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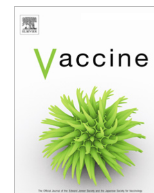

COVID-19 vaccination hesitancy and uptake: Perspectives from people released from the Federal Bureau of Prisons

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ABSTRACT

People in United States (US) prisons and jails have been disproportionately impacted by the COVID-19 pandemic. This is due to challenges containing outbreaks in facilities and the high rates of health conditions that increase the risk of adverse outcomes. Vaccination is one strategy to disrupt COVID-19 transmission, but there are many factors impeding vaccination while in custody. We aimed to examine the perspectives of former residents in the Federal Bureau of Prisons (BOP) regarding COVID-19 vaccine hesitancy and acceptance. Between September-October 2021, we conducted semi-structured interviews with 21 recently released individuals who were incarcerated before and during COVID-19 and coded transcripts thematically. We assessed perceptions of the vaccine rollout and factors shaping vaccination uptake in custody and after release. The vaccine was available to seven participants in custody, of whom three were vaccinated. Interviewees had mixed attitudes about how vaccines were distributed, particularly with priority given to staff. Most were reluctant to get vaccinated in custody for varying reasons including observing staff declining to be vaccinated, lack of counseling to address specific questions about safety, and general lack of trust in the carceral system. By contrast, twelve got vaccinated post-release because of greater trust in community health care and stated they would not have done so while incarcerated. For residents in the BOP, COVID-19 vaccination was not simply a binary decision, instead they weighed the costs and benefits with most deciding against getting vaccinated. Institutions of incarceration must address these concerns to increase vaccine uptake as the pandemic continues.

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1. Introduction

United States (US) prisons have been disproportionally affected by the COVID-19 pandemic, with standardized death rates 3 times higher and confirmed case rates 5 times higher than the general population.[1–2] Incarcerated individuals' vulnerability to COVID-19 has been exacerbated by overcrowded conditions, poor access to healthcare, an aging resident population, and higher rates of comorbid conditions.[3] Since their authorized use in December 2020, vaccines have been a crucial tool to prevent serious illness and interrupt chains of transmission.[4] Due to the initial scarcity of the vaccine supply, populations were prioritized based on health status and risk level. Early on, the National Academies of Sciences, Engineering, and Medicine (NASEM) recommended that both people who work in prisons and incarcerated individuals be granted high priority for vaccination.[5] However, many states deprioritized residents over staff, assuming that a vaccinated workforce would disrupt transmission between the community and those in custody.[6] The Federal Bureau of Prisons (BOP) was among one of the first government agencies to receive a COVID-19 vaccine supply,[7] yet they indicated that their initial doses "will be reserved for staff," even though COVID-19 case rates among residents were higher than staff.[8]

Vaccine uptake has been mixed among both carceral staff and residents. Among all state and federal prison systems the median rate of receiving at least one dose among staff was only 48 % in April 2021.[9] By comparison, the median vaccination rate of incarcerated people was only 55 % by June 2021.[10]

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However, vaccination uptake among residents was not significantly higher in states that prioritized incarcerated people compared to states that did not.[11] While vaccination rates initially reflected supply, other factors have continued to affect vaccine acceptance. In the US, vaccine mistrust has been closely linked to broader cultural and political divisions in society. These divisions have been exploited by political leaders, polarizing news media, and social media that contribute to vaccine hesitancy.[12] Correlates of vaccine hesitancy include lower perceived seriousness of COVID-19, identification with conservative political views, and perceptions that the vaccine was rushed and not adequately tested for safety or effectiveness.

Distrust of vaccines has also been higher in minoritized communities, reflecting a history of abuse and violations of medical ethics.[13] Incarcerated people are more likely to have higher levels of medical distrust due to the history of medical mistreatment of and experimentation on incarcerated people in the US, especially Black individuals who are disproportionately incarcerated.[14] However, relatively little is known about the factors shaping vaccine decisions among incarcerated people. The Correctional Association of New York surveyed people in New York prisons and found that COVID-19 vaccine hesitancy was rooted in distrust of the carceral medical system based on negative prior experiences, inadequate health care, and the trauma of incarceration during COVID-19.[15]

Qualitative research can deepen our understandings of how incarcerated people approach vaccination decisions, and to what extent the decision reflects individual attitudes versus structural factors. This study examines COVID-19 vaccine perceptions and experiences of people who were incarcerated in the federal Bureau of Prisons (BOP), including their assessment of the vaccine rollout, the nuances of getting vaccinated while in custody, and influences on vaccine acceptance in custody and post-release.

2. Materials and methods

We conducted semi-structured qualitative, phone interviews with a convenience sample of previously incarcerated BOP residents during the COVID-19 pandemic (March 2020) and who were subsequently released. The BOP houses primarily people convicted of federal felonies who typically serve sentences longer than one year, with an average sentence length of 12.25 years[16], with a smaller population in short-term and pre-trial detention. We recruited participants through public defenders and publicly-appointed attorneys, who referred participants to our study. Study participation was not disclosed to the referral source or the BOP. Eligibility criteria included incarceration prior to and release after March 2020, at least 18 years of age, and English-speaking.

Participant recruitment and interviews were conducted between August-October 2021. Interviews were scheduled at least two days after an initial recruitment call, audio-recorded on Google Voice and lasted $\sim$ 60 min. Participants were compensated with a $50 gift card.

The interview guide explored a range of resident perspectives on being incarcerated during COVID-19. This analysis focused on resident perceptions related to the COVID-19 vaccine including their assessment of vaccination prioritization within the facility, the nuances of getting vaccinated while in custody, and influences on vaccine acceptance in custody and post-release. In the interviews and in this paper, we use non-stigmatizing language like 'residents' instead of 'inmates' when referring to people who are incarcerated.

Interviews were professionally transcribed then coded using Dedoose software[17] by two research team members [CK and MS]. We developed the codebook and revised iteratively, both deductively and inductively. We revised deductively based on domains identified *a priori* in the planning stages of the project and inductively based on the data provided by participants. Two exemplary transcripts were selected and coded by both coders who reached consensus through weekly meetings. The remaining transcripts were single-coded and split between the two coders. We utilized directed content analysis approach when analyzing transcripts.

Our analysis was grounded in theory using the Conceptual Model of Vaccine Hesitancy, which uses core components of the Social Ecological Model (SEM) and applies it to vaccine uptake. [18] For example, the SEM describes how the external environment, like the carceral facility, can tip the scale between vaccine non-acceptance and acceptance. SEM conceptualizes that vaccine decisions emerge from a multilevel process between individual, relationship, community, and societal-level factors. In carceral facilities, the environmental and historical context is particularly salient due to the substantial power imbalance and mistrust between residents and staff, the history of extractive experimentation on incarcerated individuals, and the limited autonomy that many residents experience related to health care. These frameworks informed our analysis as we assessed ways in which multi-level factors influenced COVID-19 vaccination among residents in BOP facilities. This study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

3. Results

We interviewed 21 former BOP residents. Three referred individuals did not participate— one was ineligible due a language barrier and two were unreachable after three contact attempts. Participants were from a geographic range of facilities, with most being incarcerated less than 10 years (n = 11) (Table 1). While incarcerated, nine participants contracted COVID-19 and two suspected they had COVID-19 but were not tested. Twelve individuals self-identified as having some form of chronic illness (e.g. cancer, chronic obstructive pulmonary disease, and colitis). For 10 participants, the vaccine was not yet developed before their release and therefore not available to them while in custody; three additional participants noted that the vaccine was not available at their facility before their release. Another participant was at a facility when vaccine rollout began, but was not offered it. The remaining seven participants were offered the vaccine. Of these seven, three accepted and three declined outright. The seventh person reported wanting the vaccine but was considered a refusal when he asked medical staff questions about the vaccine.

We identified six main themes around residents' experiences with and approaches to COVID-19 vaccines in custody.

(1) Residents had mixed views about their lower prioritization for vaccine compared to staff. The majority of study participants viewed staff as COVID-19 vectors because they were the only people coming in and out. Many agreed staff should be vaccinated first since they were the biggest risk to the resident population contracting COVID-19: "If you [staff] really want to take care of yourself, you taking care of yourself is actually taking care of us." However, residents observed low staff vaccine uptake, which led some to believe prioritizing staff was not as impactful at preventing COVID-19. This frustrated participants, especially since they observed staff not following other safety protocols such as masking and social distancing (Table 2, Quote 1 and 2).

Among participants who were incarcerated when the vaccine was available, most reported that older adults and those with chronic health conditions were offered the vaccine first among residents, which study participants agreed with. However, other approaches were more idiosyncratic. One resident reported that

Table 1
Participant Characteristics.

	N = 21
Gender	
Man	15
Woman	5
Transgender	1
Race	
White	9
Black, African American	8
Asian, Native Hawaiian or Pacific Islander	1
American Indian or Alaskan Native	0
Other	3
Ethnicity	
Hispanic	3
Non-Hispanic	18
Age	
31–40	3
41–50	8
51–60	4
61–70	4
71–80	2
Highest education level	
Some high school	1
High school diploma/GED	11
Some college (or trade school)	4
College degree (bachelor's, associate)	4
Graduate degree (master's, doctorate)	1
Region of residence pre-incarceration	
Northeast	2
Midwest	7
South	4
West	8
Region of incarceration facility*	
Northeast	3
Midwest	4
South	9
West	9
Health Insurance coverage post-release	
No insurance	3
Private	6
Public	12
Medicare	4
Medicaid	8
Length of Stay	
0–10 years	11
11–20 years	6
21–30 years	1
31–40 years	1
40–50 years	1
Unknown	1
COVID-19 Infection while incarcerated	
Yes	9
No	10
Suspected (i.e. had symptoms but was not tested)	2

*Three participants were at more than one facility during the COVID-19 pandemic.

her facility called 20 residents at random to be vaccinated with no obvious logic, and another shared that it was first offered to residents who were COVID-19 negative. In both instances, participants stated that those who were elderly or critically ill should have been prioritized first (Table 2, Quotes 3 and 4). All participants who were in custody when the vaccine first became available stated they were aware of the limited vaccine supply. The limited supply, lack of encouragement from the facility, and staff comments regarding who they thought should be vaccinated led some residents to believe that staff did not care if they got vaccinated. One even said that the staff regarded incarcerated people as second-class citizens, "scum of the Earth" (Table 2, Quote 5).

(2) Many residents were reluctant to receive the COVID-19 vaccine. Participants expressed concerns regarding the safety and efficacy of the vaccine due to its rapid production. Some residents thought it was "too soon" for there to be a safe and legitimate COVID-19 vaccine, especially since there are viruses that have existed for decades without a vaccine (Table 2 Quote 6 and 7). Others were worried about potential side effects from getting vaccinated after reports of severe adverse side-effects circulated in the news (Table 2, Quote 8). Some believed they did not need the vaccine due to natural immunity from already having contracting COVID-19 and "fighting it off" with no medical care (Table 2, Quote 9). These individuals believed that their natural immunity would protect them from contracting COVID-19 more than the vaccine would. Almost all participants expressed that distrust in the carceral system, including staff and the government, deterred them from getting vaccinated while incarcerated (Table 2, Quotes 10 and 11). Study participants communicated concerns about being test subjects for the government's new "experimental drug." These attitudes stemmed from their individual experiences in the criminal legal system including the mistreatment and unfairness they endured while incarcerated. A 76 year-old African American female, compared it to the Tuskegee Syphilis Study and Henrietta Lacks whose cancerous cervical cells were removed and taken for research without her knowledge or consent by a Johns Hopkins physician in 1951 (Table 2, Quote 12).[19] Another participant, a 31 year-old Hispanic male, observed similar concerns among fellow residents stemming from the history of medical mistreatment of minoritized individuals in the US (Table 2, Quote 13).

(3) Vaccine hesitancy among prison staff and the lack of vaccine counseling also discouraged residents from getting vaccinated. According to participants, many medical and security staff had reservations and did not want to get vaccinated (Table 2, Quote 14). Many participants viewed the hesitancy and low vaccination rate among staff as an additional reason to distrust the vaccine. One even commented that the nurse's "body language" when speaking about the vaccine deterred him from getting it (Table 2, Quote 15). Furthermore, none of the participants said that they, or anyone else, received vaccine counseling or education while incarcerated. Most participants described being given a piece of paper about the vaccine in which they had to check 'yes' or 'no' as their decision. Some participants mentioned seeing vaccine flyers in the facility that only described the emergency use authorization and brand specific information. Many thought this was insufficient information upon which to make an informed decision, and instead wanted an opportunity to ask questions and voice concerns. One said when he tried to ask questions, staff looked at him like he was "crazy" (Table 2, Quote 16). Another wrote in questions on the vaccine acceptance form, without checking yes or no, about whether the vaccine was safe for him due to him having cancer. His questions were unaddressed, his response was considered a refusal, and he was not vaccinated despite his desire to be (Table 2, Quote 17). Some participants expressed that the administration was not concerned with vaccine acceptance among residents because they did not have enough vaccine supply to begin with (Table 2, Quote 19). One resident said that instead of encouraging residents to get the vaccine, staff's attitudes were indifference: "Hey, man. It's whatever you want to do. We don't care." Another described the method in which they vaccinated people as a "mass vaccination line" – "you signed a piece of paper really fast and they stabbed you in the arm, and went on your way" (Table 2, Quote 20). One person was in a facility that mentioned an unspecified incentive to getting vaccinated. Additionally, a few residents speculated that their vaccination status would be used as a "manipulation tool" (Table 2, Quote 21), and that those who were vaccinated would get certain privileges like the ability to move around within the facility or visitation. However, no one reported actually being treated differently based on vaccine acceptance or refusal.

(4) Some residents accepted the vaccine while in custody for varying reasons. Of the seven people who were offered the vaccine while incarcerated, three were vaccinated. Their logic for accepting

Table 2
Representative quotes for themes.

Theme	Sub-theme	Representative Quote
Vaccine prioritization	Resident's assessment of vaccine prioritization and limited supply	1. [Giving the vaccine to staff first] would have been fair if the staff was taking precautions in the beginning. Because the staff was the one who was coming in and out. So it's good if they have the COVID [vaccine], they're not able to catch it again. There was not too much information for us. If I think now, I think it wasn't fair because even if you have the vaccine you can still transmit the COVID to other people. It's just that you don't get physically sick. But you can still transmit. I think the priority should have been to give it to the critically ill patient, the cancer patient, and elderlies over there first, before giving it to the staff. In general, if it's me and you and there are only one vaccine, in my nature, I would tell them that, no, give [you] the vaccine, as long as at least you are safe. If God willingly, you know, it's meant to be, I'll get a vaccine, too. But in this case, I mean there are more critically ill patients. I will show you that there is a critical patient in front of you and there's only one vaccine, you would probably give it to that person. **– 47 year old male participant** 2. Like, I had this conversation with one of the guys from medical there, and he's, like, I haven't gotten COVID, so there's no point in me getting the vaccine. So I thought, well, what about when they mandate it? Because that's the – that's the rumor. And he's, like, then I'll probably just leave the job and stuff, but I'm not worried. And – and mind you, he's – he doesn't wear a mask either, so the only way you could actually bring this into the facility is you guys. We would tell them this all the time. Like, you guys are the ones that could bring this in here. There's nobody else. You know, we're lock, you know, we're – we're locked up. We can't go out into the outside world and bring it in here. It's only you guys that could bring it in here. It's the same thing. The older COs are the same. Majority of them, like, 95 percent of them are assholes and it's the same thing. Like, you would think that the situation that's going on, they're not going to mess with you in all the stuff. No, everything just keeps on the same. It's nothing really changes. You're supposed to have social distancing, but they – they don't give a fuck. **– 31 year old male participant** 3. It was in March [2021] when they come through, and they said they were going to get some vaccines. And it was no rhyme or reason. They called old people, young people, sick people, [and] healthy people. But they did not call everybody. They just like picked like 20 people and they called their names and said if they might want the vaccination to circle yes or no on this paper. They got it for the officers. And what was left over was being offered to the inmates. It was random, absolutely random. They should have picked the elderly people that did get really sick. And the at-risk people, you know, not just the elderly people, but people that have chronic illnesses. And they didn't do that. I mean they called young girls. And half of the people denied it anyway. And what was another point, after the fact, when they did get enough vaccine for the compound and they offered it, the people that denied it the first time, did not get to get it. They weren't offered it again, no. I thought that was horrible. Because maybe they wanted to see how it affected the people who did want it. **– 53 year old female participant** 4. So, when the vaccine came out, they actually started vaccinating the staff. Then, when they were done vaccinating the staff, they took all the extra vaccine that they had and they gave it to some of the inmates. The inmates that tested negative. And then, when they finished that unit, they moved over to one of the other units and offered people in that unit, and then, they ran out of vaccine and nobody else got it. The only thing that we really heard was that they were giving it to people that didn't get it first so that they could try to keep them in a situation where they're not going to get it. No [it was not fair]. It certainly didn't make any sense. Like it seemed, to me, that they should give it to the people that are most vulnerable first – whether that's the people that have not gotten it or the people that have higher medical risks. I mean it made sense that the staff should actually get it [first]. Because they're the ones that are going to be interacting with the inmates and the outside world. So they should get it. **– 42 year old male participant** 5. They [staff] were just saying it was coming out and that, well, some people was…Like, staff wasn't saying much about it because they didn't know nothing about who was going to get it and who wasn't. In fact, we were told that we'd probably be some of the last people in the federal system to get it. Just because of our status: inmates. Well, as one staff member put it, "You're scum of the Earth. They're not going to worry about you guys until they get everybody else vaccinated."**– 67 year old male participant**
	Rapid production and doubt regarding the vaccine's creation as well as potential side effects	6. Yeah, I was on the chronic care group but me thinking like I think, I said there ain't enough research on it for me to take it. Then, I was listening to the – I was seeing stuff in the news about – when the newspaper about Pfizer and how it was – people was taking the shot was making them sick and some people died off of it. I said, "Ah, nah. I ain't about to take it." My theory, because I said, "Well, they still trying to find a cure for the flu, AIDS, and cancer," and I said, "it wasn't enough time to take a vaccine for me." I don't know what other people think. Some people might. I denied it. You had some that took it but me – it wasn't enough research for me to take it. **– 48 year old male participant**

(*continued on next page*)

Table 2 (*continued*)

Theme	Sub-theme	Representative Quote
		7. I think everybody looked at it as an experimental drug. Like something that's experimental and that they wanted to experiment. It came out too fast to really know what was going on with it. How effective it would be or even – it just seemed too sudden. All of a sudden, you got a disease, and all of a sudden, you've got a vaccine when there are diseases we've had for years and there's still no vaccine for. So, people were just hesitant because of how fast it came out. **– 41 year old male participant**
		8. I [read] USA Today paper– I was reading a lot about it, you know, with magazines and everything, so I was against it. A lot of inmates were against it. Because, I mean, we were reading about a lot of people dying after the vaccine and, we just was curious to, like, how could they come up with this vaccine so soon; you know? When there's diseases that have been around for years and they haven't come up with anything to fight them off yet, you know. **– 40 year old male participant**
Residents were reluctant to receive the COVID vaccine while incarcerated	Belief in natural immunity to COVID from already contracting the virus	9. I wasn't interested. For one, I mean, I had already had the virus, so I was, like, okay, the hell with it. I didn't expect it again. Even though I caught it again, it wasn't as – what can I say – as – as drastic as it was the first time around so I was pretty much against the vaccine. **– 40 year old male participant**
	Distrust in the carceral system	10. They heard a lot of rumors about it not being good, and who knows what it is? How do we know that it's the vaccine? How do we know - not know that they're trying just to put something in our bodies, and why am I going to put something in my body that I don't know what it is going do to me, all those kind of things? A lot of people were concerned because then they weren't sure if they wanted to put something in their body that they didn't know what it really was. **– 39 year old female participant**
		11. I denied it because I was incarcerated; you know? Had I been out in society and never contracted the virus, maybe I would have taken the vaccine. But then that I had already caught it, I got no medical treatment and I had to fight it off myself, and then that, yes, I was in prison, I don't trust anything in prison. I didn't trust it. **– 41 year old male participant**
		12. I'm one of those conspiracy people, so I didn't want to get it. I – I remember a lot of things that happened with especially black people. I remember a lot of things that happened, the syphilis study. Henrietta Lacks, all those kind of things; you know? So I – I knew that those were not lies. They were not conspiracies. They were facts; you know? So I – I was very, very, very, very, very extremely hesitant. **– 76 year old female participant**
		13. The majority, I'll say probably, like, 98 percent of the African Americans didn't want to get it because of there's this whole situation with trusting the government. And probably a hundred, like, I'll say not hundred. I'll say about the – I'll say probably, like, about 90 percent of whites got it, and then about the same range of Hispanics got it. **– 31 year old male participant**
	Staff distrust and attitudes towards the vaccine	14. You would ask staff and stuff like that, they'll – they'll have the same opinion as a lot of the – the inmates. It's, like, no, I'm not getting it. It's too soon. They don't know what they're doing and stuff like that. So the – instead of encouraging you, they'll, like, you know? **– 31 year old male participant**
		15. Well, the first – when the vaccine first came out, no one in the institution trusted the vaccine. Even the majority of the staff was like, "No. I don't want to be vaccinated because this came out so fast. We don't know what's going on with it." I had an opportunity to get vaccinated when the first dosage came because, like I was saying, the job that I had, but I declined. One of the reasons I declined it [is because] the way the nurses and the medical staff – their body language, not necessarily something that they said, but the way was acting. The way they was moving like they didn't trust it. The medical staff seemed like they didn't trust it, so if you have all of these nurses and pharmacists and doctors that some of them might – they might not say nothing and some of them still got the jab, but the way [they were] looking and the way that they was moving, it wasn't encouraging. It didn't motivate me to want to be like, "Okay. They trust it. Let me do it." More so, it seemed like, "Man, I got to get this, and I hope it don't kill me." No [they did not encourage it]. **– 41 year old male participant**
	Lack of vaccine counseling and communication gaps regarding the vaccine	16. They didn't tell us anything about the vaccine. We asked them. Basically, when they came around with the vaccine, they were just, like, okay, –you want to take it? If you refused, you know, if you asked them, what this is, which vaccine is it, what are the side effects, if you ask them any questions, they would just look at you crazy. They wouldn't give you any answers. **– 40 year old male participant**

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Table 2 (*continued*)

Theme	Sub-theme	Representative Quote
		17. I asked them that I need to speak to the doctor to make sure that this vaccine is okay in my kind of cancer. And there was no response. And they just said it's refused. They wanted me to sign the paper that I am not getting it. I said, "I'm not saying that I don't want it. I want it. But I want to speak to the doctor to make sure it's good for me." They said, "No, you have to sign the paper." They literally asked me to sign the paper. And so I had to actually put my comment. I told her, "I'm going to write my comments on there before I sign it." And I put it on there. And later on, it came out they did not even document that into the system. They only documented that I refused because I was going through my compassionate release to the court. And the documents, they sent it to the court, says I refused, but not the actual document with my comments. Yeah. So, there was no information about anything. **– 47 year old male participant**
		18. They put something up in the bulletins explaining why it was emergency approved and stuff like that, so they gave you some information onto what the Pfizer – the Pfizer vaccine was like, and what was its history and – and stuff like that, so you could have an idea of what were the things that you were getting. No [there was no conversation if you wanted on]. **– 31 year old male participant**
		19. The thing is that they only had a certain amount of vaccines at that time and whoever was going to take it - and that's why they passed out the forms. So, they gave it to the people that said, "Yes, I want to take it. I'm going to take it." So, the people that refused they were not worried about it because, regardless, they had not enough vaccine. **– 39 year old female participant**
		20. We all went and stood in a line, and you signed a piece of paper really fast and they stabbed you in the arm, and went on your way. They didn't make you wait 20 min. They didn't ask you any questions. They just - it was kind of like a mass vaccination line. No [we were not able to ask any questions]. Absolutely, not. Nope. No, they were in a hurry. They were in a big hurry. **– 53 year old female participant**
		21. Yes, because I believe that they were going to use that against us too if you don't get—this is my belief. I'm not saying that they're doing this, but I was telling people, I said, "This is what's going to happen. You're not going to go to a visit, and your visitors aren't going to be allowed in here if we're not vaccinated." What they're going to do is kind of like they do want the TVs in jail. This is what I believe is going to happen in the future. If you refuse a TB shot, you go to isolation. I believe in the future, and we'll see what happens that if you don't get vaccinated, you go to isolation. That's my belief. Yes, and I believe they're going to use that as, oh, I believe they're going to use that as like a manipulating tool or whatever. Maybe they're not. **– 42 year old male participant**
Reasons some residents got vaccinated while incarcerated	Protection for individual health and health of others	22. Right away when they offered it, I took it because I wanted to be vaccinated, and I was in a unit where other people were, you know, elderlies, and I was worried about them because a majority of them got sick and ... The sad part of everything is, they didn't provide us with no medication. So, you literally had to just either sleep it off or just go through it, basically. **– 39 year old female participant**
		23. Yes, I got it. Yes. I used to believe like a lot in conspiracy theories and stuff like that, so I wasn't really happy on getting it, but I caught the virus, so I know it's real, and it is really, really bad to go through it, so I just, you know, if there's something that could avoid it, whatever; you know? I'll – I'll give it a try. I believe a lot in God, so I'm to say that if the virus is going to kill you or the vaccine, you know, God forbid, but, you know, there's a saying I tell people all the time, God says help yourself and I will help you. He don't say leave everything up to me. So there's something there that maybe can help, like, so why not; you know? I wanted to come back home to my family and, you know, I had to do what I had to do, but if – if you're asking if I'm comfortable that I took it? I can't say I am, but, you know, it –Because it's just the – how – I'm not going to say that the government should be blamed for how the BOP handles themselves, but they're – they're a branch of the government, and the way they treat you is just, you know, inhumane. So I don't trust them. **– 31 year old male participant**
	Perceived benefit for being vaccinated while inside	24. This is how I thought about it. Most people were skeptical and they did not take the vaccine when it was first offered. And then they made it sound like if you didn't get the vaccine, that there would be no repercussions against you, no retaliation or anything. But they did say, if you were an essential worker, that you may or may not get to keep your job. So personally, that was why I took the vaccine. Because I wanted to continue to come out of the unit every day and go to work.

(*continued on next page*)

Table 2 (continued)

Theme	Sub-theme	Representative Quote
		So, it was kind of like for some of us who were in the essential worker group, well, do we take it or don't we? They say we may or may not get to keep our jobs. But that may or may not. You may or you may not. They never know for sure what they're doing. **– 53 year old female participant**
	Increased risk of COVID once released	25. Most of it came – well, I had decided that I'm about to get out. The Delta variant was prevalent in Mississippi. So, I was thinking, "Well, look. I need to get vaccinated. I need to go ahead and get vaccinated before I get home because I'm living in this bubble right now, but once I get home, I'll be exposed to more people. I really should get vaccinated." So, I put in a request to be vaccinated. It took them so long to get with me after I told them that, "Look. I'm about to go home. I'm-a try to get vaccinated before I go home." It had to be at least 60 days. **– 41 year old male participant**
Reasons some residents got vaccinated while post-release in the community	Increased knowledge and reliable sources of information	26. At first, I said I'm not getting vaccinated. This was before I came home. I'm not getting vaccinated; I'm not doing that because I've never even had the flu shot. I felt like after studying it and hearing about things, I just felt like it was the responsible thing to do. **– 42 year old male participant**
	Perceived benefit of being vaccinated	27. My parents kind of pushed me to get it. And it made sense. Because, you know, it just gives me kind of that extra layer of protection. You know, yes, I've had COVID before. But, now, I can say I've had COVID and I've also got the vaccine. **– 42 year old male participant**
	Encouragement and support from trusted individuals	28. [I got vaccinated because of] my mom and her safety. Yeah, in order for my family to feel safe, even if I did – I didn't, you know, I felt that – at some point I – I realized the virus is actually killing people. But I don't know what the vaccine is going to do. It might do something later on or whatever, but I don't have that much time left anyway. I'm 70 some years old, so if it means keeping my mother safe or the possibility that it help to keep her safe, if it's a possibility that it helps to keep my grandkids safe when they come around me, then I was willing to take that risk. I did feel as though it was a risk. I really did. No, I definitely wouldn't have gotten it [in prison because I] distrust of the – of the whole federal government system. **– 76 year old female participant**
Reasons some residents still refused vaccination post release	Distrust in the government	29. No. I haven't been vaccinated. I figure, if I had it, I've done got immunity to it. But then, again, the information we get on TV – how good is that? You know? I don't trust information very well because of what has happened to me……… very skeptical. Because I was mixed up in the original CDC learning about this in prison. And I've seen – [laughs] it was really bad. Even with the CDC there. They didn't know no more than the staff did. Because I don't know – the CDC was there with big government. The government was the one holding us. The way they handled everything – yes – very much so. I don't trust them at all. **– 59 year old male participant**
	Belief in natural immunity	30. My original thoughts were this was an experimental drug that was put out. And then, you know, you don't hear – on the mainstream media sites – all of the ugliness or the downside of the vaccine. And I was hesitant to begin with. And then, I had heard of a couple studies, way back then, of natural immunity. And I assumed – and I still do – that I had COVID. So I had natural immunities that are better than the immunities that the COVID vaccine gives you. Because all of your breakthrough cases now – your Delta variants – almost all are people that have been vaccinated with both shots. There is always the possibility of it. But, like I said, the studies that have come out now, from the Cleveland Clinic, University of Israel-Tel Aviv – show that your – for a – the University of Tel Aviv said that, if you were unvaccinated, your natural immunity is 13 times more effective than the vaccine. And then, if you get vaccinated on top of that, it's 27 times more effective. So, at this point, I still say I'm not going to get one. **– 60 year old male participant**

the vaccine included believing it would not harm them and vaccination would protect their health and that of other vulnerable residents (Table 2, Quote 22). One participant who contracted COVID-19 while incarcerated agreed to be vaccinated because he did not want to experience COVID-19 again (Table 2, Quote 23). One participant got vaccinated because she believed this was a requirement for keeping her job as an essential worker at the prison (Table 2, Quote 24). Another participant, who first refused the vaccine but then accepted it after being transferred to another facility, thought it would be best to get vaccinated before his pending release. He believed he was "living in a bubble" while incarcerated and thought his chances of contracting COVID-19 would be greater in the community (Table 2, Quote 25). Of the 14 participants who were either released before the vaccine was developed or available to them, two stated they would have gotten the vaccine in custody if they had access; reasons included for one's own health and wanting to set an example for others. Three participants were offered the vaccine while incarcerated but declined.

(5) Reasons for getting the vaccine post-release included increased education from reliable sources, support and encouragement from trusted individuals, and perceived benefits. Twelve participants (ten who did not have access to the vaccine in custody, one who initially refused vaccination in custody, and one who wanted the vaccine while in custody but was not able to get it) were vaccinated post-release in their home communities. After learning more about the vaccine post-release, some felt like getting vaccinated was the "responsible thing to do" (Table 2, Quote 26). Another described it was an "extra layer of protection" after family encouraged the vaccine (Table 2, Quote 27). The majority shared that they got vaccinated on the outside because their family educated them and encouraged it—a contrast to the complete void of vaccination education and information in prison. Relatedly, many participants were vaccinated after being encouraged by trusted individuals, and to keep their family members, most of whom they lived with, safe (Table 2, Quote 28). Others were vaccinated after speaking to a community physician and receiving comprehensive vaccine counseling. Some thought it was still risky to get vaccinated but decided it was a risk worth taking. Of those who vaccinated after release, most stated they would not have done so while incarcerated regardless of whether the vaccine was available due to distrusting the prison system.

(6) Some residents (N = 5), including two participants who refused vaccination in custody, still declined the vaccine post-release for similar reasons to those they expressed while in custody. Distrust in the government and the actual vaccine remained a prominent reason participants did not get vaccinated once released into the community (Table 2, Quote 29). Some still believed they had natural immunity from already contracting COVID-19 (Table 2, Quote 30). Other participants recognized the risk they were taking by not vaccinating but communicated they were taking the necessary precautions like social distancing.

4. Discussion

COVID-19 vaccination is vital to the health of incarcerated communities, yet vaccine hesitancy is complex among incarcerated individuals due to the lack of counseling, distrust in the carceral system and, the subtle and direct influence of staff behaviors. Despite the nuances of vaccination in carceral settings, residents' perspectives reflected on legitimate claims that COVID-19 infection is possible even after vaccination and protections exist from natural immunity.[20–21] Yet, the low vaccination rate observed among residents in this sample likely reflects three dominant issues – the lack of any availability during time of incarceration; for those who had some access, the total lack of education and encouragement during incarceration; and thirdly, the lack of trust in the prison system.

Several recent studies have found similar findings that incarcerated individuals' COVID-19 vaccination acceptance is not solely based on one factor and that a myriad of things unique to carceral settings affect uptake.[15,22–27] Many of these themes (e.g. lack of trust and safety concerns) are consistent with vaccine hesitancy among non-incarcerated Black and Latinx communities.[28–29] Moreover, history has demonstrated that vaccine hesitancy is not limited to the COVID-19 vaccine as some people refuse immunization against vaccine-preventable diseases.[30–31] The binary of refusing versus accepting the vaccine is likely to be misleading, since most people were persuadable to some degree and many got vaccinated after release. Thus, there is an opportunity for intervention to improve vaccine acceptance among residents in custody as the pandemic continues.

Today, vaccination remains a vital element of the national response to COVID-19, and is likely to arise seasonally underscoring the importance of continued efforts to ensure equitable vaccine allocation and distribution.[32] This includes providing comprehensive vaccine counseling, improving the patient-provider relationship and communication between residents and staff, and addressing the distrust in the carceral system.[33] In May 2022, more than two years after the COVID-19 pandemic began, the CDC released guidance on COVID-19 prevention and management for correctional facilities in which they provide an appendix for strategies including vaccination.[34] It notes that COVID-19 vaccination is "the most important tool available to prevent severe COVID-19" and includes a list of what carceral facilities can do to increase vaccine uptake (e.g. staff and resident education and gaining informed input on vaccine refusal) as well as vaccine resources.

Vaccine counseling is a key intervention for increasing uptake. Such counseling could focus on key knowledge and attitude barriers such as concerns about the safety and efficacy of the vaccine and perceptions of low risk of COVID-19 infection due to previous illness and limited contact with the outside community.[23,25–27] Counseling should account for the unique circumstance of incarceration, making salient the clear benefits among incarcerated people. Many individuals in our study seemed to do their own risk–benefit analysis about how getting vaccinated would be advantageous to their own health. One study on vaccine interest in a large urban jail reported that 33 % of residents who refused vaccination were still willing to learn more about it creating space for education and conversations.[27] This same study found that COVID-19 vaccine dialogues led by community clinicians greatly increased interest in vaccine uptake.[35] Using experts from the outside to provide vaccine information to residents could be a way to mitigate distrust.

As noted, distrust is a particular issue among minoritized populations. For many, especially Black individuals, reluctance to get vaccinated is tied to broader issues like distrust in the carceral system including staff and disbelief that they will get fair and humane treatment. This is evidenced in previous studies that found Black and Latinx residents were less likely to accept the COVID-19 vaccine compared to White residents in the same facility.[25,27,36] Our study participants also suggested similar racial patterns of vaccination and some even shared their distrust is partly attributable to the historical medical mistreatment of and experimentation on Black individuals in the US. Moreover, distrust stemmed from personal experiences of how they were treated by the criminal legal system, which was further exacerbated by harsh COVID-19 protocols.[26] The broader context of power dynamics in carceral facilities must therefore be accounted for and addressed in communication campaigns. Furthermore, as documented, low vaccination rates among staff contributed to mistrust among residents. Vaccination mandates for staff have been proposed as a

key strategy for increasing their overall vaccination rates, but have been legally challenged. One optimistic scenario is that mandates on staff could increase the normalization of vaccination in jails and prisons, and ultimately increase confidence among residents, however, further evidence is needed.

These data are limited to people incarcerated in federal facilities, which are not representative of all individuals in custody in the US. Thus, our findings are not generalizability to the mass majority of incarcerated individuals nor to the entire BOP since this was a convenience sample. Residents in non-federal custody may have different experiences and perspectives regarding the COVID-19 vaccine. On October 13, 2021, the BOP published a report on clinical COVID-19 vaccine guidance with the goal to promote vaccine use to control COVID-19 transmission and reduce morbidity and mortality.[37] The report provides information to address the science and authorization of the vaccines but provides little guidance regarding patient counseling or how to account for other factors, like lack of trust, that impact vaccine uptake for incarcerated individuals. However, one report noted that vaccine uptake among BOP residents was comparable to the adult population in those states.[38] Recall bias is also a possibility since participants reported on past experiences; nonetheless their current perception and interpretation of their experiences is what is significant in qualitative research. Finally, we did not assess whether as political ideology and the US political climate regarding COVID-19 and the vaccine like misinformation and conspiracy theories had an influence on resident perspectives.[39–40]

5. Conclusions

COVID-19 vaccine uptake among incarcerated individuals is crucial to the health of residents and staff in carceral facilities. This study highlights that it was not solely the vaccine that participants were hesitant about, evidenced by their vaccine uptake post-release; rather, it was getting vaccinated while incarcerated that deterred residents. Residents in this study perceived the vaccine as illegitimate because of the carceral context and lack of trust in and lack of endorsement by staff. Therefore, vaccination efforts in carceral settings must address how these systems can commit to public accountability and transparency.[41] Doing so could ultimately promote not only vaccination uptake but can also increase trust in public health campaigns.

CRediT authorship contribution statement

Camille Kramer: Methodology, Investigation, Formal Analysis, Data Curation, Writing- Original Draft, Project administration, Visualization. **Minna Song:** Methodology, Investigation, Formal Analysis, Data Curation, Writing- Original Draft, Project administration. **Carolyn Sufrin:** Supervision, Writing- Review and Editing, Conceptualization, Methodology, Resources. **Gabriel Eber:** Supervision, Writing- Review and Editing, Conceptualization, Methodology, Resources. **Leonard Rubenstein:** Supervision, Writing-Review and Editing, Conceptualization, Methodology. **Brendan Saloner:** Funding acquisition, Supervision, Writing- Original Draft, Conceptualization, Methodology, Resources.

Data availability

The data that has been used is confidential.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Carolyn B. Sufrin is the American College of Obstetrics and Gynecology liaison on the board of the National Commission on Correctional Health Care. Gabriel B. Eber is a member of the Centurion Health Advisory Board, which meets four times annually and for which he receives remuneration.

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