Equity in Action - Heat Planning in Greater Phoenix

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Webcast Questions and Answers

What does “social capital” mean?

Melissa Guardaro: Social capital are the relationships that you have, your close-in relationships, whether it's religious groups or ethnic groups - that's your bonding capital. Your bridging and linking capital has to do with having relationships either vertically -- that's your linking capital -- or across other like-minded groups. So, David mentioned Gloria from the Community Asset Resource Enterprise (CARE) Partnership. She has the highest social capital I think of anybody I've ever met in a neighborhood because she knew everybody. She knew who to go to for all sorts of things. She knew who we needed to include, who we should not include, so it's really about relationships. There is absolutely a social aspect to heat. Particularly when you get into lower socioeconomic groups, you don't have the capacity to pay for a solution. So, if your air conditioning goes out and you have money you can go to a hotel or in my research, people do an instant vacation where they'll just go away, or they'll just pay straight-up to have their air conditioning fixed. But when you're in less flush economic circumstances you rely on your social networks in order to help you get through difficult times. And now that we are practicing social isolation, I'm concerned about people who normally would go to a friend’s house to cool off or would go to a friend's community pool or who would catch rides with their neighbors as they were walking to transit when it's really hot out. Those kinds of actions aren't necessarily happening right now because people are practicing social distance. So, I think that that was one of the driving forces that we really wanted to reinforce during our process: that it was really important to increase social capital for everybody in the community as we move forward, not just for the core team and the community-based organizations, but for everybody to know other people in the community and to use each other as resources.

The approach of working with community-based organizations is interesting. How does the city avoid creating a perception that the community–based organizations are an arm of the city government?

Melissa Guardaro: It was really clear that the community-based organizations were not part of the city government at all. There is no way that you could have even supposed that they were an arm of the city government. In fact, some of the community-based organizations that we worked with were used to fighting the very people that we were bringing in to be part of our fishbowl group and part of the solution process, and that actually was a learning experience for the community-based organizations to then take on a collaborative tone rather than an adversarial or an advocate's position along the way.

David Crummey: One, we invited the city to participate in our process as a team. And we were selective on who we invited. We've built relationships with staff and elected officials and we know who is going to be amenable to working towards a community-based solution and who maybe doesn't care. We also did this on a Saturday, so if they didn't care, they didn't show up. But you know, it's about working with the community with people that we know, and if you know people you don't think that they're the "city" because you see them every day and they're not the "city." I think that it is important, and in some ways we're fortunate, and maybe it's also a limitation. And Mesa, our city, is not frequently an advocate and being proactive but they are very willing to listen whenever you ask them to do things.

One of the things that we've learned as a community organization is that we need to build positive relationships with staff, and we always try and find better solutions. We know that staff can be in their positions for decades. You know, councilmembers can come and go but staff are there year after year; building those relationships with staff and finding out who is willing to listen, and encouraging people who might be on the fence or might not see the value of it to attend and listen to the community is really important and it's a long game. It's not something that's solved in a month or a year.

Melissa Guardaro: Nobody who participated, especially during the workshops, was observing. And that just changes the dynamic of what is going on. So, if you came to a workshop you were in the thick of it. You were at breakout tables and you were participating just like everyone else. So, it really helped to increase our trust between our city people and the residents, too.

Could you describe the heat mapper walk? How were the routes set up? What kinds of information was mapped? Who walked?

Melissa Guardaro: The full details are actually available in the Heat Action Planning Guide, but the walk was in a community that was undergoing a huge neighborhood revitalization. It was the recipient of a $30 million Housing and Urban Development (HUD) grant. So, this choice neighborhood we were walking through the neighborhood and at certain points people were being asked well, how do you feel? Do you feel cool? Do you think this area is pleasant or unpleasant? And some people were also monitored where they were measuring their personal temperature and heart rate. The route was planned very carefully between the city, the Nature Conservancy, the community-based organization, and a whole team of Arizona State University (ASU) researchers.

David Crummey: This is the walk that had the cool little trailer that you walked behind you that had all the sensors and data loggers on it?

Melissa Guardaro: Yeah, that was the Marty Cart, and that area was actually mapped using a mechanical device. So, it was interesting to see what the measurements were compared to what people's perceptions were, in terms of what is cool and what isn't. And the upshot is that people really liked trees. They really liked that feeling of cool next to a tree. Being out of the sun in any way, shape or form is a good thing. That information was used to help with the redesign of that community, too.

How did you get over the hump of the collective shrug when it came to what mitigation

measures or solutions the city wanted to see?

David Crummey: I think the biggest thing is that we maybe didn't get all the way over it. Some people didn't attend the meetings that we thought would or would tell us they would. Other people did. I think that with the collective shrug, I think what we were able to do was break it into an individual shrug; some people were able to get past it and other people weren't. But it was really about showing that there were possibilities that could happen in the neighborhood. And maybe the example projects that we worked on helped.

Melissa Guardaro: The shrug is, "well, there's nothing we can do about it at all, why even bother?" But I think that through the Zine, through going and collecting stories to going out in the neighborhood, I think that there is something that you can do about urban heat in your community too -- you can do individual actions and you can do collective actions. And the shrug is kind of our resignation that there's nothing that can be done and I hope that those projects really, once we were in the community, really helped people understand there are things that we can do here.

Victoria Ludwig: Yeah, that's what we try to emphasize at EPA, that global temperature increases that are happening, it is a very daunting thing, and folks might not think that they can control it, but the city is really like a microclimate and you can reduce temperatures there. It takes a lot of activities to reduce the temperatures citywide and to reduce them by a couple of degrees, but you can reduce them in certain areas in a significant enough way that people feel the difference and that their health is protected. That can be really empowering for getting over the collective shrug.

Could you talk about any of the policy recommendations that resulted from the work? Were there any policy changes recommended as far as cooling centers, where they are located, or changing the criteria for when they open?

Melissa Guardaro: The core team including Retail, Arts, Innovation and Livability (RAIL) Community Development Corporation (CDC) recently presented to city department heads. There were three people from the city council, and we talked about what the plan results were, and this is actually its RAIL plan. They talked about what things they wanted to see change. The Broadway corridor is really hot. Cars are going by at 55 miles an hour. There's no protection between the road and the sidewalk. David is right when he says there are telephone poles right in the middle of the sidewalk; if you're pushing a stroller it's really very uncomfortable. So, in terms of adding in these cooling features that people wanted to see to that project, and it's not that they necessarily have to cost more money, but it's just a realignment of what you're going to prioritize. The Broadway corridor is also very wide; you could wait forever for a light because the traffic lights are designed to keep traffic flowing, not necessarily to move pedestrians faster. So, one of the ideas was just to have an all way stop. You've probably seen this in some communities -- to have an X in the middle of the crosswalk where you don't need to cross, wait, and then cross again, but rather you could crisscross, particularly outside of the school area. So, there are some big ideas in there, but then there are some really simple ideas that the community really wants to see. Drinking water provided or some sort of cooling feature. So, when we originally started, the community said, "we want a pool." Then they said, "no, wait a minute, we know that a pool is too expensive, and we won't get it. We want a splash pad." And they said,

“you know what? We will even settle for somebody setting up sprinklers that you buy from a store and just having somebody from the Parks Department run them for a certain hour every day just to provide an opportunity to cool off.” And it's important to note that the people in this community understand the social justice issues involved. They know that two or three miles down the road not only does the park have a splash pad, not only do they have water fountains, but they also have a water fountain for dogs along the way. So, I think that our community, our city members needed to hear this and that whenever they are planning something to keep this in mind as well. So, it's not necessarily all policy change but I think it's more an understanding that this community really needs to have some of these features put in as soon as possible to make them at least equal with some of the surrounding areas.

Did you run into any language barriers, both in terms of non-English speakers, but also science literacy? If so, did you use any specific resources or activities to get over those barriers?

Melissa Guardaro: The entire the process was run simultaneously in Spanish and English. The workshops had whisper translation, so there was no waiting for somebody to translate. It's interesting that you asked the question about science terms. Remember, storytelling was used over and over again, and we had a list of terms that we felt that everybody needed to know in order to effectively advocate for the solutions that were going to come up later on. So, those terms were woven into different stories as to you had experts talk about them. So, yeah, there was a lot of teaching about science terms, but the storytelling format helped some people from getting too technical as well.

David Crummey: Or just avoiding the terms to begin with. I have one little anecdote, or just an important component, about the language translation. It is really, really hard to have meetings that are bilingual. And one of the great examples is one of our former councilmembers who's a community advocate and just a great person. She was in a meeting that when we broke out into small groups, the language of the group was whatever most people spoke and then we whisper translated to the other language. So, in most cases it was Spanish or English. And so, this person, she had it translated to her in English and I think it was one of the early or first times that she, or just the realization about how difficult it is to follow along in a fast moving conversation and participate when translation has to happen. So, we just need to be mindful of that. If you have the opportunity to experience it, to understand how to better deal with that and make space for conversation to happen and include those people that are being translated or are needing translation.

Melissa Guardaro: In one of our other communities when we would gather in the beginning and we would have this big circle, we would ask how many people spoke English, how many people spoke Spanish, and then whichever one had the majority that was the language that was spoken in the circle. And in this other community the language that most people spoke was Spanish, so I am not a native Spanish speaker and I was actually hearing the English whisper translation. Even with that, it was difficult to follow for the first 10, 15 minutes or so. So, I think that that was also a learning experience that can be applied to other groups too, that even if you are trying your best with whisper translation that the first five or 10 minutes just should be people introducing themselves so that everybody gets comfortable with that format.

David Crummey: And whisper translation is when the translation is happening at the same time in your ear while you are listening.

What is the most important takeaway that you would pass on to local governments or community-based organizations that you learned in this process?

David Crummey: Funding. It takes a lot of time and money. These types of activities occur over a long span of time and relying on volunteers is a good way to tire them out, and so funding to pay for people to knock on doors, to go door-to-door, to attend meetings, is so important. And one of the incredible things that was how the Nature Conservancy, the ASU team, Maricopa County Public Health, and everybody came together and got the grant funds to be able to fund this across the valley. It made this a real project that had actual impact and even though there's no money left in the grant and things like that, it's carrying forward now because it has to.

Melissa Guardaro: Yeah, absolutely. So, the funding was provided by Vitalyst, which is a health foundation here in the county, and a big shout out to Maggie Messerschmidt from the Nature Conservancy at the time who was the one who obtained the funding. But it was also important that the community-based organizations be incentivized too. This just wasn't one more thing that was added to their list. They were paid to participate. They weren't paid a lot, but they were paid to participate.

David Crummey: Yeah, it was enough for us to hire one of our community organizers to, go a couple times a week for the entire period to be able to knock on doors and just be more present in addition to our volunteers.

Melissa Guardaro: The big learning for me was really in honoring all forms of wisdom and trying to use all forms of wisdom to come up with equitable solutions.

Can you recommend a data set or tool to map urban heat, or local level urban heat and vulnerabilities? Something free and accessible to folks with moderate technical skills.

Victoria Ludwig: There are variety of factors to consider for mapping local heat islands and vulnerabilities. The U.S. EPA Heat Island Reduction Program's Measuring Heat Islands page captures these factors and considerations. The page also highlights sources for air and surface temperature data.

At a national scale, there are a few resources that lend themselves as inputs to further heat island vulnerability analyses including the EPA's EnviroAtlas, Center for Disease Control and Prevention's National Environmental Public Health Tracking Network, U.S. Forest Service's i-Tree Landscape, and the Trust for Public Land's Urban Heat Island Severity for U.S. Cities.

A few local examples you might explore to see how they have defined and mapped heat vulnerability include Minneapolis and St. Paul, MN; Philadelphia, PA; and San Francisco, CA.

Melissa Guardaro:

- U.S. Census Bureau data outlining social vulnerability factors such as income, age, education.

- Public health department data for heat mortality, morbidity, and pre-existing conditions such as cardiovascular disease, asthma, and diabetes.
- i-Tree tree coverage data, or any other public source for tree canopy/vegetation.
- Surface temperature maps for both daytime and nighttime to measure urban heat islands intensity.

Do you know how many trees and years it will take to solve the heat island effect in the entire city of Phoenix? How you can scale up the amount of planted trees without sidestepping the work with the community?

Melissa Guardaro: We do not have a definite answer. We recommend referring to the City of Phoenix's Tree and Shade Plan, which targets a 25% tree canopy by 2030 from roughly 10% now.

Would you be willing to share the zine tool you distributed to community members or is the zine survey available in the Heat Action Planning Guide?

David Crummey: The Zine can be found online: Nature's Cooling Systems - Creating Urban Heat Solutions in the Valley of the Sun. It was inspired by a handmade Zine created by Intermedia Arts Minnesota's work in the Dinkytown neighborhood, as part of their Creative Citymaking program, in partnership with Artplace America: Creative CityMaking: In Search of the New Village.

Can you give an example of a personal story about urban heat that you heard from the community participants?

Melissa Guardaro: The Heat Action Planning Guide for Neighborhoods of Greater Phoenix report is peppered with stories throughout.

How much time did you take to explain the role of climate change with extreme heat?

Melissa Guardaro: The entire scientific explanation was told as a story of a giant trying to decide where to walk in bare feet throughout the metropolitan Phoenix area. Surface temperature maps helped to illustrate the hottest regions of the city and then a street level explanation explained why it is so hot. This compelling tale took about 20 minutes and included an array of technical language patiently explained. Given the politicization of "climate change" we mentioned the phrase but focused more on the fact that it is hot, hotter in certain neighborhoods, and will get hotter in the future.

Did you consider nighttime temperature rise, and develop any strategies specifically related to that?

David Crummey: We focused on the hottest parts of the day.

Melissa Guardaro: The heat island effect intensifies nighttime temperatures as materials retain heat and are slow to release heat, especially during the night. The focus of this heat action planning process were strategies that residents could deploy. The composition of the urban form, future development planning and mitigation of the urban heat island were discussed at length in

terms of advocating for better thermal comfort, shade incorporated into future designs, and allocation of resources where they are most needed. Residents were very interested in advocacy training and relationship building with municipal decision makers. The advisors involved in this project were also interested in incorporating resident needs and desires and gave tips and pointers for effective advocacy.

Working with communities is not easy. How did you manage different views/interests of groups? And how did you overcome those differences?

Melissa Guardaro: Working with communities is a challenge, but we had agreements up front that made for an open, flexible, and honest environment. The project was set up to empower communities and transfer ownership of the heat action plans to community-based organizations. As a result, capacity building was the major focus for the core team. Any differences regarding the community engagement were openly discussed and plans were shifted, if necessary. Team participants were also frank and honest about their organization's priorities and understood that concessions had to be made to keep true to the original intent. This group still meets regularly as a community of practice, sharing ideas and updates, indicating that differences were overcome and, as a result, a stronger bond was forged.

How did you compensate neighbors for their participation?

David Crummey: Neighbors were given cash payments at the end of each workshop.

What do you anticipate for this project going forward in the next years (i.e., what are the current hurdles)?

Melissa Guardaro: The major hurdle going forward is the current COVID-19 pandemic as it is difficult to implement community projects with social distancing requirements.

Did you get into the role of utilities with this work?

Melissa Guardaro: One neighborhood focused on the role of utilities for implementing (or not) clean energy options and conducted an education campaign about the rate structure. They then advocated for change with the utility company.

How did you design the make-up of the core team for the Nature's Cooling Arizona project? Did you refine the core team as the project developed, to include members of the community in addition to community-based organizations?

Melissa Guardaro: The original core team was selected by The Nature Conservancy when applying for funding. The core team of The Nature Conservancy, Arizona State University, Maricopa County Department of Public Health, and the Central Arizona Conservation Alliance remained the same throughout the project. Community-based organizations recruited residents and they became the leaders for work in their own communities, with the core team shifting back to an advisory role.

Are light-colored, shade structures, sun-sails, awnings, etc. considered an effective way to reduce heat?

Victoria Ludwig: Shade structures do have the potential to cool heat islands in a similar way as cool roofs and cool pavements, but there is less research surrounding shade structures. To be effective you need to consider: (1) solar reflectance/albedo - the percentage of solar energy (ultraviolet rays, infrared energy, and visible light) reflected by a surface, and (2) thermal emissivity – the surface's ability to shed heat. One important note, is that the reflectivity of cool roofing surfaces general will decrease over time due to aging, and regular wear and tear. These resources provide more details on cool surfaces:

- EPA Heat Island Guide chapters on Cool Roofs and Cool Pavements
- Cool Roof Rating Council
- Lawrence Berkley Lab
- Global Cool Cities Alliance Cool Roofs and Cool Pavements Toolkit

How many trees are required to decrease 1°C in urban settings? In other words, how you measure temperature reductions and what are the best species of trees to decrease heat?

Victoria Ludwig: Planting trees and vegetation are good steps to cool heat islands. However, there is not a one-size-fits-all answer to this question. The effectiveness of planting trees can vary depending on local conditions such as the climate you live in. Other factors include surrounding heat-absorbing surfaces (e.g., pavements, roofs), other sources of shading (e.g., buildings, trees), and the species and maturity of the trees under consideration. To learn more about the role of trees and vegetation in cooling heat islands, read the Trees and Vegetation chapter of EPA's Heat Island Guide.

Is Urban Resilience to Extremes Sustainability Research Network (UREx SNR) available nationwide or only in the Arizona region?

Victoria Ludwig: UREx SNR is working with an initial nine cities — six in the continental U.S. and three in Latin America. UREx SNR plans to expand its network of cities in the future. The UREx SNR website lists cities currently in the network.