

WHY HAVE HEAT RELATED DEATHS DRAMATICALLY INCREASED IN SOUTHERN ARIZONA?

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HEAT-RELATED DEATHS HAVE INCREASED

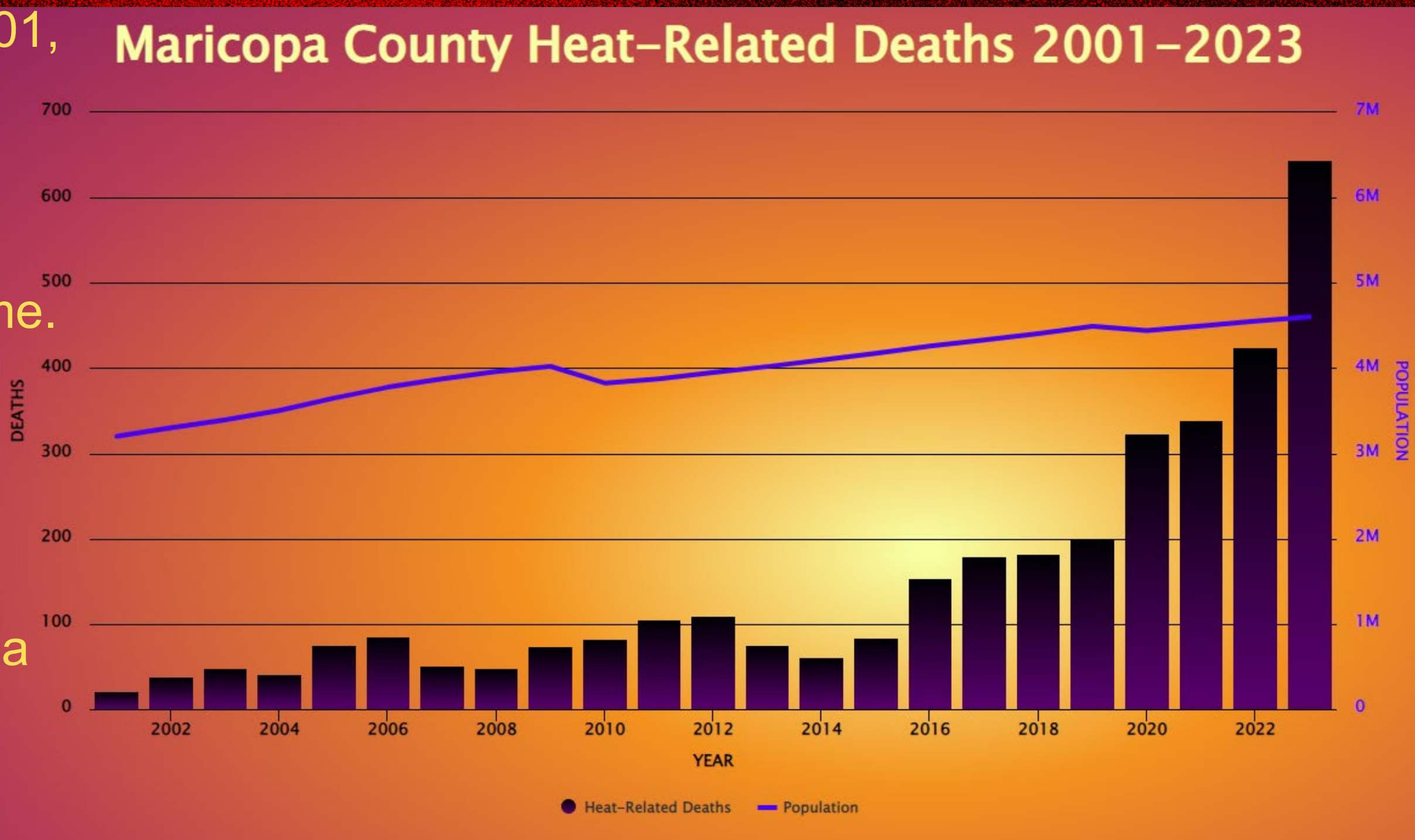
In Maricopa County in 2001, there were 21 heat-related deaths.

In 2011, heat-related deaths topped 100 for the first time.

In 2023, there were 645 heat-related deaths

Every year since 2016, Maricopa County has set a record for the number of heat-related deaths.

Maricopa County Heat-Related Deaths 2001-2023

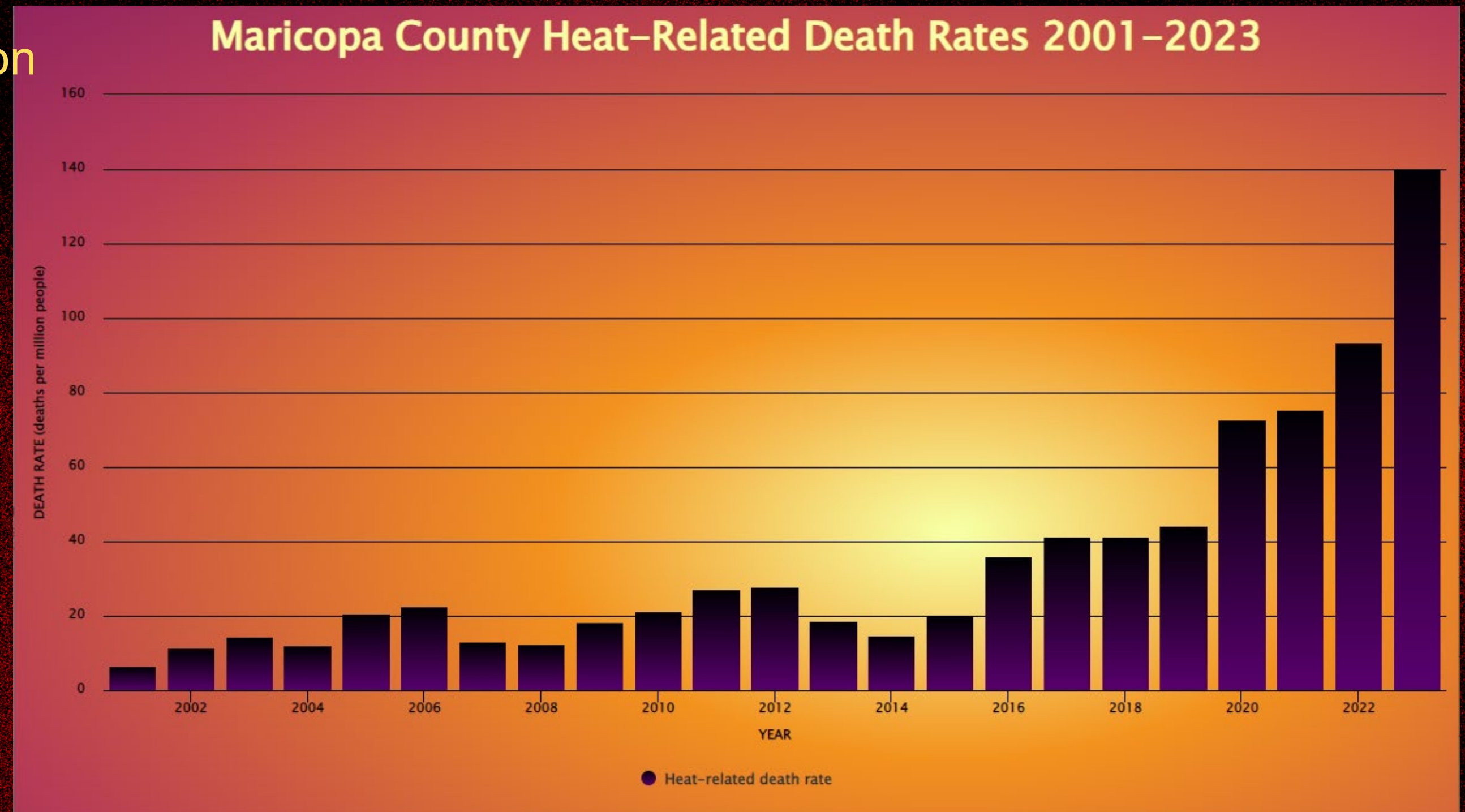


HEAT-RELATED DEATHS HAVE INCREASED

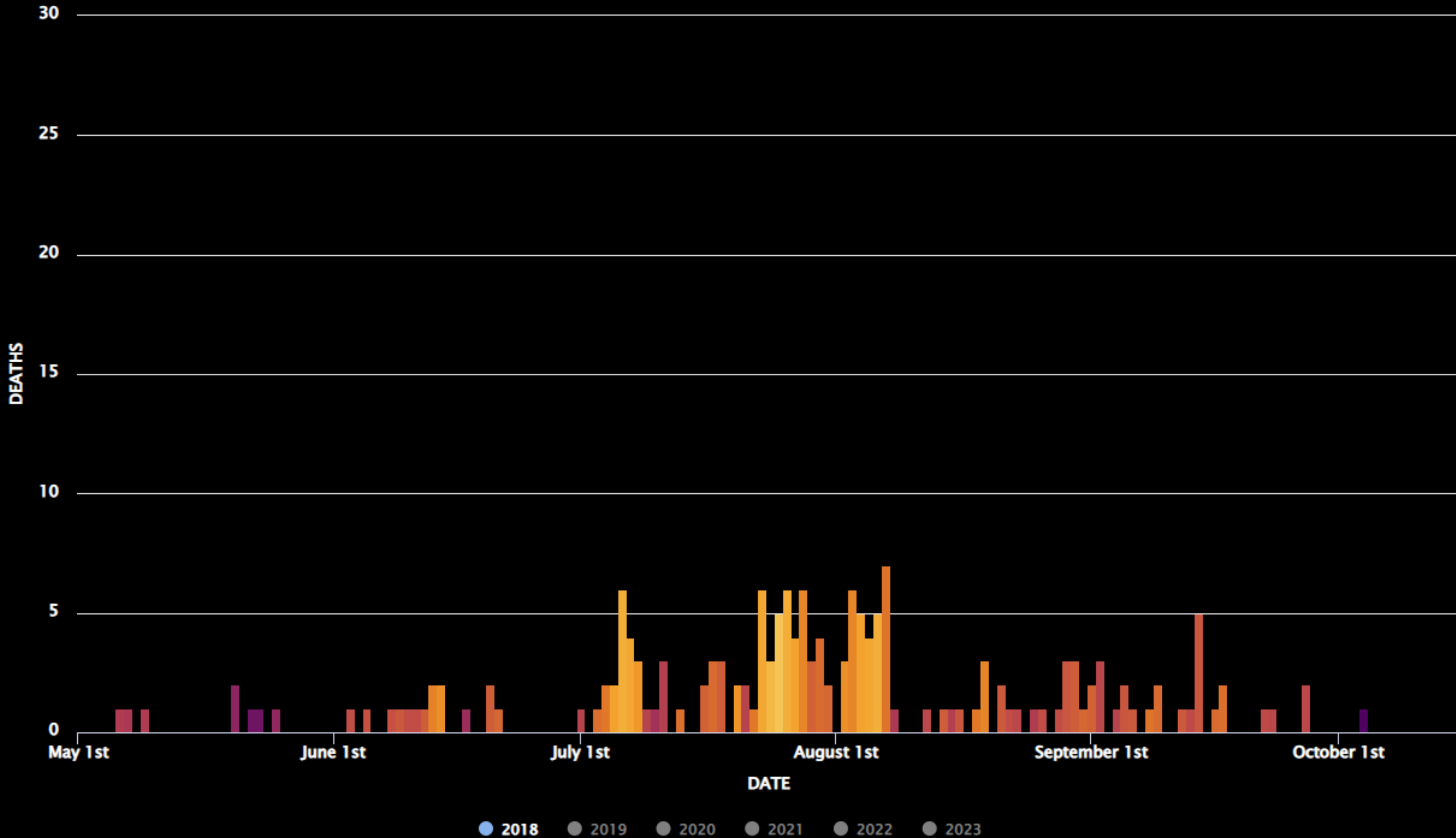
Adjusting for population increase doesn't make the graph look much different!

The heat-related death rate has increased from 6.6 per million people in 2001 to 140 per million in 2023

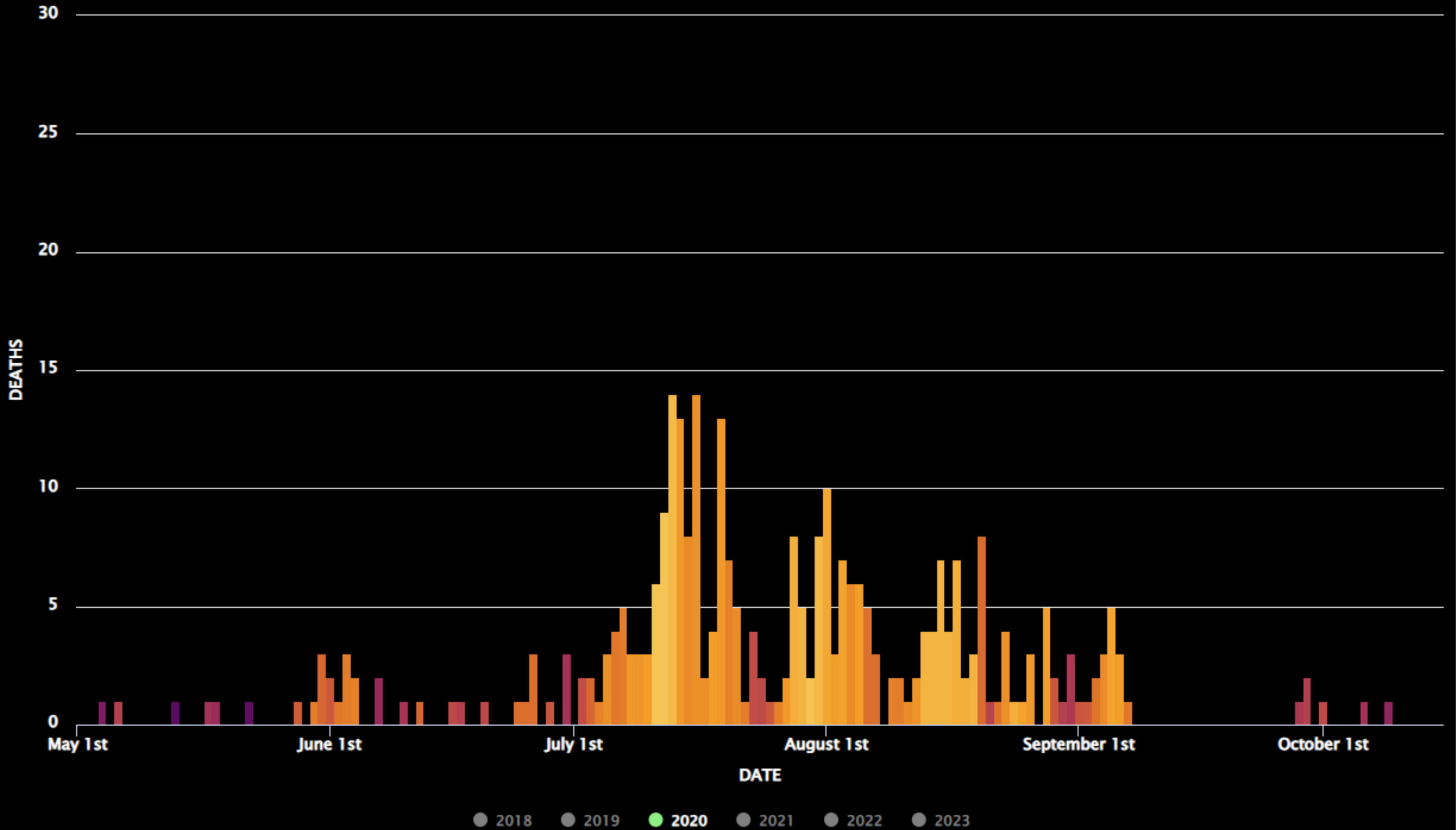
The heat related death rate has set a record high every year since 2016



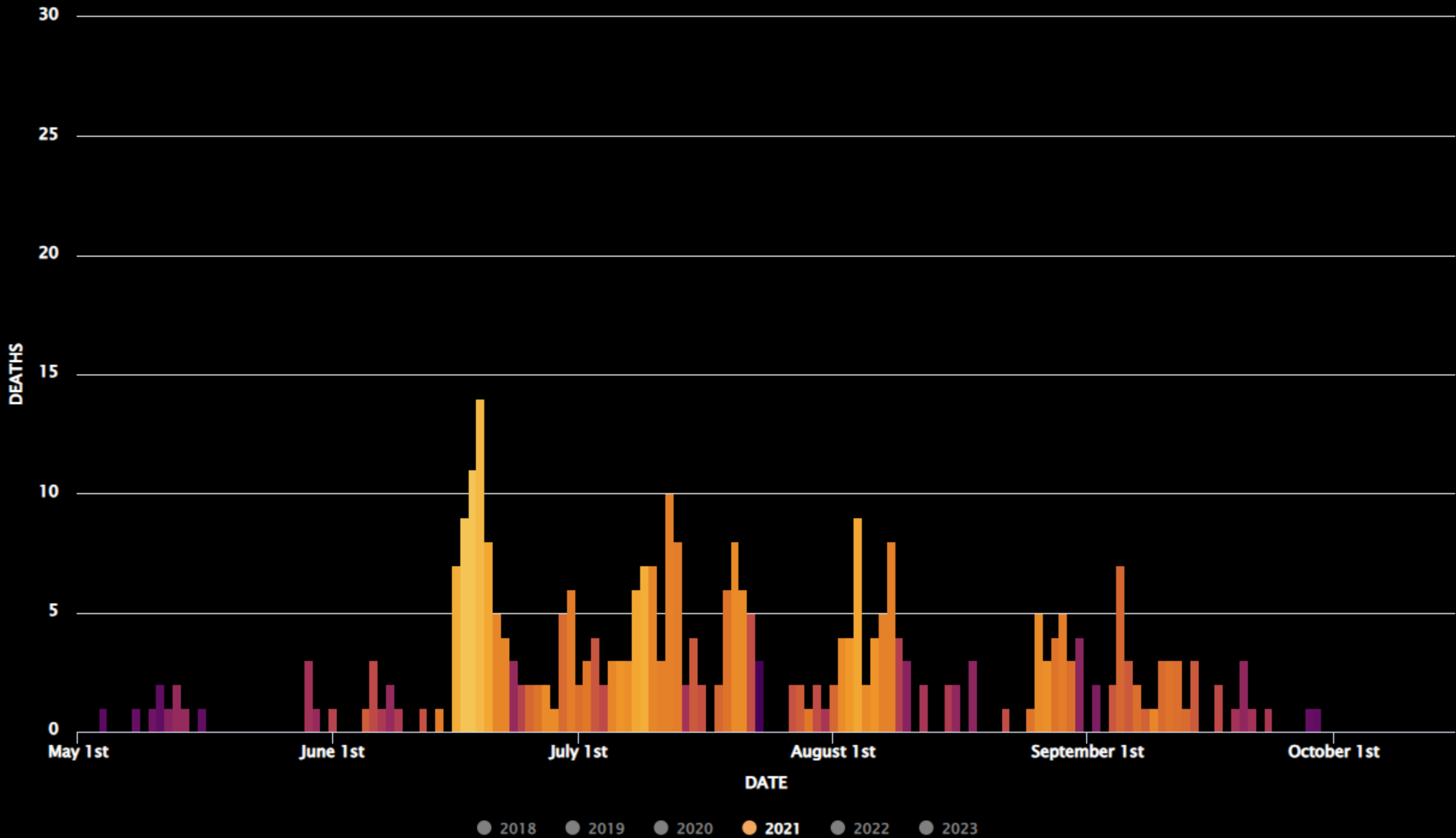
2018 Maricopa County heat deaths



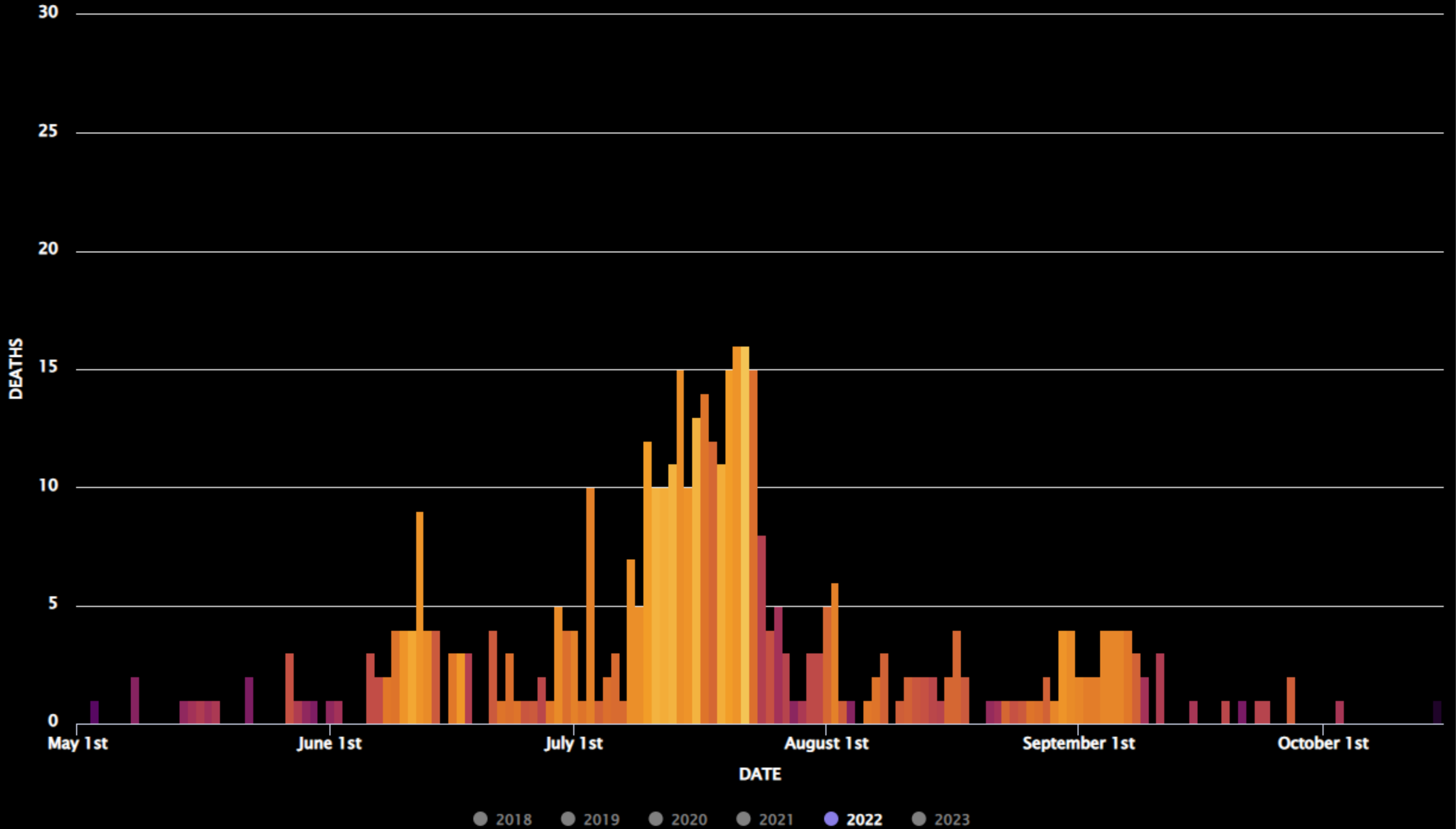
2020 Maricopa County heat deaths



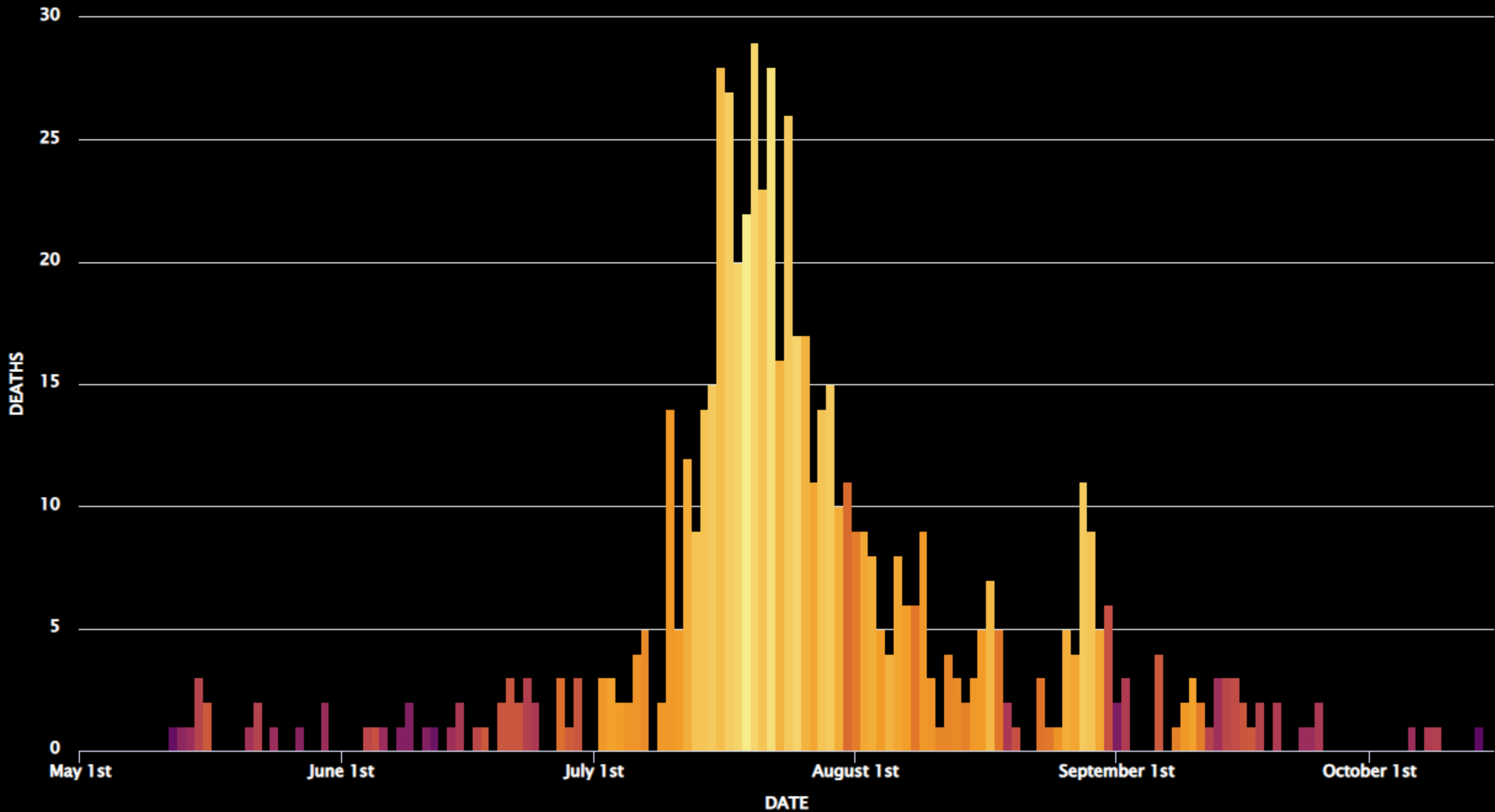
2021 Maricopa County heat deaths



2022 Maricopa County heat deaths



2023 Maricopa County heat deaths

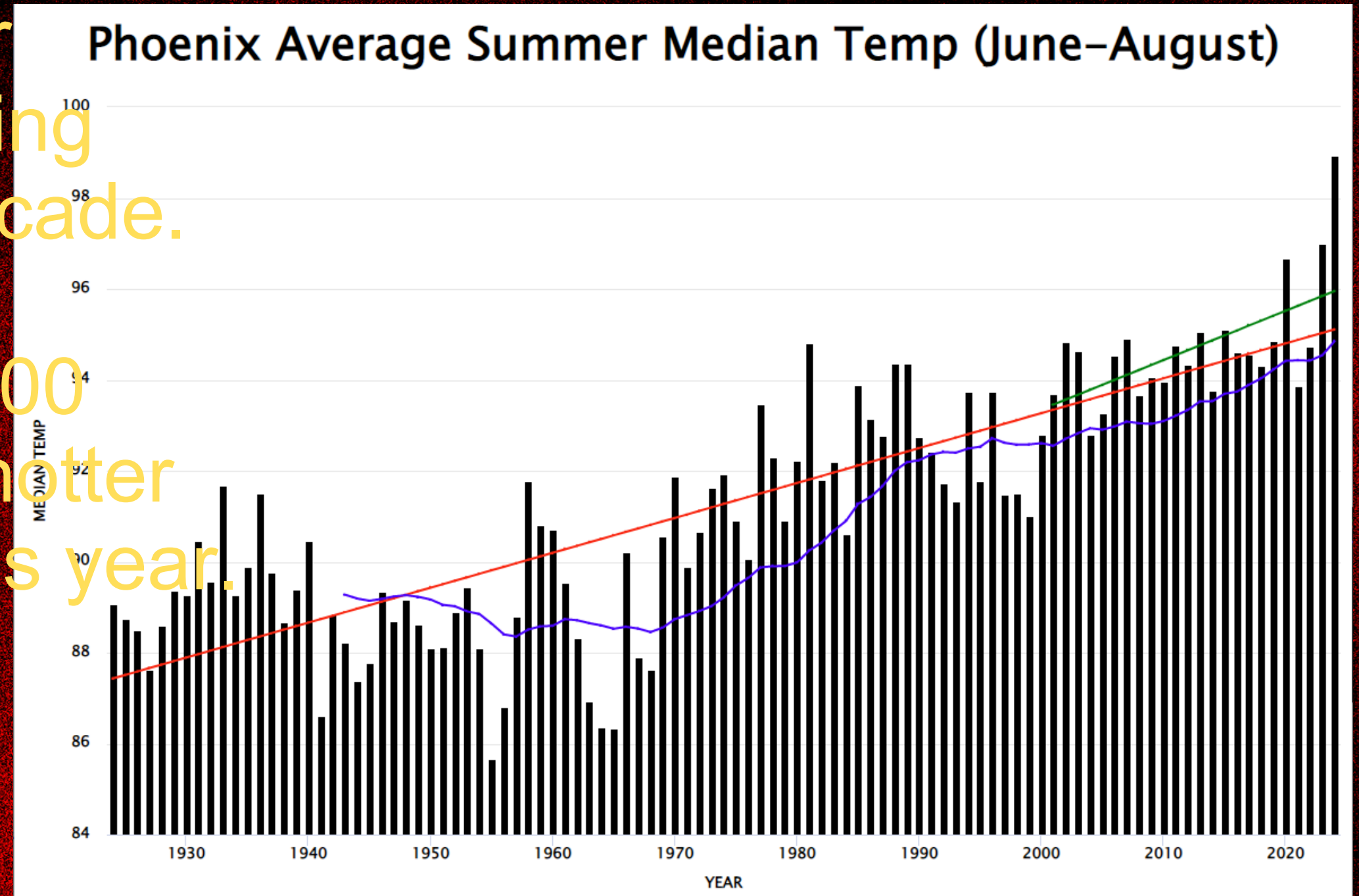


● 2018 ● 2019 ● 2020 ● 2021 ● 2022 ● 2023

IT'S GETTING HOTTER

Phoenix average summer temperatures are increasing about 0.8 degrees per decade.

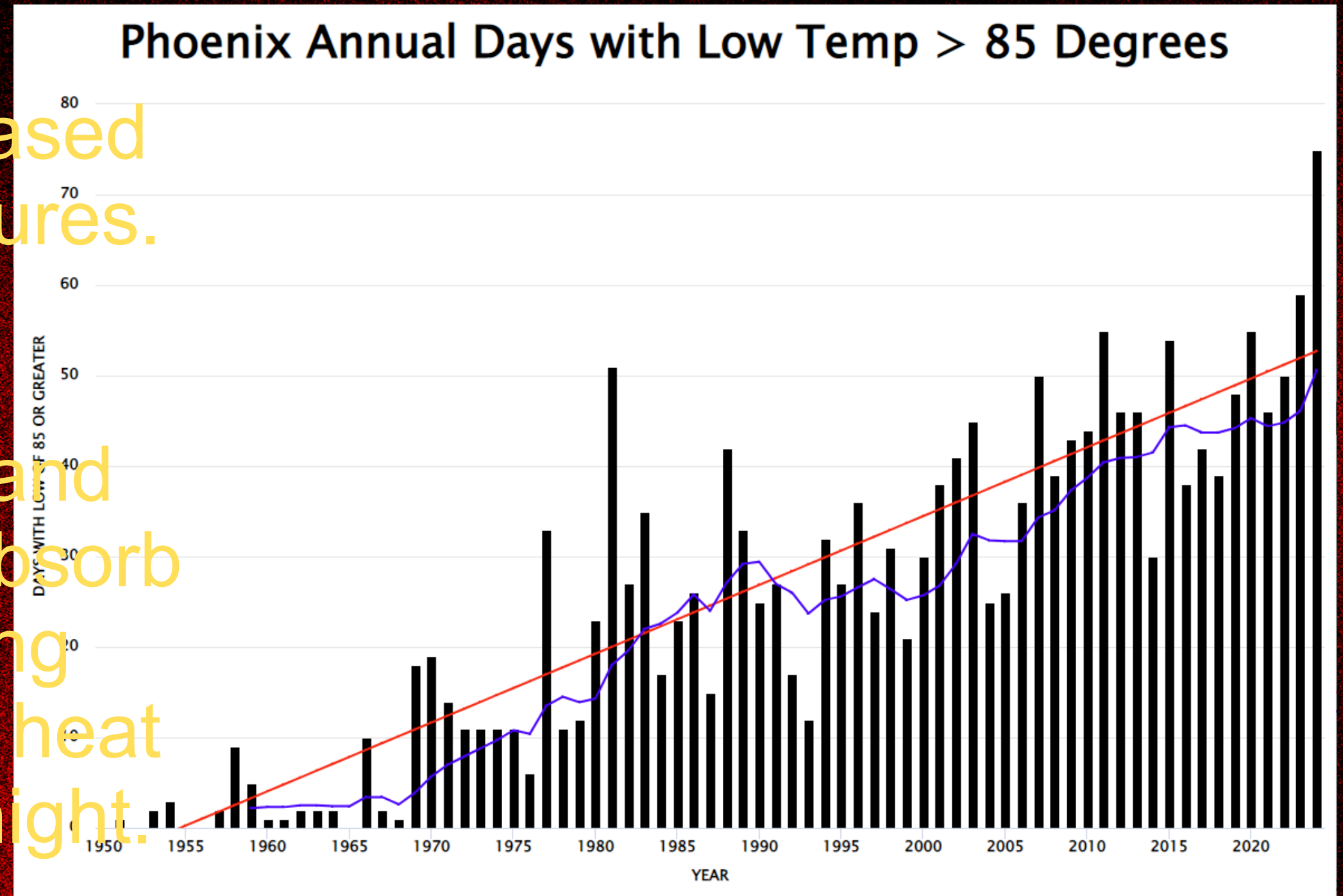
At this rate, in less than 100 years Phoenix would be hotter than Death Valley was this year.



PHOENIX'S URBAN HEAT ISLAND EFFECT

Phoenix daily low temperatures have increased more than high temperatures.

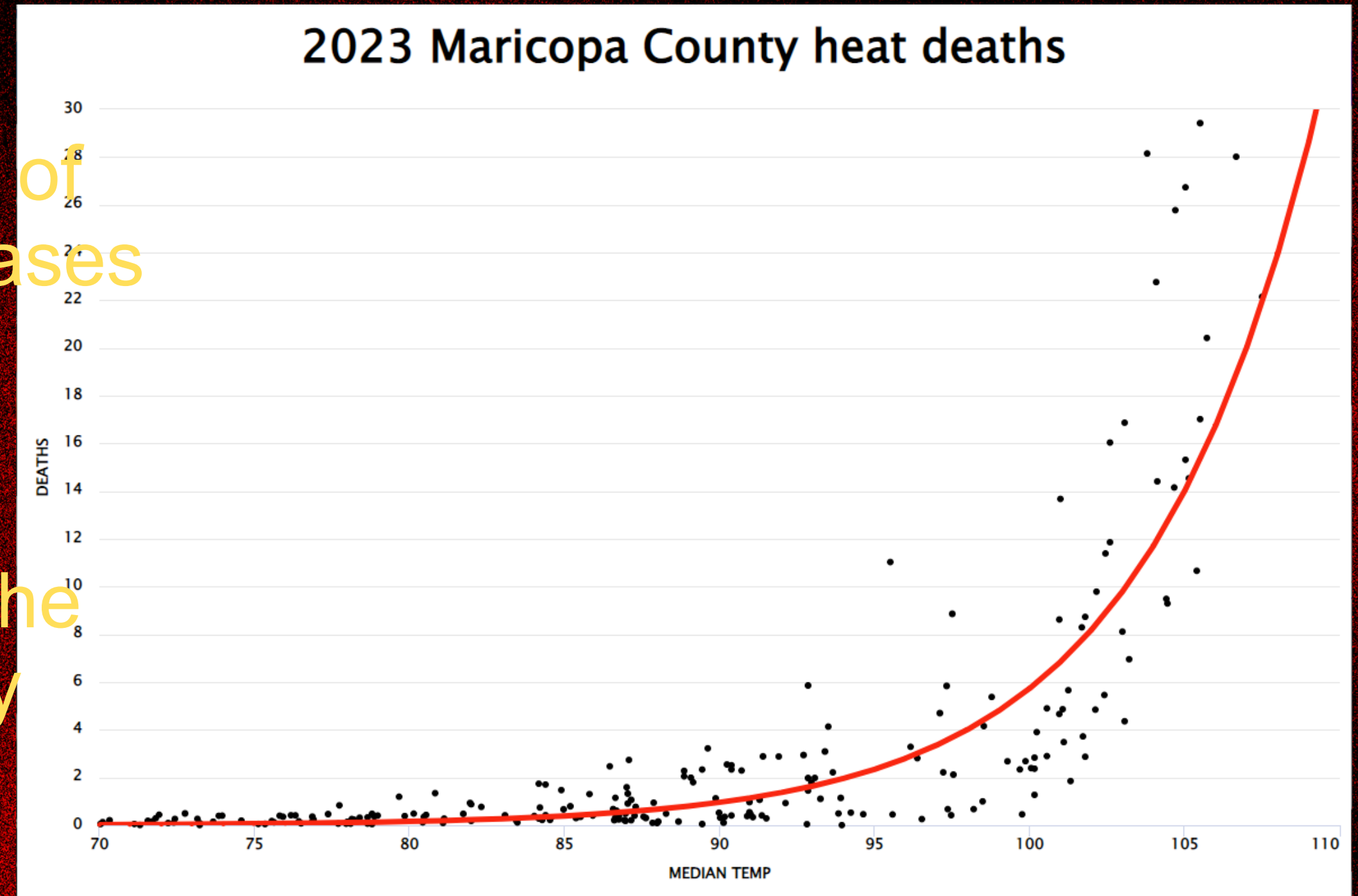
This is a signature of a worsening urban heat island effect. Urban surfaces absorb energy from the sun during the day and release it as heat throughout the day and night.



HOTTER TEMPERATURES = MORE DEATHS

As daily temperatures increase, the daily count of heat-related deaths increases exponentially.

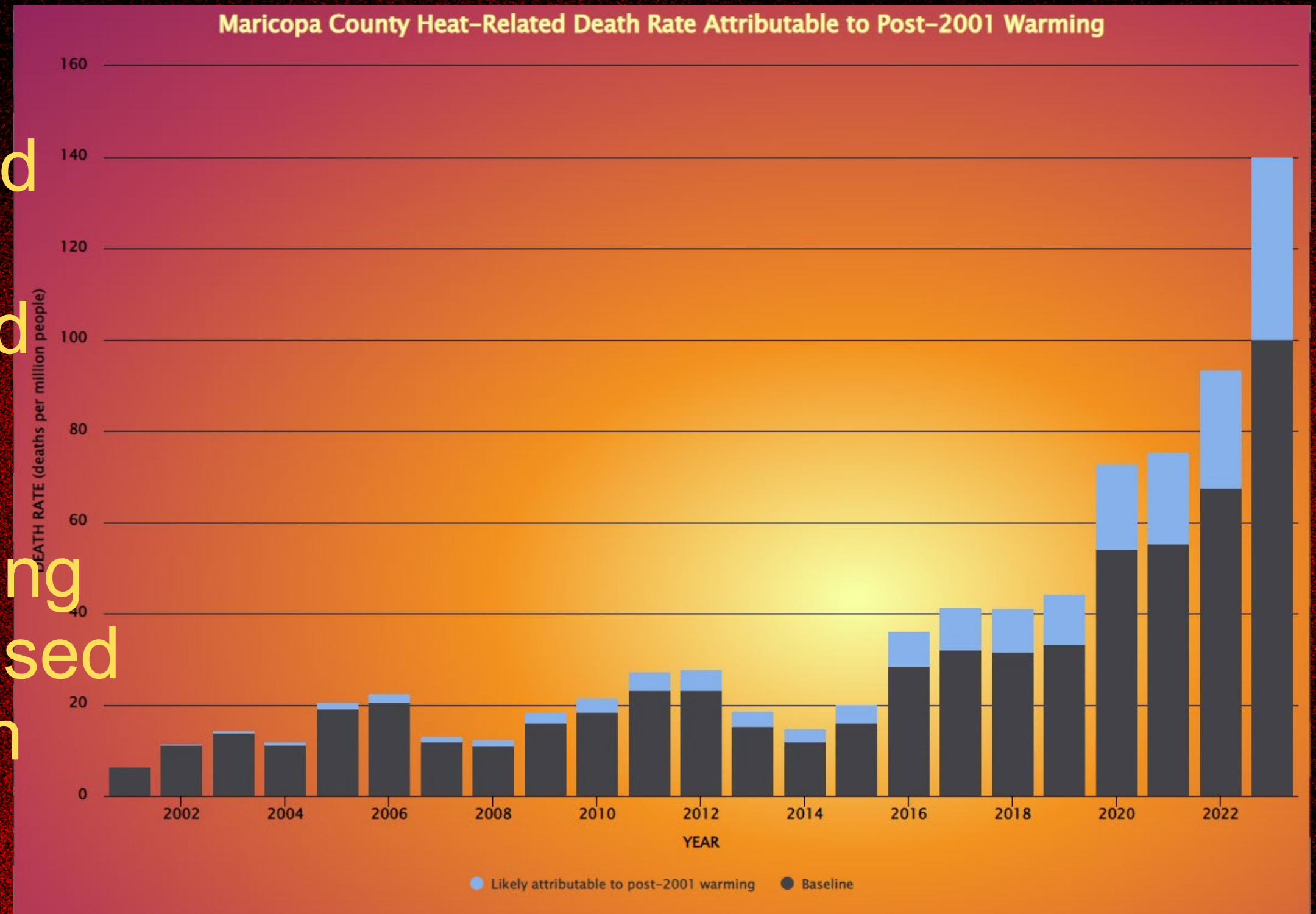
For each degree that temperatures increase, the death count increases by about 150%.



HOTTTER TEMPERATURES = MORE DEATHS

Many people who have died from the heat would not have died from the heat if temperatures had not warmed.

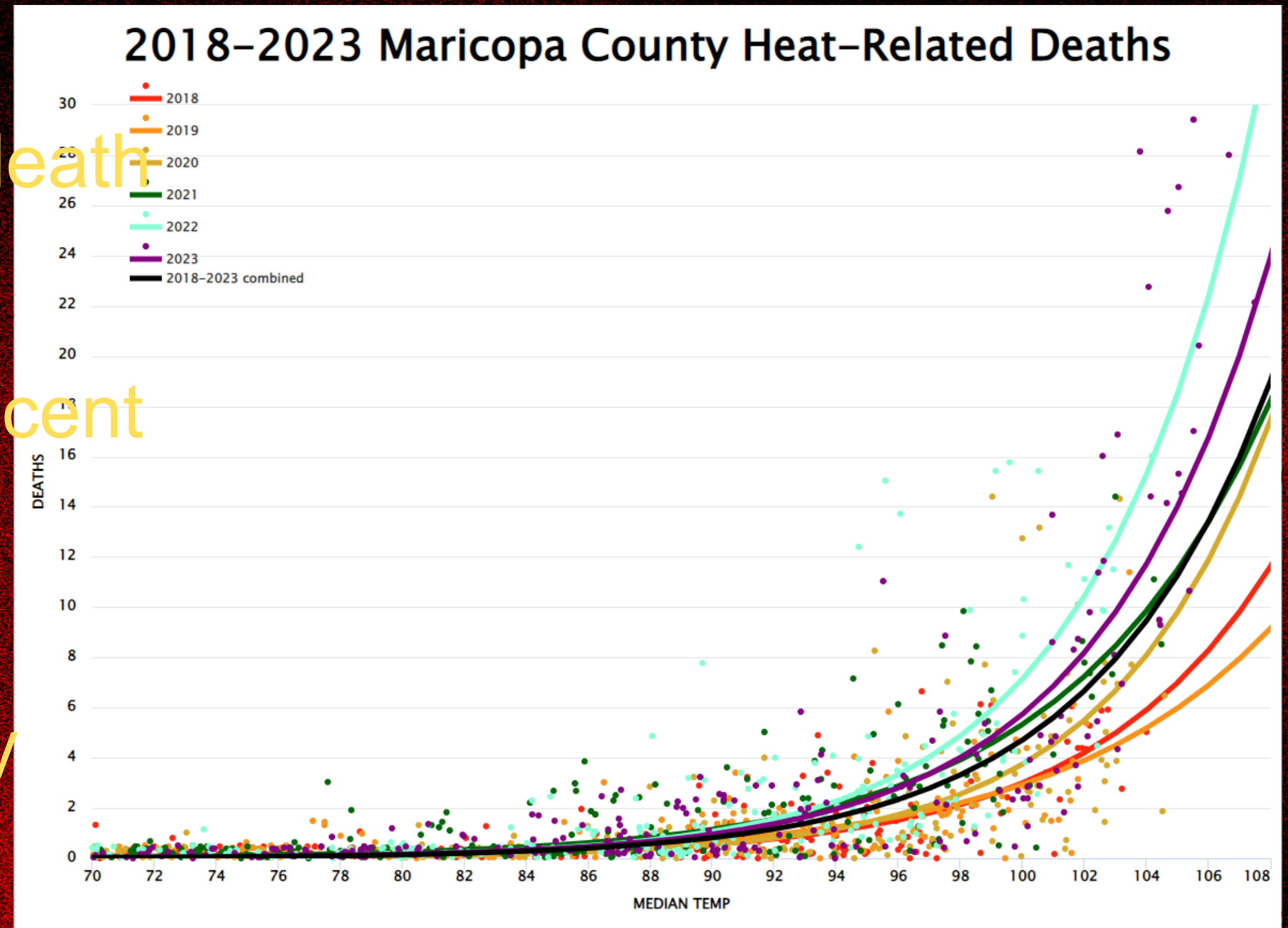
We estimate that warming just since 2001 has caused about a 40% increase in the death rate.



IT'S NOT JUST THE HEAT

Increasing heat doesn't explain the entire rise in death counts.

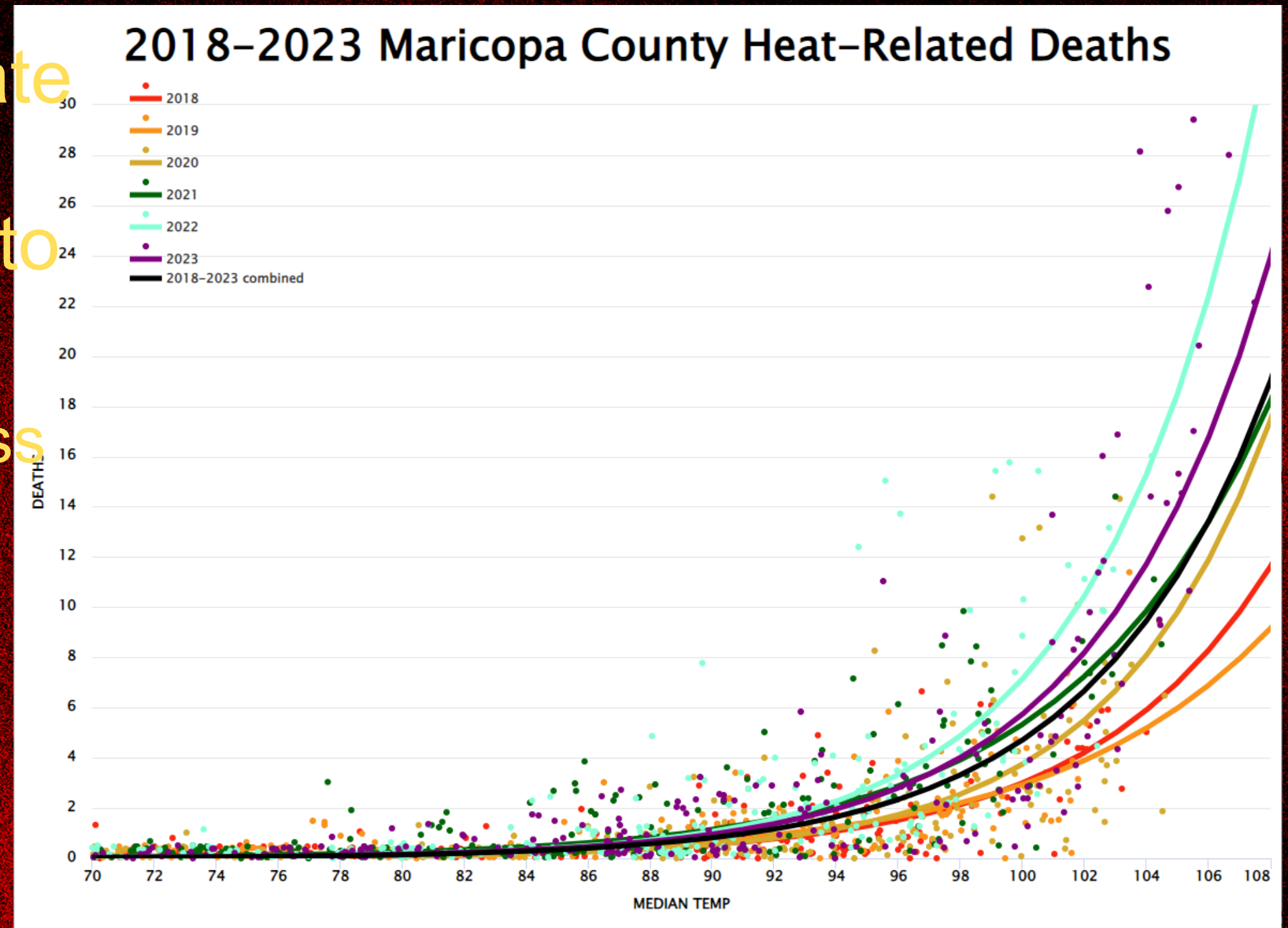
The curves of the most recent years bend upward more steeply indicating that on average more people are dying from the heat at any given temperature.



THE POPULATION IS MORE VULNERABLE

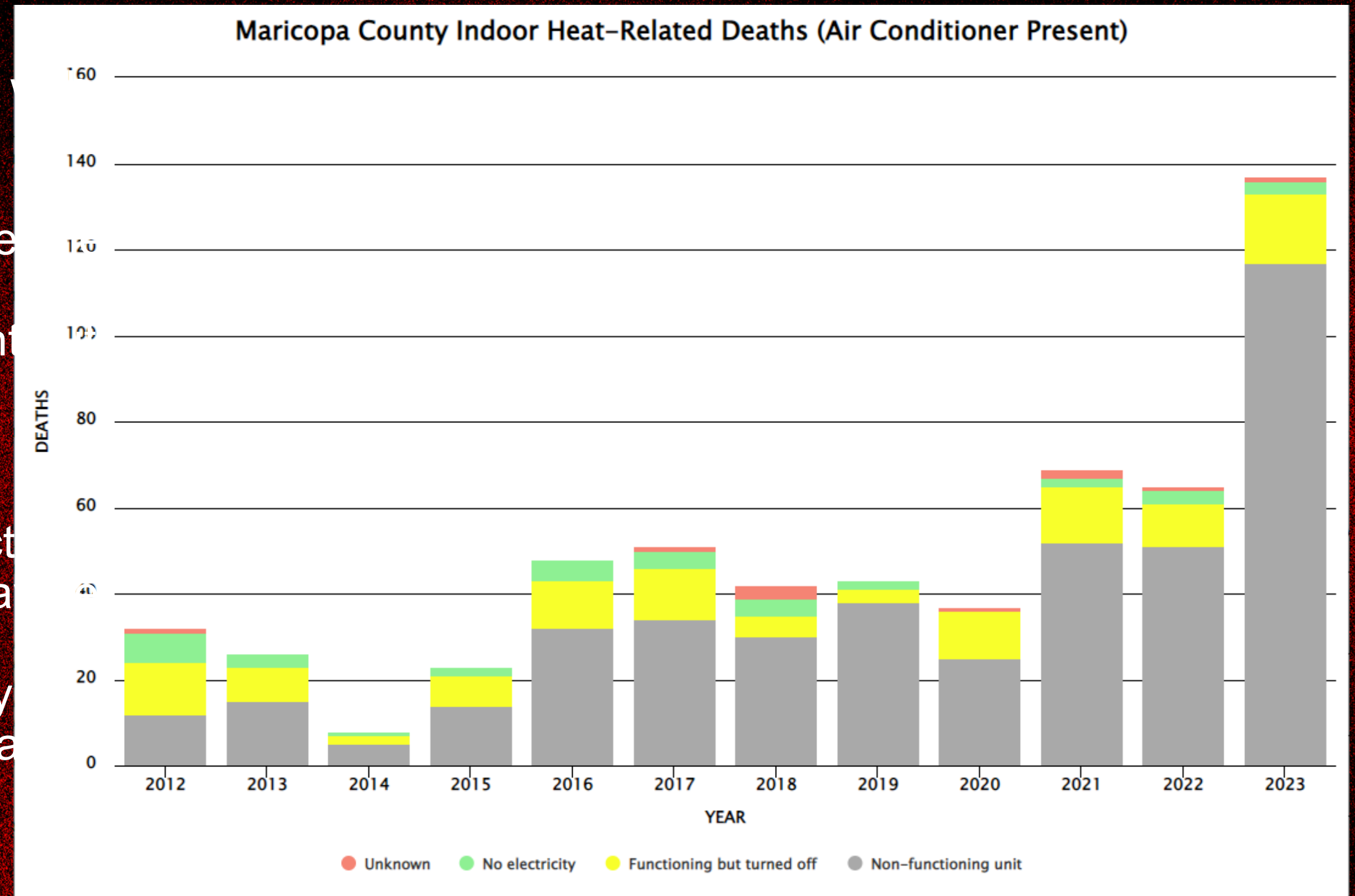
The steeper curves indicate that the population has become more vulnerable to heat. Factors include:

- **Unsheltered homelessness**
 - ~1000 in 2014 to ~5000 in 2023
 - But down to ~4000 in 2024!
- **Drugs (especially meth)**
 - Overall meth deaths up 4x since 2015
- **Air conditioning insecurity**
 - Higher housing/energy/maintenance costs



SOCIAL ISOLATION

- Social isolation is strongly linked to higher heat-related death rates (studies, Klinenberg book).
- Indoor victims tend to be older people who have not used drugs.
- Air conditioning is usually present but not working/not on.
- People are just generally more isolated (fewer friends, less in-person contact. (pandemic, phone addicted))
- Potential providers of support may be “hibernating” more during the increasingly hot summers or may be leaving the city to escape the heat (“empty” feeling in city)



2024 IN MARICOPA COUNTY

Average summer median temperatures set another record.

- 1.9 degrees hotter than the previous record in 2023

Heat related deaths will likely set another record or come close to it.

- 256 confirmed deaths as of last week (September 14) vs 289 at this time last year
- 393 cases under investigation vs. 264 at this time last year

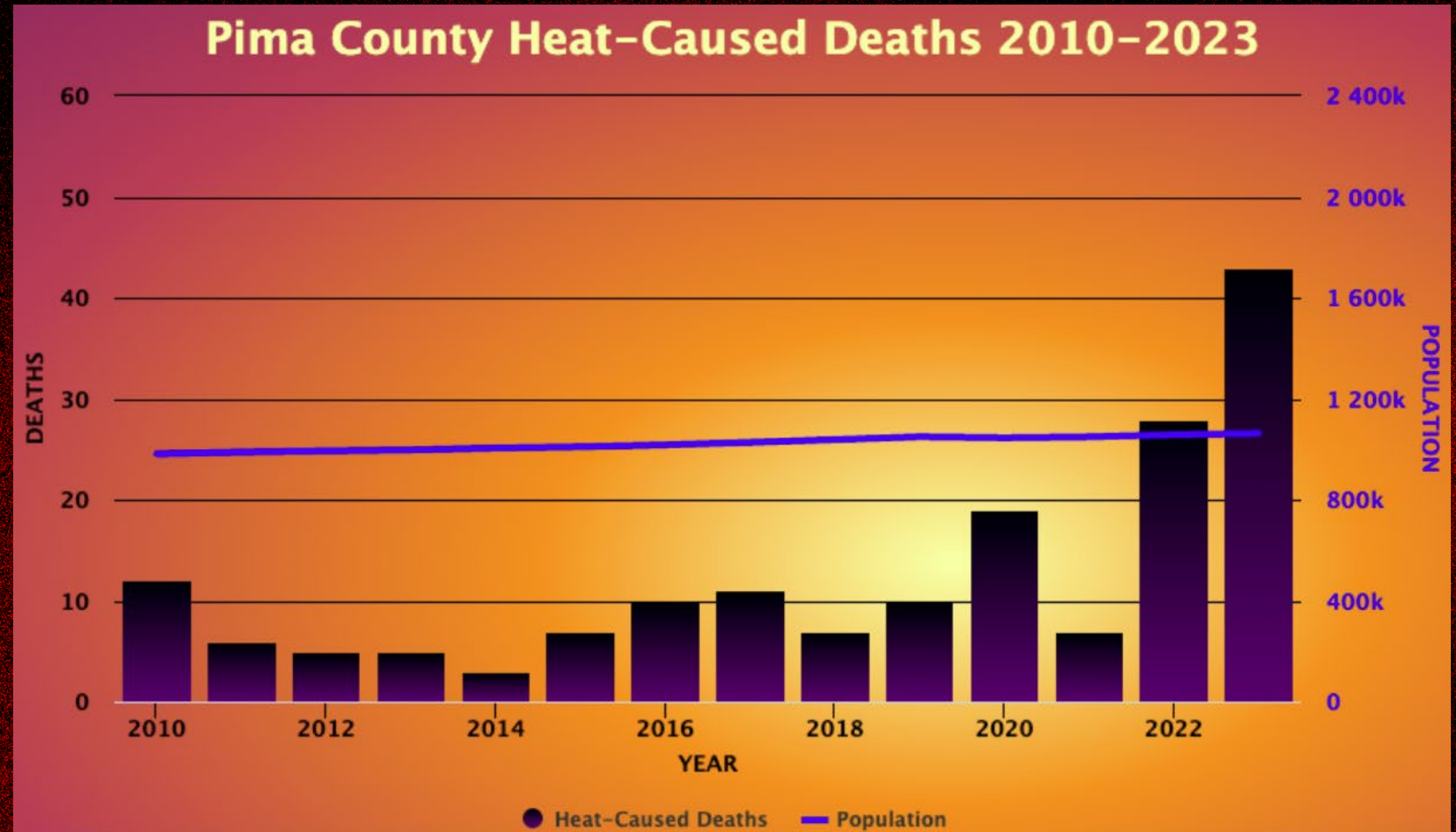
Even if there's another record for deaths, the "curve" will likely be bent down, showing that population vulnerability is being reduced.

PIMA COUNTY

There is also an epidemic of heat related deaths in Pima County.

Similarities to Maricopa County:

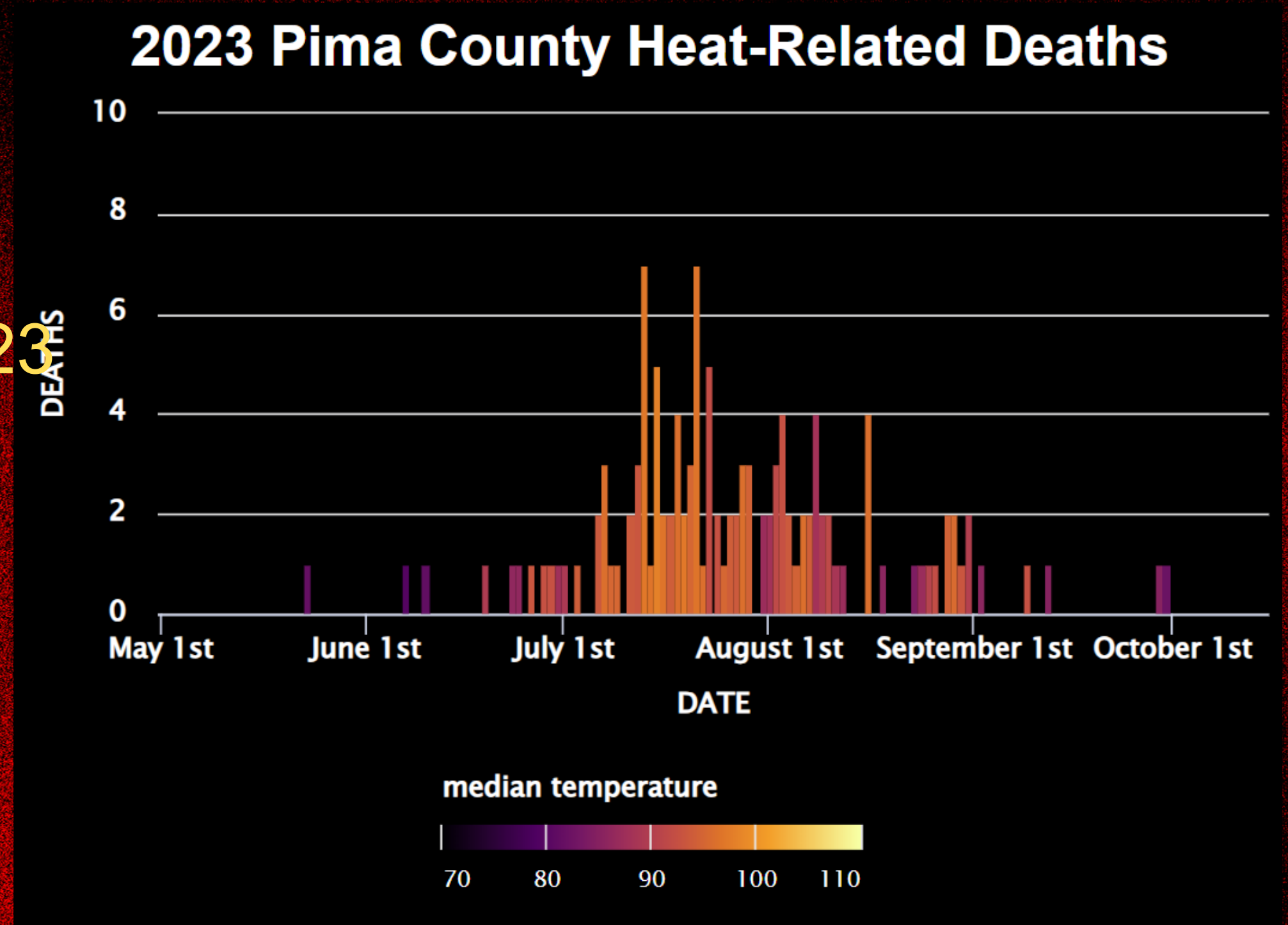
- increasing homelessness
- increasing meth/fentanyl use
- increasing temperatures



PIMA COUNTY

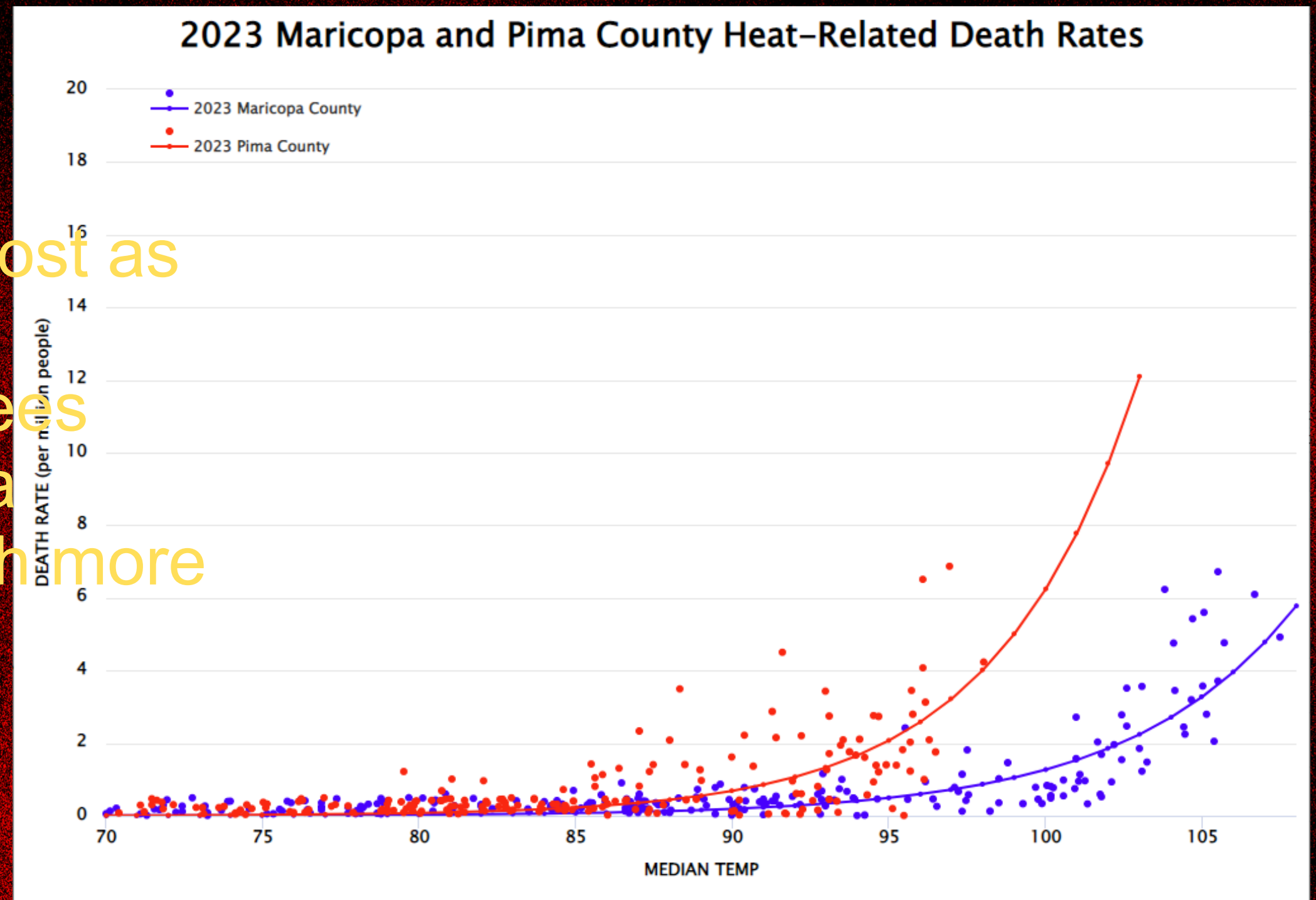
There were 126* heat-related deaths in Pima County in 2023 almost certainly a record.

*excludes border crossers (50 deaths)



PIMA COUNTY

The Pima County-related death rate in 2023 was almost as high as Maricopa County's, despite being several degrees cooler-suggesting that Pima County's population is much more vulnerable to heat than Maricopa's.



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