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Evaluation of Baltimore City Health Department Flu Vaccination in Senior Housing Buildings

Lessons Learned for COVID-19 Vaccination



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EXECUTIVE SUMMARY

Introduction

Influenza (“flu”) and COVID-19 have disproportionately impacted communities of color and older adults in Baltimore City. Vaccination rates in special populations have been historically low and the Baltimore City Health Department (BCHD) has prioritized efforts in communities that include older adults and persons with underlying conditions. To increase vaccination rates of older adults, BCHD offered flu vaccinations for approximately 13,500 older adults living in 123 senior housing buildings in the City. To determine the effectiveness, acceptability, and feasibility of the flu vaccination initiative as well as the acceptability of a future COVID-19 vaccine among senior housing residents, BCHD worked with the International Vaccine Access Center at the Johns Hopkins Bloomberg School of Public Health and Morgan State University to conduct an evaluation of the initiative.

Methods

We used a mixed-methods approach and designed our efforts to evaluate the effectiveness of Baltimore City’s flu vaccination initiative in increasing vaccination, including attitudes and perceptions, social norms, motivation and practical issues described in the Increasing Vaccination Model (Brewer, et. al). We conducted a paper survey distributed to senior housing residents in late November 2020 to measure flu vaccination coverage. Acceptability of the initiative and knowledge, attitudes and perceptions as well as social norms underlying vaccination behavior was assessed via a phone survey. The phone survey was administered December 5-21, 2020 to a sample of the residents that completed the paper survey. Feasibility and sustainability of the initiative were evaluated through key informant interviews with the Health Department, Resident Service Coordinators (RSC), pharmacists and outreach partners including Coppin State University.

Results

The paper vaccination coverage survey was conducted in 44 buildings which housed over 6800 senior housing residents. Findings from the paper survey indicate a high level (83.5%) of flu vaccine acceptance among the 1598 (23.5%) respondents. Although there was likely survey response bias, we conclude that flu vaccination uptake is significantly higher than the 28.5% indicated by ImmuNet. Although it is difficult to ascertain the true vaccination coverage given the low proportion of respondents, after adjusting for non-response, we estimate flu vaccine coverage among all buildings was between 42% and 67%. Most people were vaccinated in a doctor’s office or pharmacy, but 17% were vaccinated in their building. Respondents residing in a building where a flu vaccine initiative was conducted (by BCHD or by the RSC) were significantly more likely to be vaccinated than those in buildings with no initiative. Convenience of receiving the vaccine in their building could influence both those who delay vaccination and those who are never vaccinated.

The phone survey (n=347) found that those who had received flu vaccine this year were more likely to have reported receiving it last year than non-vaccinated individuals. Females had a higher likelihood of receiving flu vaccine when compared to males. Nearly 75% of those immunized said it was because they habitually get it. The key drivers for not getting vaccinated were concerns about vaccine safety or perceived low individual

risk of flu. Unvaccinated respondents were significantly more likely to worry that flu vaccine may give them the flu (46% vs. 16% among vaccinated respondents).

Overall, 62% of phone survey respondents indicated they were somewhat or very likely to receive the COVID-19 vaccine, which was lower (less than 50%) among unvaccinated respondents, especially after excluding those planning to receive the flu vaccine this year (<30%). Even among flu vaccine recipients, at the time of the survey about 1 in 3 stated they were either unlikely to get the vaccine or unsure whether they would get the vaccine..

From October 21st to December 11th, BCHD held 50 flu vaccine clinics for 54 senior housing buildings. All were held in a common area, except four clinics that used a door-to-door strategy. A total of 500 residents were vaccinated with an average of 11 residents vaccinated per clinic or 9% of the target population. Key informant interviews revealed that RSCs appreciated BCHD's support in flu vaccination planning, but there is a need to start planning and implementing campaigns earlier. Pharmacy partners that could be flexible were preferred both by BCHD and the RSCs. Although few door-to-door flu vaccination campaigns were held, they demonstrated feasibility and the RSCs appreciated their likely importance for COVID-19 vaccination. Outreach was viewed as important and better communication between all stakeholders can improve COVID-19 vaccination campaigns.

Conclusion & Recommendations

Several lessons learned can be applied to both flu and COVID-19 vaccination in Baltimore City. It appears that flu vaccination coverage rates are not as low as official estimates indicate, but nonetheless, there are still significant pockets of vaccine hesitancy among older adults living in senior housing. The efforts expended by the city were significant, and did appear to improve vaccination coverage among older adults. Utilizing the relationships established with RSCs and the outreach activities for flu vaccine should improve COVID-19 vaccination rates given their engagement with residents and provide information. We recommend continuation of communication strategies that address the needs of those that are likely to be eligible for COVID-19 vaccination and to address the questions and concerns of those that are undecided. Many will want to see others in their building being vaccinated, which can be a powerful incentive to get vaccinated themselves. Using trusted messengers is essential for communicating with hesitant populations. RSCs are an important resource, but not sufficient to reach all hesitant individuals. Medical professionals are highly trusted, but not always for hesitant individuals and we believe trained peer ambassadors can play an important role to inform others about flu and COVID-19 vaccines. Making vaccination convenient is important for many and may influence some who may not otherwise get vaccinated. Although not used extensively for flu vaccination, door-to-door vaccination to reach people who are less mobile or concerned about being in common areas should be considered for COVID-19 vaccinations. RSCs may find this approach more acceptable after having considered the benefits. Education should also include broader topics affecting the individual's health and well-being. Considering social determinants must be a priority. Addressing concerns about safety and efficacy of vaccines is important, but recognizing that some concerns may be impacted by broader issues of trust. Strategies to address hesitancy must be targeted to specific populations and engagement and customized education can help in addressing those underlying concerns over the longer term.

INTRODUCTION

Influenza (“flu”) and COVID-19 have disproportionately impacted communities of color and older adults in Baltimore City. Vaccination rates in special populations have been historically low and the Baltimore City Health Department (BCHD) has prioritized efforts in higher risk communities that include older adults with underlying conditions, Latinx, and homeless persons. BCHD intensified efforts into these categories, and, for older adults, they supplemented current strategies by offering onsite flu vaccination for approximately 13,500 older adults living in 123 senior buildings in the City. The BCHD goal for this population and across all populations was to achieve 70% coverage of flu immunization for the 2020-2021 season, consistent with the Healthy People 2020 goals. In previous years, BCHD supported flu clinics in senior centers, but participation of residents was very low. With the COVID-19 pandemic, increasing flu vaccination rates of older adults became an even greater priority. In response to residents’ concerns about going out during the pandemic and increasing their chance of contracting COVID-19, the BCHD developed a strategy to bring flu vaccination directly to older adults in the senior housing buildings (“BCHD-led initiative”). To plan clinics, BCHD coordinated directly with Resident Service Coordinators (RSCs) at the senior housing buildings and provided information and support for not only flu immunization but also for other City services for older adults. The flu vaccination clinics were held in October and November 2020. They were organized by BCHD and RSCs and were staffed by local pharmacists, nursing students from Coppin State University, and community health workers hired by the City. Additional flu vaccination clinics were organized by buildings independently from BCHD (“building led initiative”). For some buildings, no initiative was planned; older adults residing in these buildings had to seek vaccination on their own.

The International Vaccine Access Center (IVAC) at Johns Hopkins Bloomberg School of Public Health and Morgan State University were asked by BCHD to evaluate the initiative with the goal of assessing program effectiveness, acceptability, feasibility and sustainability. Members of BCHD were also part of the evaluation team to advise and facilitate the process. The results of the evaluation were presented to BCHD to inform future flu vaccination efforts and to inform COVID-19 vaccination strategies for the residents of senior housing. A Town Hall with the Health Commissioner, Senior Housing Residents and Staff was held on February 2, 2021 to share results.

PROJECT AIMS

The evaluation was conducted with the following aims.

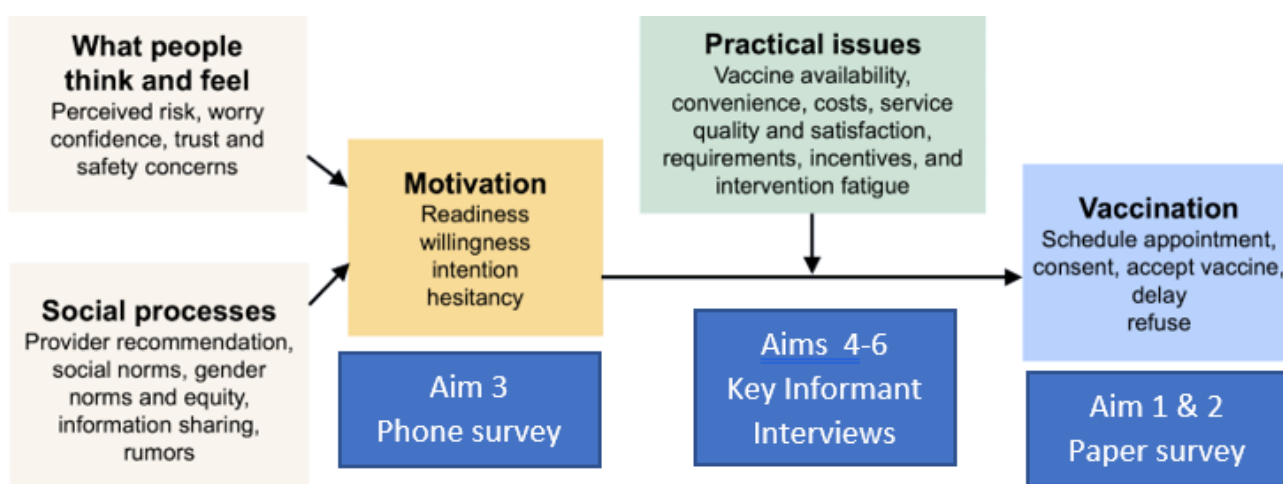
1. Determine if the program met the 70% immunization rate target among residents living in senior housing buildings [program effectiveness]
2. Compare coverage achieved among buildings, based on the primary vaccine delivery strategy used (building-led initiative vs. city-led initiative vs. no initiative) [program effectiveness]

3. Assess knowledge, attitudes and behavior around the value of flu and future COVID-19 vaccines to inform the design of future flu and COVID-19 vaccine campaigns. [acceptability]
4. Describe resources required to plan and implement the initiative [feasibility, sustainability]
5. Evaluate program reach, feasibility and sustainability based on human resource requirements [feasibility, sustainability]
6. Identify bottlenecks or improvements to be implemented that can help inform the design of a COVID-19 vaccine program [feasibility, sustainability]

OVERVIEW OF RESEARCH PLAN AND APPROACH

To achieve the study aims, a mixed methods approach (qualitative and quantitative) was used. The evaluation was grounded in The World Health Organization's Increasing Vaccination Model (Brewer, et al.) to measure the impact of attitudes and beliefs, social processes, motivations, and practical issues related to the program on vaccination behavior (Figure 1). Resident Service Coordinators, who were key partners in conducting the study given that they facilitated communication to residents of senior housing, were briefed on the study approach in virtual meetings and in a series of emails prior to each step. Effectiveness of the BCHD's flu vaccination initiative (Aims 1 and 2) was evaluated using a paper survey distributed to senior housing residents to measure vaccination coverage. Acceptability of the initiative (Aim 3) was assessed via a phone survey administered to a sample of respondents completing the paper survey. Finally, feasibility and sustainability of the initiative (Aims 4, 5, and 6) were evaluated through key informant interviews with the Health Department, Resident Service Coordinators, pharmacists and others. The methods for these three primary aims are further described under the appropriate sections in this report.

Figure 1. Increasing Vaccination Model

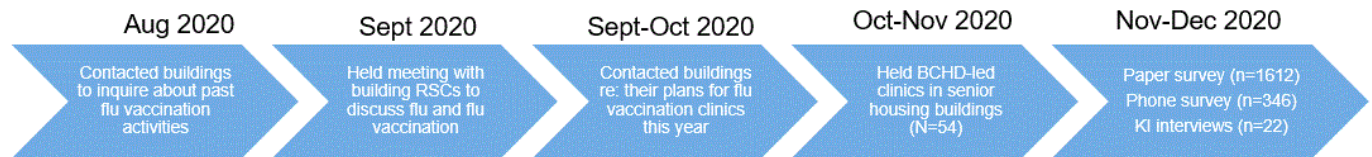


Source: The BeSD expert working group. Based on: Brewer NT, Chapman GB, Rothman AJ, Leask J, and Kempe A (2017). Increasing vaccination: Putting psychological science into action. *Psychological Science for the Public Interest*. 18(3): 149-207

Evaluation Timeline

The general timeline of evaluation activities was as follows:

Figure 2. Timeline of Evaluation Activities



In August of 2020, BCHD contacted senior housing buildings to inquire about past flu vaccination activities at the buildings. Approximately 75% of buildings responded of which 50% reported holding a vaccination event in the past with local pharmacies or schools. In September 2020, IVAC and BCHD held a virtual meeting with senior housing RSCs to provide education on flu and flu vaccine; materials were provided to RSCs to share with their residents. After contacting building RSCs again in late September and October to determine each building's plans for holding or not holding a vaccination clinic this year, 54 buildings opted to have BCHD conduct a vaccination clinic at their building, or a nearby building. BCHD-led clinics, carried out with the support of RiteAid, were held in late October through mid-November.

Buildings were selected and contacted for participation in the evaluation in mid-November. The majority of paper surveys, along with informational flyers, were delivered to RSCs of the 44 participating buildings at a BCHD event providing personal protective equipment for senior housing buildings; direct delivery of surveys was arranged for a small number of buildings. RSCs were asked to post flyers and distribute the surveys to their residents. After 7-10 days, IVAC team members collected the completed surveys from all 44 buildings. JHU and MSU students entered the paper survey responses into REDCap during the last week of November and the first week of December.

MSU and IVAC trained MSU students in proper interview techniques beginning in November, ending with REDCap and mock interview virtual training sessions held December 2-4. A sample of paper survey respondents who agreed to participate in the phone survey were selected for inclusion. Phone interviews to assess acceptability of flu and COVID-19 vaccination were conducted December 5-21. All phone interview responses were entered by the students directly into REDCap in real time.

Finally, Key informant interviews occurred throughout the month of December 2020.

Analyses of the paper survey, phone survey, and key informant interviews were completed in January 2021.

Ethical Approvals

Johns Hopkins School of Public Health: The study application was reviewed and deemed to be Public Health Surveillance and not human subjects research by the Johns Hopkins School of Public Health Institutional Review Board.

Baltimore City Health Department: Because the evaluation was commissioned by the BCHD, approval was not required.

Morgan State University: The Morgan State University Institutional Review Board approved the evaluation activities on November 10, 2020 (IRB #20/11-0144).

PAPER SURVEY: ESTIMATING COVERAGE (AIMS 1 & 2)

Vaccination Coverage Data

The State of Maryland currently uses a web-based electronic immunization registry, ImmuNet, to track vaccinations across the state. In October of 2019, the State of Maryland mandated that all vaccinations administered in the state be reported in ImmuNet, with the exception of nursing homes. However, comparison of ImmuNet data with other survey data indicates that, despite the 2019 mandate, there is likely substantial underreporting of immunizations in ImmuNet for various reasons (e.g., there is no process for identifying providers who do not report, geocoding issues prevent some individuals from being counted as Baltimore City residents, addresses are not always updated leading some individuals to be incorrectly included or excluded from a count of vaccinations for Baltimore City, use of third-party data companies to upload data to ImmuNet can lead to incorrect and missing data).

In the absence of other available data on immunizations for Baltimore City, it is not possible to fully gauge the extent of potential underreporting in ImmuNet. Using data obtained from this evaluation, we hoped to arrive at a better understanding of flu vaccination coverage in the senior housing population and also of the accuracy of the ImmuNet data.

Methods

To determine if the program met the 70% immunization rate target among an estimated 13,500 residents living in senior housing buildings and to compare coverage between buildings based on the primary vaccine delivery strategy used, a short paper survey was distributed to all residents of a selected sample of the 123 senior housing buildings in Baltimore City. Buildings were selected in an attempt to achieve a representative sample and adequate representation of key factors such as poverty level and type of flu vaccination initiative in the building (e.g. building-led, BCHD-led, no initiative). BCHD contacted the RSC or property manager of all selected buildings to request participation, and BCHD's personal protective equipment (PPE) distribution event was leveraged to disseminate study materials (paper survey, flyers, drop boxes, etc.) to RSCs of participating senior housing buildings. For participating

buildings not attending the PPE event, study materials were delivered directly to the building by an IVAC study team member.

The short survey, designed by IVAC and MSU, included questions on flu vaccine receipt this season, the location of vaccination, and flu vaccine receipt last season (Appendix 1). Residents of the selected buildings were offered the opportunity to participate in a follow-up survey for which they would receive a \$20 gift card. Once completed, respondents returned the survey to a locked drop box placed in a central location at the building. After approximately 1 week, surveys were collected from buildings by IVAC and entered into REDCap by JHU and MSU students. Respondents were also given the option to enter responses online into REDCap rather than complete the paper survey.

Target Sample Size

We aimed to estimate coverage among senior housing residents stratified by type of flu vaccination initiative conducted in the buildings: BCHD-led initiatives (60 buildings, 7020 units), building-led initiatives (39 buildings, 4524 units) and buildings with no initiative or buildings that did not report an initiative (25 buildings, 1939 units). These figures were based on building plans at the time of selection, and the number in each category did change slightly.

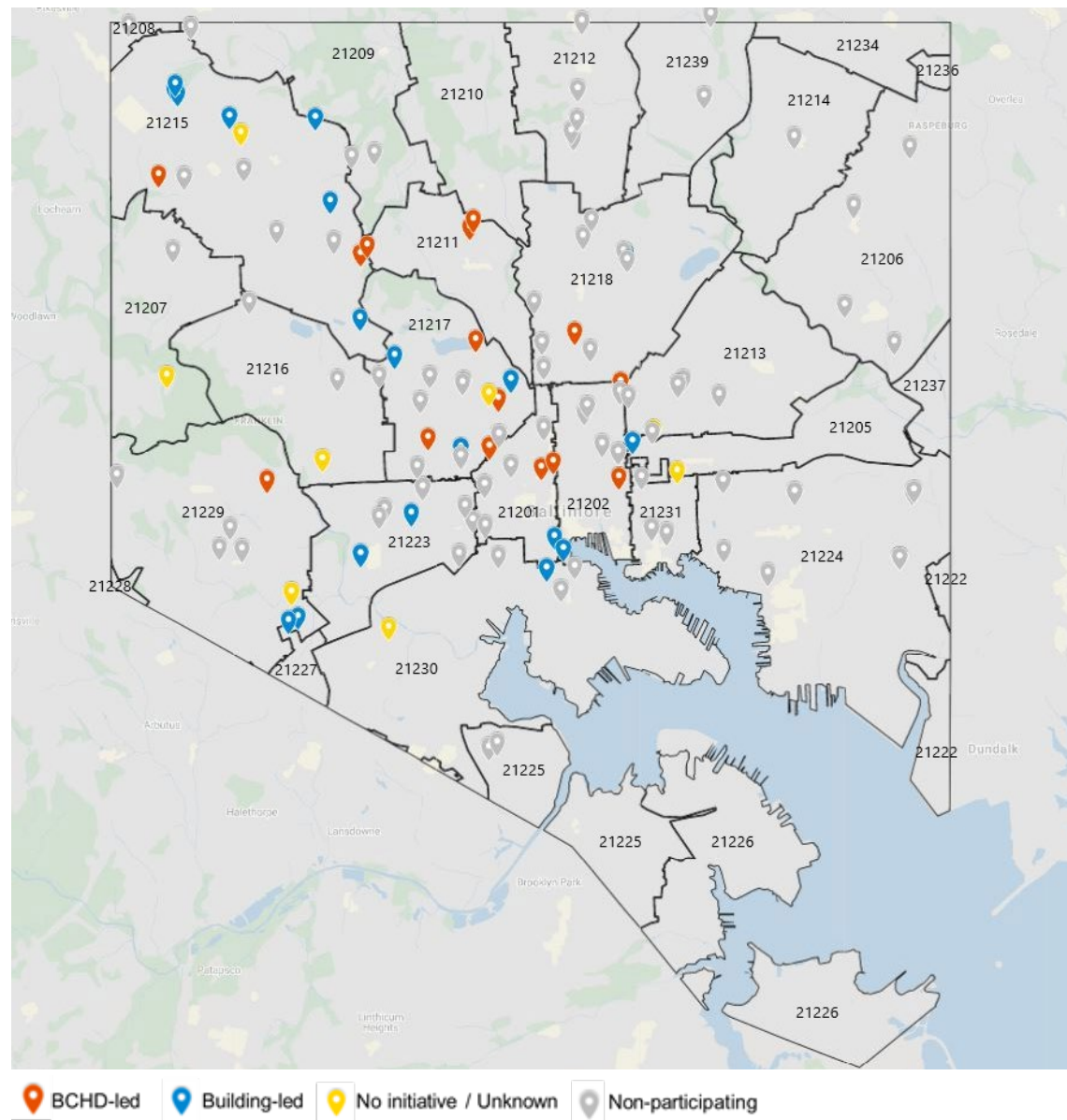
As many buildings as study resources allowed were sampled for participation, distributed across the three strata. Initial selection included 13 BCHD-led, 13 building-led, and 11 no initiative/no response buildings. Within each of the 3 strata, buildings were selected with probability of selection proportional to population size as determined by the number of units in a building, while ensuring representation from census tracts of varying poverty levels. In addition to these 37 buildings selected proportionally to population size, all 6 buildings (3 BCHD-led and 3 building-led) that conducted door-to-door flu vaccination within their buildings were selected to participate. We aimed for a 50% response rate among residents at participating buildings.

Paper Survey Results

Response Rates

Of the 43 buildings initially selected, 31 agreed to participate in the evaluation. Thirteen additional buildings present at the BCHD PPE distribution event were added to the evaluation based on their willingness to participate. Thus, 44 buildings representing approximately 51% of the senior housing population agreed to participate in the evaluation (Supplemental Table 1). Locations of participating and non-participating buildings are shown in Figure 3.

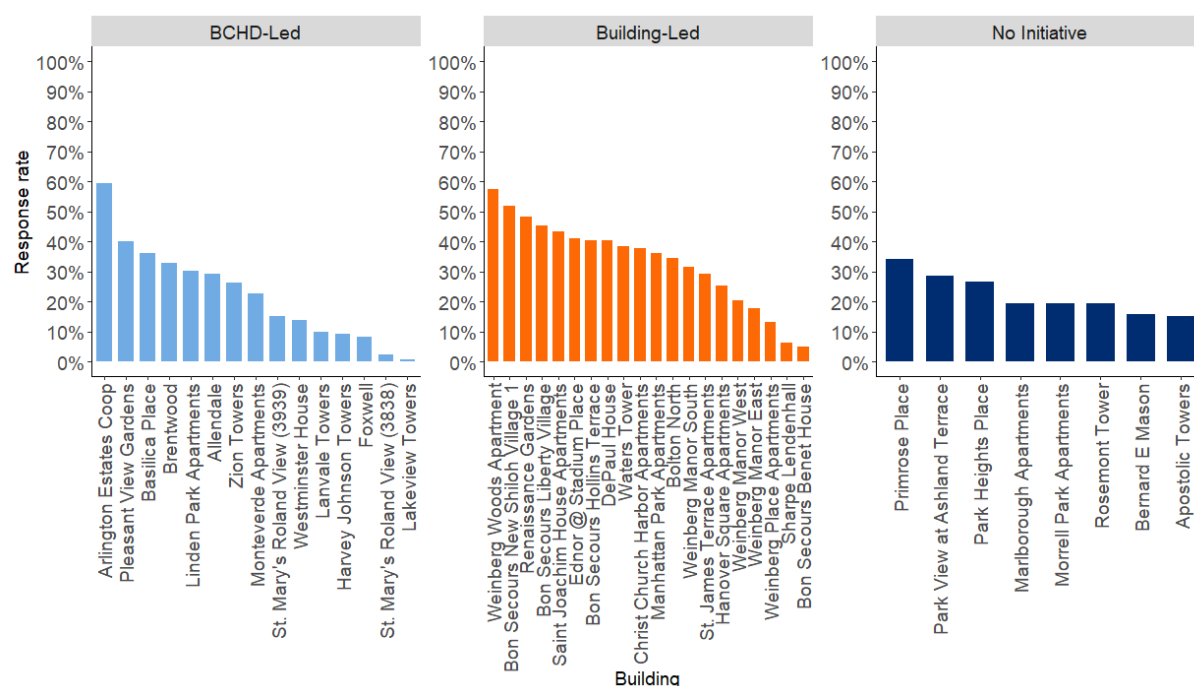
Figure 3. Map of Participating and Non-participating Senior Housing Buildings



The most common zip codes among the participating buildings were 21215 (25% of participating buildings), 21217 (15.9%), and 21201 (9.1%); the most common zip codes of non-participating buildings were 21218 (11.4%), 21224 (10.1%), 21223 (7.6%), and 21217 (6.3%) (Figure 3).

In total, 1612 respondents, representing approximately 12% of the senior housing population, completed the paper survey (Supplemental Table 1). The mean response rate across all buildings was 23.5%, but ranged widely between buildings from 1% to 61%. Response rates also varied across initiative type: 75% (15/20) of buildings with a building-led initiative had a response rate greater than 20% compared to 50% (7/14) of buildings with a BCHD-led initiative and 37.5% (3/8) of buildings with no initiative (Figure 4).

Figure 4. Paper Survey Response Rate by Building



Flu Vaccination Coverage Among Respondents

Among 1598 respondents with known flu vaccination status this season, 1335 (83.5%) received vaccine. A lower proportion of respondents in buildings with no initiative indicated they received vaccine (Table 1); this difference was statistically significant (chi square p-value = .01).

Table 1. Flu Vaccination Receipt Among Respondents by Type of Building Vaccination Initiative

Flu Vaccination Initiative Type	Flu Vaccination Coverage among Respondents ¹ % (95% CI ²)
BCHD-led initiative (n=525)	84.6 (81.2-87.4)
Building-led initiative (n=844)	84.7 (82.1-87.0)
No initiative/Unknown (n=229)	76.9 (71.0-81.9)
All buildings (n=1598)	83.5 (81.6-85.3)

¹Restricted to respondents with known flu vaccination status.

² Wilson score interval

Adjusted Flu Vaccination Coverage Estimates

We adjusted the observed flu vaccination coverage among survey respondents to account for non-response by assuming various levels of uptake among the non-responders. Assuming non-responders have the same uptake as responders within each building, the estimates equal the observed uptake among survey respondents (row 1, Table 2). This provides us with an upper limit, since we know uptake is likely lower in non-responders. Assuming no non-responders were vaccinated provides us with a lower limit (row 5, Table 2).

We also calculated flu vaccination uptake assuming non-responders had an uptake equal to estimates provided by ImmuNet (row 4, Table 2) as well as estimates provided by 2 national surveys (rows 2 and 3, Table 2). ImmuNet estimates are specific to Baltimore City residents 60 years and older, but likely an underestimate due to incomplete reporting. The estimates from the national surveys were restricted to African-Americans 65 years and older and were further restricted to Maryland metropolitan city centers (2019 Behavioral Risk Factor Surveillance System [BRFSS]) or the Baltimore-Columbia-Towson MSA (2017 BRFSS Selected Metropolitan/Micropolitan Area Risk Trends [SMART] Survey). While these estimates are not specific to Baltimore City, they may be the best available estimates for the Baltimore City senior housing population. Assuming true flu vaccination coverage among non-responders lies somewhere between 28% (ImmuNet) and 62% (2019 BRFSS Survey), we estimate that 42%-67% of senior housing residents received flu vaccine this year.

Reported flu vaccine coverage of phone survey respondents was 83.5%, but adjusting for non-response we estimate that 42%-67% of senior housing residents were vaccinated against flu.

Table 2. Estimated Flu Vaccination Uptake Among Senior Housing Buildings under Various Assumptions

	Estimated Flu Vaccination Uptake (%)			
	BCHD-led (N=15,525 ¹)	Building-led (N=20,844 ¹)	No initiative (N=8,229 ¹)	Total (n=43,1598 ¹)
Assuming non-respondents = respondents (upper limit)	84.6	84.7	76.9	83.5
Assuming 62% ² uptake among non-respondents	66.1	69.6	64.8	67.3
Assuming 57% ³ uptake among non-respondents	62.0	66.3	60.9	63.6
Assuming 28.5% ⁴ uptake among non-respondents	38.6	47.2	38.3	42.1
Assuming 0% uptake among non-respondents (lower limit)	15.3	28.2	15.8	20.7
ImmuNet (≥ 60 years of age)				28.5

¹ Analysis sample size (where flu vaccine receipt is known)

² 2019 BRFSS (survey weights applied, restricted to Maryland, metropolitan area city center, African-American, ≥ 65 y)

³ 2017 BRFSS SMART Survey (survey weights applied, restricted to Baltimore-Columbia-Towson MSA, African-American, ≥ 65 y)

⁴ 2020 ImmuNet Data (60+ y)

Location of Flu Vaccination Receipt

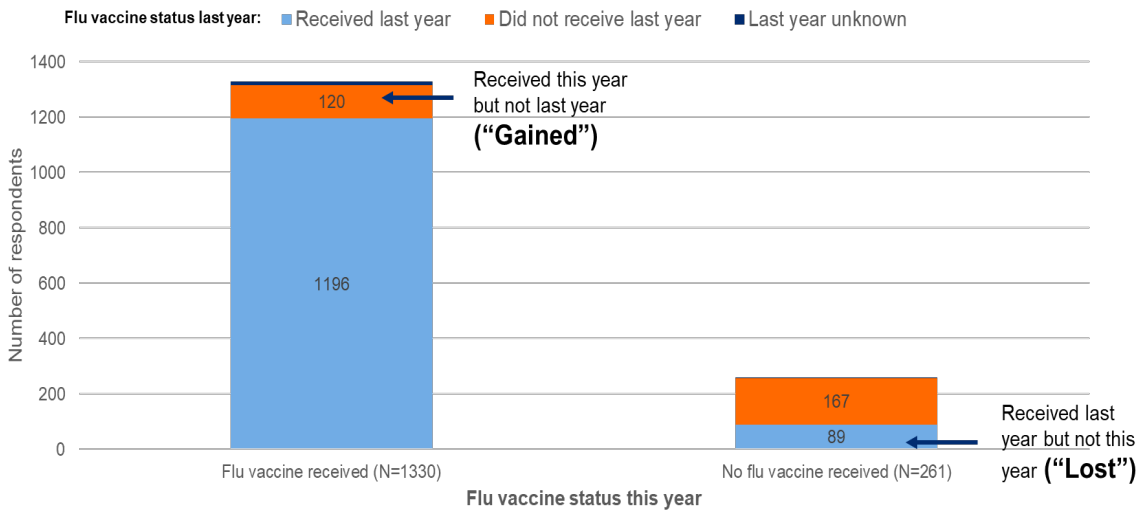
The most common location of vaccination was at a healthcare provider. Among respondents who received flu vaccine this year, 45% indicated they were vaccinated at a healthcare provider, including Veterans Administration, underscoring the important role healthcare providers play in vaccination. A large proportion of senior housing respondents (32%) were vaccinated at a pharmacy while 17% were vaccinated in their building.

Most respondents were vaccinated at a doctor's office or pharmacy. Nearly 1 in 5 received flu vaccine in their building.

Flu Vaccine Receipt This year vs. Last Year

Among 1572 respondents with known flu vaccination status for both last year and this year (as reported by respondents), 167 (58.2%) reported not receiving the vaccine both years, 1196 (76.1%) reported receiving the vaccine both years, 120 (7.6%) reported receiving the vaccine this year but not last year, and 89 (5.7%) reported receiving the vaccine last year but not this year. Thus, among respondents there was an overall increase in the number vaccinated this year (n=1316) compared to last year (n=1285) with an overall 'gain' of 31 respondents vaccinated (Figure 3).

Figure 5. Number of Respondents Receiving Flu Vaccination Last Year by This Year's Vaccination Status



Limitations

Limited availability of building-level data prevents us from a clear understanding of any bias resulting from potential differences in participating vs. non-participating buildings. Nevertheless, comparison of participating and non-participating buildings using the limited data we do have did not identify any unexpected differences. As described above, buildings were selected for participation with probability of selection proportional to size with implicit stratification by the percent of the population living below poverty level in the census tract to ensure representation of buildings from across the socioeconomic spectrum. Because not all initially selected buildings could participate, convenience sampling was also utilized. As a result of the size-proportional sampling methodology, buildings participating in the evaluation were larger than those not participating. Including larger buildings would allow us to sample

a larger proportion of the senior housing population. The median number of units among buildings participating in the evaluation was 144 compared to 65 among non-participating buildings.

No statistically significant difference was found in the median percent of the population living below poverty level when comparing census tract level data of participating and non-participating buildings; the median percentage of the population living below poverty in census tracts of participating buildings was 19.4% compared to 25.3% in non-participating buildings ($p = .52$). Sixteen percent of participating buildings and 16.5% of non-participating buildings were managed by the Housing Authority of Baltimore City (HABC); this difference was not statistically significant ($p = .94$)

Potential response bias among respondents of participating buildings is another limitation. Self-reported vaccination may itself be associated with propensity to participate in the survey, and may upwardly bias the coverage estimate. In addition, various reasons unique to this evaluation, may explain why senior housing residents may not have participated in the paper survey other than unwillingness/lack of interest. These include absence from the building during the short duration of the survey, lack of awareness about the survey (some building RSCs did not post informational flyers in the building), and lack of convenience/accessibility (in some buildings, surveys were placed in a common area rather than distributed to the residents, preventing less mobile respondents from completing it). Because we collected data on respondents only, but have no data on non-respondents, the degree and directionality of such biases is not possible to ascertain.

In making extreme assumptions about flu vaccination uptake among non-respondents, we derived minimum and maximum estimates of vaccination uptake among senior housing residents in Baltimore City. We then narrowed the window using estimates from ImmuNet and from national surveys. While results from these surveys can be restricted to older African-Americans in metropolitan areas of Maryland and may provide the best estimates, it is important to note that these surveys were not particular to Baltimore City, but included other metropolitan areas in Maryland as well. The older African-American population in Baltimore City may differ in terms of flu vaccination coverage from other metropolitan areas in Maryland. In addition, there may be differences in coverage between older adults living in senior housing and the general older adult population.

PHONE SURVEY: KNOWLEDGE, ATTITUDES AND PERCEPTIONS (AIM 3)

Phone Survey Methods

A survey tool was developed by the team and pre-tested with five older adults to ensure the questions were easily understood and that the survey would take no longer than 15 minutes. Modifications were made and the tool was finalized. The target sample size for the phone survey was 340, aiming for approximately 170 individuals who received a flu vaccine this year and 170 who did not. The sample size was set to detect a difference of ± 15 percentage points between these two groups in the percentage of respondents who intend to get a COVID-19 vaccine when it became available ($\beta=0.80$, $\alpha=0.05$). The

phone survey sample was derived from the 881 respondents of the paper survey who agreed to participate in the phone survey and provided contact information. Anticipating high non-response levels, all who did not receive a flu vaccine this year were sampled (n=202; 118% of target). A subset of respondents who did receive a flu vaccine this year were sampled (n=509; 299% target), attempting to sample an even number by senior housing building (N=44).

Ten students from Morgan State University were trained to conduct the phone interviews. Prior to beginning the phone surveys, the students held weekly meetings with the evaluation co-lead to review the questionnaire and survey methods, understand background on the senior housing buildings, and to learn interviewing techniques. Students were trained on the data collection system (REDCap) and conducted mock interviews with trainers from the Evaluation Team. Students were also trained to provide respondents with the Maryland Access Point (MAP) phone line for further information about other health or social needs.

Students were provided a list of participants to call and made up to five attempts to reach each potential respondent. Verbal consent from the respondent was obtained before beginning the interview (see Appendix II for questionnaire). All responses were recorded in a password-protected data collection system (REDCap). For questions on factors influencing decisions and sources of information, open-ended responses were recorded then matched to pre-specified categories by the interviewer; respondents were not provided options to choose from and may have reported multiple factors. Interviewers audio-recorded a sample of interviews during the first week of interviews, after obtaining verbal permission, for quality control purposes. Feedback from the quality control review was used to improve the interview process. Respondents were offered a \$20 gift card in appreciation for their time.

Characteristics of Survey Process

Seven hundred and eleven individuals were attempted for the phone survey in total, with 347 phone surveys completed, exceeding the target sample size. Phone surveys were conducted between December 5th to December 21st, 2020, with each student conducting between 15 to 48 interviews. Results of the effort are shown below in Table 3.

Table 3. Status of Phone Interviews

Status	Vaccinated n (%)	Not Vaccinated n (%)	Total
Phone interview sample	N=509	N=202	N=711
Interview completed	259 (50.9)	88 (43.6)	347 (48.8)
Refused	46 (9.0)	38 (18.8)	84 (11.8)
Call not answered	149 (29.3)	45 (22.3)	194 (27.3)
Call answered but selected individual unavailable	5 (1.0)	6 (3.0)	11 (1.6)
Hung up	19 (3.7)	4 (2.0)	23 (3.2)

Wrong number	19 (3.7)	16 (7.9)	35 (4.9)
Incomplete, other reason	12 (2.4)	5 (2.5)	17 (2.4)

Despite sampling all paper survey respondents who did not receive a flu vaccine, we did not achieve an even split between vaccinated and unvaccinated individuals; the sample of respondents was biased towards those that received flu vaccine (n=259, 75%). Completion rates were slightly lower for non-flu-vaccine recipients (44%) compared to flu vaccine recipients (51%). Of note, forty-five percent of respondents who did not receive a flu vaccine this year reported they plan to do so but had not by the time the phone survey was completed (N=40). This suggests the ‘not vaccinated’ group includes both respondents that delayed receiving flu vaccine and respondents that opted not to receive the vaccine at all. A subset of analyses further restricting the ‘not vaccinated’ group to those with no plans to receive a flu vaccine this year is presented in supplemental materials.

The demographic characteristics of our sample are presented below in Table 4. Two-thirds of the sample were female, three-quarters between 55-75 years old, and 81% African American (a higher proportion than the racial breakdown of all Baltimore City residents [66%, [2019 American Community Survey](#)]). The majority of respondents reported at least one underlying condition, with a slightly higher percent observed among flu vaccine recipients. Flu vaccine recipients were more likely to be female.

Table 4. Demographic Characteristics of Phone Survey Respondents

Characteristics	All participants (N=347)	n (col %)		P-value flu vs non-flu recipient
		No flu vaccine recipients (N=88)	Flu vaccine recipients (N=259)	
Female	227 (65.4)	47 (53.4)	180 (69.5)	0.006
Age				
55 - < 65 y	92 (26.5)	31 (35.2)	61 (23.6)	0.05
65 - < 74	170 (49.0)	42 (47.7)	128 (49.4)	
≥ 75 years	85 (24.5)	15 (17.1)	70 (27.0)	
Race				
African American	281 (81.0)	75 (85.2)	206 (79.5)	0.11
White	50 (14.4)	8 (9.1)	42 (16.2)	
Other	7 (2.0)	1 (1.1)	6 (2.3)	
Refused	9 (2.6)	4 (4.6)	5 (1.9)	
Underlying conditions	251 (72.3)	58 (65.9)	193 (74.5)	0.10
Received flu vaccine last year	268 (77.2)	30 (34.1)	238 (91.9)	<0.0001

Mantel-Haenszel Chi-square test for stratified variables. For underlying conditions, race, and last year’s receipt, p-value calculated excluding ‘other’ and ‘unknown’/‘refused’ categories.

Similar to what was reported in the paper survey, the majority of respondents reported receiving a flu vaccine at their primary care doctor’s office or other health facility (43%) or at a pharmacy (32%). One-fifth received their vaccine at a clinic held in their senior housing building (Table 5). Of those who either did not receive a vaccine or received it outside of their building, 53% reported that it was offered in their

building but opted to receive it elsewhere, possibly due to timing of the clinic or other reasons, and 29% were unsure if it was offered.

Table 5. Location of Flu Vaccine Receipt among Vaccine Recipients (Phone Survey)

Location of flu vaccine receipt	n (%) (N=259)
Primary care doctor	100 (38.6)
Other health facility, a specialist	14 (5.4)
Pharmacy or supermarket	84 (32.4)
At my building (indoor or outdoor common area or inside home)	53 (20.4)
At a vaccination clinic separate from my building	4 (1.5)
Other	4 (1.5)

Restricted to those receiving a flu vaccine.

Factors Influencing Flu Vaccine Decision

Respondents were asked what influenced their decision to get, or to not get, the flu vaccine this year (Figure 6, Supplemental Table 2). Three-fourths of vaccine recipients reported they always get vaccinated. This aligns with the observation that 98% of those receiving a vaccine this year reported

Flu Vaccine recipients

"I have been getting it every year because my doctor really wants me to have it."

"[I] got bacterial pneumonia and never wanted to experience that again."

they plan to receive it again next year. A third of flu vaccine recipients noted that concerns about flu illness (based on personal experience with prior illness) and/or concerns about potential complications due to age or underlying conditions influenced their decision to get vaccinated. Twenty percent of vaccine recipients were influenced by a doctor's recommendation, though this was rarely mentioned among unvaccinated respondents.

General vaccine safety concerns or prior reaction from the vaccine (e.g., "It made my arm hurt the last time I took it") were commonly mentioned among unvaccinated respondents; this increased to more than half of non-vaccine respondents when excluding those planning to be vaccinated this year. Other common reasons mentioned by non-vaccine recipients included lower perception of risk of flu illness or complications as well as standard practice (i.e., "never get vaccinated").

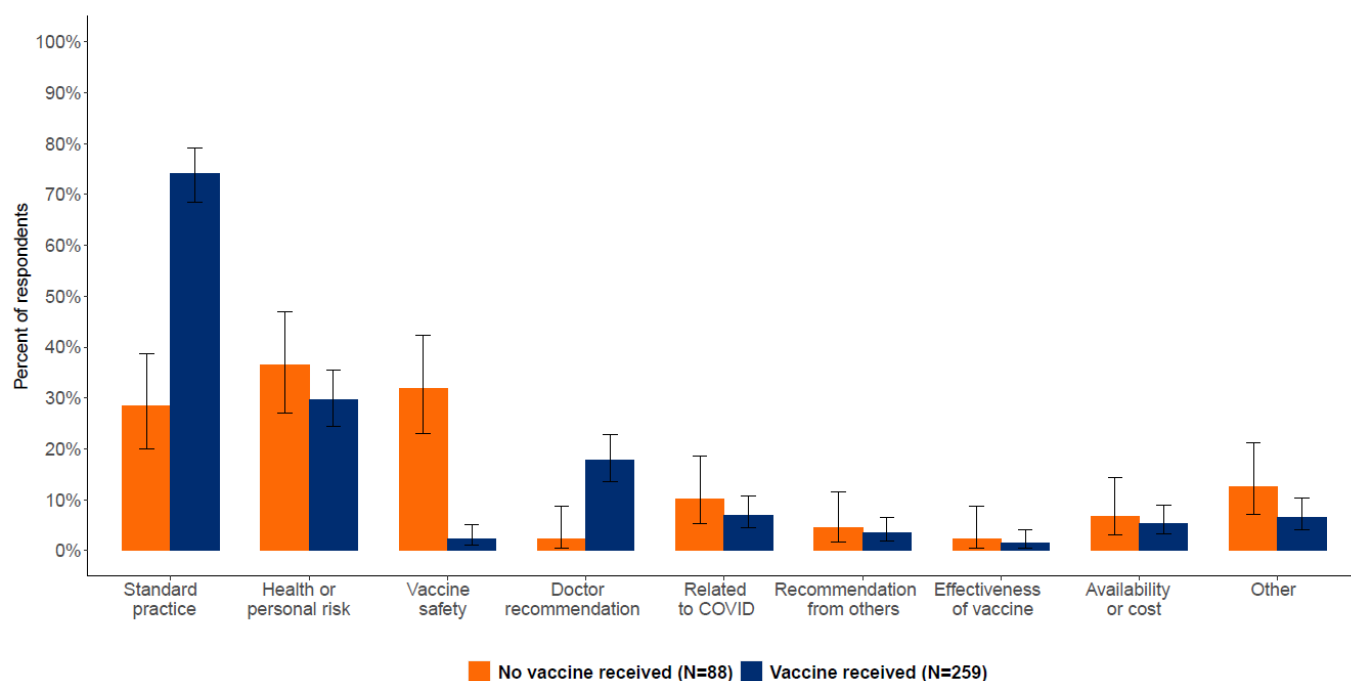
Non-flu vaccine recipients

"Vaccines do not work for me."

"So far, so good, never had [the flu], never took [the vaccine]."

"The first time I took the flu shot I got sick, so I never got it again."

Figure 6. Factors Influencing Flu Vaccine Decision

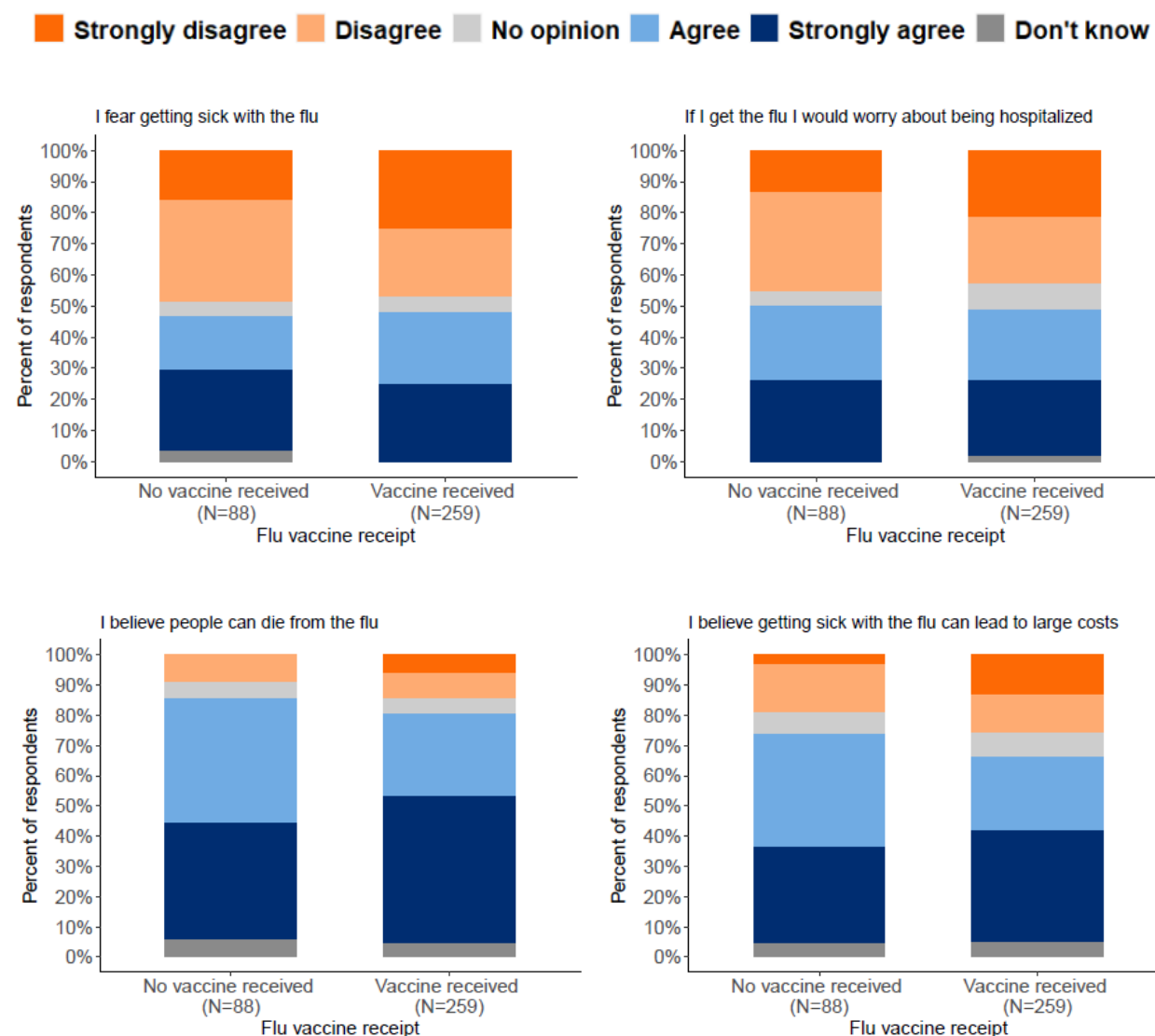


Categories not mutually exclusive; respondents may have reported multiple reasons.

Knowledge and Perceptions of the Flu and Flu Vaccine

Respondents were provided a series of statements about flu illness and flu vaccine and asked if they agreed or disagreed with each statement. The percent of respondents perceiving flu illness to be serious with potential to result in hospitalization or death was similar between flu and non-flu vaccine recipients; approximately 50% of respondents noted they fear flu illness and worry about hospitalization, and 75% agreed flu can result in death (Figure 7).

Figure 7. Knowledge and Perceptions of the Flu



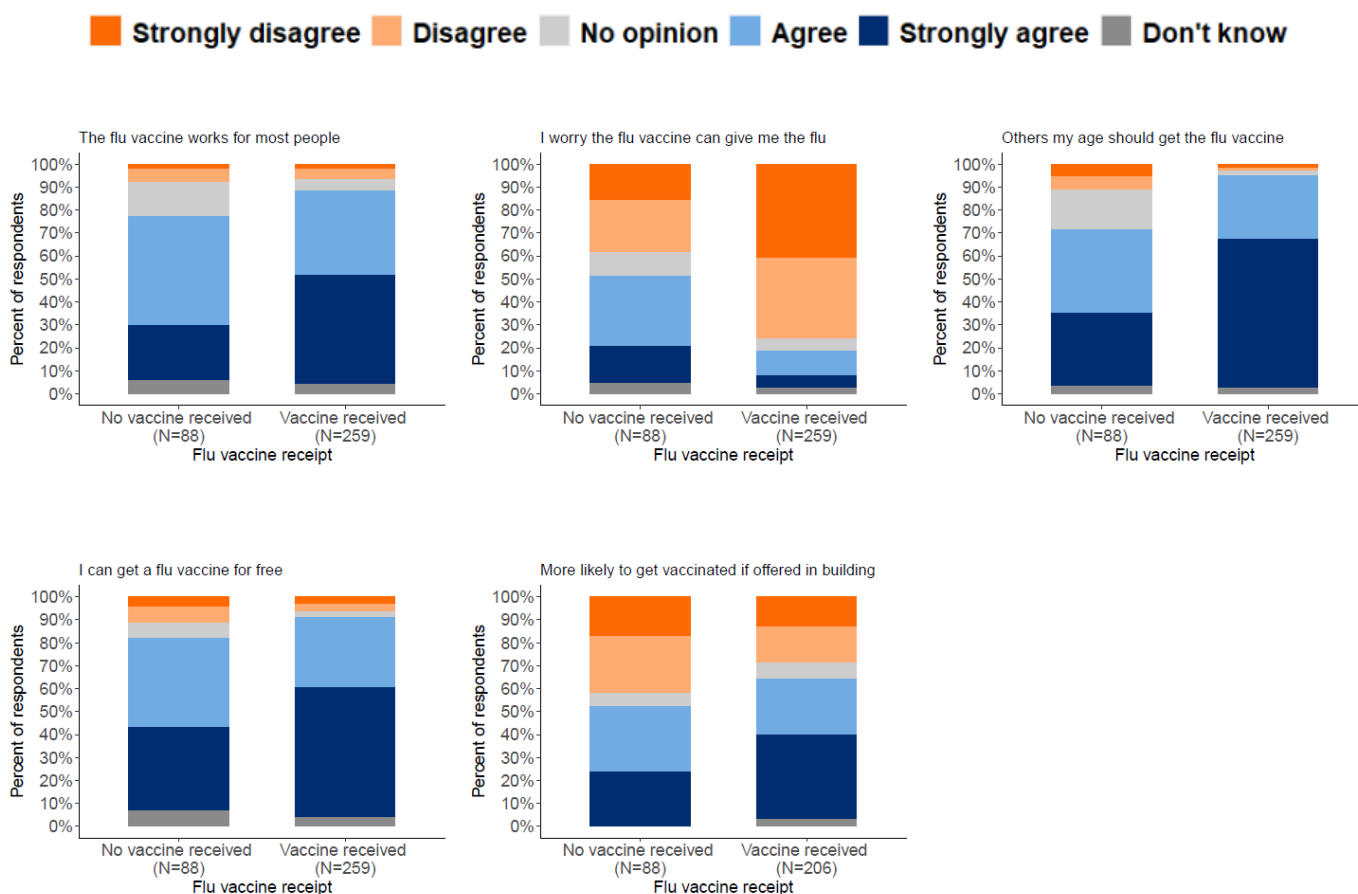
Attitudes and Perceptions About Flu Vaccine

Compared to unvaccinated respondents, vaccinated respondents were more likely to agree that the vaccine was effective (84% vs. 72%) and that most people their age should get the vaccine (93% vs. 68%) (Figure 8). Perceived vaccine effectiveness among non-vaccine recipients decreased when excluding those planning to be vaccinated this year (Supplemental Figure 1). Non-vaccine recipients were significantly more likely to worry the vaccine may give them the flu (46% vs. 16% among vaccine recipients); this difference increased when excluding those planning to be vaccinated this year (Supplemental Figure 1). While few vaccine recipients worried the vaccine may give them the flu, 44% agreed most people they know have that concern. Fewer non-vaccine recipients believed the vaccine is available for free compared to those receiving the vaccine (75% vs. 87%). Half of non-vaccine respondents agreed that having the vaccine

Non-flu vaccine recipients were more likely to worry the flu vaccine will give them the flu.

offered in their building would have increased the likelihood they get vaccinated, however this decreased to only 23% when excluding those planning to be vaccinated this year (Supplemental Figure 1).

Figure 8. Attitudes and Perceptions of the Flu Vaccine



Willingness to Receive a COVID Vaccine

Respondents were asked how likely they would be to receive an approved COVID-19 vaccine if it were easily accessible (Figure 9, Supplemental Table 3). Of note, the phone surveys were conducted either just before Emergency Use Authorization was granted by the FDA or just following authorization when the U.S. had just started vaccinating healthcare workers. This may have influenced respondents' view on the vaccine.

More than 6 in 10 respondents reported that they are likely to get the COVID-19 vaccine. Among those not receiving and not planning to receive a flu vaccine, the likelihood of receiving a COVID-19 vaccine drops to less than 3 in 10.

Overall, 62% of respondents indicated they were somewhat or very likely to receive the vaccine. However, the sample was biased toward those receiving a flu vaccine, and willingness to receive a

COVID-19 vaccine varied by flu vaccine receipt. Less than 50% of the non-flu vaccine recipients reported being likely to get the COVID-19 vaccine, which decreased to under 30% when excluding those planning to receive the flu vaccine this year. Even among the flu vaccine recipients, about 1 in 3 were either unlikely to get the vaccine or undecided.

Fewer female respondents indicated they were likely to receive the COVID-19 vaccine compared to male respondents (54% vs. 77%) (Figure 10). Increased hesitancy was also observed by race, with 60% of African American respondents indicating they were likely to receive the vaccine compared to 76% of White respondents. Older respondents (≥ 75 years) were more likely to receive the COVID vaccine compared to younger respondents (71% vs 58% among 55 to < 74 years). No differences were observed by presence of underlying conditions.

Figure 9. Likelihood of Receiving a COVID-19 Vaccine, Overall and by Flu Vaccine Receipt

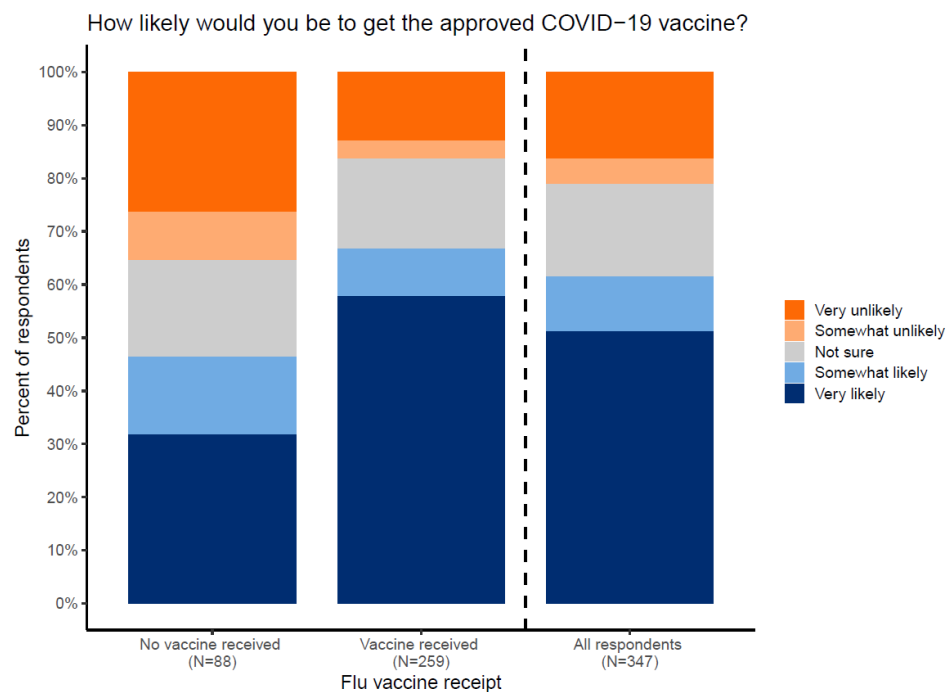
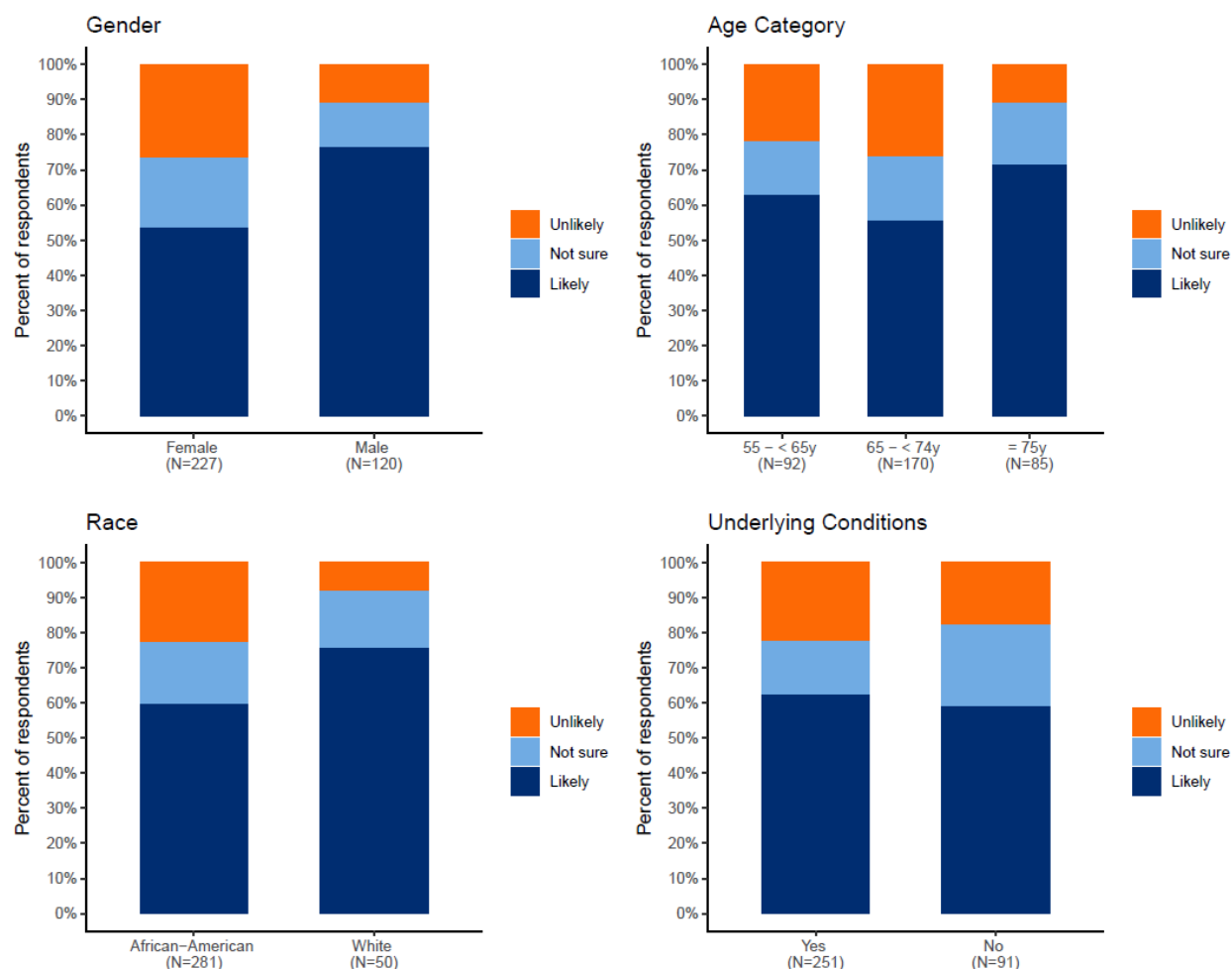


Figure 10: Likelihood of Receiving a COVID-19 Vaccine, by Demographic Characteristics



Factors Influencing COVID Vaccine Decision

Of those respondents likely to receive a vaccine, 70% indicated concerns about COVID illness or complications, and concerns about the large number of people becoming ill and dying as a factor influencing their decision to be vaccinated (Figure 11, Supplemental Table 4). Twenty-five percent of those individuals valued recommendation or opinion of a doctor or health official (e.g., CDC, FDA) to influence their decision; conversely, few of the respondents unlikely to receive the vaccine cited these as factors influencing their decision. Past positive experiences with the flu vaccine and general trust in science and other vaccines were also reported among those likely to receive the COVID vaccine.

Respondents likely to get COVID-19 Vaccine

"At my age, I don't want to take a chance. I have to protect myself from getting sick."

"I think after seeing the news yesterday and the lady who got the first vaccine, she [was] feeling fine."

Half of the undecided respondents and over 80% of the respondents unlikely to receive the vaccine cited a lack of trust in the vaccine or concerns about safety as factors influencing their decision. The most common concerns reported were related to the speed of manufacturing, lack of information available, and potential side effects. One-quarter of the undecided and unlikely respondents citing concerns reported a desire to wait for others to be vaccinated first to evaluate effectiveness and safety. A desire to wait for others to be vaccinated was also noted among those likely to be vaccinated. Some respondents also highlighted mistrust in the medical system and government as influencing their decisions.

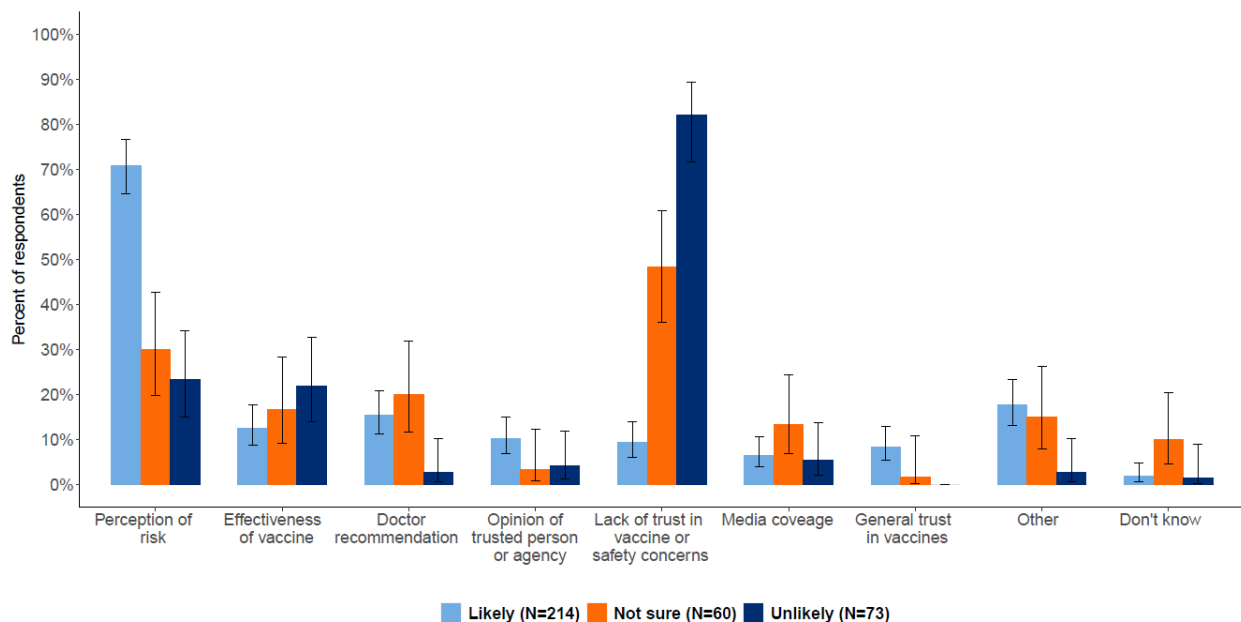
Respondents unlikely to get COVID-19 Vaccine or unsure

"I do not wish to be a guinea pig."

"I will not trust it unless I see other people have it for at least 2 years and they have no problems."

"I'm scared that the vaccine will give me the virus."

Figure 11: Factors Influencing COVID-19 Vaccine Decision, by Likelihood of Future Vaccine Receipt



Trusted Sources of Information

Respondents were asked who they rely on most for information about flu vaccine (Table 6). The most often cited source was medical professionals, although this was more common among flu vaccine recipients than those not receiving the flu vaccine. Restricting the non-vaccine recipients to those with no plans to

Medical professionals are trusted sources when it comes to information about flu vaccination, but less so for those that don't receive the flu vaccine.

receive the flu vaccine, just over 50% reported medical professionals as a trusted source of information versus over 80% for those that did or were planning to receive a vaccine.

One-third cited media or internet (primarily news on television) and 16% cited family or friends as trusted sources of information, with no difference by flu vaccine receipt. Both vaccine and non-vaccine recipients reported they do their own research, taking information from various sources then deciding.

No differences in trusted sources were observed when stratifying respondents by likelihood of receiving the COVID vaccine.

About 1/3 of respondents cite the media or internet as a trusted source of information.

Table 6: Trusted Sources of Information by Flu Vaccine Receipt

Source of Information	n (col %)		p-value
	No flu vaccine recipients (N=88)	Flu vaccine recipients (N=259)	
Medical professionals	58 (65.9)	226 (87.3)	<.0001
Media / internet	32 (36.4)	78 (30.1)	0.28
Family or friends	15 (17.0)	42 (16.2)	0.86
Government (e.g., CDC, BCHD, others)	5 (5.7)	16 (6.2)	0.87
I do my own research	8 (9.1)	36 (13.9)	0.24
I don't trust any sources of information	4 (4.5)	1 (0.4)	0.005
Other	7 (8.0)	9 (3.5)	0.083
Don't know	5 (5.7)	15 (5.8)	0.97

Chi-square p-value (bold indicates < 0.05).

Includes any source reported (top sources or other sources). Categories not mutually exclusive; respondents may have reported multiple sources.

Other includes building/RSC (< 2%) and variety of other.

Non-Trusted Sources of Information

When asked if there is anyone you do not trust for information about the flu or flu vaccine, 50% of respondents did not identify a specific source. Of those identifying a source, most common source was general public with no medical background, including “word of mouth” and gossip. Few individuals reported they distrust medical professionals or all sources of information, and almost all reporting these were individuals who did not receive a flu vaccine.

Limitations of the Data

Although the planned recruitment sample size was achieved, the survey sample was biased to those who had received a flu vaccine. This was due to a lower number of non-vaccine recipients completing the paper survey, which formed the sampling frame, and inability to reach all who were attempted for

the phone survey due to refusal or individuals not answering the phone. A second limitation of the survey sample is the non-vaccine recipient group was likely a mix of vaccine hesitant with no plans to receive a vaccine this year and those planning to be vaccinated who had delayed for various reasons. To address this, analyses were presented restricting to those most likely to represent vaccine hesitant individuals which demonstrated this subgroup differed from those who planned to receive a vaccine.

Future Directions

Based on the feedback in the phone surveys, there will be a need for education and providing information that allays fears, particularly for the substantial “wait and see” population. Additionally, a segment of the population, that may represent 30% or greater, could require additional focus to better understand attitudes and perceptions which may be influenced by social determinants of health or historical or current mistreatment by the health system or government. Building residents’ trust and identifying trusted messengers will be crucial to ensure immunization. Targeted communication through a trusted messenger can help address concerns about safety and efficacy, however deep seated distrust in government and the institutions that may have treated them poorly in the past may need more comprehensive, longer-term solutions. Demonstrating concern about issues other than vaccination may be important to demonstrate trust and true commitment. It is important to remember that populations are not monolithic, so multiple strategies are likely needed to ensure vaccination uptake.

KEY INFORMANT INTERVIEWS: EVALUATING FEASIBILITY & SUSTAINABILITY (AIMS 4-6)

Methods

The feasibility of the BCHD flu vaccination initiative was assessed through documentation of the formative process of the initiative among the senior housing facilities and through key informant interviews, debriefings during routine BCHD meetings, and observation of flu vaccine service delivery during senior building events. Participants in the key informant interviews and debriefings included personnel from BCHD, pharmacists, Coppin State, and Resident Service Coordinators (RSCs) of the senior housing buildings (see Appendix III – V for interview guides). RSCs, whose primary responsibilities are to provide supportive services to residents, assist residents with issues that arise (e.g., social security, food assistance, social isolation, substance abuse, home health services, legal aid), and develop wellness programs and resources for residents, were the primary points of contact for BCHD in each building and were responsible for coordinating the flu clinics.

We evaluated intervention feasibility using semi-structured key informant interviews, focus group discussions, and clinic observation. Through the interviews and debriefings, we also documented the engagement process for RSCs, participating pharmacies, and the target population (e.g., discussions with other pastors and a congregation led by Pastor Terris King, town hall events led by BCHD, regular conference calls with BCHD and participating pharmacies) and identified bottlenecks and areas for

improvement for implementing such an initiative in the future. These interviews were approximately 30-60 minutes in duration.

Sampling for the key informant interviews was purposive to ensure representation of key stakeholders and constituencies participating in the flu vaccination initiative. The sample size for the key informant interviews was driven by the range of respondents needed to provide a comprehensive understanding.

A total of 23 key informants were either interviewed, provided written responses to interview/survey questions, or participated in focus group discussions.

- *Baltimore City Health Department staff: 6*
- *Participating Pharmacists: 2*
- *Resident Service Coordinators: 14*
- *Outreach Partner (Coppin State University): 1*

The evaluation included all aspects of the flu initiative, starting with initial BCHD engagement with senior housing buildings to the clinic events and opportunities for continued engagement in the future (Figure 12). Specific topics addressed in the semi-structured interviews focused on the aspects described in Figure 12.

Figure 12: Aspects of the Flu Initiative Evaluated



Flu Initiative Planning

BCHD Planning

Initial planning for the flu initiative began August with the intent to partner with LabCorp for vaccine service delivery. A contract with LabCorp's parent company was in place at the start of planning, but an agreement with LabCorp for the initiative would not be finalized until October. LabCorp required a minimum of one month notice to plan for specific clinic events (e.g., estimating participation, hiring nursing staff, sending vaccinations to the nurses), which did not align with the clinic timelines. Due to challenges with LabCorp, Rite Aid agreed to participate in the senior housing clinics. The pharmacist interviewed said that while most clinics were planned over the summer, Rite Aid has the ability to participate in clinics on short notice.

Pharmacy partners that could be flexible in their plans contributed to the ability to reach a broader number of older adults.

Throughout the initiative, BCHD staff spent the majority of their time working on initiative activities. Senior BCHD staff spent most of their time finalizing contracts with the partnering pharmacies, including meetings, email communications, and consultations with the legal team. The Care Coordination team was responsible for flu clinic planning.

The Care Coordination team led the effort in reaching out to senior housing buildings to gauge interest in participating in the initiative, coordinating events, and doing educational outreach. In the early phase of planning, the team spent much of their time calling individual housing buildings, but the process was slowed because the list of contact information was outdated, building staff was working remotely and not on site to answer phones, or the building was not in Baltimore City or was not a senior housing building. The Care Coordination team of seven were reassigned to the flu initiative from August to November and diverted over 90% of their time to flu initiative activities. During the initial planning phase, BCHD staffing was adequate, but additional staff for outreach to the buildings was hired or assigned to the flu initiative in September and October.

Pharmacies traditionally plan their flu activities in the spring and early summer. Large events, such as at schools or workplaces, are scheduled in April and May, and smaller clinics like the senior housing buildings are scheduled in June and July. The RSCs and pharmacist interviewed indicated that pharmacies were usually the ones initiating the scheduling with buildings, but occasionally buildings would reach out to the pharmacies. Once the clinics were scheduled, the Rite Aid district manager provided a list of dates and times for upcoming clinics to pharmacy staff, and then staff signed up to work the clinics. In many cases, the pharmacist at the event did not participate in the scheduling, planning, and coordination with the buildings and did not directly communicate with the buildings.

Building Coordination

Prior to 2020, BCHD had little engagement with the senior housing buildings. A complete list of senior housing buildings, RSC or property management contact information, and resident demographic information was unavailable or outdated. Initial engagement, focused on food distribution and COVID-19 control, began in spring 2020, but most engagement with the senior housing buildings did not start until the flu initiative began in August. As part of the flu vaccine initiative, BCHD surveyed RSCs in late August to inquire about previous experience holding flu vaccination clinics. Approximately 75% of buildings responded of which 50% reported holding a vaccination event in the past with local pharmacies or schools.

BCHD began initiative planning in September 2020. IVAC and BCHD held a virtual meeting with senior housing RSCs to provide education on flu and flu vaccine; materials were provided to RSCs to share with their residents. A second survey was conducted by BCHD and IVAC in September to gauge building interest in participating in clinics arranged by BCHD. About 90% of senior building RSCs or property managers completed the second survey with most requiring follow-up phone calls from BCHD staff. The multiple surveys led to confusion among RSCs. Many thought the second survey was the same as the first and did not complete it until BCHD staff reached out directly. Of the senior housing buildings contacted, 54 expressed interest in partnering with BCHD, 37 opted to arrange their own vaccine clinics, 14 opted not to host a clinic this year, and 17 did not respond to multiple communications from BCHD.

Feedback from the RSCs through the key informant interviews and interactions with BCHD staff was that too many BCHD contacts in the initial outreach led to some confusion with RSCs. Communications with buildings improved once BCHD staffing was in place and point persons were assigned to each building.

Most RSCs said that partnering with BCHD for the flu initiative did not save time, but they still chose to participate because they appreciated the opportunity to partner with BCHD and considered it a benefit to residents. For buildings that hosted clinics, the repeated engagement from BCHD "kept the [flu] information front and center in this time of COVID" (RSC 12). Of the BCHD-led buildings we spoke with, all held clinics in the past, and many had already started planning clinics for this year. Even for buildings that chose not to have a clinic, the initial outreach from BCHD led at least one RSC to call each resident in the building to see if they had been vaccinated or needed help getting vaccinated.

It took considerable effort to establish relationships, but RSCs really appreciated the outreach from BCHD.

"I really appreciate this new initiative that they brought to [this building], and as long as I am here and as long as the residents are willing, I'm willing to work to make it better, to make it more acceptable." – RSC 4

"I believe BCHD is doing a phenomenal job collaborating with RSCs and/or property managers to increase flu vaccine participation. Keep up the great work with reaching out to communities and providing assistance." – RSC 13

Building Vaccine Clinics

From October 21st to December 11th, BCHD held 50 flu vaccine clinics for 54 senior housing buildings. All but four clinics were held in a common area, and the rest used a door-to-door strategy. A total of 500 residents were vaccinated with an average of 11 residents vaccinated per clinic or 9% of the target population (range 0-39 people vaccinated, with 0-32% of the target population). Details of the flu clinics are provided in Supplemental Table 5.

Most buildings that conducted their own clinics began planning in July and held clinics in September and early October. In some cases, the building management reached out to pharmacies or partnering institutions, and in other cases, the pharmacy reached out to the buildings. The building-led RSCs we spoke to chose not to partner with BCHD because they were already far along in clinic planning or because they wanted to maintain existing partnerships with local or regional pharmacies and home health organizations. Few clinic details were available from buildings that coordinated clinics themselves, but two of the RSCs we spoke with said their clinics had 30-45 residents vaccinated, higher numbers than the BCHD-led clinics held later in the year. In some cases, the demand was large enough that the building opted to hold two clinics.

We were only able to interview or survey three buildings that chose not to hold a clinic this year. Two buildings cited low vaccine demand as the primary reason, and the other cited COVID-19 restrictions

imposed by property management. In the September survey sent to RSCs, some indicated that their building was too small (<50 residents) to host an event. Other buildings did not respond to the communications from BCHD and little information is known about these buildings and their residents.

Clinic Observation

From October 30th to November 19th, the evaluation team observed seven BCHD-led senior housing building clinics. The buildings and clinics ranged in size and strategy used (common area vs. door-to-door).

- *Heritage Run at Stadium Place – October 30th (common area)*
- *Amity Ramble – November 5th (door-to-door)*
- *Lanvale Towers – November 9th (common area)*
- *St. Mary's Roland View – November 9th (common area)*
- *Wayland Village – November 9th (common area)*
- *Basilica Place – November 10th (common area)*
- *Zion Towers – November 19th (door-to-door)*

Prior to the clinic, the pharmacists would coordinate with the district manager and not the senior housing buildings. Based on the projected clinic size information provided, the pharmacists would pick up the vaccines and supplies from the pharmacy the day of the clinic, and would arrive at the building a few minutes before the start of the clinic. Depending on the location of the clinic and the pharmacy, this step could take a couple hours, and it led to the pharmacist arriving late for at least one clinic. Supplies provided by the pharmacist included a cooler with vaccines, alcohol wipes, band aids, sharps disposal box, gloves and other PPE, and hand sanitizer. Additional supplies like cleaning wipes and pens were sometimes provided by the building.

Most of the clinics observed were held in an indoor common area or outdoors on the building property and allowed for appropriate social distancing (Figure 13). However, in many cases, the pharmacist did not know what the set up would look like until they arrived because they did not communicate directly with the buildings prior to the clinic. Some clinics had a clear flow for residents to follow with a designated waiting area, vaccination table, and observation area while others just had an open area with appropriately spaced tables and chairs.

Figure 13. Examples of the Clinic Set Up at Senior Housing Buildings



The process for vaccination was generally the same at each clinic. Residents first filled out a consent form and provided their insurance information, and then were vaccinated. The vaccination process took less than 5 minutes, but filling out the form took an average of about 10 minutes. Coppin State University nursing students, CHWs from HealthCare Access Maryland or BCHD staff were able to help with outreach to facilitate the process. Rite Aid provided a standard consent form to be completed by residents prior to vaccination.

Most of the people vaccinated at each clinic signed up in advance and were vaccinated in the first 30 minutes. Many of the clinics held indoors were not visible to foot traffic and signage was sometimes sparse. Consequently, drop-in vaccinations were generally limited. At the later clinics, incentives helped improve participation, including small gift cards, PPE and hand sanitizer, and first aid kits (Figure 14). The RSCs interviewed also mentioned food and household items as possible incentives. One building paired the clinic with a food distribution event, which resulted in a few additional drop-in vaccinations.

Figure 14. Examples of Incentives Provided at Senior Housing Clinics



Overall, the RSCs and the pharmacists interviewed believed residents felt comfortable getting vaccinated in the building, and it served a segment of the older adult population that may have limited mobility and ability to access health services.

BCHD staff and the pharmacists noted that residents had few questions about the flu vaccine but did have questions

"A lot of the folks in [building B] are little bit more frail [sic] and were kind of sticking closer to home. So for them, like having [the clinic] in the building was super, super convenient...People who did use it [the building clinic] were very, very grateful and happy." – RSC 3

about COVID-19, other vaccines (e.g., pneumococcal and shingles), other health problems. The pharmacists interviewed made it a point to answer resident questions and provide additional health information, but having CHWs or nurses available to answer general health questions would streamline the clinic by allowing the pharmacists to focus on vaccination.

All key informants interviewed attributed the low participation at some clinics to residents getting vaccinated elsewhere. RSCs said the majority of residents had already received the flu vaccine at their provider or pharmacy because that is what they have always done, but the RSCs noted that some residents could have just been telling them what they wanted to hear. Despite some residents'

preference to get vaccinated at their provider or a pharmacy, the building clinics were generally considered a good option for those who were unable to get vaccinated elsewhere.

Through the key informant interviews, several areas of improvements were identified. Ways to increase participation include pairing the clinic or outreach with another event at the building (e.g., food distribution), having staff conduct additional outreach while the clinic is underway (e.g., door-to-door outreach or someone positioned in the lobby area), holding the clinic in an area that is visible to foot traffic or placing signs and staff in key locations to direct people, and providing incentives for participation (e.g., food, gift cards, PPE and cleaning supplies). However, the incentive should be appropriate so as to not provide undue influence on the resident. Recommendations to improve the clinic include reducing the number of people moving around by having the residents seated at tables and having the staff and pharmacist come to them, having CHWs or nurses available to answer any other health questions residents may have, and providing the pharmacist with contact information of onsite building staff, a description of the clinic area, and instructions for accessing the building (e.g., parking, entrances to use) prior to the clinic to reduce delays.

Recommendations from the interviews:

- *Schedule with other events*
- *Leverage outreach*
- *Minimize movement of residents*
- *Be prepared for questions on other health issues*
- *Provide incentives*
- *Improve communication between the pharmacist, RSC and staff prior to the event*

Door-to-Door vs. Common Area Strategies

Few buildings considered using a door-to-door clinic strategy because of building COVID-19 restrictions. According to BCHD planning records, four buildings were described as door-to-door, but the door-to-door clinics varied in their implementation and effectiveness. The study team observed the flu vaccine clinic at two BCHD-led buildings listed as door-to-door. At the first clinic, the pharmacist knocked on the resident's door and the resident came to the common area to fill out the paperwork and get vaccinated. For the other door-to-door campaign, the pharmacist went to the resident's unit, waited in the hallway while the resident filled out the paperwork inside, and then vaccinated the resident in the hallway outside the unit. Both BCHD-led door-to-door clinics only vaccinated 2 and 7 residents, respectively. Across all four door-to-door clinics led by BCHD, an average of 7 residents were vaccinated per clinic.

Additionally, we also interviewed a RSC from a building that partnered with local pharmacies to conduct its own door-to-door clinic. According to the RSC, the door-to-door approach was used for the first time this year because of building restrictions on gathering in a common area. Compared to the other door-to-door clinics we observed, this clinic vaccinated 56 residents over two sessions, which was higher than past years (~30 people) for the building. Residents who participated in the door-to-door clinic were comfortable having the pharmacist and pharmacy tech enter their home.

"Some people like privacy. ... Now that I think about it, I don't know if that was why the number wasn't as large [in past years] because it wasn't private." – RSC 1 (non-initiative building)

Despite its limited use for flu vaccines, all RSCs interviewed were open to using a door-to-door strategy for COVID-19 vaccines. Most RSCs could not conceptualize what a door-to-door campaign would look like considering existing

COVID-19 restrictions in most buildings, but some even hypothesized that it could have increased participation in the flu initiative.

Based on feedback provided by the RSCs and clinic observation, some suggestions for door-to-door strategies include working with property managers to explain the rationale for a door-to-door approach, outlining steps to ensure safety of residents and staff, and

"I think being able to go door to door really helps us reach those folks who literally aren't even leaving their apartment... [This year] we didn't even try. I think in retrospect, they [BCHD] did offer it, and I think we probably should have tried to do that. It probably would have been a little bit more effective in retrospect." – RSC 3 (BCHD-led building)

obtaining buy-in for conducting a door-to-door clinic. The clinic date(s) should be advertised and COVID-19 vaccine educational activities conducted with RSCs and residents as soon as possible (ideally 1 month before the clinic), clearly outlining the rationale and steps for the door-to-door campaign so residents feel comfortable with the door-to-door approach. Ideally residents would sign up for vaccination 2-3 weeks before the clinic and be provided appointment times when possible. Residents' insurance information should be collected and submitted prior to the clinic day, done by either building staff or with support from CHWs or other BCHD staff if building staff not available. If collecting documentation prior to the clinic is not possible, building staff and CHWs should go door-to-door assisting residents in filling out the paperwork with the pharmacy team following behind on the day of the clinic. On the day before or day of the clinic residents should be sent an appointment reminder and asked to complete the COVID-19 screening. During the door-to-door clinic, vaccinating residents based on appointment times may be preferred, or using a systematic approach (e.g., floor by floor) if providing appointment times is not possible. Residents may be vaccinated in their unit or in the hallway outside their door, limiting the number of individuals entering the resident unit to the pharmacist and a pharmacy tech (if needed). Recommend working with building staff to identify furniture or equipment needed (e.g., cart, folding chair, etc.) then determining what can be provided by the building and what must be brought by BCHD or the pharmacist.

Recommendations for door-to-door

- *Reconsider door-to-door for COVID-19*
- *Education for property managers and residents about the approach*
- *Emphasize coordination before the clinic (e.g., fill out paperwork before hand, communicate furniture and equipment needs, etc.)*
- *Provide appointment times (2-3 weeks in advance)*
- *Limit number of individuals entering the unit*

Types of Outreach

The outreach offered by BCHD included printed flyers and posters advertising the clinic date, informational flyers and brochures, other promotional items, and door-to-door outreach visits when the

building would allow. Additionally, BCHD held an informational town hall for residents. However, when we asked RSCs about the town hall, none of them knew that it had occurred and did not promote it to their residents. The flu initiative and outreach by BCHD was viewed positively by the RSCs, particularly the onsite and face-to-face outreach.

Prior to the COVID-19 pandemic, most RSCs liked to communicate with residents in person or in writing, and several spoke to the importance of face-to-face

"Their [BCHD's] materials throughout all of COVID have been quite good. I think they've done a really great job... of trying to dispel myths and other various things." – RSC 3

"I think the communication was very effective. I'm hoping it continues with in the future." – RSC 4

interactions with residents. The COVID-19 pandemic has limited the ability for RSCs to meet with residents face-to-face and limited the reach of BCHD's outreach activities. Other strategies used by the RSCs to communicate with residents included:

- Building designed flyers delivered to resident mailboxes or slipped under the door
- Intercom announcements or building phone system
- Building monthly newsletters
- Resident councils, social clubs, and word of mouth
- Educational presentations from invited speakers (past years)

Feedback Regarding COVID-19 Vaccines

Despite the favorability of the educational materials and outreach activities, the RSCs noted that challenges remain for flu vaccine hesitant populations, and they highlighted the need for additional strategies that foster a dialog with these hesitant populations.

"A lot of people still report that the flu shot made them sick... It's really hard to not argue and show other evidence against somebody's lived experience of getting sick after a flu shot. I feel like it would be helpful to have some more things to turn to an actual conversation when people say things like that... [Education materials] that's kind of like more focused on discussion, instead of just, like, 'here's how it is.'" – RSC 3

The same challenges in vaccine acceptability exist for COVID-19 vaccines, among both residents and RSCs. For successful distribution of COVID-19 vaccines, more outreach and engagement with the RSCs and residents will be essential.

COVID-19 vaccine hesitancy is a real issue identified by the RSCs, and many voiced concerns over both issues brought up by the residents as well as their own reservations about communicating about the vaccine. Issues brought up by RSCs were very similar to our phone survey and include safety, efficacy and the need for more information. There needs to be a higher degree of comfort and more information for them to feel comfortable in answering questions.

The RSCs we interviewed considered themselves a trusted source for residents, and they should be part of any education and outreach strategy. They also recognize the importance of partnering with Baltimore City and the relationship with the health department helps provide needed credibility.

Additionally, using building newsletters and resident councils offer the opportunity to personalize the outreach and work with trusted sources in the building. The printed flu vaccine materials were positively received by residents according to the RSCs interviewed, and one RSC recommended BCHD send mail directly to residents. While this may be useful for general public, the responses from the phone survey show that this may not be sufficient for the most hesitant populations who are mistrusting of broad messaging. Alternative strategies for outreach and targeted messaging will be needed for these highly hesitant populations, and involving the RSCs in the communications will be key to ensuring the messages are received.

Conclusions and Lessons Learned for Future Initiatives

There are a number of lessons learned that can be applied to both flu and COVID-19 vaccination in Baltimore City. It appears that flu vaccination coverage rates are not as low as official estimates indicate, but nonetheless, there are still significant pockets of hesitancy among older adults living in senior housing. The need to strengthen reporting is an important theme of our research to be able to measure progress and identify where resources are needed or should be targeted.

The efforts put forth by the city required a significant effort, but appeared to pay off with more older adults vaccinated. Building off of the relationships with RSCs and the outreach activities should also help ensure high rates of vaccination for COVID-19. In senior housing, the buildings that were not engaged in any efforts may be an important starting point.

Recommendations

1. *Communication strategies to remind and reinforce the importance of flu vaccine are important*
2. *Trusted messengers are essential for communicating with hesitant populations. RSCs are an important resource, but not sufficient to reach all hesitant individuals. Medical professionals are highly trusted, but not always for hesitant individuals. Leveraging existing community networks and training peer ambassadors can play an important role to inform others about flu and COVID-19 vaccinations*
3. *Making vaccination convenient is important for many and may influence some who are not usually vaccinated. Door-to-door vaccination should be considered for COVID-19 vaccinations, but adequate planning and coordination will be needed.*
4. *Education should include broader topics affecting the individual's health and well-being. Addressing concerns about safety and efficacy of vaccines is important, but considering social determinants must also be a priority.*
5. *Engagement and education can help in addressing **underlying concerns of trust***

We recommend that there continue to be communication strategies that address the needs of those that are likely to accept COVID-19 vaccine and address the questions of those that are on the fence. We note that while our respondent population indicated a high degree of flu vaccine acceptance, both flu

and COVID-19 vaccination will face challenges within certain populations. To keep the degree of vaccination high amongst those that get flu vaccine, reinforcing messaging and reminders, particularly through the provider's office or pharmacy may be sufficient. For a small number of people that did not get their flu vaccine this year, providing it in a convenient location may be enough to encourage vaccination next year. For those that are hesitant, broad messaging may not be helpful, so finding trusted messengers is essential. Those messengers may be less likely to be providers or government. Our research showed RSCs are often trusted sources for many residents, and RSCs can use their knowledge of resident matters in the building to help identify trusted peers among the residents that can be ambassadors. Additionally, leveraging the relationships between RSCs and residents, and the communication strategies used by RSCs, can provide additional avenues for delivering tailored messaging to older adults and hesitant populations. Constant outreach and personal communication is very important to both residents and RSCs. Utilizing CHWs, peer ambassadors and engaging partners like Coppin State University can show residents that BCHD is committed to maintaining relationships and adds a personal touch.

COVID-19 may also provide an important reality to leverage in discussing the potential risk benefit. The population of hesitant people for flu vaccine are more likely to be male and under 65, so speaking about the economic impact of lost work due to illness may resonate. The increasing vaccination model provides a framework upon which to evaluate various strategies and how BCHD can take a person-centered approach for both flu and COVID-19 vaccines.

Many will want to see others in their building being vaccinated and that can be a powerful incentive to get vaccinated themselves. Making vaccination convenient is important for many and may influence some who are not usually vaccinated. Although not used extensively for flu vaccination, door-to-door vaccination should be considered for COVID-19 vaccinations. The initial resistance or lack of consideration of the idea of door-to-door vaccination for flu vaccines may be less of an impediment for COVID-19 vaccines, but additional efforts are needed to ensure building management and residents understand the rationale and logistics of a door-to-door strategy. The mixed experience from flu vaccine door-to-door clinics highlight the need for sufficient planning and coordination prior to the event. Regardless of the strategy used, successful COVID-19 vaccine distribution in buildings will require sufficient planning and coordination with buildings, a pharmacy partner that is flexible, and adequate staff for outreach and coordination during the clinic. Having a dedicated budget can speed up purchasing of supplies and incentives, and having staff in place prior to the start of outreach and planning can minimize delays in engagement RSCs and property managers.

Education should also include broader topics affecting the individual's health and well-being. Considering social determinants must be a priority. Addressing concerns about safety and efficacy of vaccines is important, but recognizing that some concerns may be impacted by broader issues of trust and strategies to address hesitancy must be targeted to specific populations and engagement and customized education can help in addressing those underlying concerns over the longer term.

Supplemental Materials

Supplemental Table 1. Participation in the Evaluation of the BCHD Flu Vaccination Initiative

	Buildings agreeing to participate (n)	Total units among participating buildings (n)	Total surveys completed (n)	% of all senior housing units in Baltimore City completing surveys
BCHD-led	15	2,932	530	8.7
Building-led	21	2,795	850	20.2
No initiative	8	1,111	232	7.8
All buildings	44	6,838	1612	12.1

Supplemental Table 2. Factors Influencing Flu Vaccine Decision

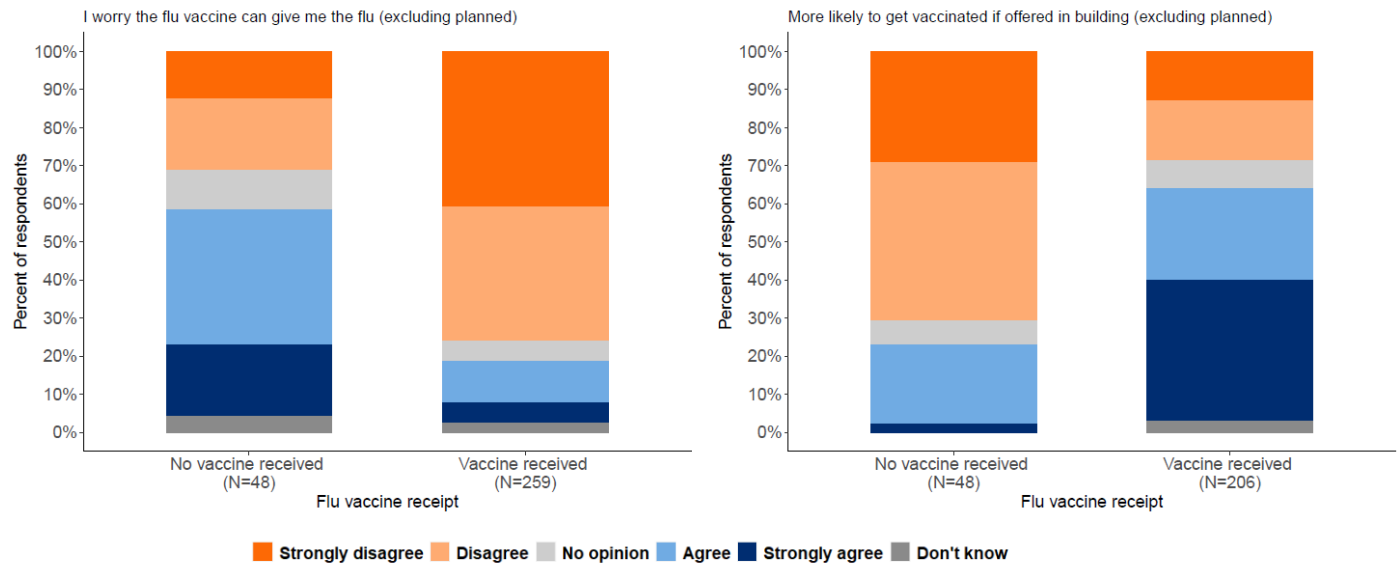
Factor	n (col %)		p-value
	No flu vaccine recipients (N=88)	Flu vaccine recipients (N=259)	
Standard practice ("always get vaccinated / "never vaccinated")	25 (28.4)	192 (74.1)	<0.0001
Health-related reasons / personal risk (fear of flu, past experience with flu, personal risk perception, complications)	32 (36.4)	77 (29.7)	0.25
Vaccine safety / prior experience or reaction	28 (31.8)	6 (2.3)	<0.0001
Recommendation from doctor	2 (2.3)	46 (17.8)	0.0003
Media coverage about COVID-19 / due to COVID-19	9 (10.2)	18 (6.9)	0.32
Recommendation from family, friend, community or religious leaders	4 (4.5)	9 (3.5)	0.65
Effectiveness of flu vaccine	2 (2.3)	4 (1.5)	0.65
Availability / cost / convenience	6 (6.8)	14 (5.4)	0.62
Other	11 (12.5)	17 (6.6)	0.08

Chi-square p-value.

Categories not mutually exclusive; respondents may have reported multiple reasons.

Other includes risk of spreading flu to my family and friends, recent media coverage about the flu and flu vaccinations, social norm ('everyone gets it'), trust of the people recommending or giving the vaccine, and others

Supplemental Figure 1. Knowledge and Perceptions of the Flu Vaccine, Excluding Those Planning to be Vaccinated



Supplemental Table 3: Likelihood of Receiving a COVID-19 Vaccine, Overall and by Flu Vaccine Receipt

Likelihood of Receiving COVID-19 Vaccine	n (col %)			P-value flu vs non-flu recipient
	All participants (N=347)	No flu vaccine recipients (N=88)	Flu vaccine recipients (N=259)	
Very likely	178 (51.3)	28 (31.8)	150 (57.9)	0.0002
Somewhat likely	36 (10.4)	13 (14.8)	23 (8.9)	
Not sure	60 (17.3)	16 (18.2)	44 (17.0)	
Somewhat unlikely	17 (4.9)	8 (9.1)	9 (3.5)	
Very unlikely	56 (16.1)	23 (26.1)	33 (12.7)	
Categories collapsed				
Likely	214 (61.7)	41 (46.6)	173 (66.8)	0.0004
Not sure	60 (17.3)	16 (18.2)	44 (17.0)	
Unlikely	73 (21.0)	31 (35.2)	42 (16.2)	

Chi-square p-value.

Supplemental Table 4: Factors Influencing COVID-19 Vaccine Decision, by Likelihood of Vaccine Receipt

Factor	n (col %)			P-value
	Likely (N=214)	Not sure (N=60)	Unlikely (N=73)	
Perceptions of risk of COVID illness, complications, exposure	152 (71.0)	18 (30.0)	17 (23.3)	<0.0001
How well the vaccine works	27 (12.6)	10 (16.7)	16 (21.9)	0.15
If my doctor recommends that I get vaccinated	33 (15.4)	12 (20.0)	2 (2.7)	0.007
Opinion or approval from trusted person	22 (10.3)	2 (3.3)	3 (4.1)	0.087
Lack of trust in vaccine or concerns about safety	20 (9.3)	29 (48.3)	60 (82.2)	<0.0001
Recent media and social media coverage about the COVID-19 vaccine	14 (6.5)	8 (13.3)	4 (5.5)	0.16
General trust in vaccines	18 (8.4)	1 (1.7)	0 (0.0)	0.009
Other	38 (17.8)	9 (15.0)	2 (2.7)	0.006
Don't know	4 (1.9)	6 (10.0)	1 (1.4)	0.004

Chi-square p-value. Includes any factor reported (top factors or other factors). Categories not mutually exclusive; respondents may have reported multiple reasons.

Other includes if the vaccine is covered by my insurance, out of pocket costs, convenience (e.g., easily accessible and available), and doing something that benefits my community.

Supplemental Table 5. BCHD Flu Vaccine Clinic Details

Senior Housing Building	Building Size	Number Expected	Number Vaccinated	% Residents Vaccinated
Broadway Courts	47	4	5	10.6%
Wyman House	309	14	18	5.8%
Lillian Jones	74	6	10	13.5%
Walker Mews	178	6	10	5.6%
Ahepa Senior Housing (55), ODS/Messiah Hall (20), Polish National Alliance Senior Housing (20), St. Elizabeth's (20)	115	8	10	8.7%
Allendale Apartments	164	9	7	4.3%
Brentwood	50	13	16	32.0%
Harford Commons	30	14	8	26.7%
Monte Verde Apartments	200	25	39	19.5%
Indecco	45	1	0	0.0%
Coleman Manor	44	4	6	13.6%
Harvey Johnson Towers	120	15	35	29.2%
Belvedere Green (94), Woodbourne Woods (71)	165	NR	26	15.8%
Bel Air (Ellerslie)	45	13	12	26.7%
Foxwell Memorial Apartments	154	15	16	10.4%
Heritage Run at Stadium Place	40	5	5	12.5%
Cherry Hill Manor	80	2	8	10.0%
Oaks at Liberty	72	3	6	8.3%
Amity Ramble*	46	2	2	4.3%
Bel Park Tower Apartments	269	NR	20	7.4%
Linden Park Apartments	266	6	21	7.9%
Pleasant View Gardens*	97	8	13	13.4%
Irvington Place Apartments	41	10	8	19.5%
Alcott Place Senior	50	NR	7	14.0%
Bellevue	48	9	6	12.5%
Walker Daniels	23	0	0	0.0%
Mary Harvin Apartments	70	4	3	4.3%

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St Mary's Roland View 1	210	3	12	5.7%
St Mary's Roland View 2	140	3	2	1.4%
Chase House	189	7	9	4.8%
Lanvale Towers	151	1	0	0.0%
Wayland Village Apartments	120	4	4	3.3%
Basilica Place	202	13	11	5.4%
Lakewood Apartments	110	22	20	18.2%
Charles R. Uncles Senior Plaza	47	5	Missing	--
Terrace Garden	84	10	Missing	--
Arlington Estates Coop*	69	9	6	8.7%
Westminster House	280	9	Missing	--
J Van Story Branch Apartments	150	13	13	8.7%
Oliver Plaza Apartments	50	8	7	14.0%
Ruscombe Gardens	200	NR	8	4.0%
City View at McCulloh	350	13	13	3.7%
Highlandtown	83	3	6	7.2%
Johnston Square	216	30	20	9.3%
Lakeview Towers	326	15	18	5.5%
Homewood House	30	1	3	10.0%
Zion Towers*	200	4	7	3.5%
Bernard E Mason (Rescheduled)	236	NR	6	2.5%
Rosemont Towers		NR	8	
Morrell Park		NR	10	

*Door-to-Door; NR Not received

Appendices



Appendix I. Baltimore Flu Vaccination Survey

XXXX

The Baltimore City Health Department, Morgan State University and Johns Hopkins University are surveying residents of senior housing buildings to help plan future flu vaccination initiatives.

- **Request:** Please complete the short survey below for each adult over 55 years of age living in this apartment (today if possible).
- **How to complete:** By paper (below) or online (<https://redcap.link/bmorefluvax>).
- **Where to turn in (if completing by paper):** Drop the completed survey in the box labelled “Baltimore City Flu Vaccination Survey” in the lobby or office of your building.

	Adult 1	Adult 2
1. Did you receive a flu vaccine this flu season? (Check one)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
2. If you received a flu vaccine this year, where did you get vaccinated?	<input type="checkbox"/> In my building (common area or outdoors) <input type="checkbox"/> In my apartment <input type="checkbox"/> At a pharmacy <input type="checkbox"/> At a health provider <input type="checkbox"/> Not applicable <input type="checkbox"/> Other: _____	<input type="checkbox"/> In my building (common area or outdoors) <input type="checkbox"/> In my apartment <input type="checkbox"/> At a pharmacy <input type="checkbox"/> At a health provider <input type="checkbox"/> Not applicable <input type="checkbox"/> Other: _____
3. Did you receive a flu vaccine last year? (Check one)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure

We would also like to conduct a 15-minute phone survey to learn more about your views about the flu and flu vaccines. **We are offering a \$20 gift card to those who participate in the phone survey.** Please check the box below if you are willing to participate in the phone survey. If you are selected for the phone survey, you will receive a call in the coming weeks.

☐ I am interested in participating in the phone survey (record name and number below).

Mr. / Ms. / Mrs. / Dr. / Rev. (circle one)

Print Last Name: _____ Phone Number: _____

☐ Yes, you can share my contact information with Baltimore City Health Department for future health-related alerts.

Please drop the completed paper survey in the box in the lobby or office of your building labelled “Baltimore City Flu Vaccination Survey”.

Thank you for your participation!

**Appendix II. In-Depth Survey on Attitudes and Beliefs
Related to Flu & COVID**

Version: December 9, 2020

(to be conducted by Morgan State students)

ELIGIBILITY & SCHEDULING CALL

INTRODUCTION

Good (Morning, afternoon or evening) My name is _____. I am a student from Morgan State University working with the Baltimore City Health Department and Johns Hopkins University on the Flu Initiative in senior housing buildings.

Do you recall completing a short three question survey sent to you in late November?

- ☐ Yes
- ☐ No

If Yes recall completing the survey

Do you recall:

- *That you marked you were willing to participate in a longer survey about your knowledge and opinions about the flu, flu vaccination, and COVID-19 vaccination (brief pause)*
- *That the survey will take about 15 minutes and (brief pause)*
- *That we will offer a \$20 gift card in appreciation for your time? (brief pause)*

The purpose of this call is to schedule a time to complete the longer survey, or you can complete the longer survey now.

Would you like to complete the longer survey now?

- ☐ Yes,
 - *If Yes, proceed → proceed to eligibility section*
 - *If No, schedule another time: When would be a good time to schedule this survey?*
 - *Date:*
 - *Time:*
 - *Thank you so much for your time, I look forward to speaking to you on [date _____ Time _____]*
- ☐ *No, not willing to participate - We completely understand. We want to thank you for your time. Have a nice day. [End call]*

If No do not recall completing the survey – Remind the participant about the survey.

This short survey was given to you in mid-November, either in your mailbox, under your door, or in your lobby.

At that time, you indicated that you were willing to participate in a longer survey.

Do you recall

- *That you marked you were willing to participate in a longer survey about your knowledge and opinions about the flu, flu vaccination, and COVID-19 vaccination (brief pause)*
- *That the survey will take about 15 minutes and (brief pause)*
- *That we will offer a \$20 gift card in appreciation for your time? (brief pause)*

The purpose of this call is to schedule a time to complete the longer survey, or you can complete the longer survey now.

Are you still interested in helping us by completing the survey?

- ☐ Yes,
 - *If Yes, proceed → proceed to eligibility section*
 - *If No, schedule another time: When would be a good time to schedule this survey?*

- Date:

- Time:

- *Thank you so much for your time, I look forward to speaking to you on [date _____ Time _____]*

☐ **No, not willing to participate** - *We completely understand. We want to thank you for your time. Have a nice day. [End call]*

START OF FULL PHONE SURVEY

Eligibility

First, we need to determine if you are eligible since this survey is limited to people 55 and older.

Are you 55 or older?

- ☐ **Yes (Do not probe but if respondent provides exact age record for later reference: ____ years)**
- ☐ **No** - *Based on this information you are not eligible for the survey, but we want to thank you for your time. Have a nice day. [End call]*

Permission to record (only for phone calls to be recorded)

This survey has been selected to be recorded for quality control purposes. Do I have your permission to record this survey?

- ☐ **Yes - turn on the recorder**
- ☐ **No – DO NOT RECORD THE SURVEY**

Informed consent

Next, we need to get your informed consent before we begin the survey.

As noted earlier – the purpose of this survey is to learn about your knowledge and opinions about the flu, flu vaccination and COVID-19 vaccines. (brief pause)

This survey will take about 15 minutes. (brief pause)

You do not have to answer all the questions. You may stop at any time during the survey. (brief pause)

Your responses will be anonymous and we will only keep your name and personal information to send you the gift card. (brief pause)

The results of the survey will be summarized from all participants and shared in a town hall meeting call in January, 2021.

In appreciation for your time, we are offering a \$20 gift card. We will collect some additional information at the end of the survey so we can send you the card.

Do you have any questions before we get started?

May I begin the survey?

- ☐ Yes
- ☐ No

B. Influenza vaccination status

Prompt: This first set of questions refers to your experience with the flu vaccine this year. For each question please answer with the response that matches or most closely represents your experience.

1. Did you get a flu vaccine this year?

- ☐ Yes (Skip to Question 2)

- ☐ No (Skip to Question 3)
- ☐ Don't know (Skip to Question 5)
- ☐ Other, please specify: _____ (Skip to Question 5)

2. Where did you get the flu vaccine this year? *Instructions: Ask the question then type their response into text field. After recording their response select the most appropriate option from the question below. You may continue with the survey after typing their responses then come back to select the appropriate option after the call is complete.*

Text response: _____

- ☐ Primary care doctor
- ☐ Pharmacy or supermarket
- ☐ Other health facility, a specialist
- ☐ Inside my building in a common area (e.g., lobby, office, common room)
- ☐ Outside my building (e.g., parking lot or other outdoor location near my building)
- ☐ In my home (i.e. door-to-door campaign)
- ☐ At a vaccination clinic held at a nearby senior housing building
- ☐ At a vaccination clinic held at my church
- ☐ At a vaccination clinic in another location
- ☐ Other, please specify: _____

3. (Ask if 'No' to Question 1) Are you planning to get a flu vaccine this year?

- ☐ Yes
- ☐ No
- ☐ Don't know

4. (Ask if 'Yes' to Question 3) Where are you planning to get vaccinated this year? *Instructions: Ask the question Check the box that best matches their answer, If no match is found - then type their response into text field. After recording their response select the most appropriate option from the question below. You may continue with the survey after typing their responses then come back to select the appropriate option after the call is complete.*

Text response: _____

- ☐ Primary care doctor
- ☐ Pharmacy or supermarket
- ☐ Other health facility, a specialist
- ☐ Inside my building in a common area (e.g., lobby, office, common area)
- ☐ Outside my building (e.g., parking lot or other outdoor location near my building)
- ☐ In my home (i.e. door-to-door campaign)
- ☐ At a vaccination clinic held at a nearby senior housing building
- ☐ At a vaccination clinic held at my church
- ☐ At a vaccination clinic in another location
- ☐ Other, please specify: _____
- ☐ Don't know _____

5. (Ask if 'No', 'Don't Know', or 'Other' to Question 1 or 'Vaccine Not Received in Building/Home' to Question 2) Was the flu vaccine offered in your building?

- ☐ Yes
- ☐ No
- ☐ Don't know

6. (Ask if 'Yes' to Question 1) What influenced your decision about getting the flu vaccine **this year**? *Instructions: Ask the question Check the box that best matches their answer, If no match is found - then type their response into text field. After recording their response select the most appropriate option(s) from the question below. Select all that apply. You may continue with the survey after typing their responses then come back to select the*

appropriate option(s) after the call is complete.

Text response: _____

- ☐ My personal risk of getting flu
- ☐ My standard practice ("always get vaccinated")
- ☐ Complications that can occur as a result of the flu
- ☐ The risk of spreading flu to my family and friends
- ☐ Recommendation from provider
- ☐ Recommendation from family
- ☐ Recommendation from friends
- ☐ Recommendation from community leader
- ☐ Recommendation from religious leader
- ☐ Recent media coverage about the flu and flu vaccinations
- ☐ Recent media coverage about COVID-19
- ☐ Social norm ("everyone gets it")
- ☐ Past experience with flu vaccine
- ☐ I was sick last year
- ☐ Convenience (time/location)
- ☐ Cost of getting the vaccine
- ☐ Vaccine safety
- ☐ Vaccine availability
- ☐ Trust of the people giving the vaccine
- ☐ Trust of people recommending the vaccine
- ☐ Don't know
- ☐ Other, specify: _____

7. (Ask if 'Yes' to Question 1) Based on your experience this year, would you get the flu vaccine next year?

- ☐ Yes
- ☐ No
- ☐ Don't know

C. Knowledge of flu and perceived risk

Prompt: This next section is about the flu. I will ask you later about the vaccine.

I will read a series of statements. Please respond using a scale of 1 to 5, where 1 is strongly disagree and 5 is strongly agree.

There are no right or wrong answer.

	99-Don't know	1-Strongly Disagree	2-Disagree	3-No opinion	4-Agree	5-Strongly Agree
8. I fear getting sick with the flu.	0	1	2	3	4	5
9. If I get the flu I worry about being hospitalized	0	1	2	3	4	5
10. I believe people can die from the flu.	0	1	2	3	4	5
11. I believe getting sick with the flu can lead to large medical bills.	0	1	2	3	4	5

D. Knowledge and perceptions of the flu vaccine

Prompt: I will now read a series of statements about the flu vaccine.

Please respond using a scale of 1 to 5, where 1 is strongly disagree and 5 is strongly agree. There are no right or wrong answer.

	99-Don't know	1-Strongly Disagree	2-Disagree	3-No opinion	4-Agree	5-Strongly Agree
12. The flu vaccine works for most people .	0	1	2	3	4	5
13. I worry the flu vaccine can give me the flu.	0	1	2	3	4	5
14. Most people I know worry the flu vaccine can give them the flu.	0	1	2	3	4	5
15. Most people my age should get the flu vaccine.	0	1	2	3	4	5
16. I can get a flu vaccine for free.	0	1	2	3	4	5
17. (If 'No', 'Don't Know', or 'Other' to Question 1 or 'Vaccine Not Received in Building/Home' to Question 2) I would be more likely to get vaccinated if it was offered in my building.	0	1	2	3	4	5
18. (If they received their vaccine in their building in Question 2) Having the vaccine offered in my building influenced my decision to get vaccinated.	0	1	2	3	4	5

19. Who do you rely on most for information about flu vaccine? *Instructions: Ask the question Check the box that best matches their answer, If no match is found then type their response into text field. If they provide multiple responses record in the order mentioned. After recording their response select the most appropriate **top two** option(s) from the question below. You may continue with the survey after typing their responses then come back to select the appropriate option(s) after the call is complete. If the interviewee is not clear about the question, say "for example, your doctor, your family, etc."*

Text response: _____

Rely on most, response 1 (select one)	Rely on most, response 2 (select one)
<input type="checkbox"/> Primary care doctor <input type="checkbox"/> Other health professional <input type="checkbox"/> Family members (e.g., children or grandchildren) <input type="checkbox"/> Friends or neighbors <input type="checkbox"/> Religious leaders <input type="checkbox"/> Community groups <input type="checkbox"/> Barber or hairdresser <input type="checkbox"/> News on television <input type="checkbox"/> Newspaper or magazine (e.g. Baltimore Sun) <input type="checkbox"/> Radio (AM or FM) <input type="checkbox"/> Social media (e.g. Facebook, Twitter, Instagram, YouTube, WhatsApp) <input type="checkbox"/> Internet (excluding social media) <input type="checkbox"/> At a town hall <input type="checkbox"/> Government <input type="checkbox"/> The Centers for Disease Control & Prevention (CDC) <input type="checkbox"/> Baltimore City Health Department <input type="checkbox"/> I don't trust any sources of information <input type="checkbox"/> Don't know <input type="checkbox"/> Other, please specify: _____	<input type="checkbox"/> Primary care doctor <input type="checkbox"/> Other health professional <input type="checkbox"/> Family members (e.g., children or grandchildren) <input type="checkbox"/> Friends or neighbors <input type="checkbox"/> Religious leaders <input type="checkbox"/> Community groups <input type="checkbox"/> Barber or hairdresser <input type="checkbox"/> News on television <input type="checkbox"/> Newspaper or magazine (e.g. Baltimore Sun) <input type="checkbox"/> Radio (AM or FM) <input type="checkbox"/> Social media (e.g. Facebook, Twitter, Instagram, YouTube, WhatsApp) <input type="checkbox"/> Internet (excluding social media) <input type="checkbox"/> At a town hall <input type="checkbox"/> Government <input type="checkbox"/> The Centers for Disease Control & Prevention (CDC) <input type="checkbox"/> Baltimore City Health Department <input type="checkbox"/> Other, please specify: _____

20. (Skip if reported 'I don't trust any sources' in prior question) Are there other sources you rely on for information

about flu vaccine? *Instructions: Ask the question Check the box that best matches their answer, If no match is found then type their response into text field. After recording their response select the most appropriate option(s) from the question below. **Select all that apply.** You may continue with the survey after typing their responses then come back to select the appropriate option(s) after the call is complete.*

Text response: _____

- ☐ Primary care doctor
- ☐ Other health professional
- ☐ Family members (e.g., children or grandchildren)
- ☐ Friends or neighbors
- ☐ Religious leaders
- ☐ Community groups
- ☐ Barber or hairdresser
- ☐ News on television
- ☐ Newspaper or magazine (e.g. Baltimore Sun)
- ☐ Radio (AM or FM)
- ☐ Social media (e.g. Facebook, Twitter, Instagram, YouTube, WhatsApp)
- ☐ Internet (excluding social media)
- ☐ At a town hall
- ☐ Government
- ☐ The Centers for Disease Control & Prevention (CDC)
- ☐ Baltimore City Health Department
- ☐ I don't trust any sources of information
- ☐ Don't know
- ☐ Other, please specify: _____

21. Is there anyone you do not trust for information about the flu or flu vaccine? *Instructions: Ask the question Check the box that best matches their answer, If no match is found then type their response into text field. After recording their response select the most appropriate option(s) from the question below. **Select all that apply.** You may continue with the survey after typing their responses then come back to select the appropriate option(s) after the call is complete.*

Enter response: _____

- ☐ Primary care doctor
- ☐ Other health professional
- ☐ Family members (e.g., children or grandchildren)
- ☐ Friends or neighbors
- ☐ Religious leaders
- ☐ Community groups
- ☐ Barber or hairdresser
- ☐ News on television
- ☐ Newspaper or magazine (e.g. Baltimore Sun)
- ☐ Radio (AM or FM)
- ☐ Social media (e.g. Facebook, Twitter, Instagram, YouTube, WhatsApp)
- ☐ Internet (excluding social media)
- ☐ At a town hall
- ☐ Government
- ☐ The Centers for Disease Control & Prevention (CDC)
- ☐ Baltimore City Health Department
- ☐ I trust all sources of information
- ☐ Don't know
- ☐ Other, please specify: _____

E. COVID-19 Vaccine Questions

Read prompt: Next I will ask you two questions about your beliefs regarding the COVID-19 vaccine.

22. If it were easily accessible (i.e. convenient locations, readily available, and no cost), how likely would you be to get the approved COVID-19 vaccine?

- ☐ Very likely
- ☐ Somewhat likely
- ☐ Not sure
- ☐ Somewhat unlikely
- ☐ Very unlikely

23. What influences your decision whether or not to get the COVID-19 vaccine?

Instructions: Ask the question and check the boxes that match their response, in the order given. If no exact match enter the free-text and return to select the appropriate option(s) after the call is complete. type their response(s) in the free text field. In first column select the most appropriate response for their top answer. In second column select the most appropriate response for their second answer. If they provide more than 2 responses record all additional responses in the third column. If they only provide one or two responses leave the third column blank.

Text response: _____

First reason stated (select one)	Second reason stated (select one)	Any additional reasons stated (check all)
<input type="checkbox"/> My age <input type="checkbox"/> My race/ethnicity <input type="checkbox"/> My risk of being exposed to COVID-19 <input type="checkbox"/> My health history and risk of severe illness and complications (e.g., existing medical conditions) <input type="checkbox"/> If my doctor recommends that I get the vaccine <input type="checkbox"/> How well the vaccine works (including how long protection lasts) <input type="checkbox"/> If the vaccine is covered by my insurance <input type="checkbox"/> Out of pocket costs (excluding what is covered by health insurance, e.g., transport costs) <input type="checkbox"/> Vaccine safety and potential side effects of the vaccine (e.g., fever and soreness in the arm) <input type="checkbox"/> Convenience (e.g., easily accessible and available) <input type="checkbox"/> The opinions of my family members, friends, and community leaders <input type="checkbox"/> The number of people still getting sick with COVID-19 <input type="checkbox"/> Recent media and social media coverage about the COVID-19 vaccine <input type="checkbox"/> Doing something that benefits my community (e.g., protecting others)	<input type="checkbox"/> My age <input type="checkbox"/> My race/ethnicity <input type="checkbox"/> My risk of being exposed to COVID-19 <input type="checkbox"/> My health history and risk of severe illness and complications (e.g., existing medical conditions) <input type="checkbox"/> If my doctor recommends that I get the vaccine <input type="checkbox"/> How well the vaccine works (including how long protection lasts) <input type="checkbox"/> If the vaccine is covered by my insurance <input type="checkbox"/> Out of pocket costs (excluding what is covered by health insurance, e.g., transport costs) <input type="checkbox"/> Vaccine safety and potential side effects of the vaccine (e.g., fever and soreness in the arm) <input type="checkbox"/> Convenience (e.g., easily accessible and available) <input type="checkbox"/> The opinions of my family members, friends, and community leaders <input type="checkbox"/> The number of people still getting sick with COVID-19 <input type="checkbox"/> Recent media and social media coverage about the COVID-19 vaccine <input type="checkbox"/> Doing something that benefits my community (e.g., protecting others)	<input type="checkbox"/> My age <input type="checkbox"/> My race/ethnicity <input type="checkbox"/> My risk of being exposed to COVID-19 <input type="checkbox"/> My health history and risk of severe illness and complications (e.g., existing medical conditions) <input type="checkbox"/> If my doctor recommends that I get the vaccine <input type="checkbox"/> How well the vaccine works (including how long protection lasts) <input type="checkbox"/> If the vaccine is covered by my insurance <input type="checkbox"/> Out of pocket costs (excluding what is covered by health insurance, e.g., transport costs) <input type="checkbox"/> Vaccine safety and potential side effects of the vaccine (e.g., fever and soreness in the arm) <input type="checkbox"/> Convenience (e.g., easily accessible and available) <input type="checkbox"/> The opinions of my family members, friends, and community leaders <input type="checkbox"/> The number of people still getting sick with COVID-19 <input type="checkbox"/> Recent media and social media coverage about the COVID-19 vaccine <input type="checkbox"/> Doing something that benefits my community (e.g., protecting others)

<input type="checkbox"/> Other specify: _____ <input type="checkbox"/> Don't know <input type="checkbox"/> None, I do not intend to get a COVID-19 vaccine	<input type="checkbox"/> Other specify: _____	<input type="checkbox"/> Other specify: _____
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F. Additional Information

24. There are some health factors that are known to increase a person's risk of getting very sick or hospitalized because of the flu. Some of these conditions are diabetes, heart disease, high blood pressure, chronic lung disease.

Do you have any of these conditions or any other conditions that you believe would put you at higher risk of becoming very sick or hospitalized because of the flu? You do not need to specify the condition.

- ☐ Yes
- ☐ No
- ☐ Other
- ☐ Don't know
- ☐ Refused

Reference list for data collectors of all health factors known to increase person's risk of serious complications (do not read)

- Neurologic conditions
- Blood disorders (such as sickle cell disease)
- Chronic lung disease (such as chronic obstructive pulmonary disease [COPD] and cystic fibrosis)
- Diabetes
- Heart disease (congestive heart failure and coronary artery disease)
- Kidney diseases
- Liver disorders
- Metabolic disorders (such as inherited metabolic disorders and mitochondrial disorders)
- Obesity
- People with a weakened immune system due to disease or due to medications (such as people with HIV or some cancers such as leukemia, or people receiving chemotherapy or radiation treatment for cancer, or persons with chronic conditions requiring chronic corticosteroids or other drugs that suppress the immune system)
- People who have had a stroke

Read prompt: In order to help us better understand your responses we'd like to collect some additional information.

25. Which of the following age categories are you in? *Instructions: If the respondent previously provided their age confirm the age category based on their prior response. For example, if they said "83 years" when you asked their age at the beginning, rephrase this question to "You mentioned earlier you are 83 years old, so you are in the 75 years or older age category; is that correct?"*

- ☐ Less than 65 years
- ☐ 65 to 74 years
- ☐ 75 years or older
- ☐ Refused

26. Which group would you say best represents your race or ethnicity? *(Instructions: Select the most appropriate based on the interviewees responses. Select all that apply. Do not read out all the answer options.)*

- ☐ Black or African American
- ☐ Hispanic/Latino
- ☐ White
- ☐ American Indian or Alaskan Native
- ☐ Asian or Asian American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ Other, please specify: _____
- ☐ Refused

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27. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other
- ☐ Refused

28. Do you have any other comments you would like to add? _____

TURN OFF THE RECORDER IF IT HAS BEEN USED

Read prompt: This is the end of the survey. Thank you for your time.

We will be looking at all of the responses and reporting back on the results of the survey in a town hall early in January, 2021.

You will be invited to attend the town hall and will receive information from the Baltimore City Health Department about the date and time of the meeting.

As noted at the beginning of the survey, in appreciation for your time we would like to offer you a \$20 gift card to either Amazon, Target, Walmart, or Giant.

Which gift card would you like?

- ☐ Amazon
- ☐ Target
- ☐ Walmart
- ☐ Giant
- ☐ Not interested in a gift card.

The gift cards will be sent by mail within 2 weeks. We'll need to collect your address information to distribute the card. This information will only be used to mail the gift card and will be shared with anyone outside the study team.

First name: _____

Confirm spelling of last name: _____

Based on your paper survey you indicated that you live in <INSERT NAME OF SENIOR HOUSING BUILDING>. Is this correct? Enter building name: _____

If they say no, ask the name of the senior housing building they live in and record in the text field.

Building address:

Unit number:

City (if other than Baltimore):

State (if other than MD):

Building zip code:

Do you have any questions? _____

Thank you so much for your time. Have a great day.

**Appendix III. Evaluation of BCHD Influenza Immunization Initiative
Feasibility, Sustainability and Reliability Survey – BCHD Staff**
Version: December 2, 2020

Purpose of this survey: This survey aims to collect qualitative feedback on the Baltimore City Health Department (BCHD) flu vaccine initiative and engagement with senior housing buildings from BCHD staff, partnering pharmacies, and resident service coordinators (RSCs). Data on the human, financial, economic resources needed to plan and implement the flu clinics will also be collected. Please complete the questions below and return the completed survey to Cristina Garcia (cgarci15@jhu.edu).

A. BCHD Staff Information

- 1) Which BCHD Division/Group do you work in?
- 2) When did you start working on the flu vaccine initiative?
- 3) What was your primary role?

B. Flu Vaccination Event Planning *(Skip this section if you were not involved in the planning of flu vaccine clinics at senior housing buildings.)*

- 1) Describe the process for planning the senior housing flu vaccination events? How long did each step typically take? *(Skip steps in which you were not involved.)*
 - a. Initiative development and approvals
 - b. Senior Housing Outreach
 - c. Identifying implementing partner
 - d. Event scheduling
 - e. Development of IEC materials
 - f. Coordination and outreach
 - g. Procuring vaccines ahead of the event
 - h. Training (if needed)
 - i. Other planning activities
- 2) What factors did BCHD consider when selecting the pharmacy/organization to partner with for flu vaccination events? (e.g., timelines, vaccine availability, minimum vaccination requirements, community network, local vs. national pharmacy, etc.) Where there different considerations for the senior housing flu vaccination events compared to other community events?
- 3) Would you partner with the same pharmacies/organizations for future initiatives? Why or why not?

- 4) Approximately how much of your work time was spent on flu vaccine initiative activities? What type of work would you have done if the flu vaccine initiative was not happening?
- 5) What aspects of the initiative do you think need more focus or resources (e.g. outreach to particular communities/populations, coordination, etc.)?

C. Outreach with Senior Housing Buildings *(Skip this section if you were not involved in the outreach at senior housing buildings.)*

- 1) Describe the process for engaging with senior housing building resident service coordinators (RSCs). What types of outreach support did you provide? If buildings did not want onsite outreach, describe why.
- 2) What types of educational or planning materials did you provide to the buildings? What other information might be helpful to provide in the future?
- 3) What things worked well when engaging with RSCs? Include any feedback provided by the RSCs.
- 4) What were the main challenges when engaging with RSCs? How could BCHD improve engagement with senior housing buildings?
- 5) Did you engage directly with residents in the senior housing building during the outreach? If yes, describe what worked well and what didn't. What suggestions do you have to directly engage with residents? (e.g., provide information, conduct surveys, provide other services)

D. General Feedback on the BCHD Flu Vaccination Initiative

- 1) How did you determine where community campaigns should be conducted? What data did you need or use that was most important in managing the flu efforts?
- 2) Overall, what things worked well with the flu vaccination initiative that you would do again?
- 3) What are some things you would change or do differently in the future?
- 4) How would you describe communication on this project? Was it too much, too little with certain groups, or just right?
- 5) Is there any other information you want to add?

The following sections collect information to conduct the costing analysis of the flu vaccine initiative.

E. Personnel Needs

1) What personnel were involved in the different activities for the flu vaccination initiative in senior housing buildings?

<i>Personnel Type</i>	<i>What % of the personnel time per week is spent on <u>planning the flu vaccination events?</u></i>	<i>What % of the personnel time per week is spent on <u>outreach to senior buildings?</u></i>	<i>What % of the personnel time per week is spent on <u>developing IEC and other communications materials?</u></i>	<i>What % of the personnel time per week is spent on <u>training activities?</u></i>	<i>What % of the personnel time per week is spent on <u>participating in flu vaccine events in senior buildings?</u></i>	<i>What % of the personnel time per week is spent on <u>surveillance activities?</u></i>	<i>What % of the personnel time per week is spent on <u>supervision, monitoring and evaluation activities?</u></i>	<i>Was this personnel position filled by existing personnel? (Y/N)</i>

- 2) For each personnel type listed in the previous question, what was the number of personnel involved and the average salaries or salary range?

<i>Personnel Type</i>	<i>For each personnel type, how many participated in the flu vaccine initiative?</i>	<i>For each personnel type, on average how many hours a week does the personnel work?</i>	<i>What is the average salary for this personnel type? (Specify hourly, monthly, or annually)</i>

- 3) For future initiatives, would you recommend BCHD hire personnel to work full-time on the initiative? Why or why not?
- 4) Did BCHD work with any volunteers to plan and conduct the senior housing building initiative? Explain.

F. Activities and Resources

- 1) Information on flu vaccine doses administered during BCHD-led clinics in senior housing buildings:
- How many flu vaccine doses were administered during BCHD-led clinics in senior housing buildings?
 - How many doses were paid for by BCHD?
 - What was the total cost to BCHD of the doses administered during BCHD-led flu vaccination clinics?
- 2) What was the cost of the senior housing component of the BCHD flu vaccination initiative?
(Please fill in the table with the information where available)

	<i>Total Cost for the Flu Initiative</i>	<i>% for Senior Housing Building Events</i>	<i>Cost per Senior Housing Event</i>
<i>Personnel</i>			
<i>BCHD Staff (salaries & per diems)</i>			
<i>Pharmacy/ Partner Staff</i>			
<i>Other Staff</i>			
<i>Supplies (Excluding Vaccines)</i>			
<i>IEC Materials</i>			
<i>Printing and Office Supplies</i>			
<i>Telecommunications</i>			
<i>Other Supplies</i>			
<i>Logistics and Support</i>			
<i>Indirect Costs</i>			
<i>Transportation</i>			
<i>Outreach Activities</i>			
<i>Print/Radio/TV Advertisements</i>			
<i>Training</i>			
<i>Surveillance</i>			
<i>Other Costs</i>			
<i>Total Cost</i>			

**Appendix IV. Evaluation of BCHD Influenza Immunization Initiative Feasibility,
Sustainability and Reliability Survey – Pharmacists**
Version: December 5, 2020

Purpose of this survey: This survey aims to collect qualitative feedback on the Baltimore City Health Department (BCHD) flu vaccine initiative and engagement with senior housing buildings from BCHD staff, partnering pharmacies, and resident service coordinators (RSCs) and property managers. Please complete the questions below and return the completed survey to Cristina Garcia (cgarci15@jhu.edu). Thank you for your help and support!

A. Pharmacy Information

- 4) Pharmacy Name:
- 5) What is your title/position?
- 6) What was your primary role?

B. Flu Vaccination Event Planning

- 1) Describe the process for planning an offsite flu vaccination clinic, including when you typically begin the step, how long it takes. What is the minimum length of time required for coordinating an offsite clinic?
 - a. Event scheduling
 - b. Coordination and outreach
 - c. Hiring or scheduling pharmacists and/or nurses for the clinics
 - d. Procuring and distributing vaccines ahead of the event, including planning for high vs. standard dose vaccine
 - e. Training (if needed)
 - f. Other planning activities
- 2) What factors does your pharmacy consider when deciding whether to participate in an offsite flu clinic? (e.g. size of the event, generating new business, etc.) Does your pharmacy have minimum size requirements for conducting an offsite flu clinics?
- 3) Was there sufficient interaction with BCHD, senior housing buildings or others to enable you to plan? Why or why not? How could this be improved?
- 4) Are there any internal or external approvals or additional documentation (e.g., insurance certificate or documentation of infection control protocol) that must be obtained before conducting an offsite flu clinic? How long does this process typically take?

C. Senior Building Clinic Details and Feedback

- 1) Which senior housings building clinics did you or your pharmacy participate? Complete the table with details for each senior housing building. *(Add rows as needed. You can also attach a separate file with the information.)*

Senior Housing Building Name	Event Date(s)	How long was the event in minutes?	What strategies were used? <i>(Common area, Door-to-door, or Combination)</i>	How many residents signed up in advance? *	How many vaccines were administered to residents? <i>(Specify high dose and standard dose)</i>
					High: Standard:
					High: Standard:
					High: Standard:

*If the number of residents that signed up is not known, enter the approximate number of people you were told to expect.

- 2) Did you bring the right amount of vaccine for the people that attended the clinic? Why or why not?
- 3) Did you have to adapt or change the clinic set up or delivery strategy (common area vs. door-to-door) once you arrived on site? Describe the changes, any challenges you faced and recommendations for the future.
- 4) If you participated in a door-to-door clinic, do you think it worked well, and would you use it again for administering COVID-19 vaccines? *(Skip if you did not participate in a door-to-door clinic.)*
- 5) If you did not participate in a door-to-door clinic, would it be something you consider using in the future (e.g., administering COVID-19 vaccines)? *(Skip if you participated in a door-to-door clinic.)*
- 6) In general, did you receive any questions or concerns from people getting vaccinated (e.g. related to the flu vaccine, COVID-19, COVID-19 vaccines)? What was the nature of the questions, and were you able to address them?
- 7) What is the process for reporting vaccinations? Do you enter vaccination information into ImmuNET or another database?

D. Personnel, Equipment and Supplies

- 1) What personnel are required for planning, outreach, and conducting offsite flu vaccination?

Personnel Type	Is this personnel involved in planning, implementation or both? (Select all that apply) 1=Planning 2=Conducting events 3=Management and Supervision	For personnel involved in planning and management, how many hours of personnel time are required per clinic? (No. of hours or % of weekly time)	For personnel involved in conducting clinics, how many are needed per clinic? (Specify the event size; e.g. 1 per 20 people vaccinated in an hour)	For personnel involved in conducting clinics, on average how many hours of personnel time are required per event? (Including time before, during, and after the event)	What is the average hourly pay rate for this personnel type?
Pharmacist					
Nurse					
Supervisor					
Other; specify: _____					

- 2) What additional equipment and supplies were required to conduct an offsite flu clinic compared to vaccination in the pharmacy? (Do not include supplies that are used for vaccination regardless of the location.)

Type of Equipment & Supplies	Number Needed for an Average Sized Common Area Event	What is the price of replacing the equipment?

- 3) What additional equipment or supplies were needed for administering flu vaccinations using a door-to-door strategy compared to in a common area? (Examples include different types of cold chain equipment, additional PPE or infection control supplies, etc.)

Type of Equipment & Supplies	Number Needed for an Average Sized Door-to-Door Event	What is the price of replacing the equipment?

E. General Feedback

- 1) Overall, what things worked well that you would do again?
- 2) What are some things you would change or do differently in the future?
- 3) Would you participate in a similar BCHD initiative in the future (e.g., flu or Covid-19 vaccines)?
Why or why not? For COVID-19 vaccines, are there any changes that would be necessary?
- 4) Is there any other information you want to add?

**Appendix V. Evaluation of BCHD Influenza Immunization Initiative Feasibility,
Sustainability and Reliability Survey – Resident Service Coordinators**
Version: December 5, 2020

Purpose of this survey: This survey aims to collect qualitative feedback on the Baltimore City Health Department (BCHD) flu vaccine initiative and engagement with senior housing buildings from BCHD staff, partnering pharmacies, and resident service coordinators (RSCs) and property managers. Please complete the questions below and return the completed survey to Cristina Garcia (cgarci15@jhu.edu). Thank you for your help and support!

A. RSC and Property Manager Information

- 7) What building(s) do you represent? Please fill in the information below for each building you represent. *(Add rows as needed.)*

<i>Building Name</i>	<i>Number of Units</i>	<i>Number of Residents</i>

- 8) What is your title or role in the buildings? Briefly describe your day-to-day responsibilities. If you are the property manager, does your building have a resident service coordinator?
- 9) How do you usually communicate and engage with residents in your building? How has COVID-19 changed the way you communicate and/or frequency of communications?
- 10) Does your building have a group of residents that help you with communications or outreach to residents? If yes, describe the group.

B. Senior Building Event Planning

- 1) Was your building planning on holding an onsite flu vaccination clinic this year before BCHD reached out to your building? Why or why not?
- 2) Approximately how many times did BCHD reach out to you or others in your building regarding flu vaccination this year? Was the overall level of engagement helpful or burdensome? Why?
- 3) What kind of advertising and outreach did you do with residents in your building(s)? Did you have enough time to conducting outreach before hosting the clinic?

- 4) What kind of advertising and outreach would you recommend for the future? Are there things you would have done if you had the time and resources?
- 5) Do you think a similar approach to outreach could be used for COVID-19 vaccines once they are available? Why or why not? What would need to change?

C. Senior Building Event Details

- 1) Provide details for any flu vaccination clinics held in your building(s), including clinics organized by BCHD and organized by your building. *(Enter N/A if your building did not have a clinic this year. Add rows as needed.)*

Senior Housing Building Name	Was the event organized by BCHD?	What date(s) was the event?	What strategies were used? <i>(Common area, Door-to-door, or Combination)</i>	How many residents were vaccinated?

- 2) If your building used a door-to-door strategy, do you think it worked well, and would you use it again for administering COVID-19 vaccines? *(Skip if your building did not use a door-to-door strategy.)*
- 3) If your building did not use a door-to-door strategy, why not? Would it be something you consider using in the future (e.g., administering COVID-19 vaccines)? *(Skip if your building used a door-to-door strategy.)*

D. General Feedback

- 1) Overall, what things worked well that you would do again?
- 2) What are some things you would change or do differently in the future?
- 3) Would you participate in a similar BCHD initiative in the future (e.g., flu or Covid-19 vaccines)? Why or why not? What additional information or resources would you want for COVID-19 vaccines?
- 4) In your opinion, how could BCHD improve engagement with senior housing buildings and residents? What other topics are your residents interested in? What is the best way to reach residents directly?
- 5) Is there any other information you want to add?