

Connecting on Climate Change



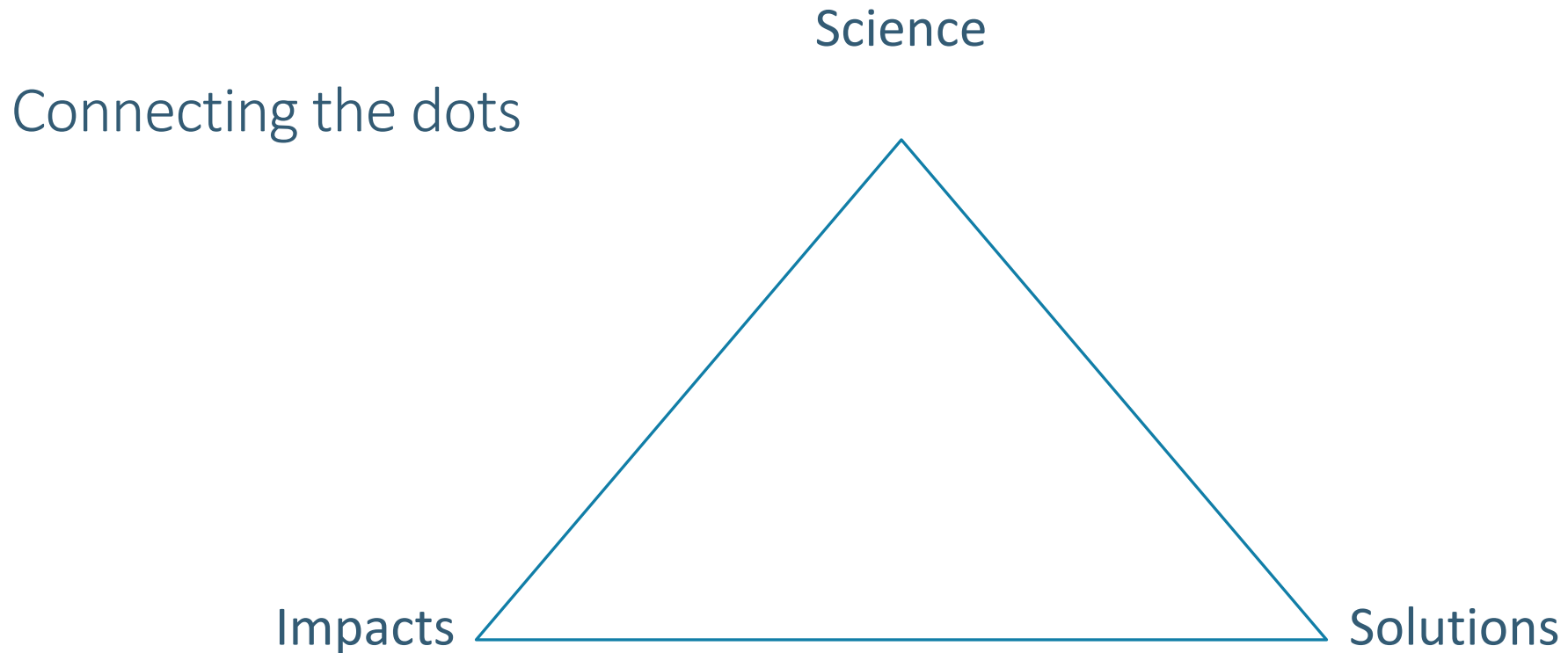
Will Atkinson
MIT/Biogen Graduate Fellow

April 21, 2021



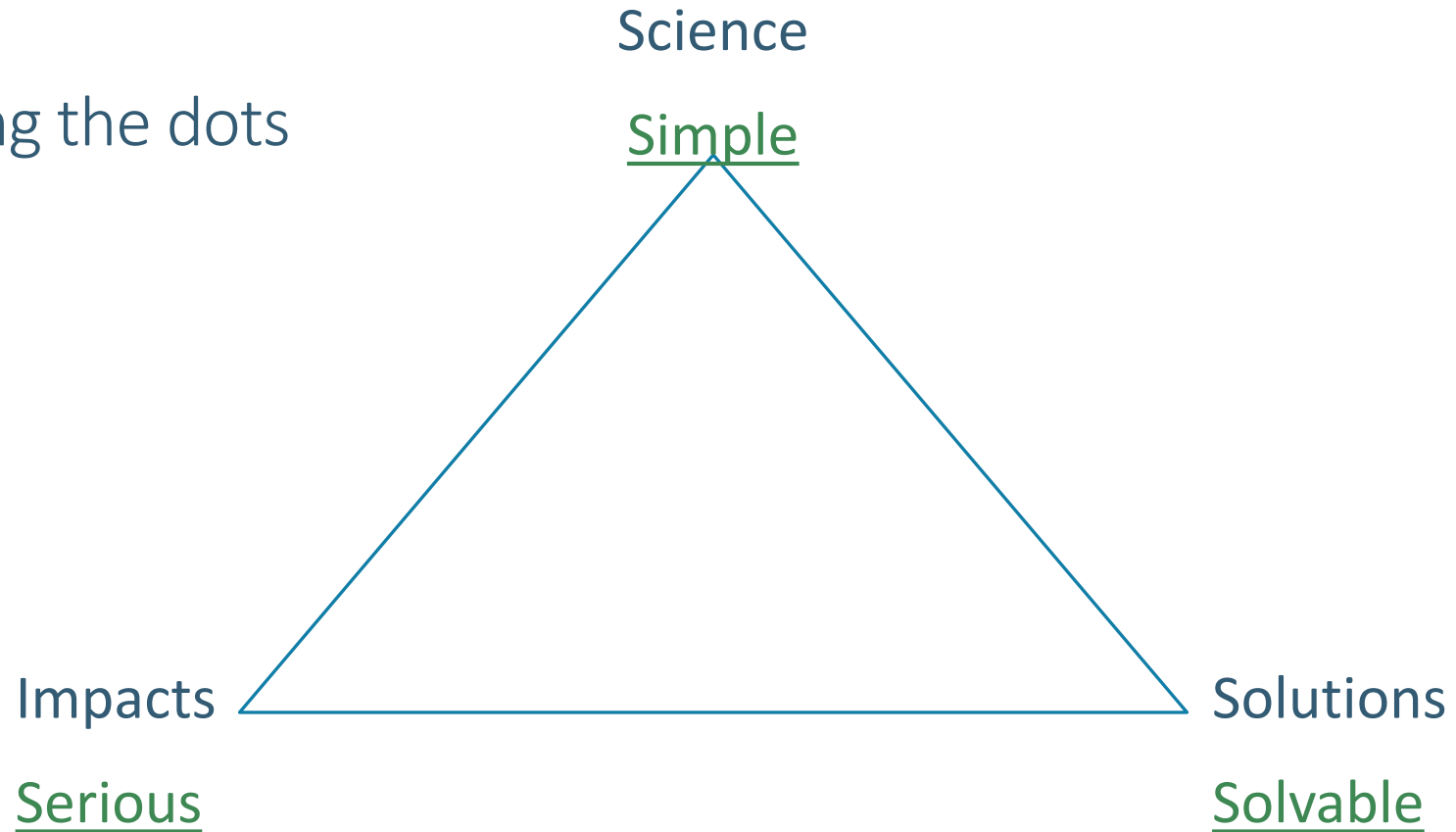
Connecting on Climate Change

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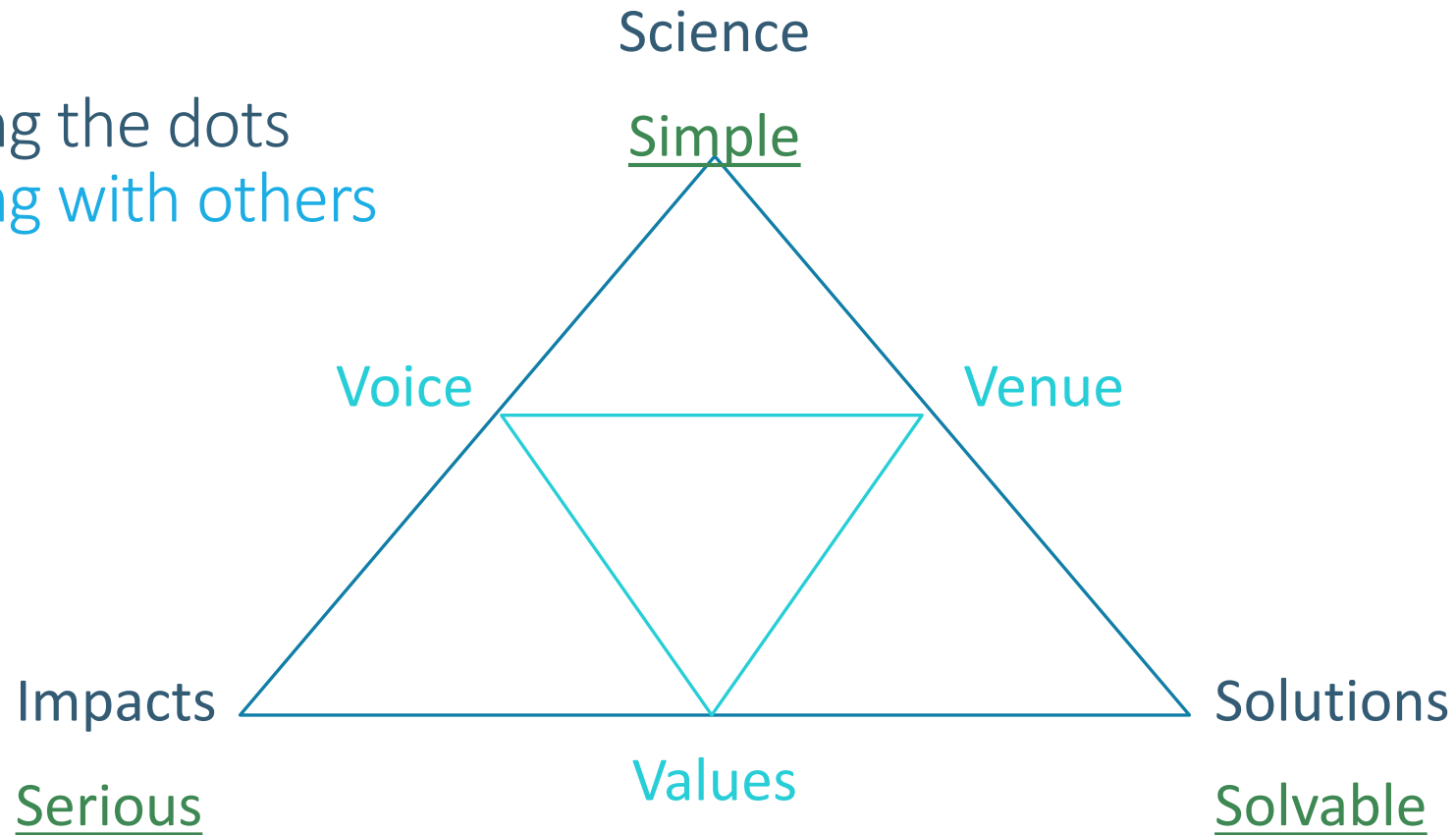
Connecting on Climate Change

Connecting the dots



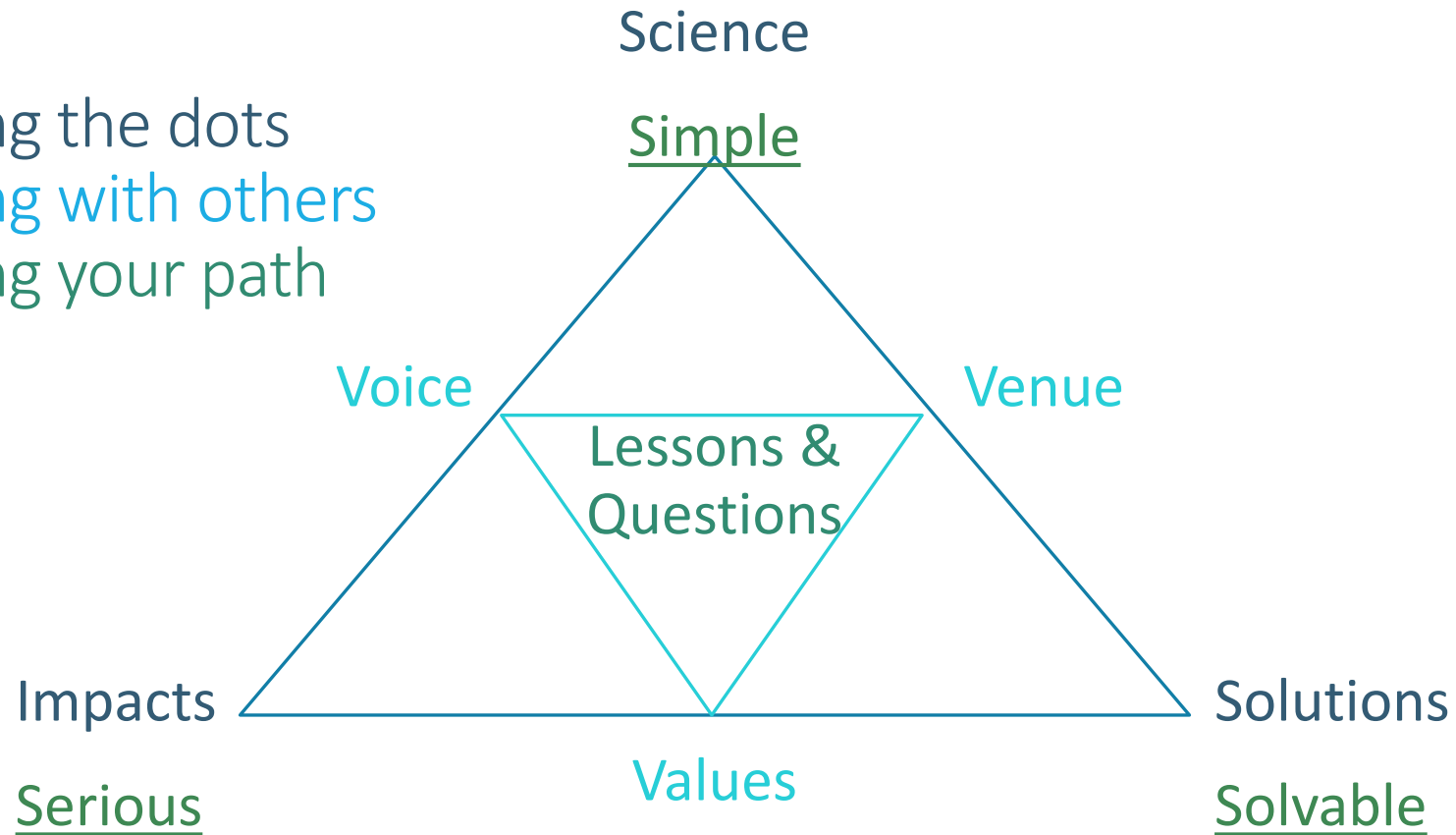
Connecting on Climate Change

Connecting the dots
Connecting with others



Connecting on Climate Change

Connecting the dots
Connecting with others
Connecting your path

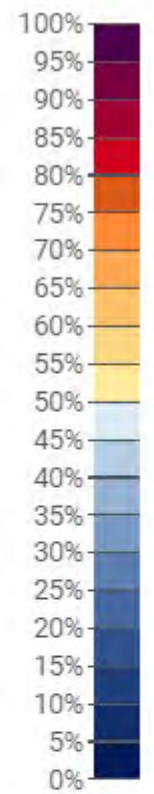
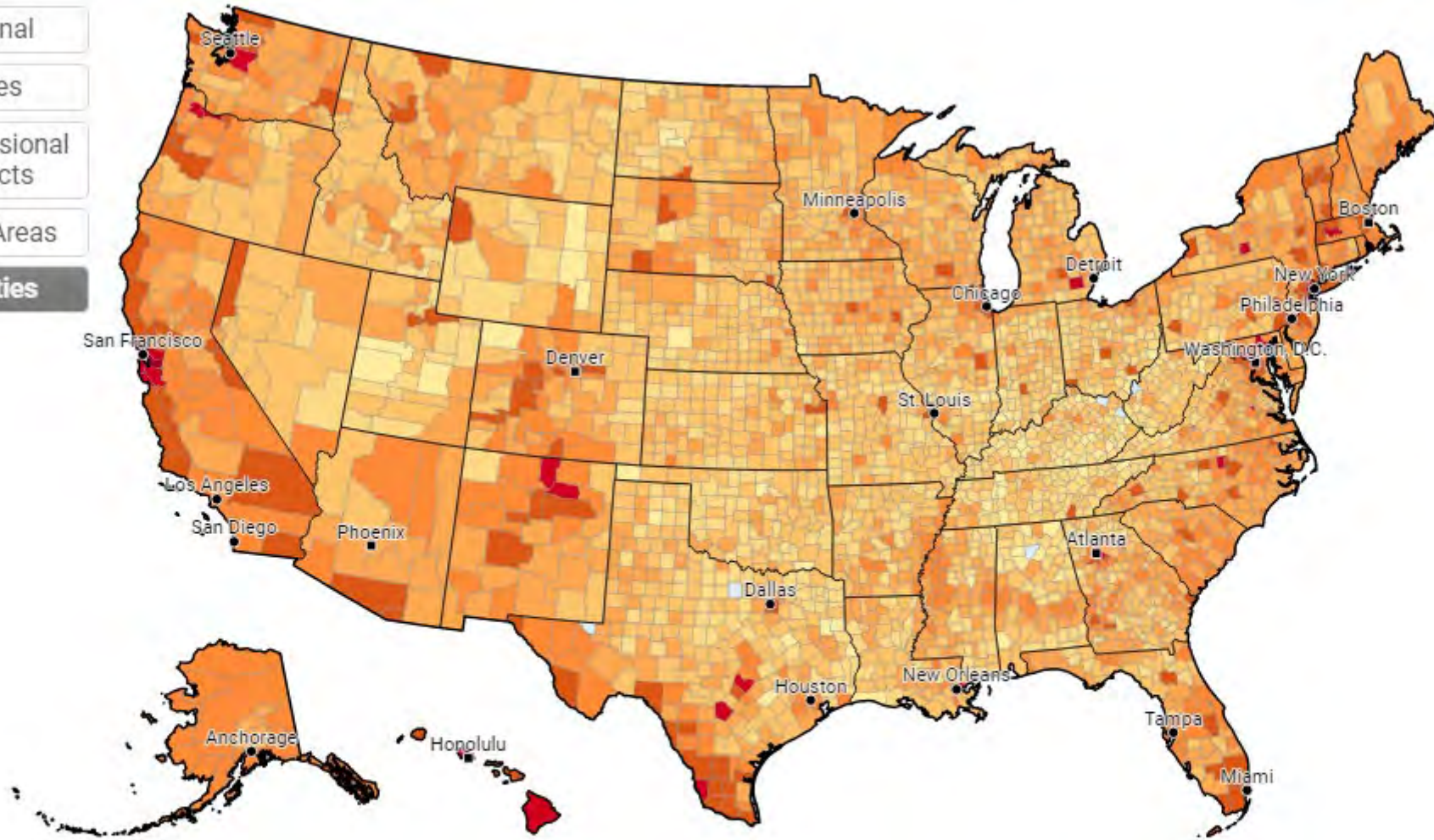


But first...



What % of Americans think global warming is happening?

- National
- States
- Congressional Districts
- Metro Areas
- Counties**

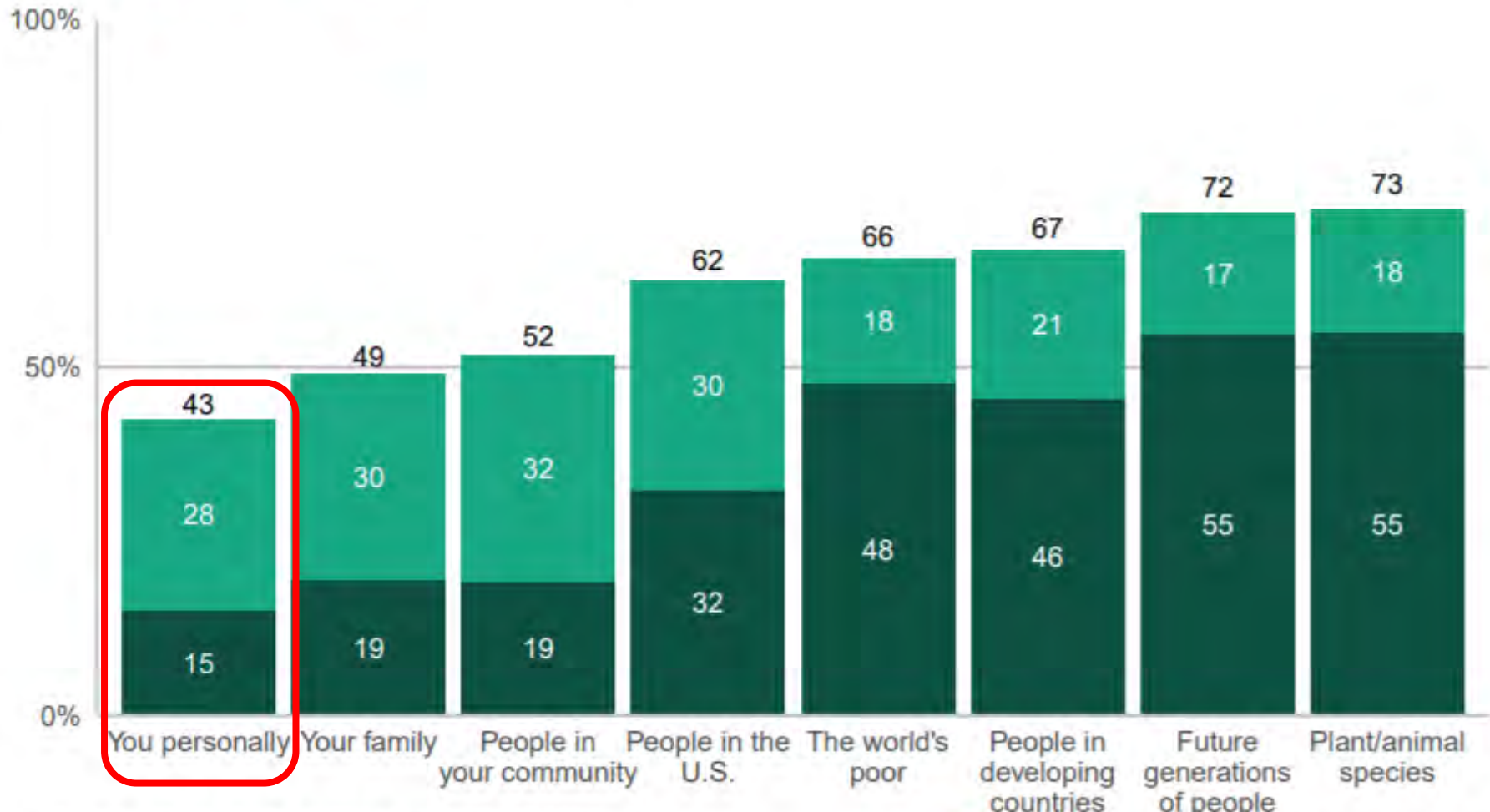


What % of Americans think global warming will harm them personally?

Many Americans think they will be harmed by global warming

- But think others will be harmed more -

■ A great deal ■ A moderate amount

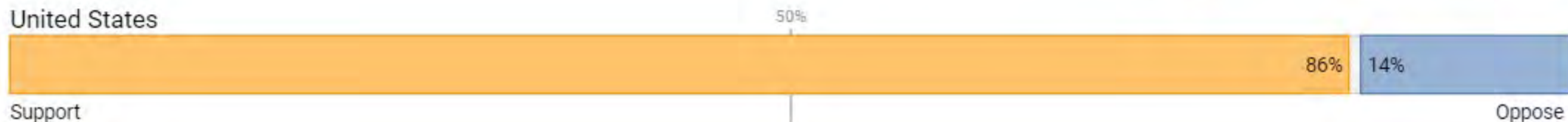
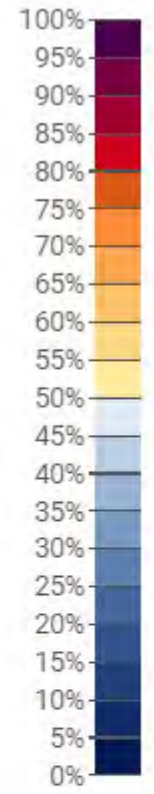
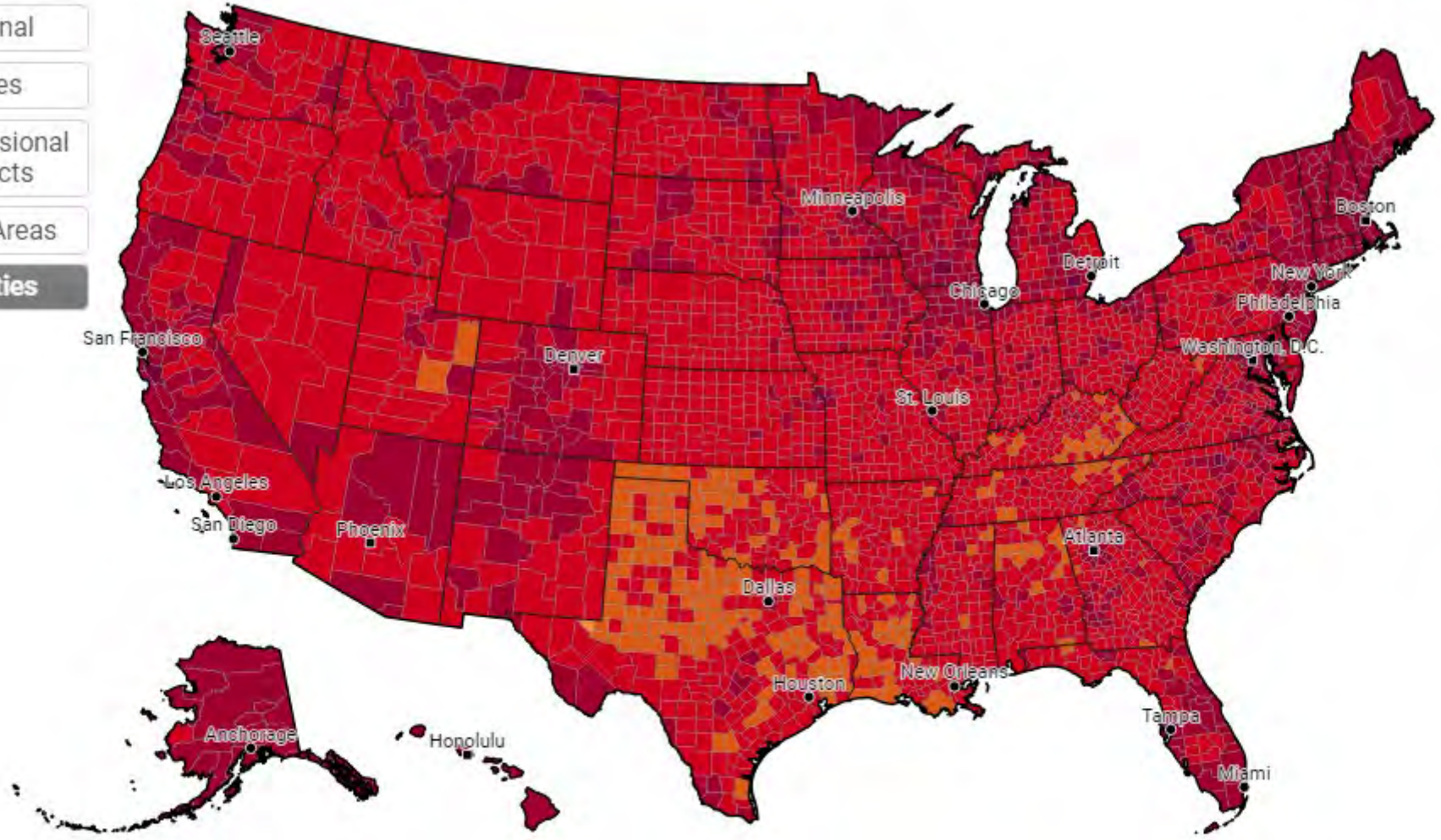


How much do you think global warming will harm...?
December 2020

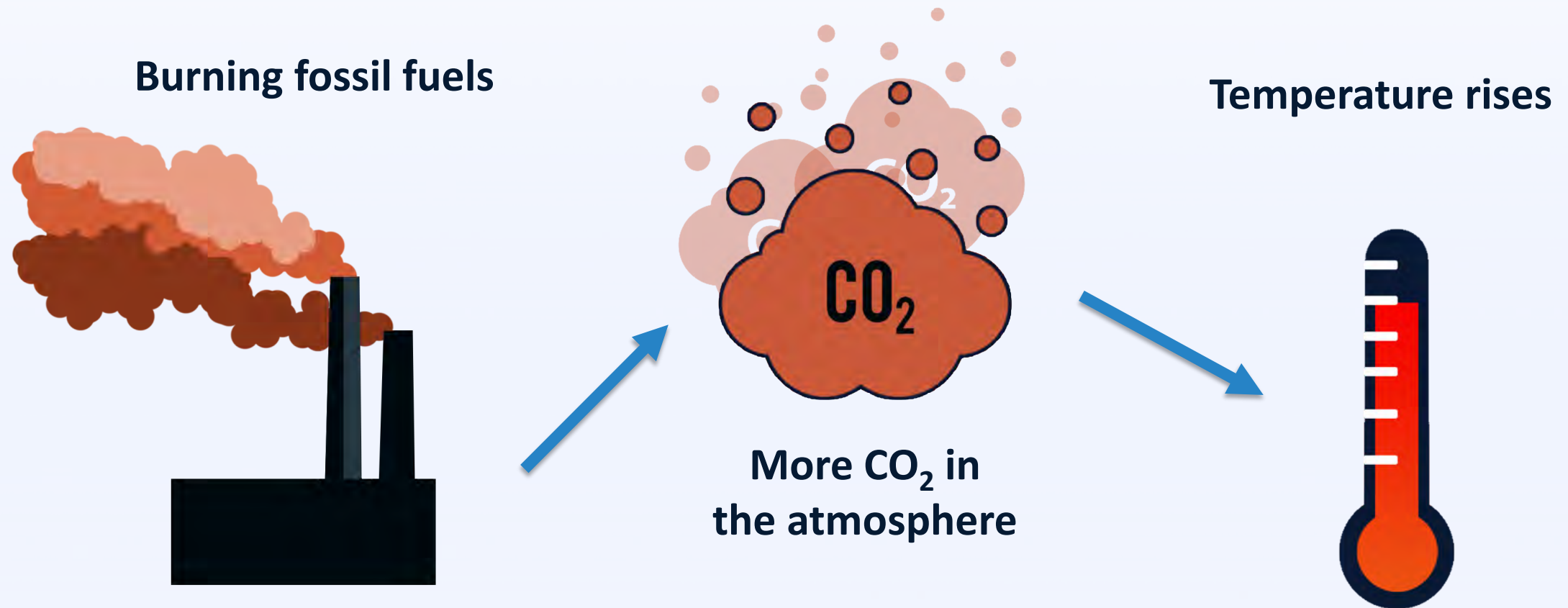


What % of Americans support funding renewable energy research?

- National
- States
- Congressional Districts
- Metro Areas
- Counties**



Climate change: keeping it simple



The Greenhouse Effect

SIMPLE

Atmosphere

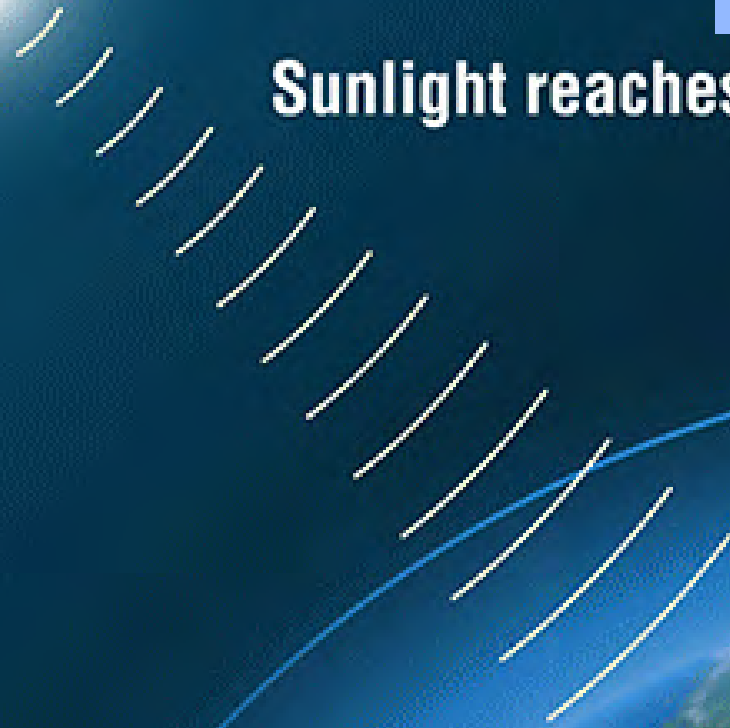
climate.nasa.gov



The Greenhouse Effect

Sunlight reaches the Earth

Atmosphere





The Greenhouse Effect

Some energy is reflected back into space

Atmosphere



The Greenhouse Effect

Some is absorbed and re-radiated as heat

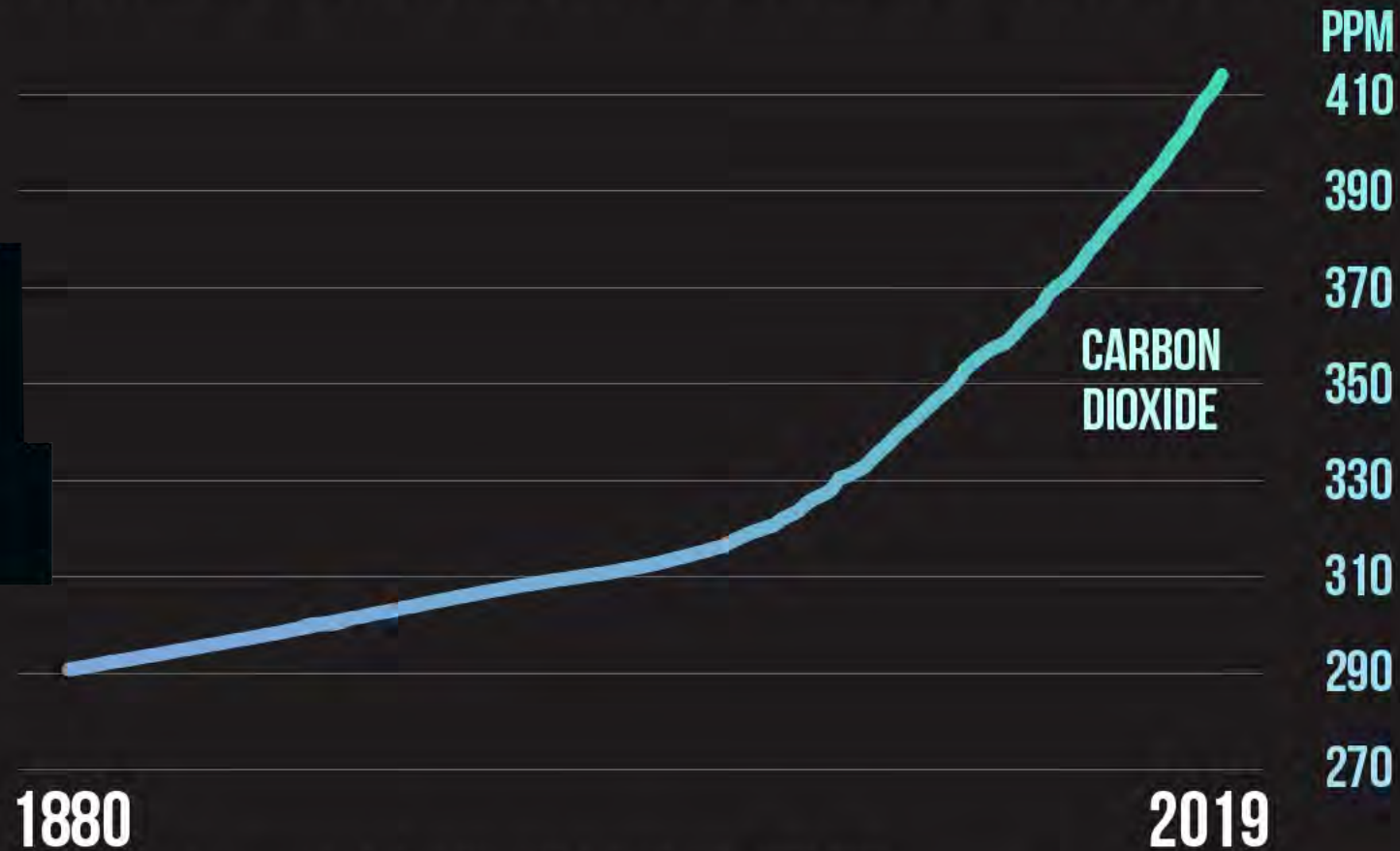
Atmosphere

The Greenhouse Effect

**Most of the heat is absorbed by greenhouse gases
and then radiated in all directions, warming the Earth**



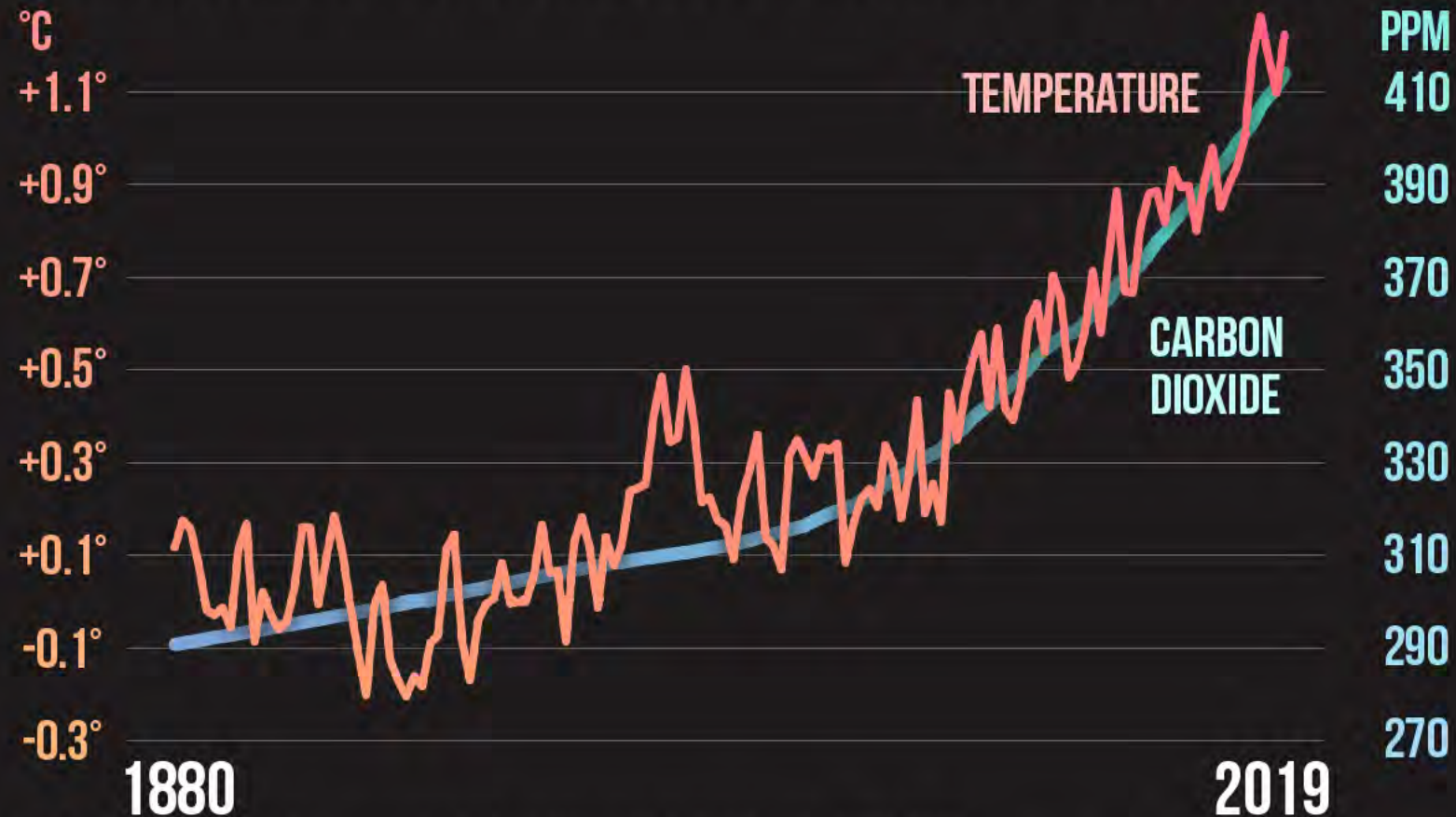
GLOBAL TEMPERATURE & CARBON DIOXIDE



Global temperature anomalies averaged and adjusted to early industrial baseline (1881-1910)
Global annual average carbon dioxide
Source: NASA GISS, NOAA NCEI, ESRL

CLIMATE  CENTRAL

GLOBAL TEMPERATURE & CARBON DIOXIDE



Global temperature anomalies averaged and adjusted to early industrial baseline (1881-1910)
Global annual average carbon dioxide
Source: NASA GISS, NOAA NCEI, ESRL

CLIMATE CENTRAL

Climate change: why it's serious



29%

OF DEATHS FROM
LUNG CANCER



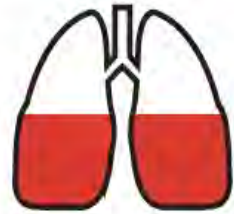
24%

OF DEATHS FROM
STROKE



25%

OF DEATHS FROM
HEART DISEASE



43%

OF DEATHS FROM
LUNG DISEASE



World Heart Federation (2019)

Fossil fuel air pollution responsible for 1 in 5 deaths worldwide

02/09/2021 | **Environmental Research**

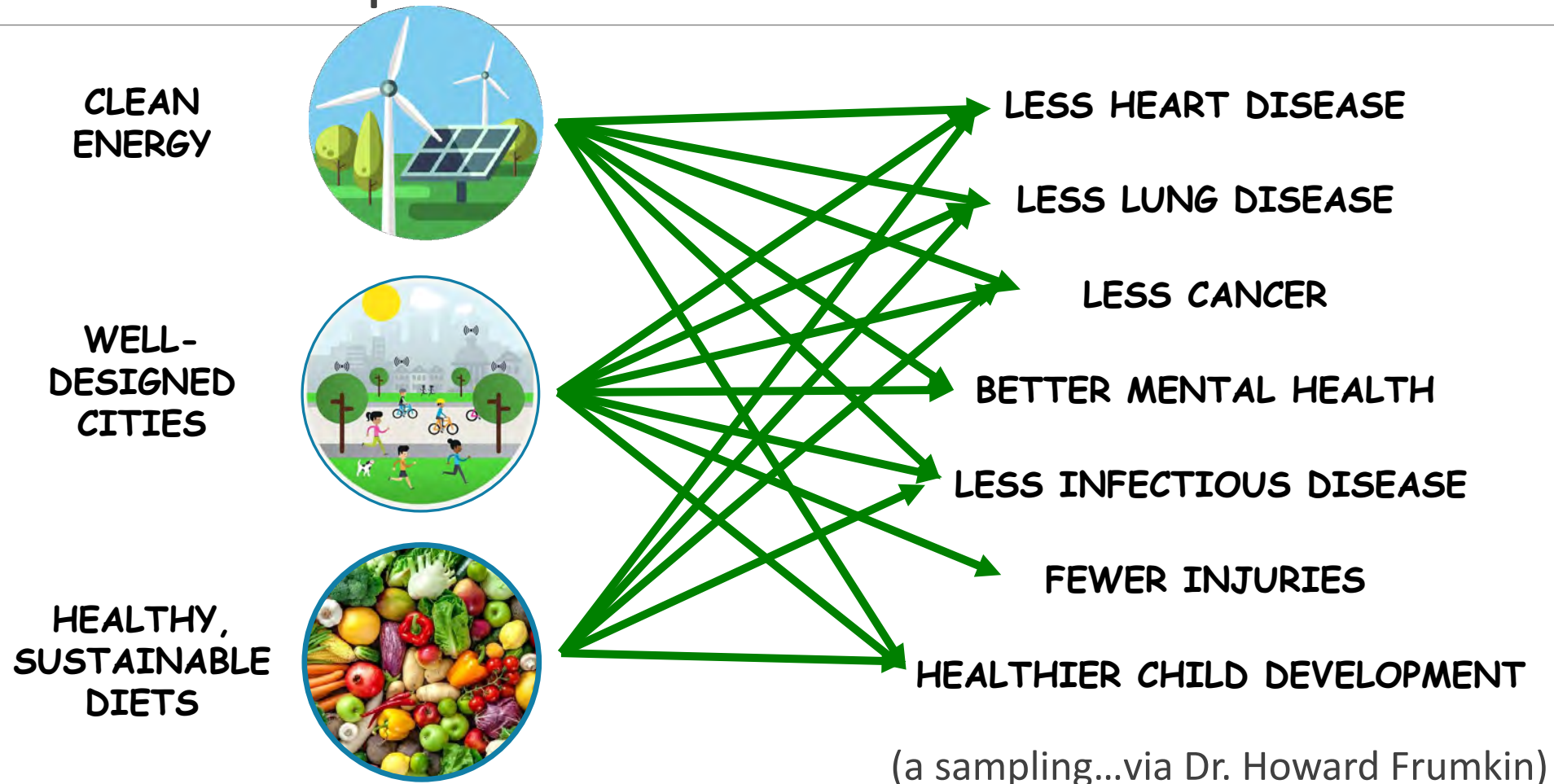
Health impacts

(a sampling...via Dr. Howard Frumkin)



HEAT	→ Heat stress, cardiovascular failure, ↓ work capacity
SEA LEVEL RISE AND SEVERE WEATHER	→ Injuries, fatalities
AIR POLLUTION	→ Asthma, cardiovascular disease
ALLERGIES	→ Resp allergies, poison ivy
CHEMICAL EXPOSURES	→ Toxicity
VECTOR-BORNE DISEASES	→ Malaria, dengue, hantavirus, encephalitis, Rift Valley fever
WATER-BORNE DISEASES	→ Cholera, cryptosporidiosis, campylobacter, leptospirosis
WATER AND FOOD SUPPLY	→ Malnutrition, diarrhea, harmful algal blooms
MENTAL HEALTH	→ Anxiety, post-traumatic stress, depression, despair
RESOURCE SCARCITY AND HABITAT LOSS	→ Forced migration, civil conflict

Health impacts...and their solutions



Solutions: see drawdown.org for 100 of them!

SOLUTION	SECTOR(S)	SCENARIO 1 *	SCENARIO 2 *
Onshore Wind Turbines	Electricity	47.21	147.72
Utility-Scale Solar Photovoltaics	Electricity	42.32	119.13
Reduced Food Waste	Food, Agriculture, and Land Use / Land Sinks	87.45	94.56
Plant-Rich Diets	Food, Agriculture, and Land Use / Land Sinks	65.01	91.72
Health and Education	Health and Education	85.42	85.42
Tropical Forest Restoration	Land Sinks	54.45	85.14
Improved Clean Cookstoves	Buildings	31.34	72.65
Distributed Solar Photovoltaics	Electricity	27.98	68.64
Refrigerant Management	Industry / Buildings	57.75	57.75

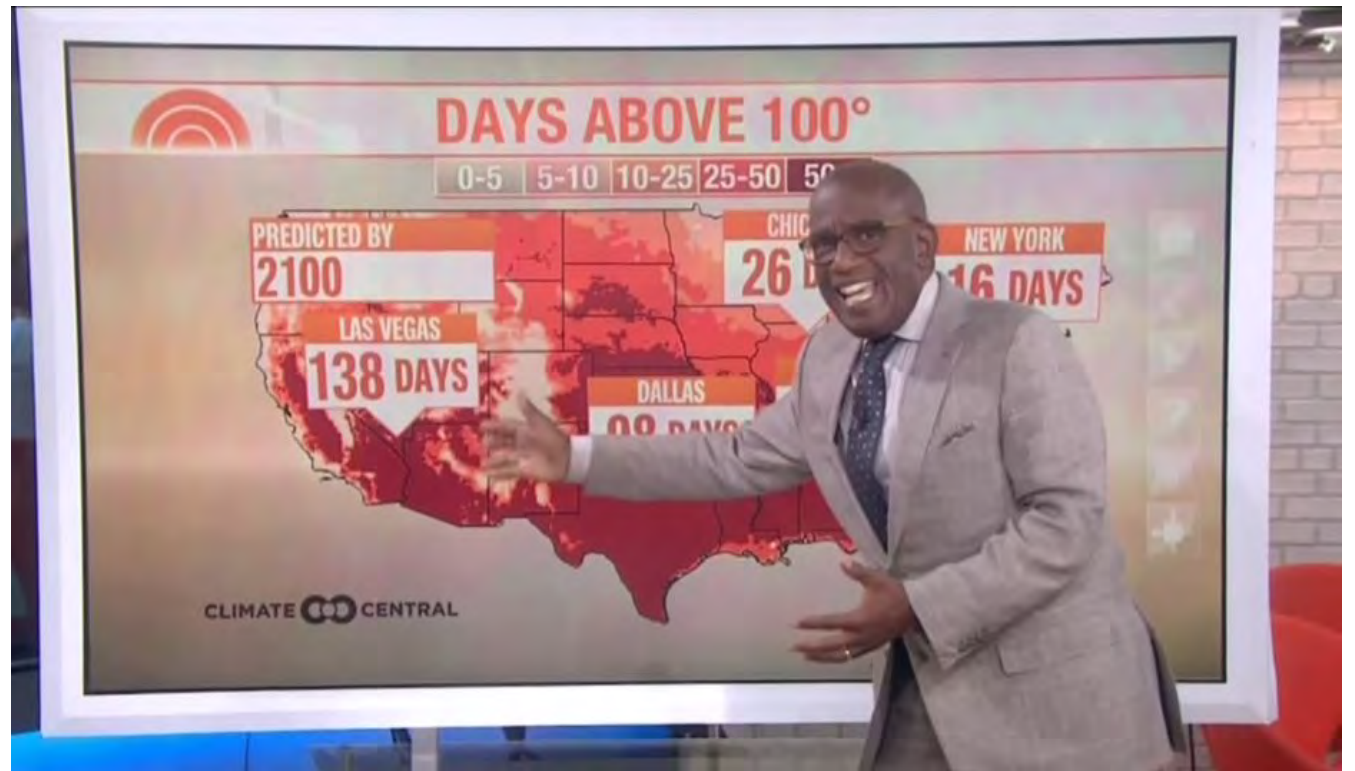
Connecting with others: Voice

Who is the audience?

Who is a trusted messenger?

How can I personalize that message?

(Localize...)



LONGER GROWING SEASON = LONGER ALLERGY SEASON

CONSECUTIVE DAYS ABOVE FREEZING

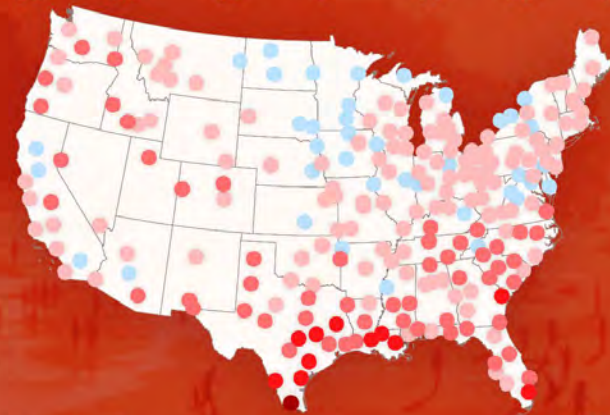
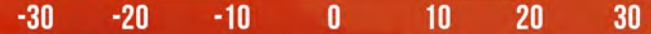


Source: RCC AGIS.org
Days between the annual last and first occurrence of 32°F. Produced 3/27/2019.

CLIMATE CO CENTRAL

EXTREME HEAT

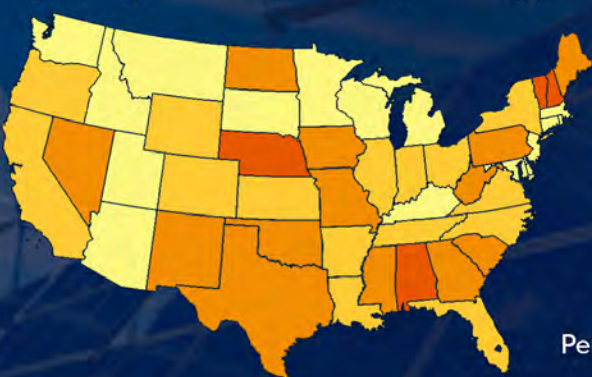
CHANGE IN NUMBER OF DAYS WITH HEAT INDEX OF 90°+



Annual days with a heat index of 90°F+
Source: gridMET minimum relative humidity & maximum temperature datasets.

CLIMATE CO CENTRAL

CHANGE IN SOLAR JOBS BY 2050 PER 10,000 PEOPLE



ALABAMA

**+84
JOBS**

Per 10,000 people

Source: Net-Zero America, High Electrification Model (E+)

CLIMATE CO CENTRAL

ATLANTA

THE POWER OF TREES

25.1
MILLION
TONS

CO₂ EQUIVALENT REMOVED

16,912
MILLION
GALLONS

STORM RUNOFF AVOIDED

544
MILLION
POUNDS

AIR POLLUTION ABSORBED

Source: U.S. Forest Service i-Tree County Tool

CLIMATE CO CENTRAL

How many smartphones could have been charged yesterday?



MASSACHUSETTS SOLAR ELECTRICITY GENERATION

	MONDAY	TUESDAY	WEDNESDAY
EQUIVALENT HOMES POWERED	23%	24%	21%
HOME ENERGY SAVINGS	165%	167%	161%
SMARTPHONES CHARGED	1.2 billion	1.2 billion	1.1 billion

Equivalent Homes Powered (locally): Electricity generated divided by the number of homes in the area, assuming average daily electricity usage.

Home Energy Savings: Percentage of daily electricity cost saved by an average household with an average-sized solar array on its roof versus using power only from the grid.

Smartphones Charged (equivalent): The number of typical smartphones that could be charged using the amount of electricity generated from the sun.

Source: Climate Central WeatherPower tool

Connecting with others: Venue

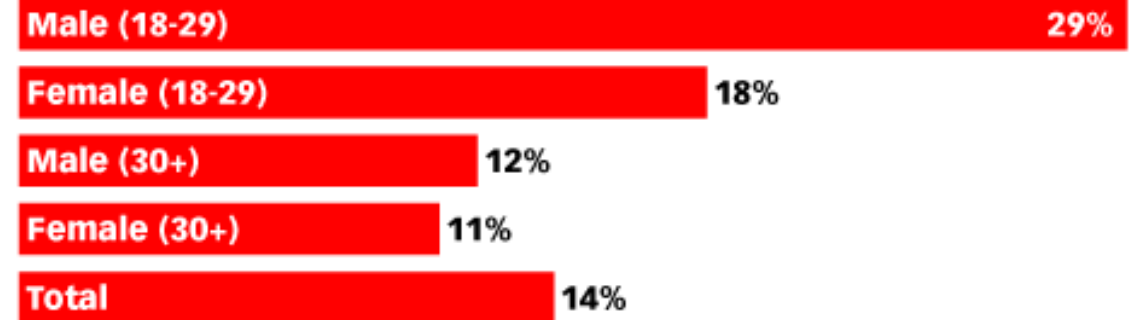
On what medium is the conversation taking place?

Is this environment conducive to what you need?

Consider the differences: in person vs. social media...

Have US Adults Changed Their Views* Because of Something Seen on Social Media? June 2018

% of respondents, by demographic



Note: in the past year; *about a political or social issue
Source: Pew Research Center, "The American Trends Panel (ATP)," Aug 15, 2018

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www.eMarketer.com

Connecting with others: Values



Connecting with others: Values

Nate Adams: why heat pumps are like the fight club...



Connecting with others: Values

Nate Adams: why heat pumps are like the fight club...



Dr. Katharine Hayhoe, Texas Tech Univ.



Connecting your path: just one example



Connecting your path: just one example

High school: “I want to solve problems, not sit in classrooms...”

College chemistry: “I want to work in nature, not in a chem lab...”

Summer ecology job: “I want to study climate change, not be affected by it...”

End of Geosciences major: “How can I translate this science more broadly?”

Science communication job: “How can I walk the talk on solutions?”

Town Climate Action Plan work: “How can I broaden my impact?”



Connecting your path: just one example

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Connecting your path: a few lessons learned

Grades don't define you.

Don't just do something, stand there!

With some opportunities, it only takes one...



Thank you!

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