Mark Peterson - Host:

I am Mark Peterson, and this is "Before, During, and After: A Podcast from FEMA."

Mark Peterson - Host:

Millions of Americans are being impacted by extreme heat waves, which are growing in intensity, frequency, and duration due to climate change. And so, in response to the calendar year 2023 annual planning guidance, where FEMA Administrator Deanne Criswell directed a review of all current FEMA authorities, capabilities and gaps to develop a unified agency approach to build resilience to threats driven by climate change such as extreme heat. FEMA Region 5 partnered with the National Exercise Division to host the first Extreme Heat Summit last year in 2023, which we've highlighted here on this podcast. But recently, in May of 2024, we hosted FEMA's second Extreme Heat Summit here in Chicago. Building on the lessons from the 2023 summit, our focus was expanded to include actions that state, local, tribal, and territorial governments can take to prepare for, mitigate and respond to extreme heat events. The summit featured a wider variety of presenters, including state and local leaders and representatives from academic and nonprofit organizations. So, we wanted to bring you back to Chicago for a full replay of the expert panel discussions. We're representing for you the conversations around extreme heat impacts planning and data analysis, communications and messaging, and nature-based solutions. First up, our panel on heat impacts explored the profound effects of elevated temperatures on both natural and human systems and learned how to collaborate as well as develop strategies for effective mitigation and resilience building. The panel featured Sunny Wescott from the Cybersecurity and Infrastructure Security Agency, Dr. Kristie Ebi from the University of Washington, Andrew Phelps, the former Emergency Management Director for Oregon Department of Emergency Management. Carolyn Levering, the Emergency Management Administrator for the City of Las Vegas. And Dr. Denise Smith, the director of the National Fire Research and Data Center at the United States Fire Administration.

Mark Peterson - Host:

And I'd like to invite all of our panelists to come on up. So, we've actually received quite a few questions, so this is actually will turn out to be a very exciting Q and A. So, I wanna start off with Dr. Ebi. One of the questions that came in was, how do we bridge the gap between climate scientific information and behavioral responses and decisions made surrounding impacts? Many of those at risk are especially in areas where climate has been politicized.

Speaker :

It's a great question. I will point out that although what you read in the paper suggests that climate is highly politicized, there's an annual survey of the US and their opinions of the population about climate change. And 75% of all Americans know the climate is changing. Two thirds think we should be doing something about it. Half think their health is being personally affected. And so, coming in with the bias that it is politicized does make our job much more difficult. People are recognizing the changes that are going on in their own backyard. So, we have a lot of commonality to work from. The critical piece from my perspective is ensure that we use co-production approaches. We work with the communities that are most affected. We work with the redline communities, we work with firefighters. We work with outdoor workers to make sure that we understand what's gonna be effective and efficient from their perspective, and make sure that then overall our inter interventions make the most difference. It's a real opportunity to take what we've learned and bring it out to the field and make people's lives better.

Mark Peterson - Host:

As you can imagine, there's quite a few questions for Ms. Westcott. So, I'll, I'll start with one, just talking about the electrical grids and how the American electrical grids are preparing for worsening heat conditions.

Speaker :

So, I have had the distinct honor of getting to work with NERC most recently and working with NERC going forward for the rest of the year on a couple of different initiatives that they've done. Things from moving from wooden poles to metal poles, moving from metal poles to underground. There's a couple of different initiatives that are already underway. I will say that I live next to a substation on purpose and that substation powers Tyson's Corner over by DC. They decided to go and build their power system underground while I lived there. So, I did intentionally put myself into an area that would be undergoing the transition to see what it would be like. I will say it is definitely a different level of insanity to have your house shook for two years straight while they bore underneath you. I don't wish that on people anymore now. I originally was like, "this is a great idea, why aren't we doing this?" Now I understand a little bit more. We also accidentally, we as a general society there, them as engineers, created a liquefaction zone near my house which jeopardized the structural integrity of my home. So there's, for every mitigation strategy that we employ, there can be these caveats that kick off things we weren't aware of triggering secondary consequences that we now need to plan for that we have to work with the communities on. Moving away from wooden power lines, obviously a necessity. Extreme heat amplifying these rainfall amounts. Wooden poles are not sufficient. Above ground power lines in these high heat pocketed areas going forward in the 2050 maps, those are not gonna be able to be there at the same material that is currently there. The level of SAG that they're experiencing. We're already looking at doing some 3D printing testing techniques to be able to create a casing that sort of holds them within it without igniting within itself. Some of the different structures that you can put around power lines that as they heat they melt as opposed to ignite so that they can put out any sort of those ignitions that kick off. So, there's a bunch of different test beds that are being tried out as it goes forward. That's the positive I usually give at the end of my presentation, which is that disaster drives innovation. So, as the unfortunate that when it comes to the power systems, everyone needs power going forward especially, and that we've really created a persisting need for the same types of power, and that's yielded this problem. I think diversifying and moving away from mega utilities to more localized resilient hubs is definitely something I've heard the energy sector across the board echo is that they're looking at what does it mean to create pockets and then have the pockets interconnected to be able to fuel front and backside of these events going forward.

Mark Peterson - Host:

Before we turn to some of the questions about the Pacific Northwest, which we actually had several, I just wanted to talk a little bit about or maybe just ask a follow up question of what are some specific strategies, one or two that you believe we need to implement or better implement to reduce the impact of extreme heat? Now that's a very broad question so maybe if you wanna focus on one sector.

Speaker :

Extreme heat, as a whole, when it comes to surface retention, a big thing in the Air force they teach us is albedo, which is the color of the material that you choose to put out. Our solar panels are dark, our roads are dark, our roofs are dark. Many of our cars are dark. Subsequently we're actually creating localized heat sinks in a variety of areas. Our concrete cement mixtures are not bright. And because of that, I think that a big move that's really easy to employ that we've seen across a couple of different areas to include Arizona and the UK, is painting things white, shifting over to brighter higher albedo content. The UK's railway industry did that last year and had immediate benefits from it just to be able to cool down the material. There is a new paint out that can reflect up to 97% of solar radiation and actually ends up cooling the material.

Speaker :

So, there's definitely that as a major move when it comes to reducing the amount of heat that's stored at the surface. Moving to more green infrastructure, adding more trees is obviously an immediate benefit. You get an immediate cooling, there's a decrease for your wind field. You have a wind block. You also have a rain block. Finding any of those buddy ups that amplify out the resiliency against other weather events. Those are gonna be big moves going forward. I'm a huge advocate for dome homes. That's just a thing I like to always plug in. And there's of course, moving into other energy sectors, pumped hydro storage, utilizing the abandoned coal mines doing tidal power. I know the US is not as inclined on that one, but Canada and the UK have already moved forward and have shown positive yields from that.

Mark Peterson - Host:

Okay. Moving over to Mr. Phelps. This question kind of sets the stage for a little bit about the Pacific Northwest, but what are actually the emergency response activities during a heat emergency from emergency management entities, the first responders?

New Speaker:

I'm still thinking about getting a dome home now.

Mark Peterson - Host:

As opposed to a tiny home.

New Speaker:

Yeah.

New Speaker:

You know, it can vary. I think the conversation about the impacts of heat on firefighters in particular is, is as a, a former firefighter, it presents a a myriad of challenges as we respond to different heat emergencies. You know, during extreme heat, the, the event that we had in Oregon, you still had structure fires, you still had car accidents, we had wildfires, you have all these other things, medical calls normal medical calls, all these other things that are still happening. And, and, and that's one of the challenges, I think with the extreme heat, we don't always know what to look for. There's not that rushing river that you need to go rescue people from. There's not the flames like a wildfire. There's not the damage to homes and infrastructure that indicate where people need help. So, one of the, the things that we monitor as emergency managers are those calls for service. Are first responders being overwhelmed. And in our case, they simply weren't. Unfortunately, and, and it's, it was one of the most sobering experiences that I had, was understanding that so many of these fatalities weren't reported for 24 hours or more. So, these numbers sort of trickled in. And, and the, the burden on the first response were some of those ancillary events, I guess related to the heat as opposed to the actual direct impacts of, of the heat causing so many fatalities in Portland and the Pacific Northwest.

Speaker :

Thank you. And I'll contrast that with what happened north of you. Just to illustrate the complexity of these situations in our region, there was a 69 fold increase in heat related presentations to the hospitals. Our emergency departments were almost overwhelmed. They had to do triage on where to move people. The emergency departments were taking calls every few minutes for somebody coming in because they were too hot. A high core body temperature is a medical emergency. You have to get that core body temperature down very quickly. If you don't, there's internal organ damage. It can affect people for the rest of their lives. There's high mortality. What the emergency departments did was as soon as somebody came in with that high core body temperature, they put people into a body bag and they filled it with ice. One of the emergency departments almost ran out of ice, which immediately raised the question of, what is your supply chain for ice for your emergency department?

Speaker :

I asked my students, I won't ask you, the kitchen is a really good place to look for ice. But they had to start looking at their supply chains. It was a massive scramble. Emergency departments are proud of the fact that they can handle emergencies. They were close to not being able to handle this one. And so, there are situations where you do see significant impacts, and it's hard on the people themselves. It's not just the kinds of stress we just heard about. It's also hard emotionally. I know one of the emergency department doctors said that a vision he will always remember is walking into emergency department with someone whose feet were covered with third degree burns from walking across asphalt, of EMT who burned their knees because they knelt on the sidewalk to try and help somebody who'd been overcome with the heat. And these are very difficult situations to manage.

Speaker :

And the better the preparation, the better you can get people to think about what the future looks like, the more effective you're going to be. I've advocated for a long time. We need to have stress testing. The military has stress testing. They call it war gaming. We know that banks have to do stress testing, and it's a way to get people out of their current vision of what life is, to think about a different kind of world where we could have these kinds of emergencies and then understand what we need to do to be ready for that world.

Mark Peterson - Host:

I just wanna shift back to Ms. Wescott 'cause there's a couple questions about the correlation of heat and crime, and I wanna just give you the opportunity to just, maybe you can expound on that and what we're seeing in the data.

Speaker :

Yeah, absolutely. So, I've lived in Arizona, California, Texas, Florida, Hawaii. So, a lot of different high heat areas, high humidity areas with Florida. And I can definitively say myself that I am highly irritable when I am hot. There is no way around it. I give my friends warnings, they don't listen. I come into work, once one thing triggers off if I'm in my car and I'm hot, if I'm hot and I'm on a platform waiting for a train, and I get on that train and everyone else getting on that train is lethargic. We're all hot. This actually happened in DC last year. I did it during a heat wave when they were single tracking, because the heat impacts to the rail. Again, I'll put myself there to do the scientific study. So I went, I stood, our train was delayed. We were out there for four hours, borderline direct sunlight, concrete cement mixture, no wind flow. There was no power at the facility we were at besides critical power because they were overheating. They warned us of that, but we all needed to get on the train. So, subsequently, we're all out there indirect heat, we all get onto the train, we are mad. We have to sit next to each other. We don't know each other. The other person's hot. They're sweaty. They're smelly. We're stuck on that train for four hours together every time they open the door to bring on new passengers. More heat came in. More hot bodies came in. We didn't cool down at all. We were then released at midnight coming back down from, I believe it was Connecticut to DC and we were released onto the streets of DC. I remember that exact moment, getting in my boyfriend's car, as aggressive as I've probably ever been. I was just like, "Don't talk to me. Turn the air on" like, I'm dying. I don't wanna ever see these people again. Everyone was yelling, they were yelling at Ubers. The Ubers were honking. It was a hostile environment. I I was so unhappy until about eight minutes under the HVAC and then I was right back to normal. I was completely like, "oh my gosh, I'm so sorry. You know, you don't understand how stressful that was." I couldn't think straight while I was on the train. I was in a, a highly irritable state where any hairline thing was suddenly too much. I had no ability to calm myself down or think about consequences to my actions. So, in a personal experience, I can say that this is a definitive, when you pull those science studies that we did using the crime statistics, it's in Los Angeles, New York, we've seen it in Texas and we've seen it in Florida. Each one of those police departments has reported a direct correlation of violent crime. So, this isn't the premeditated stuff. This is people showing up, angry, irritable, hairline, trigger a off the hip kind of reaction. And that's what's on the rise. So if you're out at major sporting events, you're out at major music festivals and you're under these heat waves, you don't have access to an HVAC cooled facility 'cause you're outside and the atmosphere is hostile. You become hostile. The animals become hostile. We can see this trend with bears, with rattlesnakes, all of our different animals. The dog bites going up on high UV days. This is across the board. It's not just us. It's not just one type of person. No one's immune to this. I've not seen one person in a highly irritable state calm down faster without needing to be cooled down. You need to get out of that environment in order to rescind from it.

Mark Peterson - Host:

Okay. Well then I'm gonna, I'm gonna add on to that question about first responder emotional capacity to deal with heat impacts. We talked about the physiological responses, but is there anything that we know about the emotional impact from the heat for firefighters?

Speaker :

I'll, I'll start with that for sure. When, when we think about the problem with first responders, we don't usually frame it in, in terms of hostility, but we talk a lot about how their cognitive function is impaired. And once again, it is a physiological question related to adequate blood flow. The cardiovascular system is so stressed. You have vasodilation, you have a decrease in the output of the heart. You have decrease in blood pressure and inadequate perfusion of the brain, right? That's just a physiological consequence. And we worry about that affecting the decision making ability of the first responder. And if you add onto that, the cumulative stress of being out on so many calls that the fire service does talk a lot about burnout, whether or not some of that includes some hostility for some of the calls are going on. I wouldn't say that I've never seen that. But our conversation in the fire service really centers on burnout from doing so much. And in the moment the problem is really one of great discomfort and great physiological strain.

Mark Peterson - Host:

Okay. So, moving to heat island effect. So, one of the questions is "If heat sink or heat island effect has been identified as a major issue, what urban planning challenges have you implemented or faced?"

Speaker :

Yeah, those are pretty significant. We're blessed at the city of Las Vegas to have a phenomenal planning team. But we're same as any city, right? We have a push and pull of what it takes to develop our community versus what happens if we don't. And so we really try to interact not only with the development community, but with town hall meetings, with the people living in the community to help better understand what we can be doing to implement the kinds of strategies I, I mentioned in my my little speech there. I, I can say that there are certain neighborhoods in our city that are especially vulnerable. And the tree project that I was talking about is actually rolling out in those neighborhoods. Parts of the city that are lower elevation are certainly subjected to higher heat temperatures because of their elevation.

Speaker :

A lot of those are the older parts of our community where there are very mature trees, but trees have a lifespan too. And so a lot of those trees are now dying diseased and being removed. So we're working really hard to not just add the canopy in the urban forest, but to replace what is being lost on a regular basis just from aging out. And and that's all in our older parts of our community, which is also our most vulnerable residents, right? That's, you're gonna be your lower socioeconomic status folks and people in the demographics at most risk. So a lot of focus and attention is going on into addressing those particular neighborhoods. First, as we continue to expand that canopy,

Mark Peterson - Host:

Two questions on trees as a innovative solution for, for you and for Mr. Phelps. one is any specific kind of trees that you're type that you're exploring, and two, are there any cascading impacts that you potentially will have to deal with related to water usage but also just maintenance that you're concerned about?

Speaker :

Start, I'll, I'll, I'll start. We actually have a lengthy list of native species trees that we encourage for anybody who's planting a new tree. We also have a list of adaptive species that are resistant to the drought and heat effects. We've imported them, but they also fit our community very well. Not so much of those unintended consequences that some imports bring. Trees actually take a lot less water than lawns, and you'll see in Las Vegas very little grass nowadays. Maybe our golf courses are still green but there's fewer of those even now takes a lot to maintain green space through lawns. And so, we're replacing a lot of those lawns with trees and desert landscaping, as you might have heard, that are drought resistant and heat resistant as well. And it's all an education campaign. We have to educate people and our our master plan actually lists all of those trees that we recommend people utilize as they look to increase their own canopies in their own front and backyards.

New Speaker:

Yeah, the pre-green trees are the ones that we're looking at in Portland, Oregon. I don't know the exact species but we do have other issues, the compounding issues with, with adding tree cover. Aside from just drought those well and urban interface issues, we don't wanna cause additional hazards there. And then also invasive species that are decimating trees in the Pacific Northwest - bark beetles and, and things like that. So, looking at more native species and taking additional mitigative steps to ensure that the trees that are being planted are gonna be there for their anticipated lifecycle, and it's not this continuous replacement that needs to happen.

Mark Peterson - Host:

Okay. So to close out the panel this is a question that's been asked by a variety of individuals in, in various ways, but I wanna just offer up an opportunity for each of you to maybe in a lightning round, if you will. What is the most innovative solution to address extreme heat that you are aware of? Sunny,

Speaker :

Most innovative? Microsoft's data centers are entirely water consumptive and susceptible to heat, as are all data centers. And they moved to create a submersible system in an attempt to avoid the worsening heat, the subsequent consequence being their heating the water in the area that they're testing it. Some of these moves to either floating cities, moving underground, moving underwater moving away from the atmosphere as, as a whole, moving into the mountains, you know, there's, there are these shifts where we're looking for an immediate solution that has this immediate cascade of benefit to your community. I can save everybody if I do this one thing. And honestly, I don't think there is one thing that you can do at this point. We've created what is essentially a tidal wave and it's important to ride the tidal wave and to do the steps necessary, many steps necessary, in order to mitigate another one on the back end of it for the generations to come. But I do think that there is going to be struggle and there is going to be pain. There is not one quick way out of it at this point. We didn't do one quick thing to get here. We did many things and that's why we have to do many things to get back out of it again.

New Speaker:

Yeah. it's, it's not even so much about mitigating the hazard of heat. It's mitigating the most challenging hazard of all, which is the hazard of apathy. This notion that bad things can't happen to, to me. And if they are, I can deal with it when it happens or the calvary will come. And it's, it's taking care of yourself and, and some general preparedness and understanding the risks and the threats and building that connectivity. That was my biggest takeaway from the, the Portland the Pacific Northwest Heat Event where the folks that died by and large weren't connected. And I think connection saved lives.

Speaker :

I'm afraid. I don't have anything that's particularly innovative, but it's incredibly powerful just focusing on the first responder community. I think what we have to do is recognize that our environment has changed, the hazards that the fire service is responding to have changed. Largely, we think of this around the wildfire concern, but that also has to do with all weather related events that the first responders are responding to, sometimes following fire events. And it has to do with increasing demands on emergency medical services. So, what we need is, it's, I, I hope it's not really innovative, but it's a new need to plan and be ready for the hazards that first responders are called to.

Speaker :

I'd like to build on that and reinforce what everyone else has said is there's no one magic solution. And yet the most innovative I've seen, I've had the privilege of working in many low and middle income countries around the world, is what happens when you have community engagement. When people see that they are part of the solution, that they come forward with ideas that work within their context, that they find ways to build on the structures they already have. You start thinking of all the different places where people get information about the heat. It doesn't necessarily just come from the broadcast meteorologists or from the emergency management people. They, they hear about heat at the bowling alley, they hear about it at faith-based organizations, and it's finding ways to much better engage with those communities so that they themselves can come forward with ways that work for them and make sure that those ways are inclusive and that we do find ways to protect the most vulnerable, as unfortunately, our temperatures are gonna go up.

Mark Peterson - Host:

Finally.

Speaker :

Best for last?

Mark Peterson - Host:

Yeah.

Speaker :

So, I'm reminded of a quote from Mark Twain, a one-time Nevada resident, at one point. He has a quote where it's everybody talks about the weather, but nobody does anything about it. And we have an opportunity. We have the technology and the capability and the desire to want to do something about this particular brand of weather. I have been in disaster services and emergency management for close to 30 years, and I'm just gonna share a, a personal story that is fairly recent for me. My my in-laws live around the corner from us. They're in their eighties very active and vital people. I sometimes forget that they are what we would call older Americans, right? And as our heat continues to increase in our communities, they're concerned about what could happen in the event of power outage, which does happen on occasion in our community.

Speaker :

And I thought to myself, if my own in-laws have this concern and aren't entirely certain that they know what to do about it, because age crept up on them, they don't consider themselves vulnerable, right? They're healthy, they don't require a lot of medications. They're mobile, they're well-resourced, but they never have thought of themselves as vulnerable. And we use that term a lot, our older Americans, they don't think they're at risk in a lot of cases. And it's important that we continue to spread that message. And for those of us who have older Americans in our lives, we need to check up on them and say, "Hey, your age crept up on me. I forgot you're in your eighties, and here are some things we wanna do to get you ready for an emergency" whether it's heat or any other kind of emergency, because folks aren't as resilient as they used to be. They're not as self-sufficient as they used to be. And their day-to-day lives are fine. But you throw that extra kink into the works of extreme heat incidents and suddenly they realize they're not fine. And by then, it might be too late.

Mark Peterson - Host:

Please join me in thanking the panel.

Mark Peterson - Host:

Our next panel discussed the critical aspects of planning and data analysis with a special focus on the tools and resources available to enhance resilience in the face of extreme heat events. I was fortunate to be joined by Quentin Cummings and Cecylia Fortunska from FEMA's Office of Resilience Strategy at FEMA headquarters, Derek Deroche from the National Weather Service, and Raed Mansour from the City of Chicago.

Mark Peterson - Host:

Okay. So, just a few questions from the audience, and then I have a couple of questions. So, for Cecilia and Quentin, should CRCI or heat risk index be used during response and recovery operations? Or is it primarily developed for resilience?

Speaker :

So, the intent was to be able to think of it in terms of being proactive so that you're planning for the future. I could imagine someone using that data to inform them of where they might want to look during a response. But I would probably, there's some other data sets or some other live feeds that you might wanna look into as well.

Mark Peterson - Host:

Do you run into any challenges utilizing local data sets?

Speaker :

So, yeah. So, this can get difficult particularly from the FEMA perspective. I'll speak for when I go on disasters, for example, and we'll go to a disaster, and this is not just heat related, but really anything related data flow from the Fed. Federal government to state to local and back can be extremely difficult. There's usually a lot of PI that we have to work through, and that becomes extremely difficult. Sure. when there's not PII, then data flows more smoothly, but at the same time, there's benefit in, in that data sharing all the way because at the state and local level, they're usually going to have something much more granular that will be helpful. And then at the federal level, we probably have a, a, a wider breadth of data that they want. And so that's really the blending of these two capabilities.

Mark Peterson - Host:

Yeah, sure. Derek, couple questions for you. When does heat risk come out? So, that's the first one, and the second one is, does heat risk account for duration of heat events?

Speaker :

Yeah, so heat risk is currently out, it's in an experimental phase right now. So, what that means is we release the the tool to the public, and then we take public comments feedback on the tool and how it's working. And then that gives us an, that gives us the ability to evaluate the tool over this summer and see how it's performing, and then make adjustments from there. And yes, it, it does take into account duration, that's the and also the the ability for people to acclimate to the heat. So, those are, those are both components of, of heat risk as well. Yeah.

Mark Peterson - Host:

Are there plans to add or adjust sensors for jurisdictions that only have a few sensors or expand maybe to other jurisdictions?

New Speaker:

So, the way heat risk works it takes into account National Weather Service forecast data. So, you know, we're, we're using a whole host of sensors and, and sources.

Mark Peterson - Host:

So, it's not any particular heat related sensors like we talked about.

New Speaker:

Correct. Yeah. I mean, we, we do take into account the, the observational data. So, we, we manage automated sensors across the country and those are regularly tested for accuracy and things like that. So, yeah.

Mark Peterson - Host:

So, we just talked a lot about the impact of heat related data on specific communities, right. What do you see for Quentin and, and Derek and Cecylia, how do you see the intersection of data like this with city planning? Where, what do you hope that it will drive change? I'll start with Derek.

New Speaker:

Yeah, great question. So again, heat risk is, is again, just a, another tool in the toolbox. So we're hoping, you know, various other tools will come into play for planning purposes. And specifically, tool risk is designed to help help decision makers and the public really to make better just decisions in general about mitigating their risk to to heat. So, that's why we're primarily focused on integrating CDCs mortality data into and then combining that with the weather information so that the decisions ultimately, whether that's city planning or their personal decisions, can be influenced by the data.

New Speaker:

No, great question. So, in addition to my FEMA role, I am also a community planner. I'm a planning commissioner for the city of Annapolis, Maryland. And we, so we use this data. One of the things that we are doing when it comes to the tree canopy is, we will use Landsat and other data sources when it comes to remote sensing to understand what our tree canopy looked like in the 1970s, 1980s, 1990s, and so on to today. And we can see that that tree canopy continues to decrease. And as we do that, we also see that it continues to heat up in particular areas of the city. So now we are working within the planning part of the city to be able to have compensatory shade, essentially. So now, whenever a new developer comes in and wants to develop and they have to tear down that, that has to be compensated throughout the rest of the community. So this way we can maintain a certain level of tree canopy.

Mark Peterson - Host:

Raed, a couple questions are coming in right now for you. So, as a government entity, how do you balance between official - they're meaning official NOAA and National Weather Service sensors, and the community-based readings or the feelings that are not official?

New Speaker:

That's a good question.

New Speaker:

I thought so. That's why it's highlighted it.

New Speaker:

So, NOAA worked with Kappa in those sensors and we can call them official, I guess. The one thing that we noticed was the differences across the city in temperatures. So, we're putting up 12 weather stations of our own for a lot of reasons modeling air quality but also, we'll be pulling in humidity and wind as well. Will it be official? Will NOAA use it? Because the city of Chicago, I don't know anyone from Noah here. We can like, strike up a bargain. But, but we want to give the community some more data that they can use. You know, we're putting up air sensors. They're not official EPA, but it'll provide more data for community. So, I don't think the community is stuck on that this is the official reading and discount anything else. I think what we're looking to do is look at the variability between each, I don't even wanna say community and neighborhood 'cause it can differ block by block, and provide that information for community to use that is specific to them.

New Speaker:

So when they see that reading, at least it comes from a trusted source. And maybe there's other standards we're not complying with that makes it official. EPA has something similar with air sensors. They're not federally regulated monitors. But using these low cost solutions gets more information out and it, it becomes now actionable not only for government, because just because it's not official doesn't mean we can't act on it. So, we can send inspectors there we can allocate resources to areas that may be experiencing hot weather more than others, and we can prioritize them like we did with the tree work where they're not really official. What's official anymore? You know, we're using NASA data, EPA data, you know, Lansat data. We're using everyone's data and just throwing it into the mix and, you know, you have to use what's available. We can't wait for that. Perfect. time in which this data will be approved and, you know, stamped, sealed and ready to go. Does that?

Mark Peterson - Host:

It's great.

New Speaker:

Thumbs up.

Mark Peterson - Host:

I feel like this next question for you is very practical for maybe the people who live here in Chicago and, and saw what it looked like, very common homes on your, your slide up there, which homes were hotter, did you find, I don't think you, you specifically identified that, but beyond being exposed or, or having more exposure in the neighborhood from your preliminary findings were brick, wood, you know, insulation, what kind of materials led to hotter homes?

New Speaker:

I don't have all the details. Most of them were brick. And it was interesting where the hottest part was, it was the second floors. They didn't have air conditioner or they had an air conditioner has to run all day and it's just one room. They got feedback from the residents and they said to cool off, they would go to the basement. Things like that. And, you know, sometimes fans make, make it hotter. So, there's a certain threshold and when to use them when not to. You know, we wanna, we wanna look at solutions for some of these folks especially apartments that live above that first floor. When that urban heat island effect happens, that radiating heat just, you know goes up. And some of it's trapped in these well insulated maybe homes. They're older homes, you know, a lot of the homes in Chicago were built I think before 1950. So, Chicago has a old housing stock. But that's the pattern. We also wanted to look at apartments and high rises too. But this was a pilot just to see what happens, because we know indoor temperatures very important. Not everyone can make it outside. So, we have to look at all, all things that are happening in the community - the parks, the splash pads, the trees, the homes, the streets, you know, there's solutions all over and what is practical and what we can do right now to save lives and what we can do to prevent deaths from happening in the future. But it was, was a brick home and it was on the second floor, but I could be wrong. It was 12 homes I think that they just looked at.

Mark Peterson - Host:

This is kind of an a good question. I was thinking this myself. Is your heat vulnerability index projecting the severity of heat waves, like the heat risk tool maybe does or how do you see it potentially playing a role in projecting

New Speaker:

It's gonna predict vulnerability instead of, you know, I think looking at the heat risk tool, which was amazing, it comes out like, we're gonna come out, ours is gonna come out in a couple months too, and that's great. More tools that people can use, the better. It's gonna depend on what the community wants to see in that tool and what we can bring together. They're gonna decide the weighting, they're gonna decide the different variables. One of them that we're really happy about that, you know, we just finished a contract with the Illinois Department of Public Health. We're put, we just gave Northwestern 30 years of death data. So, we're gonna look at excess deaths for the past 30 years and, you know, bring in weather and seeing what we can do. So, we know that much. We'll know, we'll know which chronic conditions most at risk at minimum congestive heart failure, diabetes, COPD, one of these or maybe several of 'em.

New Speaker:

And I think that's the baseline we're operating on. And we can do a lot there too. But what's gonna be of use to the community, because we don't want this just just to be used by government. There's also another one I didn't mention it, it was like a little bullet up there. We're building another HVI for clinicians. It's never been done before but, think of it like a diabetes calculator or heart, you know, stroke calculator. You enter in some risk factors and it gives you something. So, the medical doctors at Northwestern came up with it. They're saying, "Hey, we're building a community HVI can, we build a clinical?" So, they want a clinical HVI too, and they want to use it in their practice. So, you have the patient right there, and if you know their risk factors to warn them ahead of time, maybe we can take some proactive steps. So, I think these two HPIs - one for doctors and one for the community may do two different things, but there's we'll see in a couple months how it's, how it turns out.

Mark Peterson - Host:

Okay. So, this one's for Derek. What are some key focus areas within, within fields of artificial intelligence and data science that could provide high impact data-driven solutions for preparation, awareness, and mitigation of risks from extreme heat and climate change as a whole?

New Speaker:

Great question.

Mark Peterson - Host:

That's a big question.

New Speaker:

I do not know the answer to that but great question. Excellent.

New Speaker:

So, we, we do have some that we can real quick.

New Speaker:

So, go ahead.

Mark Peterson - Host:

Yeah. You, you talked a bit about sort of machine learning. Yeah.

New Speaker:

So, there's a lot happening in the space when it comes to called GeoAI. So, if you google GeoAI and really some tools are about to come out in the next year, not from the federal government, but the private sector currently, that will facilitate people actually querying through natural language essentially querying data sets. And that will help combine them in an AI fashion, kind of think of like chat GPT, but for geospatial analysis. And then that will help to feed some of that information that you're asking about. So, just Google GeoAI and there's a lot of good information, especially coming out of Esri on what they're pushing to essentially incorporate natural language processing within the geospatial space.

Mark Peterson - Host:

That's good. I mean, and, and I think that any time we talk about artificial intelligence, especially in this space, it's a, it's, it's a bit difficult to nail down exactly where things will go. Right. Okay. So sort of to close things out for, for us, this is a, the, a great question from a variety of audience members, but there are so many tools out there. How do we make, make this more digestible for the public? Or how do we house them in a centralized location? Or how do we make sure that the people who are utilizing tools are utilizing the right ones? How about, we start over here with

New Speaker:

Actually, do you want, do you have anything you wanna add? I wanna make sure we're pulling Cecylia into the conversation as well.

Speaker :

Sure. Yeah. So, one of our main goals is to make sure that we empower users to be able to use the right tools and data sets to fit their own needs. So, we have a lot of different documents that we like to set up to guide, gently guide, people through different workflows and different ways of using data but also empowering them to make it more fit their own needs. So, not making a one fit all document.

New Speaker:

Yeah, and to add to that, we, we recognize that within the, within the spatial and analytics space, that not all data sets and not all tools have the same coverage. In fact, not even within the same tool. If you look at the NCA five Atlas, for example, they have I think 15 different layers, and not all 15 layers have the same coverage. So, it makes it difficult to not re to, to, to kind of query the different tools over 350 that are on climate.gov. And then also within each tool, they might not have the same spatial coverage either. And so we are trying to build out something for that. We have something that's working through a process right now that will facilitate the end user being able to spatially query. So, essentially you can put in your location and then it will tell you what data layers have coverage in that area. And then you can also Google, use the search box, to search any function you want as well as tabs. So, this way it does help facilitate that end user getting to the resource of need.

Speaker :

As well as segregating it by hazards too. So, like, for instance, sea level rise, extreme heat. So.

New Speaker:

Yeah, great question. It's a big question, right? 'cause There are so many tools. The thing that we try to focus on as as, as the weather service is a couple of things. One is we focus on our messaging, right? So, trying to distill what the tools are saying down to actionable information for people. So, we put that messaging out through multiple facets. Try to reach the public as much as we can but also working directly with, with our, with our partners - emergency managers, federal agencies - working with them directly. That's actually part of, of what we do as an agency now. And a and a focus is, what we call decision support services. So, that's being in those communities and helping those decision makers make those decisions with those informed tools. So, while it's, it's a tall task that kind of collect and distill all that information, we're, we're trying our best to help interpret that information for those that are making those decisions.

Mark Peterson - Host:

How do you foresee?

New Speaker:

We're just gonna copy the feds, make all the tools. Local. I'm serious. We look at what the feds are doing, and then what piece works, what does the community think that they'll use? It's harder for them to get granular. Like I said, sometimes it's at the block level, but we have that data, like in the tree tool, we used asthma but we are using flood index, you know, social vulnerability indexes from the CDC, we're using NASA data so we can pull in this data. But when we mix it in with our localized data, I think building it with community, not to say that we're trying to drive people away, we do share those tools, but them being a part of building tools really makes them super users. So, they know about these tools, but it's how do we make customize it? And I think that's what a lot of the community members wanted to see. They wanted to see local data that they were part of building. But yeah, we'll copy you.

New Speaker:

We'll double down just on that agency and I, we talked about it as well, is it's really important for a local community to have the agency in that process. And not just as the data that is being selected, but also how that is implemented and, and seen and visualized within that own community.

Mark Peterson - Host:

That concludes the Q and A portion of this panel. I wanna thank everybody for joining me.

Mark Peterson - Host:

Our next panel from the day, Communications and Messaging, explores the various aspects of communications messaging as it relates to extreme heat. From public awareness campaigns to emergency alerts, our panel shared their experience and insight into crafting effective communication strategies, which were tailored to the unique challenges posed by extreme heat. I was joined by Elena Grossman from GTI Energy, Jennifer Marlon from the Yale School of Environment, Joseph Giguere from Climate Central, Adrienne Bechelli from the San Francisco Department of Emergency Management, and Jacqueline Rothenberg, who's the director of public affairs from FEMA headquarters.

New Speaker:

Alright, I'd like to invite our panelists to come join me here on stage. Yeah, I'm the External Affairs Director here in Region 5 and you'd think this would be in my wheelhouse, but I'm a little bit overwhelmed by everything that we heard. So, we're gonna try to, kind of, go through some of the, the major themes here with the help of some of the live questions that we received but before we do, as I was sitting there, I just kind of pulled a couple of headlines from, just from today. And so as you might expect, a lot of the headlines start with Texas. So, Texas heatwave sends power demand to all time high from May. Millions more adults, including Texans, will experience extreme heat by 2050. That seems obvious after going through today's presentations. And surprisingly, Mexico's howler monkeys dropping dead as heat toll mounts. That's actually several articles about that today. So, I guess we'll start with Jennifer, a couple a question to me, if the news is carrying the message of extreme heat and the potential impacts, but we realize that perception does not meet reality in terms of a desire to take action, then this might be the million dollar question, right? How do we bridge that divide?

Speaker :

No, that is the, that's the million dollar question. Someone mentioned this about the import. Well, we've talked a lot about trusted messengers. I think we have a lot of tools in our toolbox. Joseph can talk about how many people are getting their news from TikTok. So we can certainly leverage that. I think there's a lot that we're not, we're not reaching people, we're not reaching people through the traditional mechanisms. The news landscape is completely fragmented. People are getting their news from news sources. They mostly trust their friends and family. So, how do you reach everyone's friends and family? This is a question. But one of the important ways is for community leaders to demonstrate and role model the correct behaviors and start setting the new cultural norms. That and, and showing people what to do, telling people what to do, but also showing people what to do.

Speaker :

One example is during hurricane evacuations, you know, a message about, well, the power system's gonna go down, you won't be able to use your vehicles, things like this. Those are not as effective as, as being much more concrete. Your refrigerator won't work, your toilet won't flush, like, get as concrete as possible. We can, we can use advice like that. We can also do things like saying - for hurricane evacuation, again, the police chief is evacuating his family now. So, maybe in the context of heat, it's like, well, your local emergency manager is taking his grandmother to the cooling center. I don't know what the message is, but, but there are a lot of tools and, and pieces of advice like that that we just need to sort of make, we, we need to normalize those kinds of, of messages. That's one way to answer the question, one way to bridge the gap.

Mark Peterson - Host:

So, that's a big wide question, so I don't wanna only, you know, direct it to Jennifer. So, if anybody else has any thoughts, you know, please jump in. But in the meantime, we'll start with - and we'll just leave that as an open question throughout the, because I think, you know, as I sat there and listened to the intersection of each of our presentation or your presentations there, there's just so many aspects of like how we might, you know, draw that connection for the public.

Speaker :

I'll add one more thing.

New Speaker:

Yeah.

New Speaker:

From the psychological literature, or the risk perception literature, we know that fear-based messaging is really important. And sometimes it seems like, oh, we need to get away from the doom and gloom. People don't want the negativity. But, when you look at that worry map that I showed, the reality is people are not afraid enough. So, you do need more fear-based messaging. The issue is you can't stop there. You can't just give the fear. You need to also convey the sense of efficacy and agency. You need to also tell people what they can do, and you need to know what their barriers are and how to overcome their barriers. You have to have thought about the whole sort of, you know, the whole plan, the whole all the steps, and connect the dots for the people and lay out the stepping stones as we just heard so beautifully in San Francisco. So you need the, we need to scare people, but we also need to then make sure that there is something they can do to address that fear.

New Speaker:

I was just going to add that we were talking about this before, but the, there was a Republican strategist that once said, talk about it. Talk about it. Keep talking about it. Keep talking about it. And when you think you've talked about it too much, you keep talking about it because the repetition is really important. So

Mark Peterson - Host:

Messaging.

Speaker :

Yeah. And to help bridge that gap.

Mark Peterson - Host:

Sure. I'm curious the question, the questions in the survey that led to the perception, do you have any examples of like, some of those questions? I'm certainly not trying to like poke holes in the questions, but I wonder, you know, if, if it is, are you worried about a one-degree increase? You know, I could see people being like, "Well, I don't know if that really is a map."

Speaker :

No. The exact question is, "How worried are you that extreme heat will harm your local area?". That's it. And we asked the same question for wildfire, dry drought, tornadoes, flooding, snow patch, water shortages, all these things. So, so it, it is a like, kind of a rough, for course proxy for a variety of risk perceptions. But we have tested about seven other messages, and they're all highly correlated with just the general sense of, "How worried are you about this issue?". So, we can say, do you think it's going, you know, are you being harmed right now? Is your local community being harmed? Will it be much hotter in 10 years? You know, all of these things, you can kind of integrate them into the, the worry measure is a, is a robust metric.

Mark Peterson - Host:

Sure. And just one final question. Is there, is there a high correlation between the heat concern maps and wildfire risk?

Speaker :

No. No. There, the wildfire worry is like just the western US. It's like the whole western US not along the coast. But it's much more generalized. But it's also more localized, like it's a more heterogeneous pattern. People in the East are completely unconcerned about wildfire, not surprisingly. And so, the wildfire community is getting concerned because there's higher risk. And if you get one wildfire in the East, the population density is so high, of course, that it's problematic. And of course there's smoke. So yeah, the maps all look quite different for all the hazards.

Mark Peterson - Host:

Actually, some really, really great questions coming in. So, for Joseph, how does Climate Central identify and reach out to trusted community messengers? And how will this differ for communities that are more distrustful of climate science data and messaging?

New Speaker:

Yeah, that's a really good question. So, historically climate Central, one of the, the biggest audiences for Climate Central are TV meteorologists at local news stations. And so, we have a lot of meteorologists on staff that have kind of built up these networks over the past decade or yeah, decade. And we, we, we like acknowledge that there's a lot of new areas where people are getting information. For example, TikTok, I'm 24, so I, well, I know a lot of people who are like getting all of their news from TikTok, and we know that, like, we don't have anything currently that is really geared towards that kind of audience. And then for the second question, there's, there's, it's, it's very difficult. There's for a lot of our, for example, for our TV meteorologists, we know that there are a lot of people who are, shall I say, strongly encouraged to not use words like climate change or global warming. And so we have to be careful about couching those terms in our graphics that we generate so they, we can still get the same information across, but not explicitly say those words. And so, a lot of our, a lot of people will use words like in our changing climate or like very like sneaky ways of saying like, no, this is actually happening. And so it's, it's it's definitely difficult to, kind of, address that when you're, A lot of people's minds will like immediately turn off if you say global warming or climate change. But yeah, we're, we're trying, we, we try to kind of circum, circumvent that by really saying, well, here's this is, this isn't, we're not just saying that like global warming is happening around the world, like we're saying, "Right here. We have observed data from like your airport site that says that like your, your February or your, your May has increased by six degrees over the past 50 years. Do what you will with that. But like, there is a change, like it's getting hotter like."

Mark Peterson - Host:

So, to Adrian. So, a couple questions on, on the co, on the respite centers. So, the first one is have you accumulated data on how many of the community centers were open during previous extreme weather events? And it would be great to be able to measure if your initiative is contributing to continuity rather than just sustaining community centers that were already open.

Speaker :

Yeah. We are working on gathering that data right now. We started launching the equipment in September. We basically fully flushed it out in March. And now what we're doing is we're working with all of the 79 different locations to gather that background data, what they're required to report. Everyone who received the equipment for us signed an MOU with the city and county of San Francisco in order to receive the equipment. And part of that MOU was providing us data just so that we could measure the success of the program. What we're working on now is identifying ways to go back from before the program started to identify who was actually able to stay open on what days. Since about 2017, we've had some pretty significant both heat and air quality events in San Francisco, ranging from just a couple days at a time, up through about 10 to 11 days where we had purple air for that entire time in San Francisco. It was pretty gnarly. And so we're, what we're trying to do right now is, is go back in time and gather the information on those. There has been some significant change since COVID though, is what we're finding. Where a lot of the locations or even the trust or places that were previously open have completely shuttered post COVID. So, there has been a pretty dynamic community change on, in San Francisco of where people go, where people trust. And so, there frankly just isn't a lot of that data available, but we are looking to pull what we can.

Mark Peterson - Host:

And then just, an interesting question of, can you elaborate on the funding issues and sources San Francisco faced for the extreme weather resilience program.

Speaker :

Yeah, so, we piecemealed I think three or four different funding sources. We were able to use some, some of our UASI grant funding, so that was a big help. We pulled a little bit of our general fund as well. But our biggest funding source for this program were actually grants through the Bay Area Air Quality Management District. And they received a great deal of funding for various reasons. COVID was one of them, and wildfires was another one of them. And so we were able to put a lot of the air filtration equipment. We were able to purchase that equipment based on that funding and then be able to use our other sources of funding that we kind of cobbled together to purchase the air conditioning equipment.

Mark Peterson - Host:

Jacqueline, how is FEMA collaborating with other federal agencies to message on heat, for example, the National Weather Service also has weather safety, social media campaigns?

Speaker :

Yeah, so, I'm glad you asked that question 'cause it's something that we wanna do more of at FEMA. I know there's the NAIS that we work with. We, there is a interagency working group that Victoria is a part of with her team. And they meet regularly on various tools and programs, but that's why the #SummerReady campaign is so important. It was designed to be able to allow all of our interagency partners to be able to use that hashtag to use this campaign. And it's something that we are hoping that other agencies pick up, but we wanna expand it, which is why we expanded it to include you know, the, the wildfire smoke because we felt like that was a new area for us that we wanted to get into. And so, we're constantly in collaboration with the National Weather Service and others and something we wanna continue.

Mark Peterson - Host:

Okay. Back to Joseph. Would you consider local governments as trusted messengers? And how can we reduce the chances of warning fatigue while trying to promote safety? And actually, I think probably many of you have some thoughts on that last part of that question. So, we'll start with Joseph.

Speaker :

Yeah, this is a, this is a great question. I'm sure that local government as a trusted messenger depends a lot on where, where you are. We, we have we, we kind of take all comers in terms of, of trusted messengers. We don't, like, we won't, I don't think we discriminate to it towards whoever we, we who we give data to or who we give this kind of information to, obviously. We're more focused on, on generating the, the kind of information and making it as easy as possible to communicate to audiences regardless of, of who you are. With the assumption that trusted messengers are the people who, like, people who the community trusts who are using this information will be the most likely to like, gain any traction from using it in the first place. And then, sorry, can you remind what the second part?

Mark Peterson - Host:

How can we reduce the chances of warning fatigue while trying to promote safety?

Speaker :

Yeah, that's, that's also a very difficult question. And we were, we were last summer obviously was, was a crazy summer and we were putting out all these alerts about how, how there was these extreme heat events that were occurring and how these are being made more likely due to climate change and what amount. And at the beginning of the summer, we got a huge amount of coverage and at the end of the summer, nobody cared at all, and we got no coverage. And it was like, wow, we, we, we don't know exactly how to, how to deal with this. And a lot of it is like, about being timely. But you know, and, and reacting when, when these kind of events occur, but also, you know, understanding that to a certain point people will, will kind of be turning to, to have to operate within this new cycle, which is very difficult for, for us in terms of like, we think that there's all these interesting stories, but people will just not care.

Speaker :

I'm not sure how exactly we, you know, you address that, but it's, it's, it's about being, you know, very, very careful about when you step in, when there's like, when there's a really big story. Because, obviously we, we talk a lot more about specifically climate change and about global warming. And so, our when we step in, it's a lot more, or when people use our information, it's a lot less high priority in terms of immediately saving people's lives. It's more about like building context around, you know, what, what's the types of experiences that people will have have continued to have over the past, you know, a hundred or so years in, in the future. So, not really answering the question, I guess, but like there, there's, there's, I'm sure that there are other people, you guys that have, have more concrete ideas in terms of what steps you can take to avoid that kind of fatigue around health and the extreme.

Speaker :

Something, something we've done in San Francisco that's, I wouldn't say best practice but has been working for us is that to do your, your most proactive, consistent messaging in opt-in systems and save the, like, life safety, like critical peril notifications for the opt-out systems that has given us a little bit of, of strategy there because you'll never, you'll never please at everybody. Someone is always gonna be annoyed, like, why didn't you tell me it was going to rain? Like that's not my job, right? But if, if if it rains, I also get the notification that stop telling me it's gonna rain, like I know it's gonna rain. And so there, there are, there's always going to be the people who are not satisfied with your method or level of messaging. And so, just kind of A - gotta get over it.

Speaker :

And then B - try to put some very specific strategies in place. And what's worked for us is to do the more consistent messaging through our opt-in, our alert SF is our notification system. We do, we have some parameters that we set. We say we are going to send notifications based on this level of, you know, there are some thresholds being okay to lean in and over the line on those thresholds if either for political or, or other rationale we want to. But, then but then really saving those like wireless emergency alerts. Like don't send a WEA when it's just gonna be hot out unless it, it has critical actionable messaging. That's, that's really essential. So that, that's what's worked for us to try to balance that warning fatigue.

Speaker :

I think there's a connection between warning fatigue and trusted messenger. And so, thinking about what Raed was saying and how the communities are kind of looking for their own messaging and that might help with, so if you're getting the message from, whether it's a community-based organization or a local person that you trust, that might help with the warning fatigue.

New Speaker:

I, yeah, I was going to add that I, I think that was spot on about you're, you're never gonna make everyone happy. And in terms of climate change communication more broadly, we have an audience segmentation tool called the Six Americas about how people think about climate change. And there, it's not just Democrats and Republicans or you know, people who accept it and people who deny the science but it's people who are alarmed, people who are, you know, ready to support action, worried about it, people who are concerned, who think it's a problem, but not an urgent problem. People who are cautious, who don't know if the climate's really warming or not, people who are disengaged, who just aren't attuned, people who are doubtful that the climate is warming, and if it is they think it's not human activities, it's volcanoes or solar cycles or something. And then we have the dismissive. And what people really get wrong is the percentages of the public of all these different groups, because the dismissive group is only 11% of the American public, and yet they are the most vocal in many cases, and the most likely to call and say, you know, or, or to say, this is all you're crying wolf. It's just hyperbole. And you, you know, you're hyping up the weather. So, there's a, but there's a large portion of the middle. Well, in fact, 54% of Americans are either alarmed or concerned about climate change more broadly. And a lot of people underestimate that. They think that number is less than half, it's actually more than half. So, regarding, you know message fatigue or warning fatigue, I think I would say most of the public probably isn't fatigued. Most of the public still needs to hear it and just kind of keep in mind that the people you're hearing from, if they're complaining, might just be that vocal group, but it's a, it's not necessarily a majority, it just sounds like it's a majority. So, keep repeating the messages is what I would say. But, but I like your discrimination as to which channel you use is really important. And certainly, if you, yeah, you're using.

Speaker :

Can I say one more thing about trusted messengers? I was, I was really surprised when Jacqueline asked her question of how many people in this room are communicators? Every single person in here should have raised their hand. We are all communicators to someone who trusts us. So you may not have communications in your title, I certainly do not, but I'm here talking to all of you today. You may not trust me, that's fine but, so every person in this room has someone who trusts them. And if you are able to take something away from today about heat or anything and communicate that to them in a way that they believe and understand and are able to take action, you just made a difference. So, I hope that the next time someone from FEMA asks you, if you are a communicator, you very happily and enthusiastically raise your hand.

Speaker :

I don't know how I top that. I agree. But I will say, you know, one of the things that we're talking about it at FEMA a lot, especially and, I know we've talked about this with you too, and your, Mark, is that trusted messengers, that idea that a lot of young people are especially getting their information on social media. So much so that the White House actually has expanded its White House of Digital Strategy and elevated it to the same level as the communications director. And when I was detailed there, one of the most interesting things that I learned is that we're actually building out our capabilities to bring in digital influencers and to treat them like reporters. Now, my job is to pitch reporters every day. Every time I try to get the administrator on national news, preparing people for a disaster, sometimes I have to call but I'm like, "No, please give me every single channel we need to get the word out. We only have a few hours." But one of the things that we're actually really trying to do this year is identify those digital influencers to bring them in like reporters, because we know that, you know, especially when we saw the activation in Maui, there was a lot of misinformation that was happening across our agency, rumor mill left and right. And so one of the things that we're gonna try to do this season is make sure we get those digital influencers in, host digital influencer round tables, and make sure that then they can disseminate the information for us. Because a lot of people do not trust the national media anymore, and they wanna hear from someone who they follow on TikTok or Instagram. So, it is something that is going to continue to evolve and something that we're gonna have to evolve with as emergency managers.

Speaker :

Just to follow up on that, because you're touching on the role of misinformation, if we have another minute, because there's a lot of great science coming out on misinformation and one of the ideas is inoculation. So, if we have an idea of the conspiracies that this is going to generate, or you know, how people are gonna push back against your message, you can acknowledge that in your messaging and say, you may have heard that, you know, this isn't really happening or this happened this way. And if you address it and incorporate, incorporate that, that can actually help address the misinformation. There's also something called a truth sandwich. When you're dealing with misinformation, first of all, you wanna be really careful about repeating misinformation because no matter how you say it, if you say it without first sort of, you know, addressing why this is wrong, and then you can say it, but maybe say it in a slightly different way and then, and then say the action, say the, one of you can probably explain it more, reinforce again the correct message. Yeah, you kind of make a truth sandwich and put the misinformation in the middle. So, there's a lot of literature on that.

Mark Peterson - Host:

This is a really good question for the panel. And I, I might also ask it a slightly different way, but for the surveying on the worry and heat impacts, how did those results compare to worry for other hazards if you did your query for them? And maybe the question is, is heat anomalous compared to other hazards?

Speaker :

People are more worried about heat than any of the other hazards. It is the number one worry. And I think in part that's because of just the numbers and the, the physical footprint of extreme heat. More people experience extreme heat than they experience flooding or wildfires, which are much more localized. So, people are more worried about heat. The heat sort of map is, is actually the highest level of worry. Most people are less worried about the other hazards.

Mark Peterson - Host:

One of the things that Jacqueline talked about in her presentation was essentially leading towards encouraging communities to take action either through FEMA grant programs or other options. I guess the question I have is, as we're talking about messaging, we're talking about the acute impacts of heat and me needing to go to respite centers, but then there's also the messaging towards the long-term approach and how we might maybe change communities, change landscapes, things like that. How do we maintain the messaging for both the short and the long knowing that, you know, just the experience here in Chicago last summer, I think there was a, a period of extremely warm weather and then it was a fairly mild summer, right? And so, people are sort of like, well, I mean it was hot, but now it's not hot. And so why do I need to continue caring? So, how do we keep that going?

Speaker :

I've thought about this a lot. So, reporters in media like to report on controversy, something that's interesting or there's a challenge. And so, you know, at FEMA we've, we've announced that this is our year of resilience. And one of the things that we're trying to do is identify good news stories. We have a whole, a whole storytelling effort that's going on. So, if you have good stories of mitigation stories, please send them our way 'cause we're trying to highlight them. But we're looking for those stories during disaster when there is controversy of the school that stood because there was a sea wall, we're looking for the community that didn't flood because they invested in a FEMA grant. And so, using moments of controversy to show people and teach them about what good can be from these moments of resilience, that's something that we're testing out so that we can get more people to get on board. We want people to join us in the effort, but to also show them that take up these opportunities. 'cause You don't have to report on controversy anymore if we're able to protect people from those events.

Mark Peterson - Host:

Let's quickly close out with a, maybe a lightning round of what advice do you have for communities that are focused on the immediate heat concerns and then also looking towards activities that they need support within their community in order to affect that change? What communications advice do you have for the trusted messenger to advance both of those goals?

Speaker :

I can start, what's most important on both ends on kind of the governmental or the, the, the agency side as well as the resident or the community side, is to really understand who, who is the ultimate recipient of that information, whether it's the immediate or the long term. And even within a specific community, you could have either trust or distrust of the exact same entity. Whether it's especially local government, for example, even within San Francisco, we've understood that certain organizations, even certain neighborhoods, trust the government a lot more than other, than other neighborhoods or other communities. And so, really understanding who your ultimate audience is going to be for either that immediate term or that long term message is, is probably sometimes even more important than the actual message content.

Speaker :

My advice would go back to what Raed was saying and go to the community themselves, and so have those communities go to their own community members and maybe sample or test out some messages and really try to have them inform what they're talking about and what they message and send out.

Speaker :

I agree with the trusted messenger. I mean, not to go back to Maui again, but with all the misinformation that we had, especially with the history of the federal government seizing land, there was a huge fear after that event that when FEMA was on the ground, that we were actually gonna take people's properties and we had to fight that rumor mill. So, we weren't necessarily the best trusted messenger. People didn't want FEMA to be the one telling them what was true and what was not true. And actually that mayor did a really amazing thing and brought together a bunch of trusted messengers within the community, and they became the mayor's council and they counseled him and brought information to the mayor and then shared it back out. And when we brought the Administrator to Maui during one of our recovery trips, she met with them and they got to hear directly from her. So, instead of her going out and saying, "Oh, here's what FEMA's doing for you" the, the Mayor's Council did it for us. And it really helped us build that goodwill to make sure that they trusted us in the long run.

Speaker :

So, I'm gonna go a bit from the, the, the guess I'm, I'm coming from the climate change angle and go a bit from that angle. I think that the one really important thing is to, to really emphasize and put every angle that you can the like ways in which climate change are affecting, like for, for most of weather you can have a climate link to it. You know, for example, if if it was last, if last year it was, you know, really warm in Chicago for a certain period, and then it was pretty moderate, it's, it's likely that that moderate period was actually not moderate, if you like, looked at the climate from 30 or 40 years ago and it was actually, it's actually, it was super warm. You know, recently we had in the, I'm in Bo, looking in Boston and we had a really warm early winter and then what seemed like a pretty cold winter at the end. But when you look at the data, that cold period was actually mildly warm. But people are so used to the fact that this is like, from what they've just experienced, that they're, they don't think that that's actually warm. And so, there's, I think there's important to keep hammering home that there's like this effect that's happening in every facet of weather.

Speaker :

So, for, I'm thinking about trusted messengers in different scales of communication. And for climate change, we have this slide we often show, which are the five key facts for climate change. And it's, so we've simplified it so much so that you only have to communicate 10 words. It's real, meaning the planet's warming. It's bad, by and large for humanity, the impacts are gonna be devastating if we don't reduce our emissions faster. Three, scientists agree. Overwhelming consensus. Four, it's also human cause it's us, so we know the causes. And then the last one, there's hope. So, we have the tools. These are very generic messages. They're almost meta ideas for climate change. But you can create a million stories from each of those themes. But for the people who understand those five key ideas, they're more likely to take protective action. They're more likely to, you know, support more aggressive policy on reducing emissions and so on. And I think for the heat community, you know, there probably are five analogous key messages that we could develop at the national level because we need the trusted messengers to kind of come up with their own locally specific, you know, community dependent messages. But we also need the sort of underlying basic ideas that we all agree on. And then at the national level, we have the ability to produce a tremendous amount of resources and skills and expertise and support that can support those local trusted messengers and sort of feed them the materials so that they can customize it. But I think it's really helpful to have those central ideas and I don't know what they are for extreme heat, so.

Mark Peterson - Host:

But that's a great idea.

Speaker :

Yeah, we need that.

Mark Peterson - Host:

And thanks for that charge. And so we'll, we'll leave it there. I want to thank the panel for for joining me here on stage. That was excellent.

Mark Peterson - Host:

Finally, as we confront the escalating challenges of climate change, this panel is where the rubber really hits the road in terms of nature-based solutions as they emerge as a key pillar in efforts to build resilient communities. Our last panel brought up a wealth of expertise in this field, offering insights into the importance of integrating nature-based solutions into our resilience strategies. Our panel included Esteban Quiñones from Mathematica, Morgan Anya from City Forest Credits, Eva Olivas from the Phoenix Revitalization Corporation, and Jen Phillips from the California Department of Natural Resources. Eva, you mentioned that members of the Leadership Academy meet with scientists and city planners. What are those conversations like and what, what are they most interested in?

Speaker :

Most of the time they're having conversation about locations. I mean, they, they are connecting what the questions are and they're putting it in their mind and they're thinking about where, what in my life is connected to this, this, this item, this, this, you know, when they're asking, I remember one time they asked about, what's the hottest spot in your neighborhood? And it was two seconds, 10 people had an answer. It wasn't that they had to think about it, they knew exactly what the question was about.

Mark Peterson - Host:

Interesting. Esteban, do you have suggestions for bringing awareness and advice to develop green space that could produce not only cooling options, but food sources, food resources. In Chicago we see and hear about urban deserts and the potential?

Speaker :

That's a great question. I feel somewhat ill equipped. I think that this is the case where, you know, we wanna use data to sort of look at what, what, what tree crops, what, you know, what, what options might grow best, you know, based on ecological zone, things of that sort. But then, we need to compliment that with what was discussed in an earlier session, right? And bringing in community members to see, you know, what, what are they interested in, what's gonna work, and trying to find the overlap of those two. And that's, you know, the way I would think about that process.

Mark Peterson - Host:

Jen, question for you. Is there a curriculum you can share with us for the educational program of creating Green Space? Also, how did you go about funding those types of projects?

Speaker :

Is there a curriculum I can share? I mean, I don't work a ton on the curriculum side of that, but there's certainly a lot of players involved in our Office of Community partnerships that have thought about, you know, how do we engage and work with communities on where we, we put these projects and how do we work together on sort of recognizing the importance of addressing extreme heat through multiple different tactics. And I would say a lot of our extreme heat work that we've done in California is, you know, the plan was led by a couple agencies, but it truly represents all of our work. So, our department of public health, our education agency. So, there's a lot of work we're doing through that space. And I guess the last thing I, I do wanna share if it's more about, sort of, the curriculum side, is we're, we're doing a lot of work on sort of our conservation core, as I mentioned, and our climate core. So, really making sure that we're bringing young people into the fold as we think about climate action and conservation and restoration work across California. So, that work is really being led by our Cal Volunteers group. Again, that works very closely with us at Resources Agency.

Mark Peterson - Host:

This is a general question for the panel, so I'm not exactly sure who wants to take it, but at what level should nature-based solutions be pursued if we don't yet have the evidence needed to robustly demonstrate their effectiveness? Should we be more conservative until that evidence is obtained? And what are the current barriers to getting the needed evidence to say more definitively?

Speaker :

I can take part of that one. I'll jump in. So, you know, I think that, you know, as I said, they are very promising. And so, when I think about levels, I think less about sort of what we know about effectiveness, and I think more about, you know, what's gonna work well in a given community or a set of communities and sort of at what scale does it seem like there's a particular solution that's a good fit, right? And then, you know, I think what we, what we really wanna do is make sure that in every step, both, you know, from the assessment and the planning through, through, through really understanding what worked and what didn't that we're building up that evidence base. I don't think that we're in a position with where we're at with extreme heat and climate change that we, you know, shouldn't go about planning and implementing programs that we think hold a lot of promise. And I mean, I would almost, you know, flip it on its side, right, based on the, the example that, so that I was giving at the end there, right? Like these are clearly the tangible, you know, impactful things. And so, you know, there, there are times where we might not have the, the evidence and the data the way we would like it, but there's also, you know, human evidence and that that's, you know, incredibly powerful, so we shouldn't dismiss it.

Speaker :

Yeah. I might, I might add to that and say, and push back a little bit and say, I think actually we do have a lot of evidence about nature-based solutions, and it's about what problem are we trying to solve for here is the evidence or the perceived lack of evidence about how much they're mitigating heat risk or how much they're storing carbon. Okay, maybe we, we could debate that. And there's different ways of measuring those kind of things, but there's also a lot of evidence to say nature-based solutions are, when placed and cited in the right place are hugely important for equitable access, right? And, you know, the mental health benefits that come from that are super important. And, we in California are really coupling a lot of our nature-based solutions work and our workforce and our economic work right now, we are seeing job creation and economic benefits and also cost avoidance in disasters, whether it's, you know, a heat event or a flood event or things like that. So, I think there's a lot of evidence for, you know, doing nature-based solutions for many reasons.

Speaker :

I just wanted to make a comment from a grassroots level, from a front door level. So, part of the challenge that was brought up during the nature-based was the cost of water. And, you know, it's almost that nature is a barrier as well, because you can't do it without water. And in Arizona, obviously water preservation's a really important thing. Also, it's a costly thing to mostly low-income neighborhoods. And so, when you, I did a video on Vox and they showed the just dramatic difference between the north side of the track and the south side of the track. It literally just showed the green and the dirt. And it was completely related to income levels. So, I think that even nature is its own barrier.

Mark Peterson - Host:

That actually hits on another one of the questions, so, perfect. Thank you. So, this is a little bit of a plug for one of FEMA's programs, but for Jen and Morgan, maybe I think nature-based solutions are an important element of FEMA's building resilient Infrastructure and Communities grant program, the BRIC grant program. Have any of you encountered communities which utilize multiple funding sources such as BRIC with other types of grants to bring to the table and increase in nature-based solutions and resilience programs for extreme heat?

Speaker :

Maybe not totally related, but we don't have any restrictions on if a tree planting or a preservation project has additional sources of funding associated with it. As I alluded to in my presentation, there's oftentimes a lot of funding upfront for acquiring a piece of land to conserve or for putting trees in the ground, but it's that long-term funding that becomes an issue, you know, decades long. And so we don't have any restrictions on how much money can be funneled into the project

Mark Peterson - Host:

And the sources either.

Speaker :

Mm-Hmm. Correct.

Speaker :

Yeah. And I mean, I don't, I don't know if I have a specific project or city for you, but I would say California has, all of California, not just state government, has really benefited from the BRIC program. And we're excited to see where that goes. I am, I know that we're, we're really looking to kind of engage even further on sort of the future of that program. But you know, the way we, and I think this was part of the first question you asked me, but the way we really approach our extreme heat funding work in California is by looking at sort of all funding sources. So, I mentioned when I was talking that we have sort of designated funding to implement our Extreme Heat Action Plan, but we also have a completely new grant program that supports planning and implementation at many different levels and for many different partners. We have an energy program that is really focused on reducing and mitigating heat risk through our Energy commission. And then embedded within the resources agency in many of our departments, heat is woven into so many different programs. So, you can fund heat through tons of different state programs. So, I would suspect we're definitely coupling the BRIC program with many other different creative funding mechanisms. But I'm sorry, I don't have a perfect project example.

Mark Peterson - Host:

That's okay. So, unfortunately, we are coming up right on the five o'clock timeframe. So, I want to just conclude the Q and A with a question for Eva, which is, from your perspective, what is the one message you want to convey about extreme heat to government officials and academic?

Speaker :

I've always said as an individual, we are responsible. I, I feel the message should come and it be created in a way that hits us at a global level, a state country level, a state level, local level, and an individual level. I don't think it goes down, I don't wanna say down, that's not the word I'm using - across, so that responsibility starts from you and your home.

Mark Peterson - Host:

Alright. Well, I want to thank the panelists for, for being up here. Hey, thanks for listening to this episode of "Before, During, and After: A Podcast from FEMA." If you'd like to learn more about this episode or other topics or have ideas for future episodes, visit us at fema.gov/podcast.