THE STATE OF HEALTH IN HOUSTON/HARRIS COUNTY 2009

Photos are courtesy of the U.S. Census Bureau
Welcome to the State of Health in Houston/Harris County. We are pleased to provide our many constituencies this broad assessment of the health of our community. Many organizations have joined together to determine the most pertinent health indicators, and gathered and organized these measures into a format that we hope will be both interesting and informative. This report provides:

- current measures available to evaluate the health in our community
- trends in key health measures to allow readers to evaluate changes in local health status and compare these measures to national goals
- resources for priority setting in preventing disease, promoting health and improving access to care
- health care information and websites for more detailed information
- summaries of key public health actions to address the identified issues

Please feel free to use this information as needed for planning and decision making. We hope this report assists you in your efforts to address health-related concerns in our community.

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Acknowledgments

In 2005, Stephen L. Williams, Director, Houston Department of Health and Human Services (HDHHS), and Herminia Palacio, Executive Director, Harris County Public Health and Environmental Services (HCPHES), created a joint State of Health annual report. In 2006, that document expanded to include three more public health groups, the Harris County Healthcare Alliance (HCHA), the Mental Health and Mental Retardation Authority of Harris County (MHMRA), and the Harris County Hospital District (HCHD). The addition of these sponsor organizations brought together more than sixty people to create a comprehensive and practical publication, The State of Health of Houston/Harris County, January 2007. Two years later, an additional sponsor, St. Luke’s Episcopal Health Charities (SLEHC) joined the group to develop the current publication — The State of Health of Houston/Harris County, 2009.

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Introduction

The State of Health of Houston/Harris County focuses on the well being of the nearly four million people who live in Houston/Harris County. Public Health emphasizes prevention and health promotion for the whole community rather than individuals, employs interventions aimed at the environment, human behavior, lifestyle and medical care, and is stimulated by threats to the health of that population. Public Health is committed to protect the community against infectious disease and environmental hazards; to collect, analyze and disseminate health data; to provide leadership, planning and policy development; and to assure community-wide quality and accessible health services.

The report offers concise summaries on more than forty health topics. Where possible, each section reports on Trends, Population Differences, Geographic Distribution, Economic Impact, Healthy People 2010 and Public Health Actions.

Trends reflects the direction the health issue is taking over a specified period of time using statistics from the Behavior Risk Factor Surveillance System (BRFSS). BRFSS is the world’s largest, on-going telephone health survey system, tracking health conditions and risk behaviors in the United States yearly since 1984. Conducted by the 50 state health departments as well as those in the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands with support from the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC), BRFSS provides state-specific information about issues such as asthma, diabetes, health care access, alcohol use, hypertension, obesity, cancer screening, nutrition and physical activity, tobacco use, and more. Federal, state, and local health officials and researchers use this information to track health risks, identify emerging problems, prevent disease and improve treatment.

Population Differences brings to light the ethnic, gender and socioeconomic disparities apparent with many health issues. Geographic Distribution presents how various locales are impacted by health issues. The Economic Impact sections provide statistics on the dollars and lives lost and human suffering related to the consequences of each health issue.

Healthy People 2010 is a measure developed by the U.S. Department of Health and Human Services. The study uses leading health indicators to measure the health of the nation over the next 10 years. The Leading Health Indicators are: Physical Activity, Overweight and Obesity, Tobacco Use, Substance Abuse, Responsible Sexual Behavior, Mental Health, Injury and Violence, Environmental Quality, Immunization and Access to Health Care. Each of the 10 Leading Health Indicators has one or more objectives from Healthy People 2010 associated with it. As a group, the Leading Health Indicators reflect the major health concerns in the United States at the beginning of the 21st century. (Find out more at www.healthypeople.gov/.)

Public Health Actions lists the actions being taken by Public Health to address the health issue based on the Ten Essential Public Health Functions. They are: monitor health status to identify community health problems; diagnose and investigate health problems and health hazards in the community; inform, educate, and empower people about health issues; mobilize community partnerships to identify and solve health problems; develop policies and plans that support individual and community health efforts; enforce laws and regulations that protect health and ensure safety; link people to needed personal health services and assure the provision of health care when otherwise unavailable; assure a competent public health and personal health care workforce; evaluate effectiveness, accessibility, and quality of personal and population-based health services; and research for new insights and innovative solutions to health problems.

Due to the breadth of health issues included, no section can go into great detail. Readers are directed to governmental and advocacy websites for further inquiry under “For More Information.”

Much of the data presented is collected at the county level—that is, there is no distinction made between the jurisdictions of Houston and Harris County when the data are gathered. When data can be differentiated between the two jurisdictions, in many cases, the results are actually quite similar; therefore, much of the data is reported as “Houston/Harris County.” In most cases, this designation will not include information from the areas of Houston within Fort Bend and Montgomery Counties. If important differences in health data are noted between the two jurisdictions, the findings are reported separately as either “Houston” or “Harris County (excluding the City of Houston).” In this case, “Houston” is inclusive of the areas of the city within Fort Bend and Montgomery Counties.

This report uses many acronyms. Please see the Appendices for definitions.
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Demographics

Harris County is the third most populous county in the United States, with an estimated 3.98 million residents in 2008, according to the U.S. Census Bureau. Of those, approximately 2.2 million (55%) were residents of the City of Houston, the fourth largest city in the country. While most of the City of Houston is contained within Harris County, Houston also extends slightly into Fort Bend County to the southwest and Montgomery County to the north. The population of Harris County is growing rapidly, having doubled from 1970 to 2000 and increasing by 17.1% from 2000 to 2008. Growth was more rapid in the suburbs; the City of Houston population increased by 13.6% during 2000-2008.

Harris County’s population is diverse—more so than Texas or the U.S. According to the U.S. Census Bureau’s 2007 American Community Survey, Harris County has a greater proportion of African American and Asian residents than Texas or the nation, and a significantly higher proportion of Hispanic residents than the U.S. population. The Hispanic proportion (41%) of City of Houston residents is also greater than Harris County.

Year 2007 Census data show that 29% of county residents are under the age of 18, compared with 25% of the U.S. population. Eight percent of the county’s population is aged 65 or over, compared to 10% of the population of Texas and 13% of the U.S. population.

Male and female residents are closely balanced in Houston and Harris County. Census figures show that in 2007, Harris County and Houston had 49.8% and 49.6% female persons, respectively.

[See detailed data for Houston and Harris County in Appendix A]
Race and Hispanic Population Trends: 1980-2000 for the City of Houston, Harris County, Texas and the U.S.

Much of the growth in Houston/Harris County can be attributed to an expanding immigrant population. The following charts show the changing racial and ethnic composition in Houston, Harris County, Texas and the U.S.
In *The Houston Area Survey*, published in 2002, Dr. Stephen Klineberg wrote that the United States is moving from "a European to a universal nation." The graphs below depict the nature of that change showing increasing percentages of minority groups. The Hispanic population is growing more rapidly than the other groups, while the white population is decreasing.

**State of Texas Population Distribution**
**Race & Hispanic Origin: 1980-2000**

- **1980**: Other 14%, Black 2.2%, White 66.7%, Hispanic 4.2%
- **1990**: Other 119%, Black 116%, White 60.6%, Hispanic 32.0%
- **2000**: Other 6.5%, Black 25.6%, White 32.0%, Hispanic 39.5%

**United States Population Distribution**
**Race & Hispanic Origin: 1980-2000**

- **1980**: Other 2.5%, Black 11.5%, White 79.6%, Hispanic 4.5%
- **1990**: Other 3.6%, Black 11.8%, White 75.6%, Hispanic 6.3%
- **2000**: Other 2.3%, Black 12.1%, White 69.1%, Hispanic 12.6%

Source: U.S. Census Bureau
Healthy People 2010 is the prevention agenda for the Nation. It identifies steps we can take to maintain and improve health for ourselves, our families and our communities. It is a broad-based collaborative effort among government, private, public, and nonprofit organizations, and has set national disease prevention and health promotion objectives to be achieved by the end of this decade.

The effort has two overarching goals: to help individuals of all ages increase life expectancy and improve their quality of life; and to eliminate health disparities.
Socioeconomic Indicators

According to the World Health Organization (WHO), “Poor social and economic circumstances affect health throughout life.” Also, “People further down the social ladder usually run at least twice the risk of serious illness and premature death as those near the top.”¹ Such social and economic indicators include education level, employment, income and housing.

Education

Harris County and the Houston’s high school graduation rates are lower than that of the U.S. population. According to 2007 Census data, an estimated 77% of Harris County residents aged 25 and over are high school graduates or the equivalent. This compares to a high school completion rate of 73% in Houston, 79% in Texas and 85% in the U.S. Among Harris County adults aged 25 and over, 27% have a bachelor’s degree or higher, compared to 28% in the U.S. population. Twenty-five percent of Texas adults have a bachelor’s degree or higher.

There are differences in educational attainment among racial and ethnic groups in Harris County. According to the 2007 Rice University Houston Area Survey, 5% of U.S.-born white Harris County residents have not completed high school, compared with 12% of U.S.-born African American residents and 19% of U.S.-born Hispanic residents. Further, 50% of Hispanic immigrants living in Harris County lack a high school diploma. In addition, 47% of U.S.-born white Harris County residents have a bachelor’s degree or higher.

Economic Impact of Education

Education contributes significantly to one’s income potential. On average, individuals who complete high school earn $25,900 a year while college graduates earn on average $45,400 annually. Individuals with masters, doctoral, and professional degrees earn $54,500, $81,400, and $99,300, respectively. In addition, those individuals with a bachelor’s degree are also more likely to work full-time than individuals who have not finished high school and thus further increase their earnings.

During a lifetime, the individual who has not finished high school earns an estimated $1 million dollars while the high school graduate earns $1.2 million. With a bachelor’s degree one’s lifetime earning estimate nearly doubles to $2.1 million. Those with master’s, doctoral, and professional degrees are estimated to earn $2.5 million, $3.4 million, and $4.4 million during a lifetime respectively.²

Factors Influencing Health

| Secondary School Dropout Rates for 21 Harris County ISDs and the State of Texas 2002-2007 |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| % Annual Dropout Rate 2002-03 | % Annual Dropout Rate 2003-04 | % Annual Dropout Rate 2004-05 | % Annual Dropout Rate 2005-06 | % Annual Dropout Rate 2006-07 | % Annual Dropout Rate 2007-08 |
| Grades 7-8 | Grades 7-12 | Grades 7-8 | Grades 7-12 | Grades 7-8 | Grades 7-12 | Grades 7-8 | Grades 7-12 |
| Harris County ISDs | 0.4 | 1.2 | 0.3 | 1.2 | 0.3 | 1.3 | 0.7 | 3.1 | 0.7 | 3.6 |
| Houston ISD | 0.9 | 2.4 | 0.6 | 2.2 | 0.7 | 2.4 | 1.6 | 4.7 | 1.2 | 5.0 |
| State of Texas | 0.2 | 0.9 | 0.2 | 0.9 | 0.2 | 0.9 | 0.4 | 2.6 | 0.4 | 2.7 |


Language and Nativity

Houston/Harris County has a greater proportion of foreign-born residents, as well as residents who do not speak English at home, than that of Texas or the nation. Year 2007 Census data show that 25% of Harris County residents are foreign-born, compared with 28% of Houston residents, 16% of Texas residents and 13% of U.S. residents. In 2007, 74% of foreign-born Harris County residents reported Latin America as their place of birth and 17% reported Asia. In Houston, 75% of foreign-born residents reported being born in Latin America and 15% in Asia.

Of Harris County residents aged five or older, 2007 Census data show that 41% speak a language other than English at home, compared with 44% of Houston residents, 34% of Texas residents and 20% of U.S. residents. Of Harris County residents who speak a language other than English at home, 53% report not speaking English very well compared to 56% of Houston residents. Eighty-three percent of those who speak a language other than English at home speak Spanish.

Economic Impact of Language and Nativity

Immigrants may find that limited proficiency in English restricts their job choices. An immigrant is more likely to be employed in construction or housecleaning compared to banking or health services. This may be one cause of an over-representation of immigrants in the low income population. In Texas, immigrants make up 12% of the state population but 18% of the low income population, where low income is defined as 200% above the federal poverty level. In Houston, an estimated one quarter of the low income population is comprised of immigrants.

Employment and Income

According to the Texas Workforce Commission, in August 2008 the estimated unemployment rate for the Houston-Baytown-Sugar Land MSA civilian labor force was 5.0%. This compares to a rate of 5.1% in Texas and 6.4% in the U.S. According to census data, in 2007 the median household income in Harris County was $49,963 and $40,856 in Houston. In comparison, the median income in Texas households was $47,548 and $50,740 in U.S. households.

2007 Census data show that 16% of Harris County residents and 21% of Houston residents live below the Federal Poverty Level (FPL), which in 2007 was $10,590 for an individual and $21,203 for a family of four. In comparison, 16% of Texas residents and 13% of U.S. residents live below the FPL. In Harris County, 24% of children under age 18 live below the FPL, compared to 31% of Houston children and 18% of U.S. children. Twelve percent of Harris County residents and 15% of Houston residents over age 65 live below the FPL, compared with 10% of U.S. adults over age 65.

Disparities in income are also seen among racial and ethnic groups. According to the 2002 Houston Area Survey, among Harris County employed residents 24% of whites earned less than $25,000 per year, compared with 55% of African Americans, 58% of U.S.-born Hispanics and 70% of Hispanic immigrants.

Economic Impact of Employment and Income

Many studies have found a strong correlation between overall well-being and employment. For example, employed individuals experience fewer health disorders than those who are unemployed. Further, well-being also depends in part on the person’s job satisfaction. Individuals who report being satisfied with their job are healthier than those who report dissatisfaction.

Studies suggest improved health among employed persons may be attributed in part to the increased income from employment, which allows them to afford a higher standard of living, including better health care.
Uninsured in Houston Area

Texas has the highest rate of uninsured persons in the nation. According to 2006-2008 Census data, one in four residents, or 25% is without any form of health insurance, compared to 15% of U.S. residents. In the City of Houston, data from the U.S. Census Bureau’s Current Population Survey indicate that for the 2006-2008 three year average, a total of 656,253 residents under age 65, or 32.5% had no health insurance. In Harris County, 1,132,345 or 31.2% of residents under age 65 were uninsured. Among all ages, 29.9% were without insurance in Houston and 28.9% in Harris County.

Pronounced differences in insurance status are apparent among racial and ethnic groups in the Houston area. The Behavior Risk Factor Surveillance System (BRFSS) survey of adults who report that they are uninsured show that in the Houston-Baytown-Sugar Land MSA, in 2007, 10.6% of whites are uninsured, compared to 43.7% of Hispanics and 35.9% of blacks.

Costs prevent some persons from obtaining insurance. A Texas Department of State Health Services (TDSHS) Advisory Council report noted that Texas health insurance costs increased 49% for families between 2002 and 2004 while wages rose 12%.¹

Uninsured in Houston-Baytown-Sugar Land MSA 2002-2007

Source: TDSHS BRFSS survey
Uninsured is percent of all respondents to each ethnic group.


<table>
<thead>
<tr>
<th>Region</th>
<th>Not Insured</th>
<th>Percent</th>
<th>Insured</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>National 2008</td>
<td>44,965,340</td>
<td>17.1%</td>
<td>21,350,544</td>
<td>82.9%</td>
<td>262,315,884</td>
</tr>
<tr>
<td>National Average, Three-year, 2006-08</td>
<td>45,258,624</td>
<td>17.4%</td>
<td>215,219,514</td>
<td>82.6%</td>
<td>260,478,137</td>
</tr>
<tr>
<td>Texas Average, Three-year, 2006-08</td>
<td>5,610,773</td>
<td>27.0%</td>
<td>15,149,129</td>
<td>73.0%</td>
<td>20,759,902</td>
</tr>
<tr>
<td>Houston/Harris County Metro Region, 2006-08</td>
<td>1,541,388</td>
<td>29.9%</td>
<td>3,608,325</td>
<td>70.1%</td>
<td>5,149,715</td>
</tr>
<tr>
<td>Houston-Baytown-Sugar Land CBSA (Adjusted to 2007 pop.)</td>
<td>1,541,388</td>
<td>29.9%</td>
<td>3,608,325</td>
<td>70.1%</td>
<td>5,149,715</td>
</tr>
<tr>
<td>Harris County (Adjusted to 2007 pop.)</td>
<td>1,132,342</td>
<td>31.2%</td>
<td>2,500,452</td>
<td>68.8%</td>
<td>3,632,794</td>
</tr>
<tr>
<td>City of Houston (Adjusted to 2007 pop.)</td>
<td>656,253</td>
<td>32.5%</td>
<td>1,364,231</td>
<td>67.5%</td>
<td>2,020,485</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau Current Populations Surveys for Texas, 2006-2008. Population estimates from 2007 mid-year U.S. Census Bureau. Note: All metropolitan region populations are based on 2007 mid-year estimates. The national and state estimates are derived directly from population weights applied to the original CPS ASEC data, which are designed to sum to state and national population totals.

Homelessness

The homeless are one group that often is uninsured. The 2007 Enumeration and Needs Assessment of Homeless Persons in Houston/ Harris County² estimated 10,363 homeless persons at any point in time in the local area, compared to an average of 13,000 in 2005. Of these, a minimum of 5,346 do not have access to shelter when needed. Among 1,411 persons surveyed, 46% of the homeless had been without a residence for five or more years. People of color were over-represented among the homeless who participated in the survey. For example, African Americans comprise 18% of the County population, but 57% of those surveyed

were African American. In addition, more than 75% of the homeless respondents were male.

More than 50% of those surveyed reported no income or access to financial resources. Substance abuse was reported by 60% of the respondents and mental health disorders were reported by 57%. Over 69% stated that they needed dental care and 71% needed medical care.

Almost half the group indicated that they did not have health insurance. Significant barriers were described in their attempts to access health care, although 68% stated they were able to access at least minimal health services.

**Children’s Health Insurance Program (CHIP)**

The Children’s Health Insurance Program (CHIP) is designed for children in families who earn too much money to qualify for Medicaid health care, yet cannot afford to buy private insurance. The parents may have jobs that do not offer health insurance for children, or offer health insurance that the family cannot afford.

CHIP assists many Texas families with this problem. Higher-income families may pay monthly premiums. Most families also will have co-payments for doctor visits and prescription drugs. CHIP is offered by private health plans and covers services such as routine medical care, hospital care, physical therapy, prescription drugs, dental care and immunizations. Recently, CHIP began covering unborn children of qualified women.

Only Texas residents and U.S. citizens or legal permanent residents qualify for CHIP. Most CHIP enrollees were ages six to 18. Race-ethnicity proportions in CHIP are difficult to assess due to poor reporting; 49% of that information was missing.

The number of children enrolled in CHIP in September 2008 (98,868) increased 46.6% from the 67,422 enrolled in September 2007. Since March 2008 barriers have been removed to CHIP enrollment by restoring a 12-month enrollment period of continuous coverage.

<table>
<thead>
<tr>
<th>CHIP Enrollment in Harris County</th>
<th>Age 0-5</th>
<th>Age 6-11</th>
<th>Age 12-18</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td>Total</td>
<td>Percent</td>
<td>Total</td>
<td>Percent</td>
</tr>
<tr>
<td>Anglo</td>
<td>613</td>
<td>3.4</td>
<td>1,280</td>
<td>3.2</td>
</tr>
<tr>
<td>Black</td>
<td>782</td>
<td>4.3</td>
<td>2,521</td>
<td>6.3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4,746</td>
<td>26.2</td>
<td>12,705</td>
<td>31.8</td>
</tr>
<tr>
<td>Native American</td>
<td>3</td>
<td>0.0</td>
<td>17</td>
<td>0.0</td>
</tr>
<tr>
<td>Asian</td>
<td>429</td>
<td>2.4</td>
<td>1,071</td>
<td>2.7</td>
</tr>
<tr>
<td>Not Known*</td>
<td>11,568</td>
<td>63.8</td>
<td>22,311</td>
<td>55.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>18,141</td>
<td>100.0</td>
<td>39,905</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Percent by Age</strong></td>
<td>19.1</td>
<td>42.1</td>
<td>38.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>


*Race and ethnicity are poorly reported for CHIP enrollees; 55% missing.

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Medicaid

Medicaid is a jointly funded state-federal health care program, established in Texas in 1967 and administered by the Health and Human Services Commission (HHSC). In January, 2009, about one in nine Texans (2.6 million of the 24.3 million) relied on Medicaid for health insurance or long-term services and supports.1

In the Texas state fiscal year 2007, all funds (which include state and federal funds) expended for Medicaid services were estimated at $19.6 billion.1 Medicaid pays for acute health care services (physician, inpatient, outpatient, pharmacy, lab and X-ray). It also covers long-term services and supports for aged and disabled clients.

Medicaid serves primarily low-income families, non-disabled children, related caretakers of dependent children, pregnant women, the elderly and people with disabilities. In 2005, women and children accounted for the largest percentage of the Medicaid population. Fifty-five percent of the Medicaid population was female, and 74% was under age 21. Non-disabled children make up the majority (68%) of all Medicaid clients, but account for a relatively small portion (28%) of Texas Medicaid spending on direct health care services.1

As of October 2008, 464,993 Harris County residents, or approximately 12% of the population, were enrolled in the State Medicaid program. Seventy-one percent (330,296) of these enrollees were aged 18 or younger. This represents an increase among all enrollees from October 2006 when 411,514 were enrolled. The percent of those aged 18 or younger enrolled remained the same at 71%.

In Harris County, the largest proportion of Medicaid enrollees was in the age group under 6 years old (35%) while the smallest group was age 65 or over (10%). Hispanics were the largest (50%) ethnic group enrolled in Medicaid followed by African Americans with 31%.

Temporary Assistance to Needy Families accounted for 3.1% of Medicaid enrollees in Harris County compared to 5.1% of Texas enrollees. Thirty-one percent of the Refugee program enrollees were in Harris County, but across all programs, Harris County represented 16.1% of Texas Medicaid Enrollees in October 2008.2

Medicaid Point-in-Time Enrollment
Harris County—October 2008

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Age 0-5</th>
<th>Age 6-11</th>
<th>Age 12-18</th>
<th>Age 19-24</th>
<th>Age 65+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/Ethnicity</td>
<td>Total</td>
<td>%</td>
<td>Total</td>
<td>%</td>
<td>Total</td>
<td>%</td>
</tr>
<tr>
<td>Anglo</td>
<td>13,831</td>
<td>8.5</td>
<td>7,452</td>
<td>7.9</td>
<td>6,849</td>
<td>9.3</td>
</tr>
<tr>
<td>Black</td>
<td>36,726</td>
<td>22.5</td>
<td>26,662</td>
<td>28.4</td>
<td>26,649</td>
<td>36.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>105,763</td>
<td>64.8</td>
<td>55,245</td>
<td>58.8</td>
<td>35,561</td>
<td>48.5</td>
</tr>
<tr>
<td>Native American</td>
<td>569</td>
<td>0.3</td>
<td>325</td>
<td>0.3</td>
<td>225</td>
<td>0.3</td>
</tr>
<tr>
<td>Asian</td>
<td>3,886</td>
<td>2.4</td>
<td>2,218</td>
<td>2.4</td>
<td>1,879</td>
<td>2.6</td>
</tr>
<tr>
<td>Not Known</td>
<td>2,316</td>
<td>1.4</td>
<td>2,017</td>
<td>2.1</td>
<td>2,123</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>163,091</td>
<td>100.0</td>
<td>93,919</td>
<td>100.0</td>
<td>73,286</td>
<td>100.0</td>
</tr>
<tr>
<td>Percent by Age</td>
<td>35.1</td>
<td>20.2</td>
<td>15.8</td>
<td>18.6</td>
<td>10.3</td>
<td>100.0</td>
</tr>
</tbody>
</table>

1Texas Health and Human Services Commission website. Available at http://www.hhsc.state.tx.us/Medicaid/reports/.

*Race and ethnicity are poorly reported.
**Primary Care Physicians**

The U.S. Department of Health and Human Services (DHHS) defined primary care physicians as those in the following specialties: family practice, general practice, internal medicine, pediatrics, and obstetrics and gynecology. The number of physicians in these specialties is important as they typically serve as the entry point for patients into the health care system, and the majority of patient visits are to these doctors.

Physician shortages are generally more acute in rural areas. However, even metropolitan areas can be considered to have physician shortages due to physician location, accessibility to transportation, income level, and natural and physical barriers. Houston/Harris County, largely a metropolitan area, contains areas designated as medically underserved areas (MUAs) with shortages of primary care physicians as one of the defining features.

MUAs are defined by the federal government as those areas having inadequate health services. The determining factors in these areas are the percentage of the population aged 65 and over, the poverty rate, the infant mortality rate, and the ratio of number of primary care physicians to the area's population.

As of March, 2007, TDSHS reports that Houston/Harris County had 19 areas designated as MUAs, and two areas of medically underserved populations (MUPs).

In Harris County, the chart below shows the ratio of physicians to 100,000 population. In 2005, Harris County showed a ratio of 79.3 primary care physicians to 100,000 population. This is compared to the Texas ratio of 68.3 and the U.S. ratio of 81.

<table>
<thead>
<tr>
<th></th>
<th>Harris County</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>2001</td>
</tr>
<tr>
<td>Primary Care</td>
<td>2,728</td>
<td>2,772</td>
</tr>
<tr>
<td>Ratio per 100,000 population</td>
<td>82.2</td>
<td>82.1</td>
</tr>
</tbody>
</table>

**Primary Care Physicians (PCP) in Harris County and Texas**

<table>
<thead>
<tr>
<th>2000-2007</th>
<th>Harris County</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratio per 100,000 population</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Texas Medical Board—September-October: 2000-2007
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Health Behaviors

According to Healthy People 2010, “individual behaviors and environmental factors are responsible for about 70% of all premature deaths in the United States.” Such behaviors include cigarette smoking, poor diet and lack of preventive health services. Environmental health risks include poor air and water quality, lack of food safety and lead in the home environment. Further, the level of community preparedness for public health emergencies impacts the health and well-being of all citizens.

Healthy People 2010
Overview

Tobacco use is the leading cause of preventable disease and death in the nation. The Centers for Disease Control and Prevention (CDC), a component of the U.S. Department of Health and Human Services, reports that nationally 20% of all deaths can be linked to tobacco, a causative agent in lung cancer, heart disease and stroke. The rates of tobacco use have decreased dramatically since the 1960s, in part due to greater public awareness about the risks of smoking. However, according to the CDC, about one out of five American adults continues to smoke.

Nationally, tobacco use among youth has declined in recent years. The CDC notes that 20% of high school students were smokers in 2007, compared to 28.5% in 2001.

In Texas, tobacco use among high school students has increased. The TDSHS Texas Youth Tobacco Survey reports that among high school students in Health Service Region 6/5s (HSR 6/5s), an area that includes Houston/Harris County, prevalence of current tobacco use in 2006 was 32%, an increase from 26% in 2001. For middle school students in HSR 6/5s, prevalence of current tobacco use was 16% in 2006, the same as in 2001.

More than 4,000 chemical compounds have been identified in tobacco smoke. Of these, at least 43 are known to cause cancer in humans or animals.

—CDC Fact Sheet

Trends: Houston/Harris County 2002-2007

The Behavior Risk Factor Surveillance System (BRFSS) survey of adults shows that the percent of adults who report that they smoke has been declining each year in the Houston-Baytown-Sugar Land Metropolitan Statistical Area (MSA) (see appendix for map of this area), as well as in Texas and the U.S.

TDSHS Vital Statistics data indicate that in 2004, 3% of all women who gave birth in Harris County smoked during pregnancy, a decrease from 4.8% in 1999. In Texas, 5.6% of women who gave birth in 2004 smoked during pregnancy, a decrease from 6.8% in 1999.

Population Differences

Whites overall report smoking more than blacks or Hispanics. The 2007 BRFSS showed that 16.4% of Houston-Baytown-Sugar Land MSA whites smoked, compared to 16.2% of blacks and 15.0% of Hispanics. Blacks show no significant decrease in smoking since 2002.

Men are also more likely to smoke than women in Harris County. In 2007, 16.8% of men were smokers, compared to 14.2% of women.
Public Health Actions

- Inform, educate and empower people about the risks of smoking; provide health assessment and education about healthy lifestyles through public health clinics and outreach
- Enforce laws and regulations that protect health and ensure safety through investigation of violations of non-smoking city ordinances

Tobacco is the leading cause of preventable disease and death in the nation. Tobacco harms nearly every organ in the body.

For More Information

CDC: Smoking and Tobacco Use: [www.cdc.gov/tobacco/index.htm](http://www.cdc.gov/tobacco/index.htm)
Fact Sheet for Youth: [www.cdc.gov/HealthyYouth/tobacco/facts.htm](http://www.cdc.gov/HealthyYouth/tobacco/facts.htm)
Tobacco Fact Sheets: [www.cdc.gov/tobacco/data_statistics/fact_sheets/index.htm](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/index.htm)
Spanish Information: [www.cdc.gov/spanish/prevencion/tabaquismo.html](http://www.cdc.gov/spanish/prevencion/tabaquismo.html)
American Lung Association: [www.lungusa.org](http://www.lungusa.org)
Harris County Public Health and Environmental Services: [www.hcphes.org](http://www.hcphes.org)

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Economic Impact of Tobacco Use

During 1997-2001, costs related to cigarette smoking in the U.S. exceeded $167 billion per year. This included an estimated $75 billion in health-care expenditures and $92 billion in productivity losses. For each pack of cigarettes sold, an estimated $3.45 is spent on medical care and $3.73 is lost in productivity.

Tobacco use is an enormous burden on Texas, leading to 24,000 deaths and costs exceeding $10 billion in direct medical costs and lost productivity each year.

In Harris County, in 2004, there were 468 deaths from cancer of the lung and bronchus among persons who died before age 65. These individuals averaged 8.4 years of potential life lost (YPLL), had they lived to 65.

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Geographic Distribution

Tobacco Use in the Past Month for People Aged 12 and Older, 2004-2006

![Tobacco Use Map](image)

Source: National Survey on Drug Use and Health, data from their national survey. Available at [www.oas.samhsa.gov](http://www.oas.samhsa.gov)

Healthy People 2010

Objective 27-1a: Reduce cigarette smoking by adults aged 18 and older

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>24</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>12</td>
</tr>
<tr>
<td>Houston-Baytown-Sugar Land MSA 2007</td>
<td>15</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>19</td>
</tr>
<tr>
<td>United States 2007</td>
<td>19</td>
</tr>
</tbody>
</table>

---

Tobacco Use in the Past Month for People Aged 12 and Older, 2004-2006

![Tobacco Use Chart](image)

Source: TDSHS

Harris County Deaths from Cancer of the Trachea, Bronchus and Lung

![Harris County Deaths Chart](image)

Source: TDSHS

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3 TDSHS, with further analysis by Bexar County Community Health Collaborative, Dr. Bill Spears.
Overview
Secondhand smoke, also known as environmental tobacco smoke (ETS), is a complex mixture of gases and particles that includes smoke from the burning cigarette, cigar, or pipe tip (sidestream smoke) and exhaled mainstream smoke. Increasing concern is developing about the dangers of secondhand smoke. The following is taken from a report from the Surgeon General.


Major Conclusions of the Report

1.1 Secondhand smoke causes premature death and disease in children and in adults who do not smoke

1.1.1 Concentrations of many cancer-causing and toxic chemicals are higher in ETS than in the smoke inhaled by smokers.

1.1.2 Breathing ETS for even a short time can have immediate adverse effects on the cardiovascular system and interferes with the normal functioning of the heart, blood, and vascular systems in ways that increase the risk of a heart attack.

1.1.3 Nonsmokers who are exposed to ETS at home or at work increase their risk of developing heart disease by 25-30 percent.

1.1.4 Nonsmokers who are exposed to ETS at home or at work increase their risk of developing lung cancer by 20-30 percent.

1.2 Children exposed to secondhand smoke are at an increased risk for sudden infant death syndrome (SIDS), acute respiratory infections, ear problems and more severe asthma. Smoking by parents causes respiratory symptoms and slows lung growth in their children.

1.2.1 Children who are exposed to ETS are inhaling many of the same cancer-causing substances and poisons as smokers. Because their bodies are developing, infants and young children are especially vulnerable to the poisons in ETS.

1.2.2 Both babies whose mothers smoke while pregnant and babies who are exposed to ETS after birth are more likely to die from sudden infant death syndrome (SIDS) than babies who are not exposed to cigarette smoke.

1.2.3 Babies whose mothers smoke while pregnant or who are exposed to ETS after birth have weaker lungs than unexposed babies, which increases the risk for many health problems.

1.2.4 Among infants and children, ETS causes bronchitis and pneumonia, and increases the risk of ear infections.

1.2.5 ETS exposure can cause children who already have asthma to experience more frequent and severe attacks.

1.3 The scientific evidence indicates that there is no risk-free level of exposure to ETS.

1.3.1 Short exposures to ETS can cause blood platelets to become stickier, damage the lining of blood vessels, decrease coronary flow velocity reserves, and reduce heart rate variability, potentially increasing the risk of a heart attack.

100% Smokefree Ordinances In Large Texas Cities

<table>
<thead>
<tr>
<th>City</th>
<th>Workplace</th>
<th>Restaurants</th>
<th>Freestanding Bars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Corpus Christi</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Dallas</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>El Paso</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Houston</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>San Antonio</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: Texas DSHS Texas Smoke-free Ordinance Database at http://txshsord.coe.uh.edu, retrieved on 10-2-08.

1.3.2 ETS contains many chemicals that can quickly irritate and damage the lining of the airways. Even brief exposure can result in upper airway changes in healthy persons and can lead to more frequent asthma attacks in children who already have asthma.

1.4 Exposure of adults to secondhand smoke has immediate adverse effects on the cardiovascular system and causes coronary heart disease and lung cancer.

1.5 Many millions of Americans, both children and adults, are still exposed to secondhand smoke in their homes and workplaces despite substantial progress in tobacco control.

1.6 Eliminating smoking in indoor spaces fully protects nonsmokers from exposure to secondhand smoke. Separating smokers from nonsmokers, cleaning the air and ventilating buildings cannot eliminate exposures of nonsmokers to secondhand smoke.

1.61 Conventional air cleaning systems can remove large particles, but not the smaller particles or the gases found in ETS.

1.62 Routine operation of a heating, ventilating, and air conditioning system can distribute ETS throughout a building.

1.63 The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the preeminent U.S. body on ventilation issues, has concluded that ventilation technology cannot be relied on to control health risks from ETS exposure.

**There is no risk-free level of exposure to Environmental Tobacco Smoke.**
—The Surgeon General

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For More Information

The United States Department of Health and Human Services: The Surgeon General’s Report (Fact Sheets can also be downloaded from this site): [www.surgeongeneral.gov/library/secondhandsmoke/](http://www.surgeongeneral.gov/library/secondhandsmoke/)

The United States Environmental Protection Agency: [www.epa.gov](http://www.epa.gov)

Texas Department of State Health Services: [www.dshs.state.tx.us/tobacco/](http://www.dshs.state.tx.us/tobacco/)

Americans for Nonsmokers Rights and ANR Foundation: [www.no-smoke.org/](http://www.no-smoke.org/)

American Heart Association: [www.americanheart.org](http://www.americanheart.org)

American Lung Association: [www.lungusa.org](http://www.lungusa.org)

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Report from the Environmental Protection Agency

An excerpt from a 1992 report follows:

1.2 Conclusions from the Environmental Protection Agency (EPA) 1992 report Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders:\(^2\)

1.21 ETS has been classified as a Group A carcinogen under EPA’s carcinogen assessment guidelines. This classification is reserved for those compounds or mixtures, which have been shown to cause cancer in humans, based on studies on human populations.

1.22 Exposure to ETS is responsible for approximately 3,000 lung cancer deaths each year in non-smoking adults.

ETS is a mixture of over 4,000 compounds, more than 40 of which are known to cause cancer in humans or animals, and many of which are strong irritants according to the 1993 EPA report *The Inside Story. A Guide to Indoor Air Quality.*
Nutrition

Overview
According to the CDC, poor nutrition is a major cause of the epidemics of obesity and diabetes in the U.S. Poor nutrition, when combined with physical inactivity, is associated with many chronic diseases that develop into preventable disabilities and deaths, such as heart disease and cancer. Conversely, practicing good nutrition, being active and maintaining a healthy weight can lower the risk of these chronic conditions and others, including osteoporosis, arthritis and stroke.

Key components of a healthy diet are low in fat, especially saturated fat, and plenty of fruits, vegetables and whole grains.

Fruit and Vegetable Consumption
CDC recommends that all Americans consume at least five servings of fruits and vegetables each day. According to the 2007 BRFSS, 25.1% of surveyed Harris County adults reported eating an average of five or more servings of fruits and vegetables a day, an increase from 22.6% in 2005. In comparison, 25.2% of Texas adults reported consuming five or more servings, and 25.0% of U.S. adults reported eating the recommended number of servings for fruits and vegetables in 2007.

Trends: Houston/Harris County 2001-2007
Fruit and vegetable intake may decline during the adolescent and teenage years—a time crucial to establishing a healthy lifestyle. Locally, high school students report that they eat fewer fruits and vegetables than adults.

According to the 2007 Youth Risk Behavior Survey (YRBS), 17.1% of Houston high school students surveyed reported eating five or more servings of fruits and vegetables per day during the past seven days. In comparison, 22.6% of Texas high school students and 21.4% of U.S. high school students reported consuming five or more servings per day in the past week.

Population Differences
2007 BRFSS survey data collected within the Houston-Baytown-Sugar Land MSA indicate that more females eat the recommended servings of fruits and vegetables than males. Five or more servings per day were reported by 27.3% of women but only 22.7% of men.

In addition, more whites than blacks or Hispanics reported eating 5+ fruits and vegetables daily. In the white population, 27.7% reported consuming the recommended servings, compared to 20.6% of black and 25.1% of Hispanic respondents.

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Texas</th>
<th>Houston MSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>21.4%</td>
<td>24.3%</td>
<td>25.0%</td>
</tr>
<tr>
<td>2003</td>
<td>22.9%</td>
<td>24.2%</td>
<td>24.6%</td>
</tr>
<tr>
<td>2005</td>
<td>22.6%</td>
<td>25.0%</td>
<td>25.2%</td>
</tr>
</tbody>
</table>

Source: TDSHS BRFSS survey

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Percent of Adults Who Report Eating 5+ Fruits and Vegetables per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>27.7%</td>
</tr>
<tr>
<td>Black</td>
<td>20.6%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>25.1%</td>
</tr>
</tbody>
</table>

Source: TDSHS BRFSS survey
Nutrition Education for WIC Mothers

Healthy People 2010

Objective 19-5: Increase the proportion of persons aged 2 years and older who consume at least two daily servings of fruit

Objective 19-6: Increase the proportion of persons aged 2 years and older who consume at least three daily servings of vegetables, with at least one-third being dark green or orange vegetables

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston-Baytown-Sugar Land MSA 2007</td>
<td>25.1</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>25.2</td>
</tr>
<tr>
<td>United States 2007</td>
<td>24.6</td>
</tr>
</tbody>
</table>

Public Health Actions

- Educate the community and health clinic patients about the importance of good nutrition
- Assure the provision of health care support where otherwise not available through activities such as providing food vouchers to low-income women and children in the WIC program and working with vendors to provide Meals on Wheels to seniors

For More Information

Food and Nutrition Information Center: [www.nal.usda.gov](http://www.nal.usda.gov)

CDC: Nutrition Information: [www.cdc.gov/nutrition/index.html](http://www.cdc.gov/nutrition/index.html)

Spanish Information: [www.cdc.gov/spanish/nutrition.html](http://www.cdc.gov/spanish/nutrition.html)

American Dietetic Association: [www.eatright.org](http://www.eatright.org)

Coordinated Approach to School Health Program (CATCH), currently active in 22 ISDs in Harris County: [www.catchtexas.org](http://www.catchtexas.org)


MD Anderson Cancer Center: [www.mdanderson.org/topics/food](http://www.mdanderson.org/topics/food)

HCPHES: [www.hcphes.org](http://www.hcphes.org)

Economic Impact of Nutrition

Inadequate nutrition, linked with poverty, can result in nutritional deficiencies that impede cognitive development, growth and functioning among children. Adequate nutrition for children provides savings in the form of reduced health care costs and special education needs.1

The Federal Women, Infants, and Children Supplemental Nutrition Program (WIC) provides supplemental food, nutrition education, and health care referrals for low-income persons including infants and children up to age five, and pregnant, breastfeeding or post partum mothers. According to cost-benefit studies, every dollar spent on WIC saved Medicaid up to $4.21 for every woman and child served.2

Studies have shown that WIC improves birth outcomes and infant health through encouraging earlier prenatal care and breastfeeding. WIC also contributes to fewer premature births and to increased birth weight among infants.2,3 For each infant that is born at a healthy weight, rather than a low birth weight, Medicaid costs are reduced by up to $15,000.2 WIC health benefits for children include increased intake of iron, vitamin B6, and folate, lower rates of anemia, increased immunization rates and improved access to health care.2,4


Physical Activity

Overview
Lack of physical activity, combined with poor nutrition, is a leading cause of preventable death, second only to tobacco use according to CDC. These behaviors, along with the resulting conditions of overweight and obesity, are linked with chronic diseases such as heart disease, diabetes and cancer. Conversely, being active can help maintain a healthy weight and can lower the risk of these chronic conditions and others, including osteoporosis, arthritis and stroke.

CDC and the American College of Sports Medicine recommend that adults should participate in moderate to vigorous physical activity for at least 30 minutes on most days of the week. The 2007 Texas BRFSS data show that 27.5% of surveyed adults in the Houston-Baytown-Sugar Land MSA reported participating in no leisure-time physical activity during the past month, compared with 28.3% of Texas adults and 24% of U.S. adults.

The School Physical Activity and Nutrition (SPAN) monitoring system is used in Texas to track children’s weight and activity. A representative sample of 4th, 8th and 11th grade children are measured for height and weight, and complete a survey about nutrition and physical activity. 2004-2005 SPAN data show that 18% of 4th graders surveyed in Harris County reported at least 30 minutes of moderate physical activity on five or more days per week, compared with 30% of 8th graders and 31% of 11th graders.¹

The 2007 Youth Risk Behavior Survey data show that 86% of Houston high school students did not attend physical education classes daily, compared to 60% of Texas high school students and 70% of U.S. high school students. Currently, State of Texas statutes require that school districts adopt policies to ensure that elementary school, middle school and junior high school students engage in at least 30 minutes of physical activity per day or 135 minutes per week.²

Trends: Houston/Harris County 2002-2007

While the trend since 2002 shows a slight increase in leisure time physical activity, there remains some variability. In 2002, BRFSS data show 72% of Houston-Baytown-Sugar Land MSA residents reported some leisure time physical activity. This number rose to 78% by 2005 but dropped again in 2007 at 73%.

In Harris County, 60% of 8th graders view more than two hours of television per day, compared with 41% of 4th graders and 47% of 11th graders

—2004-2005 SPAN data

¹The University of Texas School of Public Health and TDSHS. School physical activity and nutrition project. Information available at the TDSHS website. Eat Smart, Be Active, www.eatsmartbeactivetx.org/data_state_child.
²Texas Education Code §28.004.
Population Differences
In the Houston/Harris County area in 2007, more women (49%) than men (45%) met the Healthy People 2010 goal for physical activity.

Education also makes a difference. For college graduates, 47% reach the recommended activity levels, compared to 46% of high school graduates and 39% of those without a high school diploma. Income variations are also significant. For those with a household income of less than $25,000 per year, only 38% meet the recommended level of activity, compared to 44% with income of $25,000 through $49,999, and 51% with income of $50,000 or more.

Age differences are also apparent. In 2007, middle aged adults reported more physical activity compared to younger age groups. According to the BFRSS, 73% of adults age 18-29 participated in leisure time physical activity, compared to 72% of those aged 30-44 years, 76% of those ages 45-64, and 64% of those aged 65+ years.

Economic Impact of Physical Activity
A lack of physical activity and the resulting complications cost both patients and the U.S. government dearly, approximately $117 billion a year. Analysis by the CDC found that if the 88 million inactive Americans incorporated daily moderate physical activity, medical costs could be reduced by an estimated $76.6 billion.

Public Health Actions
• Inform, educate and empower people to understand the importance of physical activity and incorporate it into their lives
• Assure health care where otherwise unavailable by providing health assessment and education for residents served in public health clinics
• Monitor health status by tracking lifestyle and activity trends among residents and providing reports to the community

Meet Recommendations for Moderate Physical Activity

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1997</td>
<td>32</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>50</td>
</tr>
<tr>
<td>Houston-Baytown-Sugar Land MSA 2007</td>
<td>47</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>47</td>
</tr>
<tr>
<td>United States 2007</td>
<td>49</td>
</tr>
</tbody>
</table>

For More Information
Texas DSHS Nutrition, Physical Activity and Obesity Prevention: www.dshs.state.tx.us/obesity/NPAOPprogrampage.shtm
CDC: www.cdc.gov/physicalactivity
CDC Information in Spanish: www.cdc.gov/spanish/az/a.html
American Heart Association: www.americanheart.org
HCPHES: www.hcphes.org

Overweight/Obesity in Adults

Overview

According to CDC, the U.S. is experiencing an “epidemic” of people becoming overweight and obese. The proportion of overweight people has increased dramatically since the late 1980s. Individuals are considered overweight if their Body Mass Index (BMI), a correlate of body fat, is in the range of 25.0-29.9, and considered obese if their BMI is 30.0 or above.

The National Center for Health Statistics (NCHS) data show 34% of U.S. adults over age 20 are obese, more than 72 million people. Among young people, the percentage who are overweight has more than tripled since 1980.

Among children and teens aged 6–19 years, more than nine million, or 16 percent, are considered overweight. The NCHS reports that being overweight or obese increases the risk of many diseases and conditions, including:

- Hypertension
- Dyslipidemia (high total cholesterol or high levels of triglycerides)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea and respiratory problems
- Cancers (endometrial, breast, and colon)

Although one of the national health objectives for the year 2010 is to reduce the prevalence of obesity among adults to less than 15%, current data indicate that the situation is worsening rather than improving.

Trends: Houston/Harris County 2002-2007

The BRFSS 2007 reports that 65.0% of surveyed adults in the Houston-Baytown-Sugar Land MSA were overweight or obese, compared to 65.7% of Texas adults and 63.0% nationwide. The general population is becoming increasingly overweight/obese.

Overweight is defined as ≥ 95th percentile based on BMI charts.
At risk for overweight is defined as ≥ 85th but < 95th percentile based on BMI charts.

Population Differences

BRFSS data showed that males in the Houston-Baytown-Sugar Land MSA area are more likely (73.4%) to be overweight or obese than females (56.8%). Among blacks, 78.6% were overweight or obese, compared with 66.0% of Hispanics and 65.1% of whites. Only 35.0% of the total adult population was not in the overweight/obese category.

Those aged 46-64 are most likely to be overweight or obese (70.8%), compared to those who are younger: 18-29 (64.8%) or 30-44 (61.6%), or those who are older: over 65 (63.9%).
Economic Impact of Obesity

Individuals who are overweight or obese are prone to develop an advanced sickness or complication such as hypertension and cardiovascular disease. On average, obese individuals spend 36% more than the general population on health services and spend 77% more on medications. Proper weight management can lead to a decrease in physician visits and reduce the need for medication.

Based on an analysis of trends in Medicare spending from 1987 to 2002, the study found that obesity has emerged as a major driver of increasing Medicare costs, with the percentage of obese beneficiaries roughly doubling from 11.7% to 22.5%. Spending on those patients nearly tripled from 9.4% to 24.8% of total Medicare expenditures.

In terms of productivity, employers have an incentive to implement physical activity programs. Studies show that such programs could reduce sick leave from 6% to 32%, reduce health care costs by 20% to 55%, and increase productivity from 2% to 52%.

In Texas, overweight and obesity related illnesses cost an estimated $10.5 billion in 2001.

Healthy People 2010

Objective 19-2: Reduce the proportion of adults who are obese

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1988-94</td>
<td>23.0</td>
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<tr>
<td>Target for 2010</td>
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<tr>
<td>Houston-Baytown-Sugar Land MSA 2007</td>
<td>26.2</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>28.6</td>
</tr>
<tr>
<td>United States 2007</td>
<td>26.2</td>
</tr>
</tbody>
</table>

Public Health Actions

- Inform, educate and empower people about health issues through health education for the community about the importance of physical activity
- Provide healthcare where otherwise not available through assessment and education about healthy lifestyles for the residents served by public health clinics and outreach

For More Information

Centers for Disease Control and Prevention: [www.cdc.gov/obesity/index.html](http://www.cdc.gov/obesity/index.html)

National Institute of Health, BMI Table: [www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm](http://www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm)

Texas Department of State Health Services (Obesity information in Spanish): [www.dshs.state.tx.us/dshstoday/obesity.shtm](http://www.dshs.state.tx.us/dshstoday/obesity.shtm)

Harris County Public Health and Environmental Services: [www.hcpes.org](http://www.hcpes.org)

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Overview

The rate of childhood overweight is increasing yearly. Studies have also shown that overweight children are more likely to become obese adults.\(^1\) The CDC reports numerous consequences associated with pediatric overweight, including heart disease, high blood cholesterol levels, high blood pressure, gallbladder disease and Type II diabetes.

Prevalence of Obesity Among U.S. Children and Adolescents\(^*\)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Aged 2-5 years</td>
<td>5.0%</td>
<td>4.0%</td>
<td>5.0%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Aged 6-11 years</td>
<td>6.1%</td>
<td>6.5%</td>
<td>11.3%</td>
<td>17.4%</td>
</tr>
<tr>
<td>Aged 12-19 years</td>
<td>5.0%</td>
<td>5.0%</td>
<td>12.4%</td>
<td>17.6%</td>
</tr>
</tbody>
</table>

*Prevalence of obesity is defined as BMI at or above 95th percentile for age and gender.

Source: CDC


<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Texas</th>
<th>Houston MSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>14.7%</td>
<td>15.6%</td>
<td>15.9%</td>
</tr>
<tr>
<td>2007</td>
<td>15.6%</td>
<td>16.2%</td>
<td>16.7%</td>
</tr>
</tbody>
</table>

Source: CDC Youth Risk Behavior Surveillance System Survey

Population Differences

The prevalence of overweight among black and Hispanic adolescents increased more than 10 percentage points between 1988-1994 and 1999-2000.\(^3\)

The prevalence of overweight in children and adolescents is higher than it was twenty years ago in all racial-ethnic groups.\(^3\) While the incidence of childhood overweight is increasing, the rate of this disease is higher for Hispanic, African American, and Native American children.\(^2\)

Prevalence of Obesity Among U.S. Children and Adolescents*

<table>
<thead>
<tr>
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<tbody>
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<td>12.4%</td>
<td>17.6%</td>
</tr>
</tbody>
</table>

*Prevalence of obesity is defined as BMI at or above 95th percentile for age and gender.

Source: CDC

The 2007 Youth Risk Behavior Survey conducted by the CDC, indicates that among Houston high school students, 16.7% are obese (BMI greater than or equal to the 95th percentile) and 82.9% ate fewer than five servings of fruits and vegetables per day during the past 7 days.

Higher rates of child overweight are apparent in southern states as compared to other regions of the country. Some research has shown that lower socioeconomic status groups are also exhibiting increasing rates of overweight.\(^2\)

Percentage of Obese Students, 2007 (≥95th percentile BMI)

<table>
<thead>
<tr>
<th>Region</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>10.8%</td>
<td>18.3%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Texas</td>
<td>13.8%</td>
<td>14.6%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Houston</td>
<td>19.2%</td>
<td>15.8%</td>
<td>19.1%</td>
</tr>
</tbody>
</table>


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Overweight Risk Factors
The 2007 Youth Risk Behavior Survey (YRBS) results published by the CDC, indicate that among Houston High School students:

- 42.8% watched television three or more hours per day
- 85.6% did not attend physical education classes daily

The 2007 Texas YRBS reported that among Texas high school students:

- 55% did not meet recommended levels of physical activity
- 24% played video or computer games or used a computer for something that was not school work for three or more hours per day on an average school day
- 38% drank soda daily

The 2006 School Health Profiles results published by TDSHS, indicated that among Houston middle/junior and senior high schools:

- Only 15% of schools required students to take two or more health education courses, a decrease from 37% in 2002.
- 65% of schools prohibit students from purchasing candy, high fat snacks, or soft/sports drinks during lunch periods, a significant increase from 0% in 2002.

Risk factors for child overweight include diets high in fats, sugars and calories; large meal portions; lack of nutrition knowledge; income below poverty level; non-active personal leisure activity; access to fast food; and media promotion of food for enjoyment over physical activity or nutritional value.

Economic Impact of Overweight Children
The direct and indirect costs of Type 2 diabetes attributable to childhood overweight were $32.4 billion and $30.74 billion, respectively. About 70% of the total annual health care expenditures for overweight children is financed by Medicaid and private insurance.

However, 26% of the health care costs for overweight children is paid out-of-pocket by their families. Some of these payments may be for services not generally covered by health insurance, such as weight-management programs or supportive services. Low-income families are more likely to have restricted access to these types of services.4

Healthy People 2010
Objective 19-3c: Reduce the proportion of overweight or obese children and adolescents

<table>
<thead>
<tr>
<th>Overweight or Obese Children and Adolescents Aged 6 to 19 Years</th>
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</thead>
<tbody>
<tr>
<td>Area</td>
</tr>
<tr>
<td>National Baseline 1988-94</td>
</tr>
<tr>
<td>Target for 2010</td>
</tr>
<tr>
<td>City of Houston 2007*</td>
</tr>
<tr>
<td>State of Texas 2007*</td>
</tr>
<tr>
<td>United States 2007*</td>
</tr>
</tbody>
</table>

* Grades 9-12

Public Health Actions

- Develop plans and programs that support individual and community health efforts through health education about nutrition and physical activity for individuals and community groups
- Inform and educate people about health issues through nutrition and exercise education for those served by public health clinics and outreach

For More Information

Coordinated Approach to Child Health Program (CATCH): [www.catchtexas.org](http://www.catchtexas.org)


Click: Call to Action

Mayor's Wellness Challenge—Get Moving Houston: [www.getmovinghouston.com](http://www.getmovinghouston.com)

Centers for Disease Control and Prevention (Spanish): [www.cdc.gov/pcd/issues/2005/apr/04_0039_es.htm](http://www.cdc.gov/pcd/issues/2005/apr/04_0039_es.htm)

Walk To School Day: [www.walktoschool-usa.org](http://www.walktoschool-usa.org)

Five a Day Month: [www.fruitsandveggiesmorematters.org](http://www.fruitsandveggiesmorematters.org)

TV–Turnoff Week: [www.tvturnoff.org](http://www.tvturnoff.org)

HCPHES: [www.hcphes.org](http://www.hcphes.org)

*Center on Aging Society analysis of data from the 1997 Medical Expenditure Panel Survey
Overview

According to the CDC, injuries are among the top ten leading causes of death among persons of all ages. Injuries such as motor vehicle crashes, drownings, poisonings, animal bites, homicide and suicide are preventable. There are many factors that affect injury risk, such as failure to use safety belts, impaired driving and domestic violence.

Motor Vehicle Safety

According to TDSHS, in 2005 motor vehicle accidents were the leading cause of all accidental deaths in Harris County. In addition, motor vehicle crashes are the leading cause of death due to unintentional injuries among children in Harris County. During the period of 2004-2005, the Houston/Harris County Child Fatality Review Team (HHCCFRT) identified 107 deaths among children attributed to motor vehicle crashes.

Family Violence

Family or domestic violence is defined by the Texas Family Code as “an act by a member of a family or household against another member of the family or household that is intended to result in physical harm, bodily injury, assault or sexual assault.” In 2006, there were 31,746 family violence incidents reported to law enforcement agencies within Harris County. This includes 8,564 incidents reported to the Harris County Sheriff’s Office; 20,114 reported to the Houston Police Department; and, an additional 3,068 incidents reported to other local and municipal police departments within Harris County.

According to court records, 6,643 of the criminal charges filed in 2004 involved family violence, among which 5,066 were for assaults and 732 were for injuries.

Homicide

Homicide was the 11th leading cause of death in Harris County in 2005, with 396 deaths—a rate of 10.1 per 100,000 persons.

According to data from the HHCCFRT, 61 homicide victims were children under age 18 in Harris County in 2006. Fifty-six percent of these were teens aged 14-19; 94% of these were committed using a firearm. Forty-four percent of homicides were children younger than 13, 70% were committed with a blunt object.

Suicide

Suicide was the 13th leading cause of death in Harris County in 2005, with 343 deaths—a rate of 9.7 per 100,000 persons.

The HHCCFRT reports that there were 33 deaths from suicide among Harris County youth during 2004-2005. Firearms were used in 48% of suicides, closely followed by asphyxiation due to hanging. The most common age for child suicide is 17, with 30% of deaths. Ages 15 and 16 were next, with 24% and 18% of deaths, respectively. The suicide death rate among male youth in Harris County is 2.3 deaths per 100,000 persons, twice the rate among females.

All Intentional Injuries

During 2004, 3,539 injury cases were filed against Harris County adults, 2,923 of which were committed by men and 616 by women. Nearly 10% of injury cases involved a child.

Crime in Houston/Harris County

Criminal charges in Houston/Harris County have decreased since 2004. In the same period, the percent of drug related criminal charges has risen from 24.5% in 2004 to 36% in 2008.
Homicide rates vary widely among demographic groups in Harris County, occurring more frequently among males, both black and Hispanic. Of the 396 deaths due to homicides in 2005, the rates per 100,000 were 35.6 for black men, 19.4 for Hispanic men, and 6.4 for white men. Males more frequently died of homicide, a rate of 16.5 compared to 3.3 for women. The overall homicide rate in Harris County was 10.0 per 100,000.

Suicides occur more frequently among white male residents. Of the 343 Harris County suicides in 2005, 159 (46%) occurred among white males, a rate of 23.6 per 100,000. The suicide rate was 11.2 per 100,000 among Hispanic males and 9.9 per 100,000 for black males. Suicides among white females were also higher than women of other races, with a rate of 7.7. There were too few suicides among women of other races to calculate a rate.

Combining homicides, injuries and assaults shows the highest rate of violent acts in 2008 occurred among blacks (313 per 100,000 blacks), followed by whites (256 per 100,000 whites). Hispanics and Asian adults had the lowest rate of violent acts (43 and 36 per 100,000, respectively). Family violence rates were highest for blacks (173 per 100,000), followed by whites (132 per 100,000), Hispanics (23 per 100,000) and Asians (20 per 100,000).
Public Health Actions

- Monitor health problems through methods such as tracking emergency room visits
- Diagnose and investigate problems and hazards through programs such as the Houston/Harris County Child Fatality Review Team (HHCCFRT), which evaluates child deaths and can refer cases to law enforcement or physician review as needed
- Inform people about health issues through venues such as HHCCFRT-sponsored teacher training about suicide warning signs, and efforts by public health educators to encourage use of seatbelts and other safety measures

Healthy People 2010

Objective 15-13: Reduce deaths caused by unintentional injuries

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>35.0</td>
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<tr>
<td>Target for 2010</td>
<td>17.5</td>
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<tr>
<td>Harris County 2005</td>
<td>41.4</td>
</tr>
<tr>
<td>State of Texas 2005</td>
<td>39.8</td>
</tr>
<tr>
<td>United States 2005</td>
<td>39.1</td>
</tr>
</tbody>
</table>

Economic Impact of Injuries

Injuries can result from domestic violence, not using seatbelts or helmets, suicide, homicide, assault, sexual assault, etc. As a result, injuries are a substantial economic burden to the U.S. The total lifetime costs of injuries which occurred in 2000 could total more than $406 billion, including $80.2 billion in direct medical costs and $326 billion in lost productivity.

A worker who suffers from a temporarily disabling injury will miss an average of eleven days of work. In 2000, injuries to children between the ages of 5 and 14 were estimated to result in $34.6 billion lifetime medical costs. Adults aged 75 and older accounted for only six percent of injuries in 2000, yet they were estimated to account for 12% of lifetime medical costs.1

The costs of injury are in most cases preventable. A study examining the effectiveness of helmets for motorcycle riders estimated a medical expense savings of $3,618 for those individuals who wore helmets in an accident as compared to those individuals who did not.2

For More Information

Relocation Crime Lab Index, for city and zip code crime rate: [www.homefair.com/homefair/calc/crime.html](http://www.homefair.com/homefair/calc/crime.html)

CDC National Center for Injury Prevention & Control, for US injury/death statistics. See also the WISQUARS section for multiple reports: [www.cdc.gov/injury/index.html](http://www.cdc.gov/injury/index.html)

Texas DSHS for morbidity, mortality, risk data [www.dshs.state.tx.us/injury/data/](http://www.dshs.state.tx.us/injury/data/)

Houston Trauma LINK: [www bcm.edu/traumalink](http://www.bcm.edu/traumalink)

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Injury Risk/Submersion

Overview
Submersion injuries consist of drowning and near drowning. A drowning is defined by the TDSHS as a death due to suffocation within 24 hours of submersion under water.\(^1\) A near drowning is classified as victim survival for at least 24 hours after submersion in water.

Submersion injuries were first reportable in Texas in 1994. HDHHS and HCPHES collect and analyze data regarding submersion injuries.

Drowning is the seventh leading cause of unintentional injury deaths for all ages and the second leading cause of injury deaths in children aged one to 14 years in the United States.\(^2\)

Children between the ages of one and four account for one quarter of all submersion injuries in Houston. This has been a consistent pattern in the period from 2000 to 2007 and also applies across all racial/ethnic categories.\(^3\) This pattern can also be seen in state and national observations.\(^4\)

The majority (62.7%) of local submersion injuries occurred in the summer months between April and July and peaked in the month of June.

Population Differences
During the period 1995-1999, the highest number of drowning cases occurred among blacks. This has changed in recent years. In the years 2000-2007, more submersion incidents in Houston occurred among Hispanics with 105 (33%) events, compared to blacks with 113 (35%) events. Victims are more likely to be male, young or adolescent.\(^5\) TDSHS reported in 2005 in Harris County that persons under the age of 14 accounted for 40% of drowning cases.

Public Health Actions
- Inform, educate and empower people to not leave children unattended around pools, bathtubs or other bodies of water
- Encourage all people to wear life vests when participating in recreational activities around water, such as boating, fishing, etc
- Educate people about the dangers of drinking alcohol around water activities
- Enforce swimming pool safety laws

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\(^3\)Bureau of Epidemiology, Houston Department of Health and Human Services.
Overview

According to the Texas KIDS COUNT 2005 Annual Data Book, Texas’ future economic and social potentials are linked to today’s child population. Houston/Harris County boasts 1,041,191 children.¹ It is important for this child population to grow up healthy.

Abuse and neglect influence a child’s physical and psychological health. Maltreatment disrupts proper brain development, which can lead to sleep disorders, attention deficit disorder and hyperactivity.² In addition, abused children are more likely as adults to have alcoholism, drug abuse, eating disorders, obesity, depression and other chronic diseases. They also show an increased incidence of smoking, suicide attempts and sexually transmitted diseases.³

The National Children’s Alliance reports that one-in-four girls and one-in-six boys in the U.S. are sexually abused before the age of 18. In 2003, the Harris County Children’s Assessment Center provided intervention and treatment services for 4,730 child sexual abuse victims and their non-offending caregivers. Sex offenders may be jailed for this crime; however, once paroled, they may live in the local area. According to the Texas Department of Criminal Justice, 21% of the paroled sex offenders in Texas reside in Harris County.

During 2004, 1,824 charges were filed in Harris County for crimes involving children—an overall rate of 110 per 100,000 adults.

Trends: Houston/Harris County 2002-2006

The number of alleged abuse or neglect cases assigned to Harris County Child Protective Services has steadily increased, from 18,666 in 2001 to 25,915 in 2006. Of these investigations, 8-10% consistently result in removal of children from the home, and 25-30% of investigated cases are resolved through family-based safety services, such as parenting classes and family counseling.

Despite these high numbers, the rate per 1,000 of children in Harris County confirmed as having been abused or neglected 2006 is 6.6, compared to an average of 10.8 children per 1,000 for the State of Texas.

The total number of Harris County children in protective custody remains between 3,500 and 5,000. From 2002 to 2006, the number of foster homes within Harris County did not increase above 361 (2002) and only an average of 622 children were adopted each year over the five-year period.

¹Harris County Child Protective Services 2006 Annual Report
Public Health Actions

- Assure quality and accessible community-wide health and human services that support positive child rearing and development
- Educate to promote and encourage healthy behaviors that will foster positive development of Houston’s children
- Mobilize partnerships such as the Houston/Harris County Child Fatality Review Team to evaluate deaths and risks for children

Economic Impact of Child Abuse

Due to child abuse in 2005, an estimated $94 billion in direct and indirect costs was spent in the U.S. This amount averages to $258 million per day and $1,462 per family. Direct costs ($24.4 billion) include hospitalization, continuing health care, law enforcement and judicial costs. Indirect costs ($69.6 billion) include psychiatric care, juvenile delinquency and adult prosecution.

Healthy People 2010

Objective 15-33: Reduce maltreatment of children under 18 years

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>12.7</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>10.2</td>
</tr>
<tr>
<td>Houston/Harris County 2007</td>
<td>6.0</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>11.2</td>
</tr>
<tr>
<td>United States 2006</td>
<td>12.1</td>
</tr>
</tbody>
</table>

*Rate is reported cases per 1,000 children under 18 years

Population Differences

Instances of child abuse are not specific to a victim’s age or gender. From 2001 to 2006, the number of children taken into protective custody within Harris County was split equally between boys and girls and was evenly distributed among all age groups (0-17 years of age).

Over the five year period, the ethnic proportion of children put into protective custody has remained constant. Black children are the largest group, accounting for half of those removed from their homes.

Race/Ethnicity of Children in Harris County Placed in Protective Custody

For More Information

Family and Protective Services: [www.dfps.state.tx.us](http://www.dfps.state.tx.us)

National Association of Counsel for Children: [www.naccchildlaw.org](http://www.naccchildlaw.org)

Collaboration for Children: [www.collabforchildren.org](http://www.collabforchildren.org)

Baylor College of Medicine: [www.bcm.edu/traumalink](http://www.bcm.edu/traumalink)

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Overview

Alcohol Use
Alcoholism is a diagnosable disease characterized by strong craving for alcohol, continued use despite harm or personal injury, the inability to limit drinking, physical illness when drinking stops, and the need to increase the amount drunk in order to feel the effects.\(^1\) Heavy drinking generally refers to more than an average of two drinks a day for men and one drink for women.\(^2\)

According to the National Institute on Alcohol Abuse and Alcoholism, one of every 13 adults is an alcoholic or abuses alcohol, and an even greater number engage in such activities as binge drinking and regular heavy drinking.

The CDC reports that excessive alcohol use is the 3rd leading lifestyle-related cause of death for people in the U.S. each year, accounting for 75,000 deaths annually. Linked with cirrhosis of the liver, motor vehicle crashes, injuries, cancer and drowning, alcohol is involved in 39% of traffic deaths.

Illegal Drug Use
TDSHS reported 2,590 deaths in Texas during 2004 related to drug use. Most of these deaths involved overdose, HIV/AIDS, homicide, suicide or injuries. Harris County, with 507 such deaths, accounted for 20% of the Texas incidents.

In the region of Texas that includes Harris County, from 2004-2006 an estimated 7.0% of people over 12 have used an illicit substance in the past month. This compares to 6.8% in Texas. Of local residents over age 12, 4.7% are estimated to have used marijuana in the past month and 2.2% used cocaine or crack cocaine in the past year.\(^3\)

In 2004, over 15,000 persons were arrested on substance abuse charges in Houston/Harris County, a rate of 195.2 per 100,000 persons.

Population Differences

Harris County Court records show that in 2004, 22,671 criminal charges were filed involving prohibited substances. The highest rate of these offenses is found among blacks, 2,374 per 100,000, which is more than twice that of whites, 872 per 100,000. Hispanics and Asians had the lowest rates: 146 and 118 per 100,000, respectively.

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\(^3\)U.S. Substance Abuse and Mental Health Services Administration’s National Survey on Drug Use and Health.
Marijuana Use Within the Past Month for People 12 and Older, 2004-2006

Public Health Actions
- Educate persons served by public health, such as pregnant women, TB patients, the mentally ill, and those with HIV/AIDS about the health issues of substance abuse
- Inform the community about substance abuse concerns through health education presentations and publications
- Mobilize community partnerships to develop plans to support individual and community health drug abuse treatment and prevention

Economic Impact of Alcohol and Drug Use
Alcohol and drug abuse pose significant economic costs on U.S. and Texas residents. In 1997, the estimated cost of alcohol and drug abuse for Texans was $19.3 billion, $8.1 billion of which was the result of lost work productivity.1

Underage drinking is a substantial burden itself. Drinking by youth under the age of 21 cost Texas $1.8 billion dollars a year, $374 million in direct medical expenses and $1.4 billion in lost productivity.2 Additional costs of underage drinking should also include the expenses of youth violence, traffic crashes, high-risk sex, and possible later alcoholism.

Drug-related illness, death, and crime cost the nation approximately $66.9 billion. Every man, woman, and child in America pays nearly $1,000 annually to cover the expense of unnecessary health care, extra law enforcement, auto accidents, crime, and lost productivity resulting from substance abuse.3

In 2000, total economic costs of illegal drug abuse in Texas were estimated at $9.5 billion.4

Healthy People 2010
Objective 26-3: Reduce drug-induced deaths

<table>
<thead>
<tr>
<th>Rate of Drug-Induced Death per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
</tr>
<tr>
<td>National Baseline 1998</td>
</tr>
<tr>
<td>Target for 2010</td>
</tr>
<tr>
<td>Harris County 2005</td>
</tr>
<tr>
<td>State of Texas 2005</td>
</tr>
<tr>
<td>United States 2005</td>
</tr>
</tbody>
</table>

Public Health Actions
- Educate persons served by public health, such as pregnant women, TB patients, the mentally ill, and those with HIV/AIDS about the health issues of substance abuse
- Inform the community about substance abuse concerns through health education presentations and publications
- Mobilize community partnerships to develop plans to support individual and community health drug abuse treatment and prevention

In 2004, Harris County Court records show that 10,851 DWI charges were brought against Harris County adults—a rate of 140.8 incidents per 100,000 adults. Texas DSHS reported 1,677 deaths in Harris County related to alcohol use in 2002.

For More Information
Texas Commission on Alcohol and Drug Abuse: [www.tcada.state.tx.us](http://www.tcada.state.tx.us)
Council on Alcohol and Drugs Houston: [www.council-houston.org](http://www.council-houston.org)
Alcoholics Anonymous: [www.aahouston.org](http://www.aahouston.org)

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Use of Preventive Services

Public health encompasses three core functions: assessment of information on the health of the community, comprehensive public health policy development, and assurance that public health services are provided to the community. The totality of the public health infrastructure includes all governmental and nongovernmental entities that provide any of these services.

Service providers, such as managed care organizations, hospitals, nonprofit corporations, schools, faith organizations, and businesses, also are an integral part of the public health infrastructure in many communities. All public health services depend on the presence of basic infrastructure.

Every categorical public health program—childhood immunizations, infectious disease monitoring, cancer and asthma prevention, drinking water quality, injury prevention, and many others—requires health professionals who are competent in cross-cutting and technical skills, public health agencies with the capacity to assess and respond to community health needs, and up-to-date information systems. Federal public health agencies rely on the presence of infrastructure systems at the local and State levels to support the implementation of their programs.

Healthy People 2010
Overview
The American College of Obstetrics and Gynecology recommends that all pregnant women receive prenatal care beginning in the first trimester. Receiving prenatal care includes regular health check-ups, education regarding nutrition, and proper physical activity during pregnancy. Expectant mothers should also be informed about the birthing process and be counseled on basic infant parenting skills.

The National Institutes of Health reports that adequate prenatal care is closely tied with the birth of healthy babies. Women who begin prenatal care late in the pregnancy or receive no prenatal care throughout a pregnancy have been linked with low birth weight infants, premature birth, and increased rates of maternal and infant mortality.

According to TDSHS in 2005, 62.2% of women in Harris County entered prenatal care during the first trimester. This is lower than the rates for Texas 63.7%, and the nation 72.8%.

In 2005 no zip codes in Harris County met the standard of 90% of women receiving entering prenatal in the first trimester. (See map on page 37).

Trends: Houston/Harris County 1999-2004
Five year trended data on the adequacy of prenatal care is available only for the period of 1999-2004. The CDC reports that implementation of a new birth certificate for 2005, which includes data on the onset of prenatal care within the first trimester, is not directly comparable to previous years. Statistics for Harris County are not available for 2006. However, 2006 data for Texas indicates one in four births (26.2%) received inadequate prenatal care, and about one in nine (11.5% of live births) received late or no prenatal care. In 2006, a total of 62.5 % of births were to women who received adequate prenatal care.

Population Differences
TDSHS reports show that in Harris County, in 2005, 62.2% of all expectant mothers received prenatal care beginning in the first trimester. A racial disparity can be seen in the percents of women who receive early prenatal care: 73.5% of white women, 58% of black women, and 56.6% of Hispanic women receive care in the first trimester.

Hispanic women gave birth to fewer babies with low birth weight (6.9%) in 2005, compared to babies born to black (14.2%) or white (7.9%) mothers.

Women in Harris County Who Received Prenatal Care Beginning in the First Trimester
Source: TDSHS
This figure is not directly comparable to future years due to the implementation of a new birth certificate in Texas in 2005.
Percentage of 2005 births in Harris County, in which the mother began prenatal care in the 1st trimester. Location is based on mother’s residence zip code. No zip code meets 2010 goal of 90%.

**Public Health Actions**

- Provide prenatal care to low income women and link women to prenatal services in the community.
- Educate women about prenatal health, care for themselves and their infants after delivery, the importance of vaccinations, and the availability of Medicaid and CHIP resources.
- Provide food vouchers for low-income mothers and young children through the WIC Nutrition Program (funded by the U.S. Department of Agriculture and the TDSHS).
- Promote contraception and abstinence to prevent unwanted pregnancies.

**Economic Impact of Prenatal Care**

Adequate prenatal care can save a considerable amount of money and time, and can prevent complications at birth. On average, the cost of pregnancy for women with prenatal care was $1,589 as compared to $3,930 for women without prenatal care. It is estimated that every dollar not spent on necessary prenatal care results in $3.33 more spent on postnatal care and $4.63 in incremental long-term cost.¹

If an employer practices active management of prenatal and antenatal care, the average number of days for pregnancy related disability drops from 34.4 to 28.2 days.²

Premature and low birth weight births become more likely in the absence of prenatal care. Children born prematurely in the U.S. cost $4.6 million dollars more than babies carried to term.³ Neonatal intensive care units can cost between $1,000 to $2,500 per day⁴ and $300,000 a month.⁵

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⁴Krebs G. Maternity medical case management: a study of employer attitudes. Presentation before the national Managed Health Care Congress; Dec. 9, 1993.

⁵Personal communication with local Houston hospital staff.

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**For More Information**


**March of Dimes**: [www.marchofdimes.com](http://www.marchofdimes.com)

**The National Women’s Health Information Center**: [www.womenshealth.gov/faq/prenatal-care.cfm](http://www.womenshealth.gov/faq/prenatal-care.cfm)
Immunizations

Overview

Immunizations are one of the greatest public health achievements in the past 100 years. Immunizations are responsible for the control of once common diseases such as polio, measles, mumps, pertussis, and tetanus. High immunization coverage rates across the country have not only protected those inoculated against the disease but also protected those who have not received the immunization by reducing the spread of infection.

The Advisory Committee on Immunization Practices (ACIP) and the American Academy of Family Physicians (AAFP) recommend the schedule for childhood vaccinations. Currently, children receive eight vaccines inoculating against twelve diseases. Most vaccines require numerous doses per visit to the child’s medical provider.

While childhood immunizations provide greatly increased immunity to disease, this immunity can fade over time. A patient’s increasing age can also increase susceptibility to infection. For these reasons, some vaccines are recommended for adults. The CDC recommends that all adults over the age of 65 be vaccinated against influenza annually and receive a one-time vaccine against pneumococcal pneumonia. Influenza and pneumonia remain deadly diseases, especially for the elderly. Each year, 36,000 Americans die from the influenza virus, and 40,000 Americans die from pneumonia. More people die from pneumonia in a given year than from all other preventable diseases combined.

Trends: Houston/Harris County 2000-2007

As of 2007, the CDC’s National Immunization Survey showed that 73.0% of Houston infants received the recommended vaccinations (series 4:3:1:3:3:1), compared to 77.3% and 77.4% for Texas and the U.S., respectively. This series of vaccinations controls for many of the most deadly childhood diseases including diphtheria, tetanus, pertussis, polio, measles, mumps, rubella, influenza, hepatitis B, and chicken pox.

For adults in 2007 aged 65 and older, Texas BRFSS reported that 64% of seniors in the Houston-Baytown-Sugar Land MSA had received an influenza vaccination in the past year, and 64.5% had been vaccinated against pneumonia. In Texas, 66.7% had a flu shot in the past year (70% nationwide) and 63.4% had been vaccinated against pneumonia (65% nationwide).

The 4:3:1:3:3 series of vaccines includes the following: four or more doses of DTaP (diphtheria, tetanus, pertussis), three or more doses of poliovirus vaccine, one dose of measles, containing vaccine such as MMR (measles, mumps, rubella), three or more doses of Hib (Haemophilus Influenzae), and three or more doses of Hep B (Hepatitis B).

The 4:3:1:3:3:1 series adds the chicken pox vaccine, and was recommended after 2002.
**Public Health Actions**

- Mobilize partnerships such as the Vaccines for Children (VFC) program through which 500 private and public providers have given free immunizations to low-income children in Houston and Harris County.

- Educate the public through outreach programs to promote vaccinations.

- Provide care where otherwise unavailable through provision of immunizations to low-income mothers and children.

**Populations Differences**

Many people still do not have adequate immunizations, especially children and adults in the lowest socioeconomic levels. They may be unable to pay for vaccinations and are unlikely to have insurance coverage. A resource for these individuals is the Vaccines for Children program.

BRFSS data show that in 2007, in the Houston-Baytown-Sugar Land MSA, white adults are more likely to have gotten a flu shot in the past year (40.5%), compared to blacks (25.3%) or Hispanics (27.7%).

**Economic Impact of Immunizations**

In addition to saving lives and improving the quality of life, immunizations generate significant economic benefits. According to a cost-benefit analysis by the CDC, every dollar spent on immunization saves $6.30 in direct medical costs. When indirect costs to society are included, such as missed work, death and disability, the CDC reported that every dollar spent on immunization saves $18.40.

Many studies have reported significant cost savings from immunizations. Routine childhood immunization in the U.S. has been evaluated as resulting in a net savings for direct medical and societal costs of more than $53 billion per year. The Institute of Medicine estimated $21 saved for each dollar spent on the MMR (measles, mumps, rubella) vaccine. A 2003 study conducted in Houston and Dallas showed a benefit-cost ratio of 5.26 to 1 for vaccinating against hepatitis B.

**Healthy People 2010**

**Objective 14-24**: Increase the proportion of young children and adolescents who receive all vaccines that have been recommended for universal administration for at least five years.

**Children Aged 19-35 Months Who Received the Recommended Vaccines**

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>73</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>80</td>
</tr>
<tr>
<td>City of Houston 2007</td>
<td>74</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>78</td>
</tr>
<tr>
<td>United States 2007</td>
<td>81</td>
</tr>
</tbody>
</table>

*4DTaP, 3 Polio, 1MMR, 3Hib, 3 HepB (Series 4:3:1:3:3)

**Public Health Actions**

- Mobilize partnerships such as the Vaccines for Children (VFC) program through which 500 private and public providers have given free immunizations to low-income children in Houston and Harris County.

- Educate the public through outreach programs to promote vaccinations.

- Provide care where otherwise unavailable through provision of immunizations to low-income mothers and children.

**For Every $1 Spent:**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTaP</td>
<td>$27.00</td>
</tr>
<tr>
<td>MMR</td>
<td>$26.00</td>
</tr>
<tr>
<td>H. Influenza type b</td>
<td>$5.40</td>
</tr>
<tr>
<td>Perinatal Hep B saves</td>
<td>$14.70</td>
</tr>
<tr>
<td>Varicella saves</td>
<td>$5.40</td>
</tr>
<tr>
<td>Inactivated Polio (IPV) saves</td>
<td>$5.45</td>
</tr>
</tbody>
</table>

Source: Every Child by Two website. Available at [http://www.ecbt.org/advocates/economicvaluevaccines.cfm#_edn1](http://www.ecbt.org/advocates/economicvaluevaccines.cfm#_edn1)

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1 in 4 teen girls got cervical cancer shot
News Release from Associated Press, October 9, 2008

About one in four teen girls last year got the groundbreaking vaccine that prevents cervical cancer, federal health officials reported.

The figures represent the government's first full year of vaccination rate data for the Gardasil vaccine, which came on the market in mid-2006. Merck & Co.’s heavily advertised, three-shot series targets the sexually transmitted human papillomavirus (HPV).

Health officials recommend that girls get the shots when they are 11 or 12, if possible, before they become sexually active. Also, age 11 is when kids are generally due for another round of vaccinations.

The survey covered children only in the 13-17 age range.

Vaccine proponents had been hoping for much higher vaccination rates, saying the shots could dramatically reduce the nearly 4,000 cervical cancer deaths that occur each year in the United States.

Low rates could be due to multiple factors including price, safety of the vaccine, and concerns about lifetime immunity.

Merck officials said they were pleased with the vaccination rate.

The Centers for Disease Control and Prevention based the study on household telephone surveys done in late 2007. The results are based on nearly 3,000 teens ages 13 to 17 for whom the researchers could verify vaccination information through medical records.

Of the girls in the survey, 25 percent had gotten at least one Gardasil shot.

The CDC, which has been promoting other shots for adolescents, also studied other teen vaccination rates.

About 32 percent of teenagers got a recommended meningitis shot last year, up from 12 percent in a 2006 survey. Also, 30 percent got another relatively new shot, one that guards against tetanus, diphtheria and whooping cough. That’s up from 11 percent the year before.

As with the cervical cancer shot, health officials say children should get both those shots when they are 11 or 12.

About 75 to 90 percent of children got the better-known vaccinations that have long been required by schools, such as chickenpox, hepatitis B and measles, mumps and rubella, the study found.

"The overall trends are good news," said Dr. Lance Rodewald, director of the CDC’s Division of Immunization Services.

"We are seeing more preteens and teenagers being protected against serious, sometimes deadly diseases. But we remain short of our goals. For almost all of these vaccines we want at least 90 percent of adolescents to be fully immunized."

30 million more children should get flu shot, feds say
News Release from CNN, September 24, 2008

All children 6 months to 18 years old should receive the flu vaccine this year, federal officials said, offering protection to an additional 30 million children. The previous recommended age group was 6 months to 5 years.

The age group was expanded because children are two to three times more likely to contract the disease than are adults, said Dr. Renée Jenkins, president of the American Academy of Pediatrics.

Federal officials also discussed how the formulation for the vaccine was changed for this flu season. Each vaccine consists of three flu strains, but two of the strains proved ineffective last season. This year they also have an sufficient supply of vaccines.

The Centers for Disease Control and Prevention aims to vaccinate 261 million people this year, said Dr. Julie Gerberding, director of the CDC.

In an average year, 60 million Americans get the flu and 36,000 die from complications. The elderly have the greatest risk of death.

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### Recommended Adult Immunization Schedule by Vaccine and Age Group

**United States October 2007—September 2008**

*Covered by the Vaccine Injury Compensation Program.*

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection).

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications).

**NOTE:** These recommendations must be read with the footnotes found at Department of Health and Human Services Centers for Disease Control and Prevention. Available at [http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm#print](http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm#print).

### Age Group

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>18-49 years</th>
<th>50-64 years</th>
<th>&gt;65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus, diphtheria, pertussis (TD/Tdap)</td>
<td>1 dose TD booster every 10 years</td>
<td>19-64 years substitute 1 dose of Tdap for TD</td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td>3 doses (females)</td>
<td>0, 2, 6 mos</td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td>1 or 2 doses</td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>2 doses (0, 4-8 weeks)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td>1 dose annually</td>
<td>1 dose annually</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal (polysaccharide)</td>
<td>1-2 doses</td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>2 doses (0, 6-12 mos, or 0, 6-18 mos)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>3 doses (0, 1-2, 4-6 mos)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal</td>
<td>1 or more doses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster</td>
<td>1 dose for &gt; 60 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: CDC

### Recommended Childhood and Adolescent Immunization Schedule

**United States—2008**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Immunization Starts</th>
<th>Number of Doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B1</td>
<td>Birth</td>
<td>4</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>Two Months</td>
<td>3</td>
</tr>
<tr>
<td>Diphtheria, Tetanus, Pertussis</td>
<td>Two Months</td>
<td>5</td>
</tr>
<tr>
<td>Haemophilus Influenzae type b</td>
<td>Two Months</td>
<td>4</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>Two Months</td>
<td>5</td>
</tr>
<tr>
<td>Inactivated Poliovirus</td>
<td>Two Months</td>
<td>4</td>
</tr>
<tr>
<td>Influenza</td>
<td>Six Months</td>
<td>Yearly</td>
</tr>
<tr>
<td>Measles, Mumps, Rubella</td>
<td>One Year</td>
<td>2</td>
</tr>
<tr>
<td>Varicella (Chicken Pox)</td>
<td>One Year</td>
<td>2</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>One Year</td>
<td>2</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Two years</td>
<td>2</td>
</tr>
<tr>
<td>Human Papillomavirus</td>
<td>11 years (females)</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: CDC

NOTE: These recommendations must be read with the chart and footnotes found at Department of Health and Human Services Centers for Disease Control and Prevention. Available at [http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm#printable](http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm#printable).
Cancer Screening

Overview

The use of screening tests to detect cancers during early stages can allow patients to obtain more effective treatment with fewer side effects, and also increase their chances of survival. Appropriate screening could prevent many of the half million annual cancer deaths in the U.S. Cervical, colorectal and breast cancer screening detect cancers accurately, allowing the patient to receive lifesaving or life-extending treatment.

The National Cancer Institute reports that fecal occult blood tests every 1-2 years in people aged 50-80 reduces deaths from colorectal cancer as much as 30%. Regular mammograms have been shown to decrease the chance of dying for women over 40 by 17%, and by 30% for women ages 50-69, if done every one to two years, providing crucial information for the 13% of women (1 out of 8) who will eventually be diagnosed with breast cancer at some time in their lives. Nearly all cervical cancer deaths could be avoided if all women followed screening and follow-up recommendations.

Trends: Houston/Harris County

CDC BRFSS data for 2008 indicates that 83% of women aged 18 or older in Houston/ Harris County had received a pap smear test within the past 3 years, down from 87% in 2002. These percentages can be compared to 82% in Texas for 2008, and 83% in the U.S.

In 2008, 18% of adults aged 50+ in Houston/Harris County reported a fecal occult blood test in the past two years, down from 24% in 2002. The 2008 rate was 19% in Texas and 21% in the U.S.

In 2008, 57% of adults aged 50 and over in Houston/Harris County reported ever having had a sigmoidoscopy or colonoscopy, up from 48% in 2004. For 2008, 56% of Texans had one of the tests compared to 62% in the U.S.

Population Differences

The TDSHS 2008 BRFSS data for the Houston MSA show income and education levels are related to whether women get mammograms and pap smears. Among women with incomes of $50,000 or more, 88% reported a pap smear in the past three years compared to 78% of those with incomes of $25,000 or less. Among college graduates, 82% reported a mammogram in the past two years but only 74% of those with a high school diploma.

Men are more likely to report having a fecal occult blood test than women. In 2008, in the Houston MSA, 16% of females and 19% of men age 50+ reported having this test, compared to 19% of males and females combined in Texas.
Public Health Actions

- Inform, educate, and empower people about the importance of early cancer screening tests
- Link people to needed personal health services through referrals to sources for cancer screening
- Assure the provision of health care when otherwise unavailable by providing cancer screening for low income persons
- Mobilize partnerships with public health organizations, universities, medical centers, and other groups to monitor cancer rates

Healthy People 2010

Objective 3-12a: Increase colorectal cancer screening

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>35</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>50</td>
</tr>
<tr>
<td>Houston-Baytown-Sugar Land MSA 2006</td>
<td>21</td>
</tr>
<tr>
<td>Houston/Harris County 2006</td>
<td>21</td>
</tr>
<tr>
<td>Texas 2006</td>
<td>22</td>
</tr>
<tr>
<td>United States 2006</td>
<td>24</td>
</tr>
</tbody>
</table>

Economic Impact of Early Cancer Detection

Cancer is the second leading cause of death in the United States, causing nearly half a million deaths each year. However, early detection can prevent many of these deaths.2

The economic impact of cancer screening is evaluated by cost effectiveness in terms of cost per life year saved, an evaluative technique which divides the cost of a procedure or medicine by life year extended. Any value less than $50,000 is usually considered cost-effective. The cost per life year saved for colorectal cancer screening is $11,890 to $29,725.3 If a mammogram is conducted every two years for women 65 and older, the cost per life year saved is $36,924.4 If a pap screen is conducted for cervical cancer every three years, the cost per year of life saved is $5,392.5

Regular screening by health professionals can detect cancers of the breast, colon, rectum, cervix, prostate, testes, oral cavity and skin at early stages. Self-exams of the breast and skin may also detect early tumors.

Cancers that can be detected by screening account for about half of all new cancer cases.

—The American Cancer Society

For More Information

National Cancer Institute: [www.cancer.gov](http://www.cancer.gov)
CDC Division of Cancer Prevention and Control: [www.cdc.gov/cancer/](http://www.cdc.gov/cancer/)
American Cancer Society: [www.cancer.org](http://www.cancer.org)
Texas Cancer Registry, for cancer information and statistical data: [www.dshs.state.tx.us/tcr/default.shtm](http://www.dshs.state.tx.us/tcr/default.shtm)

Overview

The American Academy of Pediatric Dentistry recommends an oral exam for all infants within the first year of life or within six months of their first tooth. According to the CDC, healthy children and adults should routinely receive annual dental exams, and professional cleaning at least once every 1-2 years.

The two most common oral diseases are dental caries (tooth decay) and periodontitis (advanced gum disease affecting the surrounding bone of the teeth). Both conditions are preventable, but if untreated, can lead to pain, infection, and partial or complete tooth loss. Dental caries can also be passed from mothers to infants.1 Chronic oral infections and periodontal disease have been linked to other health conditions as well, such as diabetes, heart disease, stroke, lung disease, and low birth weight and prematurity among infants.2

A 2001 assessment of dental needs in Harris County noted that 52.4% of county pre-kindergarten children had untreated dental caries, and that persons with lower socioeconomic status had less access to dental care.3

Trends: Houston/Harris County 2002-2006

Population Differences

The BFRSS shows that 67% of adults residing in the Houston MSA visited a dental professional in 2006. Whites had the highest percentage of dental visits in 2004, at 67.9%. Persons with higher education also had higher rates of dental visits. Overall, the percentage reporting a dental visit in the past year for each racial/ethnic group in Harris County was higher than those surveyed throughout Texas, with the exception of the Hispanic population. In 2004, only 58.3% of Hispanics in Harris County had visited a dentist in the preceding year, compared to 63.5% of Hispanics in Texas.

32001 Dental Needs Assessment; The University of Texas Health Science Center at Houston – Dental Branch and the Dental Health Task Force of the Greater Houston Metropolitan Area, 2001.
Fluoridation

Fluoridation of community drinking water systems is considered an effective and inexpensive measure to reduce tooth decay. Studies of tooth decay in children before and after community drinking water fluoridation show a median decrease in tooth decay of almost 30% after fluoridation. The annual cost per capita to fluoridate community water is $0.50.5

In their annual report for 2007, HCPHES reported that levels of fluoridation among the 1,200 public drinking water systems in Harris County vary widely. Over 500,000 persons in Harris County, or 13% of the total population, are served by residential drinking water systems that do not meet the minimum level of fluoridation that may benefit oral health.

Economic Impact of Dental Care

Visiting the dentist routinely can delay or eliminate the need for more extensive or emergency visits later, even in infancy. A dental visit before the age of one can reduce subsequent restorative and emergency visits. For example, the average cost of dental treatment in a hospital operating room is $1,502 compared to $102 for children who received preventive dental care.

Expansion of preventive dentistry into the schools provides additional savings. Students who received dental sealants were 60% less likely to develop new decayed pits and fissures in the following 2-5 years. Community water fluoridation provides cost savings by reducing dental caries. Every dollar spent on fluoridation saves $7 to $42 dollars in dental costs. In the last decade, the savings total as much as $25.7 billion.

Healthy People 2010

Objective 21-10: Increase the proportion of children and adults who use the oral health care system each year

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1996</td>
<td>44</td>
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<tr>
<td>Target for 2010</td>
<td>56</td>
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<tr>
<td>Houston MSA 2006</td>
<td>67</td>
</tr>
<tr>
<td>State of Texas 2006</td>
<td>64</td>
</tr>
<tr>
<td>United States 2006</td>
<td>70</td>
</tr>
</tbody>
</table>

Public Health Actions

- Educate people about the importance of optimal nutrition and drinking fluoridated water to promote good oral health
- Promote routine dental care and oral hygiene, and provide dental care when otherwise unavailable for low income pregnant women and children
- Mobilize partnerships to solve health problems such as access to dental health services for residents in Houston/ Harris County and fluoridation of water

For More Information

American Dental Association: www.ada.org
Texas Dental Association: www.tda.org
Greater Houston Dental Society: www.ghds.org
Texas Oral Health Coalition: www.txohc.org
HCPHES: www.hcphes.org

References:

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Environmental Health Indicators

Broadly defined, the environment, including infectious agents, is one of three primary factors that affect human health. The other two are genetic factors and personal behavior.

Poor environmental quality is estimated to be directly responsible for approximately 25% of all preventable ill health in the world, with diarrheal diseases and respiratory infections heading the list.

Because the effect of the environment on human health is so great, protecting the environment has been a mainstay of public health practice since 1878. National, Tribal, State, and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed significantly to improvements in public health in the United States.

Healthy People 2010
Overview

Unhealthy interaction between people and their environment can result in acute and chronic health conditions. Environmental risk factors include poor air and water quality, improper food handling practices and the presence of lead in the home environment.

Houston has long had a problem with outdoor air pollution and was once called the smog capital of the U.S. The city is taking strides to correct this problem. Under the direction of the federal Clean Air Act, cities and states are reducing airborne levels of ozone and particulate matter.

Houston and Harris County fall into one of four regions within Texas that exceed the National Ambient Air Quality Standard (NAAQS) for ozone levels. This region is required to reduce ozone levels to 85 parts per billion over an eight-hour period by the summer of 2010.

Ozone is caused by motor vehicle exhaust, industrial emissions, gasoline vapors, and chemical solvents, as well as natural sources of nitrogen-oxygen and volatile organic compounds. During hot weather, these chemicals react with sunlight, forming dangerous ground-level ozone.

For particulate matter, however, Houston and Harris County meet the current NAAQS standards of 15 micrograms per cubic meter. Particulate matter is defined as a mixture of airborne solid particles and liquid droplets. The particles can vary in size from dirt, soot, or smoke large enough to see with the naked eye to particles only visible under a high-powered microscope.

Particle pollution includes coarse particles with diameters of 2.5 to 10 microns, up to one-seventh the diameter of a human hair. Particles designated as “fine” have diameters less than 2.5 microns.

A report completed by the Health Task Force, commissioned by Mayor Bill White, on the health effects of air pollution indicated that, beyond ozone and particulate matter, ten additional air contaminants pose a significant health risk to the Houston/Harris County region: diesel particulate matter, 1,3-butadiene, acrolein, acrylonitrile, benzene, chlorine, chromium VI, ethylene dibromide, formaldehyde and hexamethylene diisocyanate.

Short-term exposure to diesel particles may cause eye, throat, and bronchial irritation, light-headedness, nausea, cough and phlegm. It can exacerbate allergic responses and asthma-like symptoms. Long-term exposure may contribute to chronic respiratory disease, and could increase the risk of developing lung cancer.

Short-term, high-level exposure (minutes to hours) to many of the other EPA Hazardous Air Pollutants, like benzene and formaldehyde, can cause headaches, difficulty breathing, nausea, confusion and seizures.

Long-term, lower-level exposure (months to years) to these pollutants may cause many adverse health effects, including cancer. These pollutants can also damage the respiratory, circulatory, nervous, reproductive, digestive, endocrine and immune systems. In addition, long-term exposure can lead to developmental effects in children.

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2Particulate matter annual average standards of the Environmental Protection Agency.
Healthy People 2010

Objective 8-1a: Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency’s health-based standards for ozone

Proportion of Persons Exposed to Air that Does Not Meet EPA Standards for Ozone

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1997</td>
<td>43</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>0</td>
</tr>
<tr>
<td>Houston/Harris County 2008</td>
<td>100</td>
</tr>
<tr>
<td>Texas 2005</td>
<td>N/A*</td>
</tr>
<tr>
<td>United States 2004</td>
<td>39</td>
</tr>
</tbody>
</table>

*Measures not available

Public Health Actions

- Research new insights and innovative solutions through activities such as participation in a study by the University of Texas, commissioned by Mayor Bill White, on steps to fight identified pollutant risks
- Mobilize partnerships such as settlement agreements reached between local government and industry to reduce emissions
- Educate residents to reduce emissions through methods such as carpooling and use of electric yard equipment and natural gas fireplaces
- Enforce laws and compliance with regulations, and monitor air contaminants

Economic Impact of Air Quality

Poor air quality increases health risks. For example, increased levels of ozone are linked with asthma and other respiratory illnesses. High levels of fine particulate matter from automobile exhaust and industrial processes can cause shortness of breath and aggravate patients with respiratory illnesses or cardiovascular diseases.

In the Houston ship channel and other industrial areas, long term exposure to air pollution increases cancer risk by a factor of 1000.3 These increased risks can lead to higher health-care costs for individuals as well as taxpayers.

Further, health complications arising from poor air quality may lead to decreased worker productivity. One study suggests that one quarter of the participants in regions with poor air quality indicated lower productivity because of coughing, chest pains, and watery eyes.4

Source: Texas Commission on Environmental Quality

Trends: Houston/Harris County

The overall trend for excessive ozone days in Houston/Harris County shows fluctuation in recent years, but appears to be trending gradually lower since 2000. The chart below uses standards of 125 ppbv (parts per billion volume) for 1-hr ozone days and 85 ppbv for 8-hr ozone days. However, in 2008 the EPA designated the Houston region as a non-attainment area for a more stringent 75 ppbv 8-hr ozone standard.

For More Information

AirNow: www.airnow.gov
EPA: www.epa.gov/air/oaqps/cleanair.html
Texas’ Nonattainment Areas: www.tceq.state.tx.us/implementation/air/sip/siptexas.html
Environmental Defense: www.environmentaldefense.org/cleanairforlife.cfm
Mothers for Clean Air: www.mothersforcleanair.org/
HCPHES: www.hcphes.org
The Mayor’s Office of Environmental Programming: www.greenhoustontx.gov

Air Quality, cont.

Populations at Risk

All areas in the Houston/Harris County region are exposed to unhealthy levels of at least one air contaminant—a result of urban concentrations of vehicle exhaust and industrial emissions. Communities closest to the largest sources of air toxins are at a greater risk of detrimental health effects from air pollution. In Houston and Harris County, the greatest air pollution is next to and around the Houston Ship Channel. Residents and employees in this area should monitor their health closely, looking for warning signs of long-term effects of air pollution.

Those also at high risk are individuals with pre-existing medical conditions who are easily affected by exposure to airborne contaminants. These conditions are primarily respiratory ailments, but also include cardiovascular disease and diabetes. This accounts for about 35% of the Harris County population, both children and adults.

Adults over the age of 65 and children under the age of 18 are also more susceptible to air toxins, whether or not they have a pre-existing condition. According to the American Lung Association, of over 3.6 million people living in Harris County in 2007, more than 280,000 were over 65 (approx. 7.7%) and more than one million were under 18 (approx. 29%).

Those who fall into high risk categories should monitor the air quality on a daily basis through local weather reports, newspapers, and online sources and should avoid exercising outdoors when pollution levels are high.

Geographic Distribution

The following figure illustrates local trends of one air pollutant, benzene. Benzene can cause cancer, headaches, difficulty breathing, nausea, confusion and seizures. It is emitted from cars and widely used in industrial processes to make crude oil, gasoline, some types of rubbers, lubricants, dyes, detergents, drugs and pesticides. It is also found in cigarette smoke.

The City of Houston conducted a comprehensive investigation of the annual trends of benzene in the air surrounding Houston and vicinity through 2007 and updated the five year trend analysis in 2008. The update included analysis of the 2008 and 5-year trends with seven statistical measures of benzene at 11 monitoring sites in the Houston area.

The evaluation of the annual benzene data for 2008 indicated that the Lynchburg Ferry and Channelview sites continued to be ranked as “most contaminated” for seven benzene measures, while the Lake Jackson and Danciger sites were least contaminated. Trend analysis indicated 37% of the statistical measures showed improvement in the five years ending in 2008, up from 27% of the statistical measures showing improvement in the five year period ending in 2007. Four of the 10 monitoring sites evaluated showed no improvement in any statistic for the 5, 7 or 10 year trends.

Population of Harris County with High-Risk Pre-existing Medical Conditions

- Cardiovascular Disease: 707,758
- Emphysema: 37,811
- Chronic Bronchitis: 104,332
- Adult Asthma: 177,117
- Pediatric Asthma: 94,934
- Diabetes: 172,713
- Healthy Population: 2,398,383

Source: American Lung Association, State of the Air 2005

Note: Statistical finding of improvement is objective but lenient. A monitor was classified as improving if any one of the seven statistical measures showed improvement. Therefore, a monitor could have six statistical measures that show no improvement with one that shows improvement and the monitor would still receive an "improvement detected" rating.

Surface Water Quality

Overview
Monitoring Surface Water Quality
Clean water is crucial to the health of residents of Houston/Harris County. Continuous evaluation of the quality and possible contamination of the streams, rivers, bayous and lakes is performed throughout the City and the County. HDHHS and HCPHES cooperate in this endeavor, each monitoring its respective areas. Greater than 91% of the designated stream segments in the City of Houston/Harris County have at least one water quality impairment.

Elevated bacteria levels continue to be a problem affecting many streams in the Houston/Harris County area. In 2008, 84% of designated stream segments in our area were impaired due to elevated levels of bacteria.

Over half of the stream segments in the region are included in the state’s 303 (d) list of impaired water bodies due to elevated levels of bacteria. Over 30% of the stream segments are listed as a concern due to elevated levels of nutrients such as fertilizer runoff. Recent studies indicate this contamination is largely due to sources other than wastewater treatment facilities, including malfunctioning septic systems, animal waste and gray water discharges. As a result, many water bodies are unsafe for most recreation activities and the fish or shellfish living in the streams may be unsafe for human consumption.

Aftermath of Hurricane Ike
In 2008, approximately 63% of the samples collected by the City of Houston Bureau of Water Resources Protection failed to meet the state standard for safe contact recreation. The increase in the percentage of samples exceeding the standard may be related to an increase in development of rural areas and impacts from Hurricane Ike. In the weeks following Hurricane Ike, many of the region’s wastewater treatment plants and lift stations were not operating at full capacity. As a result, raw sewage was discharged at very high rates into local bayous and streams.

Testing Local Surface Water
In 2008, the EPA reported that nationwide, 47% of assessed stream miles, 61% of assessed lake acres and 40% of assessed bay and estuarine square miles were not clean enough to support uses such as fishing and swimming.

Rainfall and E. Coli
There is a strong relationship between measurable rainfall and elevated levels of E. coli. All water segments throughout the Houston and Harris County are designated for contact recreational use, except the Houston Ship Channel segment. All bacteriological results are compared to the contact recreational standard, which is 394 colonies per 100 ml (E. Coli).

Surface-water quality in Houston/Harris County has remained largely consistent in recent years, with no appreciable year-to-year change.
Clean Rivers Program
The Clean Rivers Program (CRP) was created after the establishment of the Clean Rivers Act which requires an ongoing assessment of water quality issues and management. The Houston-Galveston Area Council (H-GAC) and its CRP partners strive to protect, maintain, and improve the quality of water in Texas as well as provide public education and outreach.

The H-GAC has identified key impairments among all water segments in the 13 county H-GAC service region. The biggest sources of concern in this region continue to be bacteria, nutrients and dioxin. While dioxin concerns are mostly limited to the Houston Ship Channel and Upper Galveston Bay, elevated levels of bacteria and nutrients as well as decreased levels of dissolved oxygen occur in streams throughout the entire area.

Healthy People 2010
Objective 8-8: Increase the proportion of assessed rivers, lakes and estuaries that are safe for fishing and recreational purposes

<table>
<thead>
<tr>
<th>Safe Rivers, Lakes, Estuaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
</tr>
<tr>
<td>National Baseline 1994</td>
</tr>
<tr>
<td>Houston/Harris County, for bodies of water that were assessed 2008 (from H-GAC Clean Rivers Program)</td>
</tr>
<tr>
<td>U.S. 2007 (EPA reports, random testing)</td>
</tr>
<tr>
<td>Assessed stream miles</td>
</tr>
<tr>
<td>Assessed lake acres (2007)</td>
</tr>
<tr>
<td>Assessed bays and estuarine square miles</td>
</tr>
</tbody>
</table>

Public Health Actions
- Enforce laws and regulations to protect health and ensure safety by testing and monitoring the quality of surface water, swimming pools, spas, hazardous waste sites, landfills, illegal dumpsites and wastewater treatment plants
- Mobilize community partnerships and action to solve health problems through stakeholder meetings and activities such as voluntary waterway clean-ups
- Educate the public on the importance of proper waste disposal, prevention of sanitary sewer overflows, and everyday habits that can negatively affect water quality

For More Information
City of Houston residents who want to determine if streams or other surface water are safe for recreation can contact the HDHHS Bureau of Water Resources Protection: 713-640-4256.
[www.houstontx.gov/health/Environmental/the%20new%20phepage.html](http://www.houstontx.gov/health/Environmental/the%20new%20phepage.html)

Harris County, outside the City Limits. HCPHES: [www.hcphes.org](http://www.hcphes.org) or call 713-439-6000.

Houston Bayou Preservation Association for monthly data about local bayous: [www.bayoupreservation.org](http://www.bayoupreservation.org)

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Overview

The Federal Safe Drinking Water Act authorizes the EPA to set health-based standards for public drinking water to protect against naturally-occurring and man-made threats to the water supply. Such threats include animal and human waste, improperly disposed chemicals, naturally occurring substances such as radium 226 and poorly maintained water treatment and distribution systems. The standards apply to every public water system in the U.S. Public water systems are drinking water systems that serve at least 25 people per day for at least 60 days per year. Like most states, Texas has the authority to implement statewide drinking water standards that are at least as stringent as those outlined by the EPA.

Within Harris County there are approximately 1,200 public drinking water systems, ranging from the City of Houston’s, which is the largest in Texas, to many that are among the state’s smallest. HCPHES focuses its efforts on these smaller systems—such as those maintained by mobile home parks, subdivisions, child-care facilities and small businesses. HCPHES conducts approximately 130 plant inspections each month. Through these inspections, HCPHES determines if a drinking water system has exceeded federal standards on certain contaminants, including those that can affect human health. If a system is in exceedance, HCPHES coordinates with the system as well as with State and Federal partners to address issues and, if necessary, to identify alternate drinking water sources.

Drinking water standards within Houston are measured and enforced by the City of Houston Department of Public Works and Engineering.

For More Information

HCPHES: [www.hcphes.org](http://www.hcphes.org)

City of Houston, Public Works and Engineering: [www.houstontx.gov](http://www.houstontx.gov)

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Source</th>
<th>Health Risks after Long-term Consumption</th>
<th>Systems in Exceedance</th>
<th>Residents Served by System(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes</td>
<td>Skin damage or problems with circulatory system, increased risk of cancer</td>
<td>5</td>
<td>12,630</td>
</tr>
<tr>
<td>Gross Alpha particles</td>
<td>Erosion of natural deposits</td>
<td>Increased risk of cancer</td>
<td>2</td>
<td>6,165</td>
</tr>
<tr>
<td>Radium 226 and 228</td>
<td>Erosion of natural deposits</td>
<td>Increased risk of cancer</td>
<td>1</td>
<td>120</td>
</tr>
<tr>
<td>Uranium</td>
<td>Erosion of natural deposits</td>
<td>Increased risk of cancer, kidney toxicity</td>
<td>1</td>
<td>120</td>
</tr>
</tbody>
</table>

Occupational Health

Overview
The toll of workplace injuries and illnesses is significant. Healthy People 2010 points out that every five seconds a worker is injured in the United States. On average, each day 137 workers die from work-related diseases, and an additional 17 die from injuries on the job.

According to the Texas Workforce Compensation Commission and the U.S. Department of Labor, the Texas nonfatal occupational injury rate has decreased from 6.3 per 100 full-time workers in 1996 to 3.7 per 100 full-time workers in 2006. A similar trend can be seen at the national level.

The top five events or exposures that caused fatal occupational injuries in Houston-Baytown-Sugar Land from 2003-2007 included assaults and/or violent acts, transportation incidents, falls, contact with objects and equipment, and exposure to harmful substances.\(^1\)

Of the 540 fatal occupational injuries that occurred in Houston-Baytown-Sugar Land MSA during the five-year period of 2003-2007, 25% occurred among persons in construction and extraction occupations. Over 22% occurred in industries classified as transportation and material moving occupations and 8% occurred among the installation, maintenance and repair occupations.\(^1\)

As of 2006, motor vehicle-related fatalities remained the leading cause of death for U.S. workers since 1980. Falls in the workplace are the second most frequent work-related fatal event followed by workers struck by an object and workplace homicides.\(^2\)

Population Differences
From 2003 through 2007 there were 540 fatal occupational injuries in the Houston-Baytown-Sugar Land MSA. Of those injured, 37% were Hispanic, 42% white and 13% black. Males accounted for 508 of those fatal occupational injuries.\(^1\)

The Houston-Baytown-Sugar Land MSA had 125 of the 527 occupational injury deaths in Texas in 2007. Of the Texas fatalities, 493 were men and 34 were women. Whites accounted for 46% of the deaths, Hispanics 40%, blacks 11% and Asians 2%.\(^1\) Nationally, from 2003 through 2007, whites comprised 70% of the deaths, Hispanics 15%, blacks 10% and Other 5%.\(^1\)

Public Health Actions
- Inform the public about occupational health issues and hazards
- Develop policies and plans to support individual and community efforts to improve worker safety
- Enforce laws and regulations to protect worker health and ensure safety

For More Information
Texas Department of Health:
[http://soupfin.tdh.state.tx.us](http://soupfin.tdh.state.tx.us)
Texas Workforce Commission:
[www.twc.state.tx.us](http://www.twc.state.tx.us)
Texas Department of Insurance:
[www.tdi.state.tx.us/wc/index.html](http://www.tdi.state.tx.us/wc/index.html)

In 2008, HCPHES identified 1,326 food establishments within unincorporated Harris County and 18 municipalities within the County that required follow-up inspection, where critical food safety violations were identified at routine inspection. This represents 8.7% of the 15,224 food establishment inspections conducted in 2008. In addition, HCPHES issued 342 warnings and/or citations to food establishment operators for failing to comply with food safety guidelines.

Campylobacter is one of the most common causes of food poisoning in the U.S. This bacteria is estimated to affect 2.4 million people annually. Most people recover from the infection without any medical treatment, but antibiotics can be used to treat severe cases.\(^1\)

While individuals can protect themselves at home by following basic food-handling precautions, the public must trust that restaurants and other dining establishments have complied with locally-adopted food safety guidelines based on the Texas Food Establishment Rules.

The most common complaints concern outside dumpsters, public restrooms or employee storage, preparation and consumption.

A pathogen is an agent that causes disease, especially a living microorganism such as a bacteria or fungus.

Trends: Houston/Harris County 2005-2008

<table>
<thead>
<tr>
<th>Inspections Within the City of Houston</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>1/08–6/08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Establishments*</td>
<td>13,699</td>
<td>12,565</td>
<td>13,012</td>
<td>14,060</td>
</tr>
<tr>
<td>Violations of the City Food Ordinance</td>
<td>90,079</td>
<td>74,805</td>
<td>55,717</td>
<td>25,186</td>
</tr>
<tr>
<td>Citations Issued to Establishments</td>
<td>1,747</td>
<td>1,014</td>
<td>1,029</td>
<td>675</td>
</tr>
<tr>
<td>Complaints Investigated</td>
<td>2,077</td>
<td>2,592</td>
<td>2,415</td>
<td>1,290</td>
</tr>
<tr>
<td>Alleged Food-Borne Illnesses</td>
<td>260</td>
<td>588</td>
<td>393</td>
<td>197</td>
</tr>
<tr>
<td>Establishment Closures</td>
<td>20.7</td>
<td>19.5</td>
<td>15.5</td>
<td>22.5</td>
</tr>
</tbody>
</table>

*Includes mobile units but not temporary food establishments
Source: HDHHS Bureau of Consumer Health Services

\(^1\)CDC, Division of Bacterial and Mycotic Diseases. Campylobacter infection. Available at: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm#What%20is%20campylobacteriosis](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm#What%20is%20campylobacteriosis). Accessed November, 2006.
Public Health Actions

- Enforce laws and regulations that protect health and ensure safety by licensing restaurants, inspecting food establishments and responding to public complaints.
- Educate food establishment owners and workers about safe food handling and inform the public about the results of restaurant inspections.
- Empower people about health issues through events such as educating flea market vendors to eliminate environmental hazards.
- Monitor health through the national surveillance program administered by the CDC to track campylobacter infection rates.

Healthy People 2010

Objective 10-1a: Reduce infections caused by Campylobacter species

| Reduce Infections Caused by Campylobacter (Cases per 100,000 Population) |
|-----------------------------|------------------|
| Area                        | Rate             |
| National Baseline 1997      | 24.6             |
| Target for 2010             | 12.3             |
| Houston/Harris County 2007  | 3.9              |
| State of Texas 2006         | 4.5              |
| United States 2005          | 12.7             |

Hurricane Ike

In September 2008, as part of the post disaster recovery efforts following Hurricane Ike, HDHHS sanitarians conducted 1,854 inspections of shelters and storm-damaged food establishments. Nearly 530 tons of food had to be condemned due to spoilage caused by power outages at food establishments.

Food Inspection and Safety Website

The HDHHS Bureau of Consumer Health Services has a public website where consumers can check a food establishment’s most recent inspection report in order to make an informed decision about dining or shopping at a specified food establishment. Also, the consumer can now submit complaints about unsanitary food establishments on-line.

The public website is located at www.houstontx.gov. This website provides a snapshot of the facility’s condition and practices at the time of the most recent inspection.

Economic Impact of Food Illnesses

Major causes of food-borne illnesses are enteric diseases such as those caused by salmonella and E. coli. Food-borne salmonellosis in the United States is estimated to cost $1 billion a year.2

The most common effects of enteric disease are diarrhea and vomiting, which can lead to lost productivity and absenteeism. However, in some cases, such as infection by Vibrio vulnificus, which can be found in raw oysters, it can lead to life-threatening complications.

Campylobacter infections usually have little economic impact. Patients may miss a few days of work while recovering, but for otherwise healthy people, the bacteria does not require medical attention. Only for those in high risk groups, such as children, elderly persons, or people with compromised immune systems, does a Campylobacter infection incur medical expenses such as antibiotic treatment.1


For More Information

City of Houston Food Ordinance: www.houstontx.gov/codes/index.html
Food Inspection Results at HDHHS: http://houston.tx.egov.com/media/index.cfm
HCPHES: www.hcphes.org
Texas Department of State Health Services, Food Establishment Group: www.dshs.state.tx.us/foodestablishments
Food-Borne Illness: www.cdc.gov/enterics
USDA Food Safety and Inspection Service: www.fsis.usda.gov
Lead Poisoning

Overview
A high level of lead in the bloodstream can lead to learning disabilities, behavioral problems, seizures and even death. The primary source for lead poisoning in children is lead dust given off by aging paint. Lead-based paint was banned in 1978. However, Houston/Harris County still has almost 700,000 pre-1978 occupied residences, based on the 2000 Census.

Children under age six, particularly those living in older housing, are at the highest risk for lead poisoning. A few of the most common sources of lead poisoning in children are: lead based paint, lead glazed pottery (jarros/jars) and tiles, certain vinyl mini-blinds, home remedies (Azarcon and Greta), crayons (made with lead), imported toys and jewelry, contaminated soil, candy and automobile parts such as batteries and radiators.

Both the City and County health departments provide ongoing lead screening among high risk populations. According to the TDSHS Childhood Lead Poisoning Prevention Program, in 2008 the two health departments tested 59,041 children under six years of age, with 324 confirmed cases. Most children with elevated blood levels live in pre-1950 housing.

Within the 610 Loop, 25% of homes were built before 1950. In some zip codes, this fraction is as high as 35%. The extent of the lead poisoning problem varies by location, by socioeconomic status, and by ethnic group.

Trends: Houston/Harris County 1999-2007
HDHHS tests children in high risk areas for blood lead levels. In 2000, HDHHS reported that 6.5% of children under age 6 in Houston were tested for blood lead levels. This percentage increased to 9.0% in 2008. Of those children who are tested, the percent who test positive for elevated blood lead levels has decreased over time.

The decreasing incidence of children with elevated blood levels can be attributed in part to the Department of Housing and Urban Development (HUD) programs administered through local public health organizations to remediate houses with dangerous paint.

Population Differences
The prevalence of lead poisoning correlates along socioeconomic divisions. Those near or below the poverty line are more likely to live in older housing containing lead-based paint than are families in the middle or upper middle class. Also, the children in lower socioeconomic levels are less likely to receive prompt and adequate medical care for elevated blood lead levels.

Based on HUD databases, Houston has 402,626 families (42.25%) with less than 50% of the city’s annual median income (AMI) and has 158,246 families (17.8%) in the jurisdiction-wide area with less than 80% of the city’s AMI.

The CDC reports that some racial and ethnic groups are disproportionately affected by lead. For example, 3% of black children were found to be affected by elevated lead blood levels, compared to 1.3% of white children in the U.S.
Public Health Actions

- Monitor health status to identify and solve community health problems by testing children in high risk areas for elevated blood lead levels.
- Link people with needed health services through referral of children positive for lead poisoning for medical treatment.
- Diagnose health hazards by assessing houses with young children in the home as well as crumbling lead-based paint.
- Enforce laws and regulations to remediate houses with dangerous paint.

Economic Impact of Lead Poisoning

Since lead poisoning can lead to learning disability, behavioral problems, seizures, and even death, it poses a substantial economic burden. A 2002 study estimated the annual cost of lead poisoning in the U.S. at $43.4 billion. Since lead poisoning can decrease intellectual potential, the result may be a loss in lifetime earnings. One study estimates an increase of $110 billion to $319 billion in lifetime earnings for the 3.8 million children affected by lead poisoning today compared to their lifetime earning potential had they not been subject to 1975 lead levels.

For More Information

- U.S. Department of Housing and Urban Development: [www.hud.gov/offices/lead](http://www.hud.gov/offices/lead)
- State of Texas: [www.dshs.state.tx.us/lead](http://www.dshs.state.tx.us/lead)
- City of Houston: [www.houstontx.gov/health/Environmental/leadprogrampage.html](http://www.houstontx.gov/health/Environmental/leadprogrampage.html)
- HCPHES: [www.hcphes.org](http://www.hcphes.org)
- National Safety Council: [www.nsc.org/resources/issues/lead.aspx](http://www.nsc.org/resources/issues/lead.aspx)
- CDC Prevention Program: [www.cdc.gov/nceh/lead](http://www.cdc.gov/nceh/lead)

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Mental Health Indicators

Mental disorders generate an immense public health burden of disability. The World Health Organization, in collaboration with the World Bank and Harvard University, has determined the “burden of disability” associated with the whole range of diseases and health conditions suffered by peoples throughout the world.

A striking finding of the landmark *Global Burden of Disease* study is that the impact of mental illness on overall health and productivity in the United States and throughout the world often is profoundly under recognized. In established market economies such as the United States, mental illness is on a par with heart disease and cancer as a cause of disability. Suicide—a major public health problem in the United States—occurs most frequently as a consequence of a mental disorder.

Mental disorders occur across the lifespan, affecting persons of all racial and ethnic groups, both genders, and all educational and socioeconomic groups. In the United States approximately 40 million people aged 18 to 64 years, or 22 percent of the population, had a diagnosis of mental disorder alone (19 percent) or of a co-occurring mental and addictive disorder in the past year.

Healthy People 2010
Overview
Mental health refers to positive emotional and psychological well-being. While many persons experience days with less than ideal well-being, public funding is most concerned with the three severe mental illnesses: schizophrenia, bipolar disorder and major depression. All three can lead to severe impairment in the person’s ability to cope with daily life, and depression may lead to suicide, as well.

Poor mental health can also impact physical health. The Mental Health and Mental Retardation Authority of Harris County (MHMRA) offers the following estimates:

- About 140,000 of Harris County adults with a mental health condition suffer a severe mental illness.
- Almost half of adults in Harris County with a severe mental illness could not access treatment from public or private health systems.
- Almost 20,000 Harris County youth need services from the public mental health system each year, but the majority (76%) have not received treatment services.

Additionally, the Harris County Mental Health Needs Council estimated that more than 62% of the 16,000 youth in the Harris County Juvenile Probation Department have a diagnosable mental illness.

On a typical night, 37% of inmates in the Harris County Jail had once been a consumer of the Texas mental health system and 11% of inmates suffered a diagnosable severe mental illness. For 2004, a total of 24% of incarcerated individuals had a history of mental illness.

The public mental health system in Harris County (MHMRA and Harris County Psychiatric Center) was able to provide services to about 39,000 persons (about 10,000 youth and 29,000 adults) during fiscal year 2005; whereas the total number of persons in need was 340,295.

Trends: Houston/Harris County 2003-2007

The Harris County MHMRA estimates that about 500,000 adult residents and 186,000 youth in Harris County experience a mental health condition or emotional disturbance each year. Of children with an emotional disturbance, 108,480 suffer a severe mental illness.

The BRFSS assesses mental health by asking survey participants if they had five or more days of poor mental health, including problems with stress, depression and emotions during the past 30 days. (see chart at left)

Population Differences
The 2007 BRFSS for the Houston-Baytown-Sugar Land MSA, shows that women more frequently reported five or more days of poor mental health (22.5%) compared to men (17.5%). Also, those with incomes of $50,000 or more were less likely to report poor mental health (17.5%), compared to 25.1% of those with incomes below $25,000.

The source for these statistics is the Texas Department of State Health Services (TDSHS) Behavioral Risk Factor Surveillance System (BRFSS).

1Extrapolated from prevalence rates regarding mental illness by MHMRA staff.
2Data created by matching jail booking records with MHMRA and TDSHS mental health clinical practice databases.
Public Health Actions

- Monitor health status by tracking those with severe mental illness in the county
- Provide health care where otherwise unavailable by diagnosing and treating low-income persons with severe mental illness in Harris County
- Mobilize community partnerships and action to identify and solve mental health problems through support or organization of groups such as the Mental Health Association and the MHMRA Mental Retardation Planning Advisory Council

Healthy People 2010

Objective 18-1: Reduce the suicide rate

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>11.3</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>4.8</td>
</tr>
<tr>
<td>Harris County 2005</td>
<td>9.7</td>
</tr>
<tr>
<td>State of Texas 2005</td>
<td>10.8</td>
</tr>
<tr>
<td>United States 2005</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Economic Impact of Mental Health

The medical, societal, and lost productivity costs of mental health total more than $113 billion dollars nationally. In Texas, mental health illness costs state and local governments $1.5 billion dollars. Lost family income and economic productivity is estimated at $16.6 billion dollars.

In some cases, the suffering individual is the head of the household. Stress and other factors can lead to depression and absenteeism at work, resulting in unemployment and further debt. Many severely mentally ill receive some form of social security disability or supplemental security income.

Businesses can benefit when appropriate mental health facilities and counseling are available. Health plans with lower financial barriers to mental health treatment have lower rates of psychiatric long-term disability than health plans with more restricted access to mental health services. Cases also show that decreasing mental health services can result in greater costs for companies due to increased health care use and more frequent sick days.

For More Information

National Mental Health Association: www.nmha.org
Houston Mental Health Association: www.mhahouston.org
National Institute of Mental Health: www.nimh.nih.gov
CDC: www.cdc.gov/mentalhealth/index.htm
MHMRA: www.mhmraharris.org/
Texas DSHS: www.dshs.state.tx.us/mentalhealth.shtm
Suicide & Crisis Center: www.sccenter.org
Suicide Prevention Resource Center: www.sprc.org/stateinformation/statepages/showstate.asp?stateID=43

For More Information

Rosenheck, R et al. Effect of declining mental health service use on employees of a large corporation: general health costs and sick days went up when mental health spending was cut back at one large self-insured company. Journal of Health Affairs. September 1999; 18(5).
Data for most Healthy People mortality objectives are based on the underlying cause of death. The underlying cause of death is defined by the World Health Organization as the disease or injury that initiated the sequence of events leading directly to death or as the circumstances of the violence or accident that produced the fatal injury. It is selected from the conditions entered by the physician in the cause of death section on the death certificate.

Healthy People 2010
When considering the leading causes of death and disability, HCPHES, HDHHS and other public health organizations examine factors that impact death and disability throughout a person’s lifetime, including infant, adolescent, maternal and senior health concerns.

In 2005, the most recent year for which comprehensive vital statistics data are available, there were 20,799 deaths in Harris County. The leading cause of death was heart disease, with more than one out of four deaths attributed to diseases of the heart. Cancer followed with 23% of all deaths.

Differences in mortality rates are present among racial and ethnic groups. For example, while heart disease was the leading cause of death for all races in Harris County in 2005, the age-adjusted mortality rate for heart disease among black residents was 297.6 deaths per 100,000 population, compared with 220.9 among white residents and 133.8 among Hispanic residents.

### Leading Causes of Mortality, Harris County, 2005

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Total Deaths</th>
<th>Age-Adjusted Mortality Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Causes</td>
<td>20,799</td>
<td>832.4</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>4,928</td>
<td>212.6</td>
</tr>
<tr>
<td>Cancer</td>
<td>4,702</td>
<td>185.0</td>
</tr>
<tr>
<td>Accidents</td>
<td>1,288</td>
<td>41.0</td>
</tr>
<tr>
<td>Stroke</td>
<td>1,280</td>
<td>58.0</td>
</tr>
<tr>
<td>Chronic Lower Respiratory Disease</td>
<td>762</td>
<td>34.0</td>
</tr>
<tr>
<td>Diabetes</td>
<td>638</td>
<td>25.3</td>
</tr>
<tr>
<td>Alzheimer’s Disease</td>
<td>483</td>
<td>24.1</td>
</tr>
<tr>
<td>Septicemia</td>
<td>476</td>
<td>19.8</td>
</tr>
<tr>
<td>Influenza and Pneumonia</td>
<td>447</td>
<td>20.2</td>
</tr>
<tr>
<td>Kidney Disease</td>
<td>415</td>
<td>17.4</td>
</tr>
<tr>
<td>Homicide</td>
<td>396</td>
<td>10.1</td>
</tr>
<tr>
<td>Chronic Liver Disease and Cirrhosis</td>
<td>357</td>
<td>11.9</td>
</tr>
<tr>
<td>Suicide</td>
<td>343</td>
<td>9.7</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>261</td>
<td>7.3</td>
</tr>
</tbody>
</table>

*Deaths per 100,000 persons, age-adjusted to the 2000 Census population. Age adjustment is a method that eliminates differences in rates that result from age differences in population composition.

Source: Texas Department of State Health Services, Center for Health Statistics, 2009
## Leading Causes of Mortality by Race, Harris County, 2005

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Age-Adjusted Mortality Rate* and (Rank)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White</td>
</tr>
<tr>
<td>All Causes</td>
<td>847.2</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>220.9 (1)</td>
</tr>
<tr>
<td>Cancer</td>
<td>190.8 (2)</td>
</tr>
<tr>
<td>Accidents</td>
<td>47.0 (4)</td>
</tr>
<tr>
<td>Stroke</td>
<td>55.3 (3)</td>
</tr>
<tr>
<td>Chronic Lower Respiratory Disease</td>
<td>42.6 (5)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>17.1 (8)</td>
</tr>
<tr>
<td>Alzheimer’s Disease</td>
<td>26.9 (6)</td>
</tr>
<tr>
<td>Septicemia</td>
<td>16.9 (9)</td>
</tr>
<tr>
<td>Influenza / Pneumonia</td>
<td>21.3 (7)</td>
</tr>
<tr>
<td>Kidney Disease</td>
<td>15.1 (11)</td>
</tr>
<tr>
<td>Homicide</td>
<td>4.4 (17)</td>
</tr>
<tr>
<td>Chronic Liver Disease and Cirrhosis</td>
<td>12.1 (12)</td>
</tr>
<tr>
<td>Suicide</td>
<td>15.4 (10)</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>3.3 (19)</td>
</tr>
</tbody>
</table>

*Deaths per 100,000 persons, age-adjusted to the 2000 Census population

Source: Texas Department of State Health Services, Center for Health Statistics, 2009
Maternal and Infant Health

The health of mothers, infants, and children is of critical importance, both as a reflection of the current health status of a large segment of the U.S. population and as a predictor of the health of the next generation.

Infant mortality is an important measure of a nation’s health and a worldwide indicator of health status and social well-being. As of 1995, the U.S. infant mortality rates ranked 25th among industrialized nations. In the past decade, critical measures of increased risk of infant death, such as new cases of low birth weight (LBW) and very low birth weight (VLBW), actually have increased in the United States. In addition, the disparity in infant mortality rates between whites and specific racial and ethnic groups (especially African Americans, American Indians or Alaska Natives, Native Hawaiians, and Puerto Ricans) persists. Although the overall infant mortality rate has reached record low levels, the rate for African Americans remains twice that of whites.

Healthy People 2010
Overview
Improper prenatal care, short intervals between pregnancies, socioeconomic stressors, poor health of mothers and unavoidable genetic defects all contribute to poor pregnancy outcomes. These outcomes include low birth weight children (under 2.5 kilograms or 5.5 pounds), premature birth, infant death (less than a year of age), and maternal death. According to TDSHS, the 2005 maternal mortality rates per 100,000 live births are: Harris County 19.4, Texas 15.6 and U.S. 15.1. These rates are above the Healthy People 2010 goal of 3.3 maternal deaths per 100,000.

Timely prenatal care is one of the best ways to ensure the health of mothers and their infants. See the section on Prenatal Care for more detail about this topic.

A medical visit prior to becoming pregnant is also crucial for women with chronic disorders such as diabetes and high blood pressure to assure a healthy pregnancy and outcome.¹

After birth, breastfeeding appears to be important in reducing infant mortality in the first year of life due to various infections, Sudden Infant Death Syndrome (SIDS) and other causes.² Breast feeding is not recommended for babies whose mothers have HIV infection.

Positioning infants on their backs to sleep also is protective because it may reduce the risk of SIDS.³

**Trends: Houston/Harris County and the U.S. 1997-2005**

The death of an infant can be viewed as a sentinel event that is a measure of a community’s overall social and economic well-being.⁴

The infant mortality rate in the United States has been relatively stagnant nationwide over the past decade, and is one of the highest infant mortality rates of any industrialized nation. The infant death rate in Harris County declined to a low of 4.9 deaths per 1000 live births in 2000, but has since continued to increase to national levels by 2005.

**Population Differences**
TDSHS reports for Harris County show marked racial disparities in infant mortality, a pattern also seen in many areas of the U.S. Blacks have the highest rate of infant mortality among all races, with a rate of 8.7 / 1,000 in 2000 which increased to 13.2 / 1,000 in 2005.

The age of the mother is also important in the birth outcome. Premature birth, or birth before 37 weeks gestation, is a risk factor for infant death, and is more common among very young mothers and mothers over age 35.

Public Health Actions

- Monitor health status to identify and solve community health problems by tracking infant mortality rates
- Educate low-income women served directly by public health about health issues during pregnancy
- Mobilize community partnerships and action to identify and solve health problems
- Promote healthy practices through pregnancy and during early infant development

Healthy People 2010

Objective 16-1c: Reduce the number of infant deaths (within one year)

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>7.2</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>4.5</td>
</tr>
<tr>
<td>Harris County 2005</td>
<td>6.8</td>
</tr>
<tr>
<td>State of Texas 2005</td>
<td>6.5</td>
</tr>
<tr>
<td>United States 2005</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Economic Impact of Adverse Pregnancy Outcomes

Approximately eleven percent of children covered by employer health plans are born prematurely. The cost covered by these health plans is much higher in the first year of life for a premature child ($50,000), compared to a full-term baby ($4,551). Out of pocket expense for parents for LBW / premature infants was $3,326. Smoking during pregnancy can have significant impacts on newborn children. A child of a mother who smokes during and immediately after pregnancy is 1.5-3.5 times more likely to have a low birth weight and is 2.3 times more likely to die from SIDS. Medicaid alone paid more than $227 million in neonatal health costs in 2002 attributable to maternal smoking.

For More Information

March of Dimes: [www.marchofdimes.com](http://www.marchofdimes.com)
Premature Children: [www.prematurity.org](http://www.prematurity.org)
Sudden Infant Death Syndrome: [www.firstcandle.org](http://www.firstcandle.org)
Genetic Counseling: [www.kidshealth.org](http://www.kidshealth.org)

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Overview
According to TDSHS, teenage mothers are less likely to receive adequate prenatal care, are less likely to gain adequate weight during pregnancy and are more likely to smoke than older mothers. TDSHS also states that children born to teenage mothers are at greater risk of low birth weight, disability and mortality during the first year of life.

School is typically more difficult for children of young mothers. They are 50% more likely to repeat a grade, and in general perform less well on standardized tests. The children of teen parents suffer higher rates of abuse and neglect than children of mothers who delay child bearing.

Higher rates of premature births among younger mothers can be seen in Harris County in 2004. According to TDSHS, 14% of the births to mothers aged 10-19 were premature, as compared to 12.1% of the births to mothers aged 20-29.

Trends: Rates and Cases in Houston/Harris County 1990-2005

TDSHS 2005 vital statistics data reported that in Harris County there were 2,956 births to mothers 17 and younger. This represents 4.4% of all births in Harris County.

In comparison, in Texas, 4.9% of mothers were age 17 and younger, as were 3.4% of mothers nationwide. Following the national trend, births to teenage mothers in Harris County have declined since the 1990’s.

TDSHS Vital Statistics 2005 Annual Report indicate a pregnancy rate of 26.5 per 1,000 teenage girls (ages 13-17) in Harris County compared to 25.9 for teenage girls in all of Texas.

Population Differences
TDSHS reports indicate that in Harris County in 2005, 68% of births to teen mothers ages 10-17 years of age and younger were to Hispanic mothers, 10.6% were to white mothers and 21.1% were to black mothers.

Compared to older mothers, adolescent mothers are least likely to receive early and regular prenatal care, more likely to smoke during pregnancy, more likely to deliver preterm and their babies are more likely to die in the first year of life.

1 March of Dimes. Available at http://www.marchofdimes.com/professionals/14332_1159.asp
Economic Impact of Adolescent Pregnancy

Due to an increased likelihood of risk factors such as inadequate prenatal care, poor nutrition, and smoking, adolescent pregnancies may have greater healthcare costs, as with premature and low birth-weight babies. One study estimates the cost of Medicaid, food stamps, and medical expenditures from adolescent pregnancies to range between $13 and $19 billion nationally.

Due to the commitment to raise a child, the mother may lose education and job opportunities, resulting in lower lifetime earnings. A 1997 study showed 41% of women who had children before the age of 18 graduated from high school, as compared to 61% of women who had babies at age 21. A teenager struggles to keep a stable job, is more dependent on her family and more likely to use welfare. Three-fourths of unmarried teen mothers need welfare within the first five years after the birth of their first child.

Adolescent mothers are not always willing to obtain adequate reproductive health services, in part because they may be afraid of losing confidentiality. In Texas, the estimated cost of teenagers under 18 avoiding appropriate reproductive health care is $43.6 million due to additional pregnancies, abortions, and untreated sexually transmitted infections.

Healthy People 2010
Objective 9-7: Reduce pregnancies among adolescent females

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1996</td>
<td>68</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>43</td>
</tr>
<tr>
<td>Harris County 2004</td>
<td>41</td>
</tr>
<tr>
<td>State of Texas 2004</td>
<td>48</td>
</tr>
<tr>
<td>United States 2004</td>
<td>44</td>
</tr>
</tbody>
</table>

Public Health Actions

- Assure the provision of health care when otherwise unavailable through case management services for pregnant teens such as home visits, prenatal education, breastfeeding promotion, referral assistance and parenting skills
- Mobilize partnerships to solve health problems through support and implementation of programs such as the Healthy Families Home Visitation Program to provide family support and education when needed during the child’s early years
- Advocate for prevention services and education

For More Information
TDSHS Family Planning and Teen Pregnancy and Birth Facts: www.dshs.state.tx.us/famplan
National Campaign to Prevent Teen Pregnancy: www.thenationalcampaign.org
Planned Parenthood of Houston and Southeast Texas: www.pphouston.org
CDC: www.cdc.gov/reproductivehealth/AdolescentReproHealth/index.htm

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Chronic Diseases

The three leading causes of death in the United States are heart disease, cancer and stroke. Heart disease and stroke continue to be major causes of disability and significant contributors to increases in health care costs in the United States.

Diabetes also poses a significant public health challenge for the United States. Some 800,000 new cases are diagnosed each year, or 2,200 per day.

Arthritis is the leading cause of disability in the United States. Activity limitation affects 27% of all persons who have arthritis.

Asthma is responsible for about 500,000 hospitalizations, 5,000 deaths, and 134 million days of restricted activity a year. Yet most of the problems caused by asthma could be averted if persons with asthma and their health care providers managed the disease according to established guidelines.

Healthy People 2010
Heart Disease and Stroke

Overview

According to the CDC, almost one in four persons in the U.S. has some form of cardiovascular disease (CVD), including heart disease and risk for stroke. The 2007 BRFSS data illustrates that 6.8% of surveyed adults living in the Houston-Baytown-Sugar Land MSA reported they had been diagnosed with some form of heart disease, compared with 8.1% of U.S. adults.

More white and black BRFSS respondents reported having been diagnosed with heart disease than Hispanic respondents—8.5% white respondents and 6.5% of black respondents compared to 4.6% of Hispanic respondents. One quarter of those over age 65 reported they had been given a diagnosis of some form of heart disease.

Heart disease is the leading cause of death, followed by stroke in the third place, both in the US and in Houston/Harris County. Lowering/controlling cholesterol and blood pressure can reduce rates of CVD.

Trends: Houston/Harris County 2003-2004

BRFSS 2007 data show that among adults surveyed in the Houston area MSA, 73.1% have had their cholesterol checked in the past five years, up from 69.1% in 2003 and 69.2% in 2005. In 2007, 70.7% of Texas and 76.0% of U.S. adults reported that they had their cholesterol checked in the past five years. Of Houston area MSA respondents, 39.7% had been told their blood cholesterol was high in 2007, compared to 38.5% in Texas and 37.0% nationwide.

Even modest elevations in blood pressure increase the risk of CVD. BRFSS 2007 data show that 29.0% of surveyed Houston area MSA adults have been diagnosed with high blood pressure, compared with 27.8% of Texas adults and 28.0% of U.S. adults.

Population Differences

Mortality rates for heart disease vary widely among demographic groups in Harris County, with higher rates among males and black residents. The rate for men in 2004 was 268.8 compared to women at 190.3 per 100,000.

High blood pressure is often a component of heart disease. In the Houston-Baytown-Sugar Land MSA BFRSS survey, in 2007, Hispanics were least likely to report high blood pressure, at 18.3%, compared to 43.1% of blacks and 29.5% of whites. The percentage of those reporting high blood pressure rose with age. Only 11.6% of those in age group 18-29 reported high blood pressure, compared to 16.7% at age 30-44; 40.3% at age 45-64; and 59.6% at age 65+.
Public Health Actions

- Mobilize community partnerships through collaboration among public and private sector partners, such as managed care organizations, health insurers, federally funded health centers, businesses, schools and emergency response agencies
- Link people to personal health services such as the Wisewoman program to provide low income, under-insured or uninsured women aged 40 to 64 with knowledge, skills and opportunities to delay and control cardiovascular and other chronic diseases
- Link people with a primary care clinic and establish a medical home
- Inform, educate and empower people about CVD, the signs and symptoms of heart disease and stroke and when to call 911

For More Information

Texas DSHS: www.dshs.state.tx.us/wellness/PDF/facts/facts07.pdf
CDC: www.cdc.gov/DHDSP/index.htm
CDC (Spanish): www.cdc.gov/DHDSP/library/fs_heart_disease_spanish.htm
American Heart Association: www.americanheart.org

Healthy People 2010

Objective 12-1: Reduce coronary heart disease deaths

<table>
<thead>
<tr>
<th>Rate per 100,000 of Heart Disease Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-Adjusted to the 2000 Standard Population</td>
</tr>
<tr>
<td>Area</td>
</tr>
<tr>
<td>National Baseline 1998</td>
</tr>
<tr>
<td>Target for 2010</td>
</tr>
<tr>
<td>Harris County 2005</td>
</tr>
<tr>
<td>State of Texas 2004</td>
</tr>
<tr>
<td>United States 2005</td>
</tr>
</tbody>
</table>

Economic Impact of Heart Disease and Stroke

In 2003, the government spent $31.6 billion on Medicare beneficiaries discharged from short stay hospitals with CVD as their principal diagnosis, with an average cost of $8,966 per discharge. In 2005, the national cost of cardiovascular disease was estimated at $394 billion—$242 billion in direct medical expenditures and $152 billion in costs of lost productivity from death and disability. For 2006, the figure is $406 billion.

In the case of a heart attack, the average years of life lost is 14.2 years. Furthermore, once a person has had a heart attack, the possibilities of suffering sudden death increases 4 to 6 times. Coronary heart disease alone accounted for approximately 12.2 million visits to the hospital in 2000. The cost for coronary disease is estimated at $142 billion for 2006.

The 2006 national cost for stroke is approximately $57.9 billion. Per patient, the average lifetime cost for ischemic stroke, including the costs of inpatient care, rehabilitation, and follow-ups is $140,048. From Medicare 2003 data, an average cost for beneficiaries for short stay hospitals was $6,363 with an average of 5.2 days of care.

Current national guidelines recommend that adults check their blood pressure regularly and have their blood cholesterol checked every five years.

Cancer

Overview

Cancer is a disease caused by an abnormal growth of cells. The cells tend to proliferate in an uncontrolled way and, in some cases, to metastasize or spread. Cancer is not one disease. There are more than 100 varieties of cancer diseases. Cancer can involve any tissue of the body and has many different forms in each body area. Most cancers are named for the type of cell or organ in which they start.

Cancer is the second leading cause of death in the United States and in Texas. TDSHS estimated that 13,279 new cases of cancer would be diagnosed, and 5,065 people would die of cancer in Harris County in 2008.

Many cancer deaths can be prevented through lifestyle changes, such as avoiding sun and tobacco, and better nutrition and exercise. Recommended cancer screening can lead to earlier detection and better likelihood of survival.

Trends: Harris County 1999-2005

TDSHS statistics for 2001-2005 show the top three cancer diagnoses for men in Harris County were prostate cancer, lung cancer, and colorectal cancer. For women, the top diagnoses were breast cancer, lung cancer, and colorectal cancer. Despite advances in treatment, death cases from all types of cancer have remained consistent in the past few years, around 4,500 deaths per year in Harris County.

Medical advances, such as the vaccine for the Human Papilloma Virus (HPV) are bringing improvements in preventing and treating cancer. HPV is known to cause cervical cancer, which results in approximately 50 deaths per year in Harris County. (See following page for cervical cancer deaths.)

Deaths from Top Five Cancers in Harris County

<table>
<thead>
<tr>
<th>Type of Cancer</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>55.7</td>
<td>56.3</td>
<td>56.9</td>
<td>52.2</td>
<td>52.3</td>
<td>51.4</td>
</tr>
<tr>
<td>Colo-rectal</td>
<td>21.3</td>
<td>18.5</td>
<td>20.2</td>
<td>18.5</td>
<td>17.9</td>
<td>17.1</td>
</tr>
<tr>
<td>Breast</td>
<td>15.2</td>
<td>16.5</td>
<td>15.3</td>
<td>15.2</td>
<td>14.3</td>
<td>13.9</td>
</tr>
<tr>
<td>Pancreas</td>
<td>10.1</td>
<td>11.8</td>
<td>10.0</td>
<td>11.0</td>
<td>11.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Prostate</td>
<td>10.4</td>
<td>11.4</td>
<td>11.1</td>
<td>10.9</td>
<td>9.4</td>
<td>10.4</td>
</tr>
</tbody>
</table>

Source: TDSHS

Population Differences

In 2001-2005, TDSHS reported 61,688 new cases of cancer diagnosed in Harris County, a rate of 457 cases per 100,000 population. Blacks were more frequently diagnosed with cancer, with a rate of 522. Whites were next with a rate of 445. Hispanics had a rate of 327.

Blacks had the highest rates of cancer diagnoses in Harris County for both men and women: 663 per 100,000 for men and 410 per 100,000 for women. For both men and women, Asians had the lowest rate of cancer diagnoses (235 per 100,000 for men, 177 for women).

Source: Cancer incidence data provided by the Texas Cancer Registry, Cancer Epidemiology and Surveillance Branch, Texas Department of State Health Services, 1000 W. 49th St. Austin, TX 78756, http://www.dshs.state.tx.us/tcr/default.shtm, or (512)458-7523.
Public Health Actions

- Inform, educate, and empower people to develop techniques to prevent or to manage the symptoms of cancer, such as healthy living, cessation of smoking, and controlling other risk factors.

Mobilize partnerships with public health organizations, universities, medical centers, and other groups to address concerns such as racial disparities in cancer rates.

Healthy People 2010

Objective 3-1: Reduce the cancer death rate

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>202.4</td>
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<tr>
<td>Target for 2010</td>
<td>158.6</td>
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<td>Harris County 2005</td>
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<tr>
<td>State of Texas 2005</td>
<td>177.3</td>
</tr>
<tr>
<td>United States 2005</td>
<td>183.8</td>
</tr>
</tbody>
</table>

*Rate per 100,000 age-adjusted to the U.S. Standard Population.

Economic Impact of Cancer

Estimates for 2005 predicted $210 billion would be spent in the U.S. on cancer, including $74 billion in direct medical costs and $136 billion in indirect costs and lost production. In 2000, treatments for breast and cervical cancer cost patients $7 billion and cost the federal government $2 billion.

Once diagnosed with cancer, an individual’s expected life span decreases an average of fifteen years. Even with treatment providing a cure, the patient may be unable to work for an extended period, resulting in loss of wages and production.

In addition, cancer drugs are costly, an average of nearly $1,600 a month. With new developments in medications, the costs continue to rise. For example, Avastin, a drug used to treat colorectal cancer, costs approximately $50,000 a year. If this drug is approved to treat breast and lung cancer, which would require a higher dosage, Avastin could cost $100,000 a year. Over the past year alone, the cost of cancer drugs has risen by 15.3% compared to 3.3% for other prescription medications.

For More Information

CDC: [www.cdc.gov/cancer](http://www.cdc.gov/cancer)
Texas DSHS Cancer Registry: [www.dshs.state.tx.us/tcr/default.shtm](http://www.dshs.state.tx.us/tcr/default.shtm)
Texas DSHS Breast and Cervical Cancer Control: [www.dshs.state.tx.us/bcccs/default.shtm](http://www.dshs.state.tx.us/bcccs/default.shtm)

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Diabetes

Overview

Diabetes mellitus is a metabolic disease characterized by persistent hyperglycemia or high blood sugar. It requires medical diagnosis, treatment and lifestyle changes. The CDC recognizes three main forms of diabetes: type 1, type 2 and type 3 or gestational diabetes, which is diagnosed during pregnancy. In type 1 diabetes the immune system destroys pancreatic beta cells, and insulin production stops. Type 2 diabetes begins as insulin resistance, a disorder in which the cells do not use insulin properly. Type 3 (gestational diabetes) requires treatment to normalize maternal blood glucose levels to avoid complications in the infant.1

The term 'diabetes' is from the Greek, meaning "passing through," or "siphon." This is a reference to one of diabetes' major symptoms: excessive urine production. In 1675, Thomas Willis added mellitus from the Latin word for honey because diabetics' urine becomes sweet.

Since the first therapeutic use of insulin (1921), diabetes has been a treatable but chronic condition. Treatment has improved greatly over the years, but patients must be very diligent about maintaining appropriate blood-sugar levels. The main health risks are the long-term complications listed in the table to the right.

An estimated 17 million Americans have diabetes. The disease is the sixth leading cause of death in Texas. About one-third of cases remain undiagnosed. According to the 2007 Texas BRFSS, 9.4% of surveyed adults in the Houston-Baytown-Sugar Land MSA reported having ever been told by a physician that they have diabetes, compared to 10.3% of Texas surveyed adults and 9.0% of U.S.

<table>
<thead>
<tr>
<th>Complications from Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Condition</td>
</tr>
<tr>
<td>Heart Disease</td>
</tr>
<tr>
<td>Stroke</td>
</tr>
<tr>
<td>High Blood Pressure</td>
</tr>
<tr>
<td>Blindness</td>
</tr>
<tr>
<td>Kidney Disease</td>
</tr>
<tr>
<td>Nervous System</td>
</tr>
<tr>
<td>Amputations</td>
</tr>
<tr>
<td>Dental Disease</td>
</tr>
</tbody>
</table>

Trends: Harris County 2000-2004

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Economic Impact of Diabetes

In 2002, $132 billion was spent on diabetes in the U.S. Of that, $92 billion was spent on direct medical costs while $40 billion was attributed to lost productivity and disability payments.\(^1\) Diabetes accounts for 88 million days of disability and costs $7.5 billion for permanent disability.\(^2\) In Texas, diabetes expenses total $4 to $6 billion in annual medical costs.\(^3\)

Nationally, 7-10% of diabetics are in their income producing age of life. In Texas, 17% of individuals affected by diabetes are between the ages of 18 to 65.\(^5\) Diabetes also reduces the average lifespan by up to 15 years.\(^2\)

The average annual health cost for a diabetic patient in 2002 was $13,243,\(^1\) a five-fold increase over a healthy individual. Over a lifetime, diabetes costs $500,000 per person\(^4\) and in 2002 led to 16.9 million days of hospitalization and 62.6 million outpatient doctor’s visits.\(^1\)

With over 175,000 reported diabetes patients in Harris County, $230 million is spent annually on diabetes care; however with many of the diabetes complications not credited to diabetes, the true economic effect is underestimated. Approximately 30,000 Texas children will have diabetes by 2025. Over their lifetimes, treatment for diabetes will cost Texas $15 billion dollars.\(^4\)

Public Health Actions

- Monitor health and mortality of diabetics to identify and solve this community problem
- Inform people about the importance of healthy behaviors and lifestyle
- Educate diabetics and others through programs focusing on modest weight loss through increased physical activity
- Link people to needed health assessments and referrals for treatment. CDC recommends an approach called “opportunistic screening,” which is a risk assessment conducted during a health care visit

Healthy People 2010

Objective 5-5: Reduce the diabetes death rate

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1997</td>
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<tr>
<td>Target for 2010</td>
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<tr>
<td>Harris County 2005*</td>
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<tr>
<td>State of Texas 2005*</td>
<td>30</td>
</tr>
<tr>
<td>United States 2005</td>
<td>25</td>
</tr>
</tbody>
</table>

*Age adjusted to the 2000 standard population

For More Information

Texas Diabetes Council:  
[www.dshs.state.tx.us/diabetes](http://www.dshs.state.tx.us/diabetes)

CDC:  
[www.cdc.gov/diabetes](http://www.cdc.gov/diabetes)  
[www.cdc.gov/spanish](http://www.cdc.gov/spanish)

American Diabetes Association:  
[www.diabetes.org](http://www.diabetes.org)

National Library of Medicine:  

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Despite the Healthy People 2010 objective of reducing the proportion of adults who experience activity limitations due to arthritis or joint symptoms, limitations due to arthritis are increasing. According to BRFSS data, the Houston MSA rate of persons reporting activity limitations due to arthritis or joint symptoms rose from 25.7% in 2003 to 34.6% in 2007. The state of Texas saw an increase from 28.2% in 2003 to 33.0% in 2007. The 2003 CDC BRFSS estimated that 3.8 million people suffered from arthritis in Texas.

Population Differences
According to the 2007 BRFSS, in the Houston-Baytown-Sugar Land MSA, adult whites and blacks report higher rates of arthritis (26.8% and 22.2%, respectively) than Hispanics (14.8%), although data are not age-adjusted. The pattern is also seen at the state and national levels. Arthritis is more likely to be diagnosed as age increases. Over half of those over age 65 reported some form of arthritis, compared with only 10.4% for those aged 18-29 years.
Geographic Distribution

The BRFSS telephone survey, designed to track health conditions and risk behaviors, includes questions about arthritis in odd years. From 2003 to 2007, the percent of adults reporting some form of arthritis remained stable for both the Houston-Baytown-Sugarland MSA and Texas. In 2007, both areas reported a lower percent of adults with arthritis (22.2% for Houston MSA and 23.7% for Texas) when compared with the U.S. rate of 27.0%.

To help prevent arthritis:
- **Maintain a healthy weight**
- **Protect your joints from injury**
- **Treat any infections that affect the joints**
- **Avoid occupations and activities involving overuse of joints, such as repetitive knee bending**

—CDC

Economic Impact of Arthritis

The CDC reports that the total costs attributable to arthritis and other rheumatic conditions in the United States in 2003 were approximately $128 billion. This equaled 1.2% of the 2003 U.S. gross domestic product. This figure includes $80.8 billion in direct medical expenditures and $47.0 billion in the indirect cost of lost earnings.

Total costs estimated by the CDC ranged by state from $226 million in the District of Columbia to $12.1 billion in California. Texas was estimated to have $8.6 billion in direct and indirect costs in 2003 related to arthritis and rheumatic conditions.

The CDC also reports that national medical costs attributable to these conditions grew by 24% between 1997 and 2003, an increase attributed to the increase in the number of people with arthritis and rheumatic conditions.

The CDC report notes that in 2003, the average annual cost per person ages 18 and older was estimated at $1,742 in direct medical costs and $1,590 in lost earnings.

Healthy People 2010

**Objective 2-2:** Reduce the proportion of adults with chronic joint symptoms who experience a limitation in activity due to arthritis

<table>
<thead>
<tr>
<th>Adults with Activity Limited by Arthritis or Joint Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area</strong></td>
</tr>
<tr>
<td>National Baseline 1997</td>
</tr>
<tr>
<td>Target for 2010</td>
</tr>
<tr>
<td>Houston-Baytown-Sugar Land MSA 2007</td>
</tr>
<tr>
<td>State of Texas 2007</td>
</tr>
<tr>
<td>United States 2007</td>
</tr>
</tbody>
</table>

Public Health Actions

- Increase awareness of the use of physical activity to manage arthritis pain, ease arthritis symptoms, increase function, and prevent further physical disability
- Inform, educate, and empower people to develop techniques to address problems associated with chronic disease including the appropriate use of medications, communicating effectively with health professionals, and evaluating new treatments

The most common form of arthritis is osteoarthritis, which affects an estimated 21 million adults in the U.S. Other common arthritic conditions include gout, fibromyalgia and rheumatoid arthritis.

—CDC

For More Information

Centers for Disease Control and Prevention: [www.cdc.gov/arthritis](http://www.cdc.gov/arthritis)

Texas Arthritis Program: [www.dshs.state.tx.us/arthritis/default.shtm](http://www.dshs.state.tx.us/arthritis/default.shtm)


Arthritis Foundation: [www.arthritis.org](http://www.arthritis.org)
Overview

Asthma is a chronic (long-term) lung disease that affects both children and adults. When a person has asthma, the airways, or inner tubes, that carry air in and out of the body are inflamed and swollen. This makes the airways very sensitive to any irritants or allergens, such as secondhand smoke, dust, furry pets, poor air quality or mold.

When the airways react to these unwanted substances, they get narrower, which causes episodes of wheezing, shortness of breath, and coughing. When symptoms are severe, the episode may be called an asthma attack.

The exact causes of asthma are unknown, but methods are available to treat and control the disease. The best ways to reduce the number of asthma attacks are to take medications as prescribed and avoid asthma triggers.

A telephone survey conducted by the American Lung Association estimated that over 90,000 children and 175,000 adults in Harris County have been diagnosed with asthma.1

Population Differences

According to the 2007 BRFSS, in the Houston MSA, women are more likely than men to report current asthma (8.1% versus 6.4%). Blacks and whites (9.9% and 8.8%) are more likely to report current asthma than Hispanics (3%). At the state level, a similar pattern was observed—9.9% versus 6.5% for women and men, respectively; the overall rate for Hispanics (5.1%) is lower than the rates for blacks (10.0%) and whites (9.6%).

Public Health Actions

• Monitor health status and disease prevalence to provide data for health planning to solve this community health problem
• Inform, educate, and empower people about asthma through publications, trainings, and other media
• Link people to needed personal health services through referrals

Economic Impact of Asthma

Direct medical costs and indirect costs due to asthma for Texans total more $1 billion annually. The average annual cost, per patient, is $4,900.3 An asthma attack, however, can result in an emergency and/or critical care visit to the hospital, which can cost up to $46,000. In a few cases, medical bills generated by asthma can result in expenditures of $100,000 or more.4

A 2005 Health Costs Survey indicated that 44% of all people with asthma tried to reduce costs by skipping on doctor’s visits and regular medication, increasing the risks of intense attacks requiring expensive emergency care.5

Further, asthma patients are often children. Productivity is lost for both the child and the caregiver, who must miss work. This results in a loss of income for days at a time.

Economic Impact of Asthma

Ozone in the upper atmosphere protects us from harmful ultraviolet radiation from the sun. Ozone formed at ground level, however, is a component of smog and can be harmful to health. Ozone is especially of concern to those with respiratory diseases such as asthma.

Healthy People 2010

Objective 24-2: Reduce hospitalization for asthma

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
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<tr>
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<tr>
<td>Harris County 2005*</td>
<td>8.8</td>
</tr>
<tr>
<td>State of Texas 2006</td>
<td>11.0</td>
</tr>
<tr>
<td>United States 2005</td>
<td>11.4</td>
</tr>
</tbody>
</table>

*All ages

Public Health Actions

• Monitor health status and disease prevalence to provide data for health planning to solve this community health problem
• Inform, educate, and empower people about asthma through publications, trainings, and other media
• Link people to needed personal health services through referrals

For More Information

Centers for Disease Control: www.cdc.gov/asthma/default.htm
Facts about asthma in Spanish: www.cdc.gov/asthma/es/faqs.htm
TDHS Center for Health Statistics: www.dshs.state.tx.us/chronic/pdf/TAR.pdf
American Lung Association: www.lungusa.org

Asthma is the most common long-term disease of children. —CDC

Geographic Distribution

Admissions for Pediatric Asthma per 100,000 2005

Source: TDHS, Texas Health Care Information Collection

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Asthma is the most common long-term disease of children. —CDC
Communicable Diseases

Infectious diseases remain major causes of illness, disability and death. Moreover, new infectious agents and diseases are being detected, and some diseases considered under control have reemerged in recent years. In addition, antimicrobial resistance is evolving rapidly in a variety of hospital- and community-acquired infections.

Between 1980 and 1992, the number of deaths from infectious diseases rose 58 percent in the United States. Even when human immunodeficiency virus (HIV)-associated diagnoses are removed, deaths from infectious diseases still increased 22 percent during this period. Considered as a group, three infectious diseases—pneumonia, influenza, and HIV infection—constituted the fifth leading cause of death in the United States in 1997.

Infectious diseases also must be considered in a global context. Increases in international travel, importation of foods, inappropriate use of antibiotics on humans and animals, and environmental changes multiply the potential for worldwide epidemics of all types of infectious diseases. International cooperation and collaboration on disease surveillance, response, research, and training are essential to prevent or control these epidemics. Actions taken to improve health in one country affect the health of people worldwide.

Healthy People 2010
Overview

AIDS (Acquired Immunodeficiency Syndrome) was first reported in the United States in 1981 and has since become a major world-wide epidemic. AIDS is caused by HIV (Human Immunodeficiency Virus), which attacks cells of the immune system and destroys the body’s ability to fight off infections.

In the beginning of the epidemic, people died within about 10 years after becoming infected with HIV. In 1996, the introduction of HAART (highly active antiretroviral therapy), commonly known as triple cocktail, significantly slowed the progression of HIV to AIDS and from AIDS to death.

While AIDS has been a reportable condition in Texas since the 1980s, HIV infection did not become reportable until 1999. Reported new HIV cases, regardless of AIDS status, in Houston/Harris County have fallen from 1,418 in 1999 to 1,194 in 2007. Reported AIDS cases have decreased from the high of 1,706 new cases in 1992 to 873 new cases in 2007. Deaths in HIV/AIDS patients have decreased from a high of 1,168 in 1994 to 493 in 2006.

According to HDHHS estimates for 2006, approximately 27,000 persons are living with HIV or AIDS in Harris County. The CDC estimates that 21% of HIV/AIDS infections are undiagnosed; therefore close to 5,700 persons in Harris County may be infected with HIV but do not know it.1

Population Differences

At the end of 2007, 49% of persons living with HIV/AIDS in Houston/Harris County were black, 29% were white, and 21% were Hispanic. Of all persons living with HIV/AIDS, 26% were female, but among black cases 39% were female.

Male to male transmission is most common overall, but heterosexual transmission is more frequent among the black population.

Cumulative HIV Cases by Mode of Transmission Houston/Harris County 1999-2007

Source: HDHHS case files

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Public Health Actions

• Develop policies and plans that support individual and community healthy efforts such as incorporating HIV testing as a routine part of care in traditional medical settings

• Enforce laws and regulations that protect health and ensure safety and prevent new infections by working with people diagnosed with HIV and their partners

• Inform, educate and empower people about health issues to further decrease mother-to-child HIV transmission

• Provide care where otherwise not available for low-income persons with HIV/AIDS

Healthy People 2010

Objective 13-1: Reduce AIDS among adolescents and adults

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
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<tr>
<td>Target for 2010</td>
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<td>Houston MSA 2006</td>
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<td>State of Texas 2006</td>
<td>12.8</td>
</tr>
<tr>
<td>United States 2006</td>
<td>12.8</td>
</tr>
</tbody>
</table>

Economic Impact of HIV/AIDS

In 2002, the lifetime cost of newly diagnosed HIV infections in the U.S. was estimated at $36.4 billion. This includes $6.7 billion in direct medical costs and $29.7 billion in productivity losses.\(^1\) HIV/AIDS patients require professional attention, years of medication and a special diet. Income is lost when the individual is no longer strong enough to work. HIV/AIDS can reduce the average lifespan by 20 years.

HIV/AIDS is a highly mutable retrovirus, and treatment requires HAART. The average cost of HAART ranges from $13,000 to $17,000 per year.\(^2\) Once diagnosed with AIDS, costs of therapy can exceed $30,000 per year.\(^2\) These costs do not include consultations, laboratory tests, and hospitalizations due to complications. Over a lifetime, estimated treatment costs range from $150,000 to $200,000.\(^3\)

A majority of the cost is covered by Medicare and Medicaid, which spent $8.5 billion nationally on AIDS care and drugs in 2005.\(^4\) The remainder is paid by patients, private insurance, and nonprofit agencies. Local government administrators and sets up programs to screen, treat, and prevent the spread of HIV. A report by the CDC suggests that for every dollar spent on HIV/AIDS counseling, testing, and referrals, approximately $20 are saved in future costs.\(^5\)

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\(^2\)Pinkerton SD and Holtgrave RD. Economic Impact of Delaying or Preventing AIDS in persons with HIV. Am J Managed Care. 1999; 5; 289-298.


Sexually Transmitted Diseases

Overview—Sexually Transmitted Diseases

The occurrence of sexually transmitted diseases (STDs) such as Chlamydia, gonorrhea and syphilis is an indicator of unprotected sexual contact, a primary risk factor for HIV infection. The CDC reports that inflammations from STDs can facilitate the transmission of HIV.

STDs can cause infertility, adverse pregnancy outcomes, pelvic inflammatory disease and cancer. The CDC estimates that 19 million new infections occur each year. However, many cases of notifiable STDs are undiagnosed and some highly prevalent infections such as Human Papilloma Virus (HPV) are not reported.

Any sexually active person can be infected with gonorrhea, Chlamydia and/or syphilis. These diseases are spread through vaginal, anal, or oral sex. Some STDs can be passed from mother to child during pregnancy or birth.

Trends: Chlamydia and Gonorrhea in Houston/Harris County 2000-2007

TDSHS reported 13,469 cases of Chlamydia in Harris County in 2007 with 8,166 of these cases among women in the 15-24 year-old age group. The number of total cases decreased from 11,825 in 2006. According to TDSHS the 2007 infection rate in Harris County for all age groups was 354 cases per 100,000 population, compared to the Texas rate of 357 cases per 100,000 and the 2007 national Chlamydia rate of 370 cases per 100,000 population.

The CDC reports that although national rates of gonorrhea infection have decreased almost 75% since the 1970s, it is still the second most reported notifiable condition. In Harris County, 6,374 cases of gonorrhea were reported to TDSHS in 2007, a rate of 168 per 100,000—compared to 134 cases per 100,000 in Texas and 119 cases per 100,000 nationally.

Population Differences — Chlamydia and Gonorrhea

Chlamydia is the most commonly reported infectious disease in the United States, and gonorrhea is second most common. The highest reported rates of infection locally are among sexually active teenagers and young adults, and the poor and poorly educated. Gonorrhea rates for blacks are much higher than for the other races represented in Houston/Harris County, while blacks and Hispanics show similar rates of Chlamydia.¹

Chlamydia is detected more often in women than in men, while gonorrhea rates are similar between the two sexes.

Number of New Gonorrhea Cases by Race/Ethnicity 1998-2007

Source: HDHHS case files
Healthy People 2010

Objective 25-2: Reduce new cases of gonorrhea

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
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<tbody>
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<tr>
<td>United States 2006</td>
<td>121</td>
</tr>
</tbody>
</table>

Economic Impact of Chlamydia and Gonorrhea

Acute care for Chlamydia, including the cost of exam, diagnosis and treatment ranged from $23 to $109. The disease often shows no physical symptoms, and these patients, along with 1-5% of treated individuals, can progress to secondary diseases, such as epididymitis in men and pelvic inflammatory disease (PID) in women. This infection is the leading cause of infertility in women. Treating epididymitis costs from $144 to $684 while treating PID costs from $1,060 to $3,626.²

The average cost of screening, diagnostic visits, and treatment for Gonorrhea is $69. Gonorrhea can also lead to epididymitis or PID.²

Genital Human Papillomavirus (HPV)

Genital HPV infection is a sexually transmitted disease caused by any of a group of more than 100 different strains of virus known as HPV. Most people who contract HPV will not have symptoms, and will clear the infection on their own. Some strains of the virus can cause abnormal pap smears as well as cancer of the cervix or other parts of the genital-rectal area. A new vaccine is recommended for girls to prevent HPV infections.³

Other STDs

Genital herpes is common in the United States, affecting roughly one out of five adolescents and adults. Most have no symptoms, but occasionally complications can occur. There is no cure, but treatment is available for symptoms.³

Among other STDs are bacterial vaginosis and trichomoniasis, which can be cured with antibiotics.³
Sexually Transmitted Diseases, cont.

Overview—Syphilis
Syphilis is caused by the bacteria, *Treponema pallidum*, that moves throughout the body and reproduces once a day. Once diagnosed, it can easily be treated with penicillin or other antibiotics.

Syphilis has been shown to facilitate the transmission of HIV and to increase the likelihood of poor pregnancy outcomes (i.e., fetal death, infants born with physical and mental developmental disabilities).

According to the National Institute of Allergy and Infectious Diseases, syphilis is sometimes called “the great imitator” because it has so many possible symptoms, and its symptoms are similar to those of many other diseases.

Trends: Syphilis in Houston/Harris County 1999-2007

The national rate of syphilis infections decreased during the 1990s. However, according to CDC it has increased in recent years. Houston/Harris County follows this national trend. In 2007, 445 cases were reported to TDSHS, more than a 100% increase in cases since 2004 and greater than 500% more than the number of cases in 2000.

The infection rate for 2007 in Houston/Harris County was 11.7 cases per 100,000 population, compared to the state rate of 4.9 and the 2006 U.S. rate of 3.8 per 100,000 persons.

Population Differences—Syphilis

The largest proportion of primary and secondary syphilis cases occurs among males. In 2007, the rate of new syphilis cases was 9.6/100,000 among Harris County males compared to 2.5/100,000 for women.

Blacks, by far, have more diagnosed cases of syphilis than either Hispanics or whites. This trend has held throughout the 1990s and into this decade.

Since 2002, Men Who Have Sex With Men (MSM) have accounted for at least 47% of primary and secondary syphilis cases in Houston/Harris County.

---

Geographic Distribution

Syphilis in Houston/Harris County 2007

Source: TDSHS and HDHHS case files

Syphilis Increasing

The CDC reports that nationwide, overall diagnoses of primary and secondary syphilis reached a low in 2000 and then increased from 2000-2004. The increase occurred primarily among men. During 2000-2004, one study found 60% of new cases were diagnosed among MSM.1

Having syphilis once does not prevent a person from getting it again.
Syphilis can infect the baby of a woman during her pregnancy. —CDC

Economic Impact of Syphilis

Sexually transmitted disease poses a substantial economic burden for patients. In 2000, the direct costs due to STDs was projected at $15.5 billion. These costs include treating the disease as well as treating secondary infections.

The cost of treating an adult with syphilis can be less than $20. The cost of treating an infant with congenital syphilis can reach as high as $120,000. If syphilis is left untreated and progresses into the latent phase, treatment will cost substantially higher. The average cost per case of syphilis, therefore, is $444.2

Public Health Actions

• Inform and educate people about the risks of unprotected sex and the adverse outcomes associated with STDs
• Provide care where otherwise not available for low-income persons including education, counseling and testing, case management and clinical services for STD/HIV
• Develop policies and plans and mobilize community partnerships to support community health efforts through programs such as the National Plan to Eliminate Syphilis to enhance public health services, prioritize and target interventions to populations at greatest risk, and improve accountability of prevention efforts

Healthy People 2010

Objective 25: Eliminate sustained domestic transmission of primary and secondary syphilis

Rate of Syphilis Infection per 100,000

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1997</td>
<td>3.2</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>0.2</td>
</tr>
<tr>
<td>Harris County 2006</td>
<td>9.8</td>
</tr>
<tr>
<td>State of Texas 2006</td>
<td>4.5</td>
</tr>
<tr>
<td>United States 2006</td>
<td>3.3</td>
</tr>
</tbody>
</table>

For More Information

TDSHS: www.dshs.state.tx.us/hivstd
CDC: www.cdc.gov/std
National Institute of Allergy and Infectious Diseases: www.niaid.nih.gov/publications/stds.htm
American Social Health Association: www.ashastd.org
Harris County Public Health and Environmental Services: www.hchpc.org/dccp/hiv.htm

Overview

Tuberculosis (TB) is a bacterial disease primarily affecting the lungs. TB can take one of two forms—an active version (TB disease) or one that lays dormant within the body (latent TB infection or LTBI). Only patients with active disease can spread TB to others. Transmission occurs through the air when an infected individual with TB disease of the lungs or throat coughs, sneezes, laughs or sings. Transmission usually takes place only after prolonged close association with someone who has the disease. Patients require treatment with multiple drugs for six months or longer to cure, preferably by directly observed therapy (DOT).

Those with LTBI can develop active disease later in life. Individuals at higher risk for this include young children, patients with HIV, diabetics and cancer patients and those recently infected with TB. Progression to active disease can usually be prevented by taking a single drug for 4-9 months.

TB was once the leading cause of death in the United States, but use of antibiotics greatly reduced the rates of infection and mortality. There has been a drastic increase, however, in strains of TB resistant to multiple forms of antibiotics, both in the U.S. and in other parts of the world. This results from misuse of the drugs, either inappropriately prescribed medication or patient failure to complete the treatment course.

Trends: Houston/Harris County 2002-2007

According to HDHHS, 393 new cases of TB were diagnosed in Harris County in 2008. Most of these cases, 262, were in the City of Houston. The rate of TB infection within Houston is cause for concern. While the case rate has decreased from 2004 to 2008 (17.5 to 11.7 per 100,000 respectively), the rate is still more than twice the national rate of infection.

For the areas of Harris County outside the City of Houston, the infection rate is lower—7.1 per 100,000 persons in 2006 and 6.8 in 2007—approximately half of the City of Houston rate.

Population Differences

The rate of TB infection among blacks within Houston sharply decreased from 2004 to 2005, according to TDSHS and HDHHS records. This is in contrast to the national rate of infection for blacks, which has held constant around 11%. Despite this decrease, blacks continue to show a disproportionately high rate of infection. Other groups known to be at a higher risk are children, homeless persons, and prison inmates.

Chart to the Right Source: TDSHS and HDHHS case files
Public Health Actions

• Assure the provision of healthcare where otherwise unavailable by monitoring cases of TB and providing supervision of medication treatment
• Diagnose and investigate the problems and hazards of TB in the community
• Monitor TB rates and cases in Houston/Harris County
• Educate those with TB or at risk of TB about needed health care

Healthy People 2010
Objective 14-11: Reduce tuberculosis

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>7</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>1</td>
</tr>
<tr>
<td>Houston only 2008</td>
<td>11.7</td>
</tr>
<tr>
<td>State of Texas 2008</td>
<td>6.2</td>
</tr>
<tr>
<td>United States 2008</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Public Health Actions

• Assure the provision of healthcare where otherwise unavailable by monitoring cases of TB and providing supervision of medication treatment
• Diagnose and investigate the problems and hazards of TB in the community
• Monitor TB rates and cases in Houston/Harris County
• Educate those with TB or at risk of TB about needed health care

For More Information
CDC National Center for HIV, STD, and TB Prevention, Division of Tuberculosis Elimination: www.cdc.gov/nchstp/tb
TB Education and Training Resources: www.findtbresources.org
TDSHS: www.dshs.state.tx.us/IDCU/disease/tb
Heartland National TB Center: www.heartlandntbc.org
International Union Against Tuberculosis and Lung Disease: www.tbrieder.org
Harris County Public Health and Environmental Services: www.hcphes.org/dccp/tb.htm

Geographic Distribution

2006 Tuberculosis Cases in Texas

Economic Impact of Tuberculosis

Tuberculosis has a substantial economic impact at the national level. Studies estimate the national cost of tuberculosis from $700 million to $1 billion per year in direct medical costs, including costs of inpatient care, outpatient care, screening, contact investigations, preventive therapy and surveillance investigations.3

At the individual level, tuberculosis treatment costs approximately $2,000.4 However, if the patient has developed multi-drug resistant tuberculosis, the costs can up to 100 times greater, approximately $250,000 per patient.5,6 In addition, the World Health Organization estimates the average TB patient loses three to four months of work and twenty to thirty percent of their income. Should the patient die from the disease, their family would lose on average 15 years of income from their premature death.6

2CDC; TDSHS and HDHHS case files.
Seniors also benefit from recommended vaccinations, such as pneumonia and influenza. Influenza is a contagious viral disease that may cause a sudden onset of fever, chills, muscle aches, sore throat and headache. Influenza can also lead to severe pneumonia. Influenza/pneumonia is the 9th most common cause of death in Houston/Harris County.

While vaccine preventable diseases have decreased, the viruses and bacteria that cause these diseases still exist. Americans no longer worry about polio, diphtheria, and other killer diseases of the past, but they do exist in other parts of the world. Therefore, all recommended vaccinations are needed for good health.

**Vaccine Preventable Diseases**

**Overview**

There are two reasons why people should receive immunizations: to protect themselves and to protect people around them. In the Houston/Harris County area, occurrences of once-common diseases such as measles, mumps and tetanus are at or near record lows due to the availability of safe and effective vaccines. Introduced in 1995, the use of the vaccine for chicken pox is still relatively new; therefore occurrences of chicken pox persist.

Within the past five years, however, reported cases of pertussis have increased. Pertussis, or whooping cough, is an infectious bacterial disease that can lead to complications such as pneumonia, seizures and death. In 2005, 36% of pertussis cases in Harris County were reported in infants under age one.

**Trends: Houston/Harris County 2001-2008**

Most vaccine preventable diseases are rarely seen in Houston/Harris County. However, two diseases that were once common still infect dozens or even hundreds of local residents. Chicken pox, or varicella, cases numbered 792 to 1852 since 2002. As the relatively new varicella vaccine was gradually introduced to more of the population, the number of infections was expected to decrease, mirroring the decrease in measles and mumps cases. However, after monitoring cases of chicken pox nationwide, in mid-2006, the Federal Advisory Committee on Immunizations recommended a booster dose of the vaccine for children between ages 4 and 6. 1 Since that time, occurrences locally have decreased.

Reported cases of pertussis in Houston/Harris County increased from 73 in 2002 to 159 in 2008. Many pertussis cases are never diagnosed, contributing to the spread of the disease.

<table>
<thead>
<tr>
<th>Number of Reported Vaccine-Preventable Disease Cases and (Rate per 100,000) Houston/Harris County, 2001-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Chicken Pox</td>
</tr>
<tr>
<td>Measles</td>
</tr>
<tr>
<td>Rubella</td>
</tr>
<tr>
<td>Mumps</td>
</tr>
<tr>
<td>Pertussis</td>
</tr>
<tr>
<td>Tetanus</td>
</tr>
</tbody>
</table>

Source: HDHHS and HCPHES Epidemiology Case Files

*Data for totals less than five is not released due to the possibility of individual identification

Public Health Actions

- Identify and improve the community health status through surveillance of cases and monitoring of immunization rates.
- Assure the provision of healthcare when otherwise unavailable by providing immunizations to low-income persons.
- Mobilize community partnerships and action to identify and solve health problems, with participation in community-wide efforts to increase awareness and immunization rates.

Healthy People 2010 Objective

**Objective 14-1k:** Reduce or eliminate indigenous cases of vaccine-preventable varicella (chicken pox) in persons under 18 years of age.

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1998</td>
<td>4 million</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>400,000</td>
</tr>
<tr>
<td>Houston/Harris County 2008</td>
<td>1217</td>
</tr>
<tr>
<td>State of Texas 2008</td>
<td>7,350</td>
</tr>
<tr>
<td>United States 2006</td>
<td>441,000</td>
</tr>
</tbody>
</table>

Economic Impact of Vaccine Preventable Diseases

The CDC National Immunization Program reported that the seven routine vaccinations given to children born in one year would prevent 14 million cases and 33,500 deaths. When comparing the costs of these diseases to the cost of vaccines to prevent them, $10 billion per year was saved. When additional costs such as lost productivity are included, the savings exceed $40 billion in the U.S.
Transmission of many of the viruses and bacteria that cause meningitis occurs through direct contact with an infected person’s fluids, such as those released during coughing or sneezing. This usually happens when a healthy person comes into contact with the infected person or touches a contaminated surface and then touches their eyes, nose or mouth.

According to the CDC, about 90% of all viral meningitis cases are caused by enteroviruses, which reproduce in the infected person’s intestine and can be found in their stool. These viruses are thought to be spread among small children who are not yet toilet trained.

If an outbreak of bacterial meningitis occurs, people who are close contacts of the infected person should take antibiotics to prevent the spread of disease.

Years with a high rate of aseptic meningitis infection in Houston correspond to years of high rates in Texas, suggesting that the causes of infection are shared. Each year, however, Houston had a higher rate than Texas.

Aseptic meningitis is one of the presentations of West Nile virus (WNV) infection. Houston actively tracked WNV (2002-2005) following a 2002 WNV outbreak. The high rate of aseptic meningitis cases in these years could be attributed to this WNV outbreak. The decrease in reported cases of aseptic meningitis in 2006 and 2007 may reflect a decrease in the active surveillance of West Nile virus in Houston area hospitals and clinics.

Aseptic meningitis is one of the presentations of West Nile virus (WNV) infection. Houston actively tracked WNV (2002-2005) following a 2002 WNV outbreak. The high rate of aseptic meningitis cases in these years could be attributed to this WNV outbreak. The decrease in reported cases of aseptic meningitis in 2006 and 2007 may reflect a decrease in the active surveillance of West Nile virus in Houston area hospitals and clinics.

The highest risk of aseptic meningitis is in children less than one year of age. Their immature immune system puts them at more than 100-fold greater risk compared with persons with a mature immune system. Among the school age population, there is much variation from year to year. Some years the risk is high among elementary aged children, other years it is not.

Divided by ethnic groups, Hispanics have the highest cases of infection, followed by blacks, whites, and Asians. Across gender lines, men have a higher rate of infection than women.
Public Health Actions

- Inform, educate and empower people about health issues such as the importance of frequent hand washing, especially among those caring for infants and toddlers; and encourage use of the meningitis vaccine to reduce the number of at-risk individuals.
- Diagnose and investigate health problems in the community in order to respond quickly to clusters of outbreaks and identify sources of infection.

Economic Impact of Meningitis

The severity and economic burden of meningitis depends on the type of infection. For patients with the less serious viral meningitis, the average cost is approximately $450 for outpatient care and $5000 for inpatient care. These reflect the costs of physician visits, emergency room visits, hospital admissions, diagnostic scans, and medication, depending on the necessary course of treatment. The patient will also bear the indirect costs of five to seven days of missed work and lost income due to restricted activity.1

Patients with the more severe bacterial meningitis must seek immediate attention and usually require hospitalization. The average hospital stay is nine days. The direct medical costs incurred average $20,000 to $30,000.2

Fortunately, vaccines are available to protect against many strains of bacterial meningitis. MPSV4 (Menomune) and MCV4 (MenactraT) protect against two of the three most common types of meningitis in the U.S.3 The costs of vaccination vary between $70 and $120. Many universities subsidize up to two-thirds of the cost of the vaccine for their students.

Healthy People 2010

Objective 14-4: Reduce bacterial meningitis in young children

| Rate of Bacterial Meningitis in Children 1-23 Months of Age (per 100,000) |
|-----------------------------|--------|
| Area | Rate |
| National Baseline 1998 | 13.0 |
| Target for 2010 | 8.6 |
| Houston 2007 | 19.6* |
| State of Texas 2006 | 17.7 |
| United States 2005 | 9.5 |

*Houston had only 13 cases in this age group, out of the 66,336 children aged 1-23 months who resided in Houston in 2007.

Public Health Actions

- Inform, educate and empower people about health issues such as the importance of frequent hand washing, especially among those caring for infants and toddlers; and encourage use of the meningitis vaccine to reduce the number of at-risk individuals.
- Diagnose and investigate health problems in the community in order to respond quickly to clusters of outbreaks and identify sources of infection.

Pneumococcal vaccinations were approved in 2000 to prevent meningitis and other invasive diseases caused by this bacterium.

For More Information

CDC Aseptic Meningitis: [www.cdc.gov/meningitis/viral/viral-faqs.htm](http://www.cdc.gov/meningitis/viral/viral-faqs.htm)

CDC Bacterial Meningitis: [www.cdc.gov/meningitis/bacterial/index.htm](http://www.cdc.gov/meningitis/bacterial/index.htm)

TDSHS: [www.dshs.state.tx.us/idcu/disease/meningitis](http://www.dshs.state.tx.us/idcu/disease/meningitis)

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Overview

Hepatitis means inflammation of the liver and can be caused by drugs, toxic substances, and several infectious agents including different viruses labeled hepatitis A, B, C, D or E. Hepatitis B, C, and D viruses are transmitted by blood and blood products (types A and E are transmitted through the fecal-oral route.) All of the viruses can cause fatigue, vomiting, diarrhea, abdominal pain, jaundice, dark urine and pale stools. Hepatitis B and C may lead to liver cancer, cirrhosis, and possibly death. Prevention and treatment for each virus type varies.

Hepatitis B and C were more commonly reported in Houston in 2007 (2,652 and 4,078 cases respectively), than Hepatitis A (34 cases). Hepatitis B is a potentially serious infection, but in most cases, the immune system can overcome infection. Some persons with hepatitis B may become chronic carriers of the virus, and remain infectious all their lives.

Hepatitis C virus is often called the “silent epidemic” because approximately 80 percent of infected people do not clear the infection, and therefore become chronic carriers. According to the CDC, persons who inject street drugs with shared needles or are otherwise exposed to blood from infected persons are at risk of getting infected. An infection may also be passed from mother to child during birth. In its early stages, the infection is usually mild. It is often not recognized until chronic stages when liver disease has occurred. Hepatitis C is the leading indication for liver transplantation.

Trends: Houston/Harris County 2000-2007

From 2000 to 2007, 12,708 cases of hepatitis B and 23,372 cases of hepatitis C were reported in Houston. The apparent decline in the Hepatitis C cases from 2001-2005 appears to be an artifact of reporting by health care providers. The upward trend since 2005 may be due to increased active surveillance and testing.

Nationally, the CDC reports that new hepatitis B infections have declined by an average of 220,000 per year in the 1980s to an estimated 43,000 in 2007, largely due to prevention of transmission of infection to infants and children through routine hepatitis B vaccination, beginning in the early 1990s.

Population Differences

In Houston in 2007, males had a higher rate of new hepatitis B infection than females (132.3 cases vs. 110.9 per 100,000 population). Racial differences are illustrated in the chart at right. Asians had the highest reported rate in 2007 (307.0/100,000), followed by blacks (45.3/100,000).

Males that year were also more affected by hepatitis C (235.8/100,000) than females (160.4/100,000). Annual average rates of hepatitis C in the city are highest among blacks, followed by whites, Asians and Hispanics.
Economic Impact of Hepatitis

Hepatitis B is the most common serious liver infection in the world. The most effective prevention for hepatitis B is the hepatitis B vaccine, given in a series of three vaccinations. The vaccine usually costs between $75 and $165. For children, insurance companies usually cover the cost of the vaccines. The cost of hepatitis B vaccine for adults is more expensive, usually a combination vaccine of hepatitis A and B.\(^1\) Costs for a patient with chronic hepatitis B average $40,512 in a two year period for health care services and medication, according to a study of New England health care databases.\(^2\)

There is no vaccine against hepatitis C. An infected individual can be treated with interferon, possibly in combination with ribavirin.\(^3\) A combination therapy is usually used if interferon alone does not provide good results. The length of treatment varies on the person's genotype and response to the drugs, ranging from 6 months to 48 weeks.

A 48-week treatment of interferon and ribavirin, including the cost of drugs, medical consultation fees, management of complications and diagnostic tests, is estimated to cost $10,000. If left untreated, hepatitis C could progress to liver cirrhosis, leading to costs for treatment estimated at $34,000 to $53,000 over the patient's lifetime.\(^4\)

Since 2000, all newly diagnosed, acute and chronic cases of viral hepatitis are reportable to the local health department.

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Overview

Enteric diseases, such as salmonellosis and *Escherichia coli* (*E. coli*) infection, affect the gastrointestinal system and are usually associated with contaminated food or poor hygiene. Common symptoms of enteric diseases include diarrhea and vomiting, although in some cases, more serious illness or death may occur. According to the CDC, an estimated 76-million cases of foodborne illness and 5,000 associated deaths occur in the United States each year.

Most cases of enteric disease are relatively mild and go unreported, while other cases can cause severe problems. One infection that can lead to serious results is *Vibrio vulnificus*, a bacterial organism that thrives in warm coastal waters, such as Galveston Bay and the Gulf of Mexico, and is commonly found in fish and shellfish. Though rare, food-borne *Vibrio* infection in humans can cause life-threatening complications.

Trends: Houston/Harris County 2001-2007

<table>
<thead>
<tr>
<th>Number of Reported* Enteric Disease Cases and (Rate per 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston/Harris County</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Salmonella</strong></td>
</tr>
<tr>
<td><strong>Shigella</strong></td>
</tr>
<tr>
<td><strong>Campylobacter</strong></td>
</tr>
<tr>
<td><strong>E.coli (all Shiga toxin producing)</strong></td>
</tr>
<tr>
<td><strong>Hepatitis A</strong></td>
</tr>
<tr>
<td><strong>Vibrio (food-borne)</strong></td>
</tr>
</tbody>
</table>

Healthy People 2010 targets for many of these diseases can be seen on the following page

Sources: HCPHES Epidemiology Case Files and HDHHS Office of Surveillance and Public Health Preparedness Case Files

*Data for totals less than five are not released due to the possibility of individual identification  **Harris County Data not available

Note: Prior to 2005, data shown was only for *E. Coli 015:H7*.

Population Differences

Males in Houston have a higher rate (102.5 per 100,000) of food-borne illness than females (92.1 per 100,000).

Among reported cases from 2005–2007, Hispanics had the highest case rate (76.8.0 per 100,000) followed by those who did not identify with a specific race (other) (69.2 per 100,000), Asians (54.5 per 100,000), blacks (46.3 per 100,000) and whites (42.7 per 100,000).

Young children are also at greater risk of food-borne illness than adults. The chart shows the differences in the rate of four enteric diseases according to age group.

Number of Cases per Age Distribution of Selected Foodborne Diseases in Houston, Texas 2005-2007

Cases per 100,000 residents

Source: HDHHS Office of Surveillance and Public Health Preparedness
Seasonal Differences
During 2005-2007, the City of Houston reported that August had the highest food-borne disease rate (case rate: 11.9 cases per 100,000 population), followed by July (11.8 per 100,000), September (11.6 per 100,000), October (11.2 per 100,000), June (10.5 per 100,000), May (8.1 per 100,000) and November (7.5 per 100,000). January had the lowest food-borne disease rate (4.6 cases per 100,000).

Economic Impact of Enteric Diseases
Salmonella is a major cause of food-borne illnesses. The medical costs and lost wages due to foodborne salmonellosis are estimated to be more than $1 billion/year. The most common effects of enteric diseases such as salmonellosis, are diarrhea and vomiting, which can lead to lost productivity and absenteeism. In some cases, as with infection by Vibrio vulnificus, which can be found in raw oysters, enteric diseases can lead to life-threatening complications.

Healthy People 2010
Objective 10-1d: Reduction in infections caused by key food-borne pathogens (Salmonella species)

<table>
<thead>
<tr>
<th>Food-borne Pathogen</th>
<th>Salmonella Species</th>
<th>Area</th>
<th>Cases Per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1997</td>
<td></td>
<td></td>
<td>13.7</td>
</tr>
<tr>
<td>Target for 2010</td>
<td></td>
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<td>State of Texas 2005</td>
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<td>13.7</td>
</tr>
<tr>
<td>United States 2005</td>
<td></td>
<td></td>
<td>14.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food-borne Pathogen</th>
<th>Cases Per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter</td>
<td>12.30</td>
</tr>
<tr>
<td>E. coli O157:H7</td>
<td>1.00</td>
</tr>
<tr>
<td>Listeria monocytogenes</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Public Health Actions
- Educate people about enteric diseases and how to prevent them
- Monitor disease incidence and trends through methods such as eFORS (electronic foodborne disease reporting system) and PFGE (pulsed field gel electrophoresis)
- Investigate health problems in the community through collaborative efforts among health and regulatory agencies
- Enforce laws and regulations by licensing and inspecting facilities that serve food

For More Information
Centers for Disease Control and Prevention: [www.cdc.gov/enterics](http://www.cdc.gov/enterics)
[www.cdc.gov/ncidod/diseases/food/index.htm](http://www.cdc.gov/ncidod/diseases/food/index.htm)

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Overview

West Nile Virus (WNV) is a mosquito-borne disease that affects the central nervous system. Disease severity may vary from asymptomatic to a very severe neurological disease. According to the CDC, approximately 80% of people infected with WNV will not show any symptoms at all. The remaining 20% of infected people will have symptoms including fever, headache, and body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach or back.

About one in 150 people infected with WNV will develop a severe illness. The severe symptoms can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent.

WNV is closely related to Japanese Encephalitis Virus. Both viruses are transmitted between birds by mosquito vectors. Some mosquito species bite both humans and birds and are able to transmit the virus to humans.

Trends: Rates and Cases in Houston and Texas 2002-2007

The first human case of West Nile in Houston/Harris County occurred in 2002, and began with a severe form of the disease that caused 12 deaths that year. Since then the number of new cases in humans has decreased dramatically. This may be a reflection of increased public awareness about prevention of West Nile virus, enhanced mosquito control techniques, and better immunity within the population as people may be exposed to mild forms of the disease. The number of deaths in Houston/Harris County has decreased from 12 in 2002 to two in 2007.

Population Differences

While a person of any age can be affected by the West Nile virus, the incidence rates are higher among the elderly. An older person, perhaps with a weaker immune system, is more likely to develop a severe West Nile infection than a child or an adult under the age of 55.

No particular racial group is more or less susceptible to the West Nile virus. Differences in infection rates between racial groups reflect differences in behavioral tendencies (exposure to mosquito bites) as well as propensities to seek medical attention. People may not seek medical assistance if they feel their illness is not severe.
Public Health Actions

- Educate the public about the importance of using DEET-containing insect repellent
- Monitor health status and infection by use of geographical information system (GIS) software along with mosquito and avian data
- Educate physicians about mosquito-borne diseases and encourage reporting of fevers, rashes, encephalitis and other symptoms
- Provide mosquito spraying in high risk areas
- Inform the community about eliminating mosquito breeding grounds

Economic Impact of West Nile Virus

The costs of West Nile virus peaked in 2002, when the estimated cost of related healthcare reached $140 million, and 4,156 cases with 284 fatalities were reported nationwide. Costs would have been higher if prevention and mosquito control were included.¹ Reported cases of West Nile have been steadily decreasing since that time. In Texas 439 cases were reported in 2003, decreasing to 125 in 2005.²

West Nile symptoms can last from a few days to several weeks. Headaches and fever can be mitigated with medical care and medication. The most severe cases of West Nile result in encephalitis or meningitis. Medical costs for monitoring and possible complications in these cases can reach several thousand dollars.³

²Texas Department of State Health Services.
In 2008, HDHHS investigated 3,332 bite cases, defined as bites or aggressive behavior by animals of all types. Of these, 1,608 (48%) bite cases were from dogs. Children under age 10 were victims in 345 dog bites.

HCPHES completed investigations of 1,535 bite cases within its jurisdiction in 2008, which includes unincorporated Harris County and four municipalities within the county. HCPHES uses a different definition for a bite case: a bite or scratch that breaks the skin, causes bleeding and is known or suspected to be caused by an animal. Seventy-five percent of bite cases involved dogs. Many bite cases were caused by unconfined animals (60%), and 76% of biting animals had identifiable owners. Twenty-four percent of bite injuries were to children aged 10 and under.
Economic Impact of Zoonotic Diseases

Zoonotic diseases can take many forms including rabies, human brucellosis, echinococcosis, leishmaniasis and food borne infections. Food-borne parasitic infections are estimated to cost the United States more than $400 million in medical bills and indirect losses due to missed days at work.1

The most well known zoonotic disease is rabies, which is estimated to cost approximately $300 million a year nationally.2 Although the number of human cases is low, this large cost is the result of post-exposure treatments and pet vaccinations. Post-exposure treatments, which usually include rabies vaccine and rabies immune globulin, are especially expensive, costing more than $1,500 for the treatment series.3

Depending on the type of zoonotic disease, the costs vary. Typical costs would include lost income, hospitalization, doctor’s consultation, and medication. In some cases, the cost of lost livestock must also be taken into account.

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Health Care Access

Prehospital emergency medical services (EMS), poison control centers (PCCs), and hospital-based emergency departments (EDs) are the most commonly sought sources of emergency care. Each year, they provide prompt first-contact care for millions of people regardless of their socioeconomic status, age, or special need.

For many severely ill and injured persons, these settings are a crucial link in the chain of survival between the onset of symptoms and treatment in a hospital. For persons whose health problems are less pressing but who believe they need urgent medical attention, emergency services are a gateway to additional health care.

Within the current health care delivery system, EDs are the only institutional providers required by Federal law to evaluate anyone seeking care. They are expected at least to stabilize the most severely ill and injured patients, and they provide walk-in care for vast numbers of persons who face financial or other barriers to receiving care elsewhere.

Healthy People 2010
Preventable Hospitalizations

Overview
Preventable hospitalizations are conditions for which hospitalizations, complications, or more severe disease could potentially be prevented by good outpatient care and/or early interventions. If a patient with a preventable condition had been seen and treated as needed in an outpatient clinic, then that patient would likely not have required hospitalization. Chronic conditions such as congestive heart failure and diabetes are particularly likely to lead to hospitalization if not cared for adequately in an outpatient setting.

The Patient Quality Indicators (PQI) from the Agency of Healthcare Research and Quality are measures that can be used with hospital inpatient discharge data to identify preventable conditions for adults.

Even though PQIs are obtained from hospital discharge data, they reflect the quality of health care outside the hospitals. The PQIs provide a means to identify unmet community health care needs, and to compare performance of local health care systems across communities. These measures point to potential areas for improvement of care; they do not serve as a definitive quality measure of health care in Harris County.

Trends: Harris County 2005-2007

<table>
<thead>
<tr>
<th>Harris County Prevention Quality Indicators</th>
<th>U.S.¹</th>
<th>Texas²</th>
<th>Harris County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of hospital admissions per 100,000 that are considered to have been preventable</td>
<td>2005</td>
<td>2005</td>
<td>2005³</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>454.4</td>
<td>419.1</td>
<td>375.9</td>
</tr>
<tr>
<td>Bacterial pneumonia</td>
<td>443.7</td>
<td>366.8</td>
<td>275.1</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease (COPD)</td>
<td>214.2</td>
<td>166.2</td>
<td>152.0</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>179.8</td>
<td>187.4</td>
<td>159.8</td>
</tr>
<tr>
<td>Diabetes long-term complications</td>
<td>122.4</td>
<td>122.2</td>
<td>125.3</td>
</tr>
<tr>
<td>Dehydration</td>
<td>118.0</td>
<td>101.4</td>
<td>78.0</td>
</tr>
<tr>
<td>Adult asthma</td>
<td>127.3</td>
<td>87.9</td>
<td>78.7</td>
</tr>
<tr>
<td>Hypertension</td>
<td>46.4</td>
<td>49.2</td>
<td>56.9</td>
</tr>
<tr>
<td>Diabetes short-term complications</td>
<td>56.3</td>
<td>41.0</td>
<td>56.0</td>
</tr>
<tr>
<td>Angina without procedure</td>
<td>36.3</td>
<td>24.2</td>
<td>19.6</td>
</tr>
<tr>
<td>Amputation among patients with diabetes</td>
<td>34.9</td>
<td>41.3</td>
<td>24.3</td>
</tr>
<tr>
<td>Uncontrolled diabetes</td>
<td>20.4</td>
<td>17.0</td>
<td>16.0</td>
</tr>
<tr>
<td>Perforated appendix</td>
<td>*28.6</td>
<td>*29.4</td>
<td>*27.4</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>**6.0</td>
<td>**4.9</td>
<td>**5.0</td>
</tr>
</tbody>
</table>

¹Per 100 admissions for appendicitis; **Per 100 births
⁴2005 - 2007 Harris County Data from: Solucient, a consulting firm. Contains hospital discharge data for All Harris County Hospitals - 31 hospitals for 2005 - 2007.
Geographic Distribution

Admissions for Congestive Heart Failure per 100,000 2005

Source: TDSHS, Texas Health Care Information Collection

Population Differences

Literature suggests that both individual and community characteristics are associated with the likelihood of being hospitalized for preventable conditions. Among individuals, low income, old age, poor health, un-insurance, lower education, and living in a primary care shortage area are associated with a higher likelihood of preventable hospitalization after controlling for other factors.

At the community level, lower-area income is associated with a higher preventable hospitalization rate. One study suggested that populations in medically underserved areas (MUAs) served by a Federally Qualified Health Center or a free clinic had significantly lower preventable hospitalization rates than other MUA populations did, after controlling for other factors.4

Economic Impact of Preventable Hospitalizations

Nationwide, in 2006 the cost of preventable hospitalizations made up one of every ten dollars spent on hospital care. Half of those visits were for expenses related to congestive heart failure and bacterial pneumonia.5 A reduction in preventable hospitalizations in Harris County is appropriate from both a clinical standpoint and an economic standpoint.

Public Health Actions

- Develop policies and plans to solve health problems, working with information such as several studies that suggest that either providing health insurance or increasing the local safety net capacity for primary care may improve access to care and reduce preventable hospitalization
- Monitor health status to identify and solve community health problems through efforts such as tracking local PQIs
- Mobilize community partnerships and action to solve health problems through support of community health centers, which may help to reduce preventable hospitalizations by providing affordable primary care for low-income persons

Congestive heart failure occurs when the heart cannot pump enough blood to meet the needs of other body organs. The most common causes are coronary artery disease, hypertension (high blood pressure) and diabetes. —CDC

For More Information

Agency For Health Care Research and Quality: www.ahrq.gov/data/hcup/factbk5/factbk5a.htm

Texas Health Care Information Council: www.dshs.state.tx.us/thcic

TDSHS Preventable Hospitalizations: www.dshs.state.tx.us/THCIC/Publications/Hospitals/PQIReport2005/PreventableHospitalizations2005.shtm

Prevention Quality Indicators: www.ahrq.gov/data/hcup/factbk5/factbk5d.htm

2 Dept. of Health and Human Services and Agency for Health Research and Quality, Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions. 2006.
3 Agency for Healthcare Research and quality, HCUP Fact Book No. 5 Preventable Hospitalizations: Window into Primary and Preventive Care, 2000. Available at www.ahrq.gov/data/hcup/factbk5/.
4 Epstein, AJ. The role of public clinics in preventable hospitalizations among vulnerable populations. Health Serv Res. 2001;36(2):405-20.
Overview

Primary Care-Related ER Visits

Primary care-related emergency room (ER) visits became a relevant indicator of primary care access with the 1986 enactment of the Emergency Medical Treatment and Active Labor Act (EMTALA). This federal law mandated that hospital ERs must screen and treat patients with emergency medical problems even if the patients are not able to pay for care. As a consequence, ER use for minor emergencies and non-emergencies have risen throughout the country and in Harris County. The volume of primary care-related ER visits is considered to reflect problems or dissatisfaction with the performance or availability of primary care in a community. High rates of primary care-related ER visits have been shown to be correlated with poverty, un-insurance, medical under service, and ER overcrowding. Primary care-related ER visits are estimated from routine billing data obtained from hospital ERs. Such visits are not necessarily inappropriate, unnecessary, or unwarranted but suggest use of hospital ERs for conditions that are better dealt with in primary care settings.¹

Trends: Houston/Harris County 2004-2007

Primary care related ER visits in 16 local hospitals can be compared to the total number of ER visits that resulted in discharge to home or self care. Primary care ER visits declined from 303,914 in 2004 (54.7% of discharged visits) to 242,169 in 2006 (54.1% of discharged visits), but rose to 262,694 in 2007 (50.7% of discharged visits). Measures for 25 local hospitals in 2007 showed that primary care related ER visits made up 48.7% of discharged ER visits.¹

Population Differences

In 2007, primary care related visits in 23 Houston/Harris County area hospitals were comprised of 25.9% white, 33.5% black, and 34.0% Hispanic.¹

Children from age 0 to 17 and adults age 18 to 44 each made up 37% of primary care related ER visits. The majority (57.8%) of primary care related ER visits were by female patients.¹

¹Begley C, Courtney P, Burau K. Houston hospitals emergency department use study, January 1, 2007 through December 31, 2007. University of Texas Health Science Center at Houston, School of Public Health, April 2009. Available at http://www.sph.uth.tmc.edu/uploadedFiles/Centers/CHSR/HSRC/Final2007ED.pdf
ER Use by Payer Source

Even though primary care related ER visits are found among all payer sources, they are found disproportionately among those who are uninsured and/or those with Medicaid. The figure below shows that the percentage of primary care related visits by those with Medicaid is more than double their percentage of the Harris County population. Likewise, uninsured persons are disproportionately represented among those with primary care related ER visits.

![ER Visits by Insurance Status and Population Percentage](image)

ER Utilization

Emergency room utilization is increasing nationally and in Houston. In 2003, the national rate was 39.9 visits per 100 persons compared to 35.3 visits per 100 persons in 1993. The emergency departments saw 113.9 million people in 2003 compared to 90.3 million people in 1993. Nationwide emergency department visits in 2003 averaged 312,000 visits daily. However, compared to 1993, 12.3% fewer ERs were available, resulting in a substantially larger volume of visits to each remaining emergency department.

In September 2008, Hurricane Ike led to the temporary closure of ER services at UTMB and East Houston Regional Medical Center. Both facilities have completely reopened. However this closure led to an increase in visits to several Harris County ERs from patients who would normally have gone to UTMB or East Houston. ER utilization in Harris County is directly related to ER utilization in surrounding counties.

Emergency Room Visits in Houston/Harris County 2007

In 2007, 901,684 ER visits were made to 25 Harris County area hospitals. Out of this, 761,077, or 84.4%, were discharged to home or self care, and 15.6% were admitted or transferred. Primary care related visits (combination of non emergent, emergent yet treatable, and ER care needed but preventable) made up 41.2% of all ER visits.

Most primary care related visits occur between 11 AM and 8 PM. Visits by children peak in the early evening, whereas visits by adults peak at noon. The most frequent diagnosis for a primary care related ER visit continues to be acute upper respiratory infection not otherwise specified.

The University of Texas School of Public Health has been collecting and analyzing emergency department visit data in major Harris County hospitals to monitor primary care-related use of the emergency room.

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1Begley C, Courtney P, Burau K. Houston hospitals emergency department use study, January 1, 2007 through December 31, 2007. University of Texas Health Science Center at Houston, School of Public Health, April 2009. Available at http://www.sph.uth.tmc.edu/uploadedFiles/Centers/CHSR/HISRC/Final2007ED.pdf
Emergency Room Visits, cont.

Geographic Distribution

Patients with primary care related ER visits have come mainly from the same ZIP codes for the last three years (e.g. Fifth Ward, Acres Homes, Bear Creek, Baytown, Third Ward/South Park/Sunnyside).

A ZIP code level analysis of primary care related ER visits by children reveals that visits are more likely to be made by adults in some ZIP codes and by children in other ZIP codes.1

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1Begley C, Courtney P, Burau K. Houston hospitals emergency department use study, January 1, 2007 through December 31, 2007. University of Texas Health Science Center at Houston, School of Public Health, April 2009. Available at http://www.sph.uth.tmc.edu/uploadedFiles/Centers/CHSR/HSRC/Final2007ED.pdf
Economic Impact of Emergency Room Visits
The average cost of an emergency room visit is roughly four times the average cost of an outpatient visit. For example, in 2006 the average cost of an emergency department visit for children was $490, but the average cost of an outpatient visit for children was only $130. ¹ The emergency room must see all individuals in need of help: insured and uninsured, in need of urgent care and in need of non urgent care. However, primary care related use of the emergency room is not always a cost effective way to use health care resources.

The figure below shows the estimated cost of primary care related ER visits in Harris County in 2007, and what the cost of those visits would be if all were seen on an outpatient basis instead. Since 32.7% of all primary care related ER visits in 2007 were made by persons who were uninsured ¹, an estimated $57,403,036 could have been saved by the local health care system if all such persons were seen on an outpatient basis instead. The cost of caring for the uninsured is often uncompensated ² and is often passed on to those with private insurance or local taxpayers. Reducing the number of primary care related ER visits by the uninsured is appropriate and necessary from both a clinical standpoint (e.g. triage, appropriate level of care) as well as an economic standpoint (less costly level of care, more effective use of resources).

Public Health Actions
- Expand access to affordable convenient outpatient care at alternative locations to the ER
- Educate people about health issues, the importance of a medical home, and resources such as the Harris County Hospital District’s 24-hour nurse advice line to assist in determining the need for ER care
- Establish working relationships between individual hospitals and nearby clinics to which patients can be referred for appropriate care

For More Information
Houston Health Services Research Collaborative (six years of detailed reports on ED utilization): www.sph.uth.tmc.edu/hsrc/default.aspx?id=2272
National Center for Health Statistics: Emergency Department Visit Data: www.cdc.gov/nchs/about/major/ahcd/ercharts.htm
New York University ED Algorithm: http://wagner.nyu.edu/chpsr/

Healthy People 2010
Objective 1-1: Increase the proportion of persons with health insurance

<table>
<thead>
<tr>
<th>Area</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Baseline 1997</td>
<td>83</td>
</tr>
<tr>
<td>Target for 2010</td>
<td>100</td>
</tr>
<tr>
<td>Houston-Baytown-Sugar Land MSA 2007</td>
<td>76</td>
</tr>
<tr>
<td>State of Texas 2007</td>
<td>71</td>
</tr>
<tr>
<td>United States 2007</td>
<td>85</td>
</tr>
</tbody>
</table>

²Begley C, Courteney P, Burau K. Houston hospitals emergency department use study, January 1, 2007 through December 31, 2007. University of Texas Health Science Center at Houston, School of Public Health, April 2009. Available at http://www.sph.uth.tmc.edu/uploadedFiles/Centers/
Behavioral Health Related ER Visits

Overview
Persons who have behavioral or mental health problems may seek treatment at emergency rooms, often because of a lack of access to community based resources for behavioral health treatment. Furthermore, while ER staff are trained to deal with trauma and serious medical illnesses, they are often unequipped to intervene and treat behavioral health problems.

The problems of behavioral health emergency room visits may be a barometer of problems elsewhere in the behavioral health care system. The following information addresses combined data from the ERs of 16 local general hospitals, as well as data from the Harris County Hospital District Neuropsychiatric Center (NPC).

Public Health Actions to Address Behavioral Health
- Work with community partnerships and state legislators to expand access to and funding for outpatient mental health services, especially for the uninsured
- Expand access to crisis intervention services
- Support mental health parity for those with private insurance

Trends and Demographics:
The percentage of total ER visits that are behavioral health (BHER) related in the identified 16 Houston/Harris County hospitals has increased every year for three years. As seen in the table, BHER visits increased from 5.9% of total ER visits in 2004 to 7.6% of total ER visits in 2006. The rate of BHER visits per 100 persons increased from 1.6 in 2004 to 2.0 in 2006. More than half (52.1%) of BHER visits are by male patients. In contrast to primary care related ER visits, in which children are 37% of visits, only 7% of BHER visits are by children age 0 to 17. Persons who are white or black each make up more than one third of behavioral health visits.

Payment for Behavioral/Mental Health Related ER Visits
For those who have commercial or private insurance, coverage for behavioral health related problems is often less generous than for medical problems. Others are uninsured, without any coverage. In Houston/Harris County, the uninsured make up more than half of all behavioral health related ER visits. Even when the medical ER visits are examined separately from the NPC behavioral health visits, the uninsured make up a much higher percentage of behavioral health ER visits than primary care related ER visits.

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Appendices
## Appendix A—Demographic Tables

### DEMOGRAPHIC TABLES 2008

<table>
<thead>
<tr>
<th>Home Page: <a href="http://factfinder.census.gov">http://factfinder.census.gov</a></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Estimates of the Population:</strong></td>
</tr>
</tbody>
</table>
| April 1, 2000 to July 1, 2008  
Source: Population Division, U.S. Census Bureau  
April 1, 2000 Census 100% Count | City of Houston | Harris County | State of Texas | United States |
| 1,953,631 | 3,400,578 | 20,851,820 | 281,421,906 |
| April 1, 2000 estimates base | 1,974,304 | 3,400,578 | 20,851,792 | 281,424,602 |
| July 1, 2008 Annual Census Population Estimate | 2,242,193 | 3,984,349 | 24,326,974 | 304,059,724 |
| **Percent Change, 2000 to 2008** | 13.6% | 17.1% | 16.6% | 8.1% |
| **Percent Change, 2007 to 2008** | 1.5% | 1.2% | 1.2% | 0.8% |

*Factfinder Home Page > Population Estimates Program*

### 2007 American Community Survey 1-Year Estimates

| Source: U.S. Census Bureau  
2007 Household Population Sample Total | City of Houston | Harris County | State of Texas | United States |
| 2,046,792 | 3,935,855 | 23,904,380 | 301,621,159 |

*All Percentages based on Population in Households*

*Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau’s Population Estimates Program that produces and disseminates the official estimates of the population.*

### Race/Ethnicity: 2007

<table>
<thead>
<tr>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hispanic ethnicity (of any race)</strong></td>
<td>41.1%</td>
<td>38.6%</td>
<td>36.0%</td>
</tr>
<tr>
<td><strong>Non-Hispanic ethnicity by race:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>28.3%</td>
<td>36.4%</td>
<td>47.7%</td>
</tr>
<tr>
<td>African American</td>
<td>24.2%</td>
<td>18.3%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Asian</td>
<td>5.3%</td>
<td>5.5%</td>
<td>3.3%</td>
</tr>
<tr>
<td>American Indian/Alaska Native/</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Other/Two or more races</td>
<td>0.5%</td>
<td>0.7%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

### Age Group: 2007

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<tr>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents under age 18</td>
<td>26.4%</td>
<td>28.8%</td>
<td>27.7%</td>
</tr>
<tr>
<td>Residents age 65 and over</td>
<td>8.7%</td>
<td>7.8%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

### Educational Attainment: 2007

<table>
<thead>
<tr>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population 25 years and over</td>
<td>1,296,420</td>
<td>2,432,903</td>
<td>14,836,320</td>
</tr>
<tr>
<td>High-school graduates or higher</td>
<td>73.1%</td>
<td>76.7%</td>
<td>79.1%</td>
</tr>
<tr>
<td>Bachelor’s degree or higher</td>
<td>27.6%</td>
<td>27.3%</td>
<td>25.2%</td>
</tr>
</tbody>
</table>

### Foreign-born: 2007

<table>
<thead>
<tr>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign-born Residents</td>
<td>27.8%</td>
<td>24.5%</td>
<td>16.0%</td>
</tr>
<tr>
<td><strong>Place of birth for foreign-born:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin America</td>
<td>74.9%</td>
<td>74.0%</td>
<td>75.1%</td>
</tr>
<tr>
<td>Asia</td>
<td>15.4%</td>
<td>17.3%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Europe</td>
<td>4.0%</td>
<td>3.9%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Africa</td>
<td>4.6%</td>
<td>3.7%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>

### Language spoken at home: 2007

<table>
<thead>
<tr>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population 5 years and over</td>
<td>1,869,875</td>
<td>3,590,106</td>
<td>21,924,924</td>
</tr>
<tr>
<td>Number speaking language other than English</td>
<td>1,040,262</td>
<td>1,463,185</td>
<td>7,437,834</td>
</tr>
<tr>
<td>Language other than English</td>
<td>44.4%</td>
<td>40.8%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Speak English less than “very well”</td>
<td>56.4%</td>
<td>52.7%</td>
<td>43.4%</td>
</tr>
<tr>
<td>Spanish</td>
<td>82.8%</td>
<td>81.9%</td>
<td>86.3%</td>
</tr>
<tr>
<td>Asian and Pacific Islander languages</td>
<td>8.7%</td>
<td>9.6%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Other Indo-European languages</td>
<td>6.0%</td>
<td>6.3%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Other languages</td>
<td>2.4%</td>
<td>2.1%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
### Income & Poverty: 2007 *

**INCOME IN THE PAST 12 MONTHS**

<table>
<thead>
<tr>
<th></th>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median household income</td>
<td>$40,856</td>
<td>$49,936</td>
<td>$47,548</td>
<td>$50,740</td>
</tr>
<tr>
<td>All people below poverty</td>
<td>20.7%</td>
<td>16.4%</td>
<td>16.3%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Individuals age 18 and over below poverty</td>
<td>23.8%</td>
<td>22.7%</td>
<td>25.6%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Children under age 18 below poverty</td>
<td>31.3%</td>
<td>23.6%</td>
<td>23.2%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Adults age 65 and over below poverty</td>
<td>14.9%</td>
<td>12.2%</td>
<td>12.0%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

* Poverty Threshold for 2007: One person (unrelated individual)...$10,210; Four persons….$20,650

Source: U.S. Census Bureau, Housing & Household Economic Statistics Division


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### Households: 2007

<table>
<thead>
<tr>
<th></th>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total households: (in 2007 sample)</td>
<td>748,024</td>
<td>1,347,638</td>
<td>8,244,022</td>
<td>112,377,977</td>
</tr>
<tr>
<td>Family households (families)</td>
<td>62.0%</td>
<td>69.0%</td>
<td>70.2%</td>
<td>66.8%</td>
</tr>
<tr>
<td>Percent of families with own children &lt; 18</td>
<td>50.0%</td>
<td>53.1%</td>
<td>50.1%</td>
<td>46.6%</td>
</tr>
<tr>
<td>Married-couple families</td>
<td>64.7%</td>
<td>70.5%</td>
<td>73.6%</td>
<td>74.4%</td>
</tr>
<tr>
<td>% of Married-couple families with own children &lt; 18</td>
<td>47.8%</td>
<td>51.7%</td>
<td>47.9%</td>
<td>43.1%</td>
</tr>
<tr>
<td>Male householder, no wife present</td>
<td>9.3%</td>
<td>8.2%</td>
<td>7.2%</td>
<td>6.9%</td>
</tr>
<tr>
<td>% of Male-headed families with own children &lt; 18</td>
<td>41.1%</td>
<td>44.8%</td>
<td>48.3%</td>
<td>49.2%</td>
</tr>
<tr>
<td>Female householder, no husband present</td>
<td>25.9%</td>
<td>21.4%</td>
<td>19.3%</td>
<td>18.7%</td>
</tr>
<tr>
<td>% of Female-headed families with own children &lt; 18</td>
<td>58.9%</td>
<td>61.1%</td>
<td>61.8%</td>
<td>59.4%</td>
</tr>
<tr>
<td>Non-family households</td>
<td>38.0%</td>
<td>31.0%</td>
<td>29.8%</td>
<td>33.2%</td>
</tr>
<tr>
<td>Householder living alone</td>
<td>83.2%</td>
<td>82.5%</td>
<td>82.9%</td>
<td>82.2%</td>
</tr>
<tr>
<td>65 years &amp; older</td>
<td>20.4%</td>
<td>20.7%</td>
<td>28.9%</td>
<td>27.6%</td>
</tr>
</tbody>
</table>

### Grandparents: 2007

<table>
<thead>
<tr>
<th></th>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of grandparents living with own grandchildren under 18 years in households</td>
<td>56,234</td>
<td>108,647</td>
<td>630,182</td>
<td>6,210,076</td>
</tr>
<tr>
<td>Responsible for grandchildren</td>
<td>43.1%</td>
<td>39.2%</td>
<td>44.7%</td>
<td>40.5%</td>
</tr>
</tbody>
</table>

### VETERAN STATUS: 2007

<table>
<thead>
<tr>
<th></th>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilian population 18 years and over</td>
<td>1,506,622</td>
<td>2,602,173</td>
<td>17,190,551</td>
<td>226,715,104</td>
</tr>
<tr>
<td>Civilian veterans</td>
<td>5.9%</td>
<td>6.8%</td>
<td>9.4%</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

### DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION: 2007

<table>
<thead>
<tr>
<th></th>
<th>City of Houston</th>
<th>Harris County</th>
<th>State of Texas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population 5 years and over with a disability</td>
<td>219,719</td>
<td>389,175</td>
<td>3,031,098</td>
<td>41,199,423</td>
</tr>
<tr>
<td>Population 5 years and over with a disability</td>
<td>11.9%</td>
<td>10.9%</td>
<td>14.1%</td>
<td>14.9%</td>
</tr>
<tr>
<td>Population 5 to 15 years with a disability</td>
<td>4.9%</td>
<td>4.8%</td>
<td>6.3%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Population 16 to 64 years with a disability</td>
<td>9.7%</td>
<td>9.1%</td>
<td>11.5%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Population 65 years and over with a disability</td>
<td>40.8%</td>
<td>40.2%</td>
<td>45.1%</td>
<td>40.6%</td>
</tr>
</tbody>
</table>
Appendix B—Maps

Map of Houston/Harris County

2009 Houston City Limits in Harris, Fort Bend, and Montgomery Counties

Map developed by HDHHS Community Health Statistics
Map of Houston-Baytown-Sugar Land MSA

Houston-Baytown-Sugar Land Metropolitan Statistical Area 2003

Map Date: September 22, 2006

http://www.whitehouse.gov/omb/bulletins/b03-04_atc.pdf
Appendix C—Frequently Used Websites

U.S. Census Bureau: www.census.gov
American FactFinder, for local data: http://factfinder.census.gov
Texas State Data Center (a state level liaison to the U.S. Bureau of the Census)
www.txsdc.utsa.edu
Texas Department of State Health Services
Home page: www.dshs.state.tx.us
BRFSS survey data: www.dshs.state.tx.us/chs/brfss/
Birth and death certificate data, population, trauma data: http://soupfin.tdh.state.tx.us/
Centers for Disease Prevention and Control
Home page: www.cdc.gov/
SMART BRFSS local reports: http://apps.nccd.cdc.gov/brfss-smart/SelMMSAPrevData.asp
Healthy People 2010: www.healthypeople.gov
Bexar County Community Health Collaborative, Health Assessment Data Tables:
www.healthcollaborative.net/assessment06/assessmentData.php

Appendix D —Healthy People 2010 Sources

The first two measures on each table, the National Baseline and the Target for 2010 are from the Healthy People website, available at www.healthypeople.gov. Most of the following measures, for the Houston-Galveston-Sugar Land MSA, Texas and the United States, are from the Texas Department of State Health Services, Behavioral Risk Factor Surveillance System, available at http://www.dshs.state.tx.us/chs/brfss/. In some cases, the BRFSS results are taken from the CDC SMART BRFSS website. Results from BRFSS are age adjusted to the 2000 standard population. When other sources are used, they are noted below:

Obesity in Youth: Data from CDC Youth Risk Behavior Surveillance System Survey
Injury Risk: Harris County data from the Bexar County Community Health Collaborative website at www.healthcollaborative.net, Texas rate from TDSHS, national rate from CDC
Child Abuse: Local and Texas Statistics from the CPS in Harris County Annual Report. The U.S. rate is from CDC
Alcohol and Drug Abuse: Local and Texas data from TDSHS Texas Commission on Alcohol and Drug Abuse, national data from CDC
Prenatal Care, Pregnancy/Infant Outcomes, Adolescent Pregnancy: Local and Texas data from TDSHS, national data from CDC
Immunizations: Data from the CDC National Immunization Survey
Air Quality: Measures from the EPA
Surface Water: Measures from HDHHS and HCPHES records
Food Safety, Lead Poisoning: Local measures from HDHHS and HCPHES case files. Texas measures from TDSHS, Infectious Disease Control Unit. National measures from CDC.
Mental Health: Harris County and Texas data from TDSHS, national data from CDC
Heart Disease, Cancer, Diabetes: Harris County and Texas data from TDSHS or Bexar County Community Health Collaborative websites, national rates from CDC National Vital Statistics System.
Asthma: Harris County and Texas hospital discharge data from TDSHS Center for Health Statistics
Texas Health Care Information Collection, Preventable Hospitalizations, 2005
Communicable Diseases: Local and Texas data are from HDHHS and HCPHES case files and TDSHS. National data and some state data are from CDC.
## Appendix E—Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAFP</td>
<td>American Academy of Family Physicians</td>
</tr>
<tr>
<td>ACIP</td>
<td>Advisory Committee on Immunization Practices</td>
</tr>
<tr>
<td>ACSC</td>
<td>Ambulatory Care Sensitive Conditions</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>AMI</td>
<td>Annual Median Income</td>
</tr>
<tr>
<td>BRFSS</td>
<td>Behavioral Risk Factor Surveillance System</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>CDC</td>
<td>U.S. Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CFRT</td>
<td>Child Fatality Review Team</td>
</tr>
<tr>
<td>CHIP</td>
<td>Children’s Health Insurance Program</td>
</tr>
<tr>
<td>CPS</td>
<td>Harris County Child Protective Service</td>
</tr>
<tr>
<td>CVD</td>
<td>Cardiovascular Disease</td>
</tr>
<tr>
<td>DHHS</td>
<td>U.S. Department of Health and Human Services</td>
</tr>
<tr>
<td>DOT</td>
<td>Directly Observed Therapy</td>
</tr>
<tr>
<td>E. coli</td>
<td>Escherichia coli</td>
</tr>
<tr>
<td>ED</td>
<td>Hospital-based Emergency Department</td>
</tr>
<tr>
<td>EMS</td>
<td>Pre-hospital Emergency Medical Services</td>
</tr>
<tr>
<td>EMTALA</td>
<td>Emergency Medical Treatment and Active Labor Act</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>ER</td>
<td>Emergency Room</td>
</tr>
<tr>
<td>ETS</td>
<td>Environmental Tobacco Smoke</td>
</tr>
<tr>
<td>FDA</td>
<td>Federal Drug Administration</td>
</tr>
<tr>
<td>FPL</td>
<td>Federal Poverty Level</td>
</tr>
<tr>
<td>HCHA</td>
<td>Harris County Healthcare Alliance</td>
</tr>
<tr>
<td>HCHD</td>
<td>Harris County Hospital District</td>
</tr>
<tr>
<td>HCPHES</td>
<td>Harris County Public Health and Environmental Services</td>
</tr>
<tr>
<td>HDHHS</td>
<td>City of Houston Department of Health and Human Services</td>
</tr>
<tr>
<td>HHCCFRT</td>
<td>Houston/Harris County Child Fatality Review Team</td>
</tr>
<tr>
<td>HHSC</td>
<td>Health and Human Services Commission</td>
</tr>
<tr>
<td>HISD</td>
<td>Houston Independent School District</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>HSR</td>
<td>Health Service Region</td>
</tr>
<tr>
<td>HUD</td>
<td>Department of Housing and Urban Development</td>
</tr>
<tr>
<td>LBW</td>
<td>Low Birth Weight</td>
</tr>
<tr>
<td>LTBI</td>
<td>Latent TB Infection</td>
</tr>
<tr>
<td>MHMRA</td>
<td>Mental Health Mental Retardation Authority of Harris County</td>
</tr>
<tr>
<td>MMR</td>
<td>Measles, Mumps, Rubella</td>
</tr>
<tr>
<td>MSA</td>
<td>Metropolitan Statistical Area</td>
</tr>
<tr>
<td>MSM</td>
<td>Men Who Have Sex With Men</td>
</tr>
<tr>
<td>MUA</td>
<td>Medically Underserved Area</td>
</tr>
<tr>
<td>MUP</td>
<td>Medically Underserved Population</td>
</tr>
<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standard</td>
</tr>
<tr>
<td>NCHS</td>
<td>National Center for Health Statistics</td>
</tr>
<tr>
<td>NHANES</td>
<td>National Health and Nutrition Examination Survey</td>
</tr>
<tr>
<td>NIH</td>
<td>National Institute of Health</td>
</tr>
<tr>
<td>NIS</td>
<td>National Immunization Survey</td>
</tr>
<tr>
<td>PCC</td>
<td>Poison Control Center</td>
</tr>
<tr>
<td>PCP</td>
<td>Primary Care Physician</td>
</tr>
<tr>
<td>PM 2.5</td>
<td>Fine Particulate Matter</td>
</tr>
<tr>
<td>PQI</td>
<td>Patient Quality Indicators</td>
</tr>
<tr>
<td>RIS</td>
<td>Retrospective Immunization Survey</td>
</tr>
<tr>
<td>SIDS</td>
<td>Sudden Infant Death Syndrome</td>
</tr>
<tr>
<td>SPAN</td>
<td>School Physical Activity and Nutrition Project</td>
</tr>
</tbody>
</table>
Appendix E—Acronyms, cont.

STD        Sexually Transmitted Disease  
TB          Tuberculosis  
TCADA      Texas Commission on Alcohol and Drug Abuse  
TDADS      Texas Department of Aging and Disability Services  
TDSHS      Texas Department of State Health Services  
U.S.       United States  
USDA       United States Department of Agriculture  
USPSTF     U.S. Preventive Services Task Force  
VLBW       Very Low Birth Weight  
YPLL       Years of Potential Life Lost. Premature mortality is measured by the Years of 
            Potential Life Lost statistic, which is simply the sum of the years of life lost 
            annually by persons who suffered early death. Premature death is defined in 
            this document as death occurring before the age of 65.  
YRBS       Youth Risk Behavior Survey  
WIC        Federal Women, Infants and Children Supplemental Nutrition Program  
WNV        West Nile Virus

Appendix F—Additional Information

Map Disclaimer: Many of the maps showing health measures in Houston/Harris County were pre-
pared by the HDHHS Office of Surveillance and Public Health Preparedness, Community Health Sta-
tistics section. These maps represent the best information available to the City. The City does not 
warrant their accuracy or completeness. Field verifications should be done as necessary.