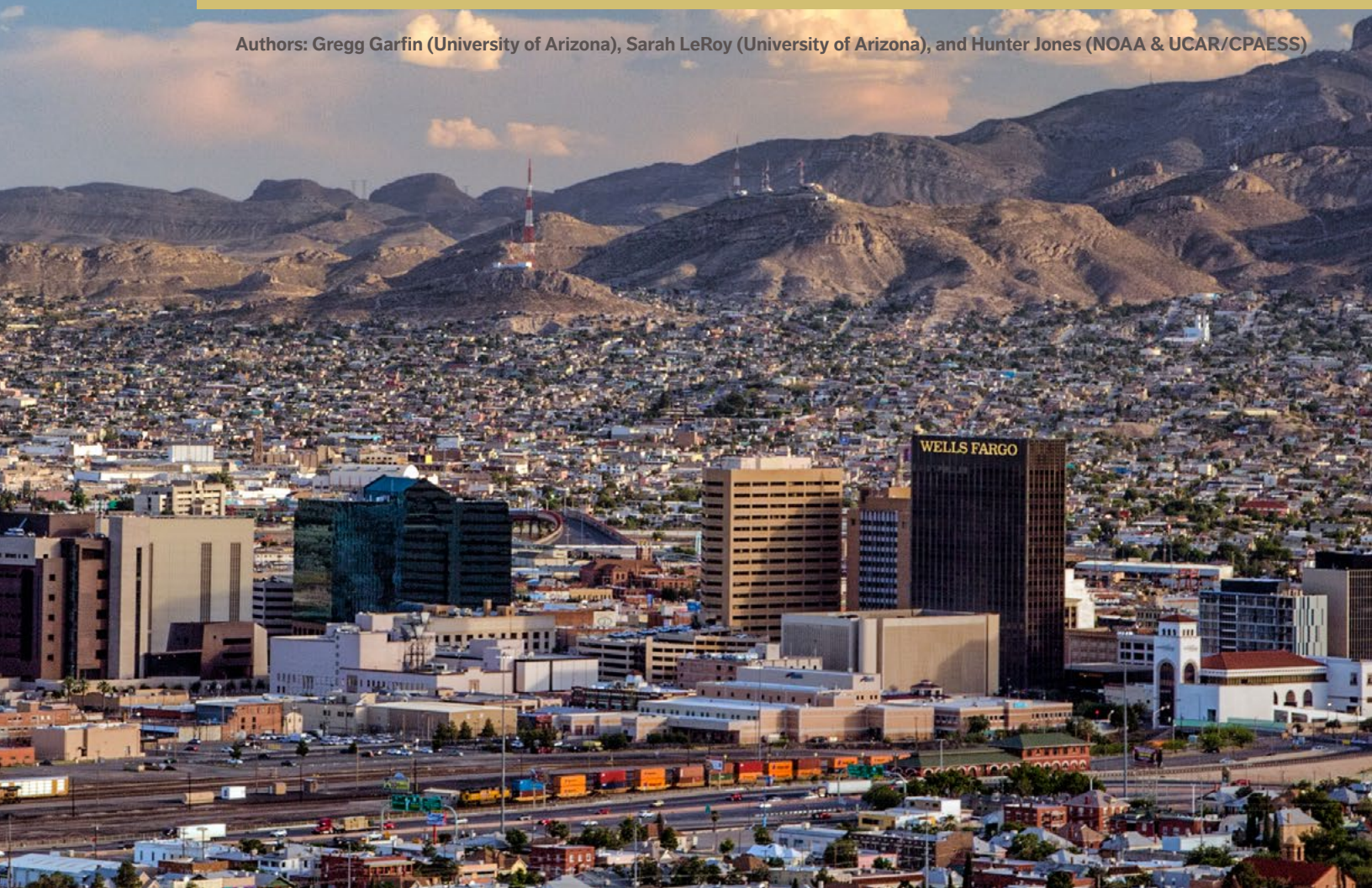


Developing an Integrated Heat Health Information System for Long-Term Resilience to Climate and Weather Extremes in the El Paso-Juárez-Las Cruces Region

Executive summary from the workshop held in El Paso, TX, July 13, 2016

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Downtown El Paso. Photo Credit: H. Jones

Background and Motivation. The workshop, *Developing an Integrated Heat Health Information System for Long-Term Resilience to Climate and Weather Extremes in the El Paso-Juárez-Las Cruces Region*, was held in El Paso, Texas, on July 13, 2016. Sponsored by a collaborative of universities and local and federal agencies, and planned as part of the National Integrated Heat Health Information System (NIHHIS), the workshop brought together individuals in government, practitioner, and academic communities from Mexico and the United States to discuss the intersection of the region's climate and weather with factors affecting public health risks related to extreme heat. The region is home to approximately 2.4 million people, most of whom are living in or near the urban centers of Ciudad Juárez (Chihuahua), El Paso, and Las Cruces (New Mexico). These cities share characteristics, such as a high proportion of residents of Hispanic origin, median income below the U.S. national average, and a range of climate-related environmental issues that include drought, flooding, air pollution, dust storms, and frequent occurrences of extremely high temperatures during the late spring and early summer. With hotter temperatures and more frequent and persistent heat waves projected for the El Paso-Juárez-Las Cruces region, it is critical to develop more robust systems of institutions, social learning, and partnerships to understand risks and strengthen public health resilience.

Workshop Goals

1. Gain a better understanding of historical climatology and vulnerabilities to heat in the region, including identification of particularly vulnerable populations and indicators that will be useful in improving preparedness for future heat episodes.
2. Identify and document science, communication, and public health needs and gaps with regard to the overall topic of extreme heat monitoring and public health preparedness in the region.
3. Establish specific information requirements and other needs for follow-on work to develop concrete information products, plans, requirements, and processes identified in this workshop.

This executive summary synthesizes the key points of the discussion from the meeting and serves as a starting point for evolving extreme heat resilience in the region.

Key Challenges

Workshop participants identified five key challenges and research needs:

- Translation of climate and health research into evidence-driven interventions and actionable strategies;
- Co-production of discipline-specific environmental and health information to support decisions on all timescales;
- Evolving risk communication strategies to drive behavior changes and inform all populations (especially the most vulnerable) of the public health risks of extreme heat;
- Enhanced coordination and communication among emergency management and public health entities; and
- Improved public health surveillance and monitoring coupled with improved climate prediction skill at timescales from weeks to inter-annual.

Recommendations. Participants broke into five groups (work streams) to focus on different aspects of heat health resilience. They provided a number of insights and recommendations:

1. *Historical Climatology and Vulnerability.* Participants identified vulnerability assessment and data synthesis and analysis as key priorities for further actions to improve understanding of extreme heat risks.
 - a. Workshop participants pointed to the critical need to quantify regional vulnerabilities of diverse populations and develop indicators and metrics of heat-related illnesses. Participants recommended data synthesis and analyses, including historical information of heat-related deaths categorized by gender and vulnerable group (e.g., infants, elderly, mentally ill, and others).





Las Cruces Farmers and Crafts Market. Courtesy of Las Cruces Convention & Visitors Bureau.

- b. They also recommended laying the foundation for a mutually agreed upon, region-specific vulnerability assessment, which would require the identification of common data, assessment indicators, methods, and mapping.
 - c. A first step would be to evaluate and validate existing assessments and methods and then test the most promising ones in the context of the region.
2. *Linkages Between Heat Parameters and Health Outcomes.* Participants in this group cited medical data as the most needed information and improved understanding of the relationship between heat parameters and interventions as the biggest hurdle for improving policy.
- a. Participants cited information on exposure in cases of heat-related death as a critical need. They also mentioned a lack of valid biomarkers for heat illness and limited availability of location- and time-specific health-outcome data.
 - b. Other high-priority data needs included prevalence data, such as identification of heat-related deaths and illnesses and consequences to disease, and correlation data with co-morbidities, such as infection, dementia, and renal failure.
 - c. Participants suggested strategies for improving heat-related health information and data, such as prioritizing data collection on power outages and usage during extreme heat events, and prevalence data on health visits related to outdoor temperatures, relative humidity, and heat index values.
3. *Prediction, Outlooks, Early Warning.* Workshop participants suggested forecast communication and research related to forecast lead time as key action priorities.
- a. Participants acknowledged that existing interagency coordination, including emergency warning and prevention teams, provide a strong foundation for risk communication. However, they expressed concern that forecast messages were not well understood by decision makers and the public. They recommended focused public communication around the theme of a *heat season awareness week*, with events at schools and shopping malls and communication through high visibility media—all of which could build upon Extreme Weather Task Force press releases and other campaigns.
 - b. Participants noted that forecasts with longer lead times, which is a research and development priority for federal agencies, can be combined with communication strategies to provide benefits. These strategies include pre-positioning assets (mobile cooling units, for example),

Cover: El Paso, Texas as seen from Scenic Drive on the Franklin Mountains. Credit: Bill Chizek.



Ciudad Juárez, México. Crédito de la foto: Astrid Bussink.

- education and raising awareness at the start of the heat season, and implementing efforts to restore public trust in the event of an inaccurate severe weather forecast.
 - c. They also recommended social science research to determine the optimal messaging approaches at various lead times to address uncertainty.
4. *Communication and Engagement.* Participants prioritized communicating to vulnerable populations and increasing trust in organizations that deliver heat health messages for further action.
- a. They advocated for increased effectiveness in reaching underserved communities, such as colonias, homeless populations, undocumented immigrants, and communities at the rural-urban interface. They urged removing barriers for aid to so-called “in-need” populations.
 - b. They endorsed the development of an inventory of initiatives by community organizations and academic institutions, identification of and coordination with leaders and certified community workers from vulnerable communities, and coordinated collaborative delivery of educational materials and resources.
 - c. They noted that community health workers and promotoras are particularly effective messengers to colonias, and that the use of multiple communication channels is an essential element to ensure effective communication to all populations.
 - d. Participants also acknowledged the strength of community-academic partnerships for improving communication and engagement with the public.
5. *Capacity Building and Training.* Participants in this group identified collaboration and capacity-building planning and process as the highest priorities for enhancing capacity and developing and deploying training on heat health issues, preparedness, and response.
- a. They recommended that capacity building and training efforts (a) reflect the needs of the community, (b) be deployed proactively, (c) reach across multiple scales (i.e., individual, household, local government, and state and federal levels), and (d) be well coordinated across government and non-government entities and initiatives and the healthcare community.
 - b. They identified the STEAR (State of Texas Emergency Assistance Registry) as an existing resource upon which to expand capacity; they noted that informing community members to register with STEAR would help raise awareness.
 - c. Participants recommended working with local governments in El Paso and Juárez to foster a unified response to heat health risks.
- Next Steps.** Volunteers from the five work streams agreed to meet regularly following the workshop to carry out the recommendations. The original workshop organizing committee recommended a first step of inventorying and assessing existing data, initiatives, resources, and funding opportunities and developing a state-of-knowledge assessment for extreme heat and public health in the region. To contribute to this assessment, the El Paso Office of Resilience and Sustainability will be distributing a community survey to determine existing knowledge of extreme heat within the community and its capacity to cope with extreme heat events. The assessment will inform future actions and provide information useful to those pursuing funding to implement recommendations from the workshop. The workshop was conducted as part of the National Integrated Heat Health Information System (NIHHIS) initiative and served as the formal launch of the NIHHIS Southwest regional pilot. The NIHHIS pilot is designed to facilitate ongoing engagement with people in the region to understand climatic, institutional, social, and other aspects of extreme heat health risk and to create a long-term approach to improving resilience to extremes.