Analysis of the Philadelphia FIGHT COVID-19 testing program

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Abstract

Background

The Philadelphia COVID-19 testing program established free COVID-19 testing sites in partnership with community organizations in neighborhoods across Philadelphia. COVID-19 PCR tests were offered on a walk-in basis with minimal barriers to access, providing thousands of patients with testing services.

Methods

Data was collected from each patient who presented for testing using the REDCap secure web application. The data from 6,886 patient surveys completed from September 1, 2020 to February 28, 2021 was deidentified and run through STATA statistical software.

Results

A comparison of the program's testing rates and that of the city of Philadelphia revealed that the testing program effectively met testing demand throughout the six-month measurement period. The majority of patients tested either were exposed (31.08%) or may have been exposed (19.11%) to a confirmed case of COVID-19, and 21.87% of patients presented with COVID-19 symptoms. The most frequently reported symptoms were headache and coughing and the most frequently reported underlying conditions were asthma (765), other underlying health conditions (497), and diabetes (317). The majority of patients listed "other" as their doctor, followed by "don't have a doctor" and "hospital". The most frequently reported races of testing site patients were black (31.54%), white (29.15%), other (20.82%), and Asian (12.02%). The most common languages spoken by patients were English (55.13%) and Spanish (9.63%). There were 14 additional languages that were reported.

Conclusion

The Philadelphia FIGHT COVID-19 testing program effectively provided COVID-19 testing to Philadelphia communities across demographics and reduced barriers to testing for the patients it served.

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), more commonly referred to as COVID-19, is a novel virus that has had a substantial global impact. The COVID-19 pandemic began with an outbreak of the emergent virus in Wuhan, China in December of 2019. Transmitted by respiratory droplets and aerosols, the disease quickly spread throughout China and across the world, and was declared a pandemic by the World Health Organization in March of 2020 (World Health Organization, 2020). While most individuals who are infected with COVID-19 only experience mild to moderate respiratory illness, any individual who is infected with COVID-19 is at risk for severe illness or death (Centers for Disease Control and Prevention [CDC], 2021). Older individuals and individuals with high-risk underlying conditions such as diabetes and cardiovascular disease have higher rates of severe illness and death (CDC, 2021). As a highly contagious disease with high morbidity and mortality rates, frequent, widespread testing is vital.

Background

Philadelphia FIGHT is a non-profit corporation and Federally Qualified Health Center that provides culturally competent comprehensive primary care in Philadelphia, Pennsylvania. In response to the pandemic, Philadelphia FIGHT sought to increase access to COVID-19 testing by minimizing barriers to access, such as transportation and income. Philadelphia FIGHT

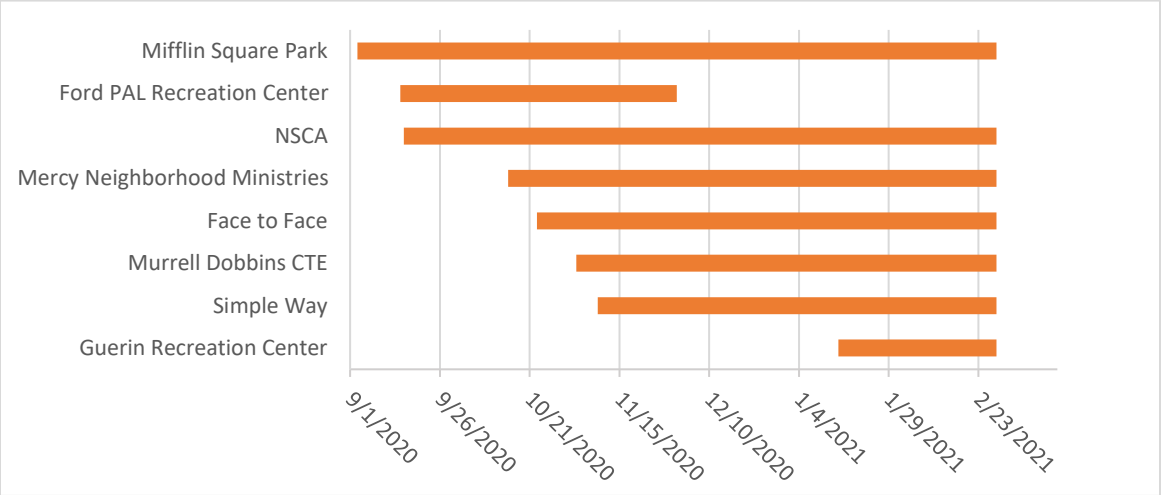
partnered with community organizations and established free COVID-19 testing sites in neighborhoods across Philadelphia. All sites offered free COVID-19 PCR tests on a walk-in basis, with the only requirement being that the patient must be over the age of 2 years, and minors must be accompanied by a parent or guardian. Proof of residency or citizenship, photo identification, health insurance, and income were not requirements, which greatly minimized the barriers to testing.

A total of 8 Philadelphia FIGHT COVID-19 testing sites were active during the September 1, 2020 – February 28, 2021 measurement period (Figure 1). The site located at Mifflin Square Park in the Pennsport neighborhood, in partnership with the non-profit organization Southeast Asian Mutual Assistance Association Coalition (SEAMAAC), was established 6/18/2020 and active during the measurement period on a weekly basis from 9/3/2020 to 2/28/2021. The site located at the Ford PAL Recreation Center in the Bella Vista-Southwark neighborhood was established 6/26/2020 and was active during the measurement period on a biweekly basis from 9/15/2020 to 12/1/2020. The site located at the Norris Square Community Alliance (NSCA) in the Kensington neighborhood was established 8/26/2020 and was active during the measurement period on a weekly basis from 9/16/2020 to 2/28/2021. The site located at Mercy Neighborhood Ministries in the Tioga neighborhood was active on a biweekly basis from 10/15/2020 to 2/28/2021. The site located at St. Vincent's Church in the Germantown neighborhood, in partnership with the nonprofit organization Face to Face, was established 8/7/2020 and was active during the measurement period on a biweekly basis from 10/23/2020 to 2/28/2021. The site located at the Murrell Dobbins Career & Technical Education High School (Murrell Dobbins CTE) in the Strawberry Mansion neighborhood was active on a weekly basis from 11/3/2020 to 2/28/2021. The site located at The Simple Way food pantry in

the Harrowgate neighborhood was active on a weekly basis from 11/9/2020 to 2/28/2021. The site located at the Guerin Recreation Center in the Stanton neighborhood was active on a biweekly basis from 1/15/2021 to 2/28/2021. All sites offered free COVID-19 PCR tests for 2 hours each day they were active.

Figure 1

Timeline of Philadelphia FIGHT COVID-19 testing sites



From September 1, 2020 through February 28, 2021, each patient tested at these sites completed a survey on the secure web application REDCap. The data collected provides important insight into testing rates, demographics, prevalence of medical conditions, and other characteristics of the patients served. This comprehensive analysis aims to identify any trends in testing rates and assess the FIGHT testing program's ability to meet the demand for testing during those trends and across demographics. I found that the program effectively met testing demand and provided testing for patients across demographics while minimizing barriers to access.

Methods

This was a retrospective study using the deidentified, self-report data from 6,886 surveys completed by COVID-19 testing patients at Philadelphia FIGHT COVID-19 testing sites from September 1, 2020 to February 28, 2021. This was a non-random, convenience sampling, as the participants were patients who came to the site seeking testing. The 6,886 surveys that were analyzed in this study included multiple surveys completed by the same patient on various dates throughout the measurement period, 241 surveys that were marked as "Incomplete" due to missing responses, and 59 surveys that were complete, but the site name was unknown. A total of 90 surveys completed during the measurement period were omitted from the study as they were not deidentified and available for analysis.

The variables assessed were testing site activity, exposure to a confirmed case of COVID-19, symptom presentation, underlying health conditions, where the patient receives medical services, race and ethnicity, and preferred language. The variables of testing frequency and race and ethnicity were compared to that of Philadelphia city testing data and American Community Survey data to assess the Philadelphia FIGHT COVID-19 testing program's ability to meet testing demand across demographics. All data was run through the STATA statistical software for analysis.

Results

Testing Site Activity

Of the 6,886 survey entries, the most active sites that provided the most tests were the NSCA site (28.46%), the Mifflin Square Park site (21.96%), and the Murrell Dobbins CTE site (20.04%). This was followed by the Simple Way site (11.66%), the Face to Face site (8.42%) the Mercy Neighborhood Ministries site (5.30%), the Guerin Recreation Center site (1.77%), and the Ford PAL site (0.90%).

Overall testing rates for the Philadelphia FIGHT COVID-19 testing program increased almost weekly from September 27, 2020 until the program's peak the week of November 15, 2020 – November 21, 2020. During this week a total of 807 tests were performed, likely due to the Thanksgiving holiday the following week, November 26, 2020. Testing rates decreased following this peak until reaching a low point the week of December 27, 2020 – January 2, 2021, with only 66 tests performed. The low rate of testing this week was likely due to lack of testing availability, as the program's testing sites were closed December 28, 2020, December 31, 2020, and January 1, 2020. In addition, many patients were likely with family for the holidays and were tested the week prior. Testing rates spiked the following week, January 3, 2021 – January 9, 2021 to 535 tests, likely due to patients seeking testing after attending holiday gatherings (Figure 2). These trends in testing rates align with those of Philadelphia city-wide testing rates, indicating that the Philadelphia FIGHT COVID-19 testing program effectively met the demand for testing (Figure 3).

Figure 2

Philadelphia FIGHT COVID-19 PCR tests performed

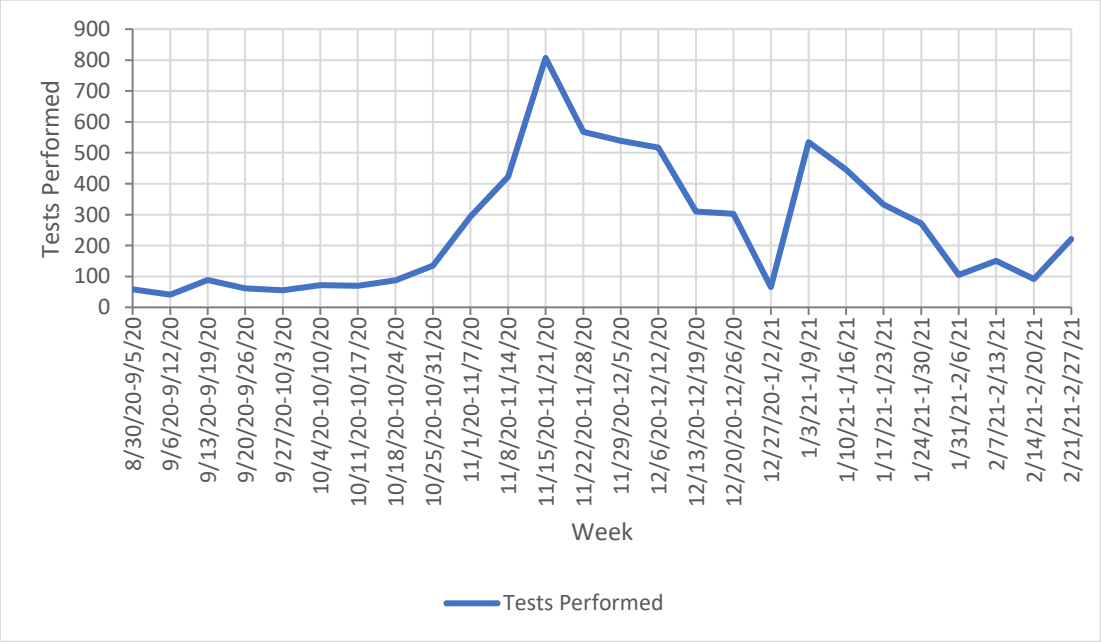
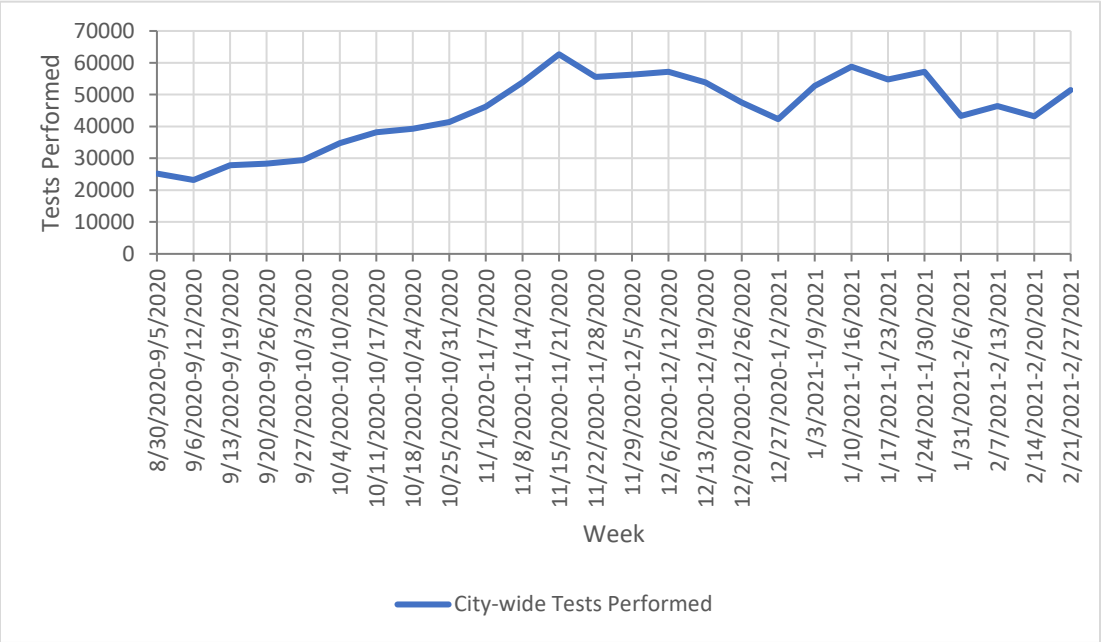


Figure 3

Philadelphia city-wide COVID-19 Tests Performed



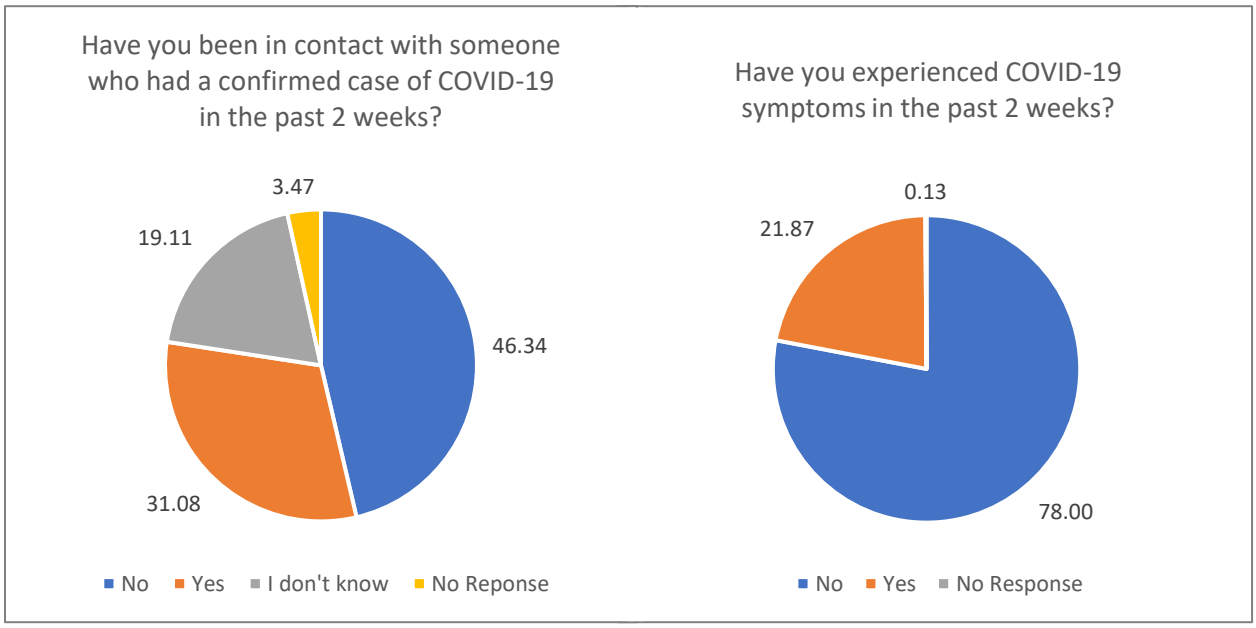
Note. Data are from City of Philadelphia (2020)

Patient Exposure and Symptom Presentation

Of all tests performed, 46.34% (3,191) of patients who presented for testing reported that they had not been exposed to a confirmed case of COVID-19 within the two weeks prior to the testing date. 31.08% (2,140) of patients reported that they were exposed, 19.11% (1,316) of patients did not know if they were exposed, and 3.47% (239) of patients did not respond to this question (Figure 4). When asked if they have experienced COVID-19 symptoms in the past two weeks, 78% (5,371) of patients responded “No”, 21.87% (1,506) of patients responded “Yes”, and 0.13% (9) of patients did not respond to the question (Figure 4).

Figure 4

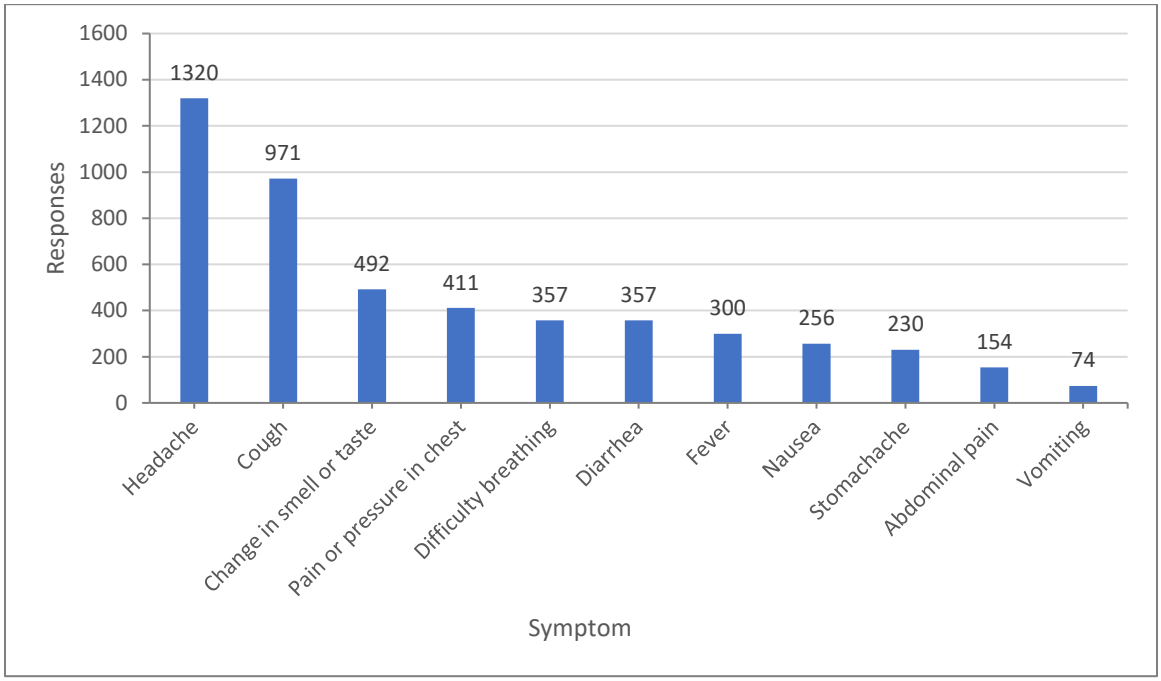
Exposures and symptoms of Philadelphia FIGHT COVID-19 testing patients



The most common self-reported COVID-19 symptom experienced by patients was headache, with 1,320 patients reporting this symptom. This was followed by coughing (971), a change in smell or taste (492), pain or pressure in their chest (411), difficulty breathing (357), diarrhea (357), fever (300), nausea (256), stomachache (230), abdominal pain (154), and vomiting (74) (Figure 5).

Figure 5

Self-reported COVID-19 symptoms



Underlying Health Conditions

Data were collected concerning the underlying health conditions that are considered to put patients at high risk for severe illness from COVID-19 infection (Guan, W.-jie, 2020). Of the 6,886 survey entries, 43.23% of patients had at least one underlying health condition, indicating that 43.23% of COVID-19 tests provided by the Philadelphia FIGHT COVID-19 testing program were provided for high-risk patients. Underlying conditions reported include asthma (765), other underlying health conditions (497), diabetes (317), current or past smoker (219), heart disease (111), HIV (32), kidney disease (29), lung disease (27), liver disease (25), and hepatitis C (15) (Table 1).

Table 1

Prevalence of underlying conditions among Philadelphia FIGHT COVID-19 testing patients

Underlying Condition	No. (%) Total (n = 6,886)
Asthma	765 (11.11)
Other	497 (7.28)
Diabetes	317 (4.60)
Current or past smoker	219 (3.18)
Heart disease	111 (1.61)
HIV	32 (0.46)
Kidney disease	29 (0.42)
Lung disease	27 (39)
Liver disease	25 (0.36)
Hepatitis C	15 (0.22)
Lung disease	27 (39)

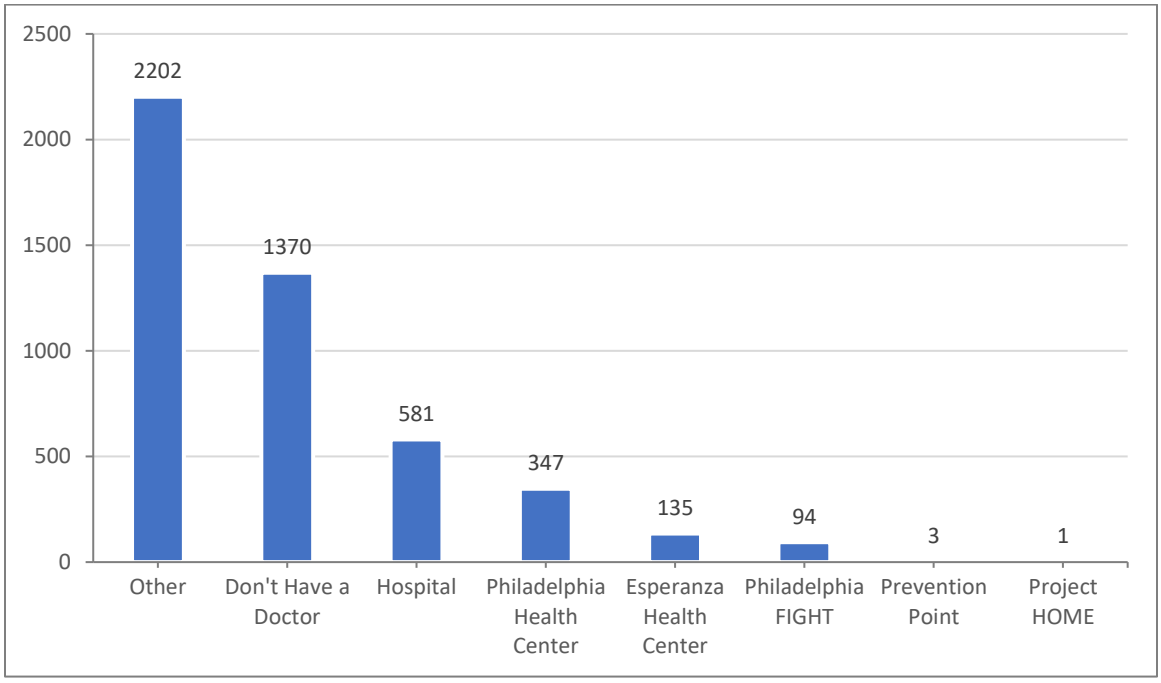
Patient Medical Providers

Access to medical care is a significant factor in overall health and a patient's likelihood to seek medical care in a timely manner. "Having a primary care provider (PCP) who serves as the usual source of care is especially important. PCPs can develop meaningful and sustained relationships with patients and provide integrated services while practicing in the context of family and community" (Office of Disease Prevention and Health Promotion, 2020). In the case of COVID-19 infection, timely diagnosis and treatment are important, and not having a PCP can delay this. Of all patients who responded to the question "Where do you go to the doctor?", 1,370 patients did not have a doctor at the time of testing, and 581 patients listed a hospital as their doctor. 2,202 patients listed "Other" as their doctor. 347 patients listed Philadelphia Health

Center as their doctor, 135 patients listed Esperanza Health Center, 94 patients listed Philadelphia FIGHT, 3 patients listed Prevention Point, and 1 patient listed Project HOME (Figure 6). 2,153 patients did not respond to the question, as the question did not require a response.

Figure 6

Patient medical providers



Patient Race and Ethnicity

The most frequently reported races of testing site patients were black (31.54%), white (29.15%), and other (20.82). This was followed by Asian (12.02%), Native Hawaiian/Pacific Islander (3.75%), and American Indian/Alaska Native (0.89%). 2.25% of patients declined to answer this question (Table 2). It is important to note that "two or more races" was not an option, but patients could select more than one race when answering the question, resulting in a total of 6,937 entries. This indicates that 51 patients selected more than one race. In addition, many

patients who selected the option “other” were Hispanic/Latino. For the variable of ethnicity, 67.76% of patients reported that they were not Hispanic/Latino, 31.66% of patients reported that they are Hispanic/Latino, and 0.58% of patients did not respond to this question (Table 2).

Table 2

Race and ethnicity of Philadelphia FIGHT COVID-19 testing patients

Race alone or in combination with one or more other races	**Philadelphia FIGHT No. (%) Total (n = 6,937)**
White	2,007 (29.15)
Black	2,194 (31.54)
Asian	828 (12.02)
Native Hawaiian/Pacific Islander	258 (3.75)
American Indian/Alaska Native	61 (0.89)
Other	1,434 (20.82)
Declined to Answer	155 (2.25)
Ethnicity	**No. (%) Total (n = 6,886)**
Hispanic/Latino	2,180 (31.66)
Not Hispanic/Latino	4,666 (67.76)
No Response	40 (0.58)

To assess the Philadelphia FIGHT COVID-19 testing program’s efficacy across demographics, the demographic data from the two most active sites were compared to the demographic data of the American Community Survey 5-year estimates for the zip codes where the sites were located. The most active site, NSCA, is located in the zip code 19122. There are a few important differences between the demographics of the testing site patients and that of the residents in that zip code. The prevalence of white and black patients at the testing site (26.63%

and 15.77%, respectively) is significantly lower than the prevalence of white and black residents in the zip code (46.2% and 39.5%, respectively). In addition, the prevalence of Hispanic/Latino patients at the testing site (63.42%) is considerably higher than that of the residents in the zip code (26.4%) (Table 3). This is likely because the majority of staff working for NSCA is Hispanic/Latino, and the teachers are all tested on a biweekly basis at the site. The organization also serves a notable number of Hispanic/Latino community members, increasing the prevalence of Hispanic/Latino patients at the testing site.

Table 3

Comparison of demographic data, NSCA testing site vs. ACS of 19122

Race alone or in combination with one or more other races	**NSCA site data No. (%) Total (n =1,960)**	**ACS data, 19122 No. (%) Total (n = 21,666)**
White	522 (26.63)	10,004 (46.2)
Black	309 (15.77)	8,551 (39.5)
Asian	112 (5.71)	1,637 (7.6)
Native Hawaiian/Pacific Islander	92 (4.69)	14 (0.1)
American Indian/Alaska Native	13 (0.66)	345 (1.6)
Other	876 (44.69)	2,264 (10.4)
Declined to Answer	66 (3.37)	N/A
Ethnicity	**NSCA Site No. (%) Total (n =1,960)**	**Philadelphia, 19122 No. (%) Total (n = 21,666)**
Hispanic/Latino	1,243 (63.42)	5,727 (26.4)
Not Hispanic/Latino	709 (36.17)	15,939 (73.6)
No Response	8 (0.41)	N/A

Note. Data are from American Community Survey. (n.d.). *ACS demographic and housing estimates: ZCTA5 19122*. Explore Census Data. https://data.census.gov/cedsci/table?q=19122&tid=ACSDP5Y2019.DP05&hidePreview=true.

The second most active site, Mifflin Square Park, is located in the zip code 19148. When comparing the demographic data from this testing site to that of the ACS of that zip code, it is important to note that the prevalence of Asian patients at the testing site (31.35%) than that of Asian residents in that zip code (23.4%). This is likely due to community outreach efforts provided by the partner community organization, SEAMAAC, which primarily served the Asian community in that area. The prevalence of white patients at the testing site (44.25%) is significantly lower than the prevalence of white in the zip code (65.5%), while the prevalence of black patients at the testing site (13.62%) is notably higher than that of black residents in the zip code (8.3%) (Table 4). The gap between the two races is considerably smaller among the testing site patients (30.63 percentage points) than among the zip code residents (57.2 percentage points). This suggests that the Philadelphia FIGHT testing program serves a more diverse population within the neighborhood.

Table 4

Comparison of demographic data, Mifflin Square Park testing site vs. ACS of 19148

Race alone or in combination with one or more other races	**Mifflin Square Park site data No. (%) Total (n =1,512)**	**ACS data, 19148 No. (%) Total (n = 52,259)**
White	669 (44.25)	34,245 (65.5)
Black	206 (13.62)	4,352 (8.3)
Asian	474 (31.35)	12,250 (23.4)
Native Hawaiian/Pacific Islander	34 (2.25)	111 (0.2)
American Indian/Alaska Native	7 (0.46)	505 (1.0)
Other	120 (7.94)	2,785 (5.3)
Declined to Answer	15 (0.99)	N/A
Ethnicity	**Mifflin Square Park site data No. (%) Total (n =1,512)**	**ACS data, 19148 No. (%) Total (n = 52,259)**
Hispanic/Latino	176 (11.64)	7,809 (14.9)
Not Hispanic/Latino	1,327 (87.76)	44,450 (85.1)
No Response	9 (0.60)	N/A

Note. Data are from American Community Survey. (n.d.). *ACS demographic and housing estimates: ZCTA5 19148*. Explore Census Data. https://data.census.gov/cedsci/table?q=19148&tid=ACSDP5Y2019.DP05&hidePreview=true

Patient Preferred Languages

The Philadelphia FIGHT COVID-19 testing program served patients of many languages. The most common languages spoken were English (55.13%) and Spanish (9.63%). These patients were served by the English-speaking and bilingual staff members of the testing team. Other languages spoken included Indonesian (0.93%), Mandarin (0.65%), Nepali (0.61%),

Cambodian (0.44%), Vietnamese (0.28%), Chin (0.12%), and Thai (0.04%). 0.78% of patients selected “other” as their preferred language. The written responses for “other” included Arabic, Burmese, Cantonese, Filipino, French, Lao, and nonverbal. 31.4% of patients did not respond to this question (Table 5). These patients were served in their preferred language with interpreters provided by SEAMAAC and a telephone interpretation service. The wide variety of preferred languages indicates that the Philadelphia FIGHT COVID-19 testing program was effective in serving patients whose language was a potential barrier to testing.

Table 5

Preferred language of Philadelphia FIGHT COVID-19 testing program patients

Preferred Language	**No. (%) Total (n = 6,886)**
English	3,796 (55.13)
Spanish	663 (9.63)
Indonesian	64 (0.93)
Mandarin	45 (0.65)
Nepali	42 (0.61)
Cambodian	30 (0.44)
Vietnamese	19 (0.28)
Chin	8 (0.12)
Thai	3 (0.04)
Other	54 (0.78)
No Response	2,162 (31.40)

Discussion

Strengths and Weaknesses

Strengths of this study include a large sample size and a multitude of variables that provide valuable insight into testing rate trends, demographics, prevalence of medical conditions, and other characteristics of the patients served. It also provides insight into the Philadelphia FIGHT COVID-19 testing program's efficacy. One weakness of this study is that the data on race is not as clear and accurate as it could be. Not having the option of "two or more races" resulted in a slight misrepresentation of the demographic data. The data was self-report, which also results in some potential inaccuracies. Patients may not have honestly and completely answered all questions, such as those regarding underlying health conditions, race, or exposures. Symptoms of COVID-19 are similar to symptoms of other illnesses and conditions, so it is possible that many of the patients were experiencing the symptoms but did not have COVID-19. This is likely the case, as the most common symptom of COVID-19 is fever, and the symptom of diarrhea is uncommon (Guan, W.-jie et al., 2020). However, the most common symptom reported by testing patients was headache, and diarrhea was reported more frequently than fever.

Recommendations

Based on the results of this study, recommendations include adding the option of "two or more races" to the survey and investing in community outreach outside of partner organizations. The testing program demographic data, when compared with that of the area demographic data, revealed that certain races and ethnicities were underserved by the testing program. While matching the area demographic data may not be possible or even ideal, an effort could be made to increase awareness of the testing program among groups that have low testing rates.

Conclusion

The Philadelphia FIGHT COVID-19 testing program reduced barriers to COVID-19 testing for the patients it served. The program effectively met testing demand, provided testing for patients who have been exposed to COVID-19 or who are presenting with COVID-19 symptoms, and provided testing for patients who are deemed to be high-risk due to underlying health conditions. The program was also effective in providing testing for patients who do not have a doctor or who rely on hospitals for medical care, patients of various races and ethnicities, and patients who are best served in a language other than English.

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