Best Practices for Cross Governmental and Interdisciplinary Collaboration to Advance Heat Governance

Ladd Keith, Ph.D.
Assistant Professor of Planning
Chair of Sustainable Built Environments
The University of Arizona

Southeast Florida Regional Climate Change Compact’s Virtual Workshop

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Planning for extreme heat: A review
Ladd Keith, Sara Meerow, & Tess Wagner

Rapid growth in heat research

Number of all publications on extreme heat planning in the Scopus database, by year
Planning for extreme heat: A review

Focus of research

- 68% Modeling
- 14% Design
- 7% Planning processes and governance
- 5% Impacts
- 4% Literature reviews
- 3% Other

Full paper at tinyurl.com/extremeheatplanning

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Planning for extreme heat: A national survey of U.S. planners
Sara Meerow & Ladd Keith

Research questions
What is the state of extreme heat planning in communities across the U.S.?
• Risk perceptions and impacts
• Information sources and needs
• Heat management and mitigation strategies and effectiveness
• Barriers to advancing heat planning

Survey methods
• Random sample: city size and region (n=69)
• Convenience sample: professional networks (n=98)
Planning for extreme heat: A national survey of U.S. planners

Concern for heat impacts & heat contributors

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>3.0</td>
</tr>
<tr>
<td>Economic</td>
<td>2.6</td>
</tr>
<tr>
<td>Environmental</td>
<td>3.2</td>
</tr>
<tr>
<td>Health</td>
<td>3.0</td>
</tr>
<tr>
<td>Climate Change</td>
<td>3.3</td>
</tr>
<tr>
<td>Urban Heat Island</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Average concern for environmental, public health, and economic impacts of extreme heat.

Concern for extreme heat caused by climate change and the urban heat island effect.
Planning for extreme heat: A national survey of U.S. planners

Reported heat impacts

- Energy Use: 67%
- Water Use: 61%
- Urban Vegetation or Wildlife: 51%
- Public Health: 46%
- Quality of Life: 43%
- Utility Functioning: 23%
- Transportation: 20%
- Economic Productivity: 20%
- Tourism: 20%
- Labor Productivity: 16%
- Economic Development: 10%
- Other: 7%
- Retail: 4%
Heat information sources

- Vegetation/Tree Maps
- Heat Index
- Historic Temp. Data
- Real-time Ambient Air Temp. Readings
- Future Projections & Statistics
- Ambient Air Temp. Maps
- Heat Vulnerability Maps
- Land Surface Temp. Maps
- Future Scenarios

Percent of sample

Used | Not used because unavailable

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Planning for extreme heat: A national survey of U.S. planners

Heat strategies

**Heat mitigation strategies**
- Urban Forestry: 73%
- Weatherization: 51%
- Manmade Shade: 50%
- Urban Design: 49%
- Water Features: 43%
- Green Roofs: 43%
- Building Materials: 41%
- Regulations: 24%

**Heat management strategies**
- Emergency Response: 66%
- Warning Systems: 49%
- Drinking Fountains: 41%
- Utility Assistance: 41%
- Info & Awareness: 38%
- Cooling Centers: 37%
- Vulnerability Assessments: 34%
- Staff: 8%
Planning for extreme heat: A national survey of U.S. planners

Barriers to heat planning

- Funding
- Time & Staff
- Higher Priority Issues
- Leadership
- Public Support
- Expertise to Understand
- Knowledge
- Coordination
- Spatial Resolution
- Temporal Scale
- Data
- Uncertainty

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Plans that address heat

- 65% addressed in some plan
- 36% a sustainability, climate action, or resilience plan
- 19% in hazard mitigation plan

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Conclusions

• Most planners are already concerned about extreme heat
• Over 80% planners said their community was impacted by heat
• Majority of planners reported addressing heat in some plan, but using development regulations yet
• Many communities implementing both heat mitigation and management strategies
• Few communities reported providing utility assistance or conducting vulnerability assessments
• Forthcoming in the Journal of the American Planning Association, preprint of paper at tinyurl.com/heatplansurvey

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Plan Integration

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Plan Integration
Plan Integration for Resilience Scorecard for Heat (PIRSH)
Ladd Keith, Sara Meerow, Philip Berke, & Joseph DeAngelis

PIRSH Pilot Communities:
Baltimore, Boston, Fort Lauderdale, Houston, Seattle

mitigationguide.org/
Heat governance: “The actors, strategies, processes, and institutions that guide decision-making for mitigating and managing heat as a hazard.”

Six guiding principles for researchers and decision-makers

- Advance heat equity
- Mitigate heat
- Manage heat
- Develop metrics
- Coordinate initiatives
- Build heat institutions

Available at go.nature.com/2ZZ9STt

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Thank You

Ladd Keith, Ph.D.
ladd@arizona.edu
@LaddKeith

Shade structure at The University of Arizona’s College of Architecture, Planning, and Landscape Architecture (AZ Daily Wildcat, Ian Green)