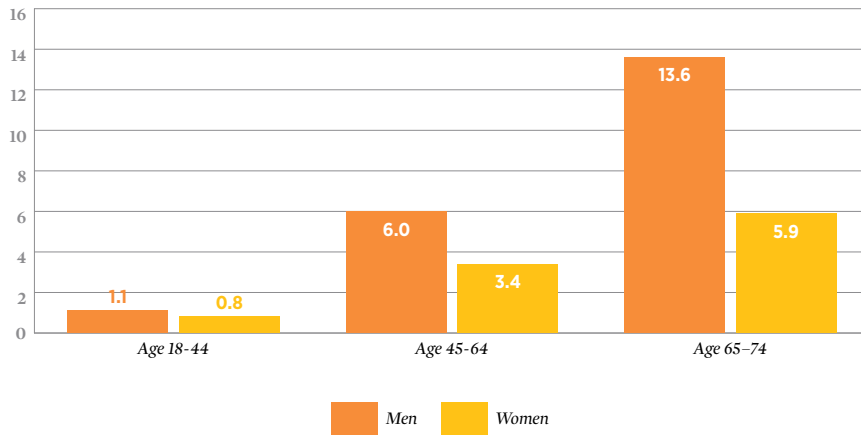
- Not smoking
- Exercising on a regular basis
- Eating foods that are low in saturated fats, trans fats, and sodium; and including vegetables, fruits, whole grains, lean meats and low-fat dairy products
- Maintaining a healthy weight
- Getting regular health screenings that include checking blood pressure, cholesterol levels, and diabetes screening

Coronary heart disease was determined by a participant's self-reported responses to questions about previous heart attacks, coronary bypass surgery, or other procedures used to clear blocked arteries. The charts show the percentage of participants with CHD.



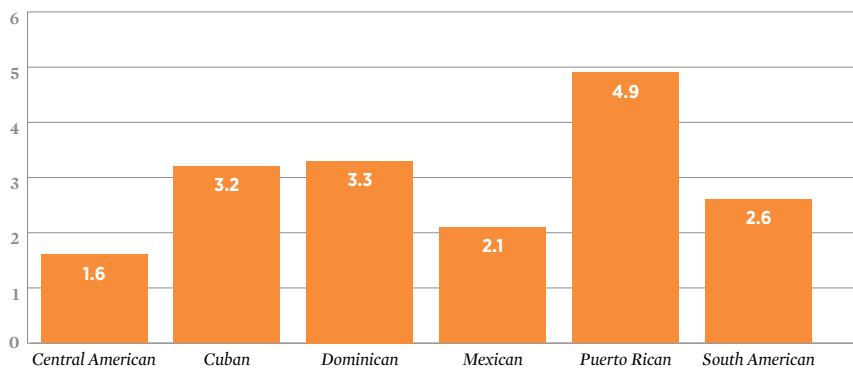
**ABOVE:** This figure shows how the arteries become blocked and harm the heart and the brain.

**Chart 13: Percent with Coronary Heart Disease by Age and Sex**



More men than women reported having CHD. For all men and women, CHD increased with age. The highest percentage with CHD was in men aged 65–74 years.

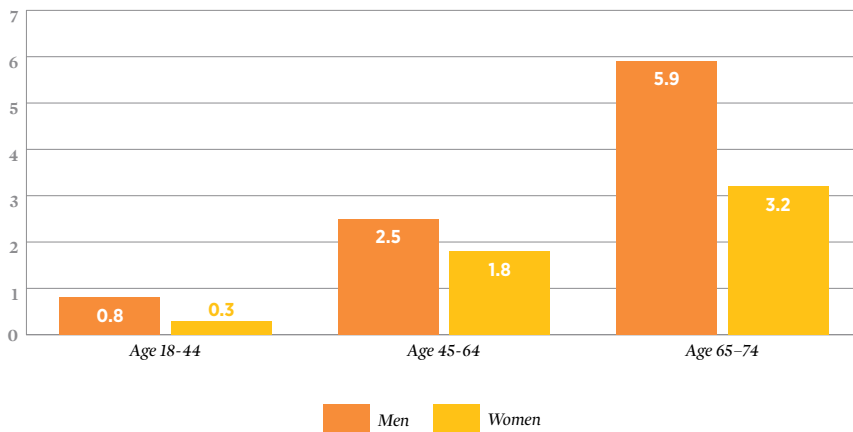
**Chart 14: Percent with Coronary Heart Disease by Background**



The highest percentage of self-reported CHD was for participants of Puerto Rican background. The lowest percentages were among those of Central American, Mexican, and South American backgrounds.

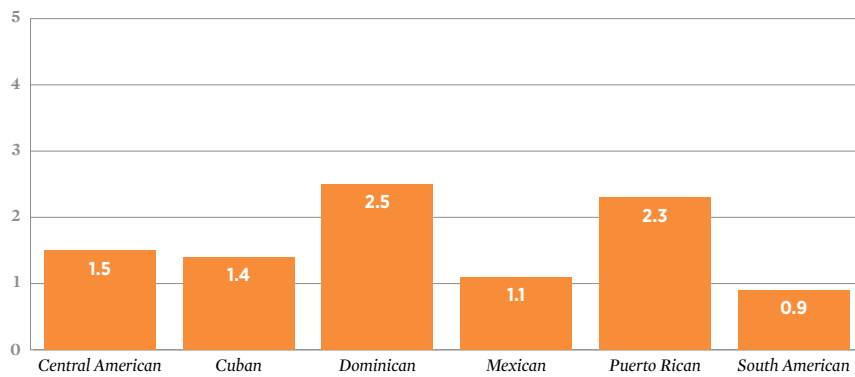
**Chart 15: Percent with Stroke by Age and Sex**

Stroke was determined by a participant’s self-reported history of stroke.



A higher percentage of men than women reported a history of stroke. For both groups, having a stroke history increased with age. The highest percentage of stroke was in men aged 65–74 years.

## Chart 16: Percent with Stroke by Background



A higher percentage of participants of Dominican and Puerto Rican backgrounds reported a history of stroke than those in the other groups. The lowest percentages were reported by participants of South American and Mexican backgrounds.

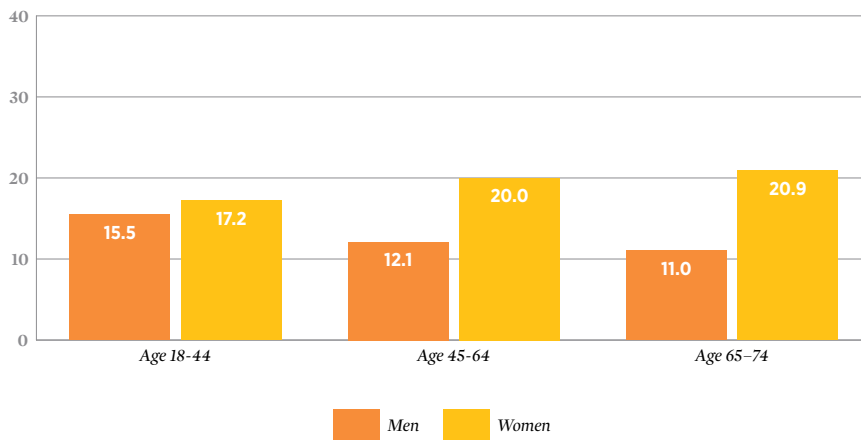
## PULMONARY DISEASE



Asthma and chronic obstructive pulmonary disease (COPD) are common lung diseases that cause shortness of breath, wheeze, cough, and phlegm. These symptoms occur due to the airways of the lung tightening. Sometimes the airway tightens enough to cause “attacks” of severe shortness of breath and wheeze that can require urgent care from a physician. Asthma usually occurs in children and young adults and is the leading cause of hospital visits in these groups. Many children grow out of asthma and asthma is often a reversible disease. COPD is like asthma but occurs in older adults, is not reversible, and is the third leading cause of death in the United States (*Murphy et al., 2012*). Both are treated most commonly with inhalers. Asthma was determined by a participant’s reported medical history of asthma.

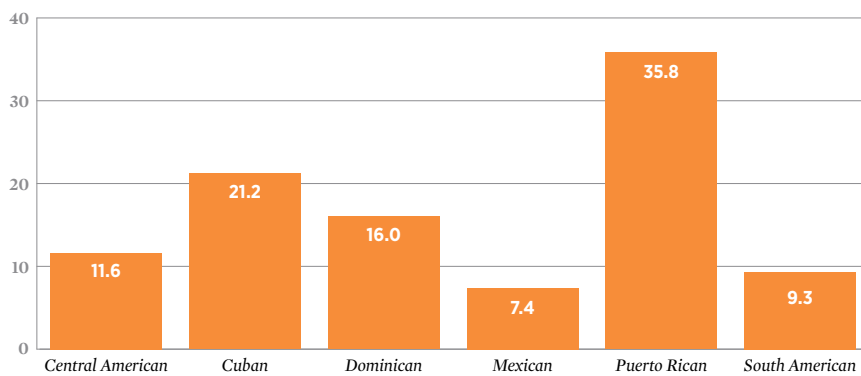
**TOP TO BOTTOM:** Lung function test; Asthma inhaler

**Chart 17: Percent with Asthma by Age and Sex**



Asthma was equally common among men and women in the 18 to 44 age group. Above that age, it was more common in women.

**Chart 18: Percent with Asthma by Background**



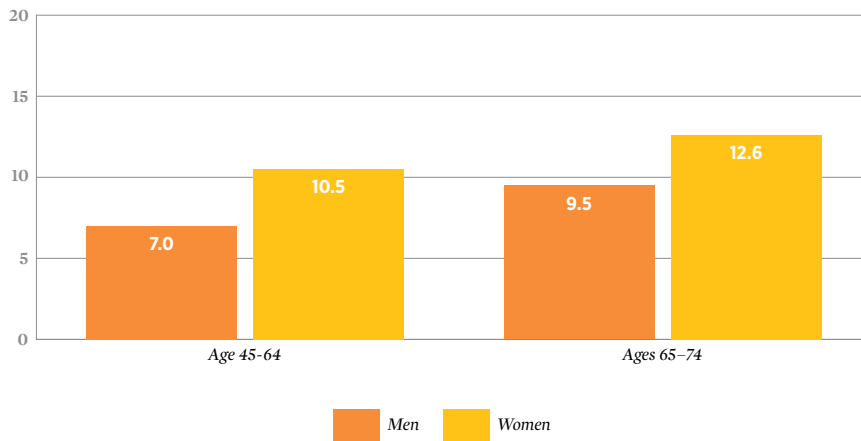
Participants of Puerto Rican, Cuban, and Dominican backgrounds were two to five times more likely to report ever having asthma in their lives than were participants of Mexican background.

- If you have asthma, visit your health care provider on a regular basis, take prescribed medications, and avoid known asthma triggers (*NHLBI, Take Action: Stop Asthma Today!*, 2010).



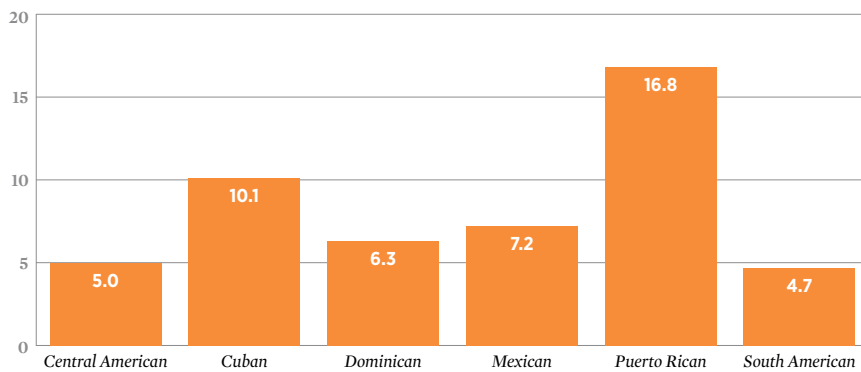
Chronic obstructive pulmonary disease (COPD) was determined by a participant’s reported medical history.

**Chart 19: Percent with COPD by Age and Sex**



COPD increased with age in men and women. Women had more self-reported COPD than men.

**Chart 20: Percent with COPD by Background**



The percentage of participants who reported a history of COPD was highest among those of Puerto Rican background and lowest among those of Central American and South American backgrounds.

Major risk factors for COPD include age, smoking (ever) and a prior history of asthma. Additional factors such as occupational exposures, environmental exposures, access to health care, and differences in diagnosis and reporting could help explain these results. Additional research using lung function (breathing test) measures will help understand these results.

- If you have COPD or think you may be at risk, you can take steps to make breathing easier and live a longer and more active life. Get a simple breathing test and talk with your doctor or health care provider about treatment options (*NHLBI, Take the first step to breathing better*).

## ORAL HEALTH

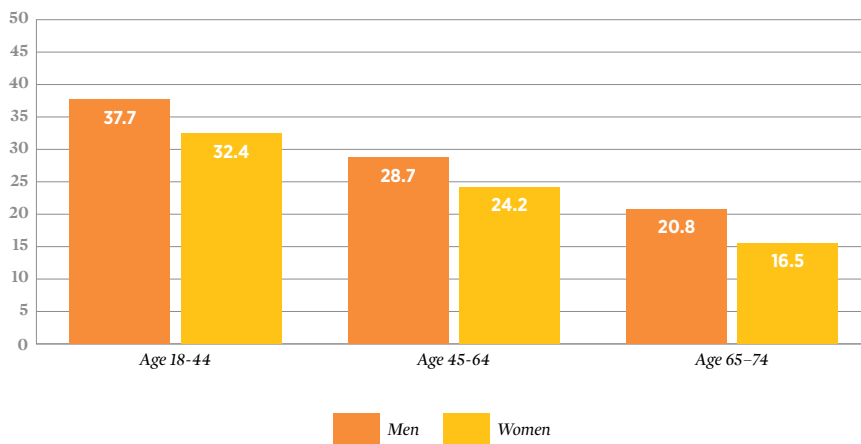
Participant's teeth were examined to determine the presence of dental decay and number of missing teeth. Decay will weaken the tooth and, if not treated, will get worse and much of the tooth surface will be destroyed. The tooth can become very painful, fall out, or need to be pulled. If the tooth was treated by a dentist, it is called a filled tooth.

The low percent with unfilled cavities in the older group was often due to that group having more missing teeth that are no longer at risk for decay, but may cause problems in biting and chewing food.



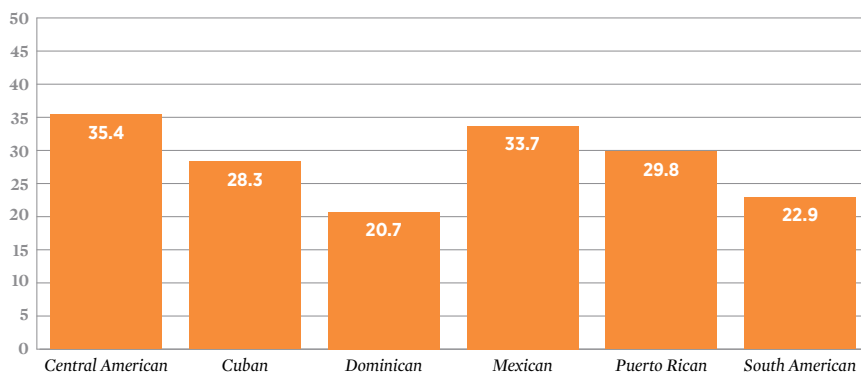
**ABOVE:** Oral health exam

### Chart 21: Percent with at Least One Unfilled Dental Cavity by Age and Sex



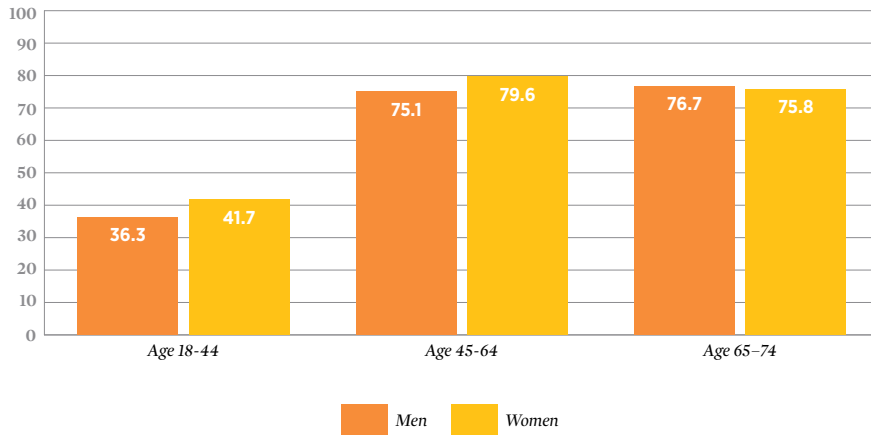
Younger participants had the most unfilled dental cavities. In all age groups, women had a lower percentage of untreated cavities than men.

### Chart 22: Percent with at Least One Unfilled Dental Cavity by Background



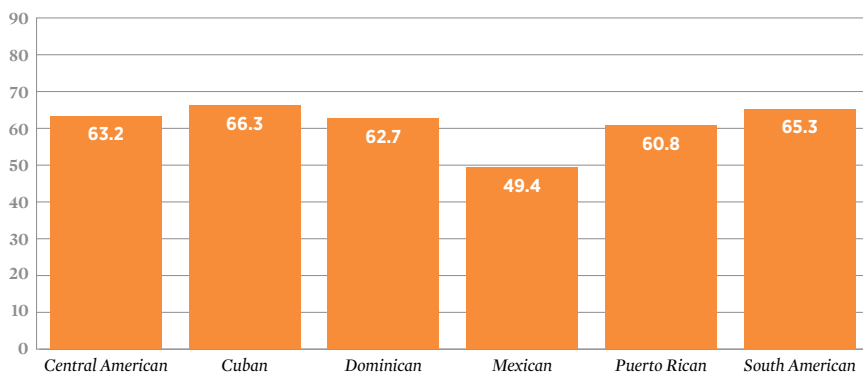
The percent of participants with one or more unfilled cavities was highest in participants of Central American background and lowest in participants of Dominican background.

**Chart 23: Percent with at Least One Missing Tooth by Age and Sex**



In the two oldest age groups, about three-fourths of participants are missing at least one tooth.

**Chart 24: Percent with at Least One Missing Tooth by Background**



There are differences in the percent having at least one missing tooth by background. Those reporting Mexican background had the lowest percent missing, about 50 percent. In the other groups, 60 to 66 percent have one or more missing teeth.

- A healthy mouth is important for general health and well-being. Having a healthy mouth makes it easier to eat well and enjoy food, speak clearly and smile.
- You can keep your mouth healthy by brushing and flossing, eating healthy foods, using fluoride toothpaste, and not smoking. Visiting a dentist for check-ups is also important, so any problems can be found and treated before they become serious.

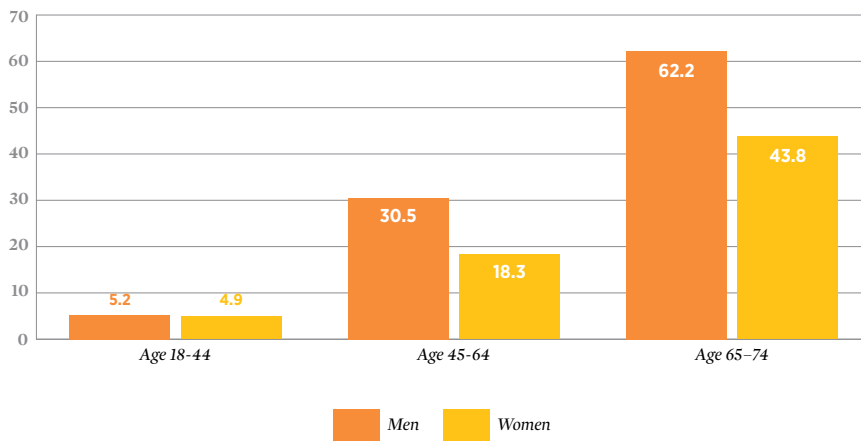
# HEARING LOSS

Hearing impairment was determined by using a hearing test called audiometry to measure how well people can hear sounds. Hearing impairment is a common, but often unrecognized, problem, as people get older. Poorer hearing can contribute to social isolation and a feeling of being left out of conversations.



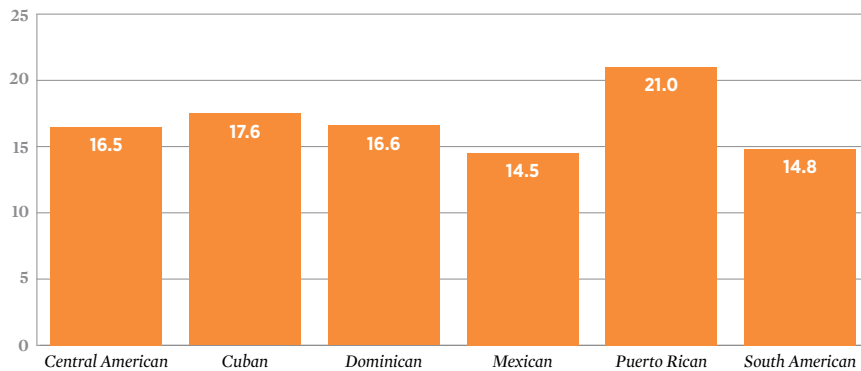
**ABOVE:** Hearing test

**Chart 25:** Percent with Hearing Impairment by Age and Sex



The percentage of participants with hearing impairment increased with age. About one in every two participants aged 65–74 years had hearing problems. Men had more hearing impairment than women.

**Chart 26:** Percent with Hearing Impairment by Background



The percentage of participants with hearing impairment was highest among those of Puerto Rican background. The percentages among the other background groups were fairly similar.

- Protecting ears from loud noises at work or at home can help to prevent hearing loss.
- Hearing impairments may be helped by medical treatment, hearing aids, or learning techniques to improve the ability to hear what family and friends are saying. A person experiencing hearing problems should seek help from a doctor or audiologist.

# VII. Risk Factors for Cardiovascular Disease

## HYPERTENSION

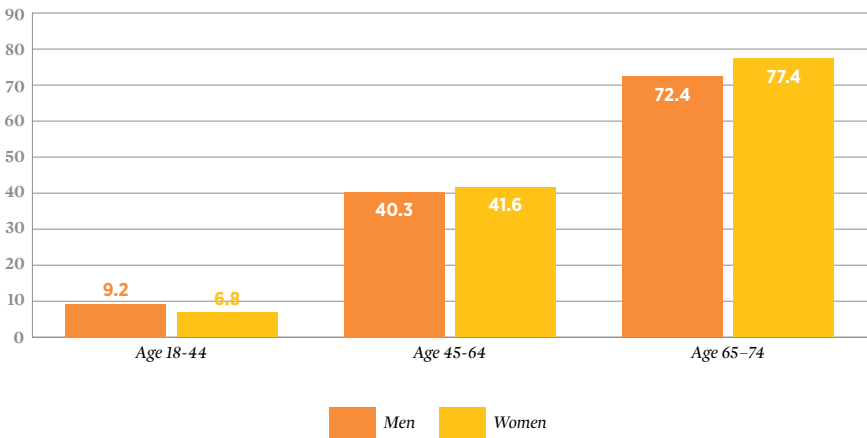
Hypertension is another word for high blood pressure. When blood pressure is measured, two numbers are provided—the systolic pressure when the heart is pumping (top number), and the diastolic pressure when the heart is relaxed (bottom number). An example of a blood pressure reading is 120/72. If the top number is greater than 140 or the bottom number greater than 90, or if a person is taking medication for blood pressure, a person is described as having hypertension. Hypertension is harmful because it can lead to heart attacks and strokes (NHLBI, *What is high blood pressure?* 2012).

- Know your blood pressure numbers. Have your blood pressure checked at least once per year, or more often if you have hypertension.
- Eat a diet that includes fruits, vegetables, fat-free dairy products and is rich in whole grains, fish, poultry, beans, seeds, and nuts.
- Limit sodium, sweets, sugary beverages and red meats.



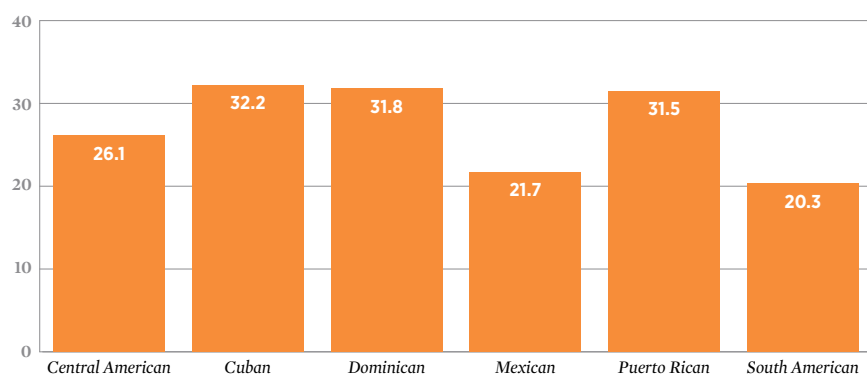
**ABOVE:** Blood pressure measurement

**Chart 27: Percent with Hypertension by Background**



The percentage of participants with hypertension increased with age.

## Chart 28: Percent with Hypertension by Background



The percentages of participants with a history of hypertension were lowest among those of Mexican and South American backgrounds and highest among those of Cuban, Dominican, and Puerto Rican backgrounds.

## CHOLESTEROL

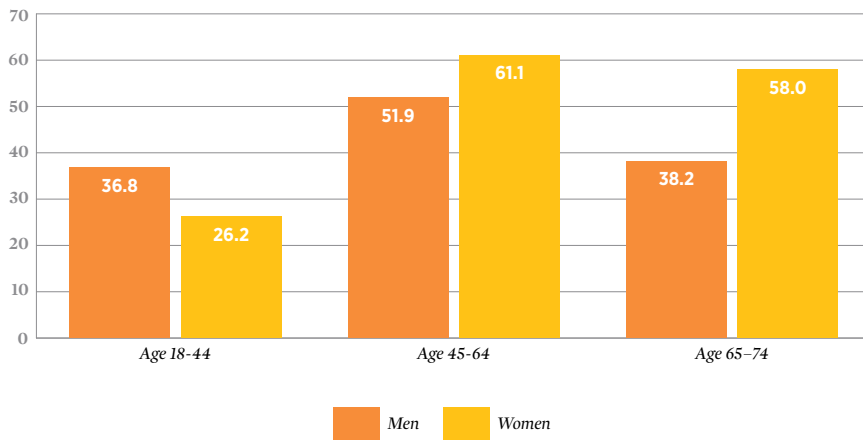
Blood cholesterol level, presented in milligrams per decileter (mg/dL), is a measure of several kinds of fat carried in the blood. Although not all kinds of fat in the blood are harmful, the higher the total blood cholesterol number, the greater the risk of hardening of the arteries and of getting heart disease. Therefore, it is important to get blood tests for cholesterol from time to time.

In the United States and most countries in the Americas, cholesterol levels are measured in the amount of cholesterol in the blood. Doctors and patients use guidelines when cholesterol is tested. A total cholesterol level less than 200 mg/dL is “desirable” because it means a lower risk for CHD. A total cholesterol level of 200 to 239 mg/dL is “borderline high.” A value of 240 mg/dL and above is “high blood cholesterol” because it doubles the risk of CHD compared to those whose cholesterol is “desirable” (*NHLBI, At a Glance: What you need to know about high blood cholesterol, 2009*).



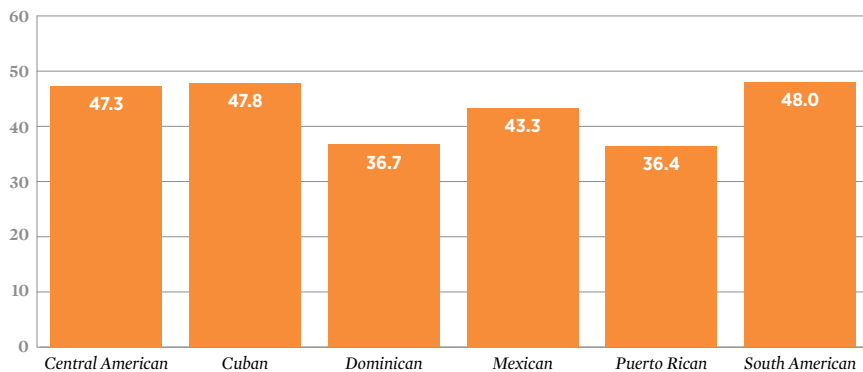
**ABOVE:** Blood draw for lab tests

**Chart 29: Percent with Undesirable Cholesterol Levels by Age and Sex**



This chart shows the percentages of participants with undesirable cholesterol levels that were equal to or greater than 200 mg/dl. The percentage of participants with undesirable cholesterol was lowest in the youngest group. More men and women aged 45–64 years had undesirable cholesterol levels than the men and women, respectively, in the other age groups.

**Chart 30: Percent with Undesirable Cholesterol Levels by Background**



The percentages of participants with undesirable cholesterol levels were lowest among those of Dominican and Puerto Rican backgrounds.

- Know your cholesterol level and have it checked periodically by your health care provider.
- To maintain healthy levels of blood cholesterol, reduce saturated and trans fats in your diet, be physically active, and maintain a healthy weight.



## PREDIABETES AND DIABETES

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Prediabetes and diabetes are serious illnesses that affect millions of persons in the United States. Diabetes was determined in participants by measuring the levels of blood glucose (sugar). This was measured both while fasting and after drinking a sugar drink. Hemoglobin A1c is another blood value that was measured. It shows a person's average blood glucose level over a longer period of time. Participants could have normal, medium, or high values of blood glucose based on these tests. If a participant was normal on all three, they did not have prediabetes or diabetes. If they were at the medium levels, they had prediabetes. If they were high on one or more, they were considered to have diabetes.

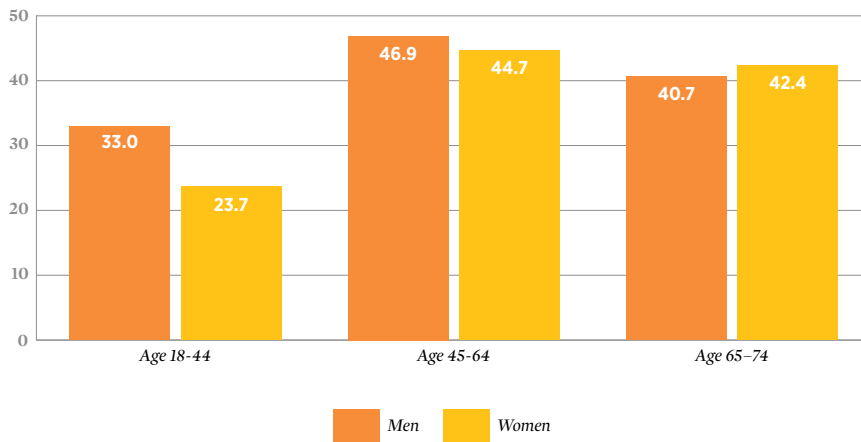


**LEFT TO RIGHT:** Oral glucose tolerance test (diabetes test); Testing blood glucose level

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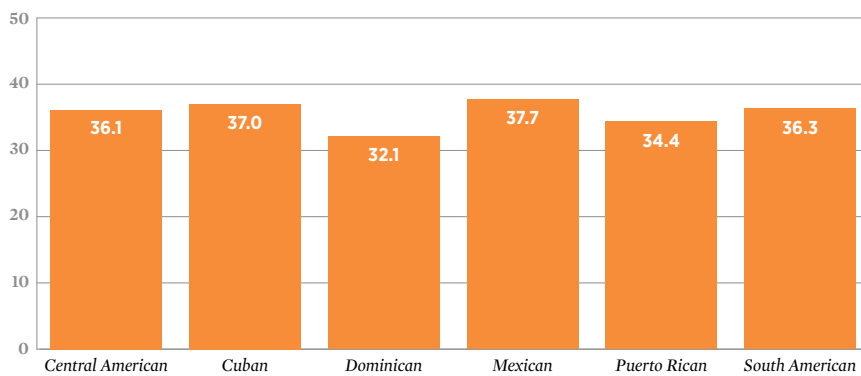


**Chart 31: Percent with Prediabetes by Age and Sex**



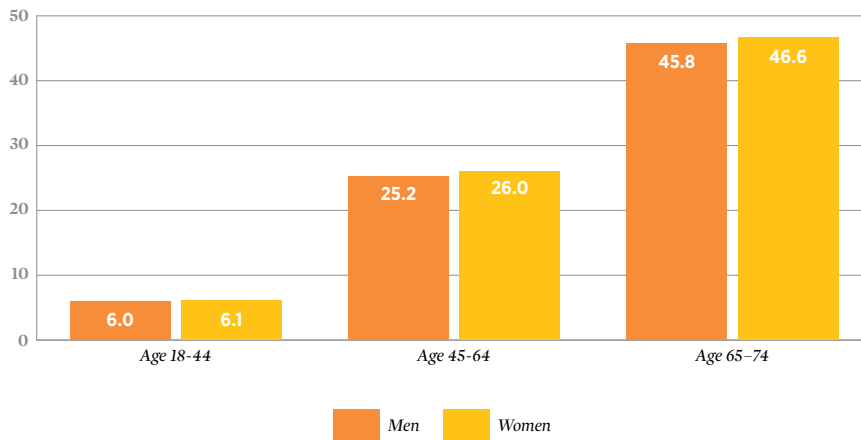
Prediabetes was lowest in the 18–44 age group and highest in the 45–64 age group. In the middle and oldest age groups, the percentages of participants with prediabetes were similar for men and women, respectively.

**Chart 32: Percent with Prediabetes by Background**



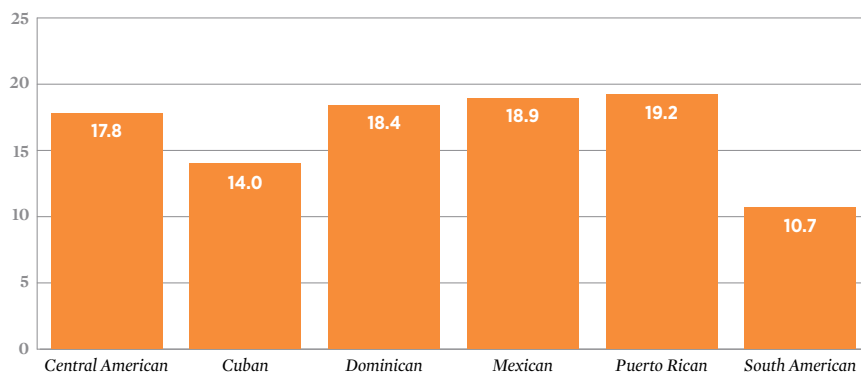
Approximately one in three participants had prediabetes in each background group. There was little difference in prediabetes by background.

**Chart 33: Percent with Diabetes by Age and Sex**



Almost one out of two participants in the oldest age group had diabetes and one in four in the middle age group had diabetes.

**Chart 34: Percent with Diabetes by Background**



The percentage of participants with diabetes was lowest in those of South American background.

Other results from this study showed that:

- A similar number of men and women had either diabetes or prediabetes in each age group.
- The number of participants with either prediabetes or diabetes increased as their weight increased.
- Among participants aged 40 to 49 years, 6 in every 10 had either diabetes or prediabetes.
- One out of three participants with diabetes was not aware of having the disease.

# OBESITY

Obesity is determined by measuring a person’s weight and height. Together these two make up a measure called the body mass index (BMI) that indicates whether a person is underweight (BMI less than 18.5), healthy weight (BMI

between 18.5 and 24.9), overweight (BMI between 25 and 29.9), or obese (BMI 30 or more). Several studies have shown that obesity increases the chance of chronic diseases such as diabetes and heart disease.

**Table 1: Ranges of BMI for Categories of Weight**

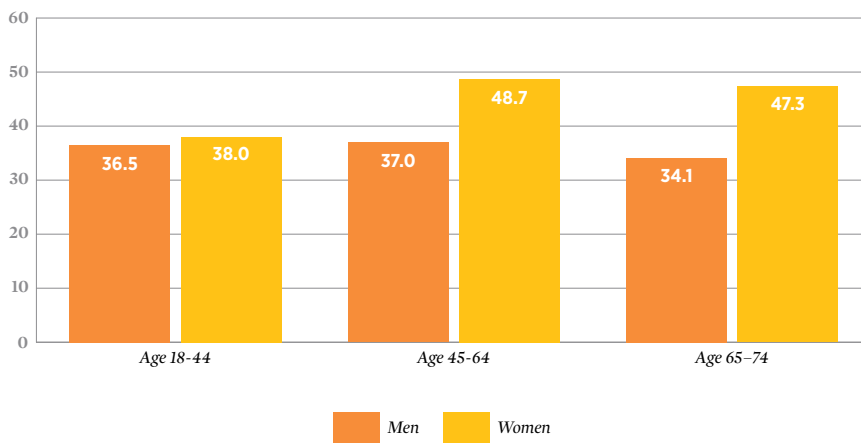
Category of Weight	BMI
Underweight	less than 18.5
Healthy weight (normal weight)	18.5 – 24.9
Overweight	25 – 29.9
Obesity	greater than or equal to 30

Calculate your own BMI at this website:  
<http://nhlbisupport.com/bmi/bmicalc.htm>



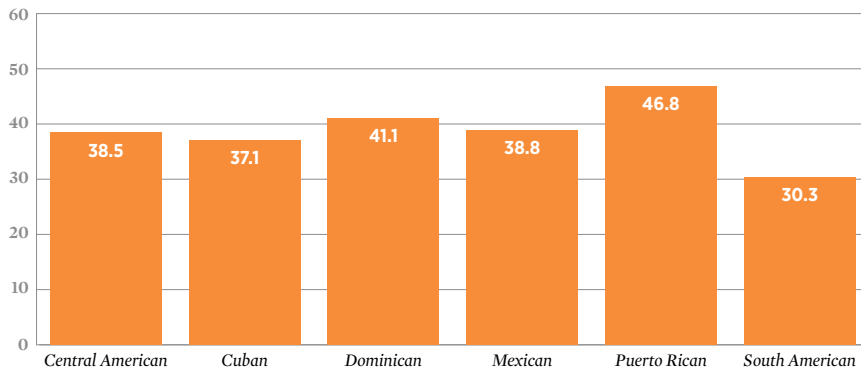
**ABOVE:** Scale

**Chart 35: Percent with Obesity by Age and Sex**



In men, the percentage of obesity was about the same for each age group. For women, the percentage of obesity was lowest in the youngest age group.

**Chart 36: Percent with Obesity by Background**



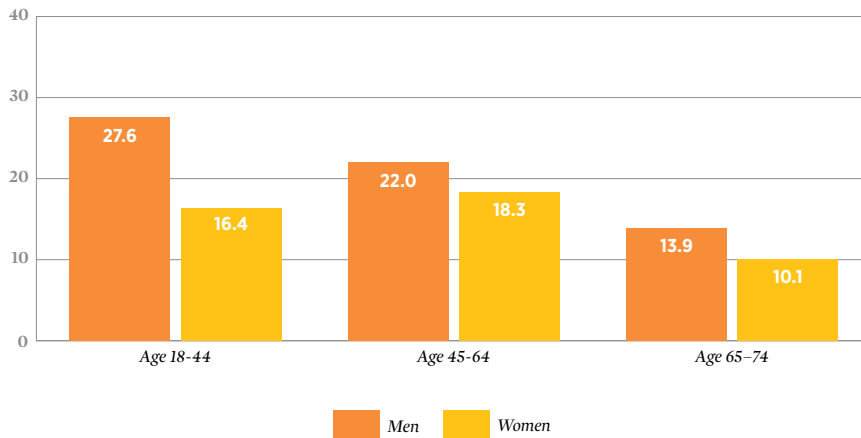
Obesity was highly prevalent in all of the background groups. It was highest among those of Puerto Rican background.

- For a large number of HCHS/SOL participants, excess weight was a problem. Achieving and maintaining a healthy weight are important steps for preventing health problems.

## SMOKING

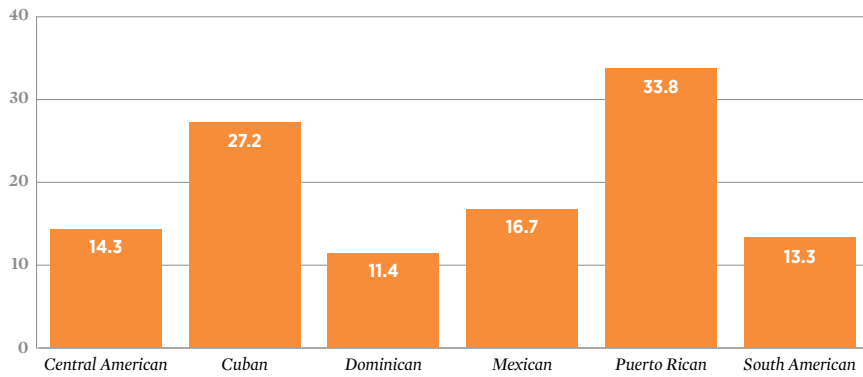


**Chart 37: Percent of Current Cigarette Smokers by Age and Sex**



The percentage of current smokers was higher for men than women in all age groups. In men, the percentage of smokers declined with age.

**Chart 38: Percent of Current Cigarette Smokers by Background**



The highest percentage of participants reporting to be current smokers was among those of Puerto Rican background, followed by those of Cuban background. The lowest percentage of current smokers was in participants of Dominican background.

- Smoking can increase your risk for heart disease, stroke, cancer, and lung disease. If you smoke, quitting will benefit many aspects of your overall health.

## SYMPTOMS OF DEPRESSION

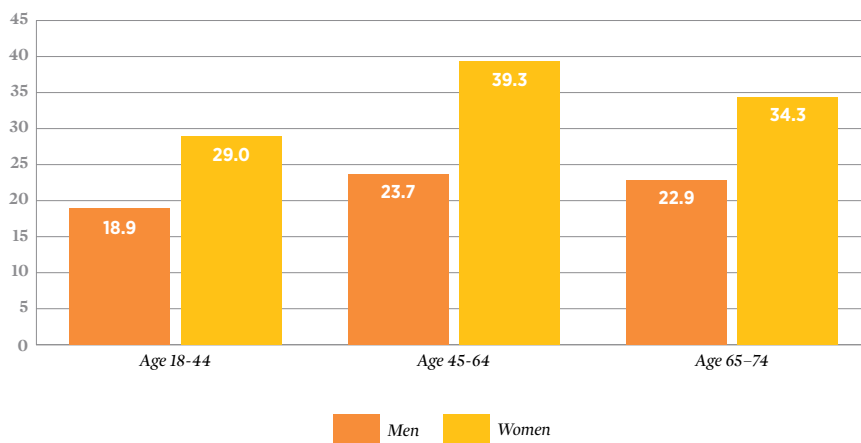
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Participants answered questions that describe some feelings or actions that accompany depression. People who are depressed have symptoms of sadness, lack of energy, feelings of loneliness, problems with sleep, and other emotional and physical feelings.

The medical condition of depression needs to be diagnosed by a mental health professional, but questionnaires can measure whether people have a high level of depressive symptoms or high risk of depression. Persons with high depressive symptoms may be at a greater risk of heart disease and stroke.

**Chart 39: Percent with High Levels of Depressive Symptoms by Age and Sex**

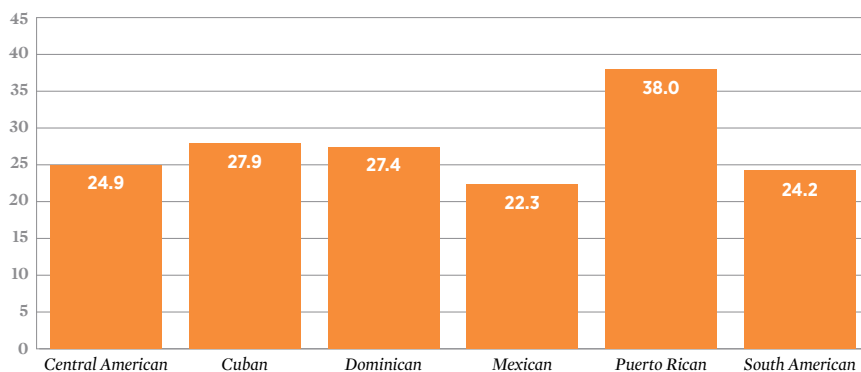
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More women than men in all age groups reported high depressive symptoms: about one in three of women reported high depressive symptoms. About one in five men reported high depressive symptoms. The highest percentage of high depressive symptoms was reported in women aged 45–64 years and the lowest was reported in men aged 18–44 years.

**Chart 40: Percent with High Levels of Depressive Symptoms by Background**

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The highest percentage of participants reporting high depressive symptoms was among those of Puerto Rican background and lowest was among those of Mexican background.

- Depression can be successfully treated with therapy or medications. If depressive symptoms continue and a person cannot seem to “shake it off,” the person should see a professional and seek help for depression.

## ANXIETY SYMPTOMS

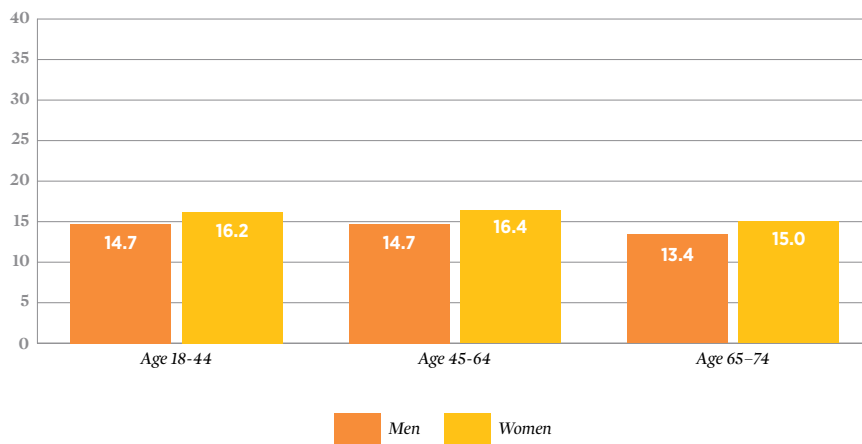
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Being anxious at times of stress is very common. In HCHS/SOL, participants stated how they generally felt in response to statements such as: “I feel nervous and restless.” They could answer that they feel that way almost never, sometimes, often or almost always. Their responses

to 10 such statements were added and a person could have a total score ranging from 10 (not at all anxious) to 40 (very highly anxious). The median anxiety score is the score where half the participants are higher and half are lower, in other words, the half-way point.

**Chart 41: Median Anxiety Score by Age and Sex**

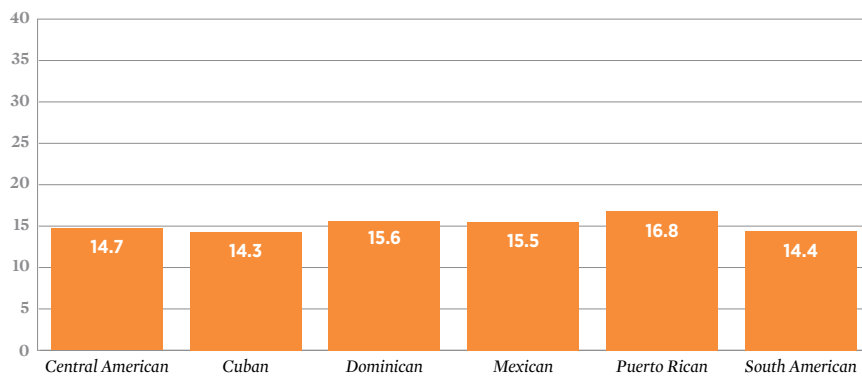
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Women were slightly more anxious than men, but there was very little difference by age.

**Chart 42: Median Anxiety Score by Background**

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There was very little difference in anxiety by background.

- Being anxious at times of stress is very common, but some people feel anxious most of the time even when there is no explanation for it. Anxiety is a risk factor for heart disease and may be accompanied by depression. Persons who are anxious or depressed should seek help from a mental health professional.

## SLEEP PROBLEMS

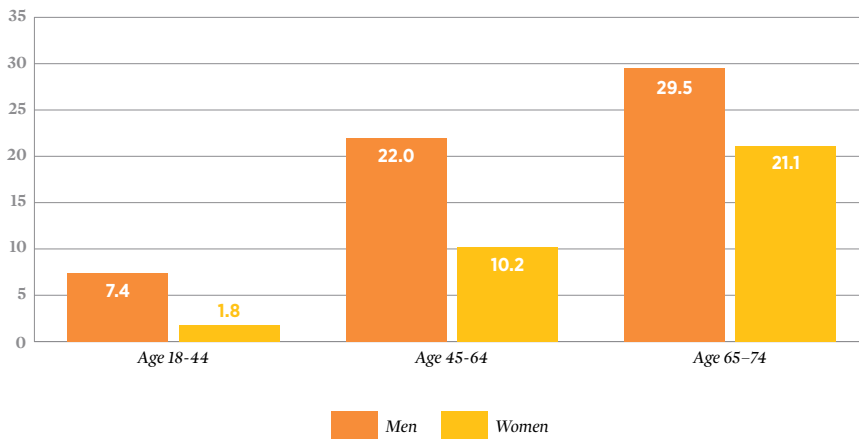


**ABOVE:** In HCHS/SOL, participants wore a sleep monitor for a night in their home. The monitor measured airflow and oxygen levels during sleep, allowing sleep apnea to be detected.

Sleep apnea is a disorder defined by an increased number of breathing pauses during sleep, usually associated with symptoms of loud snoring, snorting and gasping for air, or “stop breathing.” This often results in lower oxygen levels in the blood and increased stress on the heart.

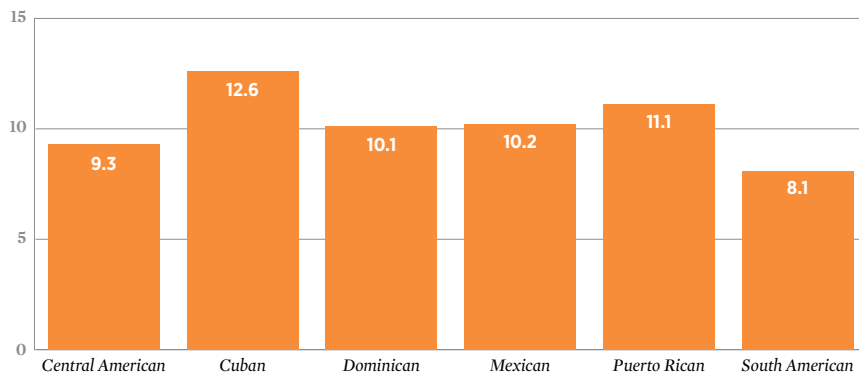
Sleep apnea was diagnosed after an overnight sleep study was performed. The sleep study reports the number of times per hour of sleep someone has breathing pauses. In this report, participants with 15 or more pauses were considered to have sleep apnea. The photo shows the sleep monitor worn in HCHS/SOL, which recorded breathing, snoring, oxygen levels, and head position.

**Chart 43: Percent with Sleep Apnea by Age and Sex**



The percentage of participants with sleep apnea increased with age and was higher in men than in women at all ages.

**Chart 44: Percent with Sleep Apnea by Background**

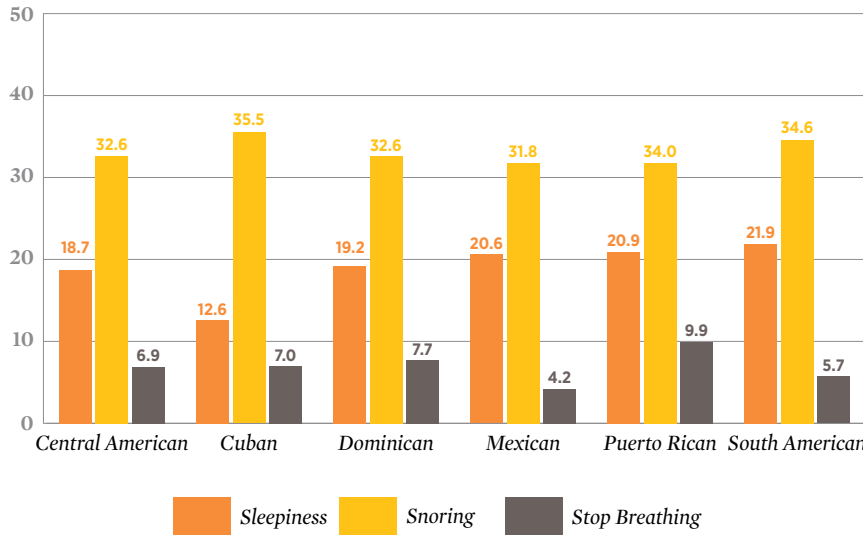


The highest percentage of participants reporting sleep apnea was among those of Cuban background and the lowest was among those of South American background.



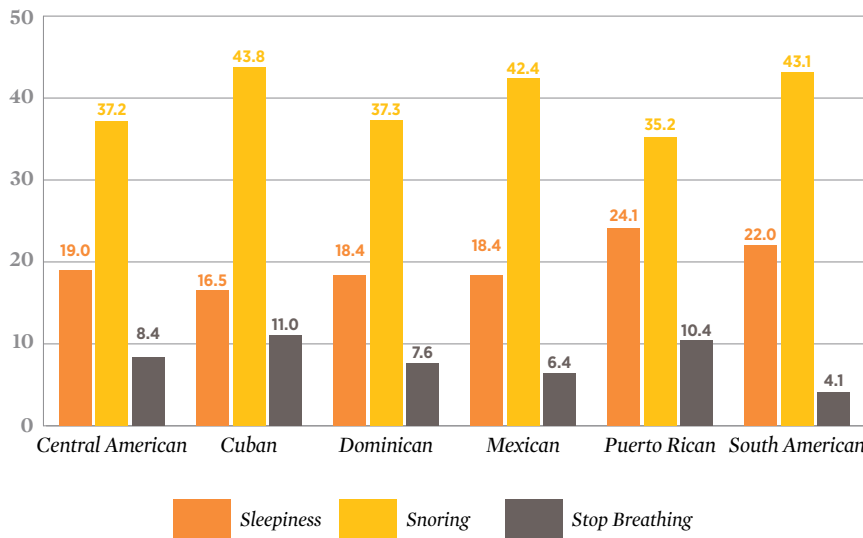
There are other sleep problems that may be signs of sleep apnea. These are sleepiness, loud snoring, and stopped breathing. These charts show the frequency of symptoms of sleep problems among participants.

**Chart 45: Percent of Women with Sleep Problems by Background**



Although the percentages of sleep problems varied by background somewhat, approximately one in three women reported symptoms of snoring and one in five women reported daytime sleepiness.

**Chart 46: Percent of Men with Sleep Problems by Background**



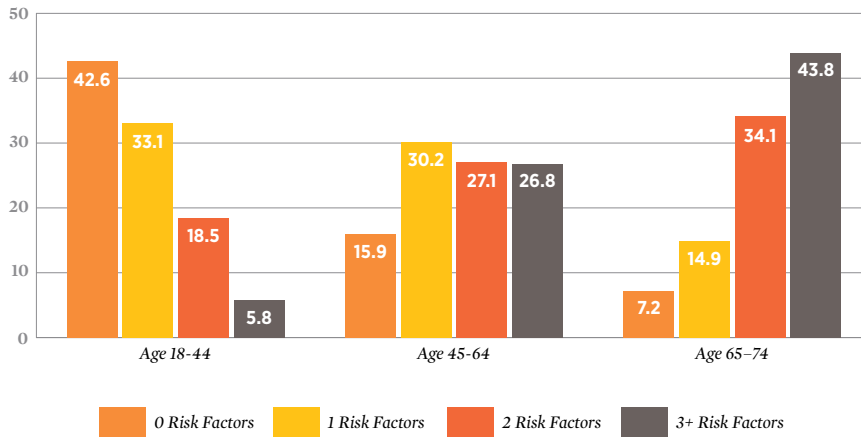
Reports of snoring were more frequent in men compared to women. In men, a higher percentage of participants who stopped breathing during sleep were among those of Cuban and Puerto Rican backgrounds and lowest among those of South American background.

- Sleep apnea is very common, but is usually not diagnosed or treated. Sleep apnea can increase risk for hypertension (high blood pressure) and diabetes. Sleep apnea can be treated. All persons, men and women, young and old who have loud snoring, stop breathing during sleep have un-refreshing sleep or have daytime sleepiness should discuss this with their doctor, who can determine whether further testing or treatment is indicated. Ways to improve sleep include maintaining a healthy weight and sleeping at least 7 hours nightly (NHLBI, *At a Glance: Healthy Sleep*, 2009).

## MULTIPLE RISK FACTORS FOR CARDIOVASCULAR DISEASE

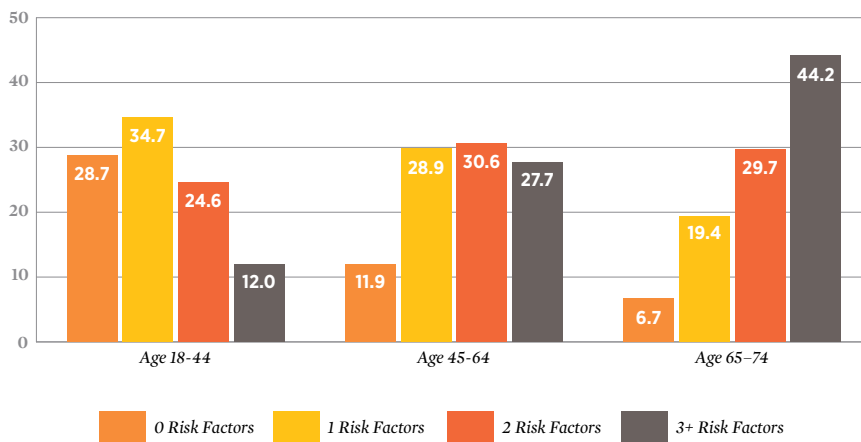
High blood pressure, high cholesterol level, obesity, diabetes, and cigarette smoking are major risk factors for heart disease and strokes. The more risk factors someone has, the higher their risk of heart disease and stroke. The charts that follow describe the percent of HCHS/SOL participants who have 0, 1, 2, and 3 or more of these risk factors. A health goal is for participants at all ages to have as few risk factors as possible (*Daviglus et al., 2013*).

**Chart 47: Percent of Women with Multiple Risk Factors by Age**



In women, about 43 percent of those aged 18–44 years had no risk factors, but only about 7 percent of those aged 65–74 years had no risk factors.

**Chart 48: Percent of Men with Multiple Risk Factors by Age**



Similarly in men, younger age groups had fewer risk factors than older age groups. In the oldest age group, about 44 percent had three or more unfavorable risk factors.

- Prevent heart disease by not smoking, having a healthy lifestyle, eating a balanced diet, and maintaining routine physical activity. These daily lifestyle habits work together to prevent the development of diabetes, weight gain, high blood pressure, and high cholesterol levels.
- If you already have one or more risk factors, two are better than three, one is better than two, and zero is best of all.

# VIII. Lifestyle

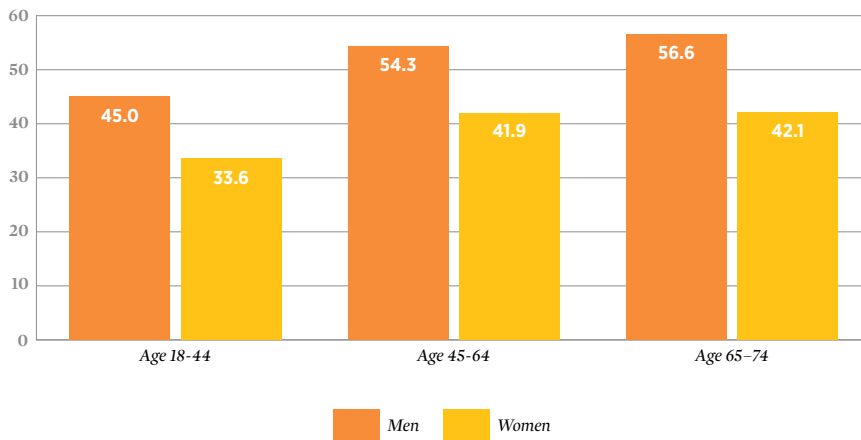
## DIET

Dietary information was obtained by asking participants what they ate on the previous day. A dietary pattern was determined by gathering dietary information at their initial examination and a month or two later by telephone.

Dietary data are tabulated into groups of higher and lower amounts of intake. For fruits and vegetables, the group is for those eating 5 or more fruits and vegetables per day. Sodium is presented for those consuming less than 2,300 mg of sodium per day. Fats are presented for those consuming less than 10 percent of calories from fat. These groupings are commonly used in presenting consumption of fruits and vegetables, sodium and fat.

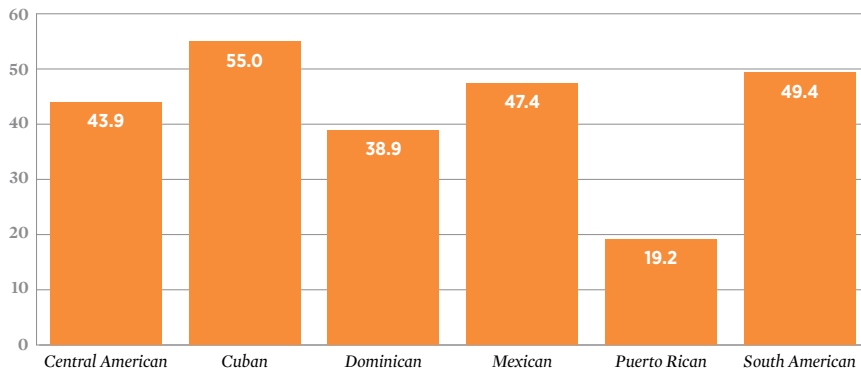


**Chart 49: Percent Eating 5 or More Fruits and Vegetables by Age and Sex**



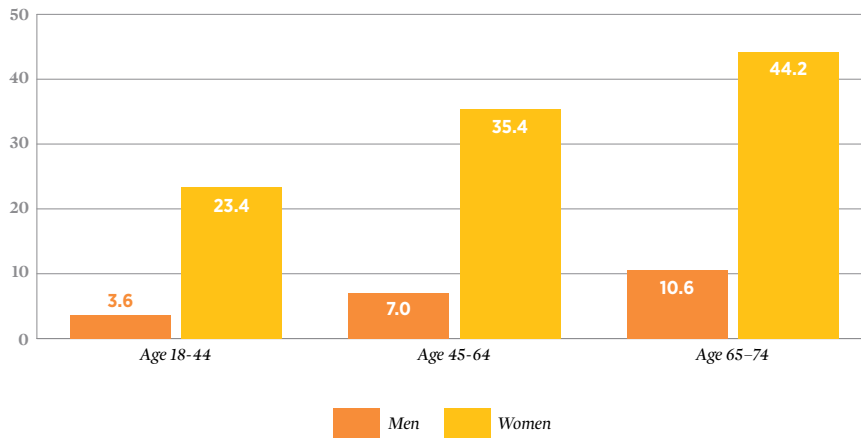
A healthy diet should include plenty of fruits and vegetables. More men consumed at least 5 fruits and vegetables (without fried potatoes) per day than women. This percentage improved in older ages.

**Chart 50: Percent Eating 5 or More Fruits and Vegetables by Background**



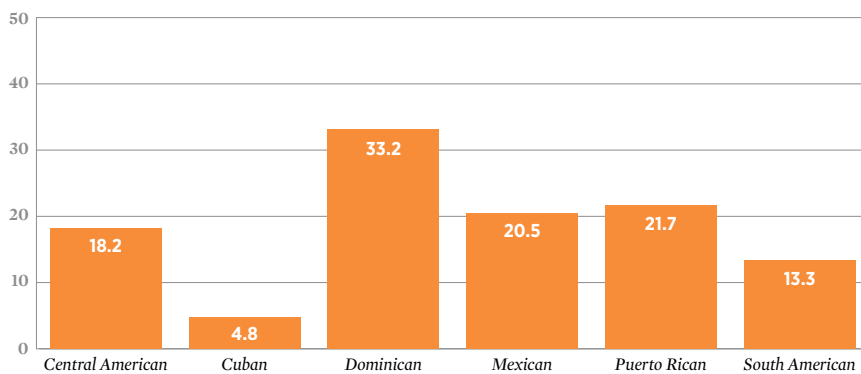
While almost half of all participants from Cuban and South American backgrounds reported eating at least 5 fruits and vegetables per day, only one out of five Puerto Ricans met this target.

**Chart 51: Percent Consuming Less Than 2,300 mg Sodium by Age and Sex**



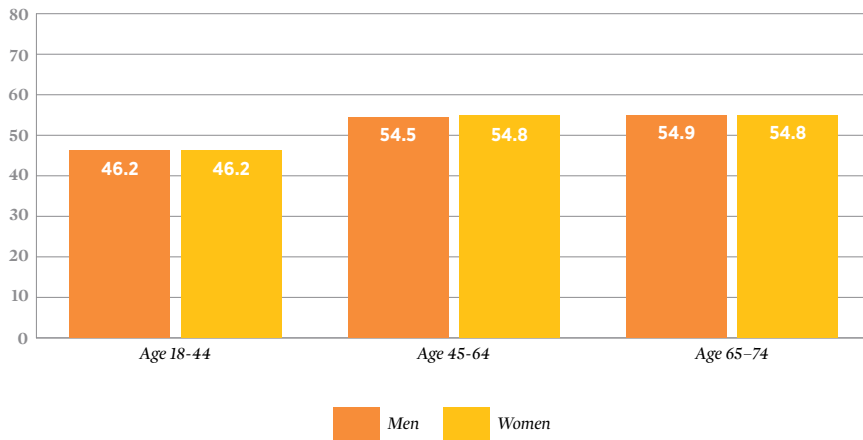
The percentage of participants consuming less than 2,300 mg of sodium per day increased with age. Across age groups, women consumed less sodium than men.

**Chart 52: Percent Consuming Less Than 2,300 mg Sodium by Background**



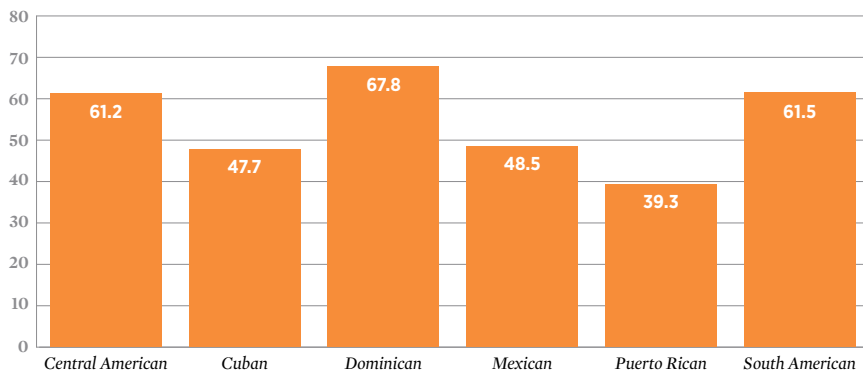
A higher percentage of Dominican followed by Puerto Rican, Mexican, and Central American backgrounds reported consuming less than 2,300 mg of sodium per day.

**Chart 53: Percent Consuming Less Than 10% Calories from Saturated Fat by Age and Sex**



About half of all participants reported consuming less than 10 percent of calories from saturated fat. Men and women had equal percentages.

**Chart 54: Percent Consuming Less Than 10% Calories from Saturated Fat by Background**



Nearly two out of three participants of Dominican, South American and Central American backgrounds reported meeting intake of less than 10 percent of calories from saturated fat; one out of two participants of Mexican and Cuban backgrounds met this intake.

A healthy diet includes:

- Eating enough fruits and vegetables
- Being aware of sodium intake (check food labels and select foods with lower sodium values)
- Reducing calories from saturated fats

## PHYSICAL ACTIVITY

The number of minutes a day in physical activity was determined from self-report of various levels of activity performed by the participants. Recreational physical activities may include walking, riding a bike, swimming, jogging, dancing, gardening, and other types of leisure activities.

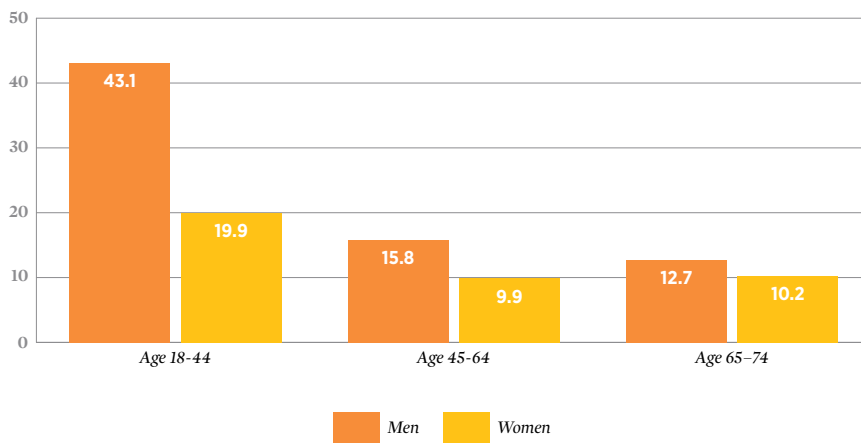
Moderate intensity activity raises your heart rate to a point where you sweat and feel you're working, yet you are able to carry on a conversation during the activity. Examples of moderate level activities include gardening, walking to the store, and shopping for groceries.

During vigorous activity, breathing and heart rate are fast. Examples of vigorous activity include very hard physical labor like home construction, walking while carrying heavy loads, riding a bike, swimming, and running.



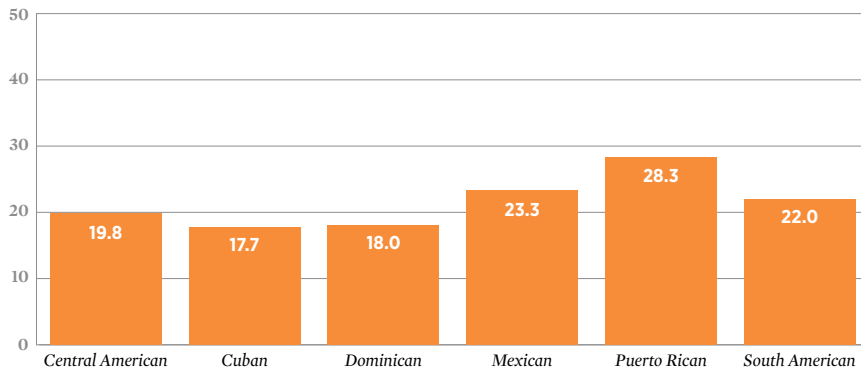
**TOP TO BOTTOM:** Group physical activity; Carpenter

**Chart 55: Average Minutes per Day of Recreational Physical Activity by Age and Sex**



Men aged 18–44 years reported more recreational physical activity than older men and women of all ages.

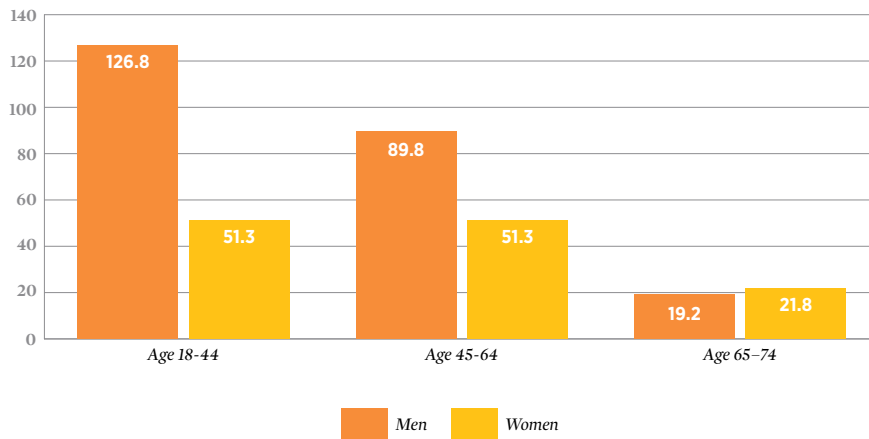
**Chart 56: Average Minutes per Day of Recreational Physical Activity by Background**



Participants of Cuban background reported less recreational physical activity than the other background groups.

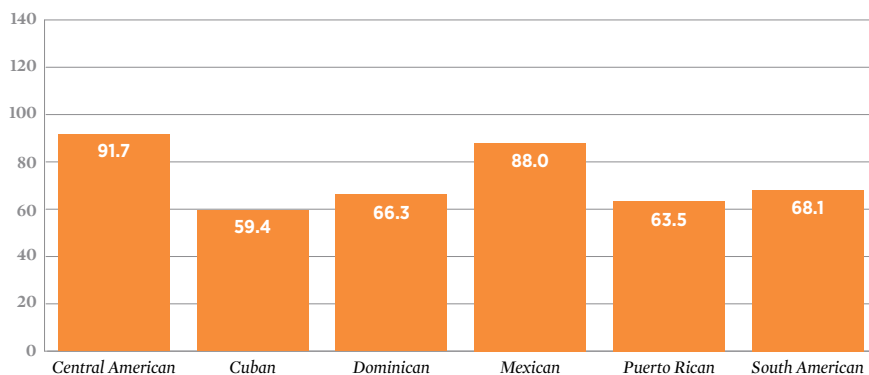
Work-related physical activity includes physical activities performed during the work day for at least 10 minutes at a time.

**Chart 57: Average Minutes per Day of Work-Related Physical Activity by Age and Sex**



Men aged 18–44 years reported more minutes per day of work-related physical activity than older men and women of all ages. Men and women aged 65–74 years engaged in fewer minutes of work-related physical activity than younger participants.

**Chart 58: Average Minutes per Day of Work-Related Physical Activity by Background**



Participants of Cuban background reported fewer minutes per day of work-related physical activity than other background groups.

Physical activity plays an important role in controlling weight. You gain weight when the calories you burn during physical activity are less than the calories you eat or drink. Regular physical activity helps strengthen bones; improves mental health; improves ability to perform daily activities and prevent falls. Also, it helps to lower risk for heart disease, stroke, type 2 diabetes, and other health problems. In general, individuals who engage in regular physical activity may live longer.

- Moderate-intensity activity, like brisk walking, is generally safe for most people. Everyone can gain the health benefits of physical activity—age, ethnicity, shape or size do not matter. A healthy lifestyle that involves physical activity can help prevent many health problems.
- Aim for at least 150 minutes of physical activity per week (or 30 minutes per day, 5 or more days per week).

For more information: <http://health.gov/paguidelines/guidelines/summary.aspx>

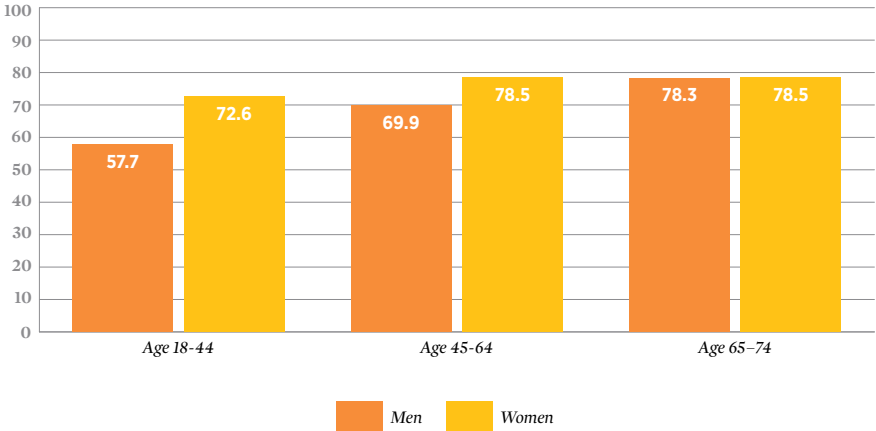


# IX. Awareness, Treatment, and Control

## AWARENESS, TREATMENT, AND CONTROL OF HYPERTENSION

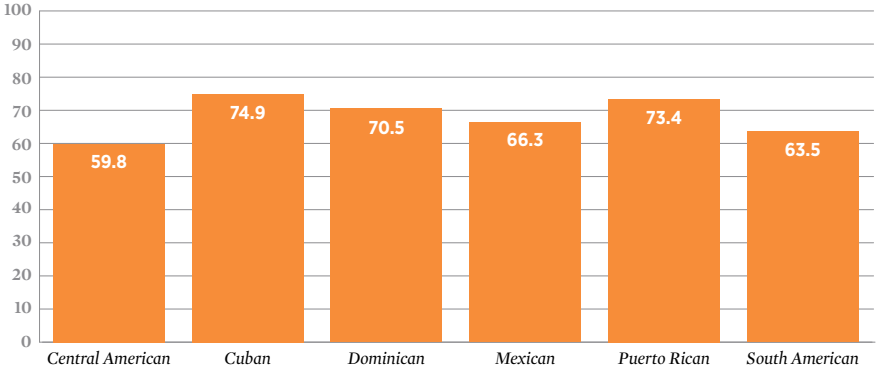
In this study, participants were asked if their doctor or a medical provider had told them that they had high blood pressure or hypertension. If they reported yes, then they were considered to be aware of their hypertension.

**Chart 59: Percent Aware of Hypertension by Age and Sex**



For hypertensive men, awareness of their hypertension increased with age. Hypertensive women generally were more aware of hypertension than men.

**Chart 60: Percent Aware of Hypertension by Background**

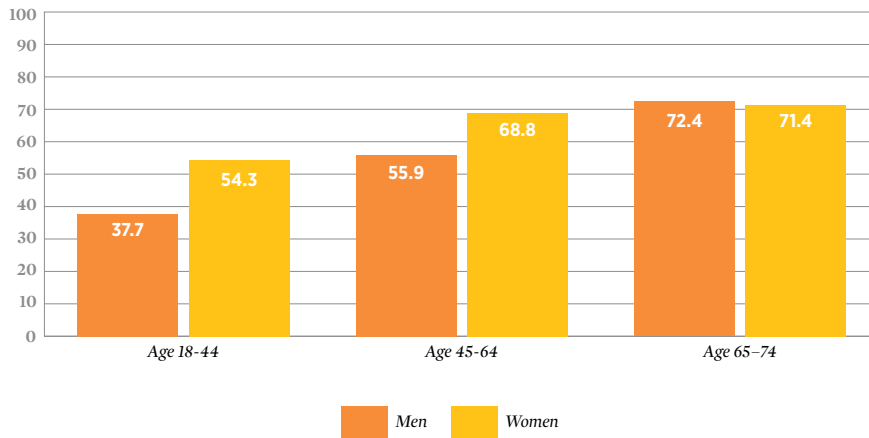


Hypertensive men of Central American background were less aware and participants of Cuban background were more aware of their hypertension.

- Assessment of blood pressure through routine medical practice or community screenings can increase awareness of hypertension so that treatment can be obtained.

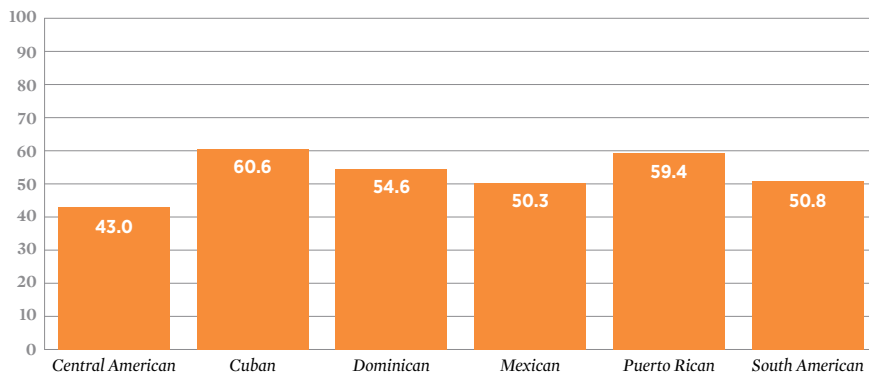
The goal is for all persons with high blood pressure to be under treatment for hypertension.

**Chart 61: Percent Under Hypertension Treatment by Age and Sex**



In the 18-44 age group, about half of the women and about a third of the men were under treatment for hypertension. In the 65-74 age group, participants under treatment increased to almost three-fourths under treatment.

**Chart 62: Percent Under Hypertension Treatment by Background**



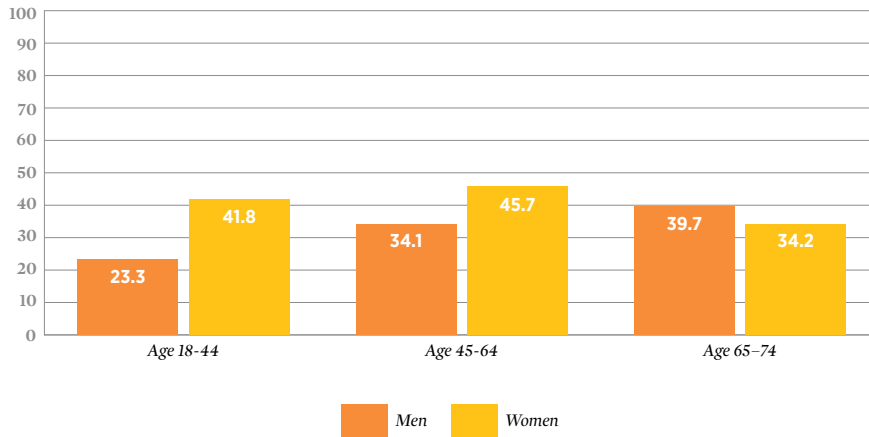
A higher percentage of participants of Cuban and Puerto Rican backgrounds were under hypertension treatment than the other background groups. The lowest percentage of participants under treatment was among those of Central American background.

- There are many kinds of medications that can lower blood pressure to healthier levels. A person who has hypertension should be under medical care of someone who can recommend the best treatment.



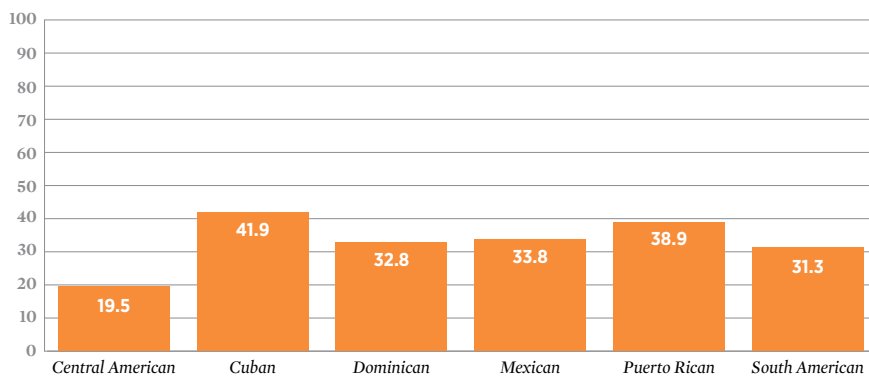
**ABOVE:** Blood pressure monitor

**Chart 63: Percent with Hypertension Under Control by Age and Sex**



The poorest control was seen in the hypertensive group of men aged 18–44 years, with only one-fourth of them under control.

**Chart 64: Percent with Hypertension Under Control by Background**



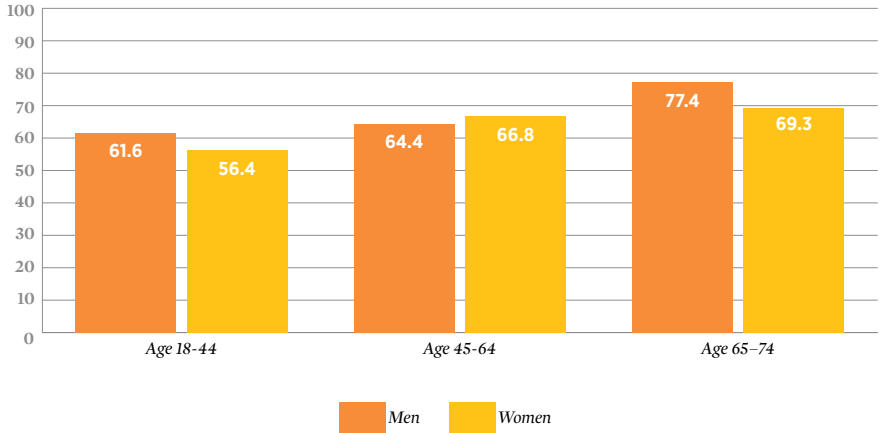
Hypertensive participants of Cuban and Puerto Rican backgrounds had the highest percentages of participants with hypertension under control. Only about 20 percent of hypertensive participants of Central American background had their condition under control.

- If you have hypertension, follow the advice of a health professional to keep your blood pressure under control.

# AWARENESS, TREATMENT, AND CONTROL OF DIABETES

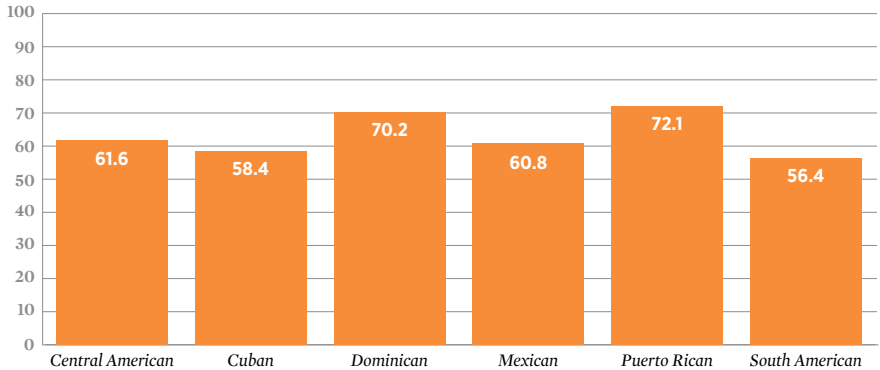
Participants were asked whether they were aware they had diabetes.

**Chart 65: Percent Aware of Diabetes by Age and Sex**



About two-thirds of participants who had diabetes were aware of it. Older participants were more likely than younger participants to be aware of their diabetes. In the oldest age group, more men than women were aware of having diabetes.

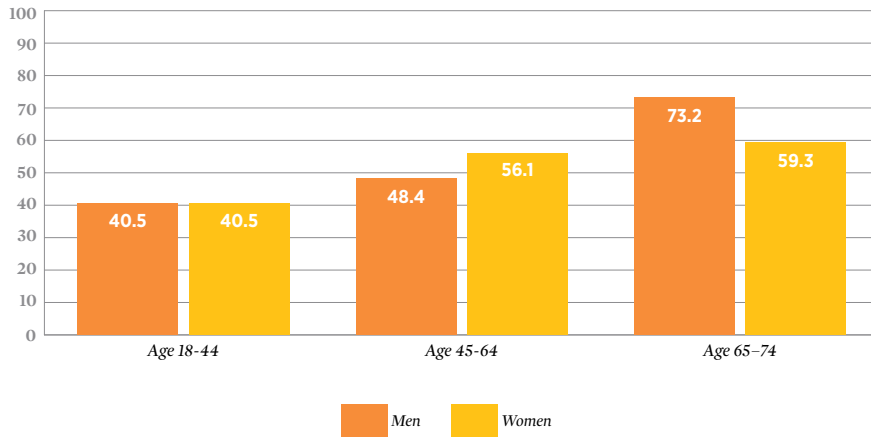
**Chart 66: Percent Aware of Diabetes by Background**



More than 70 percent of participants of Puerto Rican and Dominican backgrounds were aware that they had diabetes, whereas fewer from Central American, Mexican, Cuban, and South American backgrounds were aware.

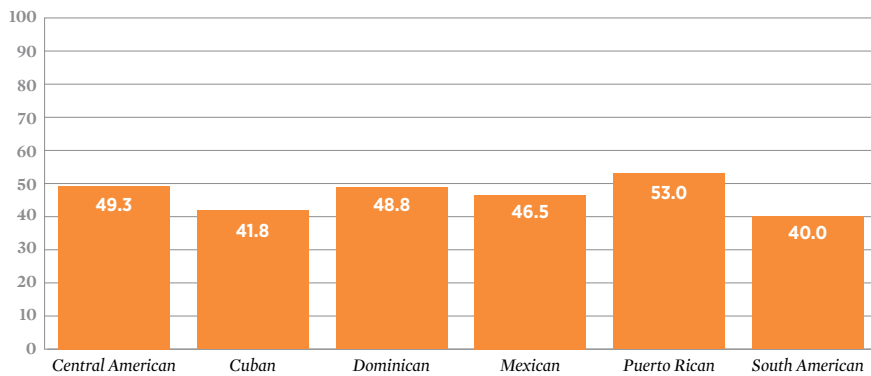
- Medicines, diet and exercise can all help lower sugar in the blood and prevent diabetes complications.

**Chart 67: Percent Under Diabetes Treatment by Age and Sex**



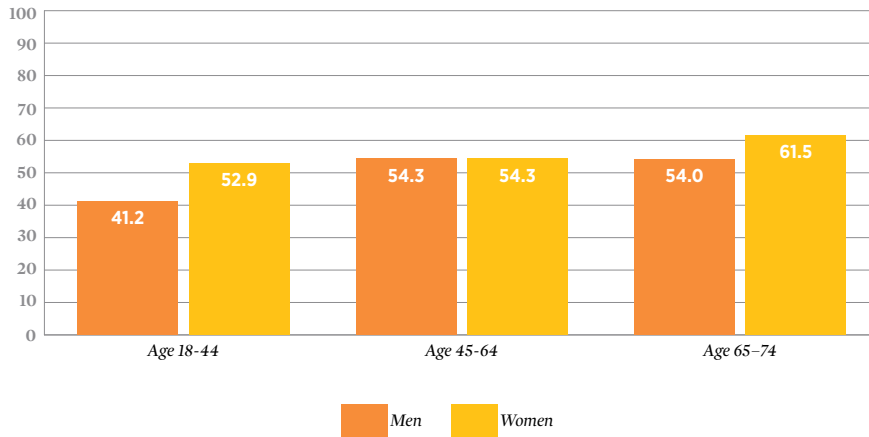
The percentage of participants under treatment for diabetes increased with age. It was higher in women than in men aged 45–64 years, but was higher in men than women aged 65–74 years.

**Chart 68: Percent Under Diabetes Treatment by Background**



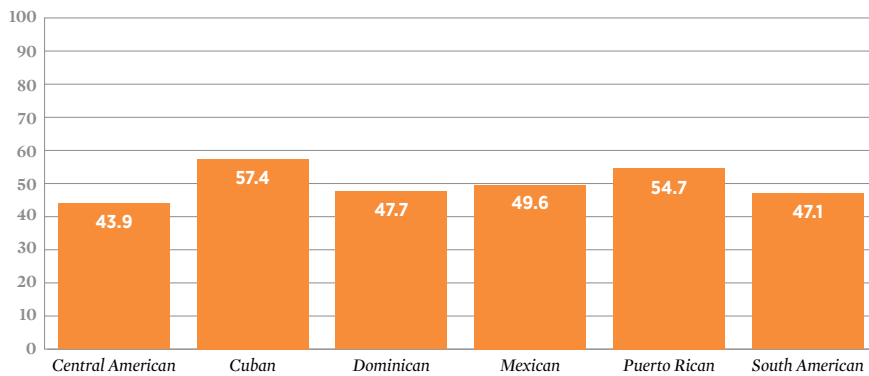
More diabetic participants of Puerto Rican background reported being treated for diabetes than those of Central American and Dominican backgrounds who, in turn, were more likely to be treated than those of Mexican, Cuban, or South American backgrounds.

**Chart 69: Percent with Diabetes Under Control by Age and Sex**



Only about half of all participants with diabetes had their condition under control. Control over diabetes increased slightly with age.

**Chart 70: Percent with Diabetes Under Control by Background**



More diabetic participants of Cuban and Puerto Rican backgrounds had control over their diabetes than those of Mexican, Dominican, South American, and Central American backgrounds.

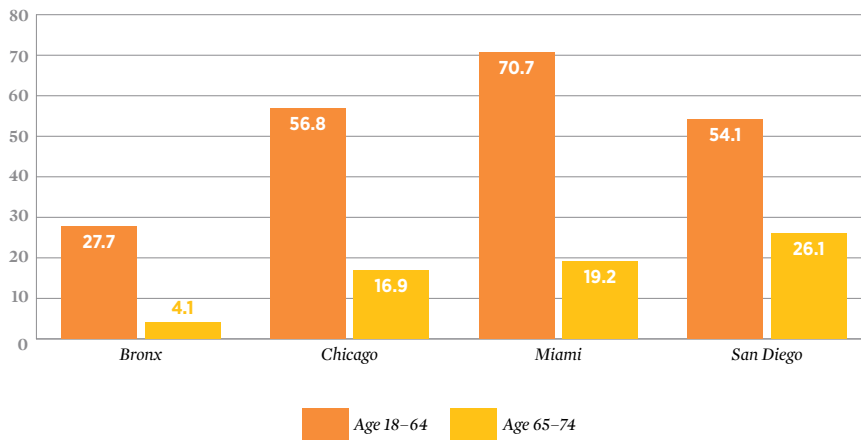
- Taking medications prescribed by the doctor can help lower blood sugar to an acceptable level and prevent diabetes complications.

# X. Health Insurance

## HEALTH INSURANCE COVERAGE

Having health insurance is an indicator of access to medical care in the United States. It increases the chance of having access to recommended preventive tests and services, and getting specialized medical care.

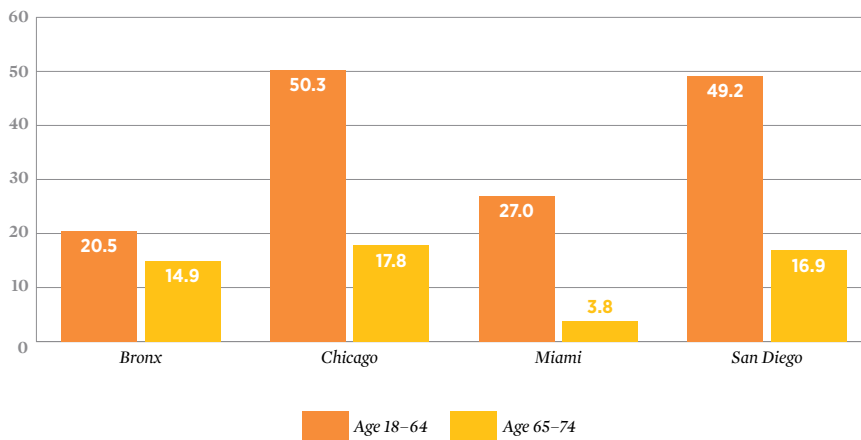
**Chart 71: Percent Without Health Insurance By Age and Field Center**



Among the four field centers, the highest percentage of participants without health insurance was in the Miami Field Center 18-64 age group and the lowest percentage without health insurance was in the Bronx Field Center 65-74 age group. The younger age group was more likely to be without health insurance than the older age group.

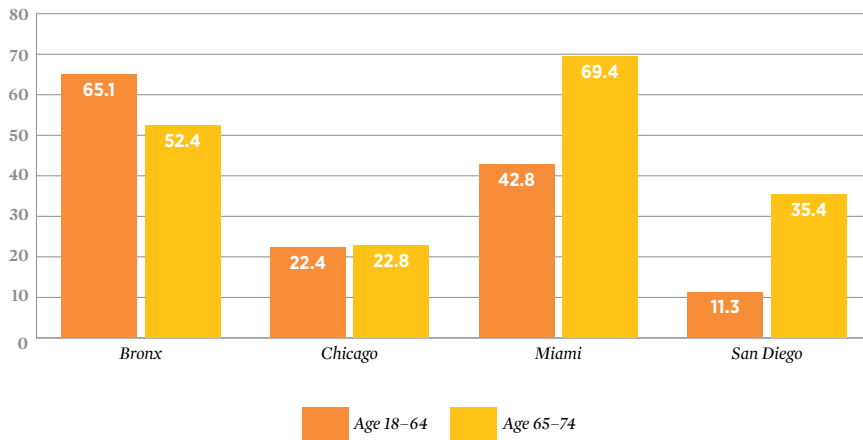
## TYPES OF HEALTH INSURANCE

**Chart 72: Percent with Employer Health Insurance by Age and Field Center**



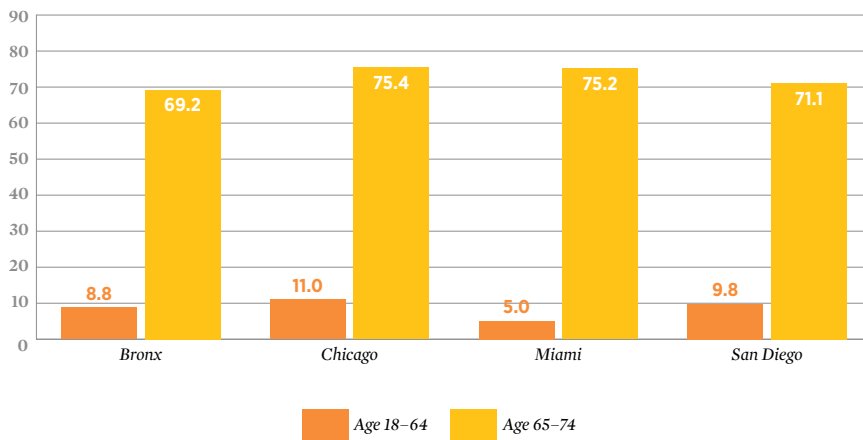
Approximately half of the participants in the Chicago and San Diego Field Centers 18-64 age group had insurance through their employers.

**Chart 73: Percent with Medicaid Health Insurance by Age and Field Center**



Most participants from the Bronx and Miami had insurance through Medicaid.

**Chart 74: Percent with Medicare Health Insurance by Age and Field Center**



The majority of participants in the 65-74 age group were insured through Medicare.



# XI. Summary

This Data Book provides a glimpse into the potential value of the Hispanic Community Health Study/Study of Latinos. It describes the health status of a sample of persons of diverse backgrounds and locations and identifies risk factors for cardiovascular diseases in this population. The study can serve as the foundation for future research into possible causes of and ways to prevent the important health problems shown in these pages. The goal is to improve the health of everyone by identifying the best ways to prevent health problems and applying the best treatments for diseases.

As shown in this Data Book, prediabetes, diabetes, and obesity continue to be very common in Hispanic /Latino populations. Prediabetes if not appropriately managed, can progress to diabetes. Additionally, obesity, which is very prevalent in this study population, can lead to diabetes and high blood pressure.

A new finding from this study showed that a substantial number of persons reported having sleep disturbances. Other studies have shown the harmful consequences of sleep disturbances to cardiovascular health.

Cardiovascular disease is caused by a combination of risk factors and the Data Book reports the percent of participants with up to three or more of harmful factors. In the oldest age group, about three-fourths have two or more of these harmful factors.

Some of the unhealthy behaviors, such as cigarette smoking, are at low levels in some of the background groups, but much too high in others. On the other hand, a substantial number of persons ate high numbers of servings of fruits

and vegetables. Younger men, both in work and recreation, were the most physically active. Although the percentage of patients with hypertension (high blood pressure) was not excessive, it is of significant concern because many participants were either not being treated or did not have their condition under control. Similarly, for diabetes, about two-thirds were aware of their diabetes, but less than half had it under control.

For some of these diseases and conditions with known prevention and treatment, the health message is clear:

- For prevention, follow recommendations to increase physical activity, and improve diet, and follow the advice of a doctor or health provider.
- For treatment, first know your blood pressure, cholesterol, and blood glucose numbers to have greater self-awareness of your health status.
- Seek advice from a medical provider on the best way to be treated for these conditions.
- Finally, follow all advice given.

In closing, an appreciation goes to all who have made this study possible. First, thanks go to the participants who devoted their time, energies, and dedication. Second, a vast number of physicians, nurses, technical personnel, administrators, computer experts, and statisticians have made this beginning possible. Finally, appreciation is given to all of the new staff, trainees and other individuals who developed an appreciation of the complexity and value of research that can improve the health of all Americans.

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Website: [www.nhlbi.nih.gov/health/health-topics/by-alpha/](http://www.nhlbi.nih.gov/health/health-topics/by-alpha/)

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