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Prenatal-to-Three CAPACITY BUILDING HUB
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Whole Child Whole Families Whole System Webinar Series

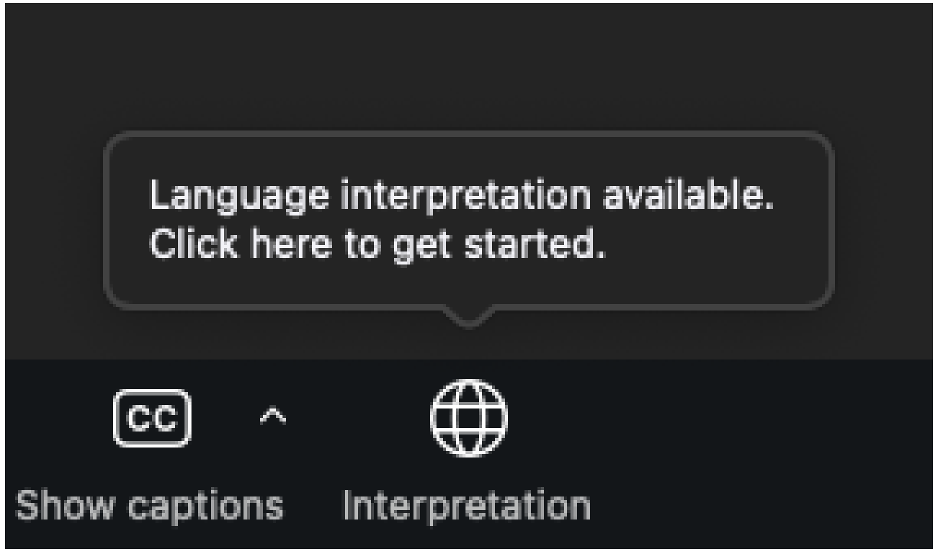
Webinar #4: When It's Too Hot to Play, Sleep, or Learn: Supporting Children and Caregivers in a Warming World

Moderated by Michelle Adkins and Ngozi Lawal

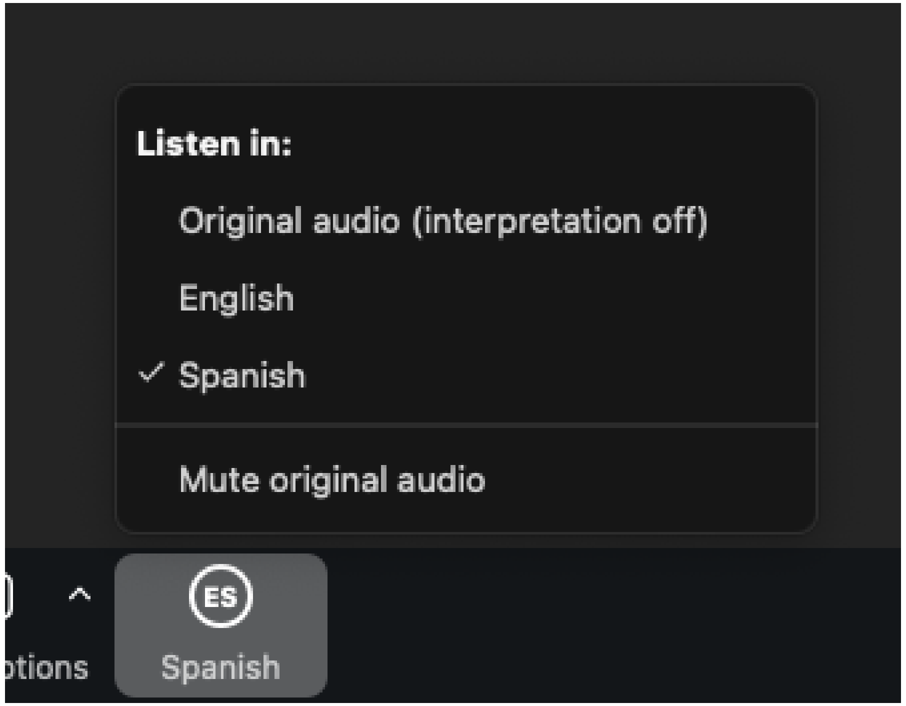
Friday, May 9, 2025

Language Interpretation

Once the interpretation function is activated, click the globe icon at the bottom of your screen.



Then click Spanish to listen in that language. (To turn off interpretation, click "Original audio.")



Webinar Series' Objectives

- Define a Whole System Approach
- Identify Key Challenges
- Explore Strategies for System Integration
- Center Family Voices and Equity
- Leverage Leadership and Data for Improvement
- Learn from Real-World Examples
- Apply Actionable Strategies
- Promote Sustainability

Today's Objectives

- Illustrate the real-life impacts of extreme heat on young children's health, behavior, and routines.
- Elevate the role of parent voices in shaping community and city-level responses to extreme heat.
- Differentiate types of heat exposure, how they impact people, and how they are represented in data.
- Understand how a building's design influences a child's personal heat exposure and risk and explore the relative effectiveness of different cooling interventions.
- Use data from the new Tree Equity Score shade features to pinpoint where children are at risk of excess personal heat exposure.
- Provide communications tools to effectively make the case for more shade where it is needed.
- Affirm the importance of cross-sector collaboration and how to initiate a conversation at the intersection of climate and early childhood.
- Identify ongoing climate initiatives that can be adapted to include pregnant people, infants and toddlers, and their caregivers.
- Learn about new interventions being piloted in partnership with communities and parents.

Presenters

Samantha Wu-Topolski

Parent Partner
East Boston Social Center-Family Engagement Network

Lindsey Burghardt, MD, MPH, FAAP

Chief Science Officer,
Center on the Developing Child
Harvard University

Dr. Kelly Turner

Associate Professor of Urban Planning and Geography
University of California Los Angeles

Kristin McSwain

Senior Advisor and Director Office of Early Childhood, Office of
Mayor Michelle Wu,
City of Boston

Prenatal-to-Three CAPACITY BUILDING HUB
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Who is represented here?

- 500+ registrants
- 45 states, DC, Puerto Rico, US Virgin Islands

You are from…

- State agencies: Children, Youth and Families, Health and Human Services, Public Health, Early Learning and Care, Education
- Child and family serving organizations/nonprofits (community-based, state, regional, and national)
- Early childhood coalitions/networks
- Colleges and universities
- Center-based and home-based child care
- Child Care Resource and Referral Agencies
- Foundations and philanthropy
- Hospitals and health care providers

Who are you?


Infant Mental Health Training Specialist
Director of Early Childhood Initiatives
Regional Sales Manager
Assistant Researcher Senior
Statewide Parent Education and Parent Leadership Coordinator
Preschool Application Specialist
Program Support Specialist (PDG B-5 Federal Team)
Parent Information Center
Clinician
Early Care & Education Specialist
Healthy steps specialist
Director of Nurse advocacy and Resources
Quality program specialist
Teacher
Early Learning and Family Engagement Specialist
Parent Youth Ambassador
Assistant Professor
Researcher
Director of the Oklahoma Clearinghouse
Senator State Anchor
Associate Director, Early Childhood Policy
PHN
Director
Director, Child Care
Research Project Manager
Behavioral Health Specialist
Program Specialist
SPM
Policy Strategist
ECE Consultant
Community Outreach Coordinator
Program Officer
Safe Sleep Specialist
Data Analyst
Peer Specialist II
Developmental Therapist
Human Services Developer
Assistant Director
Program Director
Licensed Daycare Provider
Program Support Specialist
Children's Services Program Coordinator
Early Childhood Public Health Program Supervisor
Federal Project Officer
Clinician
Program Manager
RN
RN, PHN
Community Health Doula
Head Start Collaboration Director
HFA Supervisor
Director
Community Alignment Specialist
Executive Director
Trainer
Audiologist
Child Care Health Consultants
FCC Coordinator
AGPA
Certification Rep
Director FCE
Director of Communications
Supervisor
Social Worker (Parent Educator)
Family Service Worker/Head Start
Program Coordinator/Research Associate
Education Specialist
Regional Programs Manager
Nutritionist
Educator
Masters Student
Navigator
CASA volunteer
Home Visitor
Regional Director
Casework Supervisor
FFN Educator/Facilitator
Managing Director
Training Coordinator
Early Learning Evaluator

Chat Waterfall

Using one or two words, describe how you coped on extremely hot days when you were a child — whether at home, school, or outside?

Extreme Heat Affects Early Childhood Health and Development

Lindsey Burghardt, MD, MPH, FAAP

Chief Science Officer

Whole Child, Whole Family, Whole Systems Webinar Series
May 8, 2025

Developmental environments influence development by shaping young children's experiences and exposures.

es

Climate change is affecting the environments where children live, learn, play, and grow, which in turn affects development

- Direct - for example, more children develop asthma and allergies or have flareups of these conditions due to extreme heat
- Indirect - for example, heat waves causing heat-related illness or death in caregivers, which negatively impacts their ability to care for children

es

Extreme Heat

- Personal experience, common sense, and science all confirm that **temperatures are rising around the world.**
- Excessive heat can impact young children's development and health both **in the moment and across the lifespan.**
- Practical, actionable solutions exist to prevent or minimize these impacts, and **many communities and cities have already begun implementing them to good effect.**

es

Heat Has Especially Powerful Effects During Pregnancy & Early Childhood

Fetal development

Learning loss

Sleep disruption

Mental & behavioral health

s

Heat Can Affect **Fetal Development**

- There is evidence that during times of high temperatures, there are **increased rates of stillbirth, premature birth, and lower birth weight babies.**
- These conditions are linked to a greater risk of a range of outcomes later in life, including:
    - Impaired cognition
    - Reduced growth
    - Cardiovascular disease
    - Diabetes

s

Excessive Heat Can Contribute to Learning Loss

- Heat is linked to **slower cognitive function and reduced concentration ability.**
- The optimal temperature for concentration in school is **72°F or lower.**
- **Asthma flare-ups and hospitalizations** are worsened by extreme heat.

Excessive Heat Can **Disrupt Sleep**

- **Getting enough good-quality sleep** is essential for healthy growth and development
- **Sleep deficits in infancy** can increase the likelihood of:
  - Emotional & behavioral challenges in early childhood
  - Disrupted language development
  - Reduced problem-solving skills

Excessive Heat Can Have Lasting Effects on **Mental & Behavioral Health**

- **The brain detects extreme heat as a threat to well-being**, which activates the stress response system
- Excessive heat can also increase **violent crime, conflict, and suicide** in a child's neighborhood

Heat Does Not Act Alone

- **Heat amplifies the effects of systemic inequities** in housing, neighborhood density, community infrastructure, and economic opportunity.
- This contributes to an **unequal burden of dangerous conditions for families from marginalized groups and with lower incomes.**

The harmful effects of excessive heat must be addressed through strategies directed at three levels

1. **Protect:** Immediate actions to reduce the harm from extreme heat events.
2. **Adapt:** Services, systems, and infrastructure to be better positioned to withstand increased heat.
3. **Prevent:** Addressing the root causes behind our rapidly heating planet.

Thank you!

www.developingchild.harvard.edu

UCLA Luskin Center for Innovation

Protecting Children with Heat Resilient Playspaces

When It’s Too Hot to Play, Sleep, or Learn: Supporting Children and Caregivers in a Warming World

V. Kelly Turner, Associate Director
UCLA Luskin Center for Innovation

Heat Equity Team

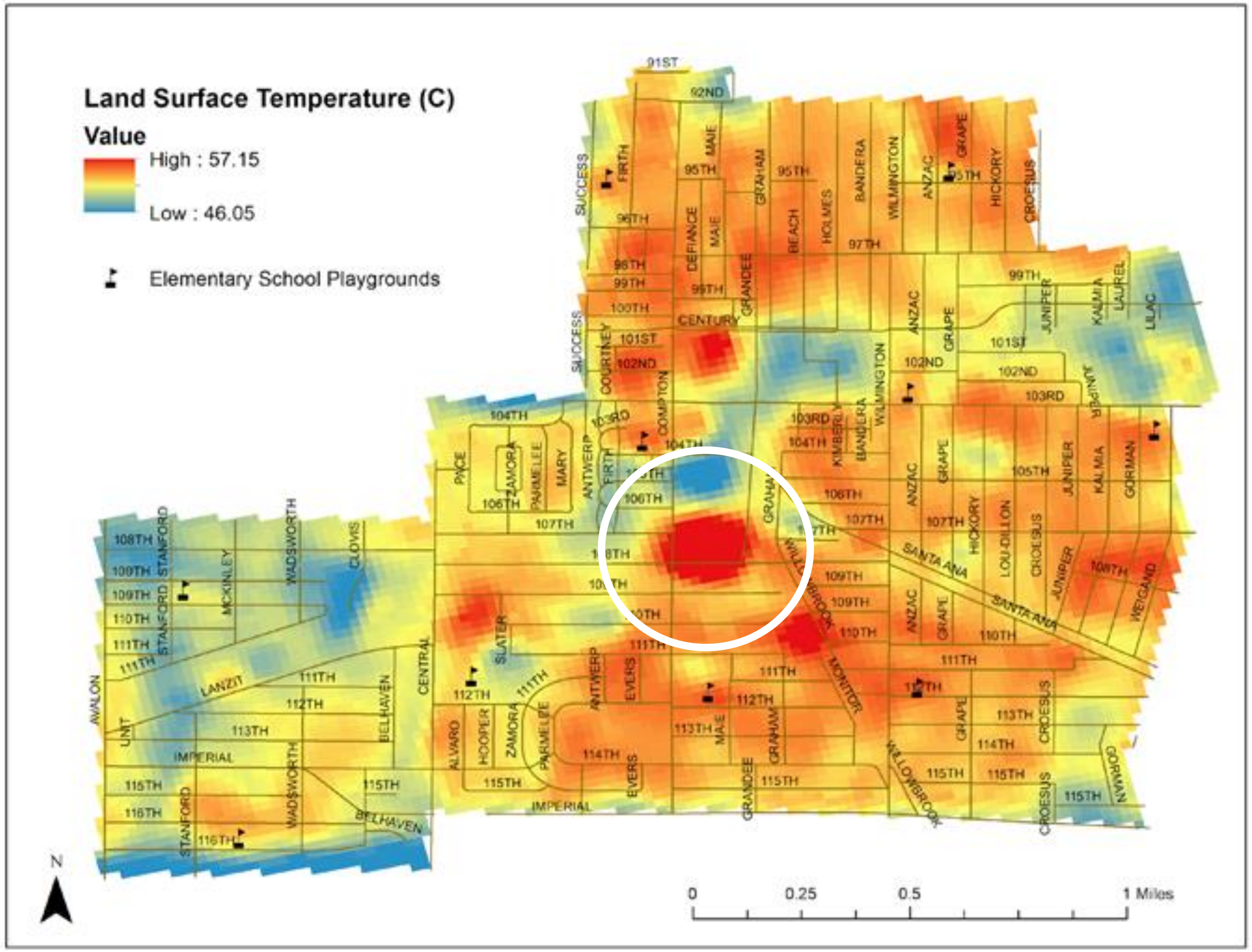
Our Research

1. Heat Governance & Policy
2. Urban Greening & Shade Infrastructure Planning
3. Actionable Data for Heat Resilient Communities

Read more about heat research at Luskin Center for Innovation

Schools are some of the hottest places in communities

Land Surface Temperature Map of the neighborhood of Watts, Los Angeles, California, USA



Typical School in Southern California is ‘Hot By Design’

Single story buildings

Asphalt play area

Less than 30% green space

Trees at perimeter

Artificial turf sports field

Markham Middle School in Watts, Los Angeles, CA, USA

Outdoors: The Problem With Hot Schoolyards

Playing outside in the heat can lead to dehydration, headaches, heat stroke, and other health impacts.

On the other hand, staying inside all day deprives kids of health and academic benefits of outdoor play.

Image by Lauren Dunlap; Funding by Resources Legacy Fund

Why This Matters for Babies and Toddlers in Early Learning Spaces

- **Babies and toddlers can't regulate heat as effectively as older children.** Their bodies heat up faster, and they depend entirely on adults for cooling and hydration.
- **Outdoor play is essential in early learning — but unsafe in high heat.** Many child care programs (both center-based and family child care) lack shade, cooling infrastructure, and heat protocols.
- **Heat risk is an equity issue.** Early childhood programs in lower-resourced neighborhoods often have fewer trees, more asphalt, and less funding for upgrades.

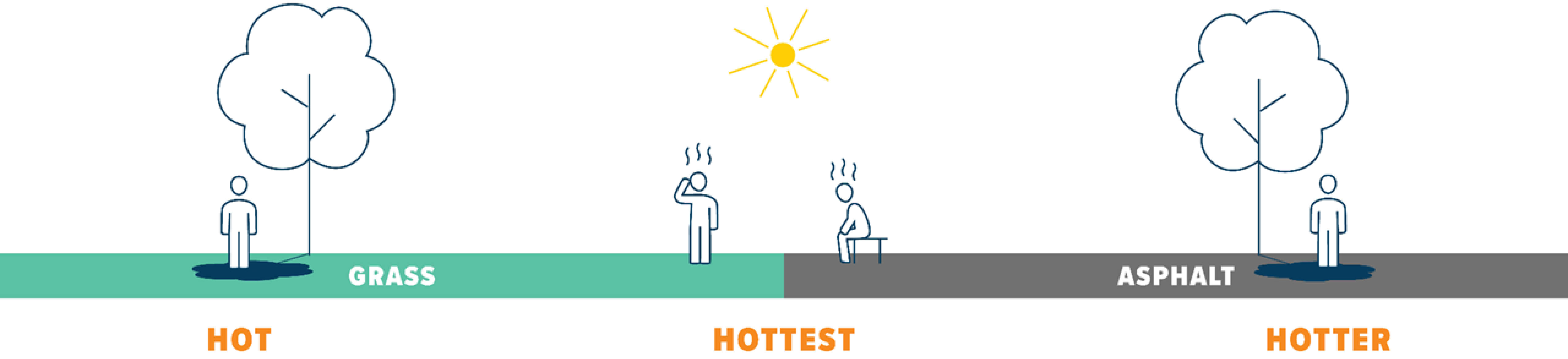
Shade is an essential solution for hotter cities

1. Recognize benefits
2. Measure benefits
3. Audit and plan
4. Tailor to context
5. Build into government

Turner, VK., Middel, A., & Vanos, J. 2023. *Nature*

Shade is the most effective way to cool people outdoors

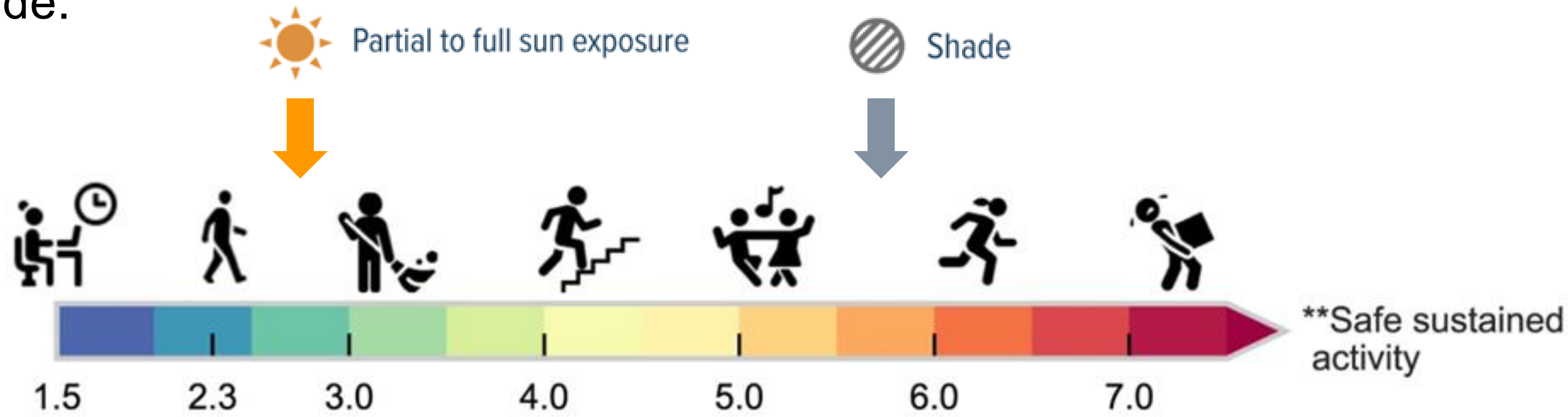
- All else equal, a person in the shade feels up to 30C (t**MRT**) cooler than someone standing in the sun just a few feet away



Find more heat infographics, fact sheets, and policy briefs here

On hot days, shade makes the difference between safe and unsafe for daily life to continue outdoors

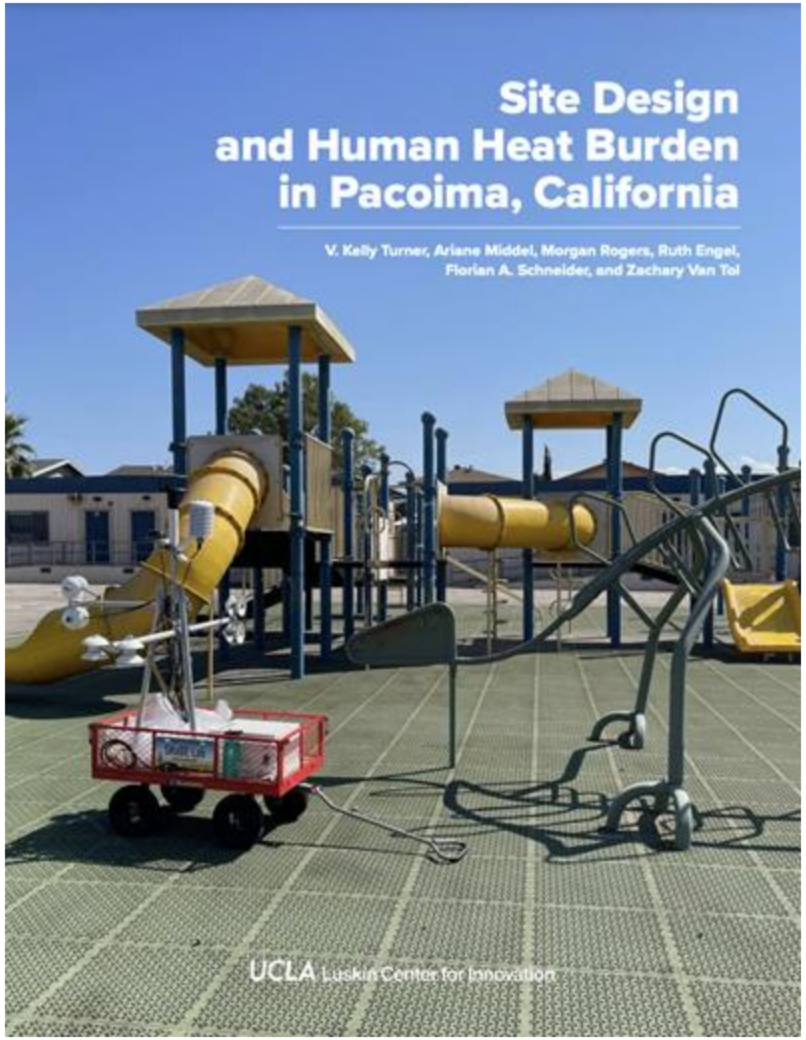
- On a 90°F day with 30% humidity, a healthy adult can safely walk in full sunlight or jog in the shade.

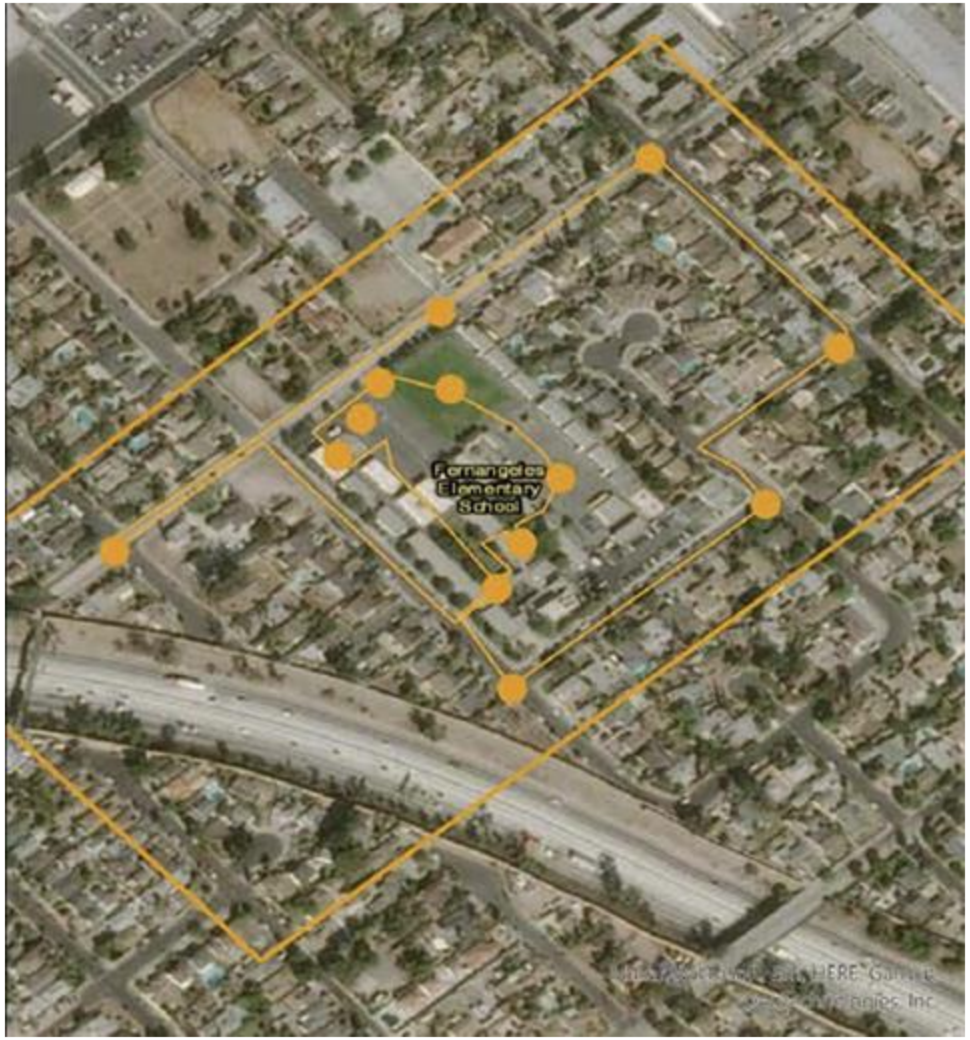


Maximum activity before body can no longer cool itself after 3 hrs (Vanos et al. 2023. Nature)

Read more about how shade can keep us active when it’s hot

Auditing shade and temperature at schools





Report by Luskin Center for Innovation / UCLA; Funding Transformative Climate Community Pacoima / Community Partners

Shade is More Effective for Cooling Children than Su

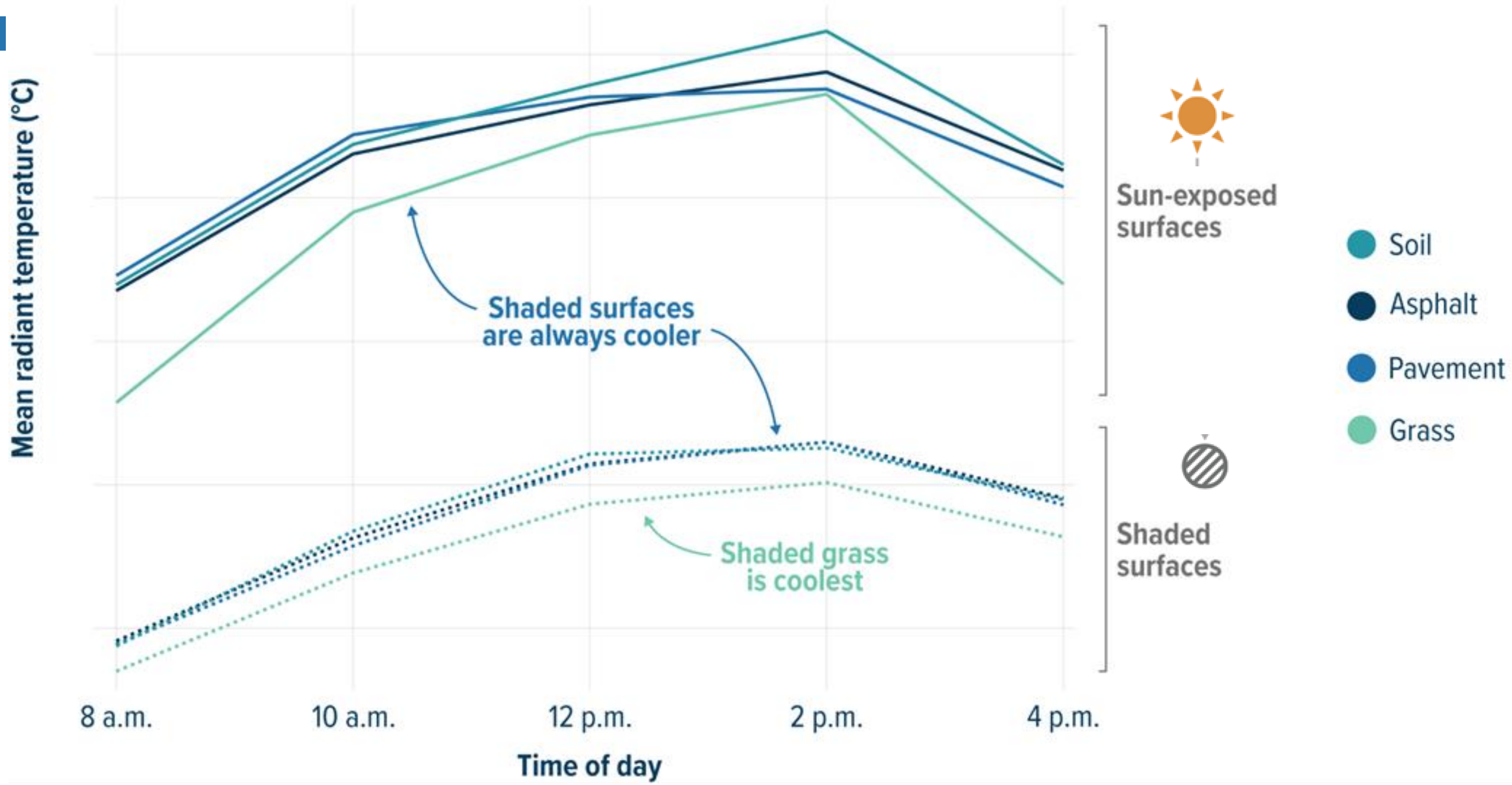


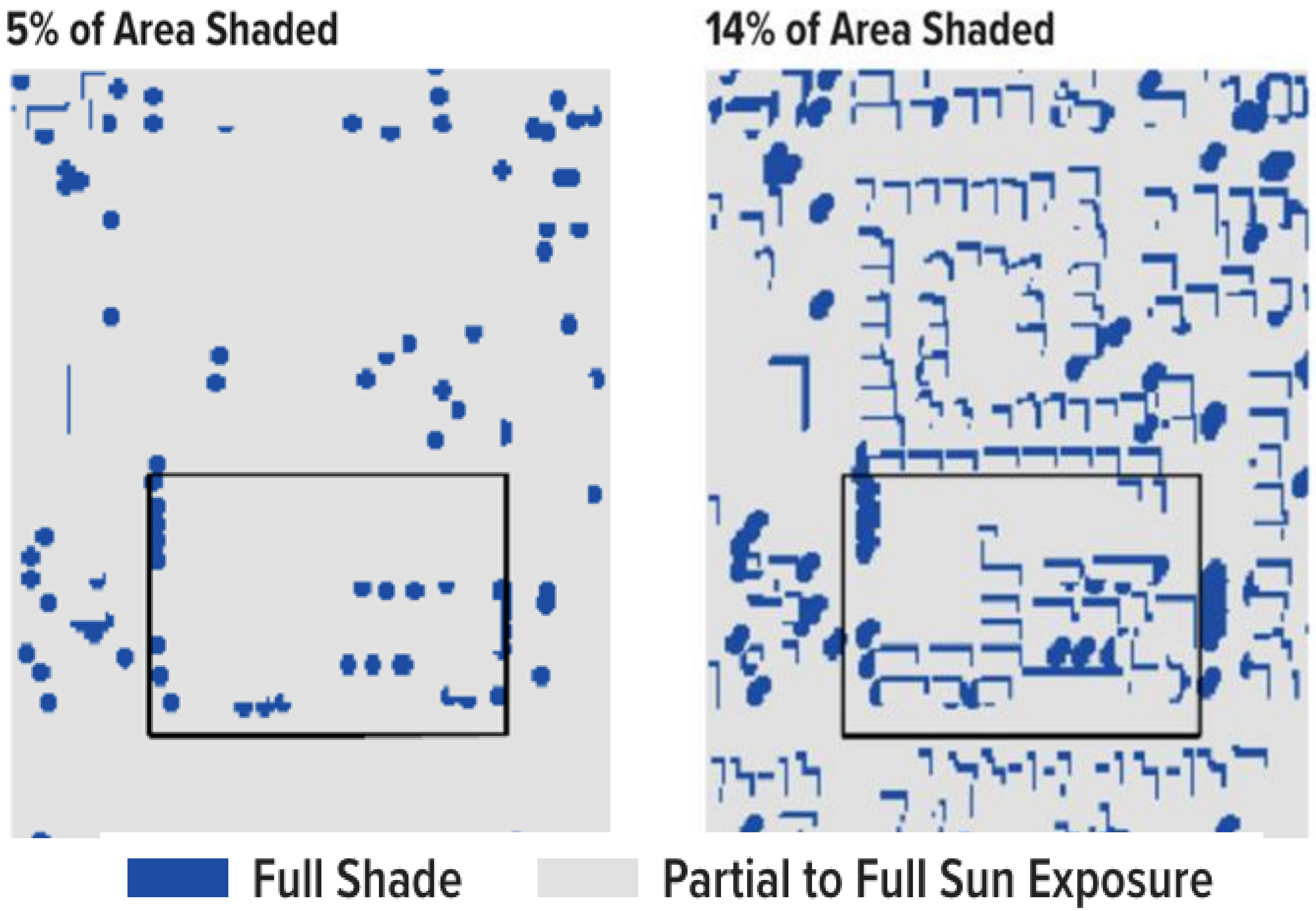
Image by Lauren Dunlap; Funding by Strategic Growth Council of California

Schools are 'Shade Deserts'

Shade Desert

Places that lack sufficient shade to keep people safe and healthy during outdoor activities

Turner, Middel, Vanos 2023.



Report by Luskin Center for Innovation / UCLA; Funding Transformative Climate Community Pacoima / Community Partners

Schools are hotter than surrounding neighborhoods

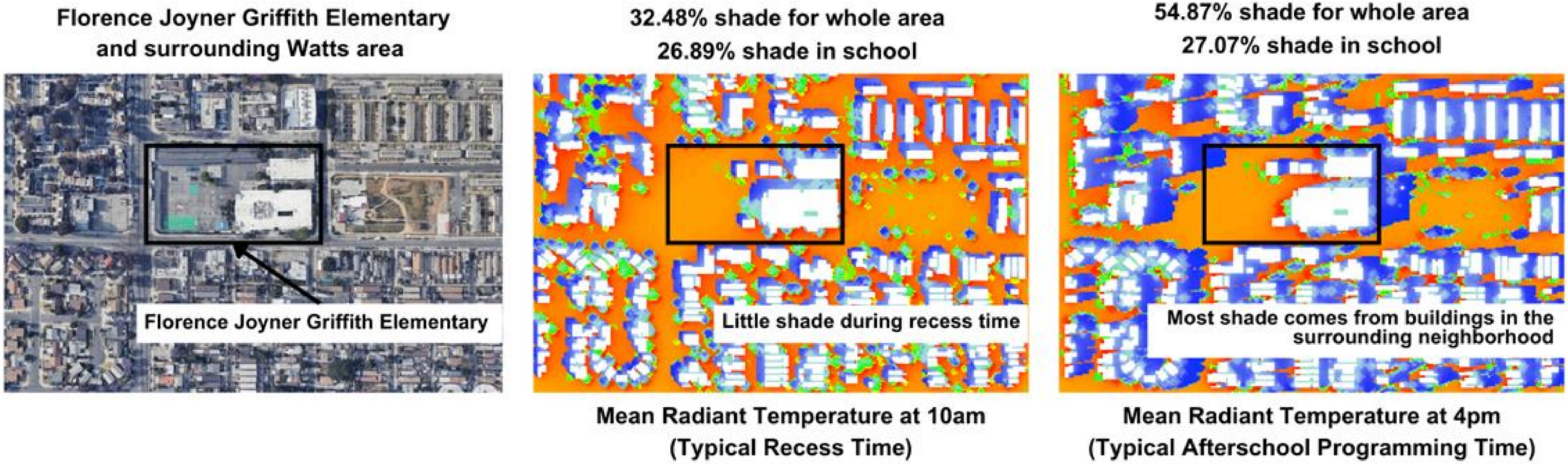


Image by Morgan Rogers; Funding by Strategic Growth Council of California

Why percent tree canopy/shade targets aren't effective

Grape Street Elementary
and surrounding Watts area

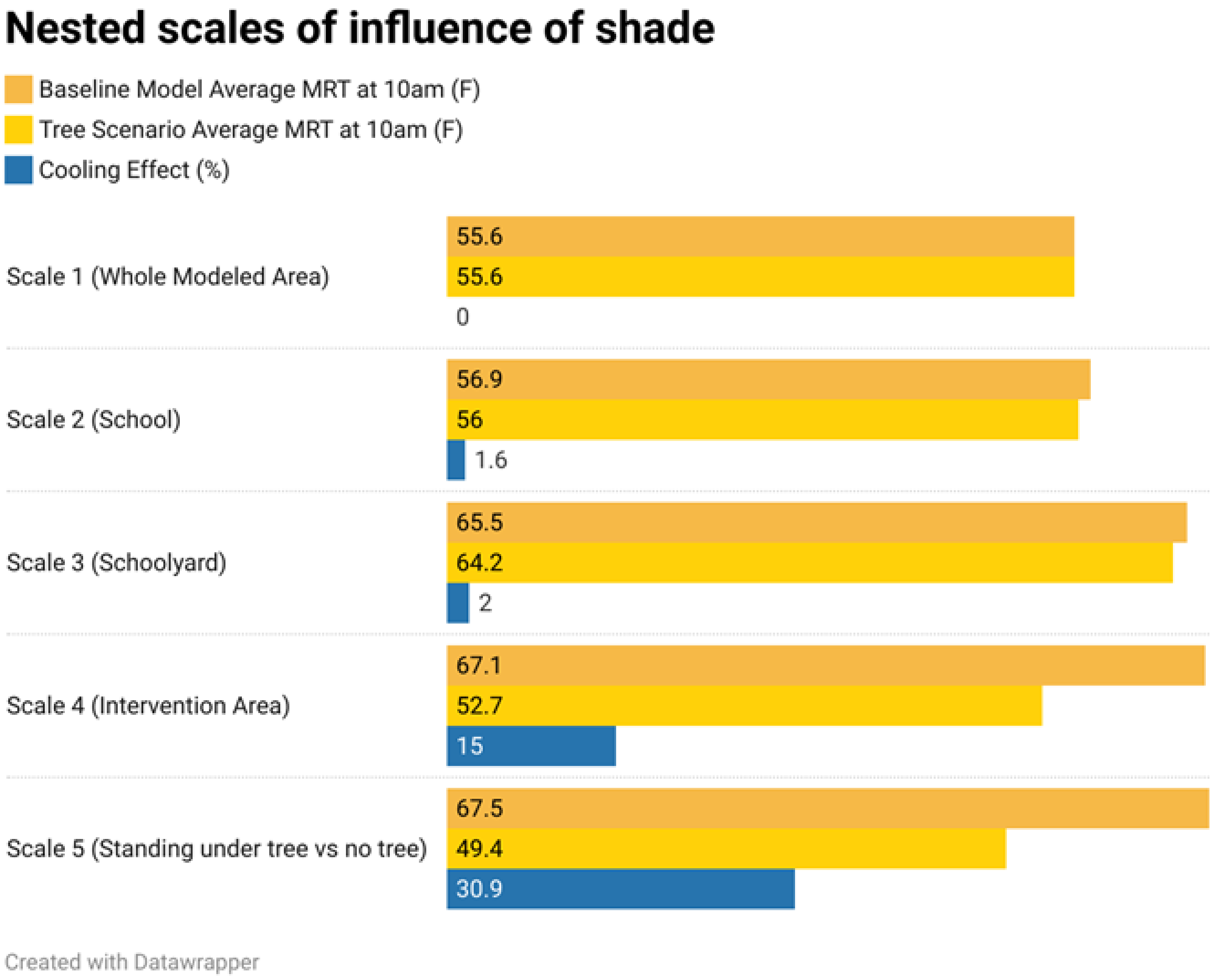


Image by Morgan Rogers (left)
Funding by Strategic Growth Council of California and Jean Claude Iradukunda (right)

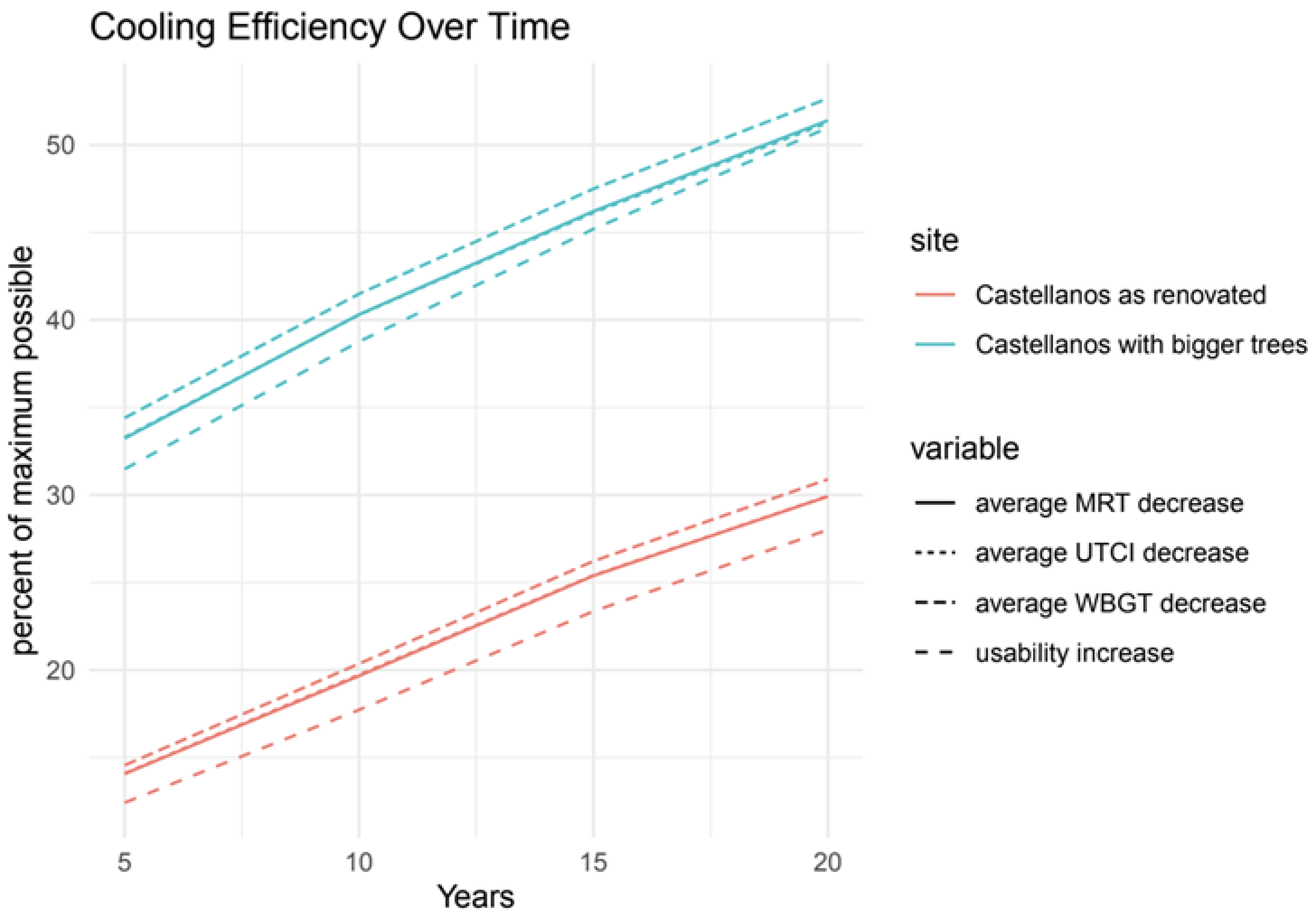
Cooling efficiency, and space/time activity gains are better

Cooling Efficiency

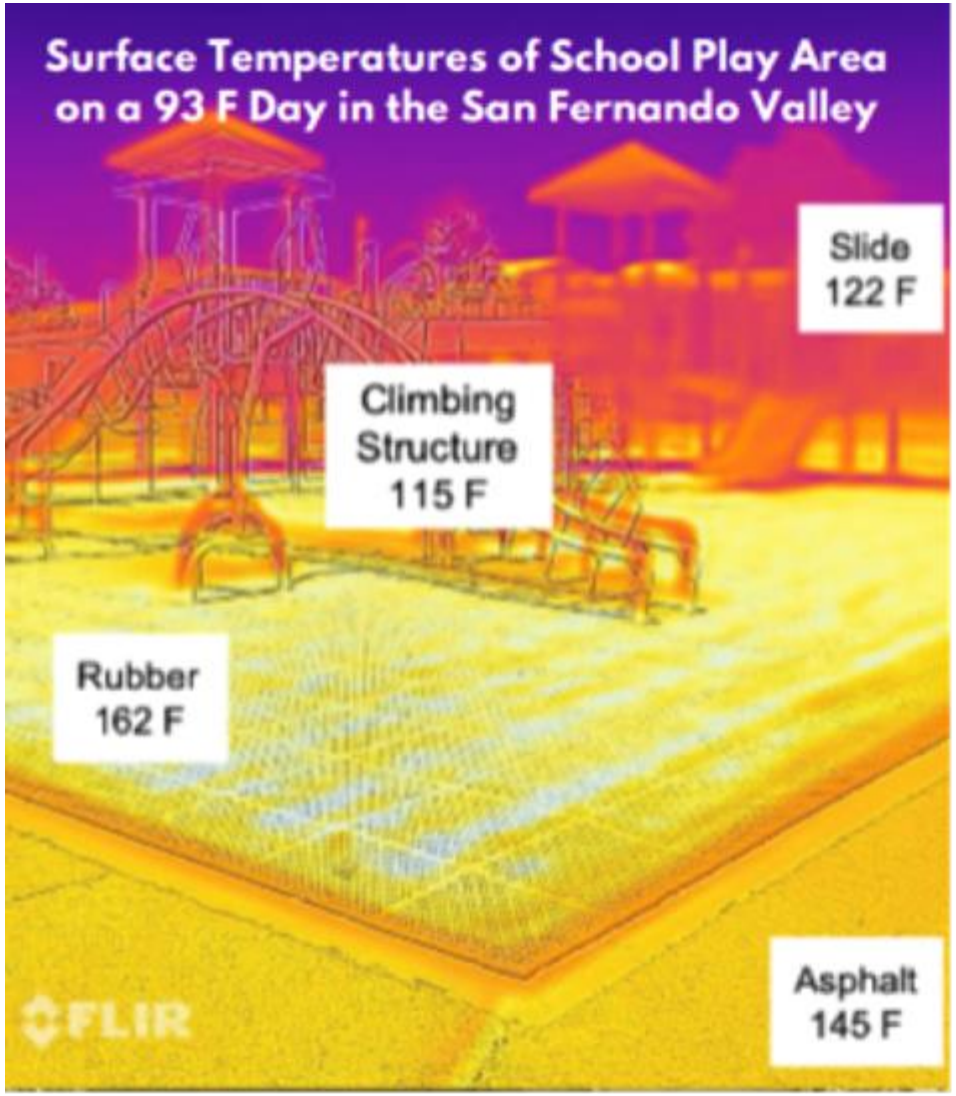
The proportion of cooling based on a hypothetical maximum

Trust for Public Land/

Nike Report



Audit and remove sector specific barriers



CA SB515 (Stern) makes shade more affordable for schools by rolling back Americans with Disabilities Act (ADA) matching requirements for playground shade structures.

American Forests

UCLA Luskin Center for Innovation

AUSTIN TX

School Routes Aren't the Coolest

How hot is your route to school? Learn how we analyzed shade along school routes in Austin.

15 MINUTE READ


Why shade?
How we measure it
How much is there?
Find your route
Make a difference
Route 1
Route 2
66% SHADE
Noon
Tree shade: 65%
Building shade: 0%
Route 1 offers very little shade until the last block. On Route 2, you'll stay cooler if you stick to the shadier side of the road. But even Route 2 has stretches of full sun.
Which route would you pick?
enter a school name or address
Jollyville
Pflugerville
We mapped shade for every sidewalk in the city so you can map your active routes.
First, locate your school. Then, zoom in and pan to find the shadiest sidewalks on your route.
Del Valle
Manchaca
SHADE
0
>50%
Kealing Middle School
7AM
9AM
NOON
3PM
4PM
6PM
TREE CANOPY

Solutions Must Be Multi-Pronged

- *City and system-level:* Heat action plans, shade audits, cooling strategies, and city partnerships can help create safer outdoor spaces.
- *Early care and education Settings:* Early educators can develop plans that include cooler routes for outdoor walks and adjust outdoor schedules to avoid peak heat.
- *Health sector:* Pediatricians and medical providers can share heat safety guidance at well-baby visits and more broadly (in the same prominent way they provide advice on safe sleep and SIDS prevention).

UCLA Luskin Center for Innovation

POLICY BRIEF | MAY 2023

Protecting Californians with Heat-Resilient Schools

GUIDANCE FOR AN EQUITABLE AND EFFECTIVE STATE STRATEGY

California's K-12 Education System is Under-Prepared for Rising Temperatures

California's K-12 public schools are vital institutions at every level: vital to the state's economic future, community wellbeing, as well as the lives of millions of children and hundreds of thousands of teachers and staff. Educators play an overwhelming number of roles for students and society at large. Given this, it is no surprise that funding to address extreme heat at schools has not been at the very top of the priority list. However, in recent years, temperatures have risen, leading to increasing concern about extreme heat and its insidious effects in schools.[1]

As the state develops and funds climate adaptation strategies, it is essential to address the effects of current and rising temperatures on students and staff while on school sites. California's 2022 **Extreme Heat Action Plan** begins to do so: it includes cooling schools in heat-vulnerable communities as a near-term focus.

This policy brief recommends specific research and policy actions to help advance the goals identified in the Extreme Heat Action Plan, as well as the equity goal set by the state's **Quality Schooling Framework** — that "*all* students are able to learn and thrive." Our five action areas and associated research recommendations build on existing findings, including in our 2021 report, ***Adapting to Extreme Heat in California: Assessing Gaps in State-level Policies & Funding Opportunities***.

Importance of Addressing Heat in Schools

Despite some progress, the nexus of schools and extreme heat is an understudied and underfunded area deserving of more targeted attention. This brief proposes an agenda for information, analysis, collaboration, and action to prevent children from experiencing excessive heat burden at schools. The following summarizes why such an agenda is important.

Summary of Policy Action Areas

We focus on five areas of action to advance heat resilience at schools and highlight where more research is needed.

- Track how schools experience extreme heat and the status of cooling interventions to understand needs
- Establish a statewide indoor temperature limit for schools based on children's risk and effects on learning
- Mitigate heat exposure in schoolyards through evidence-based engineered and nature-based solutions
- Manage heat exposure in schools through informed behavioral interventions
- Identify funding gaps and inconsistencies that should be addressed for effective, targeted heat mitigation

Thank you!

Please reach out with any questions

Kelly Turner
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Associate Director of Luskin Center for Innovation
UCLA School of Public Affairs
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"Beat the Heat" - Kristy Sandoval with Nicole Martinez/YUTEP, Pacoima Beautiful, UCLA, solar reflective paint

Extreme Heat and Children

City of Boston Mayor's Office of Early Childhood

TIMELINE

April 2024

November 2024

January 2025 to present

Boston Extreme Heat and Early Childhood Roundtable

Session 1: Framing the Problem
- Extreme heat as a climate change risk and the current assets, policies, programs, and practices to address it in Boston.
- The impact of increased heat during pregnancy and in the early years.

Session 2: Solutions Showcase
Heat adaptation strategies being implemented in other parts of the country and in other countries.

Session 3: Putting Plans into Motion
Identify short and long term heat resilient strategies to support the health, safety, and well-being of pregnant people, infants and toddlers in Boston.

Three Main Areas of Focus

Third Spaces: How can we create more programming in third spaces (cooling centers) that are tailored to the unique needs of pregnant people, young children, and their caregivers.

Facilities: How can we adapt Boston's early education and care facilities to be resilient before, during, and after, extreme heat events. Focus on short and potentially longer-term solutions, considering outdoor and indoor learning environments.

Communications: How can we adapt Boston's heat warning systems for the unique needs of pregnant people, young children, and their caregivers. Focus on health outcomes, emergency warnings, and access to cooling resources.

Three Working Groups: Extreme Heat and Children

Define: Who will be participating from the roundtable? Who else should be involved?

Strategize: Which tasks should we focus on within each initiative? How feasible are they?

Assign: Roles and responsibilities to different members, and communication streams and cadence.

Advance: Identify ongoing City initiative and departments and community partners to help us move the work forward.

CURRENT INITIATIVES: EXTREME HEAT AND CHILDREN

Three work streams identified in last year's Roundtables

WHO'S INVOLVED

PROGRAMMING BCFYs to provide relief in extreme heat	**PREPARING PROVIDERS** to respond and adapt to extreme heat	**COMMUNICATING** distinct heat risks and mitigations

Early childhood lens incorporated into Boston's upcoming **Climate Action Plan** (e.g., unique vulnerabilities, mitigation strategies) — ENVIRONMENT

PROGRAMMING BCFYs to provide relief in extreme heat

- **Community-based providers engaged to program 10-20 BCYFs** with outdoor cooling tents; focus on BCYFs in heat islands e.g., East Boston — BCYF
- **"Made to Play kits" distributed to all BCYFs designated as Cooling Centers,** available to children and families during heat emergencies. — BCYF

PREPARING PROVIDERS to respond and adapt to extreme heat

- **Extreme Heat Action Plan and Indoor Temperature Sensors** piloted in 25-30 FCC providers — EMERGING TECH, CLIMATE RESILIENCE
- **City's outreach on MassSave (Community First Partnership) extended** to home-based childcare providers — ENVIRONMENT

COMMUNICATING distinct heat risks and mitigations

- **Boston.gov/Heat & OEC website, and 2026 "Summer Weather Guide" updated** with early childhood heat resources and programming at BCYFs — OEM, CLIMATE RESILIENCE
- **Community-based "Heat Champions"** identified to amplify extreme heat alerts/resources with families and ECE providers via trusted channels — BPHC, Boston Children's
- **Communications to healthcare providers and patients** updated with relevant resources (e.g., state-wide HHAN alerts, ClimateRx resource) — Boston Children's

City-wide communications to highlight these initiatives to families, childcare providers, and community orgs (e.g., posters in City Hall screens, Bus Stops, Great Starts Website, BCYFs, pediatrician's offices, parent newsletters)

Panel Discussion

Prenatal-to-Three CAPACITY BUILDING HUB
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Thank you for joining us today!

Presenters' Contact Information

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- Kristin McSwain
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Save the dates for the upcoming webinars in the series! All webinars will be held from 2 – 3:30 ET.

- June 5th
- July 10th
- August 7th
- September 11th
- October 9th

Please fill out the survey!!