Extreme Heat in Arlington

First Street.org

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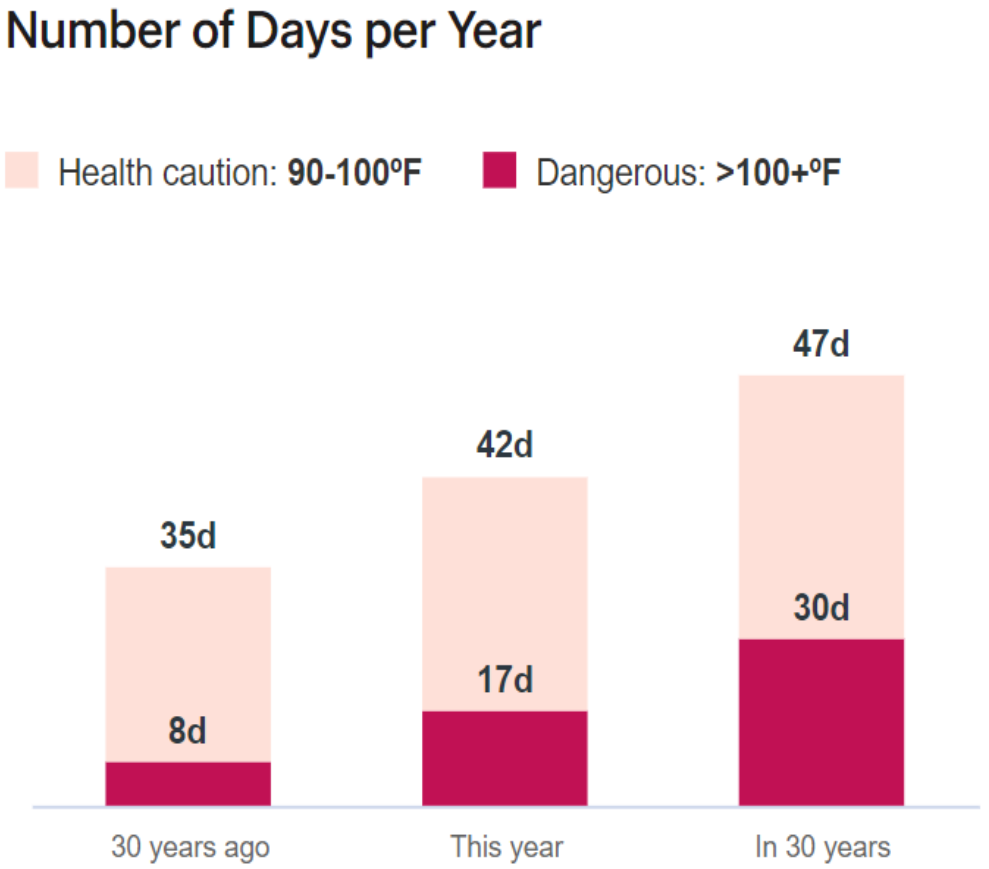
- Higher average temperatures
- More dangerously hot days
- More and longer heatwaves
- Currently 59 days above 90 degrees; 77 projected in 30 years
- Now 17 days over 100; 30 days in30 years



Over 90º Dangerous to many – Over 100º Dangerous to all

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- Temperatures exceeding 90ºF can be physically hazardous for high-risk individuals.
- Temperatures exceeding 100ºF can be dangerous for everyone.

Humidity makes it worse

- Temperature “feel” can be much higher on humid days in Arlington and there are many more days with temperatures that “feel like” over 100
- If its 90 degrees and 65% humidity, it feels like 103 degrees

The heat index is an accurate measure of how hot it really feels when the affects of humidity are added to high temperature.

	RELATIVE HUMIDITY (%)												
Temp.	40	45	50	55	60	65	70	75	80	85	90	95	100
110	136												
(47)	(58)												
108	130	137											
(43)	(54)	(58)											
106	124	130	137							nbsp;			
(41)	(51)	(54)	(58)										
104	119	124	131	137									
(40)	(48)	(51)	(55)	(58)									
102	114	119	124	130	137								
(39)	(46)	(48)	(51)	(54)	(58)								
100	109	114	118	124	129	136							
(38)	(43)	(46)	(48)	(51)	(54)	(58)							
98	105	109	113	117	123	128	134						
(37)	(41)	(43)	(45)	(47)	(51)	(53)	(57)						
96	101	104	108	112	116	121	126	132					
(36)	(38)	(40)	(42)	(44)	(47)	(49)	(52)	(56)					
94	97	100	103	106	110	114	119	124	129	135			
(34)	(36)	(38)	(39)	(41)	(43)	(46)	(48)	(51)	(54)	(57)			
92	94	96	99	101	105	108	112	116	121	126	131		
(33)	(34)	(36)	(37)	(38)	(41)	(42)	(44)	(47)	(49)	(52)	(55)		
90	91	93	95	97	100	103	106	109	113	117	122	127	132
(32)	(33)	(34)	(35)	(36)	(38)	(39)	(41)	(43)	(45)	(47)	(50)	(53)	(56)
88	88	89	91	93	95	98	100	103	106	110	113	117	121

Urban Heat Islands

VFIC Heat Watch, CAPA, NIHHIS, NOAA, NWS, USDA

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"Urban heat island" refers to the fact that cities and areas in cities tend to get much warmer than their surrounding rural landscapes, particularly during the summer.

This temperature difference (which can be up to 15-20 F) is a result of the built environment. Factors include:

+ tall buildings
+ large areas of asphalt and concrete
+ lack of tree canopy
+ waste heat

Arlington Heat Islands

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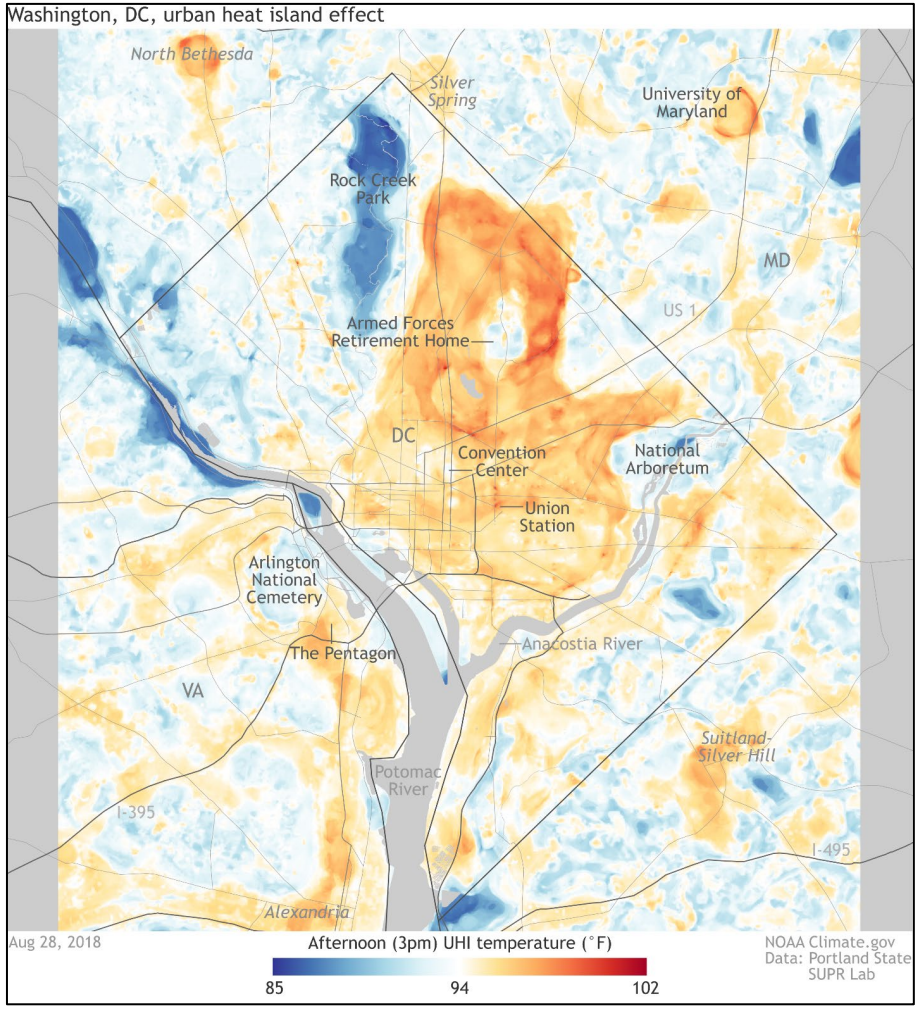
Areas with density, roadways, commercial and lower green space

- Rosslyn- Ballston corridor
- Pentagon City; Crystal City
- Glebe Road



NOAA Climate.gov, August 28, 2018 3 pm

Community Impacts examples

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- **People** – reduced activity, worsening of pre-existing health conditions, strain on mental health, increased emergencies, hospitalizations, and deaths
- **Communications** – interruptions and breakdowns, data centers require cooling
- **Power** – high demands, inadequate or unstable supply and breakdowns
- **Transportation Systems** – "asphalt softens… vehicles can then pushdown into the asphalt …leaving behind ruts; overheated asphalt can also crack." "Overheated train rails can kink, and bridges can buckle" – WSJ Meghan Bartels
- **Buildings** – underground heat can create subsidence, weaken structure, and concrete can become malleable, with damage that require costly repairs
- **Water** – Increased temperatures promote increased bacteria and algae blooms

Who is most vulnerable?

Some populations especially at risk

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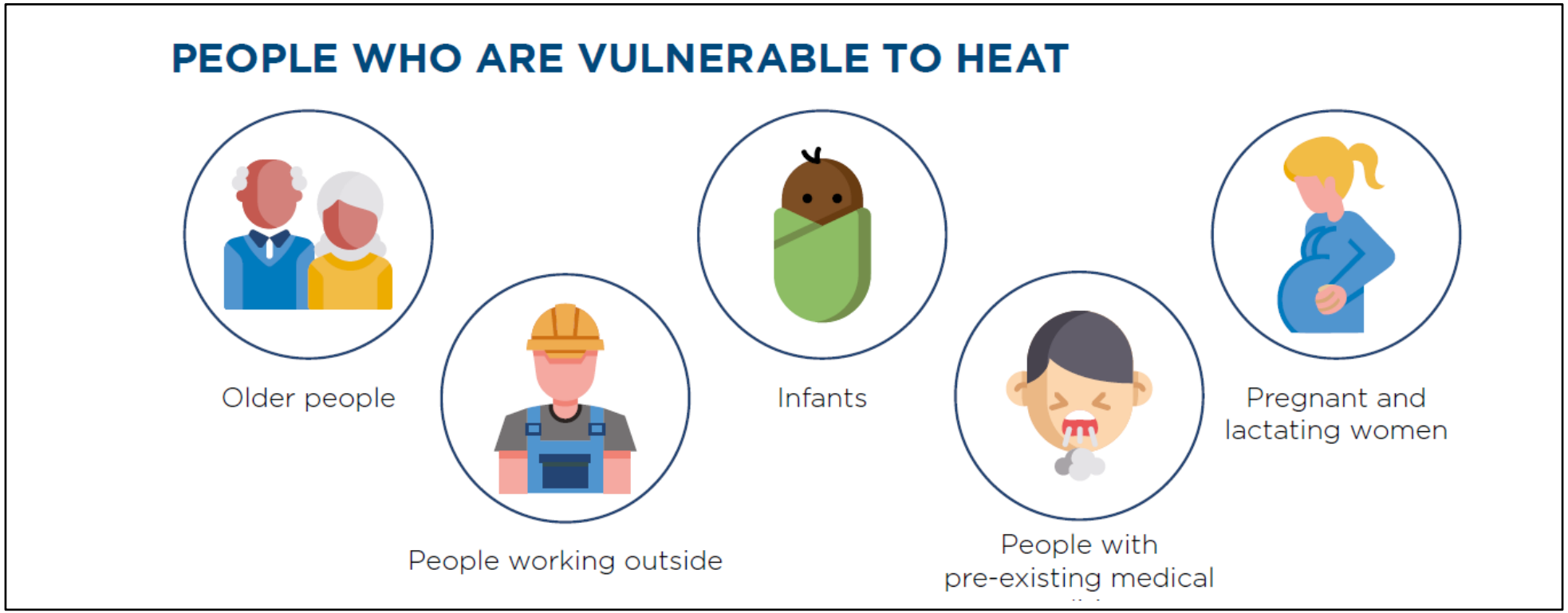

Social vulnerability: People who are isolated, people without access to affordable working AC, people without insurance or access to medical care, people in heat Islands.

Many factors can increase risk

Heat Wave Guide for Cities – Red Cross Red Crescent 2019

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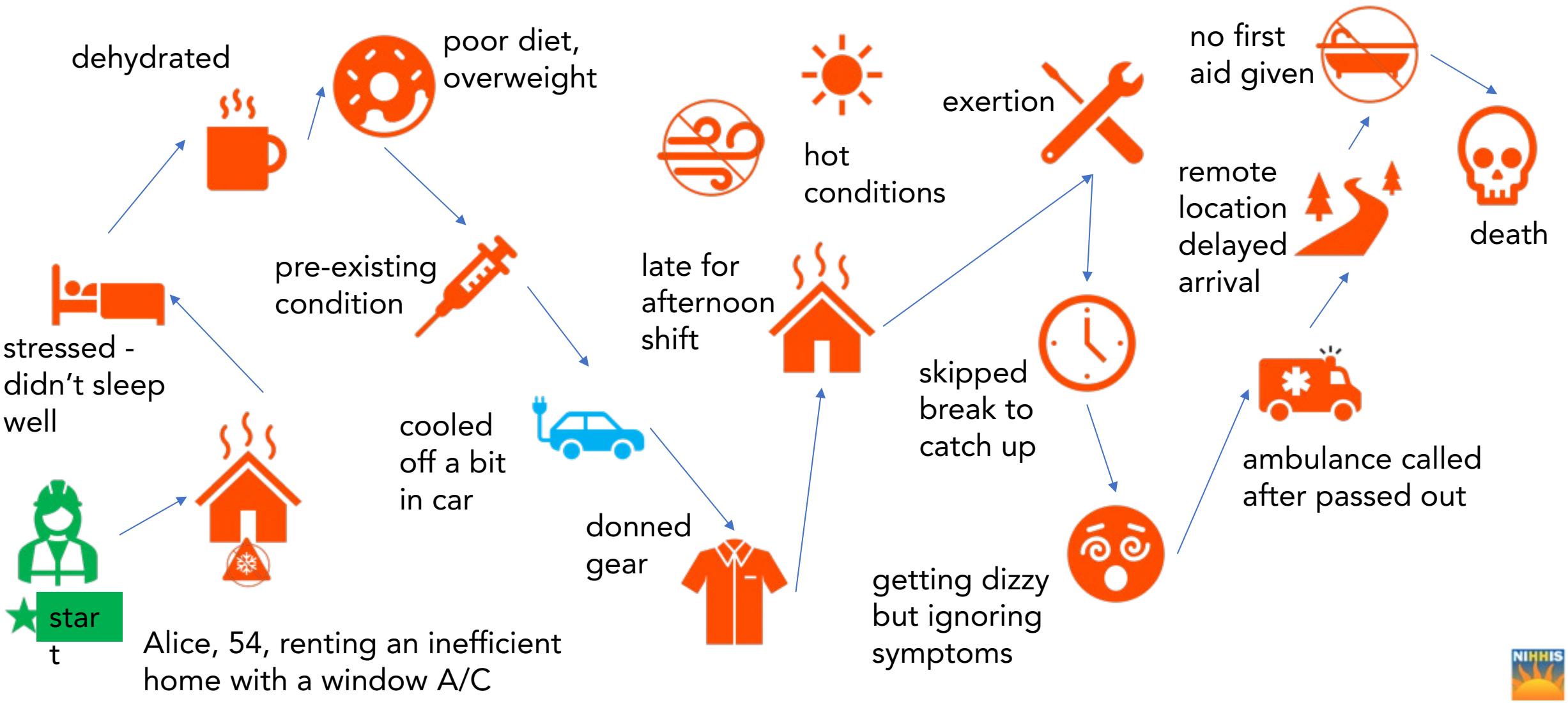

Community Education critical

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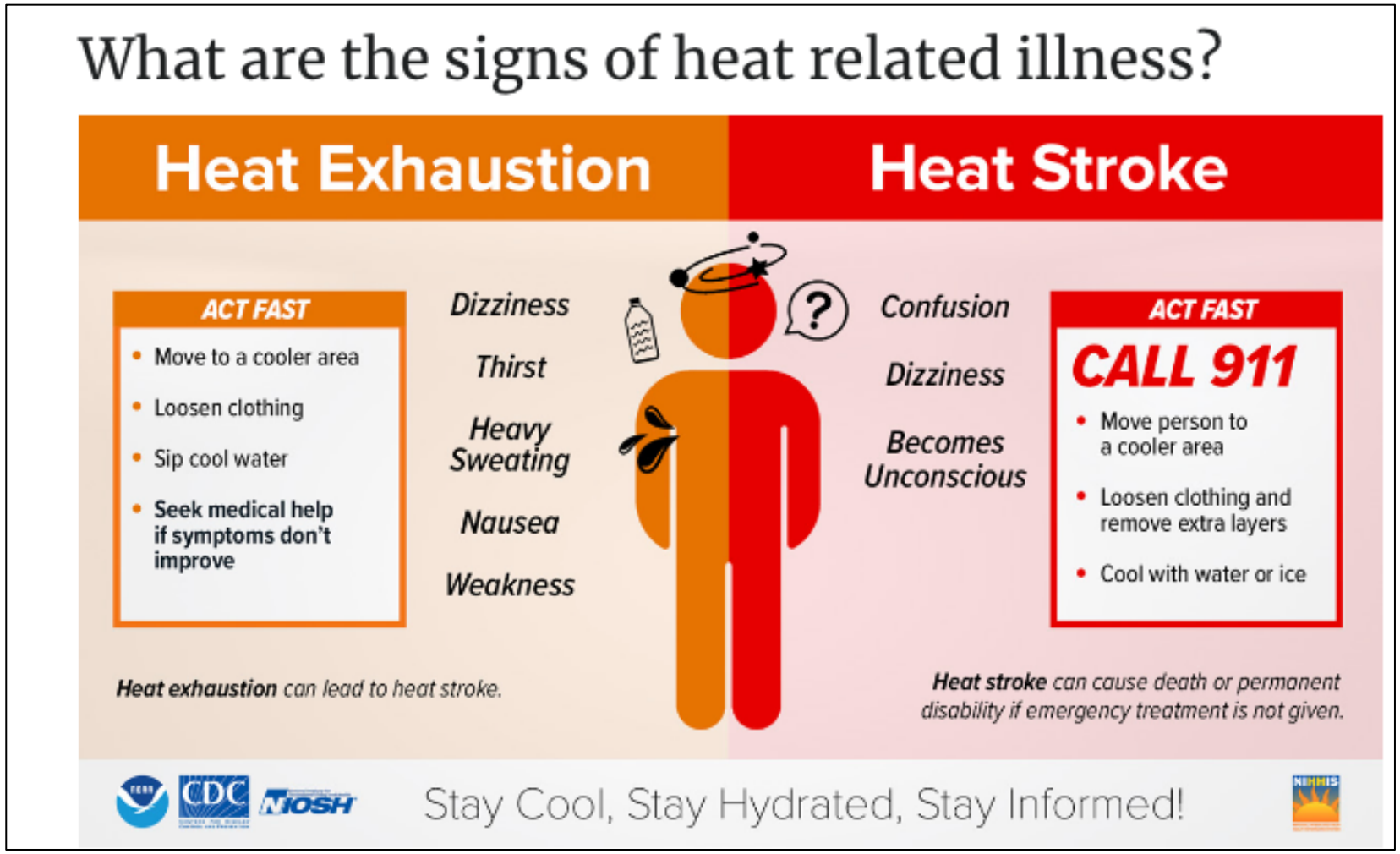
- Know the signs
- Learn how to respond
- Be ready to act



Adaptation Strategies

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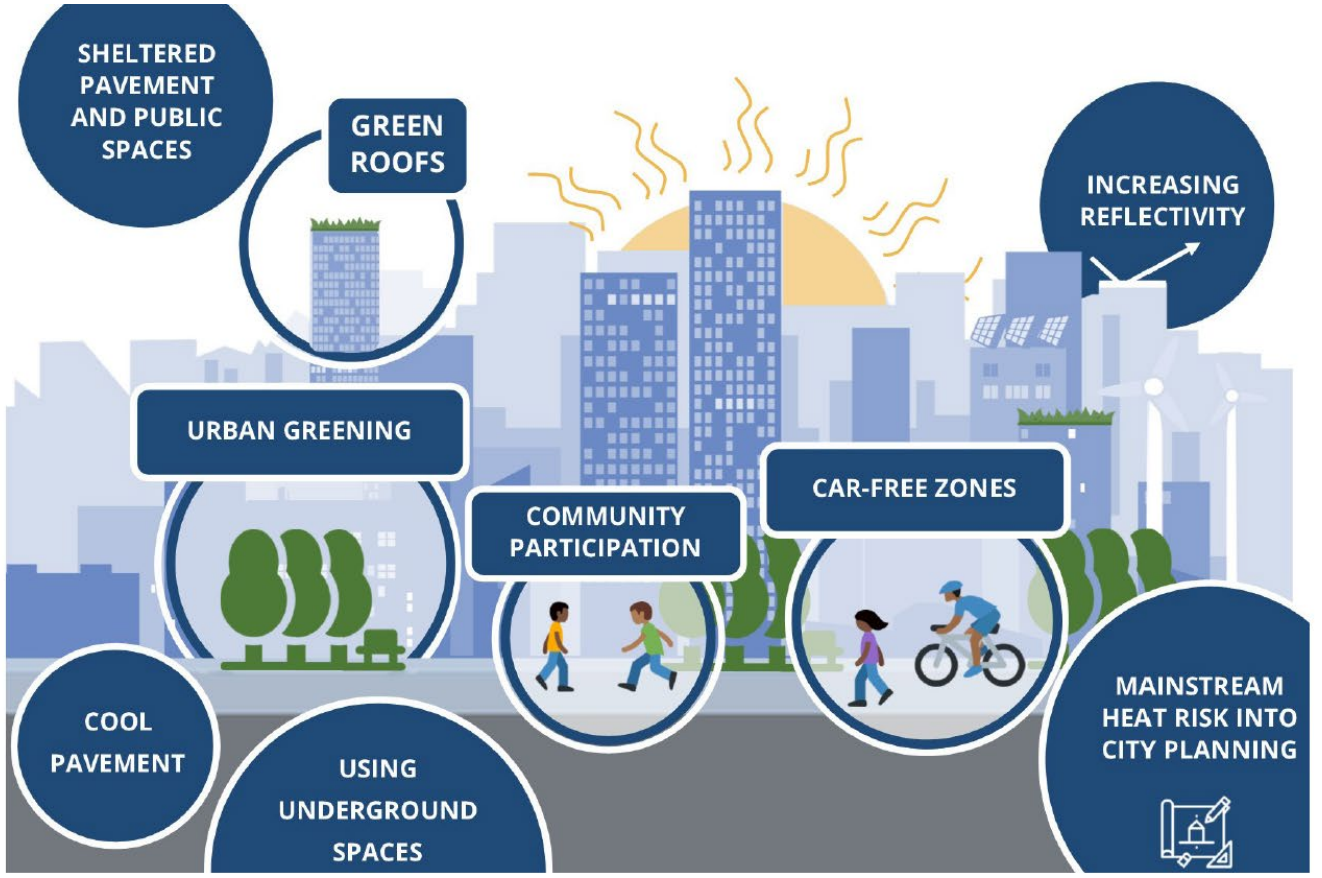
- Use a biophilic holistic approach
- Identify and connect to vulnerable people, reduce isolation and plan
- Increase trees, parks, open space, natural space
- Promote Green buildings – green roofs, green systems
- Increase pervious, decrease impervious
- Increase heat reflection, decrease heat absorption
- Plan for energy capacity and resilience
- Adapt construction materials

A Heat Wave Guide for Cities – Red Cross Red Crescent Centre, 2019



Urban planning measures that can contribute to a long-term heat-reduction strategy.

Work together for comprehensive planning

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Resiliency goal

- Integrated collaborative approach - Understand the interconnectedness of heat risks and impacts and solutions
- Risk assessment - identify and understand risks across community sectors
- Science – advance understanding of risks, impacts, science-based metrics and solutions
- Solutions - Plan, implement, measure, track, communicate, adjust
- Education and communication – communication of risks, impacts, solutions for individual, vulnerable populations and community