Cait Ellis (00:00:01):
Good afternoon, I'm Cait Ellis, program manager at the National Institute For Healthcare Management Foundation. On behalf of NIHCM, thank you all for joining us today to explore this important topic. This is a challenging time, and our goal today is to share actionable information and strategies on environmental health and justice.

Cait Ellis (00:00:21):
In the US, air pollution kills over 100,000 people a year, and comes from a variety of sources, affecting people in both urban and rural areas. Pollution, however, is not felt equally across the population. Black and Latino Americans are exposed to more pollution than they cause, while White Americans experience a pollution advantage, where they're exposed to less pollution than they create.

Cait Ellis (00:00:47):
To explore short and long-term strategies to address environmental health and justice challenges, we are pleased to have a prestigious panel of experts with us today. Before we hear from them, I would like to thank NIHCM President and CEO, Nancy Chockley, and the NIHCM team who helped to convene this event. You can find biographical information for all of our speakers on our website, along with today's agenda and copies of slides. We also invite you to live tweet during the webinar using the #environmentalhealth.

Cait Ellis (00:01:19):
I am now pleased to introduce our first speaker, Charles Lee. Charles is the senior policy advisor for environmental justice at the EPA, where he leads the development and implementation of the EPA's agency-wide Environmental Justice Strategic Plan. He is also widely recognized as a true pioneer in the area of environmental justice. We are so grateful he is with us today, to share his work and insights. Charles?

Charles Lee (00:01:47):
Thank you, Cait. And good morning, good afternoon, everyone. It is a real pleasure to be here, I want to thank Cait and Josh Hamburg and the National Institute for Health Care Management for inviting me to this webinar, and to really express my appreciation for their focusing on this important issue. My presentation is going to cover the following topics, background on environmental justice and disproportion impacts, the area of environmental justice and air pollution, particularly the lived experience of communities, which is really important for understanding environmental justice and the empirical evidence, structural racism and EJ, and then strategies and methods to advance community air protection.

Charles Lee (00:02:46):
Talking about the historical roots of environmental justice, the four pictures or four items I have on the slide, I'll speak to some of the seminal events, starting in 1982 in Warren County, North Carolina where some 500 people were arrested protesting the sighting of a PCB landfill. In 1987, the first national study on the demographics related to the location of hazardous waste sites, was issued by the United Church of Christ Commission for Racial Justice. I wrote this report to put the issue of environmental hazards in people of color and poor communities, and indigenous communities on the map. And at that point, environmental justice was unheard of and actually did not even have a name.
Charles Lee (00:03:39):
In 1991, the People of Color Environmental Leadership Summit coalesced a national grassroots environmental justice movement, and codified the 17 principles of environmental justice. And in 1994, President William Clinton signed the Executive Order Environmental Justice 12898, and called on federal agencies to identify and address, as appropriate, the disproportionately high and adverse environmental and human health effects of their programs, on minority populations and low-income populations.

Charles Lee (00:04:15):
And the main, EJ is about the lived experience, as I said, of environmentally and economically distressed communities and [Kirsch Mok 00:04:23], who is the former Dean of the Howard University Law School, once said that, "EJ is the convergence of two great social movements of the latter half of the 20th century, civil rights and environmentalism," and called environmental justice, "The civil rights issue of the 21st century," an idea that is really coming to pass in a big way.

Charles Lee (00:04:49):
So what is environmental justice? It's defined as the fair treatment and meaningful involvement of all people regardless of race, color, and national origin or income in the development, implementation and enforcement of laws, regulations and policies that affect the environment of public health. And at the bottom of the slide, you will see some elements of what is a taxonomy of environmental justice. So moving to the idea of the science behind disproportionate environmental health impacts, this slide shows the drivers from the built environment, the natural environment, and the social environments.

Charles Lee (00:05:32):
And in this case, a great example to illustrate this is air impacts. Of course everyone knows now that the idea or the recent crisis, the COVID-19 pandemic, dramatically illustrates this relationship. Recent reports point out the grim reality of disproportionate mortality from COVID-19 in Black, Brown and indigenous communities. And they have been shown to have links to both air pollution as well as the social determinants of health.

Charles Lee (00:06:12):
What is really important to gather from this slide is the fact that this relationship is not just speculative, there's evidence behind it. One prime example of that is the recent study by the Harvard School of Public Health, that found that when PM 2.5 exposure goes up, the number of COVID-19 deaths also goes up. So in the 30 years since toxic waste and rates report, thousands of peer-reviewed journal articles have produced empirical evidence about the existence of disproportionate impacts. And these range from studies that look at the characteristics identified here, from exposure and proximity to pollution sources to cumulative impacts. And these take place in all kinds of environmental media that are there listed above, and it is important to point out that these also relate to the occupational environment.

Charles Lee (00:07:21):
So talking about the idea of disproportionate impacts, this graphic is important for me because we're talking about the spatial distribution, environmental burdens and benefits. And typically people of color, low-income indigenous communities face multiple environmental hazards and the lack of environmental amenities like fresh food or green space and other things. The slide traces how our understanding of disproportionate impacts have evolved over the past two decades, from anecdotal descriptions of the
things that some examples of which are shown on this slide. Two, a process or processes which can combine both pollution burden and population characteristics, that lead to greater vulnerability.

Charles Lee (00:08:21):
As a result, we can talk about disproportionate impacts now in a rigorous way and, essentially, I would define disproportionate impacts as a consistent pattern of greater pollution burden and population vulnerability affecting the same populations, same communities, is primarily those with people of color and low-income and indigenous populations. So two of the tools that brought about this understanding are EJ mapping tools that look, cumulatively, at pollution burden and population vulnerabilities. Such as CalEPA, California EPA, CalEnviroScreen tool and US EPA EJ screen tool.

Charles Lee (00:09:08):
And this slide shows you the CalEnviroScreen which does provide cumulative scores for every census tract, in the state of California, using the formula that is on the slide. And then the next slide shows the environmental and demographic factors used, for indicators in EJSCREEN. The key thing I want to share with you or have you take away from this is, the fact that EJSCREEN is totally interactive, successful to everyone in every part of the country and therefore is a really useful tool or has proven to be a really useful tool, and we urge you to really go and take advantage of that.

Charles Lee (00:10:06):
So moving over to the area of air pollution impacts and environmental justice, or disproportionate air pollution impacts, we start with lived experience of communities. In the South Bronx, I remember, back in the 1990s, this was a huge issue that the National Environmental Justice Advisory Council, which is the formal advisory council on EJ to US EPA, focused a lot and wrote a report on waste transfer stations in the South Bronx, and today it still remains to be a important issue, even though progress has been made.

Charles Lee (00:10:52):
Second example I have here is Norco, Louisiana, particularly the community of Diamond which is one of the many communities in the Louisiana chemical corridor, that were post-slavery sharecropper communities at the edge of plantations, now converted to petrochemical plants. This one, which is next to the Norco facility, organized to relocate itself under the leadership of a Miss Margie Richard and her efforts were recognized with the Goldman Environmental Prize award. And the community story is the subject of a book by Steve Lerner, which has a forward by Professor Robert Bullard, a preeminent EJ scholar.

Charles Lee (00:11:41):
And the last picture, which I think speaks to us today because of all the wildfires now taking place in California, is a stark reminder about how certain groups are being overlooked. And this is a picture of farm workers having to continue to work, during the wildfires in California. It is not only a stark reminder of disproportionate impacts that are overlooked, but a sign of the future challenges related to climate change.

Charles Lee (00:12:22):
In terms of historical evidence around disproportionate air pollution impacts, I want to take you back in 1992. This actually was in an EPA journal entitled... This is the EPA journal that focused on issues of
disproportionate environmental impacts and, at that time, environmental equity. And it's entitled, "Environmental Protection-Has it Been fair?" And this brings data from the Argonne National Laboratories, which talked about disproportionate impacts. I think the thing I want to leave you... The key information I want to leave you there is, in the graph, the percentage of the population living in areas of one or more non-attainment, is the following; 57% for Whites as opposed to 65% for African Americans, and 80% for Hispanics.

Charles Lee (00:13:34):
Our current studies on disproportionate environmental impacts are exemplified by these two recent examples, one by Michelle Bell and Keita Ebisu from the Yale School of Forestry and Environmental Studies, and by Christopher Tessum and others at the University of Washington. The Yale study shows the unequaled exposure, on the basis of race, to the airborne particular matter components of PM 2.5, and all which are arrayed on this slide. And then University of Washington study takes a really interesting slant, it focuses on the differential between the exposure burden borne by communities of color, versus the benefits in terms of consumption of those goods and services, and associates that with the exposure burden.

Charles Lee (00:14:34):
This is, of course, a very intricate analysis as shown by this graphic but it boils down to the finding that, Whites experience a pollution advantage of 17% less pollution exposure, for goods and services associated with their consumption, while Blacks and Hispanics experience a 56% and 60% excess exposure. So at EPA, there has been lots of work done around the EJ and air pollution arena. One example I want to point out is the figure on the left, the EJ's strategic plan measure on the percentage of the low-income population in the United States, living in counties meeting the annual and 24-hour PM 2.5, National Ambient Air Quality Standards for the years 2006-2016.

Charles Lee (00:15:39):
And this was reported in the EPA's FY 2017, EJ progress report. This is noteworthy for a lot of reasons but it's especially for the fact that, it is an example of how EPA has been trying to start to look at environmental justice in terms of environmental outcomes. And, of course, we all know and the challenge of our work is to make differences in the conditions, in communities and, as hard as this may be and as difficult as many of you note, it is to document these things. Is a real credit to EPA that they decided that this was something that was important to do.

Charles Lee (00:16:24):
The other study then, which came out in 2018, is the study by the Office of Research and Development that show how disparities from PM, from stationary sources, are in fact still increasing. And there’s a lot of things that go into all this but one of the things I want to point out is, as progress is being made, the areas that are left in non-attainment are going to be harder and harder to deal with. And in that context, issues with disparities are going to become greater and attention towards eliminating those disparities is going to be really important.

Charles Lee (00:17:10):
I want to move over now to another study, which I think is one of the most important ones in the EJ area. And this is by Professor Rachel Morello-Frosch and Bill Jesdale, at the University of California, Berkeley. And it looks at measures of the relationship between racial segregation and estimated cancer
risks, associated with ambient air toxics. And what they found was a correlation between a level of racial segregation and estimated cancer risk. And as you can see, the higher the level of racial segregation, the higher estimated lifetime cancer risk. This is not only true for individual groups, but also for these municipalities as a whole. And so this is a good way to transition to my next slide, which really focuses on issues of structural racism and environmental justice.

Charles Lee (00:18:24):
And these are maps that were created by a thing called the Mapping Inequality project, which was the project of the University of Richmond and Virginia Tech. What it did was to produce a resource of having the 100 redlining maps, from the 1930s, for 108 cities. And redlining, as you know, is the intentional policy of racial steering for where people color can live, and systematic disinvestment. This is overlaid against CalEPA's or CalEnviroScreen, results for the city of California, Oakland, California. As you can see, there is a correlation between these past policy choices and current environmental conditions.

Charles Lee (00:19:17):
There are a lot of things to take away from this, and this could be a subject of a full webinar, in and of itself, but one of them is what the Mapping Inequality project did, was to create an information source that's going to generate many studies. One of which was published in February, this year, and that was on the correlation between these redlining maps and the current location of urban heat islands, something which Jeremy Hoffman, one of the co-panels here today, will be discussing.

Charles Lee (00:19:58):
So this next slide is one that I just want to leave to you and for you to think about, because the conversation that we believe needs to go to all the other examples of public policies and government programs, that have these processes of structural racism affecting them. And these could be in the areas of participation and decision making, in disparities in resource investments or inequities in the development and implementation of regulations.

Charles Lee (00:20:37):
This is something I just want to leave because I think I would like to take the last slide, and then transfer that to something like this in which you, yourself, can start to think about and what this mean for you in terms of your own experience and in terms of your own work. I'm going to conclude with talking about the emerging strategies and methods or approaches, for addressing community air protection. And one of the most important developments is the... And I want to put that in context, I think that one of the most important developments in the history of environmental justice, is the fact that the practice of EJ has matured to a point where there are now approaches that can be taught, learned and replicated. And a great example of a great place to identify some of those is the California's Community Air Protection Program, under the pages of what is also known as Assembly Bill 617.

Charles Lee (00:21:51):
It's developed on a framework to focus on community action and many of these elements, of which are identified here, there's a... And in addition to that, 13 communities were identified for pilot activities which involved the local communities, affected communities, the regional Air Quality Management Districts, and what they did was to start to map out community-driven strategies for addressing our air pollution impacts. One example of that is what in West Oakland and recently they produced a plan called, Only Our Air, which is the West Oakland Community Action Plan. And it has over 90 strategies
involved some of which are the key ones, are here in terms of moving polluting businesses and activities away from residents, and moving towards a zero emission or funding cleaning trucks, cleaning up industry, reducing car trips and road dust and stopping backyard burning.

Charles Lee (00:23:12):
This is all available to you in this report, Only Our Air, on the Bay Area, Air Quality Management District's website. I do want to point out that, an important person in this is a community activist, a long-time community activist named Miss Margaret Gordon, who not only was a co-founder of the West Oakland Environmental Indicators Project but has become an icon in this area. And one of the things that she had the honor of being is, they appointed a commissioner of the Oakland Port Authority.

Charles Lee (00:23:58):
So I think that, when we start to look back we're going to find three important paradigm shifts, and the experience in California is a great place to begin to mine these for lessons. The first is, moving from large geographic scales to neighborhood scales where a lot of these air pollution hot spots and disproportionate impacted communities are located. And so it creates the ability or opens up the ability to focus our science tools, particularly those related to community monitoring, our strategies to the current local land use, regulatory tools and other approaches that were identified in the last slide.

Charles Lee (00:24:49):
Second, this involves a conscious attempt to involve the community in the process, in terms of joint planning and decision making, and other governance process in which the community has a meaningful seat at the table. And thirdly I think the things presented in this presentation means that there needs to be greater tension, on the legacy of structural racism and institutionalized actions which address racial equity and justice. The current national conversation on structural racism provides a good opportunity to collectively tackle this issue. The West Oakland Community Action Plan has set ambitious goals, as shown here, of elimination of air quality disparities and a good place to gain lessons, as I said, about replicable approaches which everyone in the nation can benefit from.

Charles Lee (00:25:49):
In conclusion, there are four things. I think that environmental justice is proving to be a very powerful lens, by which you understand current issues, one of which is, of course, the COVID-19 pandemic. Secondly, not only does ample evidence regarding disproportionate impacts of air pollution exists, but it is actually growing. Thirdly, disproportionate air pollution impacts that demonstrably link to structural racism. And lastly, there are replicable strategies and methods to advance community air protection, that are emerging, then that is really good news. So I want to close there and thank you for the opportunity to present to you.

Cait Ellis (00:26:42):
Great. Thank you, Charles, for helping us all understand more about the link between environmental justice, structural racism and health, and for sharing some of the strategies being used to address air pollution impacts. Our next speaker, Dr. Jeremy Hoffman, is the chief scientist at the Science Museum of Virginia. His work on city and urban environments has been widely cited, and showcases how climate and heat drastically impact some neighborhoods over others. We welcome him today to share his work and perspective, Jeremy.
Jeremy Hoffman (00:27:14):
Yes. Thank you so much, I'm hoping you can hear me?

Cait Ellis (00:27:20):
Yes, we can hear you, thanks.

Jeremy Hoffman (00:27:22):
Wonderful. Thank you. So first of all I want to acknowledge NICHM, thank you so much for inviting me to be a part of this conversation. And following Charles Lee on a webinar is truly an honor and a privilege, and then to share space with the folks that you'll hear from the Greensboro Housing Coalition, is also just a joy.

Jeremy Hoffman (00:27:48):
So thanks, everybody, for your attention and I want to share a little bit today, about just this enduring legacy of inequitable exposure to climate stressors. You heard Charles bring up the idea of red-lining, as a potential lens for interpreting this inequity. And I'll share a little bit about that and some recent work that we've been doing, at the Science Museum of Virginia, in trying to highlight and understand and then use that information to efficiently dispatch resources, both before the COVID crisis and then now, using the same lessons that we've learned through studying heat and air in the COVID world.

Jeremy Hoffman (00:28:29):
So, first, because I don't think I know a lot of the people on this call, I want to introduce myself a little bit. So I grew up in the northwestern suburbs of Chicago Illinois, and being a White middle-class family, we enjoyed a lot of the privileges afforded to those families in the '90s, including regular visits to the pool. It's me and my brother there and here, on the right, an embarrassing chapter for sure in the choice of haircut but nonetheless that was the year 1995. That was the year of the famous Chicago heat wave that unfortunately killed over 700 people, and mostly in elderly communities of color that are really disconnected, we're disconnected from their communities.

Jeremy Hoffman (00:29:27):
There's a really good study of this from Eric Klinenberg, it's a book called Heatwave and then a recent PBS special called, Cooked: Survival by Zip Code. Because I lived that, I was enjoying an outdoor yard party in my backyard with air conditioning and slip-and-slides and all that, when just a few miles away on the other side of town people were suffering mortality, and significant morbidity illnesses related to this heat wave. Where temperatures topped 114° and didn't go down below, I think, 85° for several nights in a row.

Jeremy Hoffman (00:30:09):
And then we all know that, as healthcare professionals and especially people with an interest in air quality and its impact on the respiratory system, any underlying respiratory issues, something like COPD or asthma, is exacerbated by heat and humidity and that that can constrict airways and make it harder to breathe, overall, as the heat and humidity goes up.
And then you add on top of that this pollution, things like PM 2.5, you heard Charles very expertly explain that there's some disproportionate exposure to those sorts of pollutants. But these are also things like NO2 and then industrial pollution as well. So these three things heat and pollution and underlying health issues, really tether me to this study of urban microclimates because we know that heat and humidity, just like pollution, don't express themselves the same ways across an urban landscape. And I don't think that there's a better way to explain that than showing you a picture out of my office here in Richmond, Virginia.

Jeremy Hoffman (00:31:17):
And I want you all, on the call, that are watching this slide to make a hypothesis, of course, being from a science museum, you can't escape making a hypothesis during a webinar. So when you think to yourself, we're going to fly into this picture like we're on the Magic School Bus, where would you go to find the warmest place for the touch? Would you go into you... Think about where you might go for the hottest place and then on the same side, where would you go to find the coolest spot to the touch? And I hope you're thinking about, maybe these different colors have something to do with it, maybe the trees have something to do with it, maybe these native plants.

Jeremy Hoffman (00:31:58):
And what's really fascinating is that we've spent a lot of time at the Science Museum of Virginia, learning how to interpret how the natural and built world can either amplify or dampen heat extremes. So this picture was taken with a clear thermal camera, so really reasonably priced and really engaging our public tools for studying heat extremes. And so a couple things pop out in this picture, is that the asphalt's the hottest thing. These dense, impervious, dark surfaces actually absorb more of the sun's energy throughout the day and then re-emit it back into the air as heat, throughout the afternoon and into the evening.

Jeremy Hoffman (00:32:35):
And then that's actually what gives rise to the urban heat island effect or the idea that an entire urban area can be several, if not tens of, degrees warmer than the outlying rural areas. Then there's some really interesting things about the colors of the cars here, having different heat signatures. As well as the type of plants, these big mature oak trees on the far left of the screen versus the native plant garden being cooler than the non-native grasses, these non-native grasses make up a large portion of our public spaces and they can be just as hot as the sidewalk next to them.

Jeremy Hoffman (00:33:10):
So this one photo, I could do an entire webinar, I think, about the built environment and how it amplifies heat but unfortunately we can't spend too much time. But if you were to think about zooming out, going on a Google Map, and think about this balance between the natural environment, these green things, versus the dark and impaired surfaces. And think about your own city and fly above it, what we might learn from this is that we need more shade versus less hardscape. And do we design our cities that way? Because zooming up to the atmospheric level, over the city of Richmond, and using the National Land Cover Database tree canopy percentage map, from 2011. We can see that while we might quote tree canopy percentages over the course of the whole city, depending on where you are on a given day, you can have a tree nearby or absolutely no shade to speak of. And so the shade canopy around Richmond varies from as little as 5% to upwards of 80%, across the city's landscape.
And so knowing that these areas that might have less trees may or may not amplify heat, we went out with a bunch of volunteers in a community science project, in 2017, to physically measure the city’s temperature using these sophisticated thermometers, that are taking measurements of where we are in space and the air temperature, every single second. And by dispatching a bunch of cars around the city, all at once, following a methodology that was adapted by Vivek Shandas at Portland State University, and colleagues, we volunteered a bunch of these nonprofits and university partners, and the city Sustainability Office got together, dispatching a bunch of cars around the city. We discovered that there was a 16-degree Fahrenheit difference between the warmest and coolest place, at the exact same time during a heat wave, in 2017. And this happens to be at 3:00 PM to 4:00 PM.

And we know, from looking at medical records, that this 3:00 PM to 4:00 PM hour is when most of our physical heat-related health burden is occurring, during this hottest part of the day. And you can see that this is the inverse picture of that tree canopy map, whereby the areas with significantly less tree canopy are those with the significantly amplified heat extremes. Now we had to look at this in a more health-minded way, once we started showing members of our local policy-making world and advocates for environmental justice, we had to look at, "Well, what are the exact health burdens?" And so working with the VDH and the Richmond Ambulance Authority, I mean the Virginia Department of Health's ongoing work with them, we've been able to diagnose where heat-related illness responses go to the most.

So this is a map, here on the right, of only heat-related illness ambulance responses over the last five years. And you can see the correspondence between these two maps is increasingly striking. Now, most of these heat-related illness responses, 60% of them, befall Black and Brown communities where they only make up about 47% of the population, in the city of Richmond. And even normalizing by population density, this relationship still holds, and so we're working on an ongoing relationship with VDH to understand this more deeply.

Then thinking about this from the side of respiratory health, you can see the overlap of places that amplify extreme heat during the summer, are the same places that experience higher rates of adults with asthma, this is also true of other respiratory issues and we'll get back to that in a second. But I want to focus in on a little bit that you heard from Charles, in that our urban heat islands overlap with parts of the city that were physically red-lined in the 1930s. This was a Federally supported program where assessors were allowed to go out into individual neighborhoods, over 200 American cities, and rate their residential security along a spectrum of perceived safety for investment.

But as we can look at, individually here in the city of Richmond, it wasn't so much necessarily about the residential security as it was about who was living there. Because this is the area of the city which is known as Jackson Ward, Carver and Newtowne East, several of the communities in the near north side of Richmond, where the type of inhabitant was referred to as 95% Negro. And then very, very little else was explained about this particular neighborhood.
Jeremy Hoffman (00:37:49):

Just on the other side of the city, Windsor Farms, on the other hand, the type of inhabitant was listed as the best people. So upon closer investigation of these maps around the country, we realized that this has nothing to do with necessarily the residential security in the sense of financial, but really who is living there and the perception of those communities as being worthwhile for investment. This is now cascaded into several measurable economic and environmental differences and inequities, including this one that we published back in January where we took satellite imagery of the surface temperatures of cities. We averaged out where those temperatures vary across those different ratings, from A to D, with D being the red-lined communities.

Jeremy Hoffman (00:38:36):

Here in Richmond, the first test case was that it was warmer in formerly red-lined areas, and this was diagnosed by an imbalance of fewer trees as well as experiencing more impervious surfaces. Which of course, this also leads to additional environmental stressors like the capacity to hold storm water during extreme rainfall events, which are also becoming more extreme. But when we zoomed out to the entire country, we had to amalgamate some of the cities into particular urban areas, because they fell within the same Lancet tile, but we ended up with 108 cities in our study and the formerly red-lined areas are approximately 5° Fahrenheit warmer than their green-lined neighbors. And this has significant changes around the country, based on which region of the country you are, and this is largely explained by variations in the available tree canopy, and the relative preponderance of dark hard surfaces, impervious surfaces across them.

Jeremy Hoffman (00:39:35):

Now, there’s been a flourish of attention on these HOLC risk grade disparities, including this one which was published just a couple weeks after ours, from Anthony Nardone in Berkeley. And The Lancet which investigated how age-adjusted asthma rates or visits in emergency departments, in urgent care centers, varied across these different HOLC grades. And much like our heat signal, it increases almost lockstep with the perceived residential security back in, almost, 80 years ago. So it’s incredible that these judgment calls on these communities is now echoing as disparate health and environmental outcomes, including here in Richmond. So I wanted to show an application of, we’ve now digitized the Esri RTS online platform. You can go and use these maps freely, to investigate environmental disparity in your own city. You can also visit bit.ly/redhotcities and investigate more about our ongoing work with the redlining and extreme heat.

Jeremy Hoffman (00:40:49):

But if I overlay those redlining data with EJSCREEN indexes, like the respiratory health index from 2018, the disparity becomes quite clear in that the risk for respiratory health index has higher percentages in those red-lined communities, as well as something like traffic proximity. This isn’t necessarily a surprise given that places that were red-lined served as a map for where to demolish historically Black communities, and build highways that allowed White communities to flee back into the surrounding countryside, and counties surrounding them.

Jeremy Hoffman (00:41:27):

And so I want to tie this eventually back to work that’s ongoing in the city of Richmond, via the RVAgreen 2050 plan. This is an equity-centered climate action plan for the city of Richmond, and you can access information about it at rvagreen2050.com. With a GIS analysts, we developed a heat
vulnerability index which has allowed us to assess where vulnerable populations might be including underlying health, access to adaptive capacity in the sense of air conditioning, those sorts of things.

Jeremy Hoffman (00:41:59):
And what we started to look at, after the onset of COVID, was developing a COVID risk map which looks like this. And it combines both the risk of being exposed to COVID-19 or the Coronavirus, and the severity of an underlying health, predetermining an extremely severe case. And it wasn't your eyes tricking you, the heat vulnerability map and our COVID-19 risk maps look almost identical. And this points to that underlying structural inequality, both in the social determinants of health that predetermine survivability in our urban areas, including here in the city of Richmond, Virginia.

Jeremy Hoffman (00:42:42):
So the Science Museum of Virginia is leading a community science program now called RVAir, and we’re working with our local DEQ as well as the University of Virginia and Virginia Tech, and VCU and U of R, to understand how these disparities exist within our cities and then, most importantly, how they feed back on the health and well-being being of our residents. So we’re actually going out, over the next two weeks, to test how people’s heart rate variations and stress levels vary between different urban forms and contexts, while there's still some heat left to squeeze out of the summer. So, with that, I want to end and just say thank you so much for listening and such a pleasure, again, to follow Charles and then to see the rest of my time and the rest of the opportunity, to hearing from the folks in Greensboro. So thank you so much.

Cait Ellis (00:43:36):
Great. Thank you so much, Dr Hoffman, for expanding on the impact of historical red-lining practices, and illustrating how heat and urban heat islands are disproportionately impacting communities and health. Our final two speakers will focus on efforts to address environmental health, through housing initiatives at the community and neighborhood level.

Cait Ellis (00:43:55):
We will first hear from Valerie Stewart, director of healthy communities at the Blue Cross and Blue Shield of North Carolina Foundation. She will be sharing the foundation's commitment to advancing community health through collaborative partnership. She is joined by Josie Williams, executive director for the Greensboro Housing Coalition, a leading housing nonprofit in North Carolina. Josie will be speaking about their ongoing efforts, working directly with the community to address environmental factors and improve health outcomes. We're so pleased you're both with us today, Valerie, I'll start by turning it over to you.

Valerie Stewart (00:44:31):
Wonderful. Thank you. And here at the Blue Cross and Blue Shield of North Carolina Foundation, our mission is to improve the health and well-being of everyone living in North Carolina. One approach we’ve taken with that is community-centered health, which is our long-term, multi-dimensional approach to increasing the capacity of North Carolina’s communities to act on the root causes of health inequities, through partnerships, policy and systems change. And while this investment began five years ago, it's still very much alive today and has been a significant milestone and shift for us, toward prioritizing social determinants of health and increasing our focus on advancing health equity.
Valerie Stewart (00:45:12):
So a few key components of the approach that I'll just highlight are multi-sector collaborations, so it's clinical, public, private, government all working together to identify the root causes of those inequities, to name those and get explicit about how communities can create change through policy systems and environmental shifts. And these are community-driven, community-designed solutions that really center the voices and lived experiences of those most proximate to the problems. These shifts all allow for community mobilization, whether it's environmental health or in addressing other systemic and structural inequities. We've been partnering with and learning from Josie Williams, along with Collaborative Cottage Grove, the residents and the leaders there in Greensboro. And really you can look no further than to their collaboration, which serves as a clear example of the transformation that is possible when communities build power and pave the way for lasting community change.

Valerie Stewart (00:46:18):
So, Josie, we're grateful to you for your tireless efforts and advocacy to shift that power, and the systems for the health of your community. It's so telling that you believe that we fight not just for community but with communities. So, Josie, I'll turn it over to.

Josie Williams (00:46:37):
Thank you, Valerie, and thank you everyone for joining us. I want to hopefully not take up too much time, hopefully we'll have a little bit of time for Q&A. I wanted to share with you guys today, maybe to give you some understanding of the reality of what happens in these communities, when they are disproportionately impacted by many of the factors that you've heard of, in the previous slide.

Josie Williams (00:48:16):
But first, I want to give you some context of our partnership that Valerie mentions, we lead the... Or one of the leaders in the Collaborative Cottage Grove, it is a multi-sector partnership that includes our health system, Cone Health, our department of health, Guilford County Department of Health, a host of neighborhood organizations and neighborhood associations, our North Carolina Legal Aid universities. And we are multi-sector partnership that also includes our city officials, from the city of Greensboro along with parks and rec. This was very strategic and understanding because we knew that, if we were trying to address many of the factors that you guys just heard about, in this presentation, you need a true collaborative multi-sector approach. But the underlining, I guess you can say, success of the partnership is the fact that we are resident-led and our strategies are developed by, and with the residents leading at the front end.

Josie Williams (00:47:08):
And I say that to say, oftentimes we involve residents on the tail end of a so-called community change, without asking them what they want to see happen differently in their community. So our approach is founded on not just having a seat at the table, but they actually set the table. And so what we... Just as far as the background, just a little bit about the community. I think from the information that you've heard we can all glean from that, a lot of the disproportional impact of the factors that you've heard, happens in low-income communities, they happen in predominantly African American communities, communities of color. So I don't want to dwell on that, I think that's a given, but I do want to give some context regarding Cottage Grove in particular, there are other examples that I can give but I want to focus this presentation on the Cottage Grove community.
Josie Williams (00:49:16):
And so this picture that you have up here in front of you, is a snapshot overview of the community. What I want to briefly highlight on is the fact that, this community has some environmental issues related to substandard housing, related to poverty, related to high incidences of asthma complications due to the conditions that the community members are impacted by. And so these maps here, illustrate respiratory-related hospital admissions by patients diagnosed with asthma. What I want to briefly point out is, when you look at these maps you can see a theme or you can see a commonality. One of these, the top map on the left, is the actual red-lined map of Greensboro, and when you look at the red and yellow, those hot spots there, that coincides with the same map on the far right, that respiratory-related hospital asthma.

Josie Williams (00:50:22):
When you look at the bottom two maps, that percent of population living below poverty and the life expectancy, the hot spots, the darker colors, they coincide across each map. So when we look at the intersectionality between poverty, environmental conditions and those asthma hot spots, they all coincide within a particular area and that happens to be Cottage Grove, and we see this across different communities and across the country. The other thing regarding the environmental condition of this community, it's well known that oftentimes African American communities, low-income communities, we have seen where these communities have been the subject of environmental injustice. This particular community has a park named Bingham Park, that park sits on top of an old landfill. The two picture, the first two pictures in this slide, the first one is a map that was illustrated roughly two, three years ago. That is actually where the incinerator, those red circles, the incinerator of that landfill was sitting, in that park or on that piece of land.

Josie Williams (00:51:43):
The map in the middle is a historical map, that is the same map just a different time. But the reason I'm pointing that out is because right there in the middle, Maple Cemetery, I don't know how well you can see this but there's a cemetery right there in the middle, this landfill encompassed that whole piece of land. The streets and things that you see, some of the street names are different now, but all of that still exists today. The picture on the far right, that is Apache Street Park, that park sits behind one of the apartment complexes that I'm going to talk about in a few minutes. I'm pointing this out because all of this is intersecting right in Cottage Grove, so I'm going to jump around a little bit.

Josie Williams (00:52:30):
When we look at this particular slide, the intersectionality between asthma incidences, vacancy, substandard housing and poverty, intersect in those same locations on these maps. All I did was shrunk it down a little bit and highlighted the area, and this all intersects within this Cottage Grove community. So you can imagine the impact of having a landfill sitting under a park, there's a stream that runs behind that park and runs through the whole entire neighborhood, behind the Apache Street Park that you see on this slide. Also, within this neighborhood, we have conditions where we have a lot of substandard housing that is being improved now and so, again, I'm trying not to dwell on it but I have to give you the context, so you can understand the reality of the conditions that people are living in.

Josie Williams (00:53:31):
So, this is formerly... Now this is called Cottage Gardens but this is Avalon Trace, what this apartment complex used to be called, used to look like. 177 unit of substantive housing complex, with a high
incident of asthma conditions. So what you see in these pictures, people were actually living next door to these units. So you can imagine, if you're living next door to this type of property, you can imagine what your unit condition is, how that's being impacted by what's next door. You would think that, that's an abandoned building, that's not an abandoned building, I'm just highlighting the conditions, and just so you understand, there are people living next door. Now, particularly, the picture that the window looks boarded up, so to speak, that's what the residents were using to close the window, that was actually a family of four living in that with two small kids.

Josie Williams (00:54:23):
So now that you have some context to understand what people were actually experiencing, the beauty about what I wanted to point out is this community is so resilient, so tenacious and they started working with the multi-sector partnership to create the vision of what they wanted to see, for change. And that included a reduction in doctor and ER visits, related to those environmental conditions, also related to the remediation of substandard housing that exacerbated asthma, and increase in clinical community partnership and being able to address the root causes, through policy system and environmental change. Because we are aware, from what you just heard and from what I'm describing, to make those changes, this is a red-lined community, this is a community that lacked investment to the point that it created the conditions that I'm describing.

Josie Williams (00:55:19):
So when we're looking to address that, we have to look at policy and systems, we have to look at environmental conditions, because these are the things that perpetuate that type of environment, and we won't be able to create those changes unless we address those systematic structures. The community also wanted to have a walkable community, this is a historical redlined community without the investment so sidewalks were non-existent. And so the methods and strategies that we use, Valerie described to you about this community-centered approach, again, that multi-sector partnership coming together to address those factors. We begin, also, and actually founded on, as I mentioned, resident voice and community engagement and building capacity, that is prioritized.

Josie Williams (00:56:08):
We don't make decisions regarding those changes unless the residents say that this is what they want to do, because if you can get the residents to buy in, and they have ownership within their community, then you can get a lot more done. And then, also, if they are in alignment with your agendas or the organization agenda, then it's easy to come together on a common vision to create the changes and then you get buy-in across those different sectors and, more importantly, you have the buy-in of the community. Not that, that's easy because that means there has to be cultural shifts, this is a very grassroots, ground-up approach versus we know that our organizations are used to working from the top down.

Josie Williams (00:56:48):
That does not work over time because I've found out, in my experience, you can try that but you will come back to the drawing board and residents have the power, as they begin to speak up and they feel more empowered and they build more capacity, they can create the changes. We can see that now, what's going on in the climate that we're working on, in this world today. So we had a clinical shift, we wanted to collaborate directly with our community partners and our clinical partners, we wanted to have a multi-sector collaboration. We wanted to leverage the resources across those organizations and
the assets in the community, we wanted to increase the capacity on the individual level and that leads to increasing a community capacity, overall, and we are doing that by creating sustainable strategies for sustainable solutions. Because, at the end of the day, if the residents are helping you create those strategies, that’s what would make it more sustainable and that’s why Collaborative Cottage Growth has been together with those partners, and they keep strengthening, we keep expanding.

Josie Williams (00:57:50):
And I’ve been doing this work with them since 2016, and that led to a lot of advocacy for policy system and environmental changes. The reason I put this picture up, this is an actual flyer that when we started working in the partnership, the first thing we wanted to do was invite everyone in the community to come out and meet with us. Our partner meetings are usually, prior to COVID, we would have 30, 40 residents every single month come out. Now we do that online, that’s been a challenge due to COVID-19 and a technology divide. Because COVID-19 is exacerbating these factors, all these things that you just heard in previous presentations and the things that I’m describing now, these things already existed, we were already in a housing pandemic before COVID-19.

Josie Williams (00:58:38):
So when you take those factors and you layer COVID-19 on top of it, it's no wonder that a community like Cottage Grove and others that we see across the country, are being impacted disproportionately. And so, in order for us to continue that founding that grounded in resident voice and community leadership, we didn't back off our partner meetings, we actually ramped it up. So we started meeting every two weeks versus once a month, and we continue to do that. The outcome now and the outcome then, is we still get that community voice at the table and we still are able to integrate effective clinical services and advocacy, for policy systems. That led to the remediation of Apache Street Park, which you can see the pictures on the left, that led to an increased engagement. Even though we're trying to do that online, we're just being a little bit more creative about it.

Josie Williams (00:59:28):
That led to getting an apartment complex rehab, and we did that through public-private partnerships and some other forces through the city of Greensboro funds, that they were able to put forth toward this rehab as well. The picture I’m highlighting, up in that top left corner of this, illustrates the type of meetings we have. That picture is an illustration of all these organizations coming together with the residents, at the table, and the residents actually helped plan that meeting.

Josie Williams (01:00:00):
And I know that was quick because we're running out of time but I do want to also point out, this approach has positive and measurable outcomes, so that led to a deeper partnership within our Cone Health system, so we are able to share and implement upstream strategies, we are able to partner with our department of health in a more deeper way that our community ties are strengthening. We've been able to implement a pediatric residency program, where I know they have engagement opportunities but they actually engage with us, directly with us, and work in the community with us, when that program exists.

Josie Williams (01:00:35):
And then here's some other things just to highlight on that program, the things that have transpired because of that. We've seen our A1C drop in over 20 of participants and a BMI decrease, we've had
sidewalk implementations, the Bingham Park with the landfill that I mentioned about, that is under remediation. Those 177 units have been rehabbed and we have increased neighborhood access to healthy food and vegetables, even now there's a food distribution site that has now grown to the point, from one site to five. And now we're advancing into Alamance County and we're in Guilford County, in North Carolina. And that is not an institution thing, that is all led by community members, that is led by faith-based organizations and that is led by the residents in the community, pushing their voice to say, "We are lacking food access, in a food desert, in the midst of COVID-19 and no one's helping us."

Josie Williams (01:01:30):
And so they started coming together and that ended up having a food distribution project, that's still active right now and it's expanding. So we continue to grow and I just want to say, close with this, again, the strategies that we implement, more importantly, have to do with the resident's voice guiding from the beginning and the traditional norm of doing like we've normally done, in times past. Bringing someone on the tail end doesn't necessarily work, if we're looking at sustainable solutions over time. So I'm sorry that was really fast, because I know we're running out of time, but I'm going to turn that back over to our host and let them close out or do Q&A or however you guys want to do that.

Cait Ellis (01:02:10):
Great thank you Josie and Valerie for sharing your work, clearly your passion and commitment to the community is very evident. We are running close to time so I do just want to ask one closing question, to any of our panelists that would like to comment. We had a lot of questions and just looking forward to a post-COVID world or even as we're still navigating the challenges, what can organizations, especially those that don't address environmental challenges directly, states and cities do either individually or through collaborations, to help advance change? And especially bringing in an equity lens, recognizing racial disparities and the ongoing challenges of COVID-19? So I'll just open that up to anyone that would like to provide a closing comment.

Jeremy Hoffman (01:03:03):
I would love to hear what Josie would recommend.

Josie Williams (01:03:11):
I'm very honest. I recommend being honest and sitting with honest questions, you have to ask yourself when we're looking at these communities, we have to... Each should ask ourselves, is this a place where you would want to live? Is this a place where you would want your kids to play? Is this a place where you would want... What would happen if you had to make the decisions between what you're going to eat, if you're going to pay rent? What do you do when we're sitting out in this Community Cottage Grove right now, and we're trying to connect them to technology and we're in the midst of schools going through one of the biggest transitions that I've ever seen? And how that's impacting your children.

Josie Williams (01:03:54):
And so those that are more fortunate than others, we have to sit with honest questions, and if you are having an issue with your answer then, in my opinion, you're at the horizon of looking at what equity means. And so I would just say that, that's what equitable solutions is about and how do we work together in an authentic way, to create changes that are equitable, long-lasting and if you are okay with your child or your family experiencing the things that we've talked about, in this presentation. I don't
think you would be. And so when we're doing that, to me, it becomes an easier perspective if you put yourself in someone else's shoes and, to me, that's the essence of equity.

Cait Ellis (01:04:48):
Great. Thank you. Jeremy or Charles, whoever, would you like to comment?

Cait Ellis (01:04:52):
(Silence).

Cait Ellis (01:04:58):
Great. Well, we'll just wrap up here, I want to thank our excellent panel of speakers for being with us and sharing their work. Your feedback is important so please take a moment to complete a brief survey, which can be found at the bottom of your screen. I'd also like to point out that we have some resources available on our website, including an infographic on environmental health and a place to register for our next webinar, on childhood development and COVID-19's impact on children. Thank you all, for joining us today.