Public Opinion Research on Artificial Intelligence in Public Health Responses:
Results of Focus Groups With Four Communities

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Executive Summary

Artificial intelligence (AI) shows immense potential for improving public health, promising great leaps forward in predictive medical analytics, precision medicine, and automated diagnostics and decision-making. AI holds particular promise in the fight against COVID-19, including assisting with enhanced screening, early detection and diagnosis, and the acceleration of development of drugs and vaccines. But like with all public health interventions, successfully implementing AI solutions will require the trust and support of patients and community members, especially those historically underserved by the healthcare system.

This report summarizes research on public attitudes and trust about the use of artificial intelligence technologies in the current pandemic, with particular focus on four diverse and historically underserved groups in southeastern Wisconsin: (1) African American, (2) Hispanic, (3) Southeast Asian and (4) Native American (First Nation) communities. Virtual focus group sessions were held with each community during the first half of 2021 to gain a clearer picture of their general understanding of AI, their reactions to the potential uses of AI technology in response to the COVID-19 pandemic, attitudes about the use of personal health data in the development of AI, and views on how AI might impact their respective communities.

Discussions with these community members focused on the broad impacts of technology on their communities and their general attitudes toward the development and application of AI. Common to all discussions were skepticism and concern about the possible negative impacts of technology and AI on their communities, including worries about the prevalence of a digital divide, concern over who is in charge of such technologies and whether their motivations align with those of their communities, possible racial disparities in how such technologies would be designed and deployed, and the increased need for inclusiveness and involving community voices in the development and deployment of AI within healthcare settings.

Our findings gave rise to three key recommendations for implementing artificial intelligence in public health crises like COVID-19, with respect to communities of color in particular: build literacy about the implications of AI through focusing on community benefits, respect local cultures and remember the human, and involve communities from design through deployment. AI has the potential to create enduring benefits for communities of color but will require the trust, support and engagement of community members, especially those historically underserved by the healthcare system. Through these recommendations, the promise of deploying AI in these communities during future public health crises can be more readily achieved.
INTRODUCTION

Artificial intelligence (AI) has numerous potential applications in the fight against COVID-19, including assisting with enhanced screening, early detection and diagnosis, and acceleration of the development of drugs and vaccines [12]. Beyond the current pandemic, AI shows immense potential for improving public health, promising great leaps forward in predictive medical analytics, precision medicine, and automated diagnostics and decision-making [2]. Like with all public health interventions, however, AI has the potential to create enduring benefits but will require the trust and support of patients and community members, especially those historically underserved by the healthcare system [10].

In 2020, the American Association for the Advancement of Science (AAAS) commissioned a landscape assessment [15] as part of its (AI)²: Artificial Intelligence — Applications/Implications initiative, summarizing existing work on public attitudes concerning AI, particularly in areas related to addressing the COVID-19 pandemic. The report found a lack of data on how diverse publics perceive the potential risks and benefits that come with AI applications in various healthcare domains, and it recommended more research focused on understanding the variation in views across demographic backgrounds and experiences with AI and with science more broadly, for facilitating equitable engagement, decision-making and outcomes with AI. This research is a step toward filling this need.

The research described herein brought together experts from Marquette University and the Medical College of Wisconsin to conduct research on public attitudes about and trust in the use of artificial intelligence technologies during the current pandemic and in public health generally. The populations of focus were diverse and historically underserved communities within southeastern Wisconsin whose members are most at risk of severe illness or death during a health pandemic. These groups might benefit most from innovative health interventions that leverage AI but might be less informed or more skeptical about the use of such technologies for delivering healthcare — and might have the most to lose from technologies that aren’t designed with equity in mind. They include the following:

1) **African Americans** are the largest community of color in southeastern Wisconsin, making up over one-fourth of the population. African Americans are at particularly high risk for a wide range of adverse and disparate health outcomes. In 2015, the median income for African American families in the area was about $28,879, compared to $65,862 for white families. One-third of African Americans in Milwaukee County live in poverty compared to 7.3% of whites [3,5,11].

2) **Hispanics** are the second-largest minority group in Wisconsin and make up approximately 15% of Milwaukee County’s population. Hispanics are also at substantially elevated risk of chronic disease. Milwaukee ranks 16th in the nation for concentrated poverty in Hispanic neighborhoods, and the disparity between Hispanic and white poverty rates is among the worst in the nation [8,11,14].
3) The Hmong community is the largest Southeast Asian ethnic group in Wisconsin, comprising about 36% of all Asians in the state. Hmong are at a 19% poverty rate, compared to 8% of the Wisconsin population. Only 56% of adult and elder Hmong are English-language proficient, with 19% completely linguistically isolated. Hmong are at least twice as likely as the rest of the U.S. population to experience mental health issues, and Hmong youth are at substantially elevated risk of suicidal ideation and attempts. We also worked with Laotian and other Southeast Asian populations [1,7,13].

4) Native American people make up 13.7% of the population of Milwaukee County. Census data show that Native Americans have the highest poverty and unemployment rates in the United States, and Native Americans in Wisconsin are at elevated risk of diabetes and other chronic diseases. Native American youth have the highest rate of suicide among all ethnic groups in the U.S. [6,9].

The project engages with these communities to gain a clearer picture of their general understanding of AI and its range of uses within the healthcare context, their reactions to the potential uses of AI technology in response to the COVID-19 pandemic, attitudes about the use of personal health data in the development of AI, and views on whether AI might help (or perhaps perpetuate) health disparities in their respective communities.

**METHODOLOGY**

During March-April 2021, we organized an initial set of six virtual focus group discussions within diverse and historically underserved communities in southeastern Wisconsin, leveraging the existing community relationships and partnerships in place at MCW and Marquette. Community members who were part of a funded COVID-19 equitable response grant were contacted by community-engaged faculty to explore their interest in this project. The grant focused on four communities of color. These individuals had served as Community Health Leaders, virtual community advisory board members or in other similar roles in the COVID-19 response effort. Because of their involvement with direct services during the COVID-19 crisis, we felt these individuals were uniquely suited to respond to questions that overlapped healthcare/public health, the contours of a pandemic and technology/AI. Interested participants were encouraged to assist with further recruiting in their respective communities to ensure, to the degree possible, balance in gender, generation/age, sexual orientation and technology literacy. A flyer describing the project was also developed to help with recruitment, and it was shared with social services agencies working in the four communities of color identified.

Two 60-minute focus group sessions were held with members of each target community: African American (10 participants in the first session, seven participants in the second session), Hispanic (six in the first, four in the second), and combined sessions with both Southeast Asian and Native American peoples (three in each session). Sessions were held via Zoom and were scheduled approximately one week apart. A translator participated in the Hispanic sessions to assist with clear communication among participants. Dr. Zeno Franco acted as facilitator for each session, with Dr. Michael Zimmer moderating the discussion.
A protocol was jointly developed by all team members to guide participants toward discussions of their general experience and comfort with technology, understanding of the use of AI generally, reactions to the potential uses of AI technology in response to the COVID-19 pandemic, attitudes about the use of personal health data in the development of AI, and views on whether AI might help (or perhaps perpetuate) health disparities in their respective communities. News videos describing examples of AI and its application within public health contexts were also shared with the focus groups during the first session to elicit reactions and discussion; Spanish-language videos were provided for the Hispanic community sessions. See Appendix A for the full protocols.

In June, we convened a final focus group, bringing together representatives from all three focus groups in a combined “Member Check” session designed to increase the accuracy and validity of the research study by providing the community members an opportunity to give feedback on our preliminary results [4]. To ensure that we understood the meaning and intention of statements made by the community partner participants, this final session focused on sharing preliminary results of the coding of focus group sessions and presenting quotes and resulting themes. Areas identified for further follow-up by the research team and/or AAAS were also integrated into this Member Check discussion. This session resulted in ideas that modified or gave nuance to the existing theme structure.

In this session, major themes and quotes from the prior sessions were provided, and participants were asked to reflect on these. We asked the participants to consider whether the themes and quotes accurately represented their understanding of community views, interests and concerns. We asked the participants to elaborate on and correct our understanding as appropriate. We also asked follow-up questions designed to obtain additional details of trust of AI in pandemic-related contact tracing, AI trustworthiness in communities of color, and how the participants would like to receive updates on what AAAS does with this information. Six participants were present for the Member Check, and details of their reflections are provided in the sections below.

Participants who attended the first two sessions received a $50 Amazon gift card, and an additional $50 Amazon gift card was provided for attending the final Member Check session. All meetings were recorded, and transcripts were thematically coded with Altas.ti qualitative data analysis software. The project was reviewed by Marquette University’s Institutional Review Board (HR-3752; exempt determination under category #2).

THEMES

Discussions among participants throughout all sessions focused on the broad impacts of technology on their communities (both in general and specific to COVID-19-mandated lockdowns) and attitudes toward the development and application of AI. Potential benefits of AI were identified by participants, but most discussions focused on community concerns, including losing something human by relying on AI, concerns over racial disparities and the digital divide, and uncertainty over who is in charge of developing AI and whether their interests align with those of communities of color.
While the themes presented below were common across all communities, we observed that certain communities focused more than others on particular issues. Broadly speaking, the African American sessions focused more on how the deployment of AI might exacerbate existing racial disparities experienced by that community as well as concerns over who is in charge of AI. In the Southeast Asian and Native American sessions, greater stress was placed on concerns about respecting traditional culture and losing something human by relying on AI. The Hispanic community discussions emphasized concerns over a lack of literacy regarding AI.

A summary of themes is provided below and notes particular differences among community groups.

**General AI Literacy**

We did not pre-screen or test participants’ level of knowledge of artificial intelligence, and the assembled groups revealed a mix of technological literacy in our conversations.

Some participants had a general awareness of artificial intelligence but were uncertain how it could be applied in the context of COVID-19. As two members of the Southeast Asian community put it:

“I guess for me, I was a little bit confused. When I think of AI, I think about technology. I guess I am considered young enough to have grown up around technology. I was trying to put the pieces together about how technology could affect how we deliver information about COVID-19. I just never really thought about that there could be a connection.

“I was really hoping to hear how you guys are going to maybe describe how AI was going to connect or pair up with COVID, because I’m just mind-boggled — how are they going to marry the two, and how is that going to work?”

Notably, one member of the Hispanic community noted that she did not have a clear understanding of artificial intelligence until watching a video provided during the session.

[translated from Spanish] “For example, I’m a person who identifies as a baby boomer. So, in the video, they talked about the brain, and that prompted me to understand that people in my generation are less able to connect with social media, for example. This implies that we are part of that category. For millennials and youth, of course, they have dealt with that issue, and so it’s easier for them to connect. Regarding artificial intelligence, or AI, I understand it more because of this video, so it literally just clicked. It clicked with that video.”

**Benefits of Technology and AI**

Sessions opened with a general discussion of participants’ relationship to technology, with questions about how their use of technology might have changed during the COVID-19 pandemic. Many noted a silver lining during the pandemic-related lockdowns in the ability to use technology to reach more people within entertainment and healthcare contexts. For example, a health provider in the Hmong community noted:
“Technology allowed us to connect very easily, very efficiently with them. That has been the surprise that we’re all finding out through this pandemic.”

The increased focus on telehealth was also seen as a benefit by many participants. A member of the African American community noted, for example:

“I would just say, I think the telehealth part of it is awesome. Being able to connect remotely. Even prior to the pandemic, before we could have in-person meetings. I know that my great-grandmother, for example, would have struggled getting to the hospital on her own because she either lacked transportation or she just couldn’t drive herself. So being able to engage remotely is something that I think is positive for all people.”

Telehealth and virtual meetings also helped improve access to COVID-19-specific medical advice tailored to the specific communities, as expressed by this member of the Native American community reflecting on the impact of technology during the pandemic:

“For me, it’s really good in some ways. The health messages that I’ve [had] ... I’ve had a few livestreams where I had doctors, different Native doctors as well as community members that had COVID, talking about COVID and bringing it to the community. That was really good. The audience was basically ... in a way, it was international, but it reached the Native community.”

Specific to applications of artificial intelligence, many participants noted the broad potential for AI to benefit their communities. As a Southeast Asian participant summarized:

“... when you have a purpose in mind and you utilize AI, it really can do some incredible things that normal people, as they were explaining earlier, would typically be doing, is analyzing data and images and things of that nature, but where AI is used to just take it that much farther for all of us, to benefit everyone.”

And another participant in the Southeast Asian/Native American session noted hopefulness for AI’s application in the health domain.

“I think AI in the health field is a great thing. It’s more great than it is more bad. I don’t really know how to put that term, but I think it’s better than it is worse, and I think just from the video and what we talked about, being able to look at patterns, to come to treatment or to come to a diagnosis, and that’s a great thing.”

Further, numerous participants in the African American community sessions expressed hopefulness that AI might alleviate racial disparities otherwise experienced in the healthcare system. For example:

“So I think that’s something that the healthcare system accidentally can strip people of is that sense of dignity walking in. And it’s often not intentional, but the systems are just so
huge and cumbersome that they’re not thinking about that individual’s needs. So that’s a
great positive example where technology and even artificial intelligence could be super
useful.”

How AI might help address language and cultural barriers in healthcare settings was expressed again
by a member of the African American community.

“How the AI could be so Black, we got a Black person saying what you need, we got code
words for how to say pee, you know what I’m saying? Straight up, so now this has bypassed
waiting on the doctor to understand me. This has bypassed waiting on a nurse who
understands who I am or speaks my language to come into the room. Now this has bypassed
waiting on society to get hip to what’s going on. Right? AI could essentially be the bridge to
fixing that gap.”

Member Check – Benefits of AI

Overall, the final Member Check session resulted in few additional comments about the possible
benefits of AI. One participant noted that AI might be able to assist with the physical navigation of
healthcare buildings and/or be used to identify when individuals were physically lost or in need of
finding support in a hospital. This has implications for normal healthcare operations but also for
crisis/pandemic context, as wayfinding and changes to workflow patterns, signage, etc., were a
constant feature of COVID-19.

Concerns About Artificial Intelligence and Advanced Technologies

While participants shared positive perspectives about AI, various forms of skepticism and concern
prevailed throughout most of our discussions. In the broadest sense, participants noted the
limitations of technology (including technical hiccups during our Zoom sessions), worries about
“epistemic bubbles” on social media limiting users’ access to diverse information (especially noted
during the Hispanic sessions), and concerns about youth relying on technology even more during the
COVID-19 pandemic and ignoring in-person interactions with adults and family members (also noted
most strongly in the Hispanic sessions).

Underlying these broad discussions of skepticism about technology were more fundamental
concerns related to the possible negative impacts of AI and technology on the types of vulnerable
communities targeted for these discussions, especially when thinking about the application of such
technologies in the healthcare setting. This was best encapsulated by a comment in the Hispanic
session.

“Yeah, I think there’s just differences when it comes to if you’re talking about medical
interventions and using AI in that way or telecommunications, just because I’m a huge
proponent of taking on a precision medicine standpoint. So I think if it’s the right
intervention for the right person at the right time, then that’s perfectly fine. But I do have a
little bit of hesitancy working with high-risk groups and populations and really just pushing
that on a community that might be facing some other issues. So I always try to take into
account looking at how it might impact them or affect them on a biological level or physical
level or even their mental health level.”

Further conversations about how the development of AI in healthcare settings might impact the
participants’ communities gravitated to a set of core concerns, including a sense of losing something
“human” with the increased reliance on AI and advanced technologies, the prevalence of a digital
divide and racial disparities in experiencing the benefits of technology, and general concerns about
who is in control of such technologies.

Losing Something Human

Participants noted concerns with a growing reliance on technology and AI, such as this comment in
the Southeast Asian/Native American group.

“All, I would just have to agree with everything [redacted] said. You don’t want that
artificial intelligence to become the doorway. We can utilize it as a tool, but once it becomes
a main source, that presents a huge issue, I feel.”

This point was driven home more directly with numerous concerns voiced across communities that
something human is lost with a greater reliance on AI and automated systems.

“One more example, in our traditional ways, when the medicine person would see a patient,
they would speak to that patient. They would listen to that patient. They would spend time
with that patient. They would pray. They would sing. They would hold their hand. They
would give them medicine. They would do all these different things. When the Western
medicine came in, it was more like ‘OK, what’s your name? OK, here’s the chart.’ Nowadays,
it’s ‘OK, look on the computer. This symptom, this symptom, this symptom. All right, here’s
your prescription.’ We’re all of a sudden missing all these extra parts that help the person to
heal, that personal contact, that reassurance, that trust. You don’t get trust from artificial
intelligence. We have to make sure it’s a tool but it doesn’t become the doorway, because
that doorway’s going to close on too many people.” (Southeast Asian/Native American
community member)

“It also affects and it’s also good in relation to artificial intelligence because it helps the
advancement of science and everything in relation to overall development and the general
advancement. However, this isn’t necessarily measured in terms of benefits. So, for
example, we have robots that are automating processes; where does this leave the human
touch? Where does this leave the human aspect of integrating that into these practices?”
(Hispanic community member)

“My only concern, and I’ve talked about this in different arenas, is that you lose something in
trying to gain something, and that’s that social bonding or that personal kind of thing that
goes on that we all do in AI.” (African American community member)

Digital Divide
Participants also recognized that any improvements in healthcare due to AI might be felt unevenly among their communities given the persistence of a digital divide among community members in other health contexts. This issue was raised across all groups but was discussed at greatest length in the African American sessions. For example:

“But yeah, I think the access part is extremely important right now in terms of technology and health, because we realize that it’s a lot of people who just really don’t have access to the technology for the things that they need done during COVID. And that is very problematic to me.

“In terms of technology and health, I’ve been primarily concerned about access, who has it, who does not have it. And so I’ve been thinking about, like, people who live in rural communities and to [redacted] point about the elderly, how can we [inaudible] telehealth services to get access to people who need it the most but who can’t, like, travel to go get it?”

_Racial Disparities_

These concerns about the digital divide led to more detailed discussions about possible racial disparities with the implementation of more advanced AI systems. Sometimes this came down to a lack of overall trust in the medical system given a history of racial disparities in the provision of health resources, and this extended to a broader skepticism about introducing technology into that already problematic context. As one of our African American participants noted when asked about the collection of personal data to help make AI more effective:

“I wanted to speak on the fact that with AI, I think people of color would probably be a little hesitant. And this is just my opinion. Because then one, people of color are already leery of doctors but also of who is giving this information. And will they manipulate it or use it against a certain population of people? So, I think there’s that trust issue on getting all of this personal information. On one hand, yes, it could be used for good, but on the other hand, I think we will be a little leery, wondering ‘OK, how is this going to affect me? Is it going to always be considered or used for my good? Or can I trust them with this personal information?’ That it won’t turn around and be manipulated or used against me or my people.”

Other community members shared this concern. For example:

“That goes as well for the Hmong community. There is a social, economic, educational huge disparity and gap. I would have to say with the economic, with the education gap, that also plays into the healthcare and how individuals in the Hmong community view Western medicine. When you’re utilizing artificial intelligence and data and you’re extracting some of [that] information, are they going to be able to take all of that into consideration and formulate a sound outcome, I guess.” (Southeast Asian/Native participant)
These discussions also centered on concerns of biases present within algorithms and AI. For example:

“So, my main concern is about the ... unintentional bias, the stereotypes [that are] embedded in those algorithms. I don’t think I will feel 100% comfortable using artificial intelligence within the healthcare system without that being a primary area that’s addressed. It has to be addressed, because otherwise it’s most certainly gonna exacerbate, like, social and other health disparities [that’re] going to occur. And that’s going to be without a doubt.” (African American community member)

“I know that AI can do a lot of good in solving problems and coming up with solutions, but again, the real concern is if it can distinguish between the bias, and how are we going to utilize that information? It can become dangerous if we don’t know how to appropriately utilize some of that data.” (Southeast Asian/Native American community member)

“I think it’s important to have people, experts who are unbiased, looking at this data and making decisions; otherwise, it’ll lead to unintentional bias like the video talked about and unintentional harm across communities.” (Southeast Asian/Native American community member)

**Concern About Who Is in Charge**

As noted in the quote above, discussions of bias and racial disparities led to a recognition that a lack of diverse representation during the design of algorithms and AI is often the root cause.

“Specifically, certain algorithms that they use that automatically have some racism embedded in [them] because of the [fallible] nature of humans who incorporate it into the developments.” (African American community member)

“So even when you’re developing, you have all these people who are fallible, who develop the program, because a lot of times the people who are of color are not in the design process and who are developing those algorithms.” (African American community member)

These conversations often pivoted to a broader skepticism of who is in charge of designing AI solutions and what their motivations are. Put simply:

“And so it goes back to the AI issue of who’s in charge. What’s the purpose? Who’s funding it? And who is regulating and overseeing everything? That really is so critical, and every project, especially with the AI, what is the purpose?” (Southeast Asian/Native American community member)

This concern was shared by other community members.

“But who’s making the decisions, and also who is profiting from the decisions and data? And that’s what I’m literally more concerned about; I think coming from a business perspective,
I’m always thinking about the bottom-line profit, who’s making the most amount of money off of this. Because [inaudible] someone is ultimately going to lose.” (African American community member)

“As far as being Native American, it’s like the textbooks at school are generally written by the people that conquered us, that assimilated us into their system, so that fear coming from the Native American perspective is [about] who is in control. What if you get the wrong person in control of it? How do you determine who’s the right person? Because it’s a tremendous amount of power, AI, and that goes not just for medical but for anything.” (Southeast Asian/Native American community member)

“That’s why it’s a problem. Not to be like AI is the worst thing in the world, but it’s the potential of when you mix it with people, right? Because it’s still a person who develops the program who does these things. It’s a person that tells AI what to do, right? So I think even if we develop AI to be the best thing in the world but we’re not developing the people, it’s going to still be bogus.” (African American community member)

“But there’s definitely a concern of who’s in the room. Who’s at the table? Whose influence is in there when they’re creating this technology? For instance, if it’s the military and they’re going to use it as a weapon against some other country that has people that look like us. Is it a politician that’s looking to please some people that voted him in? There’s definitely questions, and that’s the concern because we’re not in that room. We’re on the receiving end of the technology. We’re not writing the codes. So that’s a major concern, just like I said before, we’re not writing the textbooks.” (Southeast Asian/Native American community member)

**Inclusiveness and the Need for Community Voices**

Many of the above concerns are encapsulated in the following observation by a member of the Southeast Asian/Native American community.

“If AI is used inappropriately, that could be detrimental. What if it falls into the wrong hands of the person who’s analyzing that data? That could lead to manipulation, so I think a part of that is having a health professional, being unbiased, making sure that there’s training to be able to analyze data correctly without being biased.”

At the root of the skepticism about AI were concerns about the lack of diversity within technological teams.

“So even when you’re developing, you have all these people who are fallible — who develops the program? Because a lot of times, the people who are of color are not in the design process and who are developing those algorithms.” (African American community member)
“What I get from it is AI is, say, like the school system we have in America. It’s a good idea, and there’s a lot of information that’s good, but when you get the textbook, is there a Southeast Asian in the history book? [Are] there Menominee in that history book, a Native American? Is there an African American in that textbook, or is it told through the eyes of who wrote it? Is it a colonial message? Is it speaking to everybody and speaking for everybody?” (Southeast Asian/Native American community member)

To counter this, participants noted an increased need for inclusiveness and involving community voices in the development and deployment of AI within healthcare settings. For example:

“When our community’s voice is left out of the inputs and the programming, the story of you not getting access to a human being in your healthcare journey can be solved by input so that when you come on the line, that system knows to not even send you through the AI system and tries to prioritize you through your preferences. That’s down the line, of course, but if our community really believes this as a chance to think about this from a cultural and a social perspective, I believe we can solve a lot of our society’s problems.” (African American community member)

“I think that’s the problem with ... [t]he same thing, just like the school systems. Even the medical system. Is it recognizing everybody? It can’t. It’s AI. It said that right in there. It’s the people behind it that are doing the programming, and the people that have the power behind it, they’re the ones that have to get this for everybody. That means they have to have ... on their team, they have to have people from all these different groups, experts from each one of these groups working to make sure that it’s used in a good way and represents everybody and also gets checked when it’s not.” (Southeast Asian/Native American community member)

“There has to be sincerity, there has to be care in order to develop trust, and that means those that are in power have to not keep the power, not hold the power, but share equally so people can trust again, and unfortunately we’re not there yet, and if we see evidence of that happening, it’s going to start with sincerity, and it’s going to start with communication, and it’s going to start with putting people into positions of power that are there for the people and they look like all of us. They look Asian, they look African, they look Hispanic or Native American, or Middle Eastern or whatever, Indian; we need to have representation, and it needs to be honest, and we need a track record.” (Southeast Asian/Native American community member)

Communities will be more likely to welcome AI technologies when they see others in their community embracing them and that outreach and education within the community are needed.

“And I just think about, like, how can we really engage communities and populations with AI? And I think a lot of it’s going to be, first of all, we need to make it relatable, we need to make it really easy to navigate, like, those kinds of things are really helpful, and also just really to see other people in our communities or other people that look like us, live in the
same areas, eat the same foods, like, really learning and seeing and using those people as an example, I think will really help.” (Hispanic community member)

“And so I think that in conjunction with whatever these solutions are, we have to make sure that we’re not only communicating ahead of time, being proactive in our communication, but also providing the education behind it so that we can help. ... So I think figuring out how to proactively educate and communicate with the community is something that we have to keep in mind from the beginning and not on the tail end.” (African American community member)

Most fundamentally, participants noted the need for a broader cultural perspective to ensure success with the application of AI within their communities.

“I think maybe historically the Hmong community and other communities, specifically to Southeast Asians, artificial intelligence just hasn’t been a part of our culture. We came from islands and our culture; we farm, and we survive that way. It wasn’t until the ‘80s when the Hmong people came to America that they realized what a fridge was or they had access to a microwave or a car or things of that sort. Maybe I’m not sensing resistance. I just don’t think that we really understand what the need is for [or] understand the use of AI.” (Southeast Asian/Native American community member)

“And I do think that there’s ways that you can do that through social and cultural things. Unfortunately, technologists a lot of times aren’t the most hip, and so they make mistakes just thinking about if the tech will work before the culture works.” (African American community member)

*Member Check – Concerns about AI*

To ensure that the researchers understood the meaning and intention of statements made by the community partner participants, the final Member Check session focused on sharing preliminary results of the coding of focus group sessions, presenting quotes and the resulting themes. Areas identified for further follow-up by the research team and/or AAAS were also integrated into this Member Check discussion. This session resulted in the following ideas that modified or nuanced the existing theme structure:

- What would be the rationale for AI over other approaches? We should use other strategies that work first, viewing AI as something that is used only when it makes good sense to do so.
- Is it the case that AI can become overused and that we end up becoming dependent on it in some way?
- Is it really possible for AI to be designed to be culturally competent in terms of diagnosis and treatment for both physical and mental health? There are many cultural subtleties in terms of how people present with health problems and how they interpret information from healthcare providers and their technology support systems. An example was given of triage-based pictures for pain or mood that were not culturally congruent with an older Asian patient.
• Related to the above idea was that emotion (and by extension emotion detection from faces, etc.) is expressed very differently across cultures.
• Hispanic representatives continue to emphasize that the community is bifurcated into younger technology adopters and people who view technology with some degree of suspicion or lack of interest and may simply not engage with it.
• Will AI be able to address holistic health and traditional culture-driven healing practices?

Additional Follow-Up Questions in Member Check Session

Contact Tracing: We posed a question addressing how AI is used for surveillance and trust in contact-tracing systems in their communities of color. Responses included the following ideas:

• A major concern has been that the vaccines are used to inject microchips into the human body so that these individuals can be tracked. A lot about this rumor needs to be unpacked, even though people might understand that they already are being tracked by their phone.
• How the technology is rolled out and education about it are just as important as the technology itself — often there are investments in research and development but not real investment in bringing the community along to address systemic education gaps.
• What “contact tracing” conveys or sounds synonymous with in the Black community — it is too close to the language of parole, probation and surveillance.
• Ascension (a major healthcare system in the region) bought up multiple smaller clinics. The smaller clinics may have been aligned with community interests, but when they are bought out, the buyer may not be aligned with community interests. But now they have the data and thus the power to harm us. Again, this comes to who is going to build the AI, how interests are going to be there, and how it can be respectful to us (from start to finish, over time and through multiple transitions).
• Using AI should be the last resort; we seek experiential knowledge and expertise in a person. There are other places where AI makes sense, but healthcare is essential to life.
• Electronic health record companies don’t have visibility/transparency into how they are using data. Even with HIPAA (the Health Insurance Portability and Accountability Act), there is a capital interest in the data. It would be interesting to consider a healthcare system where you own your data and there is more insight into how the data are going to be used. Why do I always have to ask for my own data?
• Acknowledgment that we are being tracked routinely through multiple strategies (RFID [radio frequency identification device], cellphone signals, etc.), especially in urban settings.

What makes AI trustworthy or easier to interact with?

• Introduction to the tool. Think about using AI as part of intermediary or bridging tools; for example, recognizing when a clinician uses jargon during the discharge process, and the system is able to catch that and put the same ideas automatically into wording that is more accessible to the consumer or automatically reconnect the person to a human when needed.
• Voice, tone and personalization are very valuable in this — when text messages about the vaccines come from a person or a place in the community (e.g., vaccine chatbots), the
response has been high and positive, but if the source is not well recognized, the perception can rapidly become negative.

- Showing people how much tracking is already going on — e.g., with Google Maps — can help people understand that a lot of data about our daily lives are already available.
- Transparency into what the tool is for and where the information is going, and making the explanation language as simple as possible so that it is accessible and conveys real meaning to normal/average people.
- Inclusivity — the gender data element forcing a choice between two options; for this type of information, consider leaving it blank so that people can put what they want.
- For systems that are voice-activated or use voice recognition and reply to the user, consider not using binary gendered titles; it is better to omit it than to get it wrong.

**How do you want to follow what AAAS is working on in this space and how they are using your input?**

- Send quarterly emails.
- Share policy documents/recommendations that come out of this process.
- Create professional training for people in the AI field to help them be sensitive to and navigate concerns and priorities coming from communities of color where the AI tools may be used.

**Other Notes — Visual Storytelling for AI**

We spent some time discussing the flyer (Visual 1) created at the suggestion of some of the focus group participants to help with recruiting and discussion with the wider communities about the intent of these focus groups. The visuals emphasized the following:

- Ensuring intergenerational transmission of values in BIPOC (Black, Indigenous, people of color) communities.
- Ensuring very young and very old/multigenerational inclusion is considered with the use of technology.
- Issues of dignity in the use of AI.
- Considerations of women, gender and minority status, motherhood, caring for and guiding children.
- LGBTQ+ and minority status, and how that relates to AI.
- Preservation of celebration in systems driven by AI.
- Maintaining traditions despite or perhaps supported by AI systems.
- Recognition that younger adults in the BIPOC communities are adopting and advancing technologies even where there may be reluctance in older generation and that AI may actually be driven by some of these perspectives.

Each image and why it was selected was briefly touched on. The image of the Aztec dancers raised questions from the Hispanic representative, and the idea that this image described the importance of maintaining cultural traditions in spite of (or conversely, with the help of) AI systems was noted. Another participant had initially noted that they initially felt that the graphic was too busy and not useful for recruiting (and asked that we work with a graphic artist to distill these ideas). However,
during the more extended walkthrough of the images, this individual noted the value of the various images and verbal annotation of them in explaining the range of issues brought up in considering how AI, communities of color and pandemic/healthcare responses interact. The following recommendation resulted: Consider using traditional and digital storytelling techniques to unpack the ideas for these topics; for example, use photonovela or photovoice approaches.

**RECOMMENDATIONS**

Discussions with these diverse and historically underserved communities in southeastern Wisconsin yielded numerous insights, which we have distilled into three interconnected recommendations for implementing artificial intelligence in public health crises like COVID-19, with respect to communities of color in particular.

**Enhance Literacy With Focus on Community Benefits**

Numerous participants struggled with both understanding AI broadly and its potential application during a public health crisis; bridging this information gap will be essential for successfully introducing AI into contexts that impact communities of color. When participants showed greater literacy in advanced technologies, they focused on the positive impacts experienced in their local communities, often with personal anecdotes. We recommend focusing literacy efforts less on technical details and more on fostering a broader understanding of how one’s community might benefit from the introduction of artificial intelligence. Once communities can understand how they and their neighbors might benefit from AI, then explanations of how such technologies operate can follow.
Respect for Cultures and Remembering the Human

Our participants mentioned numerous concerns related to the impact of AI on their communities, ranging from worries about biases and racial disparities to the digital divide and questions about who is in charge of developing and deploying such technologies. Woven within these stated concerns were comments cementing the need for respecting native cultures and their historical relationships to technology and not losing sight of the importance of the presence of humans within our interactions, both within the healthcare context and more generally. Future development and deployment of AI within communities of color must be grounded in a deep understanding of local culture and must be framed not as a technology meant to replace human interaction but as a means to augment it.

Involve Communities From Start to Finish

Implementing these first two recommendations cannot be achieved in isolation from the communities the technologies seek to serve. Throughout our focus group discussions and across all communities, participants regularly questioned who was in charge of developing AI solutions, often with skepticism about their motivations and whether their goals aligned with the communities. It is vital, then, for any future implementation of AI within communities of color to involve members of those communities from start to finish. Community-centered design must go beyond relying on survey results, census data or perceived community needs to inform a design team’s thinking as they work through how to develop and deploy AI. Instead, community members must be empowered and involved in each step of the design-thinking process well before AI solutions are deployed locally.

In summary, AI has the potential to create enduring benefits for communities of color but will require the trust and support of community members, especially those historically underserved by the healthcare system. With these recommendations — build literacy through focusing on community benefits, respecting local cultures and remembering the human, and involve communities from start to finish — the promise of deploying AI in these communities during future public health crises can be more readily achieved.
REFERENCES

Meeting 1: Introductions & Context

1.1 Introduction & Consent

Moderator: Welcome and thanks for joining us for this focus group. [Moderator introduces self and any other colleagues attending]. The purpose of these focus groups is to talk about the growing use of artificial intelligence in healthcare. In particular, we’re interested in learning more about your opinions about artificial intelligence, how you think it might be helpful when it comes to healthcare, any possible ways AI might be useful for dealing with the COVID-19 pandemic, and any concerns you might have about artificial intelligence in the healthcare setting.

The format of these sessions is a focus group. If you’ve never done one of these before, I have a set of questions I’ll use to help prompt your responses and generate an informal discussion, but there’s no correct answer and no pre-set way our conversation needs to unfold. My role is merely to facilitate the conversation; you all will be guiding. We might also present some examples of how AI is being used in health care and will ask for your reactions.

I encourage everyone to share their thoughts, and be mindful to allow others to speak and listen to their answers just as they’ve listened to yours. You can agree or disagree with each other, but we do want to remain respectful. It is ok to share even if you think others in the room might not agree with you. Again, there are no right or wrong answers, no valid or invalid opinions; we’re just here today to learn from your thoughts and opinions.

To help learn from our conversation, we will be recording today’s session, but no one will have access to these recordings other than the research team. We ask everyone in this session to respect each others’ privacy and not to share any individual’s responses outside of this group. But as noted in the consent forms, due to the group nature of the discussions, confidentiality cannot be guaranteed. Any names or identifying information will be removed from the transcriptions used for research purposes. Direct quotes may be used in presentations and publications, but participant names will not be associated with any quotes.

1.2 Today’s Plan

Moderator: Today’s session will be short, and is mostly meant just to make introductions and obtain a shared understanding of what we mean by “artificial intelligence in healthcare”. Later sessions will explore this in more detail. This session is scheduled to last approximately 45 minutes. Does anyone have questions before we start?

[Open to questions]

1.3 Introductions
Moderator: Great. Let’s start with some introductions. Could we go around the room and have each person share their first name and say a little something about their connection to [whatever group is meeting]?

[Warm-up activity]

1.4 Warm Up 1
Moderator: Now I’d like you to share your thoughts on computer technology broadly. Thinking about the last five years or so, how has technology changed your everyday life and activities?

Prompts: At work vs. at home? For you, is technology helpful, harmful, or annoying? Why?

[Discussion]

1.5 Warm Up 2
Moderator: (follow-up) And have you noticed any changes to the role technology plays when it comes to your healthcare?

Prompts: Are you using technology to access health information? Have you noticed if your health providers are relying on technology to help do their job? Can you give some examples? Does all this seem to be a good thing?

[Discussion]

1.6 Understanding of AI
Moderator: Now I want to shift our conversation towards this idea of “artificial intelligence”. Can someone kick us off and tell us in their own words what they understand “artificial intelligence” to mean?

Prompts: Can someone else provide an example of artificial intelligence that they’re familiar with? (recommendation systems, Siri/Alexa, autocorrect/autocomplete, algorithmic filtering, predictive analytics). Do you think AI is playing a role in your daily activities? Is there a way to explain what AI is in just one or two sentences?

[Discussion]

1.7 “What is Artificial Intelligence” video: https://www.youtube.com/watch?v=nASDYRkbQIY
Moderator: These are some great examples. To help us focus on a shared understanding of AI, I’d like to share a quick 2-minute video that walks through some of the basic elements of how AI works and what it can do for us.

Prompts: So, did anything jump out at you with this video? What were you able to learn about how AI works? Did any examples seem particularly relevant to your life? Are there any examples you’d add to the video to help explain AI?

[Discussion]

1.8 Positive Impacts of AI
Moderator: So, overall, do you think AI has had any positive impact on your daily life?

Prompts: Are they helpful in providing movie recommendations? Made life easier by providing driving directions? Saved you time? Do you think they generally are a good thing?

- Should we keep investing in AI and hope it becomes part of our homes, and cars, and schools, and work?

[Discussion]

1.9 Negative Impacts of AI

Moderator: Now, has anyone thought of possible negative impacts of the increased presence of artificial intelligence in our daily lives and activities? Have you heard any news stories or have any experiences where AI seemed to get something wrong or cause a problem?

Prompts: When a recommendation on Netflix or Amazon was wrong? Concerns about algorithms making bad decisions? Are these minor inconveniences, or could there be bigger issues? Perhaps broader concerns about biases or fairness?

- Should we be concerned about AI, or put any restrictions on who uses it or where?

[Discussion]

1.10 Wrap Up

Moderator: This has been a great conversation so far. This is all we wanted to cover in this first session. When we meet again on [date] we will continue this discussion and consider how artificial intelligence has been employed in the healthcare setting, including even the COVID-19 pandemic. We look forward to chatting again then. Thanks, everyone, for your time today...

[End of Meeting 1]

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Meeting 2: Broader Discussion of AI in Healthcare

2.1 Welcome & Consent Reminder

Moderator: Welcome again, everyone, and thanks for joining us for this 2nd focus group.

[Moderator introduces self and any other colleagues attending]. As a reminder, the purpose of these focus groups is to talk about the growing use of artificial intelligence in healthcare. In particular, we’re interested in learning more about your opinions about artificial intelligence, how you think it might be helpful when it comes to healthcare, any possible ways AI might be useful for dealing with the COVID-19 pandemic, and any concerns you might have about artificial intelligence in the healthcare setting.

As with the first focus group, I have a set of questions I’ll use to help prompt your responses and generate an informal discussion, but there’s no correct answer and no pre-set way our conversation needs to unfold. My role is merely to facilitate the conversation; you all will be guiding.
I encourage everyone to share their thoughts, and be mindful to allow others to speak and listen to their answers just as they’ve listened to yours. You can agree or disagree with each other, but we do want to remain respectful. It is ok to share even if you think others in the room might not agree with you. Again, there are no right or wrong answers, no valid or invalid opinions; we’re just here today to learn from your thoughts and opinions.

To help learn from our conversation, we will be recording today’s session, but no one will have access to these recordings other than the research team. We ask everyone in this session to respect each others’ privacy and not to share any individual’s responses outside of this group. But as noted in the consent forms, due to the group nature of the discussions, confidentiality cannot be guaranteed. Any names or identifying information will be removed from the transcriptions used for research purposes. Direct quotes may be used in presentations and publications, but participant names will not be associated with any quotes.

2.2  Today’s Plan
Moderator: Today’s session will last longer than our first meeting -- probably about an hour -- and we’ll have some videos to watch to help us think about the issues of artificial intelligence in healthcare. Does anyone have questions before we start?

[Open to questions]

2.3  Recap AI Discussion
Moderator: Great. In our first session, we discussed the idea of “artificial intelligence”, and we came up with this general description of what AI means: [Repeat definition] Since that meeting, has anyone thought of other examples of artificial intelligence that they’re familiar with? (recommendation systems, Siri/Alexa, autocorrect/autocomplete, algorithmic filtering, predictive analytics)

[Discussion]

2.4  Recap Impacts of AI
Moderator: We also talked last time about some of the ways we see AI impacting our lives, in both positive and also maybe some downsides. [Repeat some examples] Since that discussion, has anyone thought of other ways AI has impacted them, or society at large that they’d like to share with the group?

[Discussion]

2.5  AI in Healthcare Video
Moderator: This is great. Overall, we can see ways how artificial intelligence can accomplish a lot, but perhaps there are plusses and minuses. So, now I want to turn our attention back to how AI is used in healthcare settings. To help us get a better understanding of this, and to spark some reactions, let’s watch a short video that shows some examples of how AI is being used in healthcare.

[Plays video]
2.6  AI in Healthcare Video Discussion

Moderator: Does anyone have any immediate reactions to this video? Does anything jump out at you in terms of how artificial intelligence might be useful in healthcare settings?

[Discussion]

2.7  AI in Healthcare General Discussion

Moderator: Can you imagine any other examples of how AI might be helpful in a healthcare setting? Have you heard of other technologies, or can you think of a situation where it could be useful if available?

Prompts: Forecasting and prevention; AI-based diagnostics and imaging; improve hospital management; drug research and experiments; automated monitoring of nursing home patients; developing “smart” robots as companions for the elderly

[Discussion]

2.8  Reactions to AI in Healthcare

Moderator: [Summarizes list] Now that we’ve spent some time hearing and thinking about how artificial intelligence might be used within healthcare, I want each of you to pause and think of what your gut reaction is to all of this. Some of you might think this is a good thing. But others might have a different view.

First, those of you who felt this is generally a good thing, what makes you feel that way. Is there something that artificial intelligence is doing that gives you a positive view?

[Discussion]

2.9  Negative Reactions to AI in Healthcare

Moderator: And now those of you with a different view, who don’t feel quite a positive. What words would you use to describe how you feel about artificial intelligence in healthcare? Feel free to just say the words.

Gentle Prompts: Do you have concerns? (about what...safety, accuracy, automation, costs) Does it make you worry or uncomfortable? Do you trust AI? Why or why not?

[Discussion]

2.10  AI and COVID-19 Video

Moderator: This has been a really helpful discussion so far. I want us to also think more specifically about how artificial intelligence might be helpful when it comes to managing the COVID-19 pandemic. So, let’s watch another quick video that describes some of the ways artificial intelligence is being used to tackle COVID.

[plays video]
2.11  AI and COVID-19 Discussion
Moderator: Where there any examples of using artificial intelligence to help fight COVID-19 that jumped out to you in the video? Can you imagine any other uses of AI to help us during the pandemic?

Prompts: Risk factor calculator; sick-person detection; screening & testing; data dashboards; contact tracing; quarantine management; triage of patients; surveillance to ensure social distancing; allocation of resources

2.12  AI and COVID-19 Issues
Moderator: Was there anything in this video -- or in general -- that makes you feel differently about the use of artificial intelligence in the context of stopping the spread of COVID?

Gentle Prompts: Do any earlier concerns go away when we’re thinking about COVID versus other health problems?

[Discussion]

2.13  AI and Healthcare for your Community
Moderator: Ok, we’re almost done. The last thing I want us to think about is the broader community you live and work in. We’ve talked a lot already about artificial intelligence and its pros and cons when used in healthcare. Do you think there is anything unique to your community that also connects to the helpfulness of AI in healthcare?

Gentle Prompts: Are there health concerns in your community that AI might help resolve? Could AI help improve access to healthcare? How do you feel about sharing health data to enable better algorithms that are trained on more diverse communities? (If not, what conditions would make it acceptable?)

[Discussion]

Or, on the other hand, would your community share any concerns already expressed today about using artificial intelligence in health settings?

2.14  Anything Else?
Moderator: We’ve covered a lot of ground about everyone’s attitudes about the use of artificial intelligence in healthcare. Is there anything else you want to talk about today that we haven’t already brought up?

[Time for comments]

2.15  Wrap-Up
Moderator: Thank you again for your time today, which we know is very valuable. We appreciate your contributions and will be happy to share results from this project with anyone who is interested. [details about optional 3rd meeting; compensation]

[End of Meeting 2]
Meeting 3: Combined Member Check Meeting

3.1 Welcome & Consent Reminder
Moderator: Welcome again, everyone, and thanks for joining us for this final wrap-up meeting. [Moderator introduces self and any other colleagues attending]. As a reminder, the purpose of these focus groups is to talk about the growing use of artificial intelligence in healthcare. In particular, we’re interested in learning more about your opinions about artificial intelligence, how you think it might be helpful when it comes to healthcare, any possible ways AI might be useful for dealing with the COVID-19 pandemic, and any concerns you might have about artificial intelligence in the healthcare setting.

We’re already had two meetings in smaller groups, and we want to use to this time as a way for people to share any additional thoughts or reactions to artificial intelligence since we last met. Specifically, this “member check” session is designed to increase the accuracy and validity of our research study by providing the community members an opportunity to give feedback on our preliminary results.

3.2 Today’s Plan
Moderator: We want to ensure that we understood the meaning and intention of statements made in the earlier sessions, so the first this final session focuses on sharing preliminary results of the earlier small group discussions. We have a presentation that provides an overview of themes and quotes, and a few follow-up questions to guide us today.

[Review summary presentation]

3.3 Overview Discussion
Moderator: We want to open things up for anyone to provide feedback, clarifications, or even pushback on these items presented. Anyone can jump in…

[Discussion]

3.4 Contact Tracing
Moderator: A specific question we wanted to return to is about contact tracing. Are there any particular sets of concerns or roadblocks within your communities that might prevent the effectiveness of contact tracing? Whether done face-to-face or through some kind of app?

[Discussion]

3.5 Trustworthy AI
Moderator: We also wanted to bring up a common theme from earlier sessions on concerns about trusting AI systems. There was concerns expressed over who’s in charge of developing AI, what are there interests, whether they are respecting communities and their cultures, etc. Are there other issues…or perhaps even pathways towards developing trustworthy AI within your communities?
3.6 Wrap-Up
Moderator: Ok, thanks everyone. I think we’re just about done, and this is our last session together. Is there anything else you want to talk about today that we haven’t already brought up?

[Time for comments]

3.11 Wrap-Up
Moderator: Thank you again for your time for all of these sessions, which we know is very valuable. We appreciate your contributions and will be happy to share results from this project with anyone who is interested. [information about compensation]

[End of Meeting 3]