U.S. cities less susceptible to water scarcity than previously thought

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The past few years have seen powerful droughts across the U.S., with water shortages threatening crop production, shipping traffic, energy production, and groundwater stores. Water scarcity issues are particularly relevant for those living in cities, a demographic which now includes roughly 4 out of every 5 Americans.

Previous research has tallied average daily water needs, estimated at 600 liters (about 160 gallons) per person per day, and the availability of natural renewable water resources. The results suggested that up to 47 percent of the U.S. population is vulnerable to water scarcity issues. In many cases, urban water managers cope with natural variability through the use of infrastructure designed to pump, import, or store freshwater. Nationwide water resource assessments, however, overlook such infrastructure-based approaches to water management, instead assessing only water derived from local streamflow, runoff, or groundwater storage.

To more accurately assess the vulnerability of U.S. urban areas to water shortages, Padowski and Jawitz compiled publicly available records of water management resources for 225 cities across the country – those with populations of 100,000 or greater for which adequate records were available. When they included in their tallies both natural renewable water resources and the capacity to import, pump, and store water, the authors find that only 17 percent of the U.S. population – not 47 percent – is vulnerable to water scarcity issues. They find that when water management infrastructure resources were taken into consideration,

every U.S. city studied could provide an annual mean of 600 liters (about 160 gallons) per person per day or greater, even in areas where the local availability of water is scarce.

The authors find, however, that some cities, such as Miami, Florida, appear more vulnerable to water scarcity under the new assessment. Though Miami receives a high volume of water, a lack of storage or import capacity suggests that it is less resilient to natural variability than cities with more robust water management infrastructures.

More information: Water availability and vulnerability of 225 large cities in the United States, *Water Resources Research*, doi: 10.1029/2012WR012335 , 2012

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