



FACT SHEET

Bike Sensors to Map Heat

Climate Ready City

Healthy City

Climate Issue: Urban Heat Island

- Worldwide, cities are experiencing increasingly severe heatwaves
- The effects of these heatwaves are often felt unequally, with marginalized populations experiencing greater severity
- Many cities do not have sufficient data on heat and humidity for their locality
- Data is often provided from weather stations located outside of the city
- High-quality temperature and humidity data allows policy makers to implement effective urban cooling strategies.

Cities need accurate heat and humidity data in order to understand the true climate impacts on their citizens and to develop responsive policy.

Bike sensors are a low-cost, user-friendly strategy for cities to gather important data on heat and humidity.

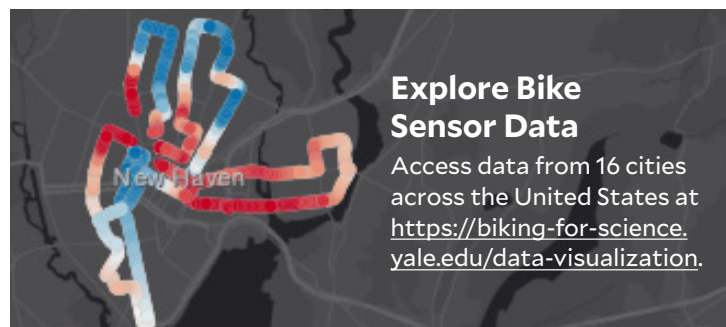
Bike Sensors: An Efficient Way to Collect Data

Bike sensors are easy to install

- Portable sensors attach to bikes and track air temperature and humidity
- Data is geo-tagged, meaning that the bike sensor provides data wherever it goes.

They collect high quality, detailed data

- Bike sensor data is sensitive and accurate enough to capture temperature changes from one city block to another
- By gathering data from citizens' bike movements, cities can gain a deeper understanding of how residents experience temperature in different neighborhoods
- Bike sensor data can also be used to identify neighborhoods disproportionately burdened by heat and humidity
- These efforts allow cities to more effectively direct resources to communities most in need.



IN A NUTSHELL

- Cities require high-quality temperature and humidity data to prepare for heatwaves and protect their citizens
- Cities can use bike sensors to collect this data.

WHAT CAN YOUR CITY DO?

- PARTNER** with universities or other institutions to expand bike sensor data collection efforts
- DEVELOP** citizen-science campaigns to scale up usage of bike sensors
- PUBLISH** data on local climate vulnerability once available to ensure transparency
- DESIGN** responsive climate resilience strategies
- PRIORITIZE** vulnerable communities for urban cooling strategies.

To find out more on this fact sheet, contact **Professor Xuhui Lee** at xuhui.lee@yale.edu. This fact sheet is based off of Cao, C. et al., (2020). Performance Evaluation of a Smart Mobile Air Temperature and Humidity Sensor for Characterizing Intracity Thermal Environment. Journal of Atmospheric and Oceanic Technology 37: 1891 -1905. <https://biking-for-science.yale.edu/subpage-2>.