



**Cornell College**  
**Strategic Roadmap Development**

**THINK-TANK DAY 1**

**FUTURE-GAZING**

**Slide deck part 1**

**April 13, 2023**

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The key to effective future thinking...

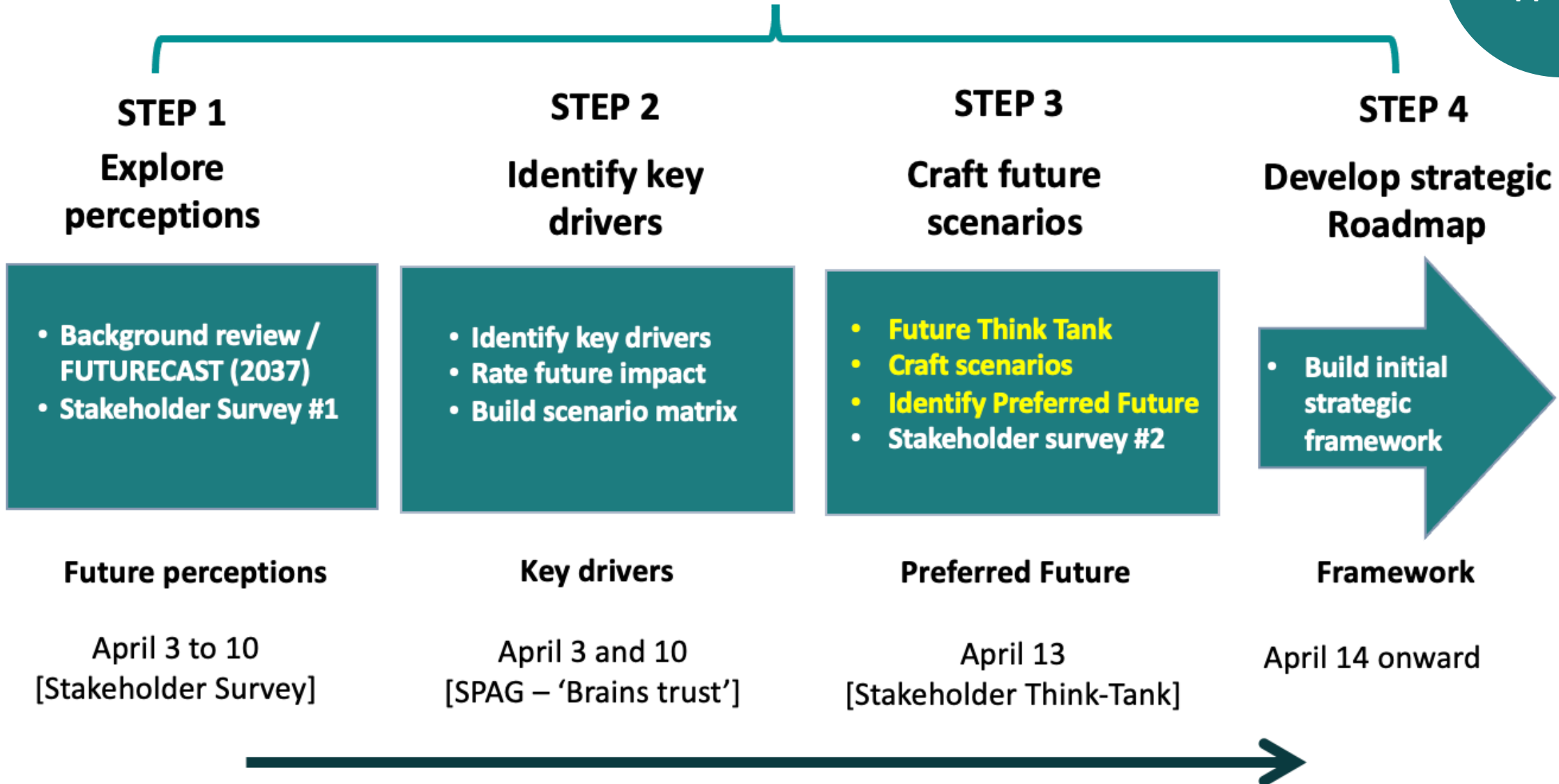
Consider both **trajectory** (direction of change) and **velocity** (speed of change).

# The Importance of Future Thinking



## Cornell College Strategic Roadmap Development

Methodological  
approach



# Scenario planning approach

## EXPLORE TRENDS

KEY DRIVERS

FORESIGHT RESEARCH



RESEARCH &  
DATA COLLECTION

## BUILD SCENARIOS

ENGAGEMENT

CRAFT SCENARIOS

ASSESS IMPLICATIONS

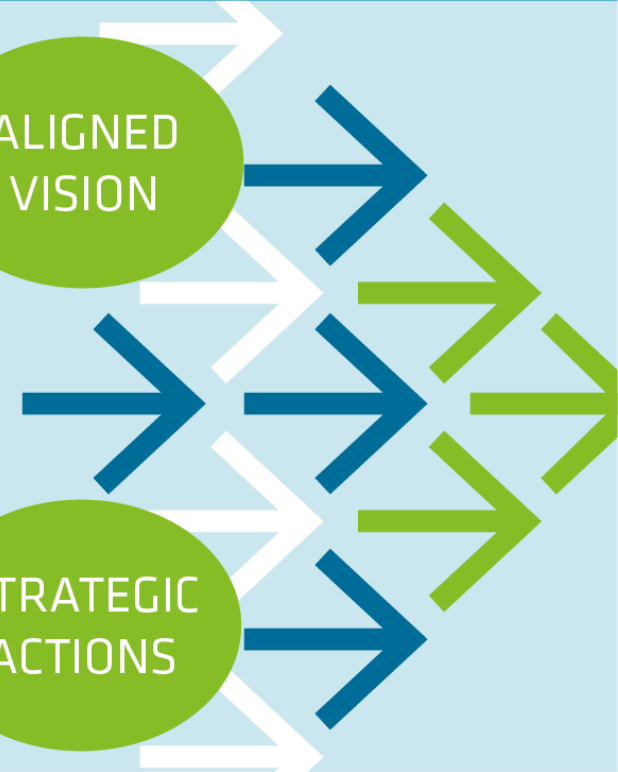


DEVELOPMENT  
& ANALYSIS

## PREFERRED FUTURE

ALIGNED VISION

STRATEGIC ACTIONS



ROADMAP





# The challenge for the Think-Tank

- Explore the future -
- Ask the hard questions -
- Think creatively -

The outcome may be a new view of the future.





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# Key Emerging Trends Shaping the future of the Midwest





# In a time of change and uncertainty....

- Which trends are being amplified and accelerated?
- What changes might be more elastic?
- Where are the potential tipping points?





Forces impacting the  
world, regions and  
people

What are the emerging  
macro drivers...



# Macro Trends and Forces of Change Related to . . .

- Demographics, population and mass urbanization
- Energy, food, water & climate change
- Technology driving change





# Demographics, population and mass urbanization

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# AN URBAN WORLD

This graphic depicts countries and territories with 2050 urban populations exceeding 100,000. Circles are scaled in proportion to urban population size. Hover over a country to see how urban it is (percentage of people living in cities and towns) and the size of its urban population (in millions).

## Urban Population

- Greater than 75%
- 50% - 75%
- 25% - 50%
- Less than 25%



1950



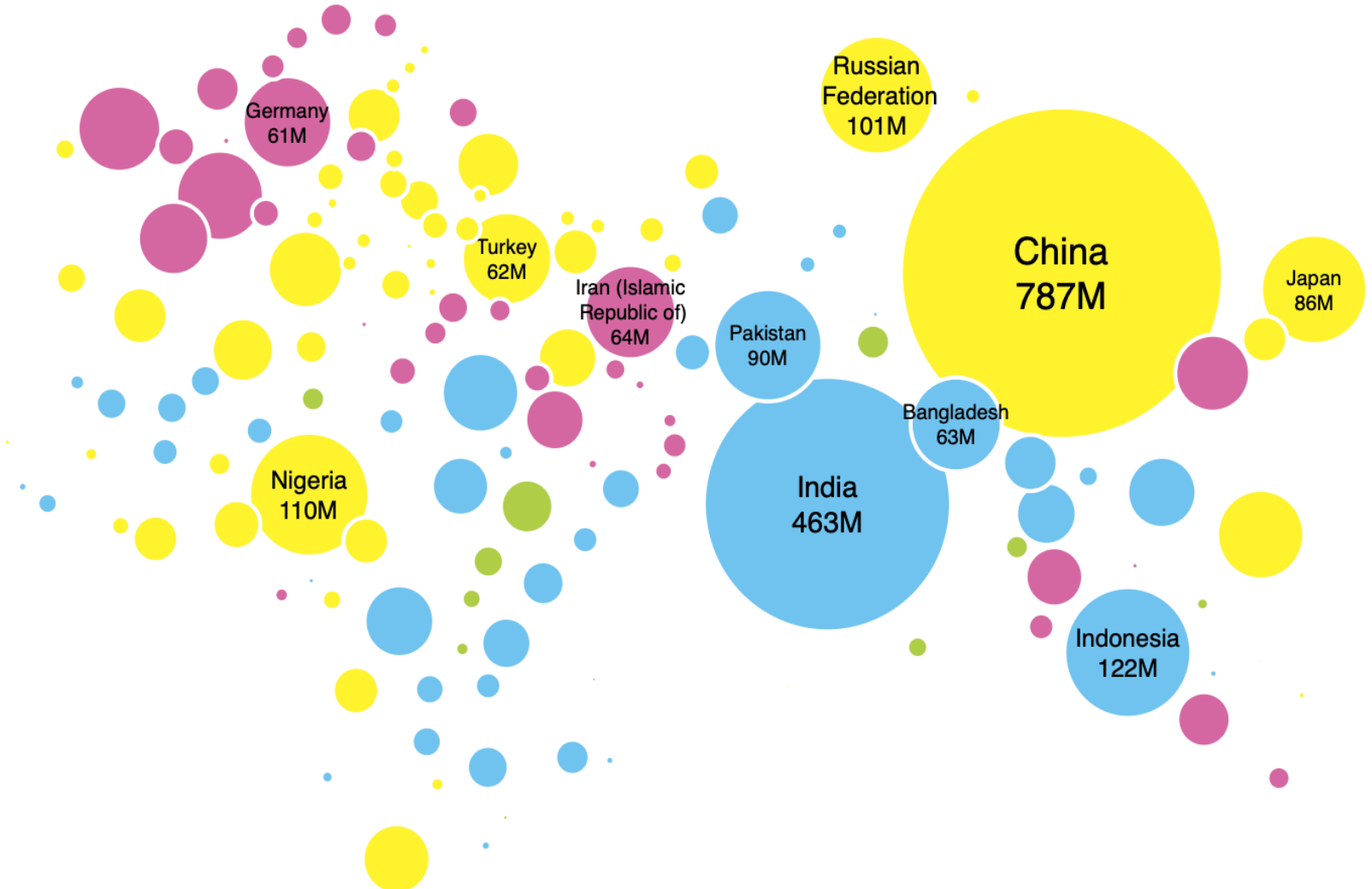
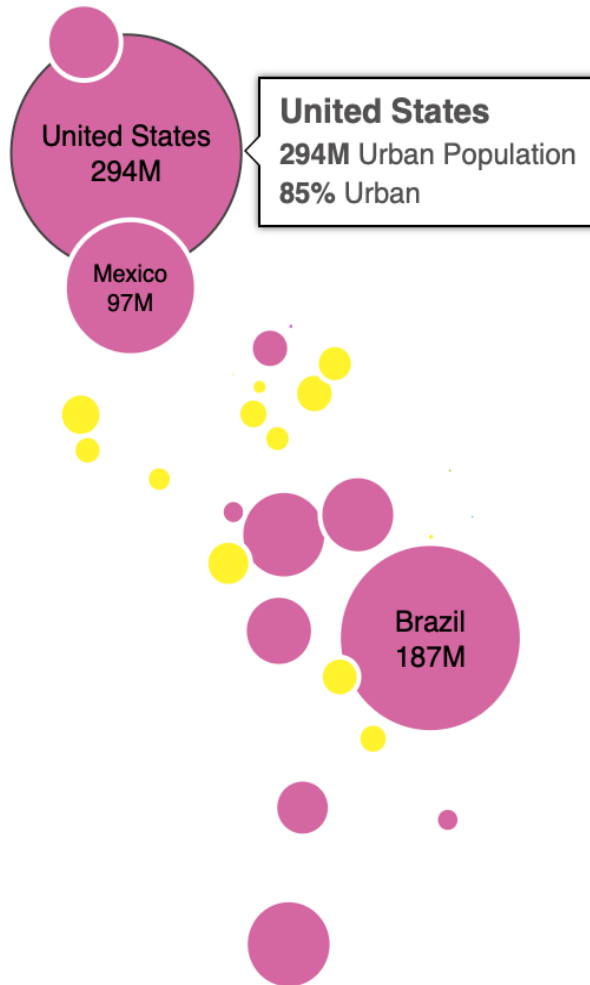
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2020





# AN URBAN WORLD

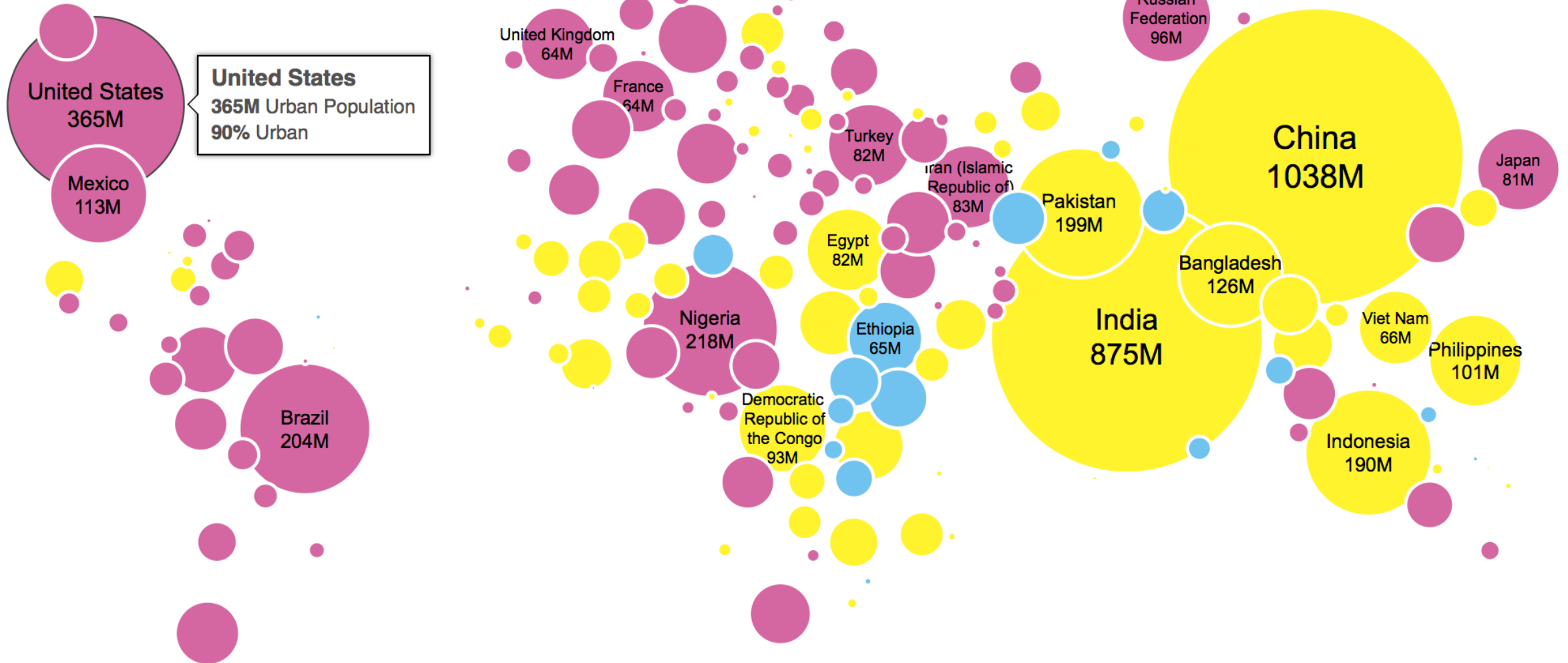
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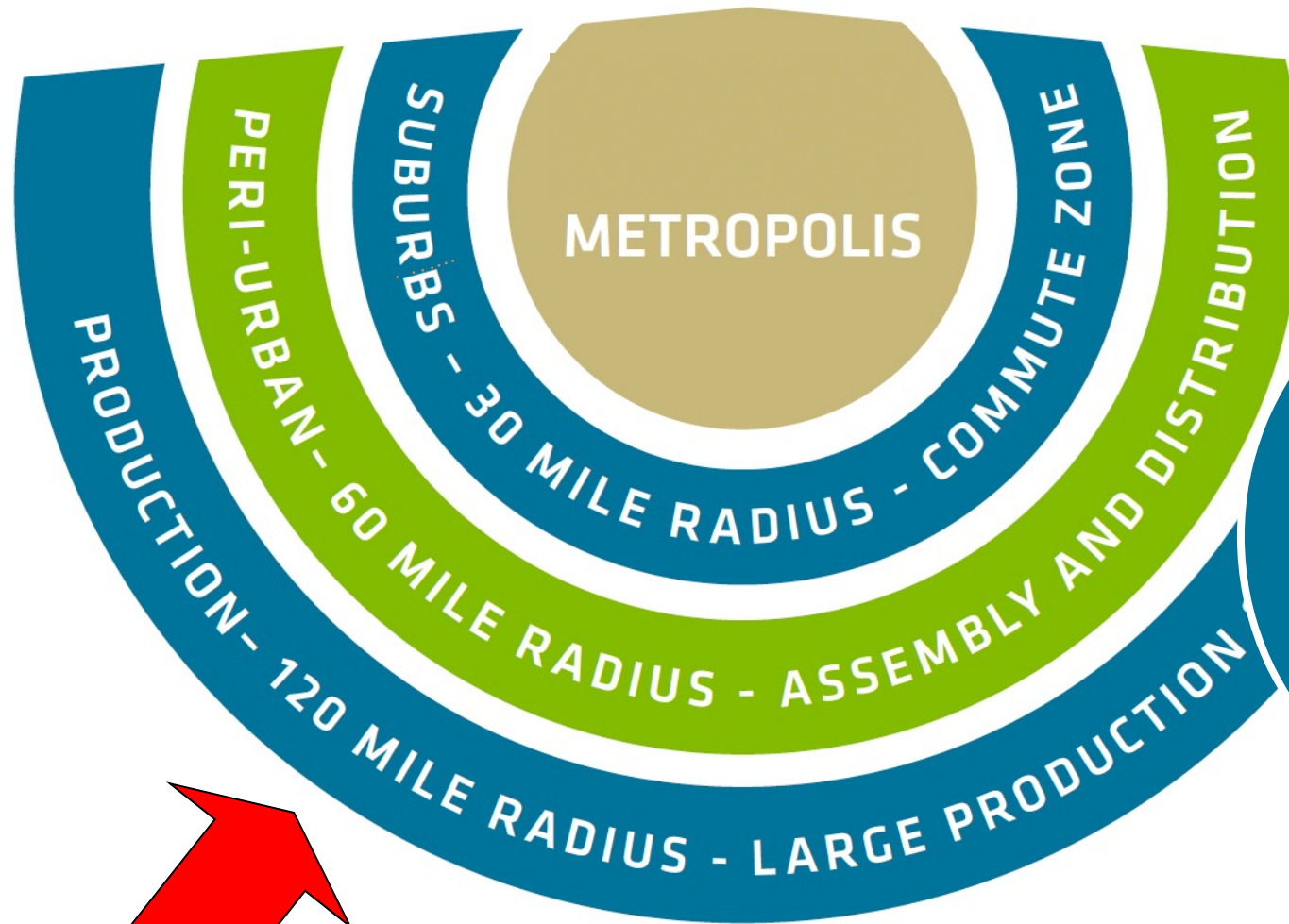
2050



## Arc of Innovation



Future-Splitting  
Questions™



Driving change  
and innovation in  
lifestyles

**Society is re-distributing into and  
around mega-cities**

# United States of America ▼

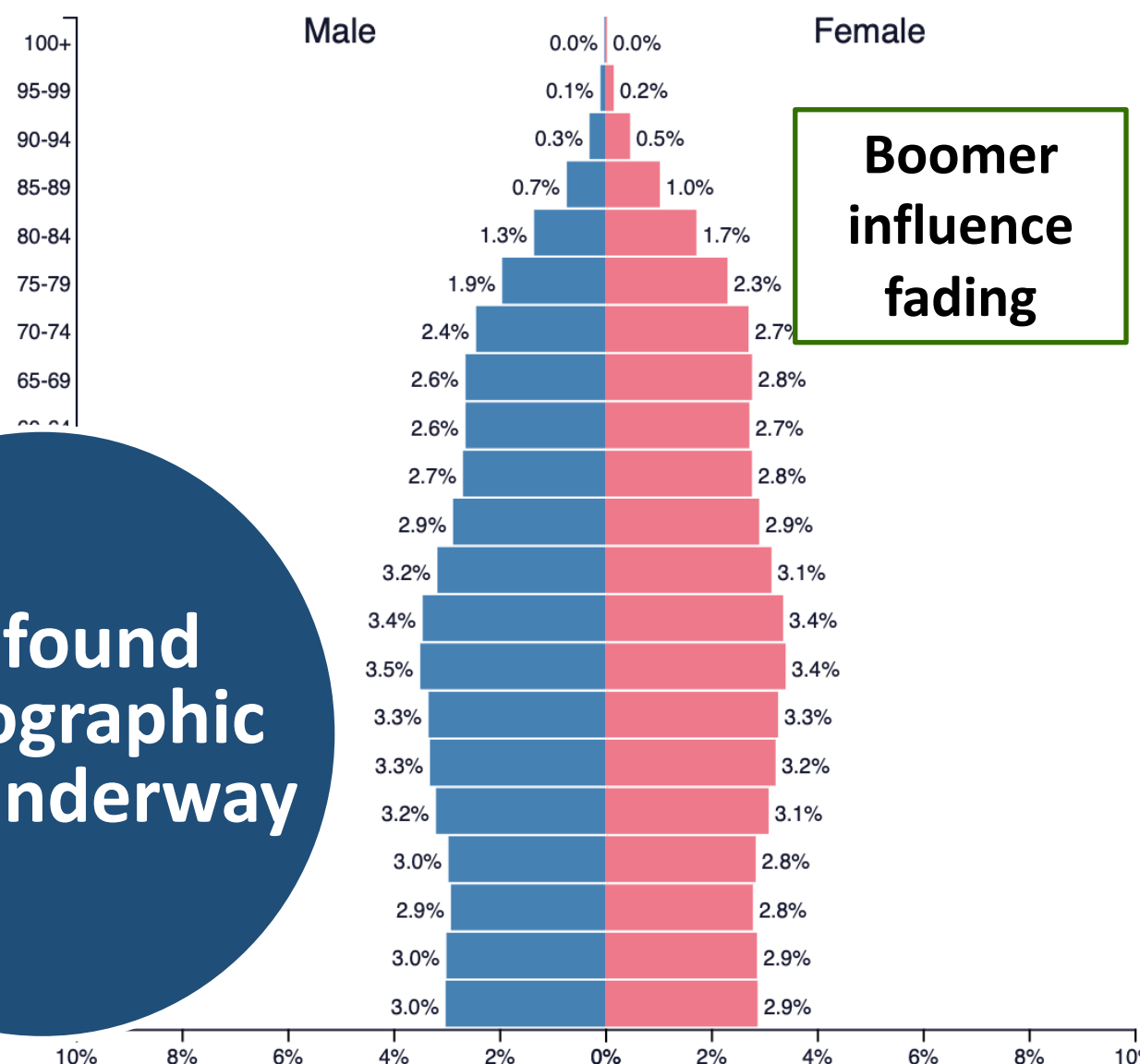
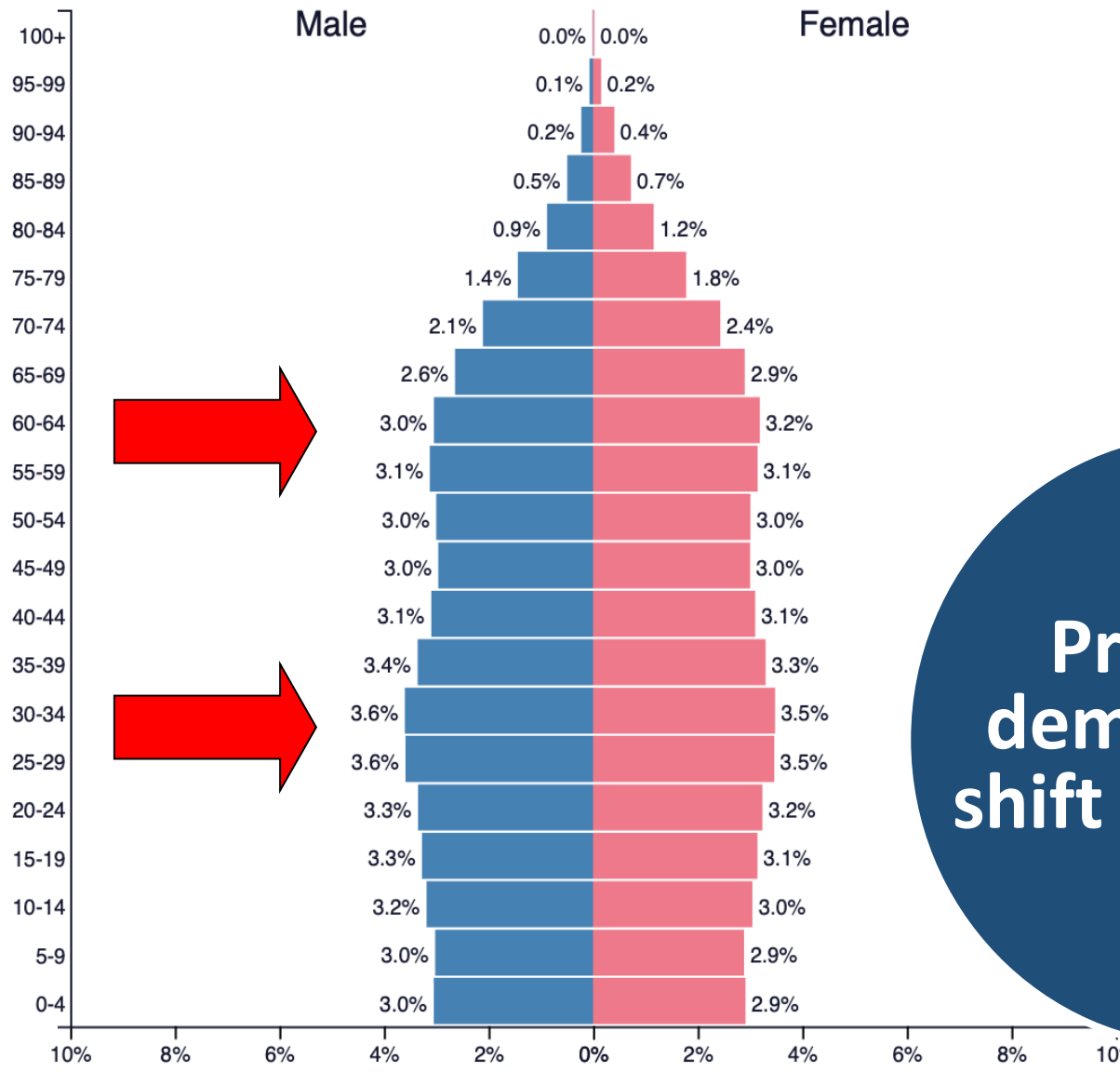
2022

Population: 334,805,268

# United States of America ▼

2032

Population: 353,335,452



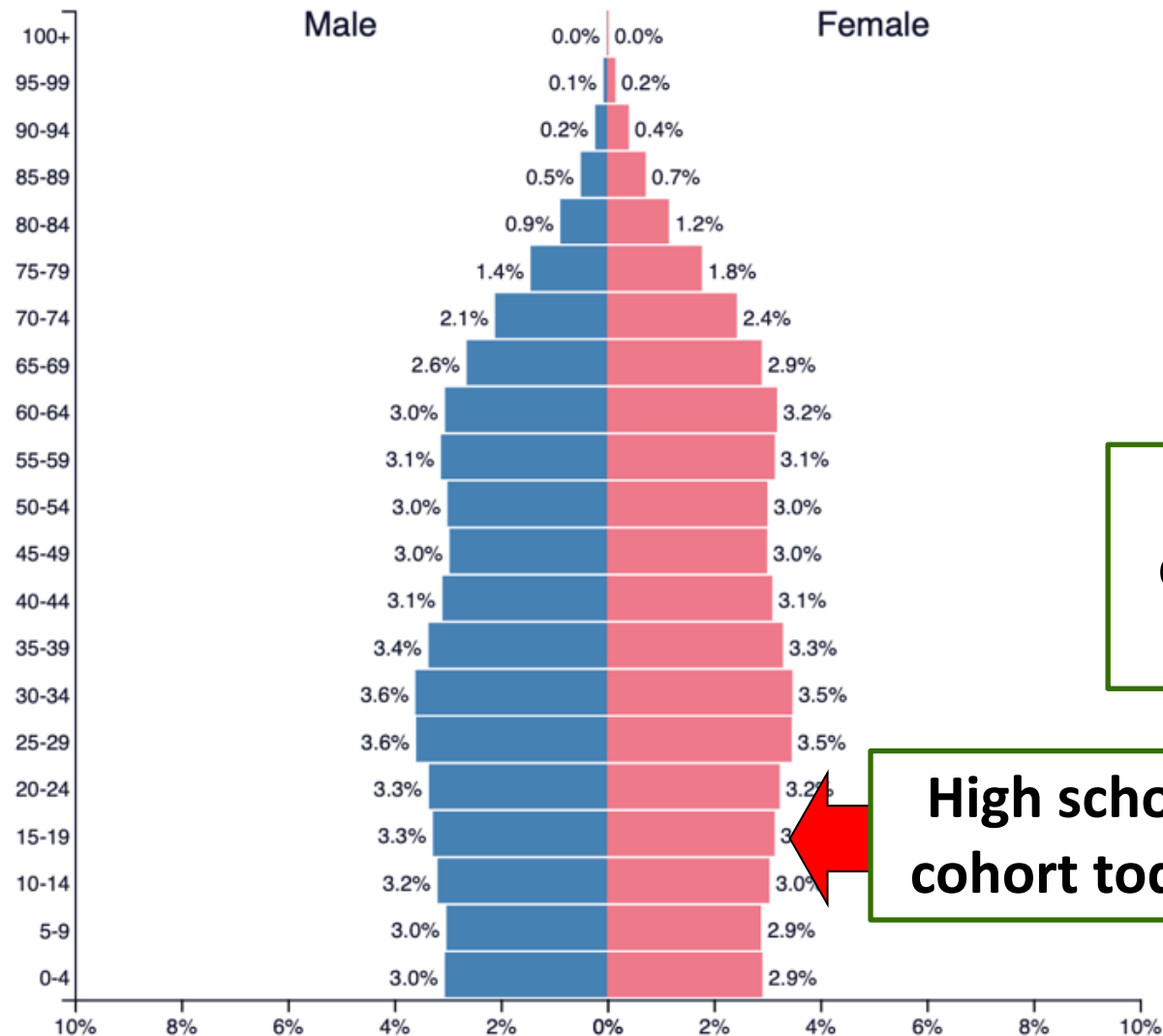
Boomer  
influence  
fading

Profound  
demographic  
shift underway



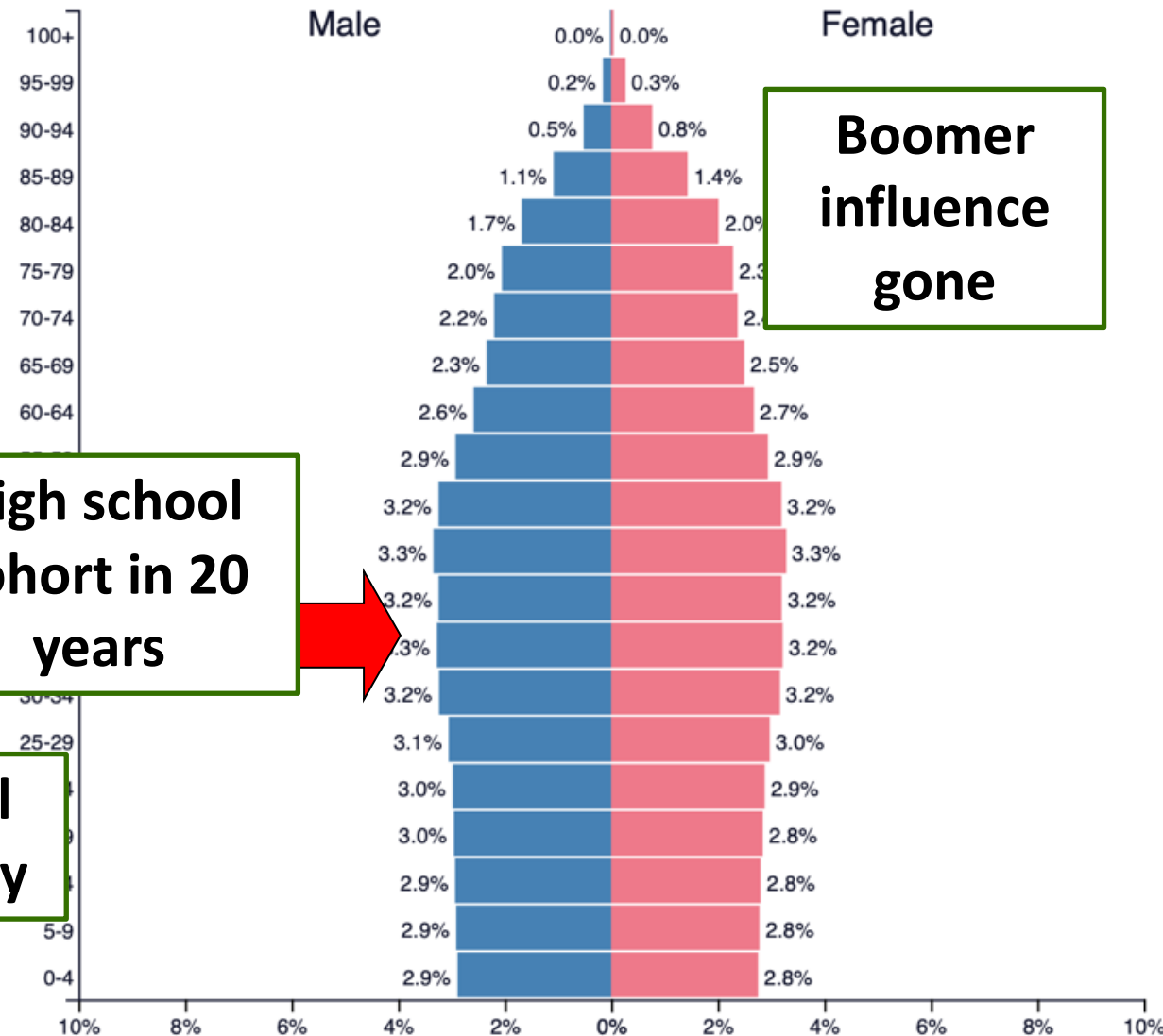
# United States of America ▼ 2022

Population: 334,805,268



# United States of America ▼ 2042

Population: 369,396,554



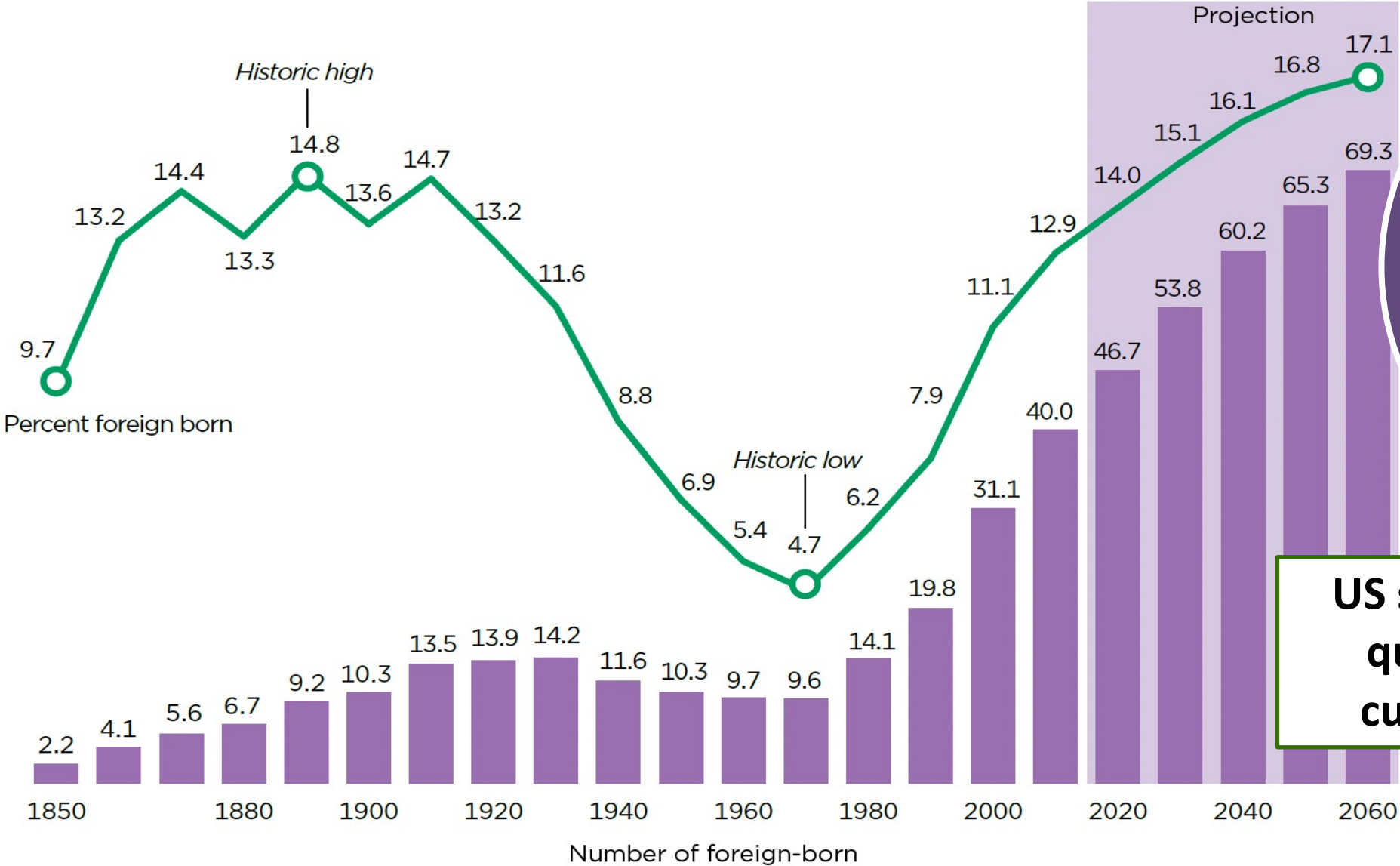
High school  
cohort in 20  
years

High school  
cohort today

Boomer  
influence  
gone

# Foreign-Born People Living in the United States: 1850 to 2010, Projected 202 to 2060

By 2028, the foreign-born share of the U.S. population is projected to be higher than at any time since 1850.



Foreign born %  
increasing

US society is changing  
quickly, with more  
cultures and voices

Source: U.S. Census Bureau, 1850-2000 Decennial Censuses, American Community Survey 2010, 2017 National Population Projections for 2020-2060.



Blow in her face and she'll follow you anywhere

Hit her with tangy Tipalet Cherry. Or rich, grape-y Tipalet Burgundy. Or luscious Tipalet Blueberry. It's Wild! Tipalet. It's new. Different. Delicious in taste and in aroma. A puff in her direction and she'll follow you, anywhere. Oh yes.... you get smoking satisfaction without inhaling smoke.

Smokers of America do yourself a flavor. Make your next cigarette a **Tipalet**

New from Muriel. About 5 for 25¢.

For a better start in life  
**start COLA earlier!**

**How soon is too soon?**

Not soon enough. Laboratory tests over the last few years have proven that babies who start drinking soda during that early formative period have a much higher chance of gaining acceptance and "fitting in" during those awkward pre-teen and teen years. So, do yourself a favor. Do your child a favor. Start them on a strict regimen of sodas and other sugary carbonated beverages right now, for a lifetime of guaranteed happiness.

**The Soda Pop Board of America**  
1515 W. Hart Ave. - Chicago, ILL.

- Promotes Active Lifestyle!
- Boosts Personality!
- Gives body essential sugars!

Shifting  
societal  
values



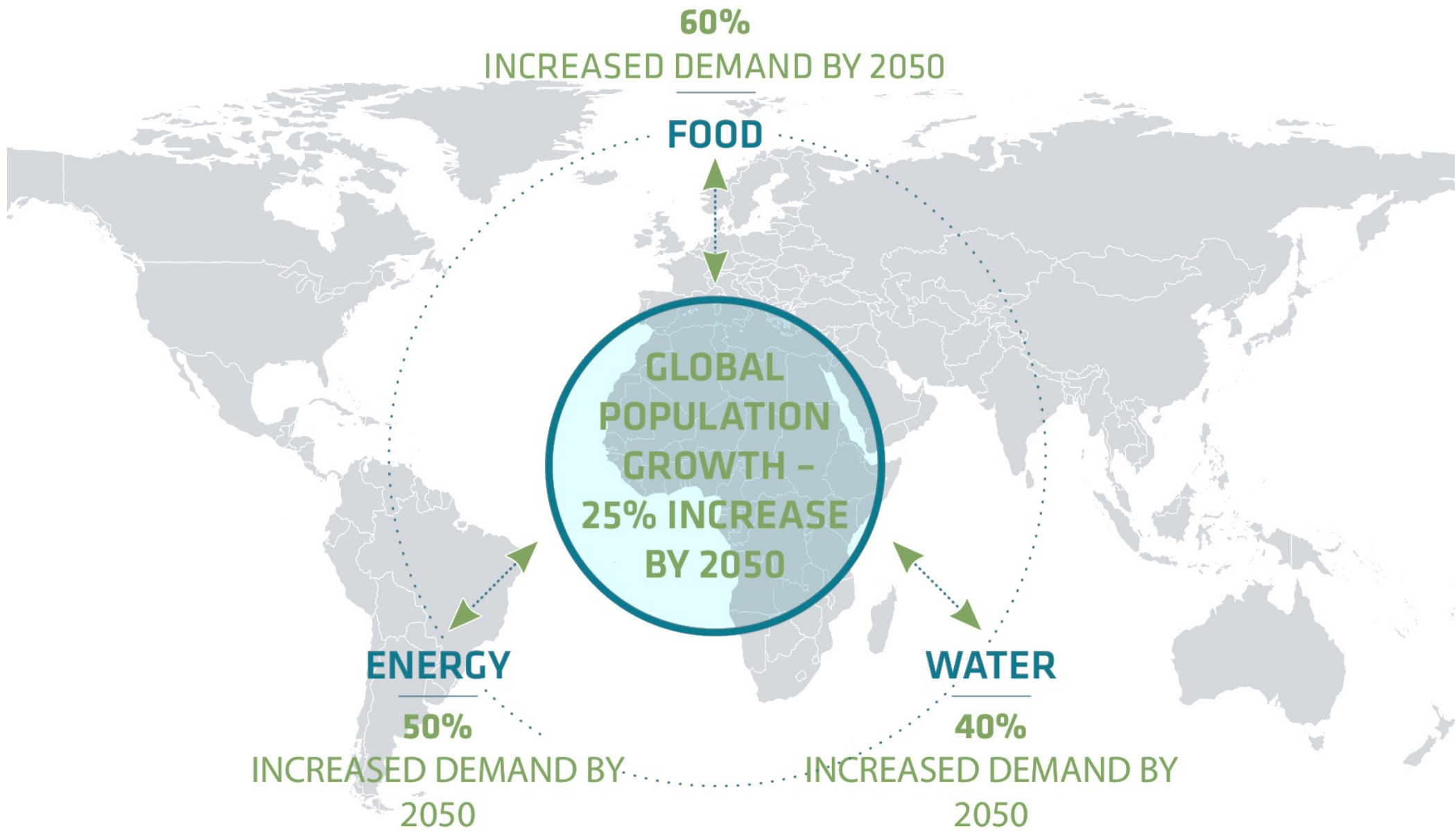
# Predictions and observations

- Generational change is coming which will trigger widespread upheaval of norms.
- People and industries will continue to cluster around mega-cities, in specialized cities and regional centers.



# Energy + Water + Food + Climate Change







# Renewable Energy

Potential for  
unlimited  
cheap energy

Electrification of the  
world is accelerating,  
driven by renewable  
energy

# FRESH WATER

- Nearly 450 million people in 29 countries now face severe water shortages
- As much as 2/3 of the world population could be water-stressed by 2025
- Half the world's rivers and lakes are seriously polluted

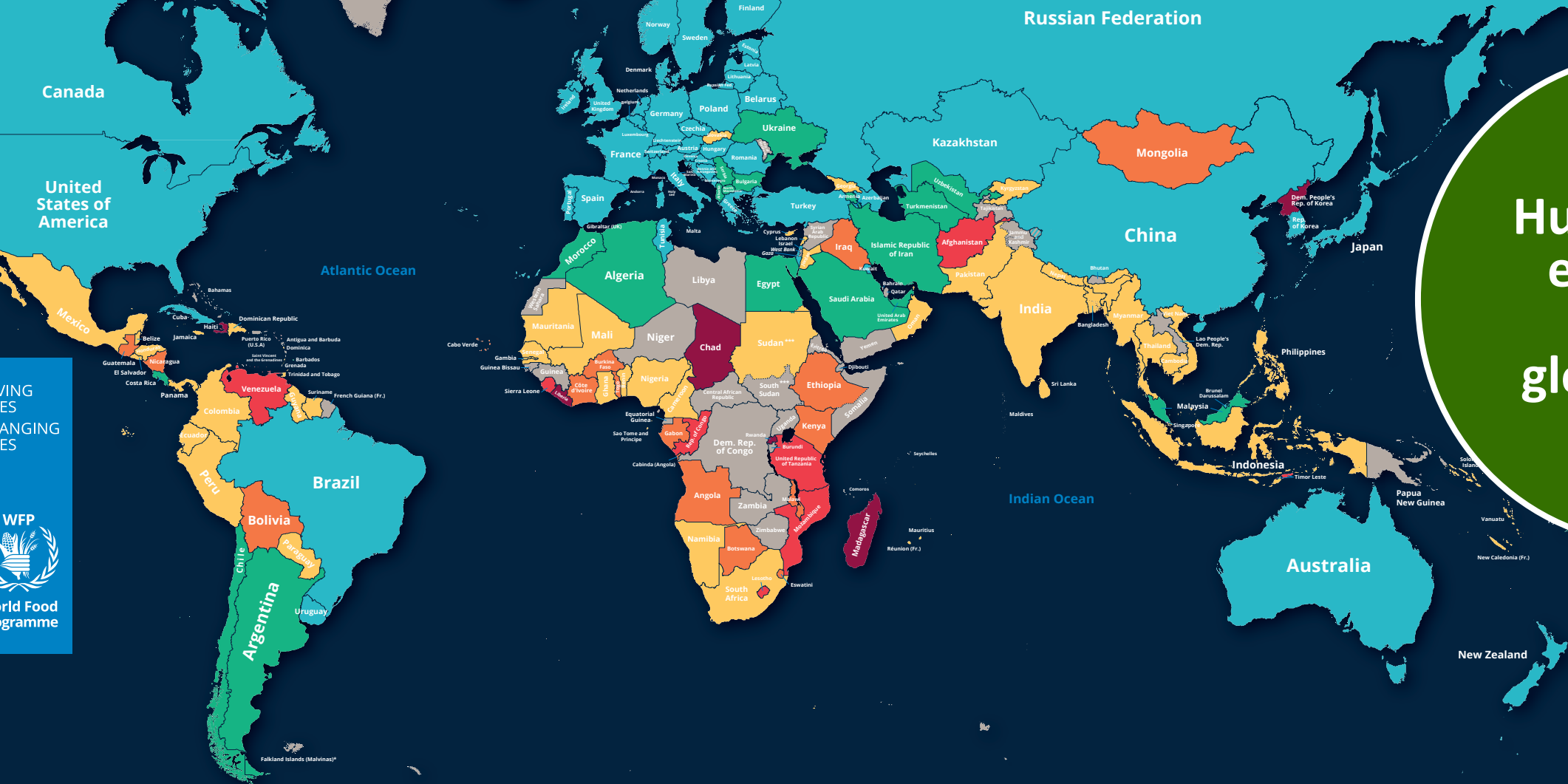


- Irrigation uses 70% of the world's fresh water
- Water scarcity will be the chief constraint to increased food production
- The threat to water resources stands as one of the major crises facing the planet



Upper-middle and  
northeast USA  
has 20% of  
global surface  
freshwater  
resources





Hunger is an emerging critical global issue

# Hunger Map 2020

**CHRONIC HUNGER**

If current trends continue, the number of hungry people will reach 840 million by 2030

<2,5% <5% 5-14,9% 15-24,9% 25-34,9% >35% DATA NOT AVAILABLE

Prevalence of undernourishment in the total population (percent) in 2017-19

Undernourishment is defined as the condition in which an individual's habitual food consumption is insufficient to provide the amount of dietary energy required to maintain a normal, active, healthy life. The indicator is reported as the prevalence of undernourishment (PoU), which is an estimate of the percentage of individuals in the total population that are in a condition of undernourishment. To reduce the influence of possible estimation errors in some of the underlying parameters, national estimates are reported as a three-year moving average. Source: FAO, IFAD, UNICEF, WFP and WHO. 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO. Further information is available at <https://www.wfp.org/publications/state-food-security-and-nutrition-world-sofi-report-2020>

© World Food Programme 2020

The designations employed and the presentation of material in this map does not imply the expression of any opinion whatsoever on the part of WFP concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

\* A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

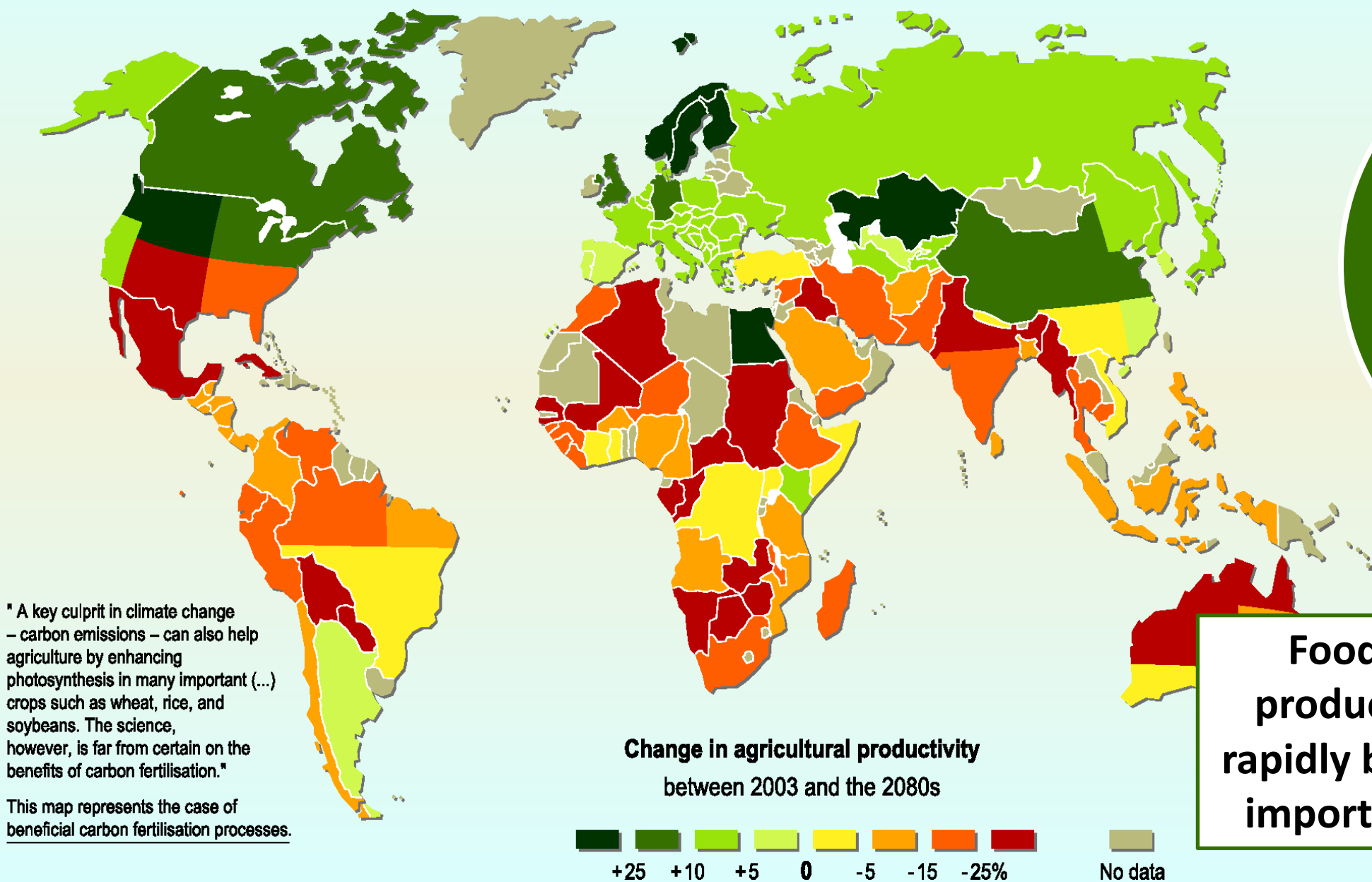
\*\* Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

\*\*\* Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

— International Boundary ..... Armistice or International Administrative Line ——— Other Line of Separation ..... Special boundary line

25 September 2020

# Projected impact of climate change on agricultural yields



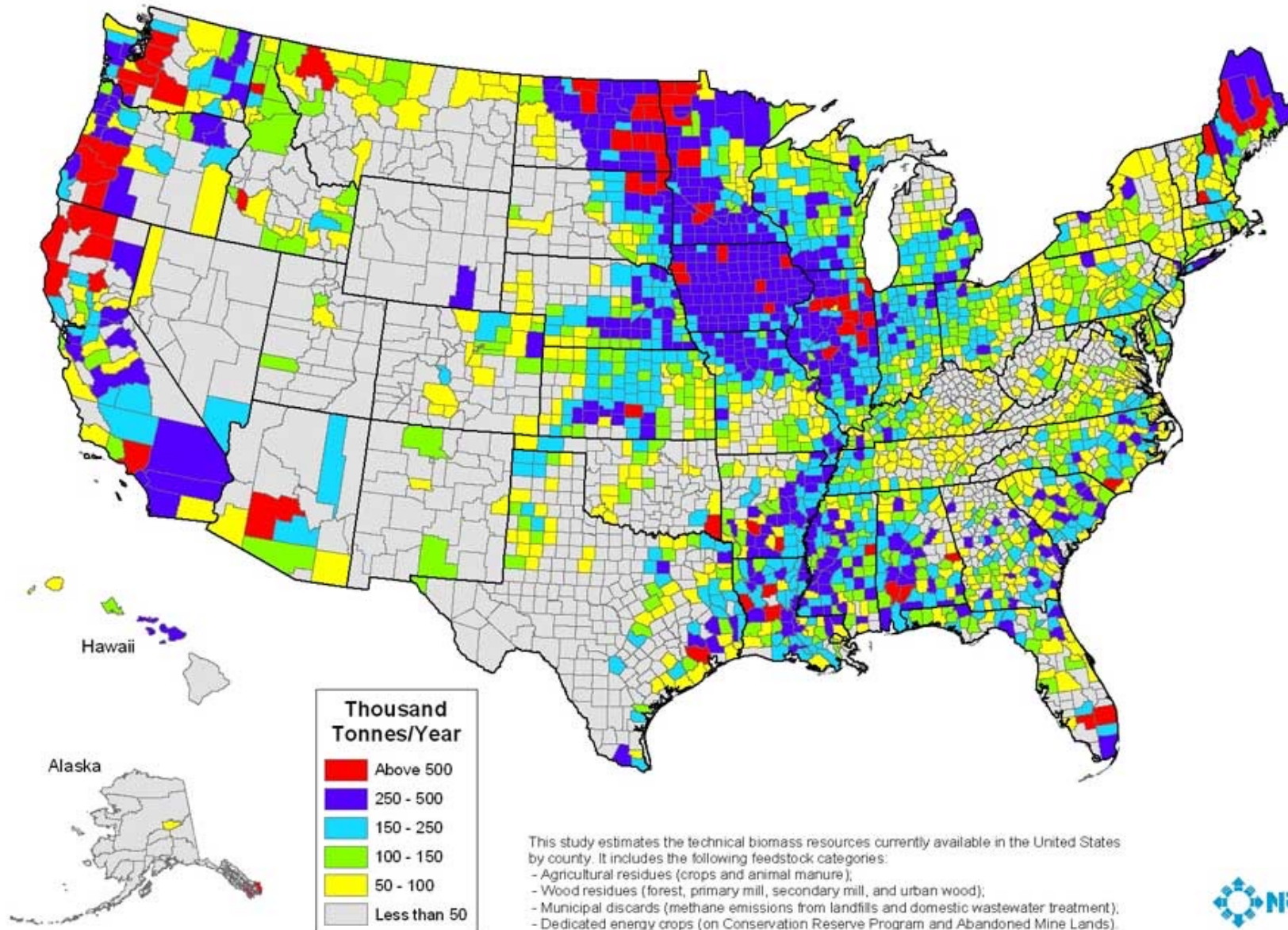
Increases  
and  
decreases

Food security and  
production capability  
rapidly becoming a more  
important global issue

" A key culprit in climate change – carbon emissions – can also help agriculture by enhancing photosynthesis in many important (...) crops such as wheat, rice, and soybeans. The science, however, is far from certain on the benefits of carbon fertilisation."

This map represents the case of beneficial carbon fertilisation processes.

## Biomass Resources Available in the United States



**Unique  
biomass  
capability**

**Upper Midwest  
bioeconomy likely to be  
more globally significant  
over coming decades**



September 2005

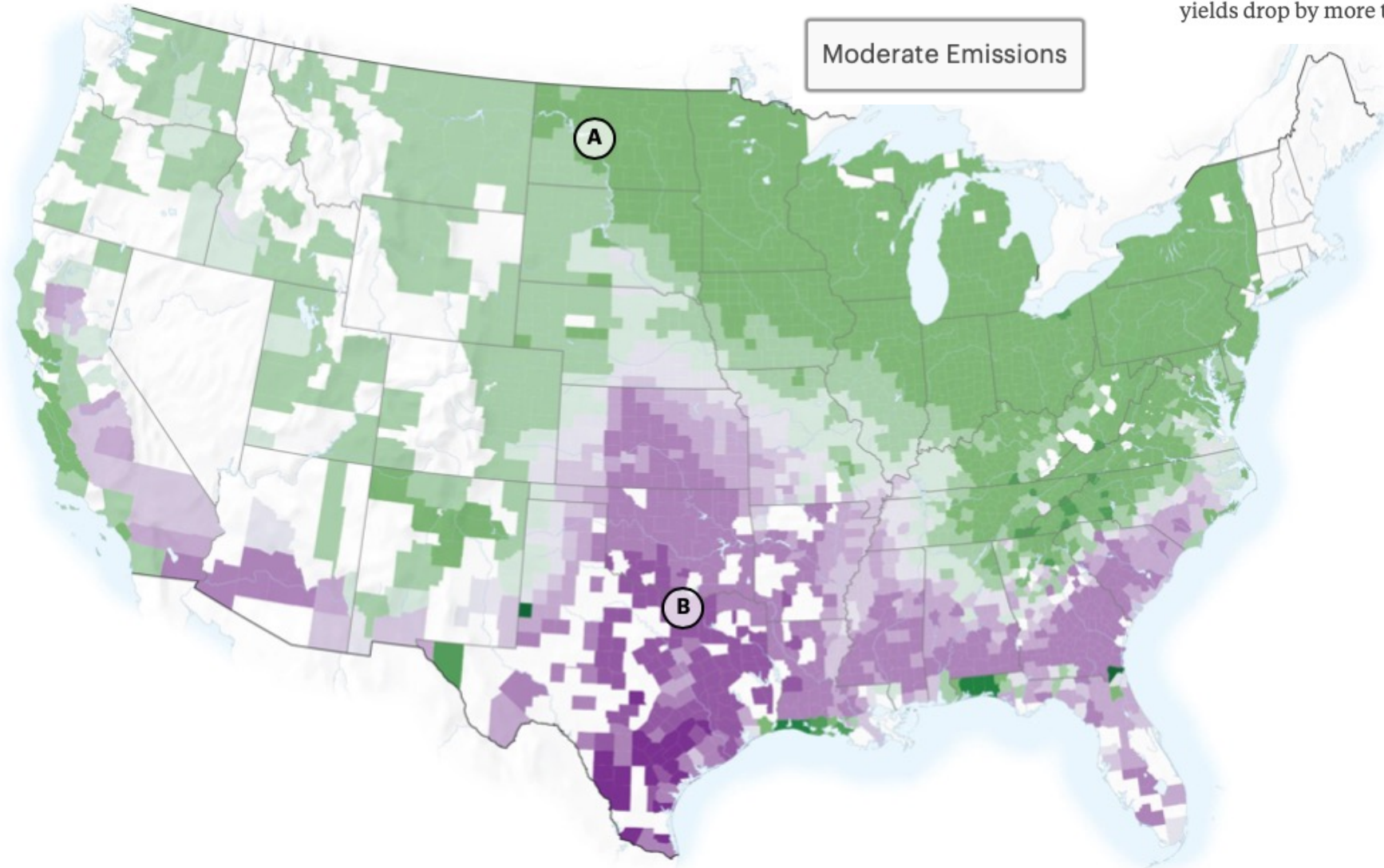




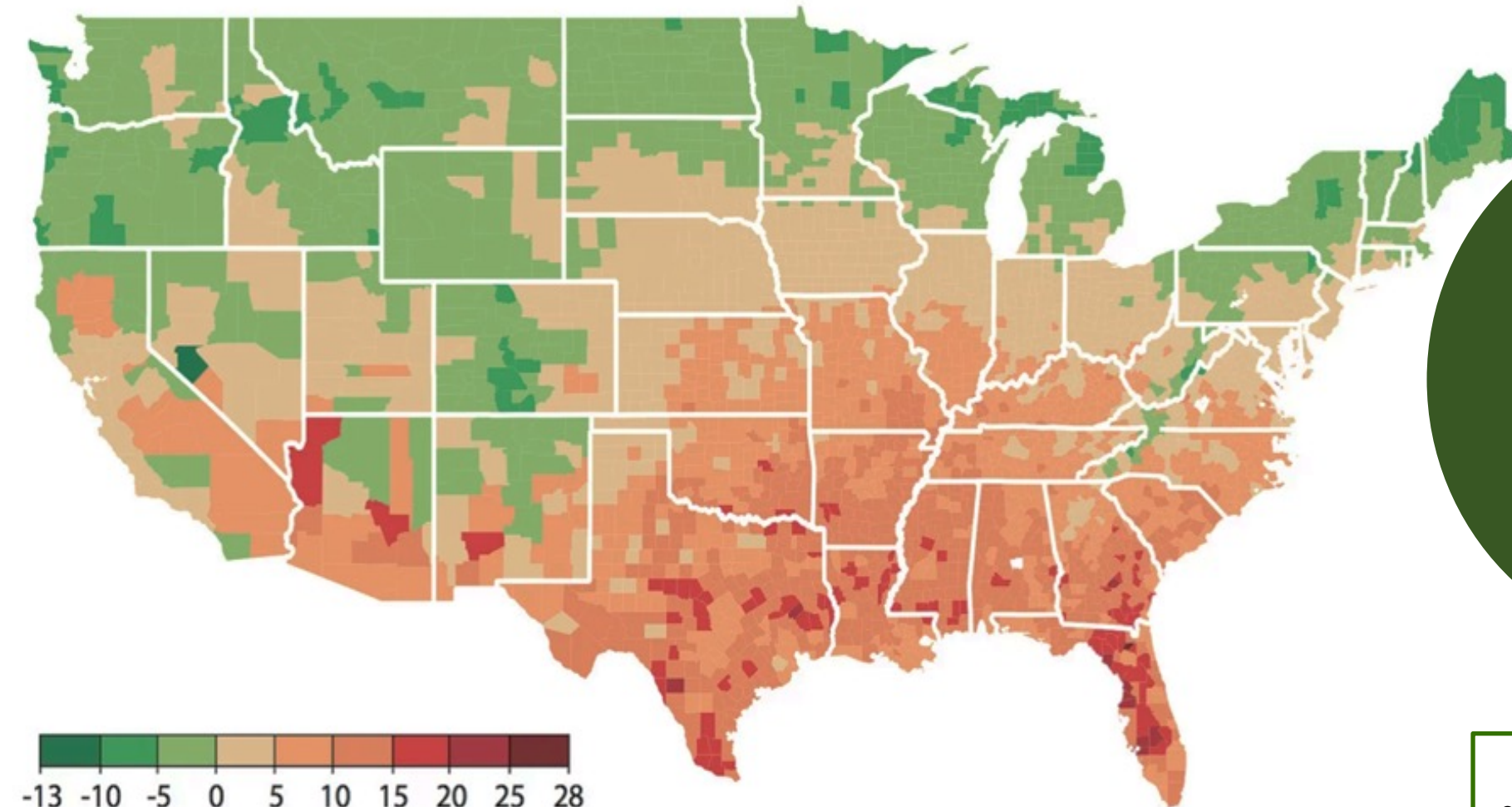
## Farm Crop Yields: 2040-2060



Corn and soy production is more sensitive to heat than drought, and it will decrease for every degree of warming. By midcentury, North Dakota (A), which already harvests millions of acres of both crops, will warm enough to allow for more growing days and higher yields. But parts of Texas and Oklahoma (B) may see yields drop by more than 70%.







-13 -10 -5 0 5 10 15 20 25 28  
Total economic damage (% county GDP)

Potential economic damages are shown at the county level in a scenario in which emissions of greenhouse gases continue at current rates. Green indicates areas that could see economic benefits. To see an interactive version of this map, click [here](#).

Hsiang, Kopp, Jina, Rising, et al./Science

**Long term  
GDP impact  
positive in  
north**

**Climate change may  
drive migration patterns  
within US may move to  
'north', and from 'west  
to center'**

Source: [Christopher Joyce, MPR News, June 29, 2017](#)

# New Climate Maps Show a Transformed United States

by [Al Shaw](#), [Abraham Lustgarten](#), ProPublica, and Jeremy W. Goldsmith,  
Special to ProPublica, September 15, 2020.

In the United States, that niche today blankets the heart of the country, from the Atlantic seaboard through northern Texas and Nebraska, and the California coast.

According to new data from the Rhodium Group analyzed by ProPublica and The New York Times Magazine, warming temperatures and changing rainfall will drive agriculture and temperate climates northward, while sea level rise will consume coastlines and dangerous levels of humidity will swamp the Mississippi River valley.



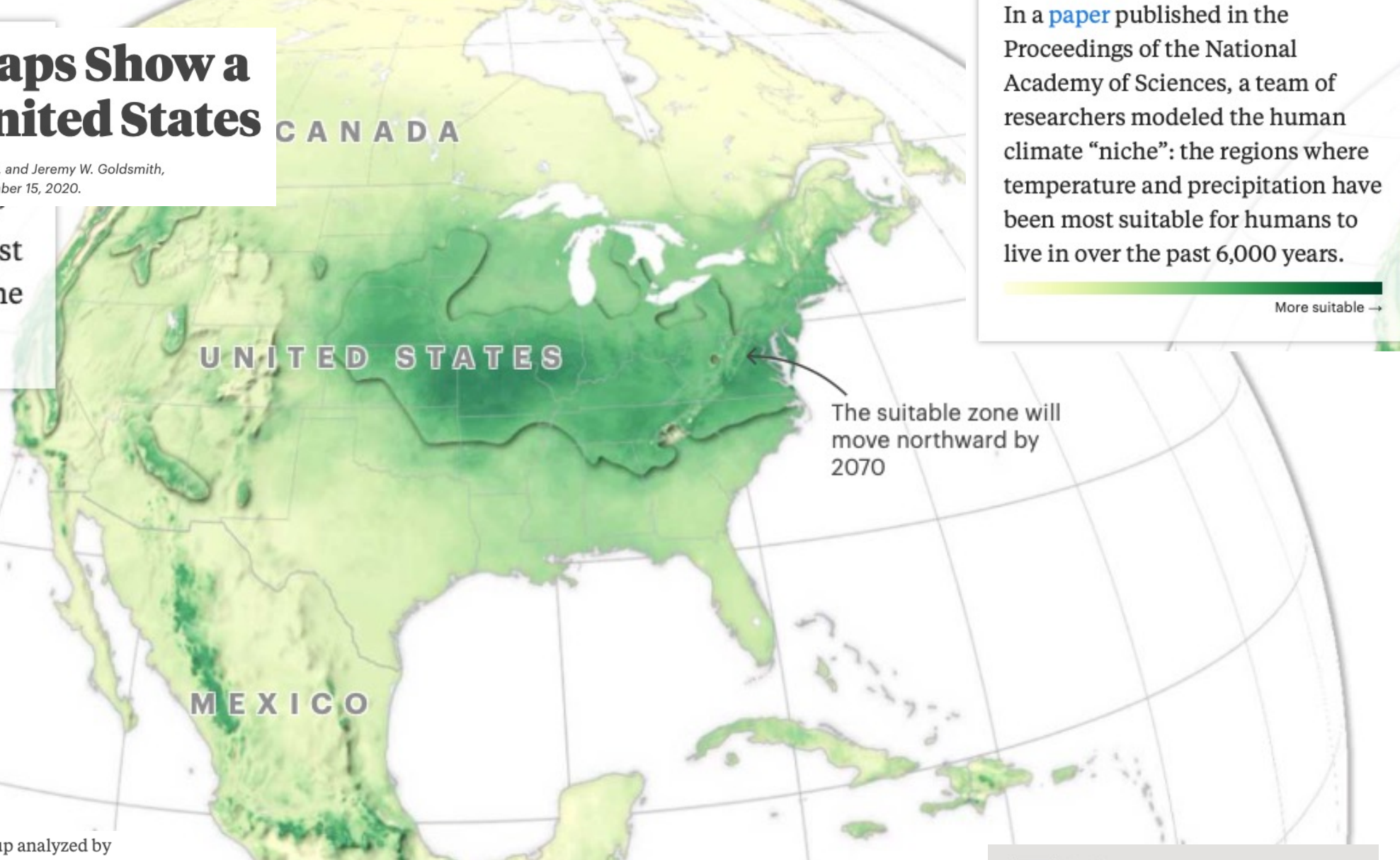


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SSIONS SCENARIO (KNOWN AS RCP  
, by 2070 much of the Southeast  
comes less suitable and the niche  
ts toward the Midwest.

In a [paper](#) published in the Proceedings of the National Academy of Sciences, a team of researchers modeled the human climate “niche”: the regions where temperature and precipitation have been most suitable for humans to live in over the past 6,000 years.



According to new data from the Rhodium Group analyzed by ProPublica and The New York Times Magazine, warming temperatures and changing rainfall will drive agriculture and temperate climates northward, while sea level rise will consume coastlines and dangerous levels of humidity will swamp the Mississippi River valley.

 **PROPUBLICA**  
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<https://projects.propublica.org/climate-migration/>



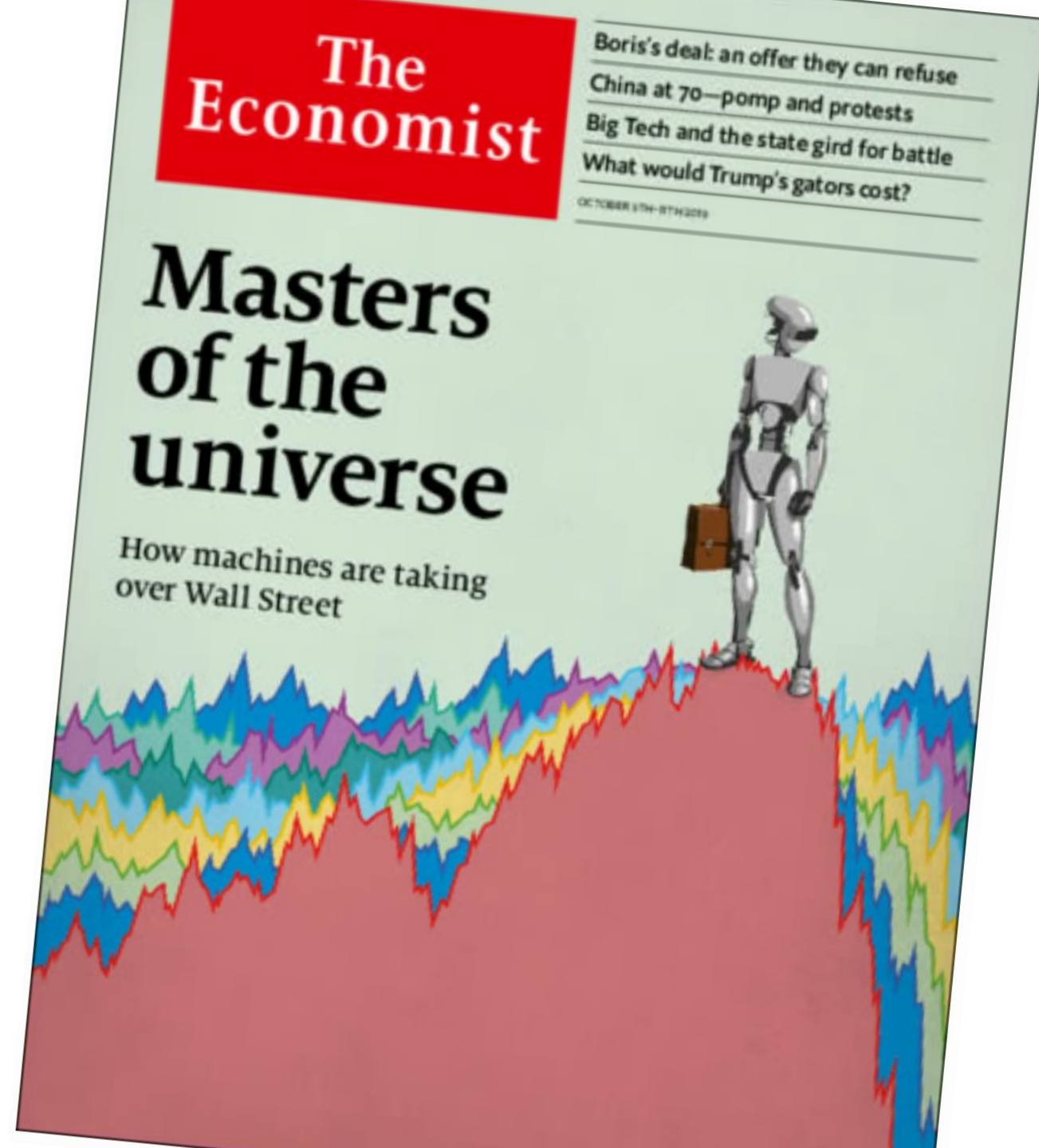
# Predictions and observations

- Growing disconnect between where food will be consumed, and where it can be grown.
- Midwest poised to capitalize on intersect of water, energy and biomass / food production capability.
- New migration patterns are emerging

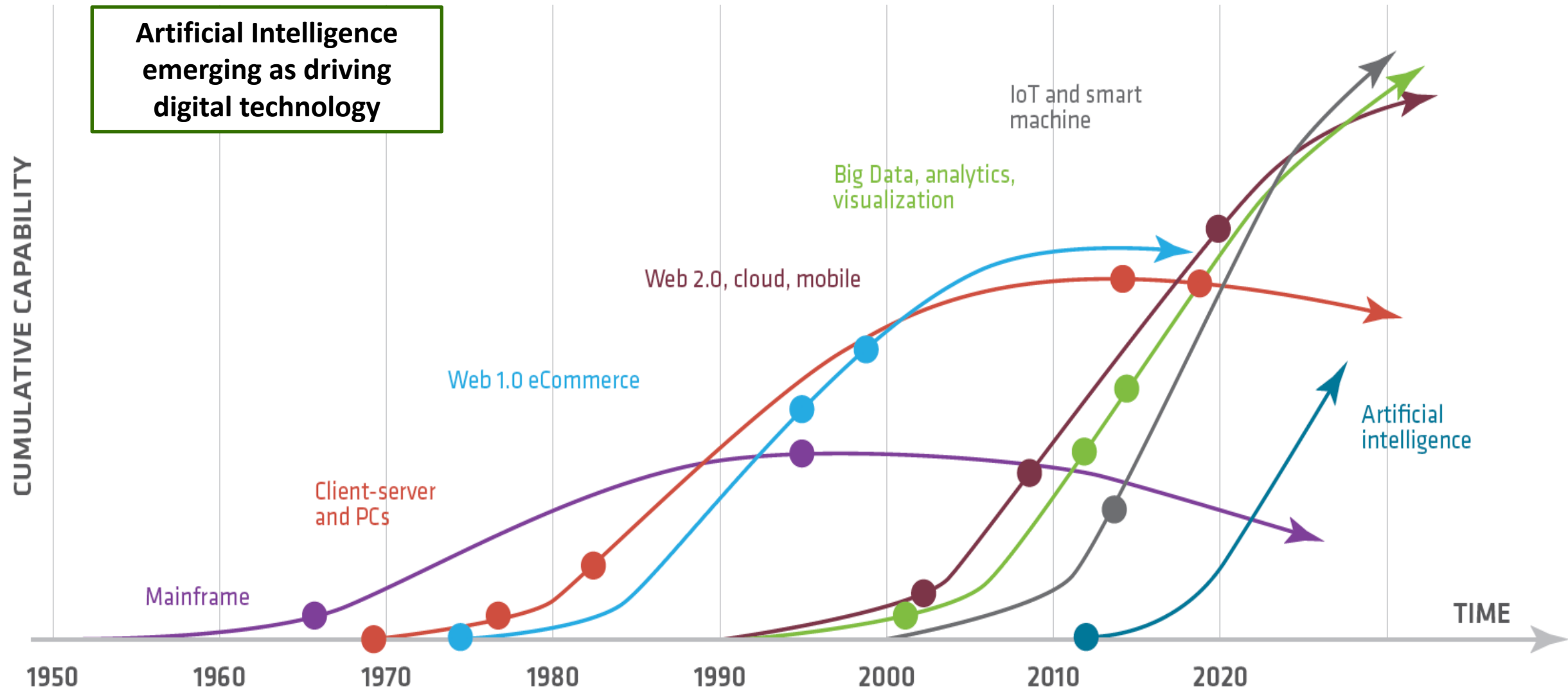
# Technology and the speed of change

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## THE INCREASING CAPABILITY OF DIGITAL TECHNOLOGIES

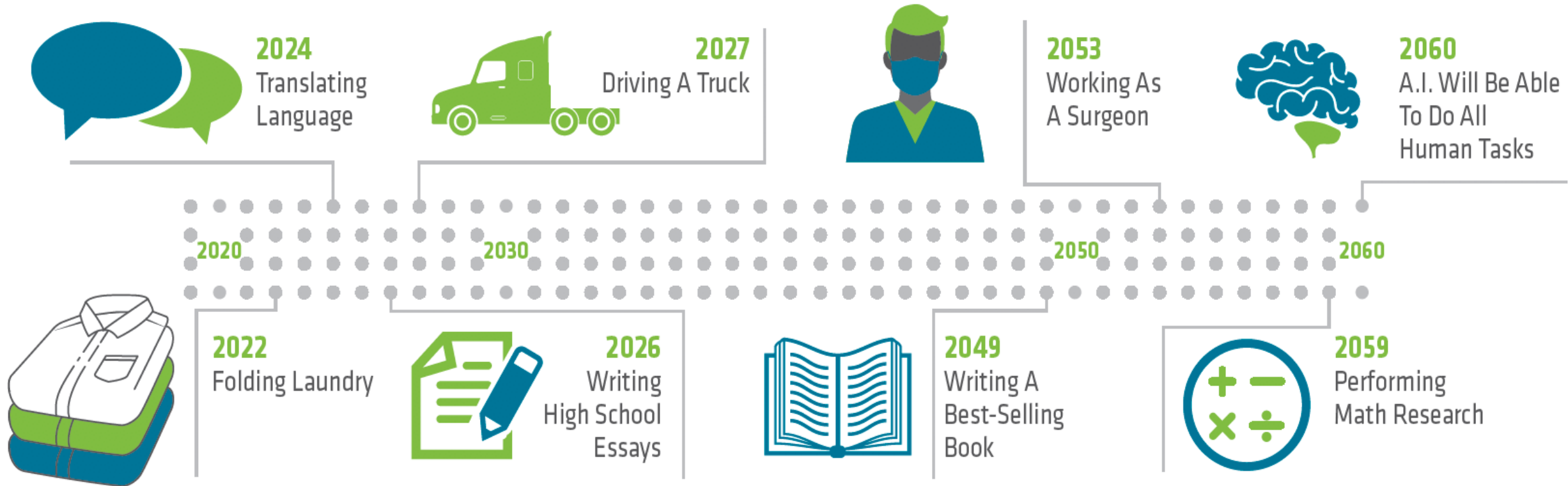




# When will AI outperform people?

**AI is reshaping our lives  
and industries – right  
now**

AI WILL LIKELY OUTPERFORM HUMANS AT...



Source: 'You Will Lose Your Job to a Robot—and Sooner Than You Think'. Kevin Drum, Mother Jones, November / December Issue, 2017. (adapted from 'When will AI exceed human performance? Evidence from AI Experts', Oxford and Yale University 2017)<sup>12</sup>

Reproduced from Next Industrial Revolution, Future iQ, 2018



Source: New Yorker Oct 23, 2017, and Max Planck Research 2009

# Rapid systemic change and technology integration

Adapted from: Source: Deloitte. 2014. Industry 4.0 Challenges and solutions for the digital transformation and use of exponential technologies

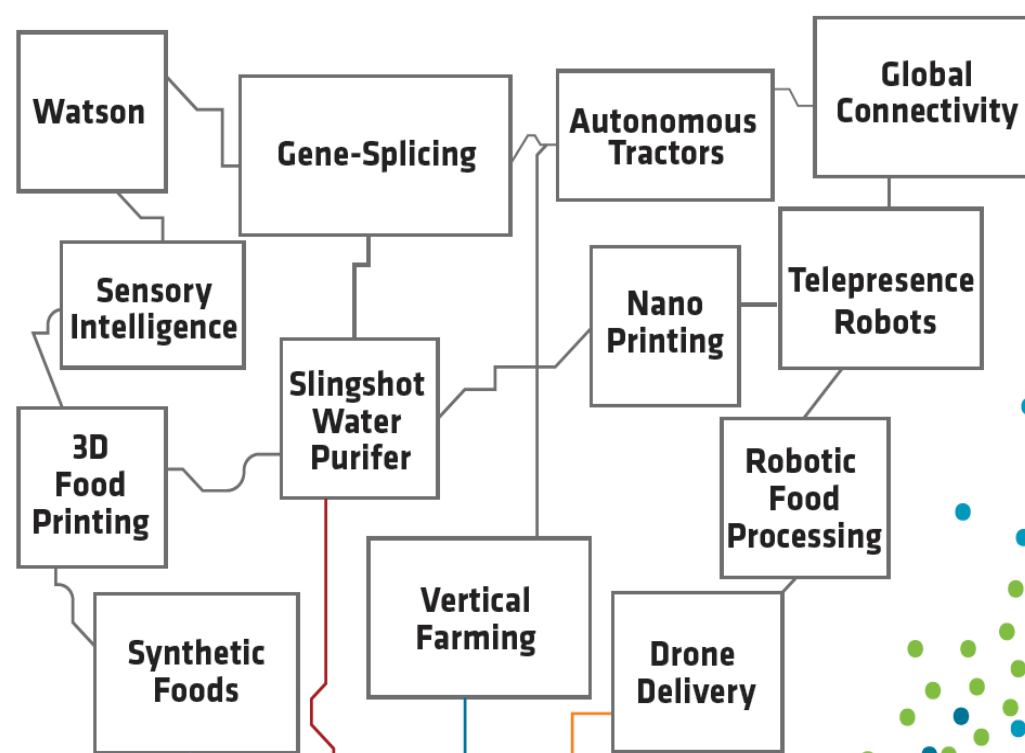
SPEED OF TECHNOLOGICAL CHANGE

EXPONENTIAL TECHNOLOGIES

**Technological Development**  
Moore's Law: The power of chips, bandwidth and computer doubles appr. every 18 months.

**The Human Factor**  
Technological dev. feeds and enables various trends in society: Democratisation, Social Connection, DIY, Decentralisation.

Biotech  
Neurotech  
Nanotech  
New Energy & Sustainability  
ICT & Mobile Technology  
Sensing  
3D Food Printing  
Artificial Intelligence  
Robotics  
Drones



FROM LINEAR TO EXPONENTIAL GROWTH TRAJECTORY



# Technology and speed of change

- Waves of disruption and technology are reshaping education, industries and manufacturing
- Speed of change is exponential



# Macro Trends...

What does all this mean for Cornell College – context and content?

