

# Optimising Workplace Health, Safety and Productivity in a Warming World

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## Climate change: Summers could become 'too hot for humans'

By David Shukman  
Science editor

16 July 2020



UK heatwaves



## Rising temperatures will cause more deaths than all infectious diseases - study

Poorer, hotter parts of the world will struggle to adapt to unbearable conditions, research finds



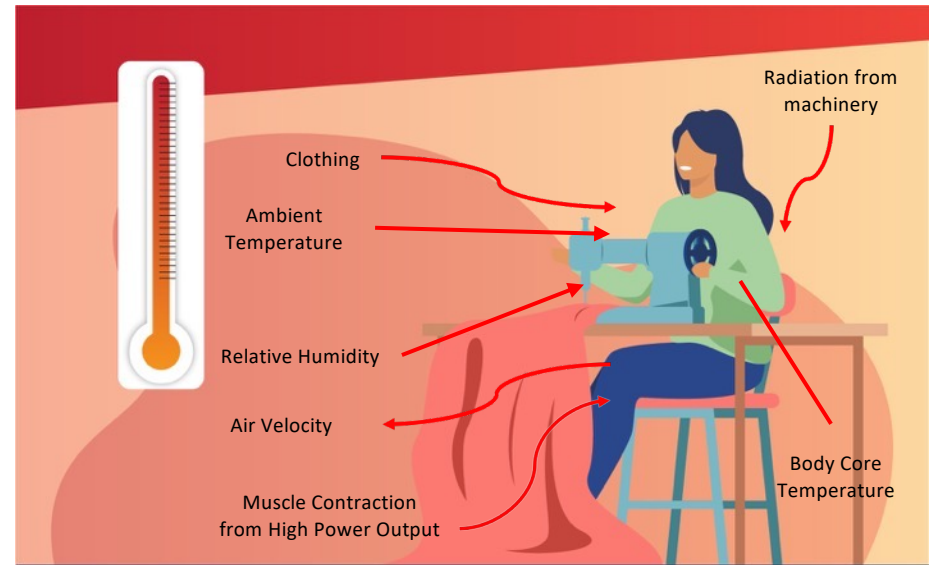
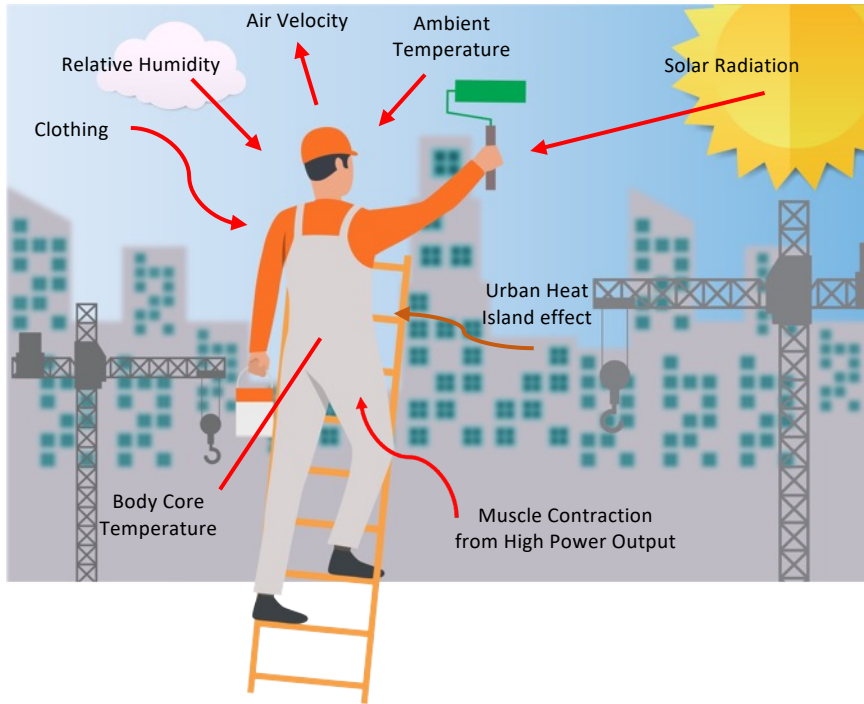
# The Problem



**Optimum Safety for Optimum Performance**



# Heat Stress and Heat Strain



**Climate + Clothing + Exercise  
(Heat Stress)**



**Heat Strain**



# The Problem



# Heat increases Risk Taking

*Appl Ergon.* 2017 Jul;62:150-157. doi: 10.1016/j.apergo.2017.02.018. Epub 2017 Apr 6.

## Effects of heat stress on risk perceptions and risk taking.

Chang CH<sup>1</sup>, Bernard TE<sup>2</sup>, Logan J<sup>2</sup>.

### Author information

### Abstract

Exposure to extreme heat at work is a serious occupational hazard, as exposure can result in heat-related illnesses, and it has been linked to increased risk of accidents and injuries. The current study aimed to examine whether heat exposure is related to changes in individuals' psychological process of risk evaluation, and whether acclimatization can mitigate the effect of heat exposure. A study with quasi-experiment research design was used to compare participants' risk perceptions and risk-taking behaviors at baseline, initial exposure to heat, and exposure after acclimatization across male participants who were exposed to heat (N = 6), and males (N = 5) and females (N = 6) who were in the control group who were exposed to ambient temperature. Results show that participants perceived the same risky behaviors to be less risky ( $p = 0.003$ ) and demonstrated increased risk-taking behaviors ( $p = 0.001$ ) after initial heat exposure. While their risk perceptions returned to baseline level after acclimatization, their risk-taking behaviors remained heightened ( $p = 0.031$ ). Participants who were not exposed to heat showed no significant fluctuation in their risk perceptions and risk-taking. Our findings support that risk-related processes may explain the effects of heat exposure on increased accidents and injuries beyond its direct impact on heat-related illnesses.

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# The Problem

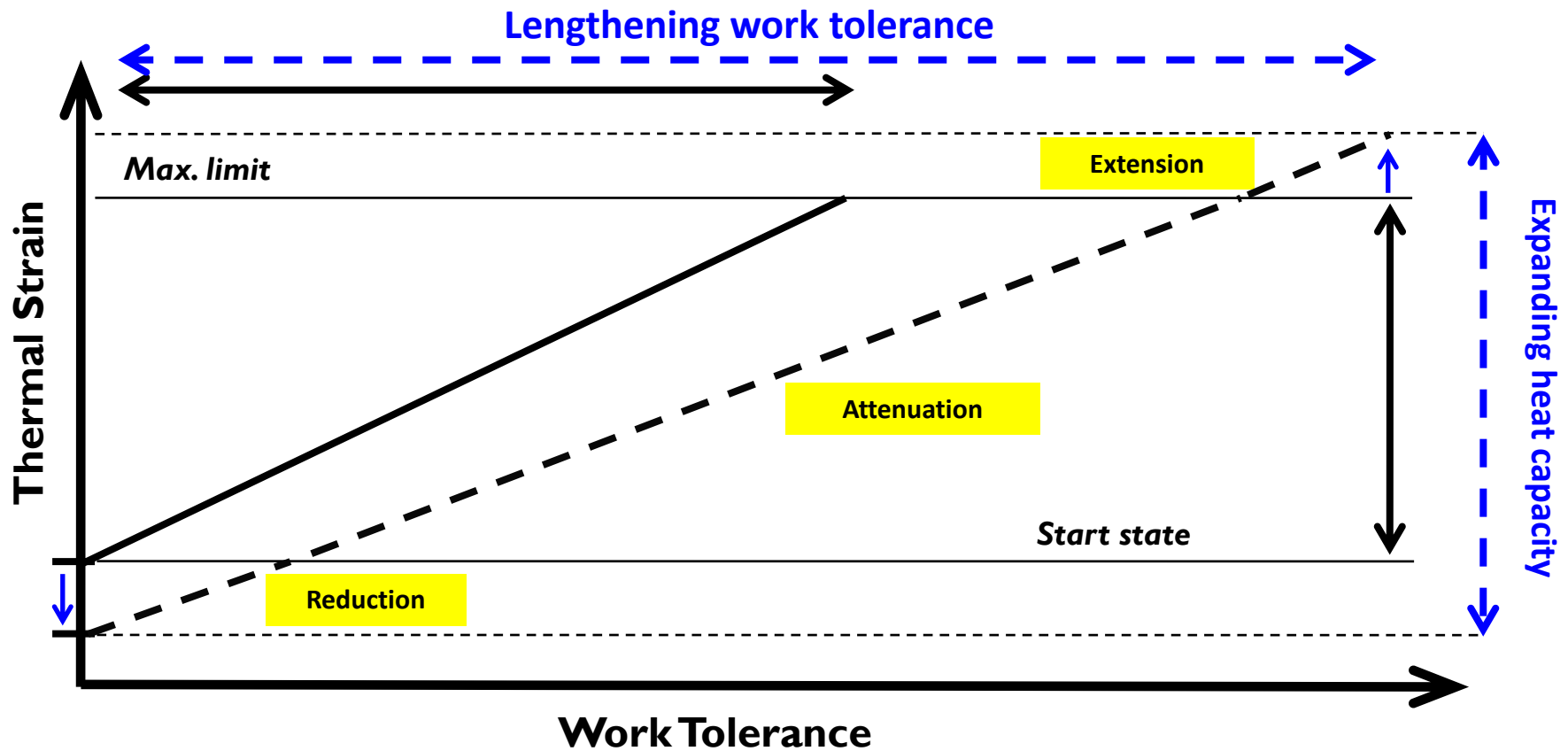


# The Problem

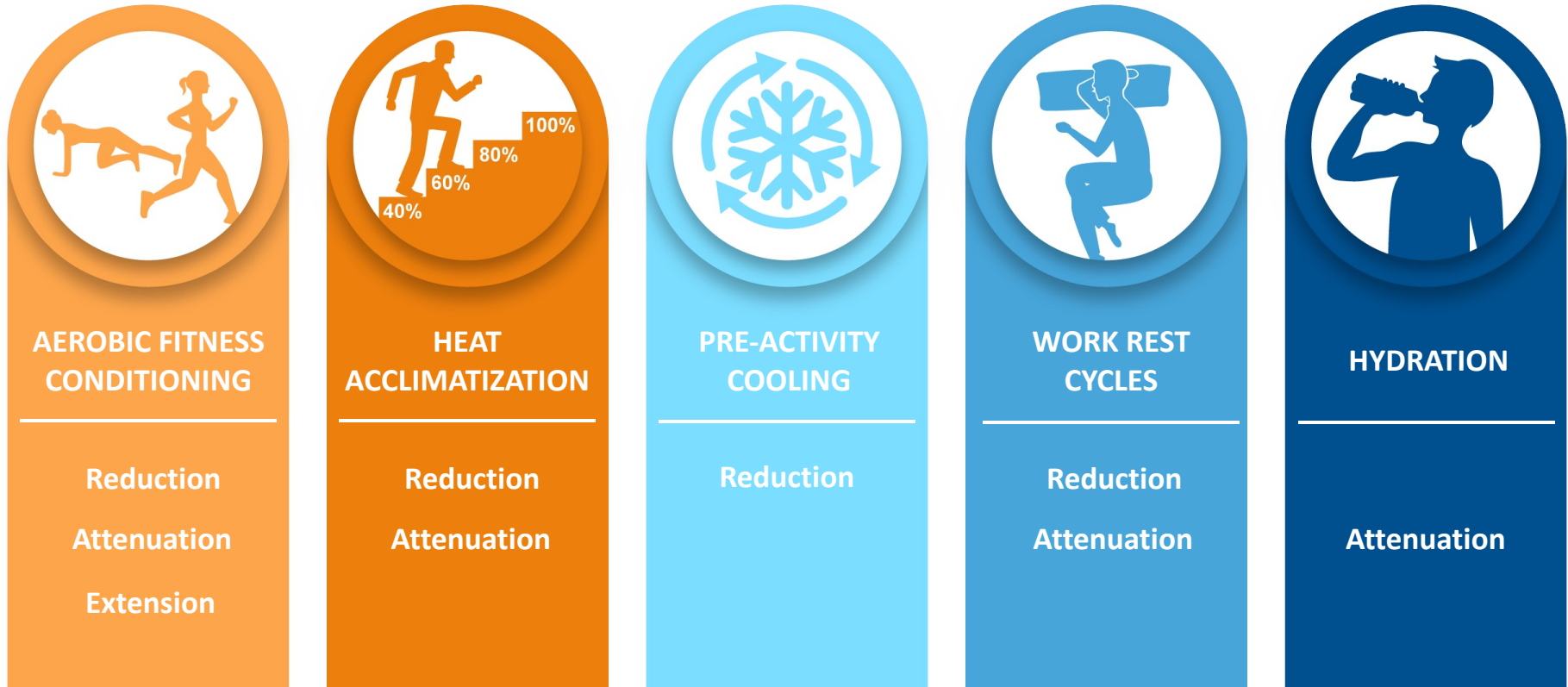




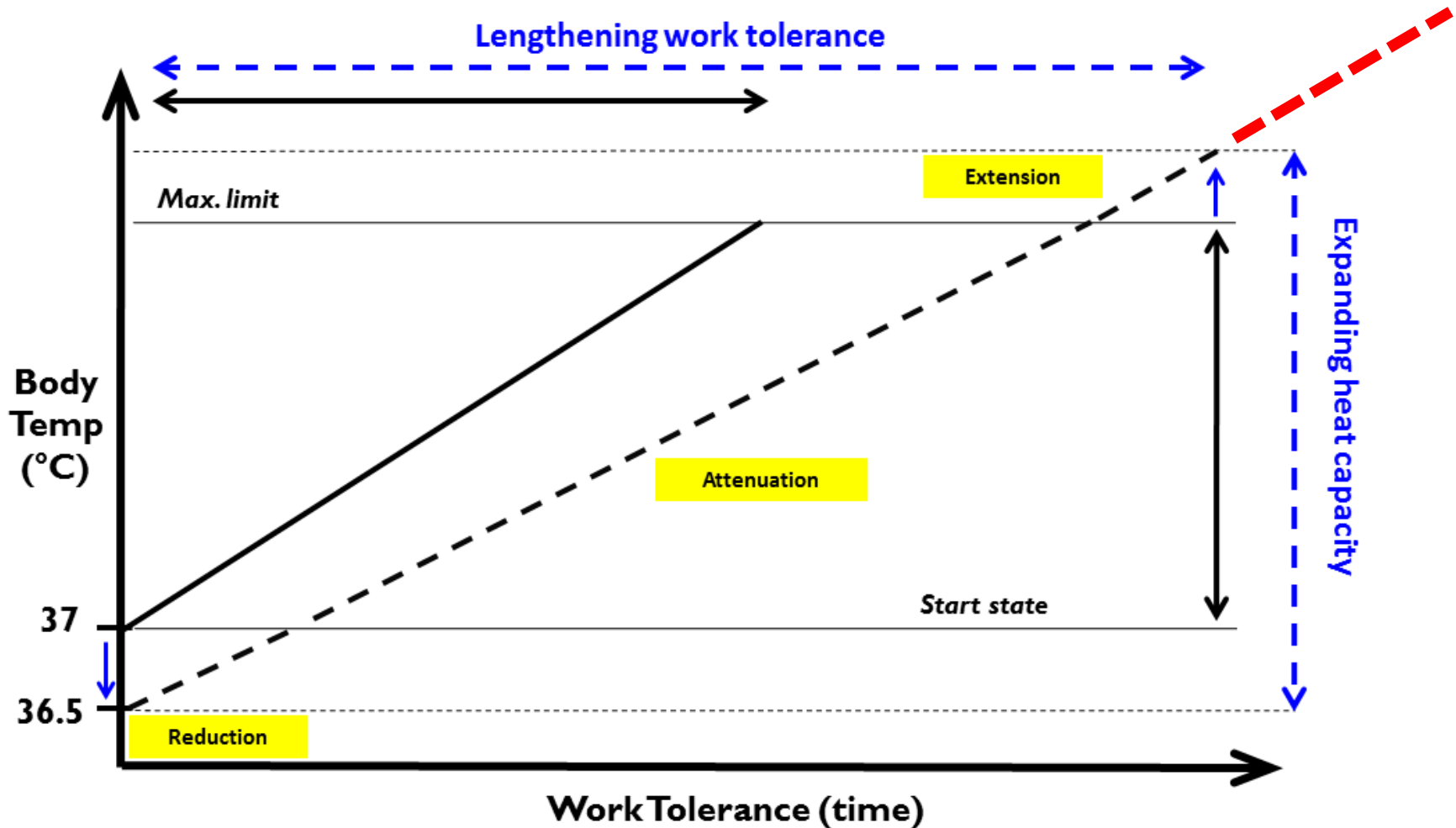
# Solutions (Physiological)



# Solutions (Physiological)



# When one goes beyond his/her limit...



# Heat Health Index (Climatic **AND** Physiology)



Environ. Res. Lett. 16 (2021) 033005

<https://doi.org/10.1088/1748-9326/abd350>

ENVIRONMENTAL RESEARCH  
LETTERS

## TOPICAL REVIEW

### Personal assessment of urban heat exposure: a systematic review

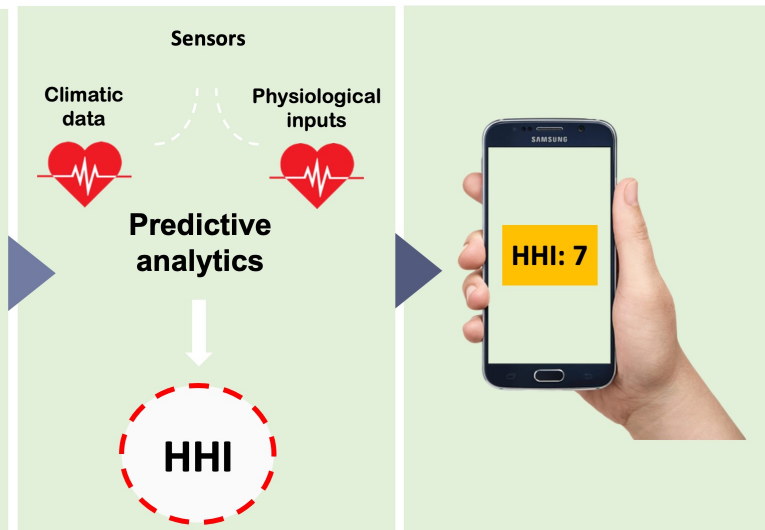
Negin Nazarian<sup>1,2,\*</sup>  and Jason KW Lee<sup>3,4,5,6,7</sup> 



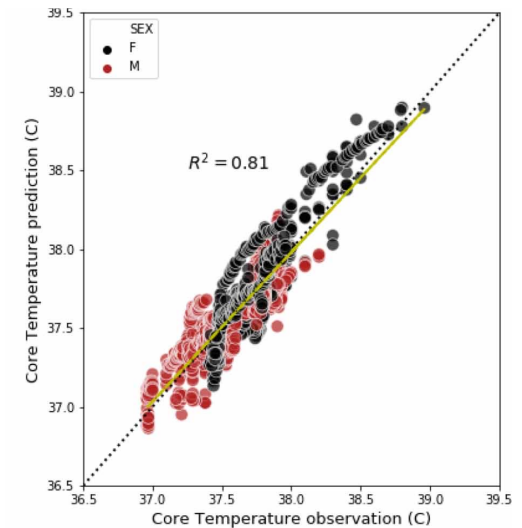
#### Sensor Data Extraction



#### Predictive Analytics



#### Control & Monitor

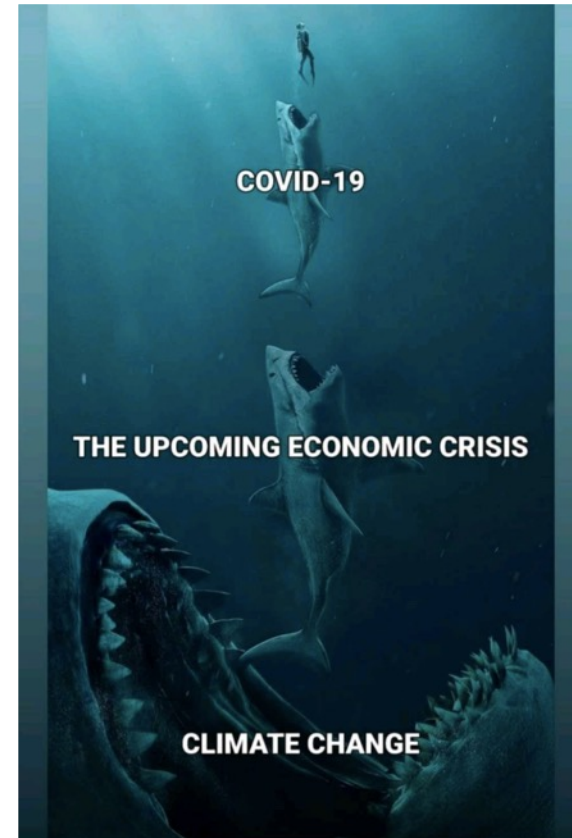




# WARNING!



*Global Climate Report 2020, NOAA*



# Thank you