CANCER COMMUNITY NEEDS ASSESSMENT 2020

HARRISHEALTH SYSTEM

Presented to the Harris Health System Cancer Committee
By the Community Needs Assessment Working Group
on
Friday, November 13, 2020

In accordance with the Commission on Cancer Standard 8.1.

Commission on Cancer

**Standard 8.1 Addressing
Barriers to Care**

A navigation team is established
to identify barriers to care for
patients with cancer and
implement a process to overcome
the identified barrier.

Each calendar year, the
navigation team provides a report
to the full cancer committee. This
report must state:
• What barrier was chosen
• What resources/processes were
utilized to identify and address this
barrier
• Metrics related to outcomes of
reducing the chosen barrier
• Plans for the upcoming year

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Introduction
As part of its accreditation process, the American College of Surgeon's Commission on Cancer requires that "a navigation team is established to identify barriers to care for patients with cancer and implement a process to overcome the identified barrier" (Committee on Cancer Standard 8.1) [1]. Cancer-related patient navigation within Harris Health System began in the late 1990s and arose from the need to maximize systems efficiency and ensure that patients with abnormal cancer screening test results obtained timely diagnostic and therapeutic follow-up. Since then, cancer-related patient navigation activities within Harris Health System have expanded to include not only those aimed at ensuring follow-up among patients with abnormal screening tests, but also to those aimed at increasing screening and vaccination coverage. Patient navigation programs currently operate within the Breast, Cervical, Colorectal, Hepatocellular, and Gastric Cancer programs, as well as in the Pediatric Service line to improve human papillomavirus (HPV) vaccination rates and tobacco use prevention, the Outreach Services Department to provide healthcare access navigation, and the Diagnostic and Screening Clinics to provide oncology care coordination.

In the first part of this report we present the latest data from a cancer community needs assessment that describes the current state of specific cancers within Harris County. The community needs assessment builds on the 2017 report and focuses on the cancers for which population-based screening tests are available and recommended by the American Cancer Society: breast, cervical, and colorectal cancer [2]. For these cancers, we provide information regarding incidence and mortality, disparities in the burden of disease, and utilization of cancer-specific screening tests.

Data, such as that presented in this report, have guided the development of Harris Health System's patient navigation programs. As described in this report, the two primary aims of the existing patient navigation programs (1) are to improve access to healthcare and cancer screening tests and (2) to ensure follow-up of patients with abnormal screening test results. The overarching goals guiding these programs are to reduce cancer health disparities in Harris County and improve the healthcare experience of Harris Health patients along the cancer continuum of care.

Overview of Harris Health System's Medical Facilities
Harris Health Systemis an integrated health system that is the primary safety net provider for the Houston metroplex. It currently operates 19 community health centers (CHCs), the nation's first free-standing HIV/AIDS treatment center, two large multi-specialty centers, six same day clinics, a geriatric assessment center, a dialysis center, a free standing dental center, five school-based clinics, ten homeless shelter clinics, five homeless eligibility service locations and a mobile immunization and medical outreach program. These clinics are distributed throughout Harris County (Figure 1) and offer primary care as well as a variety of specialty care, including as psychiatry, dentistry, obstetrical/gynecological, podiatry, ophthalmology, pharmacy, psychiatry and counseling, laboratory and x-ray services, HIV/AIDS case management, and a variety of nutrition, health education, and social services. In 2019, the Harris Health System facilities logged over 1,764,025 outpatient visits, had 5,407 births, 169,719 emergency visits, and 43,438 cases occupying hospital beds [3]. Through affiliation agreements with Baylor College of Medicine and The University of Texas Health Science Center-Houston, the two medical schools provide primary care and specialty physician staffing to all Harris Health System facilities. The clinics are also staffed by countless nurses, clerks, and allied health professionals.

Figure 1. Harris Health System facilities in Harris County, Texas.

Source: https://www.harrishealth.org/locations-hh/Pages/Facilities-Map.aspx

As of 2020, Ben Taub Hospital is a world-renowned Level I Trauma Center, Comprehensive Stroke Center and Designated Chest Pain Center with 444 licensed acute-care beds. Lyndon B. Johnson Hospital is a 207 licensed bed acute-care hospital with a newly expanded Level III trauma center and a distinguished regional center for neonatal intensive care for high-risk deliveries. Quentin Mease Community Hospital has 49 licensed beds for long-term physical rehabilitation and its geriatric services program.

Harris Health is a teaching system for Baylor College of Medicine and The University of Texas Health Science Center at Houston, training the next generation of healthcare providers on the latest medical procedures and technological breakthroughs. Through its collaboration with Baylor College of Medicine, The University of Texas Medical School at Houston and The University of Texas M.D. Anderson Cancer Center, patients at Ben Taub Hospital and Lyndon B. Johnson Hospital have access to an array of cutting-edge clinical trials. As a patient, the care team may include a medical oncologist, surgeon, radiation oncologist, nurse, genetics counselor, pathologist, nutritionist, interventional radiologist and other providers all focused on the patients' specific needs. This meeting of the minds provides each patient with a personalized care plan designed for the most successful outcome.

Harris Health System patients in the system are billed on a sliding scale based on degree of economic hardship. Enrollment assistance for Medicaid, Children's Health Insurance program (CHIP), and the Harris Health Financial Assistance Program for discounted health care are made through five eligibility centers and teams of community health

educators/workers who reach out into targeted low-income communities. Beginning on March 1, 2016, Harris Health System adopted a narrower income range for persons seeking financial assistance. To qualify for financial assistance, household income may not exceed 150% of the Federal Poverty Level. Harris Health also sponsors many awareness educational activities, such as presentations, health fairs, volunteer trainings, and individual assistance at community multi-service centers, churches, temples, apartment complexes, and other non-profit agency locations.

It is at the core of the Harris Health System strategic plan to accelerate its transformation into a high-performing, fully integrated healthcare-delivery system and to achieve their vision of "Improving the Health of our Community." Harris Health System was the first accredited healthcare institution in Harris County to be designated by the National Committee for Quality Assurance as a Patient-Centered Medical Home, and is one of the largest systems in the country to achieve the quality standard [4].

Harris Health System's Cancer Care Program

The Cancer Care Program within Harris Health System encompasses two inpatient venues (Ben Taub Hospital and Lyndon B. Johnson Hospital) as well as clinics at Ben Taub Hospital, the Outpatient Clinic at the Lyndon B. Johnson Hospital and the Smith Clinic. Patients with all forms of malignancy are seen within the system, many in multidisciplinary settings that include medical oncologists, hematologists, surgeons, gynecologic oncologists and radiation oncologists. In addition, there are programs to address genetic counseling in malignancy, nutrition, physical therapy, behavioral counseling, lymphedema, and palliative care. There are oncology diagnostic and screening clinics at both Smith Clinic and the Lyndon B. Johnson Hospital Outpatient Center to assist in rapidly obtaining an accurate diagnosis for patients in the outpatient setting. The Harris Health System boasts state of the art imaging centers including digital mammography and breast magnetic resonance imaging (MRI), multipurpose MRI and computerized tomography (CT) scanners, a positron emission tomography (PET)/CT scanner, and three state of the art linear accelerators for radiation therapy with stereotactic radiosurgery capability.

Methods

Social Determinants of Health Framework

This community needs assessment uses a Social Determinants of Health framework, which recognizes the multiple factors that affect heath and the dynamic relationship between people and their physical, social, and interpersonal environment [4]. Building on this framework, the assessment utilizes data to identify health disparities in the population and examine the socio-economic, cultural, and environmental conditions associated with such disparities. The following diagram provides a visual representation of how the interplay between people and their environments affects health outcomes (Figure 2). Individual lifestyle factors, which are most directly associated with specific health outcomes, do not occur in a vacuum. Rather, they are influenced by upstream factors such as socioeconomic status, education, and place of residence.

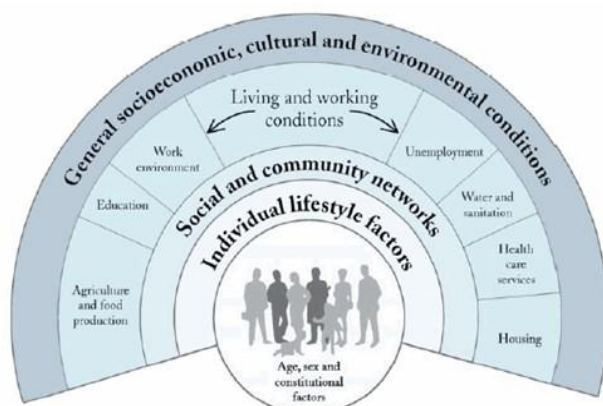**Figure 2.** Social Determinants of Health Framework

Figure shows one influential model of the determinants of health that illustrates how various health-influencing factors are embedded within broader aspects of society.

Source: Dahlgren G. and Whitehead M. Policies and Strategies to Promote Social Equity in Health. Stockholm: Institute for Futures Studies. 1991. [5]

The Cancer Community Needs Assessment Working Group

A working group was in established in 2013 to lead the development of the 2014 Harris Health System's Cancer Community Needs Assessment. The group reconvened in 2019 to develop the present 2020 report. The working group includes Harris Health System staff and academic partners from the Dan L. Duncan Comprehensive Cancer Center at Baylor College of Medicine. The Working Group met regularly between June and November 2020 and worked collaboratively over the course of this period to collect, analyze, and report the data presented in this community needs assessment.

Secondary Data

Epidemiological data was used to provide a general profile of the health, social, and economic characteristics of Harris Health System's catchment area - Harris County. Additionally, secondary data was used to explore indicators across the cancer continuum which includes risk and protective factors, cancer screening, incidence, and mortality. Data on risk and protective factors and screening were obtained from the Texas Behavioral Risk Factor Surveillance System [6]. Cancer incidence and mortality data were obtained from the Texas Department of State Health Services, Cancer Epidemiology and Surveillance Branch, Texas Cancer Registry [7].

Maps describing cancer risk and screening behaviors were obtained from the Centers for Disease Control and Prevention's 500 Cities Project [8]. The 500 Cities Project is a collaboration between the Robert Wood Johnson Foundation, the CDC Foundation, and the Centers for Disease Control and Prevention (CDC), to provide high quality small area estimates for behavioral risk factors that influence health status, for health outcomes, and the use of clinical preventive services. These estimates can be used to identify emerging health problems and to develop and implement of effective, targeted public health prevention activities. Data for the 500 cities project were obtained from the CDC. The Behavioral Risk Factor Surveillance System (BRFSS) was obtained from June Hanke (2019 Update), the Census Bureau 2010 census population data was used, and CDC 500 Cities Project maps were also used (September 2018 Update).

Social Determinants of Health Framework

The Health of Harris County

Profile of Harris County

The population of Harris County was 4,713,325 in 2019 [9]. This figure represents a 15.2% percent increase in the population from April 1, 2010 to July 1, 2019. Harris County is a racially and ethnically diverse county with 28.7% white, 20% black, 7.3% Asian, and 2.0% two or more races. Twenty-six-point one percent of the residents are foreign-born. In 2019 approximately 11% made up people ages 65 and over. Of the population 25 and older, 19.1% have not completed high school, 80.8%% are high school graduates, and 31.0% have bachelor's degree or higher. Among residents who have lived in Houston for five years or more, 44.2% speak a language other than English at home, with 20.4% speaking English less than very well. The mean per capita income in Harris County is $31,901, with approximately 18.4% of households earning less than $25,000. In 2019, the median household income was $60,146 and 16.5% of the population living in poverty.

Cancer Risk Behaviors

Obesity, physical inactivity, and smoking are well-known health indicators related to cancer [10]. According to a recent report by the Centers for Disease Control and Prevention (CDC), lifestyle changes including increasing physical activity, eating healthier, and avoiding tobacco, could prevent 21% of early cancer deaths in the United States, prolonging 84,500 lives annually [11].

The 2019 Texas Behavioral Risk Surveillance System (BRFSS) reported that 71.8% of the population of Harris County had a body mass index (BMI) greater than 25 [6], indicating that they are overweight or obese. Overweight and obesity was most prevalent among Hispanics (79.5%), followed by Blacks (78.0%) and Whites (65.9%). The prevalence of overweight and obesity was higher among men (75.7%) compared to women (67.7%).

The 2019 BRFSS Survey reported that in Harris County, 77.3% fell into the category of "Good or Better Health" while 22.7% surveyed said they were in "Fair or Poor Health." Moreover, surveyed citizens answered Excellent (17.8%), Very Good (30.3%), Good (29.2%), Fair (16.8%), and Poor (5.9%) to "How would you say your health is in general?"

In 2019 the BRFSS Survey reported that 28.9% lifetime smokers with 30.4% say they smoke every day, 19.6% say they smoke some days, and 50.0% say they don't smoke at all. When asked if they were current smokers, the survey reported 14.3% as a current smoker. It was also surveyed that among those 18 years and older, 20.2% were males.

The geographic distribution of these above-mentioned cancer risk factors is not homogenous throughout the Harris County area. Rather, as described in the maps below from CDC 500 Cities Project, risk behaviors are geographically clustered in pockets throughout the county.

Figure 3. Current smoking among adults 18 years of age and older; Houston, Texas, 2016.
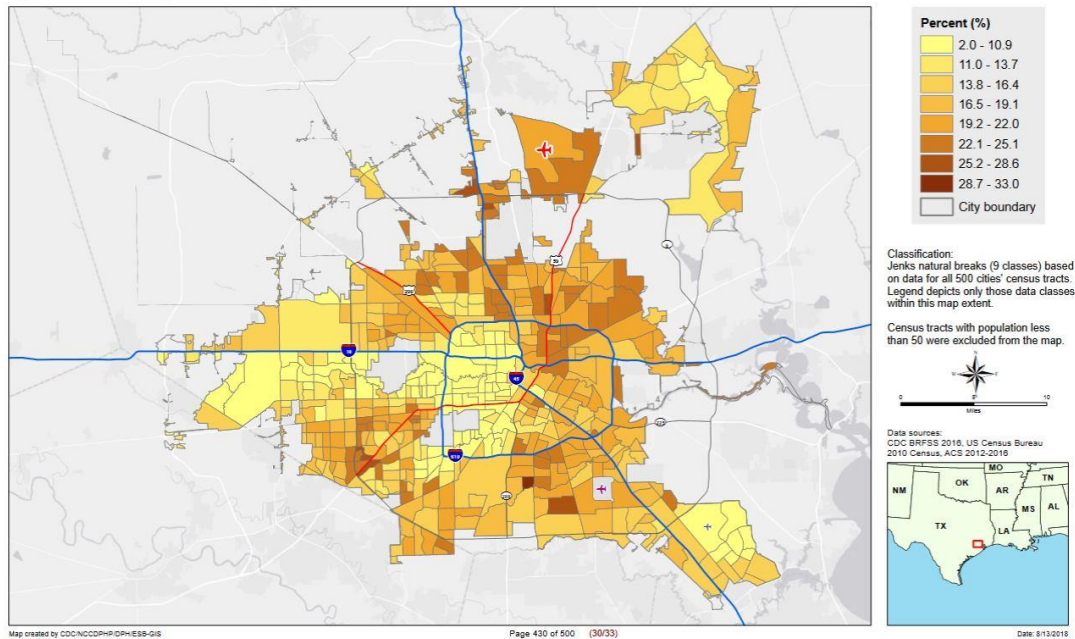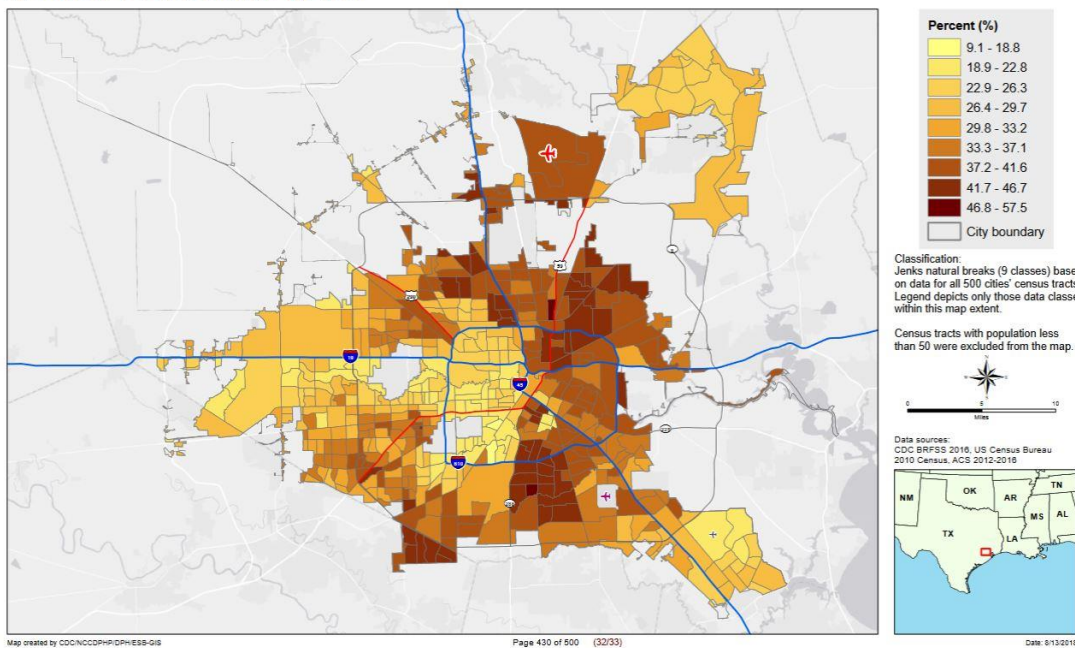

Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Figure 4. Obesity among adults 18 years of age and older; Houston, Texas, 2016

Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Figure 5. Leisure-time physical activity among adults 18 years of age and older; Houston, Texas, 2016.
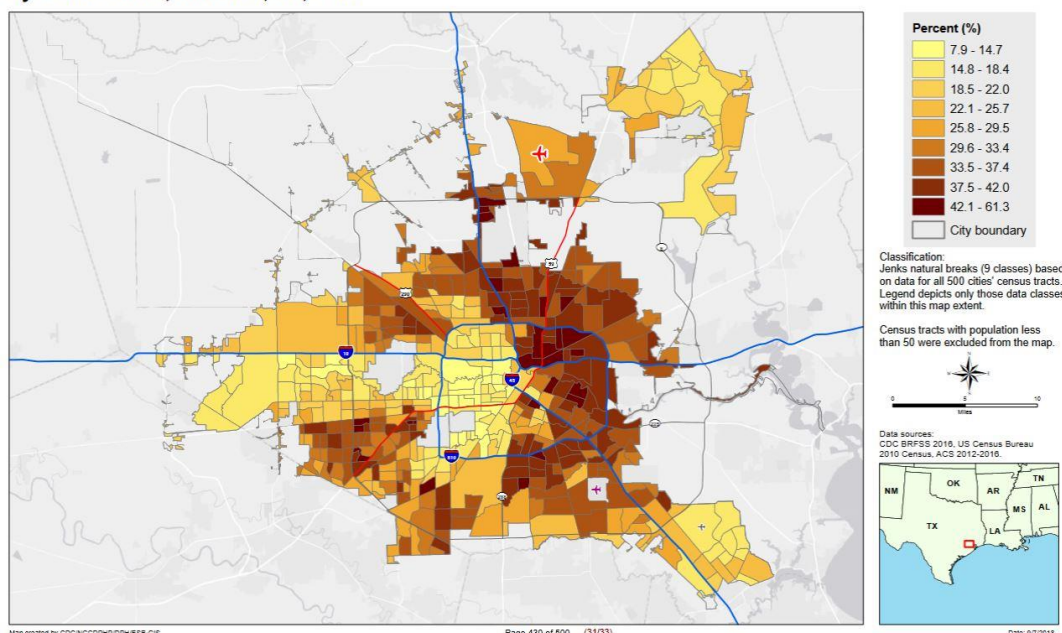
Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Healthcare Access and Cancer Screening

Health Insurance

From the BRFFS 2019 Survey, 23.8% of residents had no health insurance coverage in 2019. Among adults ages 18-64 years, the rate was 27.0%. Lack of insurance is most prevalent among ethnic minorities and the poor. Among households with incomes of less than $25,000, 54.3% lack health insurance coverage. Among those with no high-school degree, 54.3% had health insurance and increases to 66.4% with a high school degree. The highest percentage of those covered by insurance were college educated (some college) to have insurance of some kind at 91.2%. For Hispanics insurance coverage was reported at 61.2%. Figure 6 describes the geographic distribution of individuals without health insurance coverage in Houston, TX.
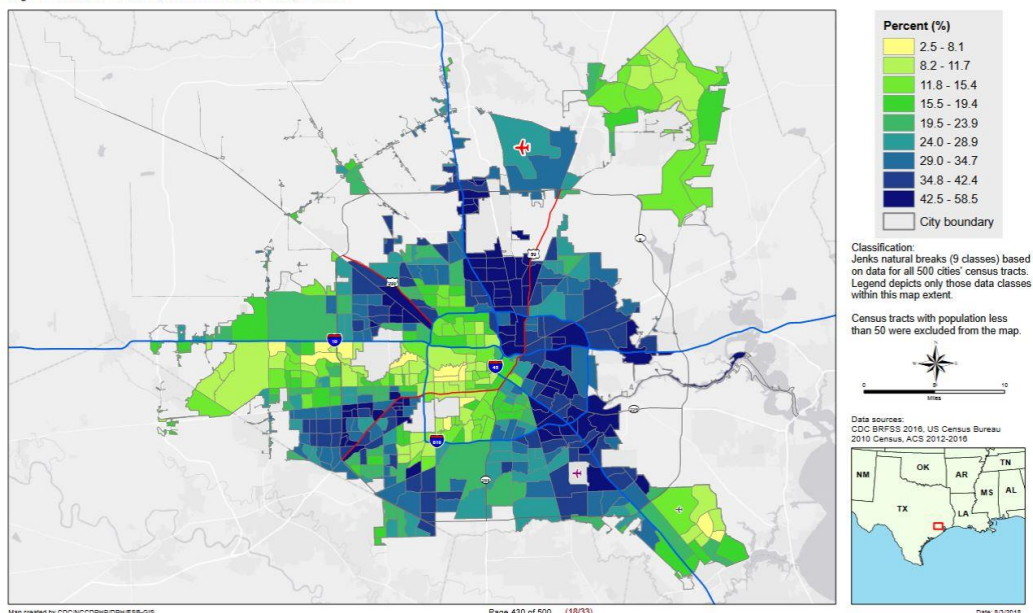
Cancer Screening

Screening exams are tests that help find cancer at an early stage, before symptoms appear. For many cancers, screening increases the chances that the cancer is detected early, when it is most easily treated and most likely to be curable. The American Cancer Society has screening guidelines for cervical, breast, and colorectal cancer. For these cancers, research has shown that regularly using the recommended screening tests significantly reduces the risk of death from that particular cancer [2]. However, medically underserved populations are confronted with a number of barriers to cancer screening, including cost, transportation issues, lack of a regular medical provider, cultural differences, language barriers, limited literacy, and lack of knowledge about the disease and the benefits of screening [12]. The maps below describe the geographic patterns in terms of the use of these screening tests among residents of Harris County.

Figure 6. Current lack of health insurance among adults age 18-64 years; Houston, Texas, 2016.

Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Figure 7. Papanicolaou smear use for cervical cancer screening among adult women age 21-65 years; Houston, Texas, 2016.
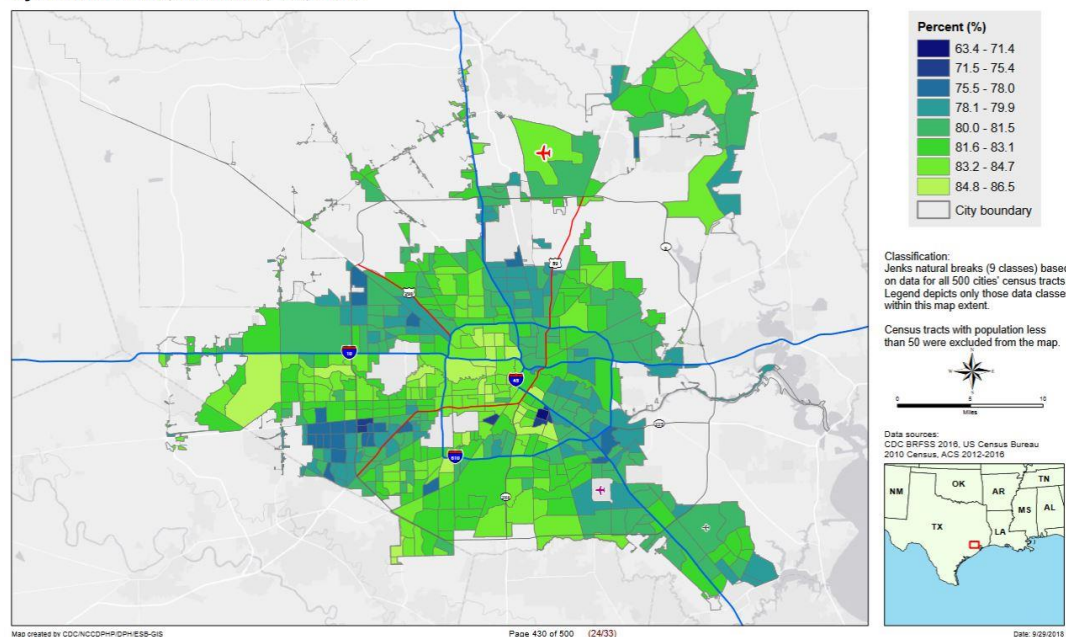
Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Figure 8. Mammography use for breast cancer screening among adult women age 50-74 years; Houston, Texas, 2016.

Mammography use among women aged 50-74 years by census tract, Houston, TX, 2016
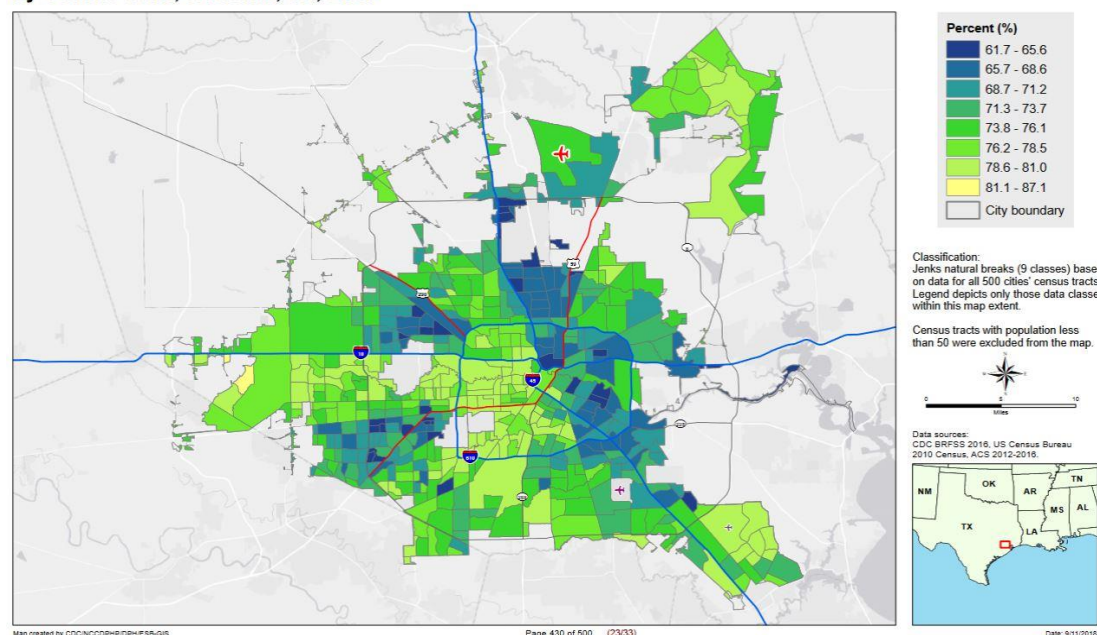
Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Figure 9. Fecal occult blood test, sigmoidoscopy, or colonoscopy for colorectal cancer screening among adult men and women age 50-75 years; Houston, Texas, 2016.

Fecal occult blood test, sigmoidoscopy, or colonoscopy among adults aged 50-75 years by census tract, Houston, TX, 2016
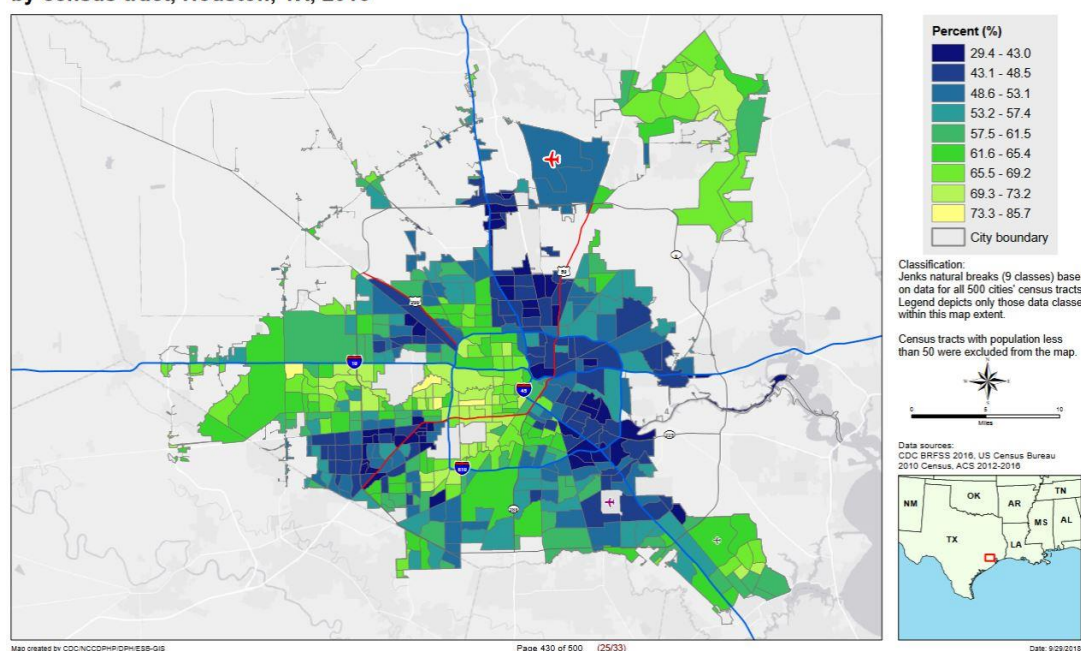
Source: CDC 500 Cities Project, available at https://www.cdc.gov/500cities/ [8]

Cancer Incidence and Mortality

This section provides a description of cancer incidence and mortality rates for cervical, colorectal, breast, and other cancers in Harris County. Cancer incidence rates describe the number of newly diagnosed cases over a specified period of time. Mortality rates describe the number of cancer-specific deaths that occurred over a specified time. Rates are age-adjusted to allow for comparison of communities with different age structures. Between 2013-2017, the three leading causes of cancer for men in Harris County and Texas were prostate, lung and bronchus, and colon and rectum. For women, the leading causes were breast, lung and bronchus, and colon and rectum. Cervical cancer, a disease that can be almost entirely prevented through screening and early detection, was among the top ten cancers for Black and Hispanic women in Harris County and Texas.

Breast cancer

Incidence. Table 1 describes the incidence of in-situ breast cancer in Harris County. For the period 2013-2017, the overall age-adjusted incidence rate was 111.2 per 100,000 (95% confidence interval 109.2-113.2). This rate is higher than the statewide age-adjusted rate of 112.8 per 100,000 (95% confidence interval 112.0-113.6).

Table 1. Breast cancer incidence, 2013-2017, Harris County, Texas

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	2189018	2240726	2291965	2326969	2346498	11395176
Total Cases	2428	2400	2371	2419	2470	12088
Crude Rate	110.9	107.1	103.5	104	105.3	106.1
Age-Adjusted Rate	118.2	113.2	108.5	108.2	108.3	111.2
95% Confidence Interval Lower	113.5	108.6	104.1	103.8	104	109.2
95% Confidence Interval Upper	123.2	117.9	113.0	112.7	112.7	113.2
Statewide Age-Adjusted Rate	112.7	113.1	114.7	110.7	112.6	112.8
Statewide 95% Confidence Interval Lower	110.9	111.3	113.0	109	110.9	112.0
Statewide 95% Confidence Interval Upper	114.5	114.9	116.5	112.5	114.3	113.6

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

In Harris County, breast cancer incidence is highest among white and black women, with a 5-year cumulative incidence between 2013-2017 of 130.4 and 120.8 per 100,000, respectively (Figure 10). This rate is roughly 1.5 times greater than that observed among Hispanic women (83.2 per 100,000) and 1.6 times greater than that observed for Asian/Pacific Islanders (80.3 per 100,000). Figure 11 describes the geographic distribution of breast cancer incidence.

Figure 10. Incidence of breast cancer by race/ethnicity, Harris County, Texas 2013-2017
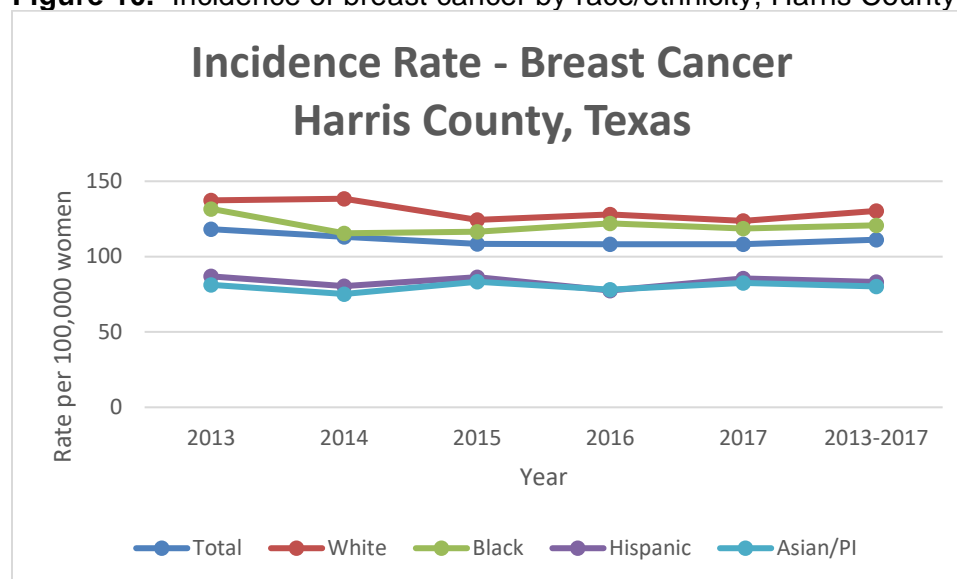
Source: National Cancer Institute and U.S. Centers for Disease Control and Prevention. State Cancer Profiles. Available at http://statecancerprofiles.cancer.gov. Updated October 22, 2020.

Mortality. The Healthy People 2020 goal for breast cancer deaths is 20.7 per 100,000 [13]. In Harris County, the overall rate was 21.4 per 100,000 in 2013-2017 (Figure 12). Racial/ethnic disparities are evident, with the lowest mortality rate among Asian/Pacific Islanders (10.7 per 100,000) and the highest among black women (30.9 per 100,000). It is important to note that although breast cancer incidence for black women in Harris County is lower compared to white women (22.0 per 100,000), mortality is disproportionately higher for black women. Research has shown that African American women tend to have biologically more aggressive tumors [14], resulting in earlier distant spread and ultimately death.

Table 2. Breast cancer mortality, Harris County, Texas, 2013-2017

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	2189018	2240726	2291965	2326969	2346498	11395176
Total Deaths	426	470	471	424	444	2235
Crude Rate	19.5	21	20.6	18.2	18.9	19.6
Age-Adjusted Rate	21.8	23.2	22.6	19.4	20	21.4
95% Confidence Interval Lower	19.8	21.1	20.6	17.5	18.2	20.5
95% Confidence Interval Upper	24.1	25.4	24.8	21.4	22	22.3
Statewide Age-Adjusted Rate	20.1	19.8	19.7	19.6	19.6	19.8
Statewide 95% Confidence Interval Lower	19.4	19.1	19	18.9	18.9	19.5
Statewide 95% Confidence Interval Upper	20.9	20.6	20.5	20.4	20.3	20.1

Source: Cancer Incidence File, available at: http://www.cancer-rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Figure 11. Breast cancer mortality rates in Harris County, Texas 2013-2017.
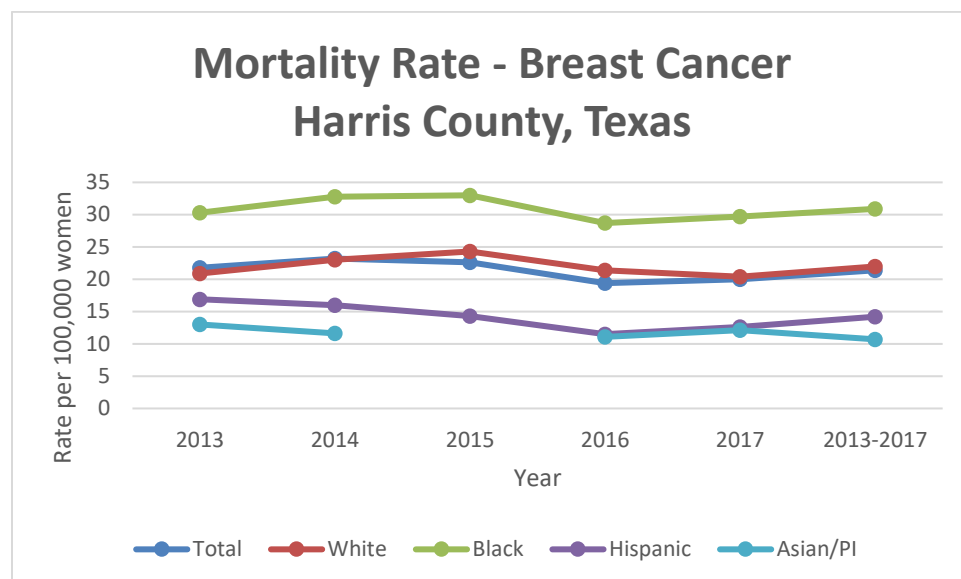
Source: National Cancer Institute and U.S. Centers for Disease Control and Prevention. State Cancer Profiles. Available at http://statecancerprofiles.cancer.gov. Updated October 22, 2020.

Cervical cancer

Incidence. Table 2 describes the incidence of invasive cervical cancer in Harris County. For the period 2013-2017, the overall age-adjusted incidence rate was 10.3 per 100,000 (95% confidence interval 9.7-11.0), which was greater than the statewide age-adjusted rate of 9.2 per 100,000 (95% confidence interval 9.0-9.5).

Table 3. Invasive cervical cancer incidence rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	2189018	2240726	2291965	2326969	2346498	11395176
Total Cases	209	272	230	240	199	1150
Crude Rate	9.6	12.1	10	10.3	8.5	10.1
Age-Adjusted Rate	9.8	12.4	10.3	10.4	8.8	10.3
95% Confidence Interval Lower	8.5	11	9	9.1	7.6	9.7
95% Confidence Interval Upper	11.3	14	11.7	11.8	10.2	11
Statewide Age-Adjusted Rate	9	9.4	9.4	9.3	8.9	9.2
Statewide 95% Confidence Interval Lower	8.5	8.9	8.9	8.8	8.4	9
Statewide 95% Confidence Interval Upper	9.5	9.9	10	9.9	9.4	9.4

Source: Cancer Incidence File, available at: http://www.cancer-rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

As shown in Figure 14, there were significant racial/ethnic disparities in the incidence of cervical cancer. Incidence was highest among Hispanic women, with a rate of 13.7 per 100,000 in 2013-2017, compared to a rate 8.7 per 100,000 among non-Hispanic whites. Incidence was also consistently higher among blacks compared to non-Hispanic whites (10.7 vs. 8.7 per 100,000). Figure 15 describes the geographic distribution of cervical cancer incidence in the county.

Figure 12. Incidence of cervical cancer, Harris County, Texas 2013-2017.
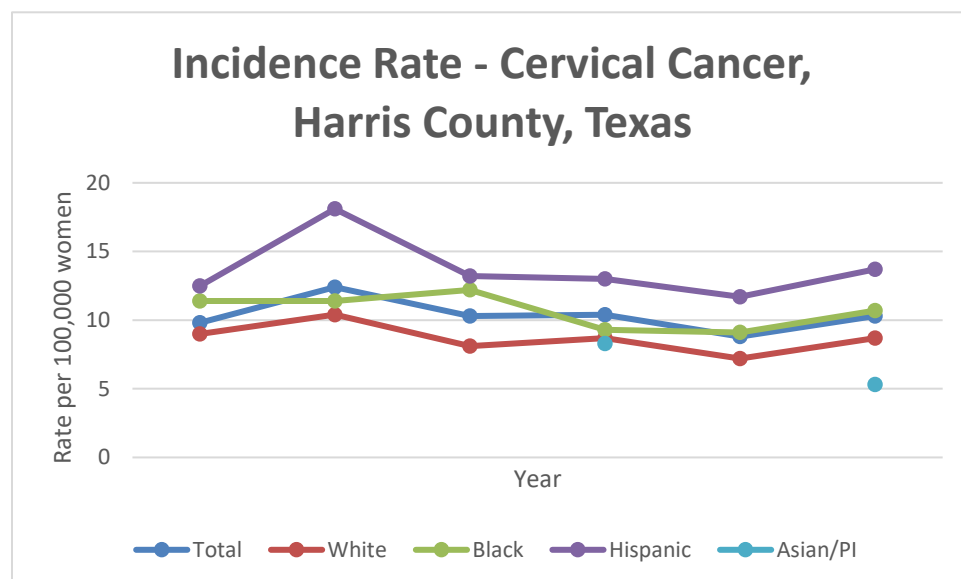
Source: National Cancer Institute and U.S. Centers for Disease Control and Prevention. State Cancer Profiles. Available at http://statecancerprofiles.cancer.gov. Updated October 22, 2020.

Mortality. The Healthy People 2020 goal for cervical cancer mortality is 2.2 deaths per 100,000 [13]. In 2013-2017, the overall rate in Harris County was 2.9deaths per 100,000. Racial/ethnic disparities are evident, with the highest cervical cancer mortality rate among black women (3.7 per 100,000) and the lowest among white women (2.4 per 100,000). Note that while cervical cancer incidence is highest among Hispanic women, mortality is highest among black women. Figure 17 describes the geographic distribution of cervical cancer mortality in Harris County.

Table 4. Invasive cervical cancer Mortality rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	2189018	2240726	2291965	2326969	2346498	11395176
Total Deaths	53	59	55	77	68	312
Crude Rate	2.4	2.6	2.4	3.3	2.9	2.7
Age-Adjusted Rate	2.6	2.7	2.5	3.5	3	2.9
95% Confidence Interval Lower	2	2.1	1.9	2.7	2.3	2.6
95% Confidence Interval Upper	3.5	3.5	3.3	4.4	3.8	3.2
Statewide Age-Adjusted Rate	2.7	2.9	2.9	2.9	2.9	2.9
Statewide 95% Confidence Interval Lower	2.5	2.6	2.6	2.6	2.7	2.8
Statewide 95% Confidence Interval Upper	3	3.2	3.2	3.2	3.2	3

Figure 13. Cervical cancer mortality rates in Harris County, Texas 2013-2017.

Colorectal cancer

Incidence. Table 3 describes the incidence of invasive colon and rectal (colorectal) cancer in Harris County. For the period 2013-2017, the overall age-adjusted incidence rate was 26.6 per 100,000 (95% confidence interval 25.9-27.4), which was greater than the statewide age-adjusted rate of 26.5 per 100,000 (95% confidence interval 26.2-26.8).
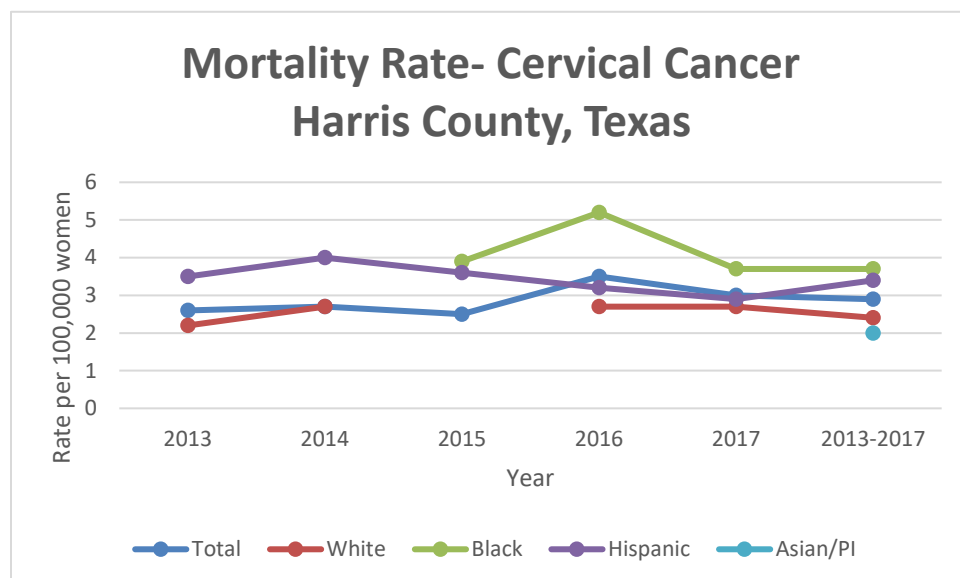
Table 5. Invasive colon and rectum cancer incidence rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	4355158	4458709	4561939	4629189	4664159	22669154
Total Cases	1011	1005	1036	1039	1097	5188
Crude Rate	23.2	22.5	22.7	22.4	23.5	22.9
Age-Adjusted Rate	28.4	26.6	25.9	25.7	26.7	26.6
95% Confidence Interval Lower	26.6	24.9	24.3	24.1	25.1	25.9
95% Confidence Interval Upper	30.3	28.4	27.6	27.4	28.4	27.4
Statewide Age-Adjusted Rate	27.3	26.5	26.8	25.7	26.3	26.5
Statewide 95% Confidence Interval Lower	26.6	25.9	26.2	25.1	25.7	26.2
Statewide 95% Confidence Interval Upper	28	27.2	27.5	26.3	26.9	26.8

As with cervical cancer, there are significant racial/ethnic disparities in colorectal cancer incidence and mortality (Figure 18). Between 2013 and 2017, incidence was consistently highest among blacks, with a rate of 37.4 per 100,000. This rate is about 1.4 times higher than that among whites (27.1 per 100,000) during the same time period. Incidence was lowest among Asian/Pacific Islanders and Hispanics (15.9 and 21.4 per 100,000 respectively. Figure 19 depicts the geographic distribution of colorectal cancer incidence in Harris County.

Figure 14. Incidence of colorectal cancer, Harris County, Texas 2013-2017.
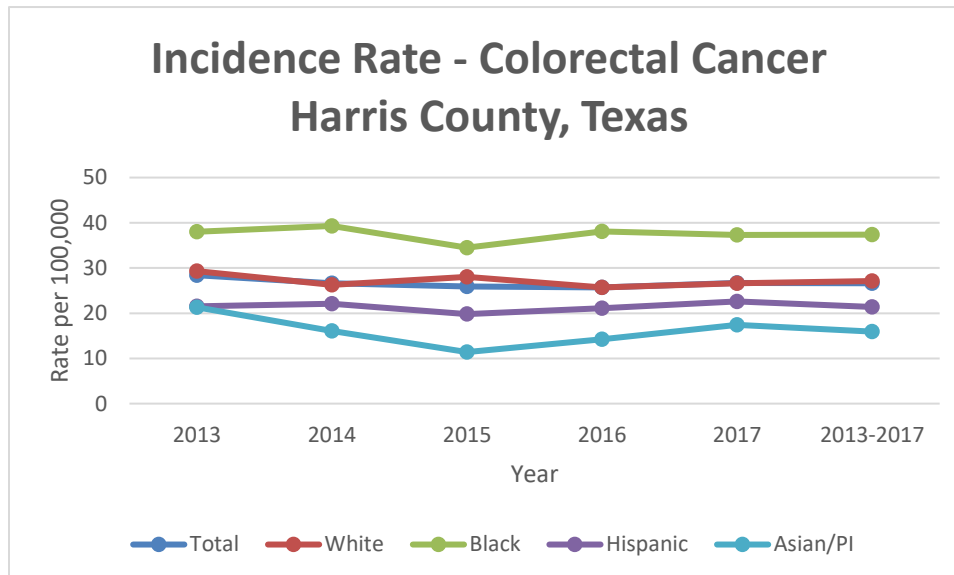
Source: National Cancer Institute and U.S. Centers for Disease Control and Prevention. State Cancer Profiles. Available at http://statecancerprofiles.cancer.gov. Updated August 23, 2017.

Mortality. The Healthy People 2020 goal for colorectal cancer deaths is 14.5 per 100,000 [13]. The overall rate in Harris County for the four-year period of 2013-2017 was 11.5 per 100,000 (Figure 20). Mortality disparities mirror incidence disparities with the highest mortality rate among blacks (17.6 per 100,000) and the lowest among Asian/Pacific Islanders (8.2 per 100,000). Note that the mortality rate is over two times greater among blacks compared to Hispanics. Figure 21 indicates the geographic distribution of colorectal cancer mortality in Harris County.

Table 6. Invasive colon and rectum cancer mortality rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	4355158	4458709	4561939	4629189	4664159	22669154
Total Deaths	435	427	411	438	440	2151
Crude Rate	10	9.6	9	9.5	9.4	9.5
Age-Adjusted Rate	12.7	11.6	11.3	11.3	11	11.5
95% Confidence Interval Lower	11.5	10.5	10.2	10.2	9.9	11
95% Confidence Interval Upper	14	12.8	12.5	12.4	12.1	12.1
Statewide Age-Adjusted Rate	11.9	11.3	11.4	11.5	10.9	11.4
Statewide 95% Confidence Interval Lower	11.5	10.9	11	11.1	10.5	11.2
Statewide 95% Confidence Interval Upper	12.3	11.8	11.8	11.9	11.3	11.6

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Figure 15. Colorectal cancer mortality rates in Harris County, Texas 2013-2017.

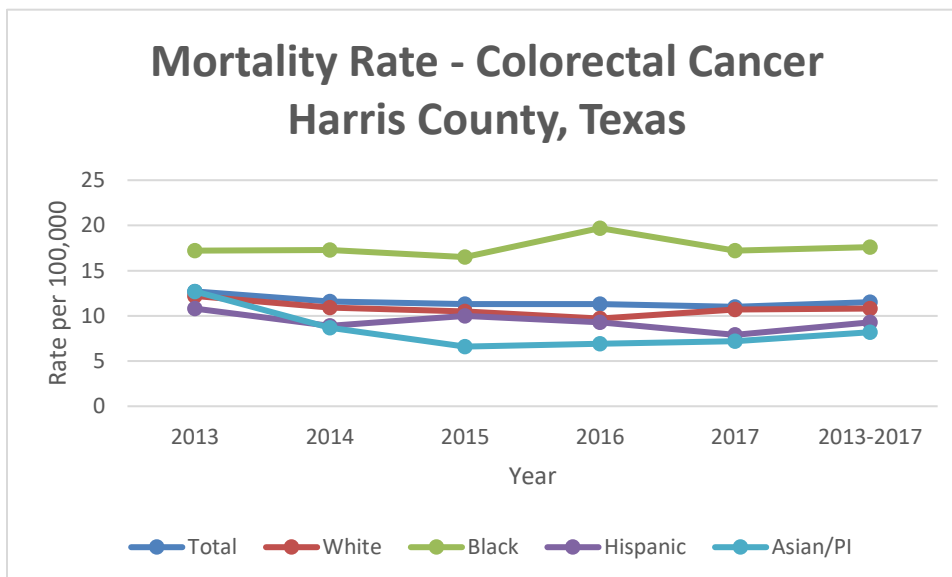Source: National Cancer Institute and U.S. Centers for Disease Control and Prevention. State Cancer Profiles. Available at http://statecancerprofiles.cancer.gov Updated October 22, 2020.

Other Cancers

Tables 7-12 depict the geographic distribution of prostate cancer, lung cancer and hepatocellular carcinoma incidence and mortality in Harris County.

Table 7. Invasive prostate cancer incidence rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	2166140	2217983	2269974	2302220	2317661	11273978
Total Cases	1756	1678	1654	1929	2061	9078
Crude Rate	81.1	75.7	72.9	83.8	88.9	80.5
Age-Adjusted Rate	102.4	94.8	88.7	98.7	104.6	98
95% Confidence Interval Lower	97.3	90.1	84.1	94.1	99.9	95.9
95% Confidence Interval Upper	107.6	99.8	93.3	103.5	109.5	100.2
Statewide Age-Adjusted Rate	94.7	90.6	92.1	93	98.7	94
Statewide 95% Confidence Interval Lower	92.9	88.9	90.4	91.3	97	93.2
Statewide 95% Confidence Interval Upper	96.5	92.4	93.8	94.7	100.5	94.7

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Table 8. Invasive prostate cancer mortality rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	2166140	2217983	2269974	2302220	2317661	11273978
Total Deaths	269	252	253	244	273	1291
Crude Rate	12.4	11.4	11.2	10.6	11.8	11.4
Age-Adjusted Rate	22	19.6	18.6	18	18.3	19.2
95% Confidence Interval Lower	19.4	17.1	16.3	15.7	16.1	18.1
95% Confidence Interval Upper	24.9	22.3	21.2	20.5	20.7	20.3
Statewide Age-Adjusted Rate	18.9	17.4	17.7	17.4	17.7	17.8
Statewide 95% Confidence Interval Lower	18	16.5	16.9	16.6	16.9	17.4
Statewide 95% Confidence Interval Upper	19.8	18.2	18.6	18.3	18.5	18.2

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Table 9. Invasive lung cancer incidence rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	4355158	4458709	4561939	4629189	4664159	22669154
Total Cases	1897	1732	1653	1754	1753	8789
Crude Rate	43.6	38.9	36.2	37.9	37.6	38.8
Age-Adjusted Rate	55.9	47.9	44.4	46.2	44	47.5
95% Confidence Interval Lower	53.3	45.5	42.2	44	41.9	46.4
95% Confidence Interval Upper	58.5	50.3	46.7	48.6	46.2	48.5
Statewide Age-Adjusted Rate	53.6	52.4	50.1	49.3	47.9	50.6
Statewide 95% Confidence Interval Lower	52.7	51.5	49.3	48.4	47	50.2
Statewide 95% Confidence Interval Upper	54.5	53.4	51	50.1	48.7	51

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Table 10. Invasive lung cancer mortality rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	4355158	4458709	4561939	4629189	4664159	22669154
Total Deaths	1287	1251	1200	1181	1121	6040
Crude Rate	29.6	28.1	26.3	25.5	24	26.6
Age-Adjusted Rate	38.8	36.1	33.2	31.8	29.5	33.7
95% Confidence Interval Lower	36.6	34.1	31.2	29.9	27.8	32.8
95% Confidence Interval Upper	41	38.3	35.2	33.7	31.4	34.6
Statewide Age-Adjusted Rate	38.8	38	35.1	34.2	32.8	35.7
Statewide 95% Confidence Interval Lower	38	37.2	34.4	33.5	32.1	35.3
Statewide 95% Confidence Interval Upper	39.6	38.8	35.9	34.9	33.5	36

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Table 11. Invasive liver cancer incidence rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	4355158	4458709	4561939	4629189	4664159	22669154
Total Cases	487	482	517	451	448	2385
Crude Rate	11.2	10.8	11.3	9.7	9.6	10.5
Age-Adjusted Rate	12.2	11.4	12	10.3	10	11.2
95% Confidence Interval Lower	11.1	10.4	11	9.3	9	10.7
95% Confidence Interval Upper	13.4	12.6	13.2	11.3	11	11.6
Statewide Age-Adjusted Rate	10.3	10.7	10.6	10.3	10.3	10.4
Statewide 95% Confidence Interval Lower	9.9	10.3	10.2	9.9	9.9	10.3
Statewide 95% Confidence Interval Upper	10.7	11.1	10.9	10.7	10.7	10.6

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Table 12. Invasive liver cancer mortality rates in Harris County, Texas, 2013-2017.

Year	2013	2014	2015	2016	2017	2013-2017
Population at Risk	4355158	4458709	4561939	4629189	4664159	22669154
Total Deaths	239	309	257	247	270	1322
Crude Rate	5.5	6.9	5.6	5.3	5.8	5.8
Age-Adjusted Rate	6.2	7.8	6.2	5.8	6.3	6.5
95% Confidence Interval Lower	5.4	7	5.5	5.1	5.6	6.1
95% Confidence Interval Upper	7.1	8.8	7.1	6.6	7.2	6.8
Statewide Age-Adjusted Rate	6.5	6.6	6.4	6.3	6.6	6.5
Statewide 95% Confidence Interval Lower	6.2	6.3	6.1	6.1	6.3	6.4
Statewide 95% Confidence Interval Upper	6.8	7	6.7	6.7	6.9	6.6

Source: Cancer Incidence File, available at: http://www.cancer- rates.info/tx/. Note: Rates are age-adjusted to the 2000 U.S. Standard Population. Rates generated on October 22, 2020.

Addressing Barriers to Care

Patient Navigation at Harris Health System

Introduction

Cancer-related patient navigation within Harris Health System began in the late 1990s and arose from the need to maximize systems efficiency and ensure that patients with abnormal cancer screening test results obtained timely diagnostic and therapeutic follow-up. Since then, cancer-related patient navigation activities within Harris Health System have expanded to include not only those aimed at ensuring follow-up among patients with abnormal screening tests but also to those aimed at increasing screening and vaccination coverage. Patient navigation programs currently operate within the Breast, Cervical, Colorectal, Hepatocellular, and Gastric Cancer programs, as well as in the Pediatric Service line to improve human papillomavirus (HPV) vaccination rates, the Outreach Services Department to provide healthcare access navigation, and the Oncology Diagnostic and Screening Clinics to provide oncology care coordination.

In Harris Health System's prior Cancer Community Needs Assessment and Patient Navigation Reports (2014 and 2017), we described the development and state of patient navigation services within Harris Health System's cancer service lines. At that time, patient navigation had been integrated into the breast, cervical, and colorectal cancer service lines, resulting in significant improvements in the flow of patients across the cancer continuum of care, particularly from screening to diagnostic follow-up. However, no similar programs existed in other cancer service lines. The recommendations from both reports were that (1) that patient navigation process be extended to other cancer service lines currently without patient navigation; (2) that existing grant-funded patient navigation positions at Harris Health be transitioned to permanent positions funded by the Harris Health System's operations budget; and, (3) that the Cancer Committee champion patient navigation programs to promote their expansion within the Cancer Program and facilitate the transition of presently grant-funded positions to a more sustainable funding source.

What is Patient Navigation?

What is patient navigation? What do patient navigators do? Patient navigation is a patient-centered healthcare services delivery model that aims to reduce barriers to care by guiding patients through the complexities of the healthcare system. Patient navigators are trained, culturally sensitive healthcare workers who support individual patients through the continuum of care for their specific disease, helping them overcome barriers at each stage [15]. Patient navigators' work focuses on processes and transitions within the continuum of cancer care, particularly from entry into the healthcare system to screening, from screening to diagnosis, and from diagnosis to treatment. The most important role of patient navigators is to ensure that individuals with findings suspicious for cancer receive timely diagnosis and treatment. Specifically, patient navigators may help to:

- Coordinate appointments with doctors' offices, clinics, hospitals, outpatient centers, insurance and payment systems, patient-support organizations, and other components of the health care system.
- Maintain communication with patients, survivors, families, and health care providers, and monitor patient satisfaction with the cancer care experience
- Ensure appropriate medical records are available at scheduled appointments

- Arrange language translation or interpretation services
- Facilitate financial support and helping with paperwork
- Arrange transportation and/or child or elder care
- Conduct community outreach, provide access to clinical trials, and build partnerships with local agencies and groups (e.g., referrals to other services and/or cancer survivor support groups) [16]

As in the 2017 Report, in this report we differentiate patient navigation from clinical case management. A key difference between the two is that, whereas clinical case management is responsive to calls to navigate patients known to need the services, patient navigation proactively identifies patients at risk and then works with the provider to ensure that they receive the care they need. This healthcare services delivery model thus requires the availability of timely data and a database management system that allows such data to be actively monitored and queried to proactively identify patients at risk and track patients' progress through the cancer continuum of care. Patient navigation also requires a team-based approach; specifically, administrators who support the program, supervisors who enable the navigators to do their job, and, of course, the patient navigators, who deliver the navigation services.

In the 2017 Report, we described the critically important dual role of patient navigation. Patient navigation, by definition, is meant to address gaps that hinder the flow of patients through the cancer continuum of care. However, a key finding in our last report is that patient navigators not only address gaps but also help identify gaps. In our experience, it is often through the active communication and triangulation between patients, providers, and support staffs, that patient navigators and cancer service line leadership learn about barriers of which the program might otherwise be unaware. Patient navigation thus serves two dual roles: it both addresses barriers in the systems that are known to exist at the time, and simultaneously informs the understanding and awareness of additional barriers that may exist. In this sense, patient navigation serves as a feedback loop, whereby navigators and administrators learn about barriers and address them through further patient navigation (Figure 16).

Figure 16. The dual role of patient navigation in informing awareness and addressing patients' barriers to healthcare utilization
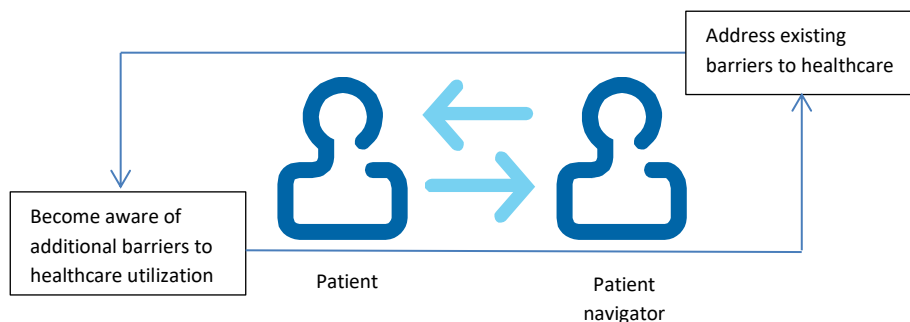
Standard 8.1 Addressing Barriers to Care

Commission on Cancer Standard 8.1: Addressing Barriers to Care

A navigation team is established to identify barriers to care for patients with cancer and implement a process to overcome the identified barrier.

Each calendar year, the navigation team provides a report to the full cancer committee. This report must state:
• What barrier was chosen
• What resources/processes were utilized to identify and address this barrier
• Metrics related to outcomes of reducing the chosen barrier
• Plans for the upcoming year

MEASURE OF COMPLIANCE:
Each calendar year, the program fulfills the compliance criteria:
1. The cancer committee identifies a navigation team.
2. The navigation team identifies at least one barrier to focus on for the year and identifies resources and processes to address the barrier.
3. At the end of the year, the navigation team evaluates the resources and processes adopted to address the barrier to care and identifies strengths and areas for improvement.
4. The navigation team reports all required information to the cancer committee once each year.

Standard 8.1 Workgroup
- Jane Montealegre, PhD MSPH, Assistant Director, Community Outreach and Engagement, Dan L Duncan Comprehensive Cancer Center, Baylor College of Medicine
- Maria Daheri, RN, Senior Nurse Case Manager, Harris Health System
- Annie Titus RN, MBA, BSN, NE-BC, CCM, LSSGB, Manager- Ambulatory Specialty Case Management Harris Health System
- June Hanke, RN MSN MPH, Strategic Analyst, Harris Health System
- Tammy Owens, RT, Diagnostic Imaging, Harris Health System
- Joseph Dygert, Director, Health System Strategy PMO, Harris Health System
- Stephen Orrell, PMP, Sr. Project Manager, Enterprise Strategy PMO, Harris Health System
- Ricky Valdes, MS, Research Coordinator, Community Outreach and Engagement, Dan L Duncan Comprehensive Cancer Center, Baylor College of Medicine
- Maria Jibaja-Weiss, EdD, Associate Director, Community Outreach and Engagement, Dan L Duncan Comprehensive Cancer Center, Baylor College of Medicine

Cancer Patient Navigation Team
Harris Health System has a robust cancer patient navigation program. In 2019-2020, the program currently included the patient navigators for the following cancer sites, with the following roles. All positions were funded through grants.

Table 13. Harris Health System Cancer Patient Navigation program, 2019-2020

Cancer Site/Prevention Service	Patient Navigators	Roles	Funding
Cervical Cancer	Angela Rubio Susana Quintero Raquel Hernandez	Navigation of patients with abnormal screening test Pragmatic prospective trial to evaluate mailed self-sample HPV testing kits for screening	CPRIT BCCS NIH
Colorectal Cancer	Angela Rubio	Navigation of patients with abnormal screening test	CPRIT
Hepatocellular Cancer	Wendy Ballestero	Navigation of patients with abnormal screening test	CPRIT
Lung Cancer	Claudia Moyeda Aurora Vargas	Screens and reviews charts of patients with 30 pack year history and recruits for Smoking Cessation Class or Decision Making Lung Screening	CPRIT
Breast Cancer	Vickey Walter	Navigation from diagnosis to treatment	Avon
HPV Vaccination	Mary Shelvin Maria Florentina Jaramillo	Recall pediatric patients pending completion of HPV Vaccination and books to Nurse or Well Child Visits	CPRIT
Pediatric E-Cigarette Use	Mary Shelvin Maria Florentina Jaramillo	Recall pediatric patients pending completion of HPV Vaccination and books to Nurse or Well Child Visits	CPRIT

## *Identifying the Barrier*
Background

The ongoing COVID-19 pandemic, and the policies and practices to curtail its spread, have had a dramatic impact on cancer screening. In the early stages of the pandemic, the U.S. Centers for Disease Control and Prevention (CDC) and other organizations issued recommendations that people delay non-urgent outpatient care. This had a dramatic impact on cancer screening, with an over 90% decrease in cervical and breast cancer screenings and 70% decrease in colorectal cancer screenings in March 2020 compared to 2017-2019 averages [17-18]. Since March, screening rates have increased, but remain at substantially lower levels than pre-pandemic [18]. This decrease raises concerns that COVID-related screening delays will lead to excess late-stage cancer diagnoses and deaths. In one model, colorectal cancer deaths are estimated to increase by 20% [19] and another estimates over 4,500 excess deaths over the next decade [20] As health systems re-open primary care and resume preventive care visits, it is likely that several challenges, including ongoing COVID-19 transmission, competing healthcare priorities, and reduced patient access, will slow the return of cancer screening to pre-COVID-19 levels. Health disparity populations that are most vulnerable to instability and insecurity are likely to be disproportionately affected [21].

Within Harris Health System, colorectal and cervical cancer screening are both conducted in the primary care setting. Home-based Fecal Immunochemical Test (FIT) kits for colorectal cancer screening are distributed at ambulatory care clinics, completed by patients at home, and returned to the clinics either by mail or in-person drop-off. Pap and Pap/high-risk human papillomavirus

(HR-HPV) co-testing for cervical cancer screening is conducted in the clinic by a healthcare provider. Using Harris Health administrative data, we compared the year-over-year number of these primary care-based cancer screening rates.

Both cancer screening tests saw a dramatic decrease in March 2020 when the national wide emergency declaration for the COVID-19 pandemic was made. Reaching their nadir in April 2020, the volume of both tests increased in the following months. However, while clinic-based Pap testing declined again starting in July, home-based FIT screening has continued to increase.

Figure 17. Year-over-year comparison of the number of colorectal cancer screening tests (Fecal Immunochemical Test-FIT) conducted within Harris Health System, 2018-2019.
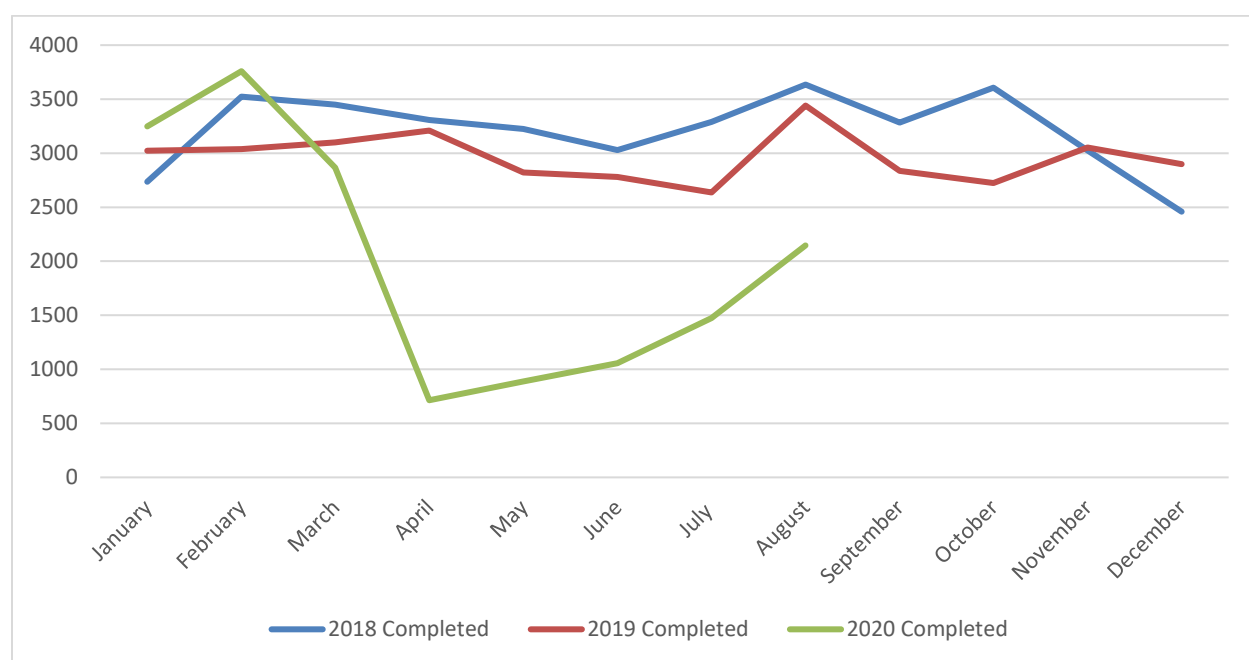
Figure 18. Year-over-year comparison of the number cervical cancer screening tests (Pap tests) conducted within Harris Health System, 2018-2019.
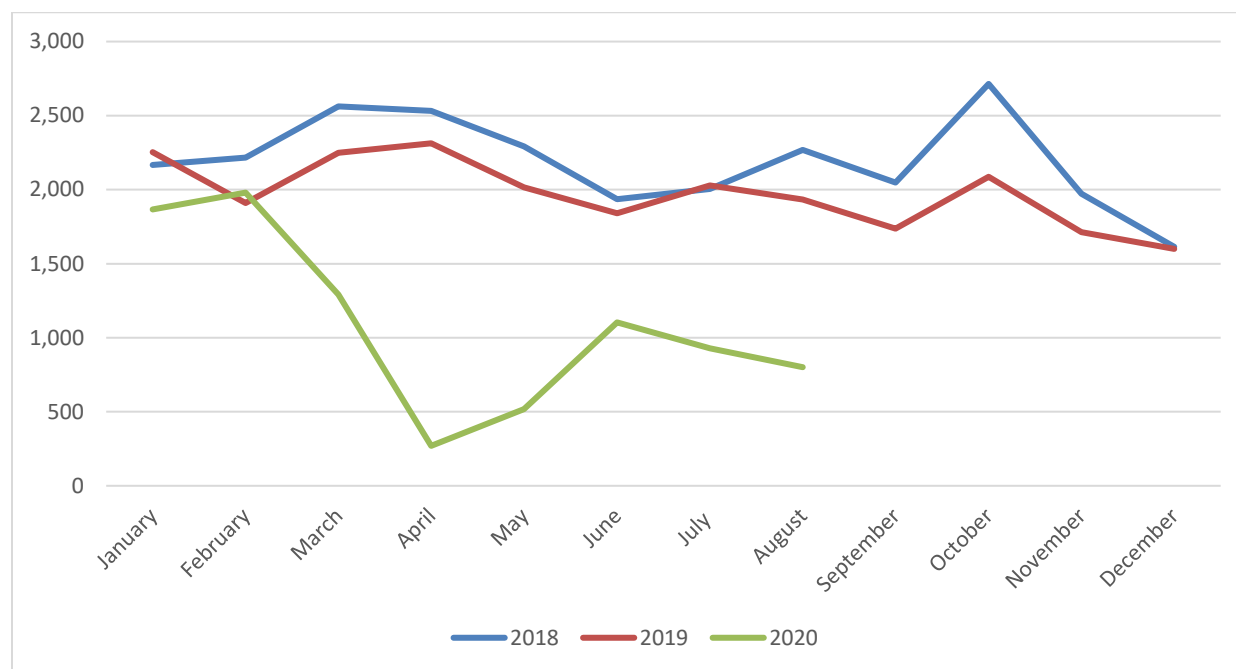
Identified Barriers:

Colorectal cancer screening is recognized as a unique opportunity to limit pandemic-related excess mortality and address inequities [22]. The National Colorectal Cancer Round Table (NCCRT) has developed a playbook for colorectal cancer screening in the pandemic era. In it, it recommends that colorectal cancer screening be safely offered through at-home stool-based tests [22]. As mentioned, Harris Health already uses home-based FIT as the primary screening test for average-risk patients. However, prior to the pandemic, these were distributed in-person at ambulatory care clinics. Thus, the selected barrier for the 2020 fiscal year encompasses health system and patient-level barriers to patients obtaining home-based FIT kits for colorectal cancer screening.

The following specific barriers have been identified:

1) Limited capacity of health system to implement a mailed home-based FIT program
2) Patient barriers to utilizing telehealth
3) Patient barriers to completing and returning a home-based FIT, including low health literacy for following instructions for completing home-based FIT

Addressing the Barrier

With the pandemic, health system leadership approved a plan to mail FIT kits to patients. Clinic nursing staff have begun mailing kits to patients who attend telehealth visits. The kits that are usually distributed in-person at the clinics (which include the FIT collection device, an instruction sheet, and a distribution bag) are packaged into an envelope that is sent to patients' mailing address. Additionally, several correction action plans overseen by the Health Systems Strategy PMO team have been put in place to reach patients who have an open FIT order but have not yet returned their kit. Specifically:

1) A super-report is generated daily that indicates patients who have an open FIT order.

2) Patient appointment center (PAC) staff are calling patients with an open FIT order and reminding them to return their kit.
3) Clinic staff are alerted by the PAC of patients who misplaced their FIT kits. These patients are re-sent a kit by mail.
4) Laboratory staff review the super report daily and remind/educate patients about completing their kit when they come in for a lab appointment.

Metrics
The following metrics are being monitored:
1) Number of FITs ordered
2) Number and proportion of ordered FITs that are completed and returned
3) Colorectal cancer screening rate (DSRIP C2 report)
4) Patient appointment center telephone encounter outcomes: Number reached, number who need a replacement kit, number who return their home-based FIT kit, number unreachable, number declined.

Plans for the Upcoming Year
The estimated reach is currently to an average of 2,000 patients per month, less than half of the pre-pandemic distribution of FIT kits. Thus, intensive health-system and provider-targeted interventions are **needed to expand the reach**.

Furthermore, the mailed intervention requires adaptation to maximize its uptake in the patient population, including adaptation of patient education materials. We expect that mailed FITs will become permanent, even after the pandemic, given a likely increase in telehealth/telemedicine following the pandemic [23].

The following activities and interventions are planned for 2021. We recently applied for a grant from the Cancer Prevention and Research Institute of Texas, CPRIT, to fund the activities described below [24].

Patient education. The current patient education materials were created for in-person distribution at the clinics. The plan is to adapt the existing print, audio, and video-based patient education materials for the mailed FIT program.

Patient navigation. According to NCCRT, mailed home-based FIT programs "require an organized program of tracking and follow-up to be in place." [22]. Pending grant funding, the plan is to bring a FIT Patient Navigator onto the patient navigation team. With the addition of a FIT Patient Navigator on the team, our patient navigation team is well poised to take on this role. Furthermore, our patient navigation team's efforts will synergize with health system efforts that will expand the reach of the program. Our FIT Patient Navigator will fulfill two roles: 1) reminders and education to increase completion of home-based FIT, and 2) recall of patients who have not received a FIT.

Reminders and education to increase completion of the home-based FIT. Harris Health System generates a fallout list of pending lab orders (i.e., FITs that were ordered but have not been completed and returned) on a monthly basis. The list is sent to staff in the Patient Appointment Center (PAC) who make telephone reminders to patients. For patients who have lost their FIT kit, the PAC contacts nursing staff at the community health centers, who are responsible for sending replacement FITs. Because of the heavy workload of nursing staff, replacement kits are not consistently mailed out. Furthermore, there is no system to educate patients on how and why to complete the FIT or to follow-up with patients who do not respond to the telephone reminder. The proposed FIT Patient Navigator will be responsible for conducting a **follow-up educational call**

with patients who do not respond with a completed and returned FIT within 30 days of the initial reminder call. On the follow-up call, the FIT Patient Navigator will provide one-on-one education involving three overlapping domains: 1) information on CRC and purpose of screening; 2) the ability to complete screening through home-based FIT; and 3) instruction on how to use and returned the completed kit. The FIT Patient Navigator will also be responsible for sending out replacement FITs to patients who displaced their original kit. The workflow for mailing out kits by the Patient Navigation team has been fully developed for our mailed self-sample HPV testing research study, allowing our team to "hit the ground running" when this task is shifted onto them.

Recall of patients who do not have an open FIT order. As mentioned, mailed home-based FIT kits are currently only sent to patients who attend telehealth appointments. This leaves out a substantial proportion of patients who do not use telehealth, potentially exacerbating health disparities [25-26]. Once clinics are fully open for in-person visits, we expect that distribution of home-based FITs to patients attending in-person appointments will resume. However, even before the pandemic, there was a considerable proportion of active patients who did not receive a FIT kit (32% in 2019). Given these gaps in the ordering of FIT kits, it is imperative to have a **recall system for patients who do not have an open FIT order**. The FIT Patient Navigator and other navigators on our team will call patients without a FIT order to educate them about CRC, the purpose of CRC screening, and the ability to complete screening through home-based FIT. They will use a partnership-building approach [27] to address barriers to care. Because our patient navigators have direct scheduling privileges at Harris Health, the patient navigators will be able to **schedule preventive health visits,** including telehealth visits, while on the telephone with patients. After verifying their address, the Patient Navigators will mail patients a home-based FIT. Patients will receive a follow-up educational call within five to 10 days of mail out to go over instructions on how to use and return the kit.

Community Access Navigation and Telehealth Enrollment Assistance. Telehealth, which has increased dramatically in the pandemic era, [28] holds great promise for reducing healthcare access barriers such as transportation, childcare, and time [29]. However, a potentially lasting shift toward the use of telehealth infrastructure for provider-patient interaction [23] may further pronounce disparities in healthcare utilization, as telehealth is less accessible to individuals without smartphones or high-speed broadband internet [25-26, 30]. To reduce the potential for widening disparities in Harris Health System, we will build on our patient education expertise to produce new **telehealth training videos**. These will provide Harris Health patients with step-by-step instruction to enroll in telehealth and access telehealth appointments. The brief animated videos (~3 minutes) will be developed in English, Spanish and Vietnamese and will be designed to prepare patients for telehealth visits based on patient-facing guidelines developed by the US Health Resources & Services Administration, [31] as well as CDC resources that were recently developed due to the COVID-19 pandemic [32]. These videos will be placed on the Harris Health website so that Patient Appointment Center and clinic staff can refer patients to them for assistance. In addition, patient navigators will be trained to assist patients with possible barriers they may encounter (i.e., internet access, using telehealth platform) or concerns they may express about telehealth visits.

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