

The Future Is Coming!

Is “One Health” Ready?

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SEAOHUN 2018 International Conference

One Health Academic Challenges: Preparing today's workforce to combat tomorrow's challenges



Is Our “One Health” Vision Ready for the Future??

As we consider the role of OH – is our vision for OH incorporating the challenges to be faced in the world of “tomorrow”?

- What are future trends?
- What are their likely consequences?
- What are the implications for One Health?



Consider the Future Through Seven Lenses –2050

- Population Change
- Urbanization
- Economic Growth
- Globalization
- Feeding the Future
- Environmental Change
- AI

And what do they mean for OH?



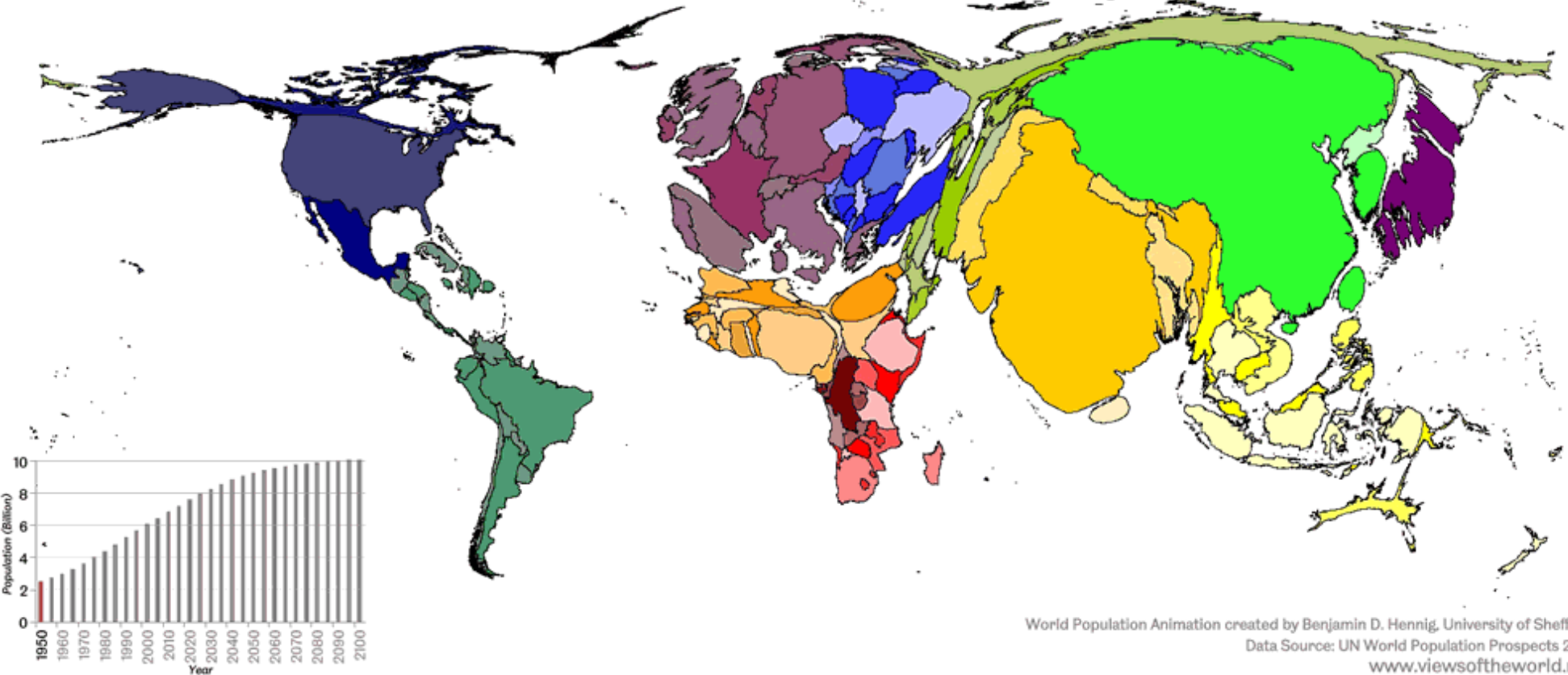


Population Growth

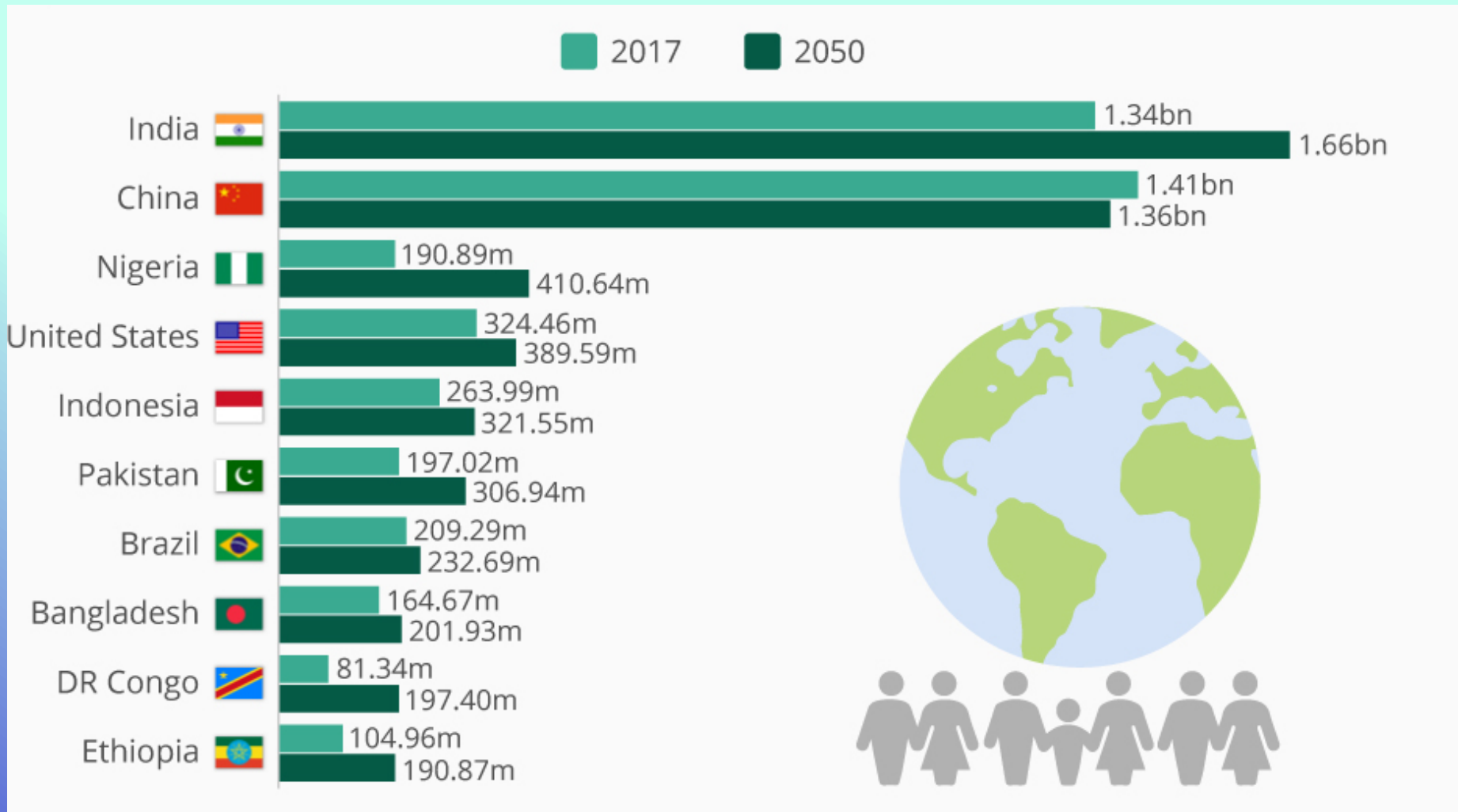


Global Populations: 1950 - 2100

World Population 1950



The World's Most Populous Nations



Urbanization



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



Notes



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1970



Notes



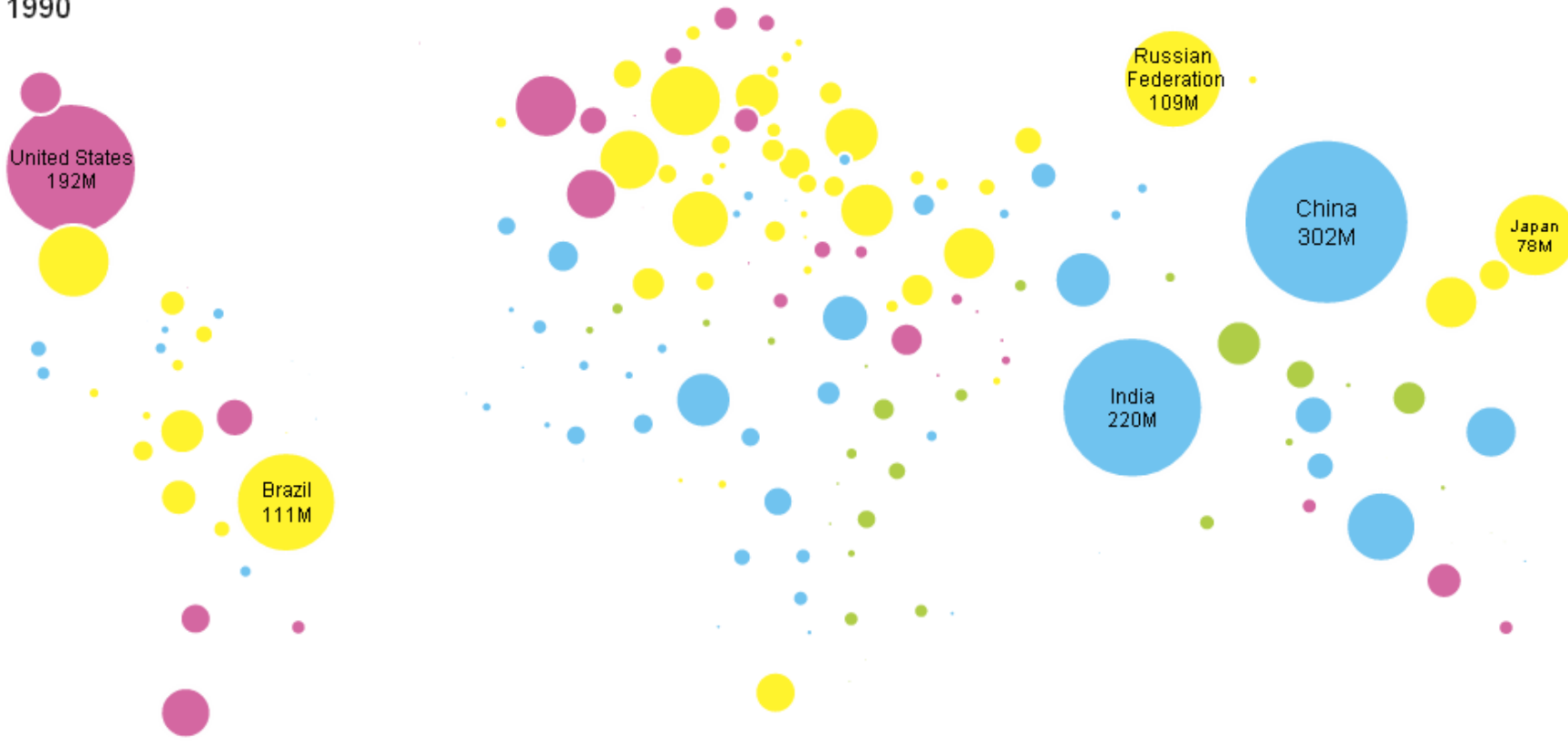
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1990



Notes



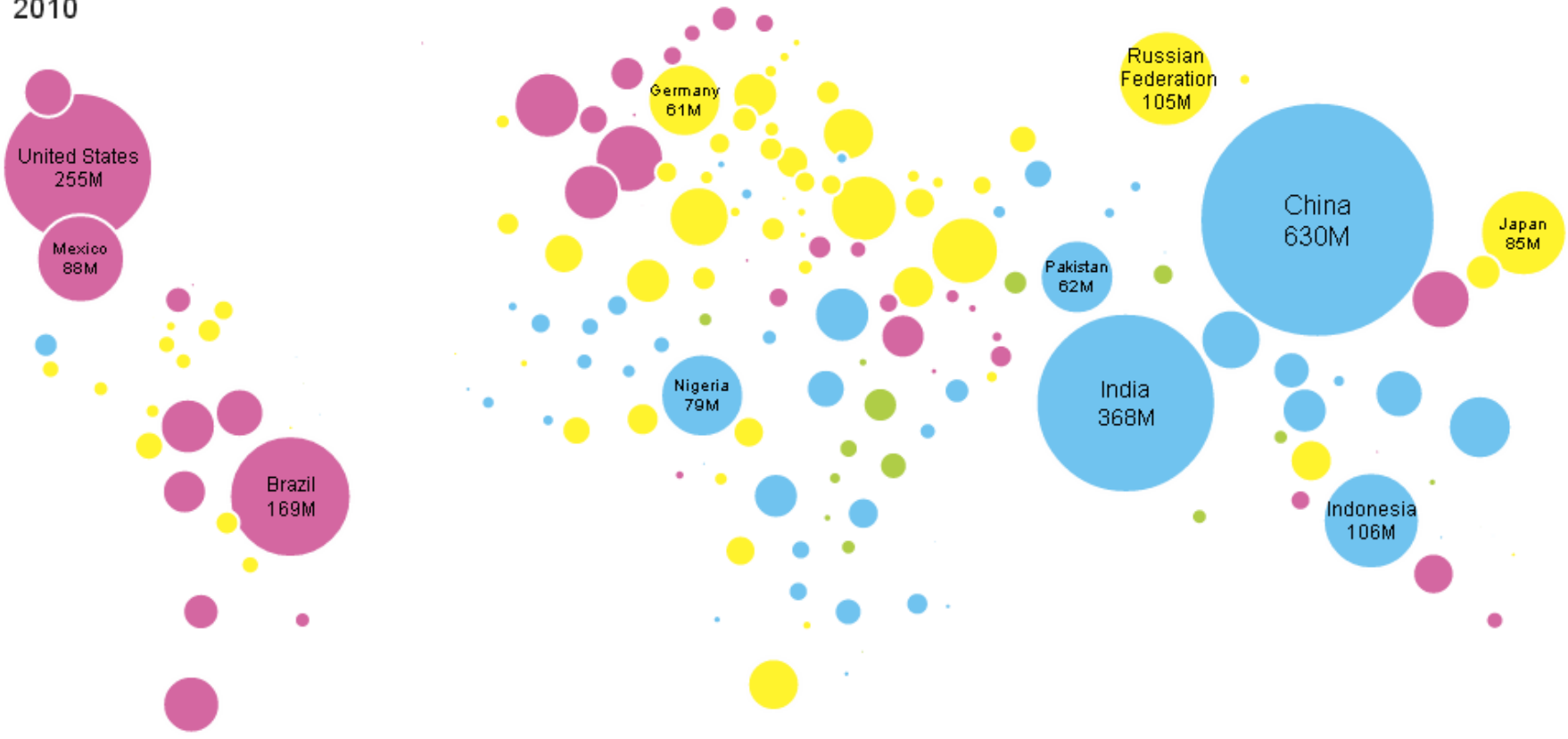
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2010



Notes



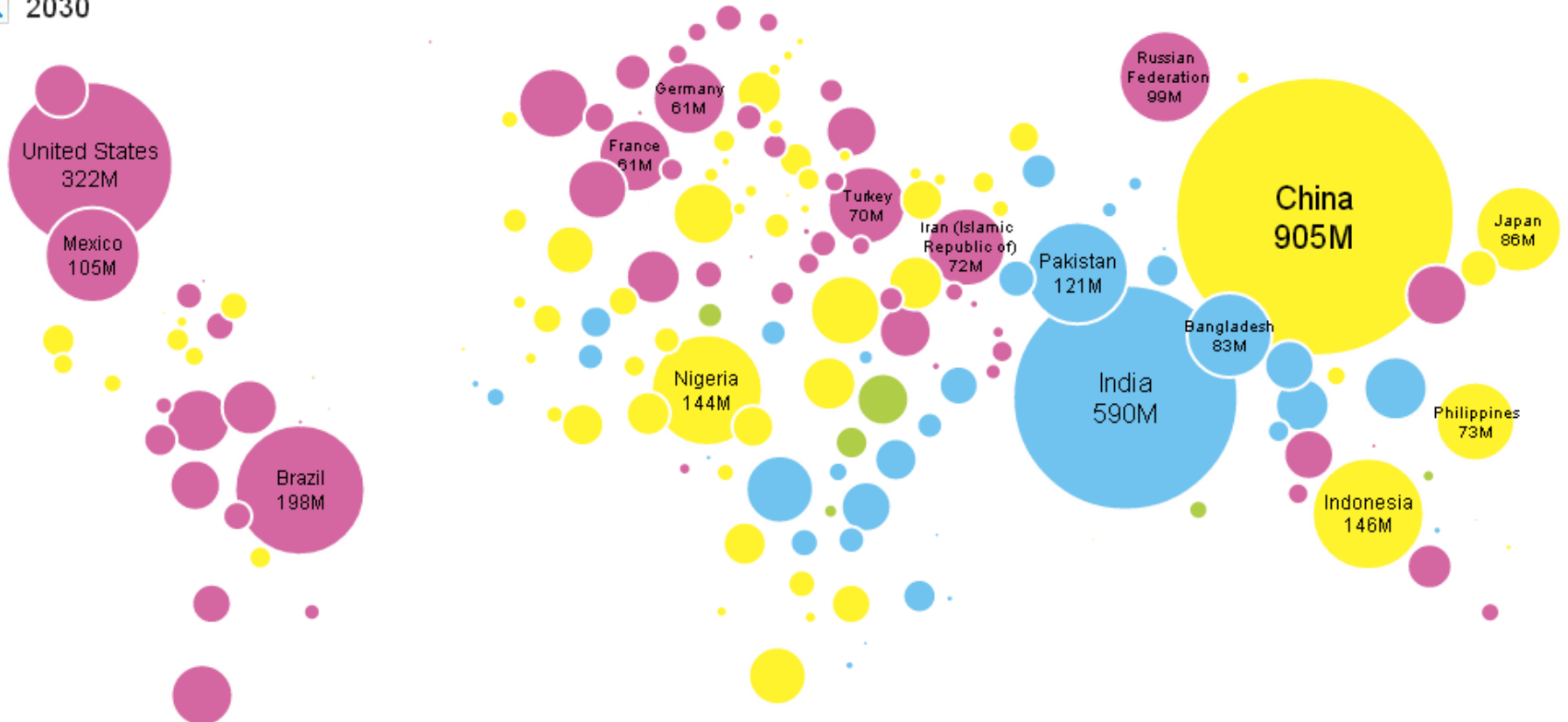
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 2030



[Notes](#)



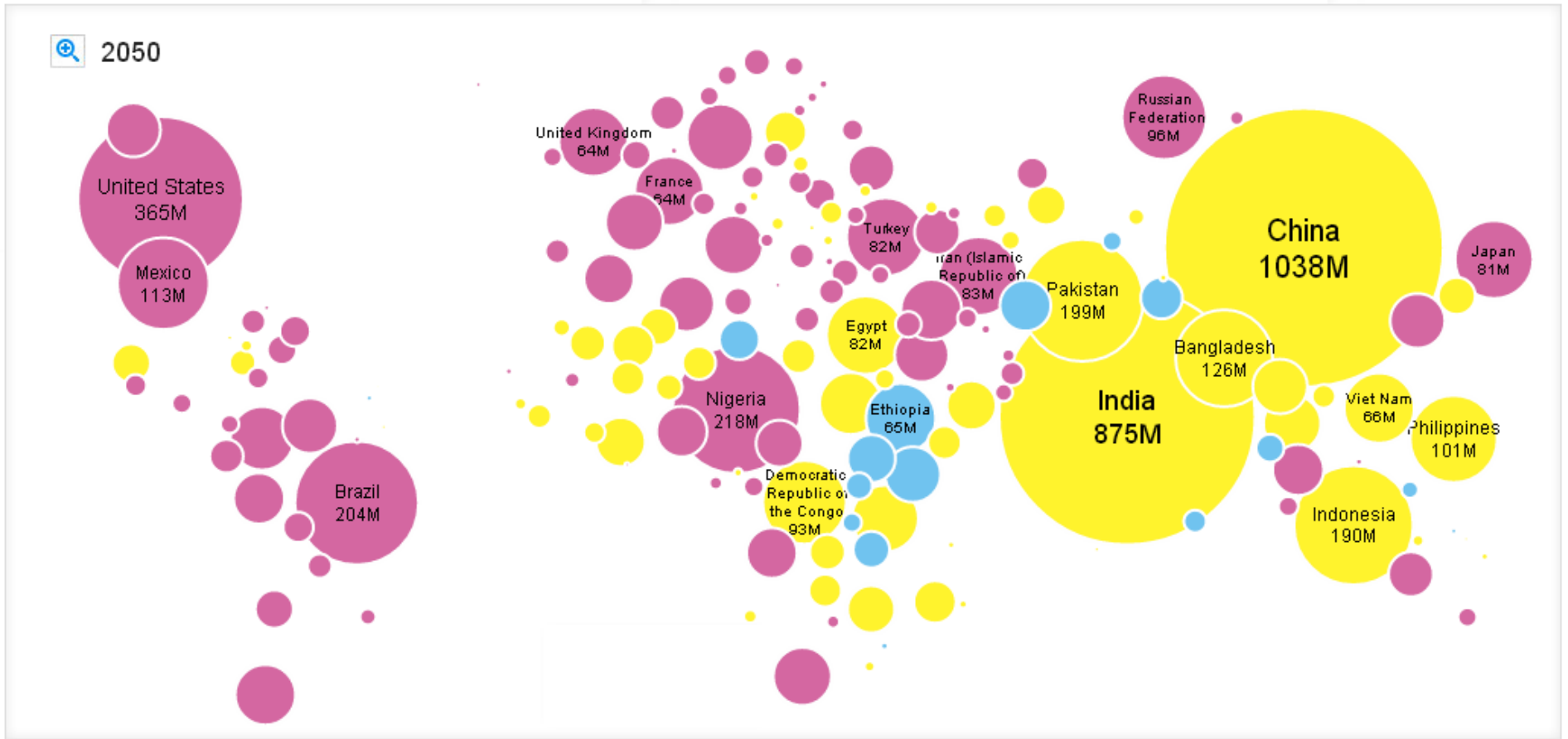
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2050



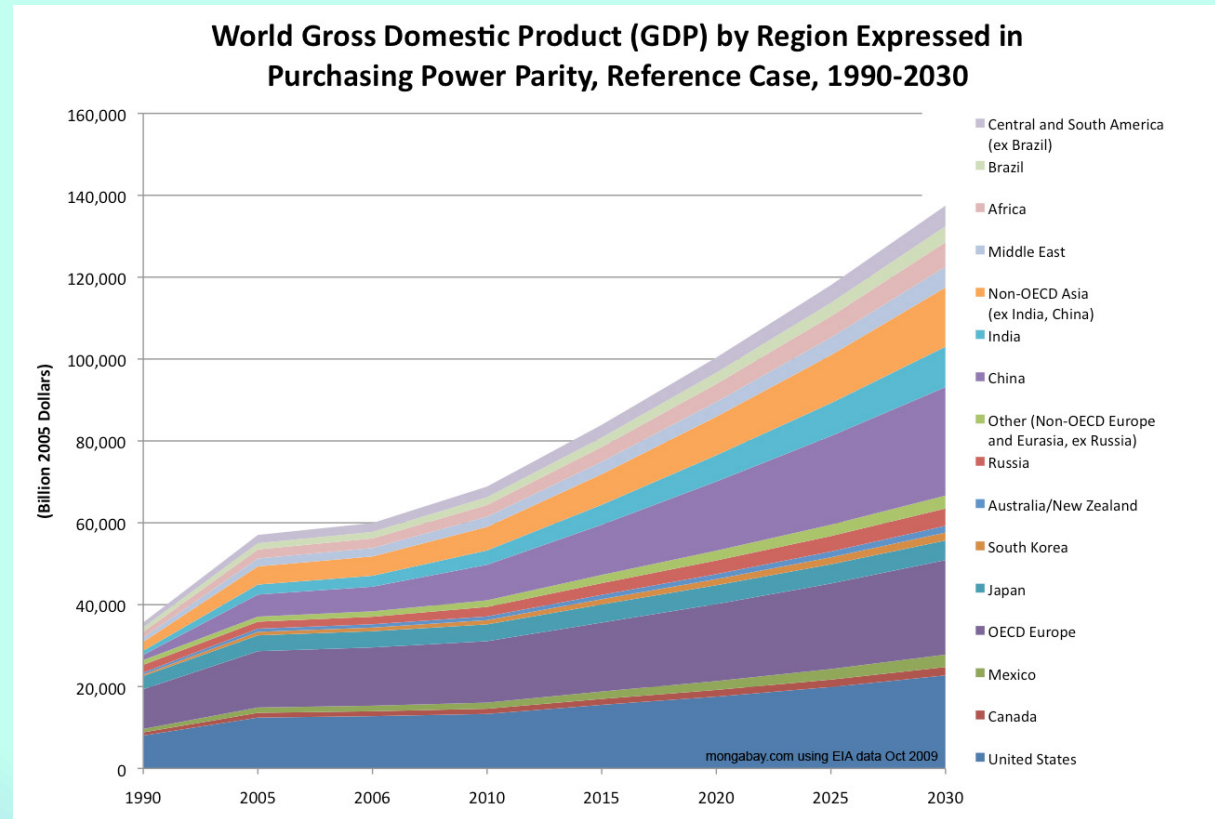
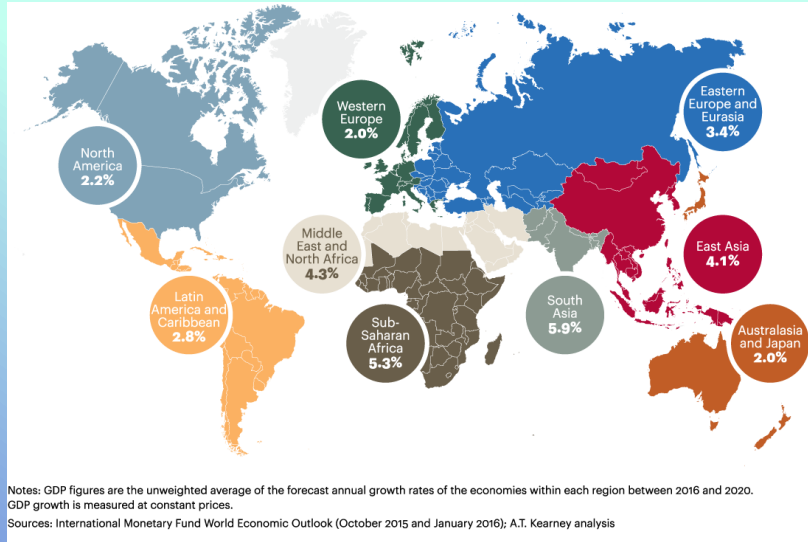
Notes



Surging Household Wealth



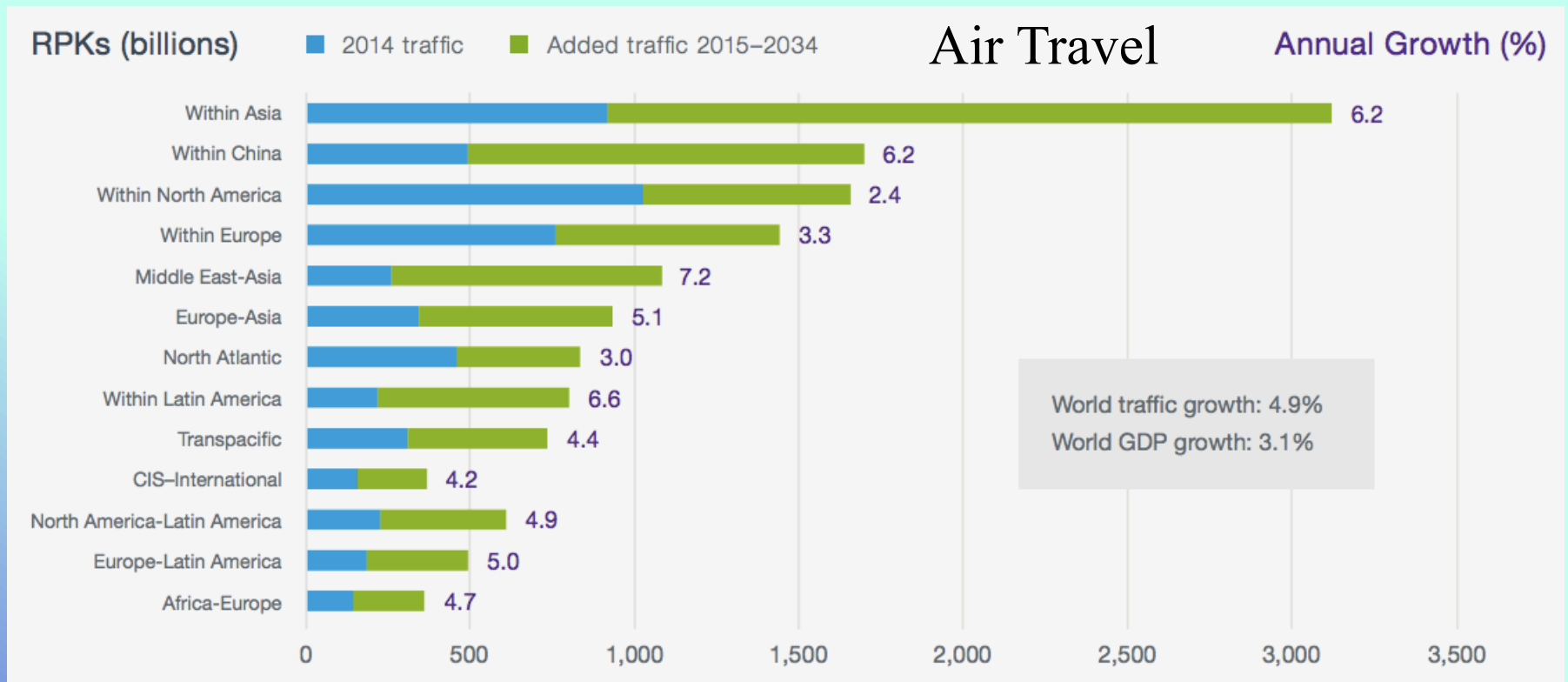
Global Purchasing Power – The World Is Getting Wealthier



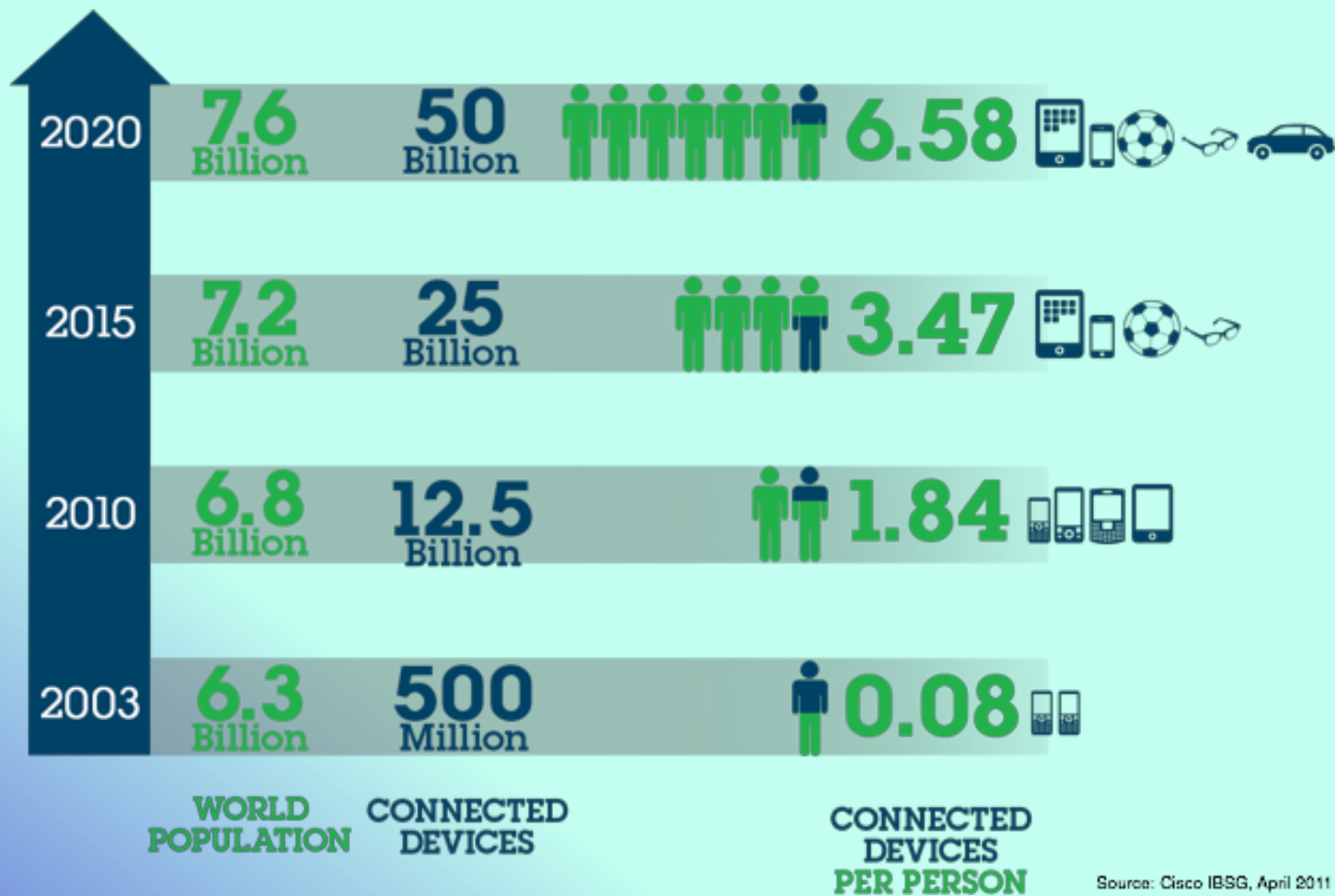
Globalization



We are Increasingly More Mobile



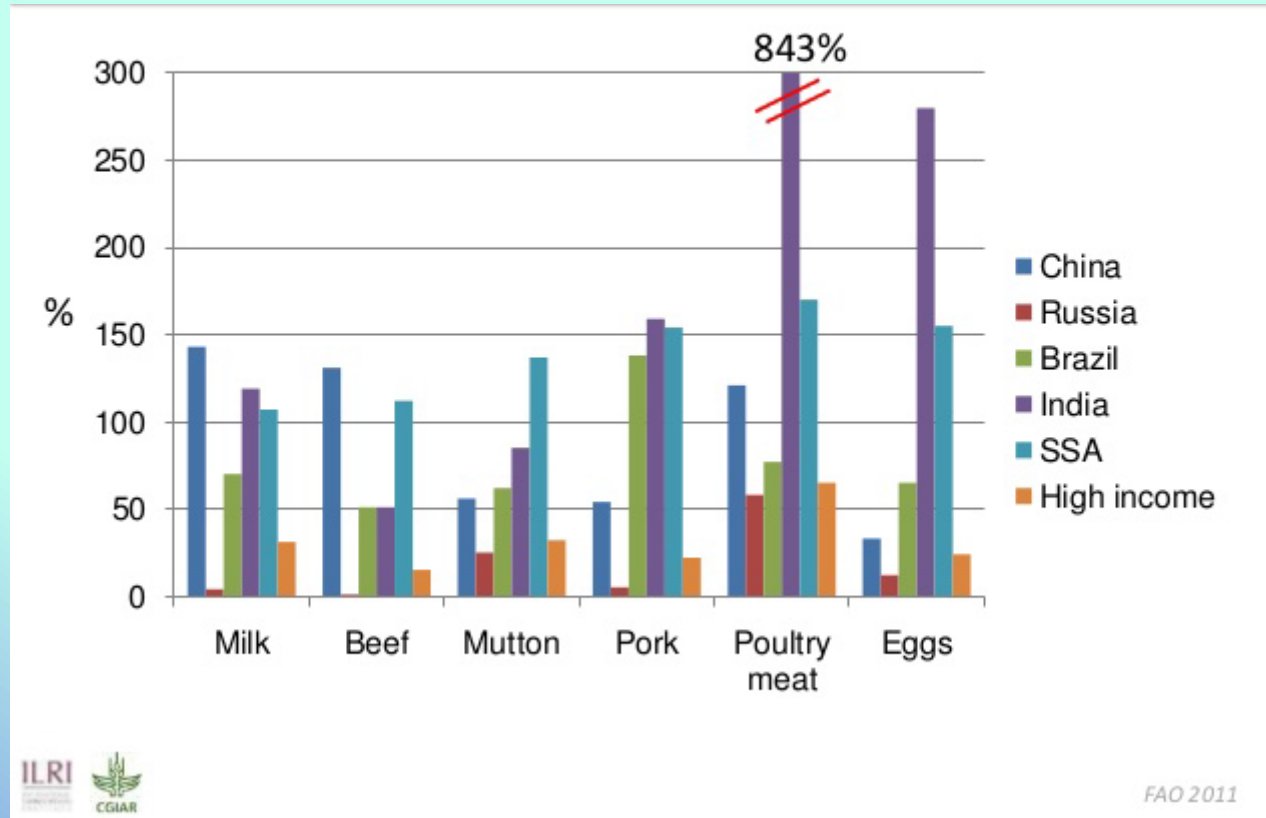
We are Increasingly More IT Connected



Feeding the Future



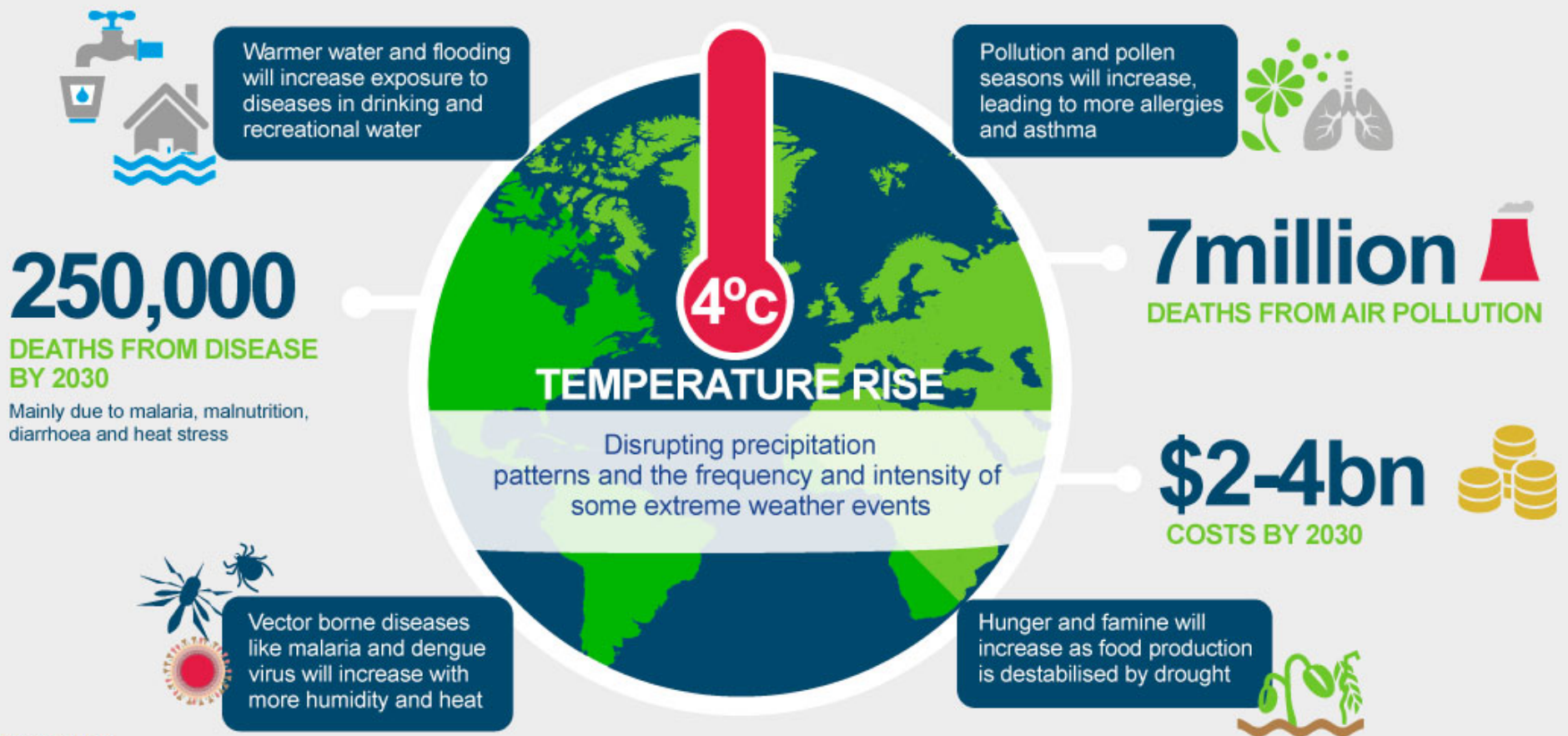
% Change in Consumption of Animal Products: 2000 - 2030



Environmental Change



How climate change could impact the world



Source: WHO

Credit: Rebecca Robinson/LSHTM



DEFORESTATION FRONTS 2010 – 2030

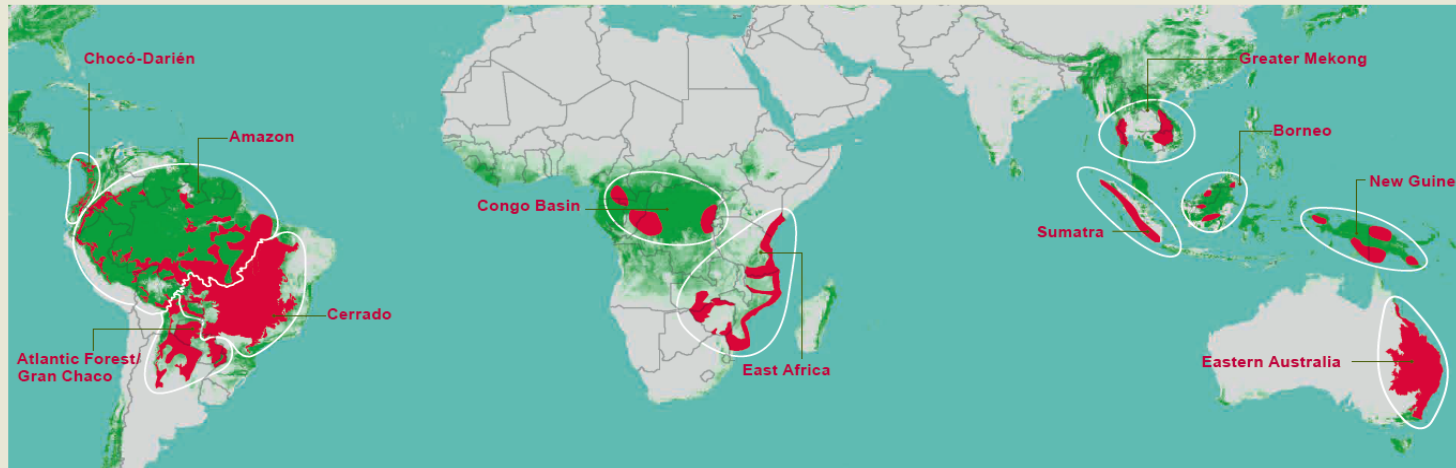


Figure 10: Hotspots of projected forest loss between 2010 and 2030⁹⁹.

Key
■ Forest
■ Deforestation fronts and projected deforestation, 2010-2030

The most common pressures causing deforestation and severe forest degradation are large- and small-scale agriculture; unsustainable logging; mining; infrastructure projects; and increased fire incidence and intensity. New roads can have a small direct impact but a large indirect effect through opening up forests to settlers and agriculture. Poor forest management, destructive logging practices and unsustainable fuelwood collection degrade forests and often instigate an increasing spiral of degradation that eventually leads to deforestation ('death by a thousand cuts'). Table 1 gives a summary of these pressures⁹⁹.

Table 1: Summary of main pressures on forests in different deforestation fronts

Key

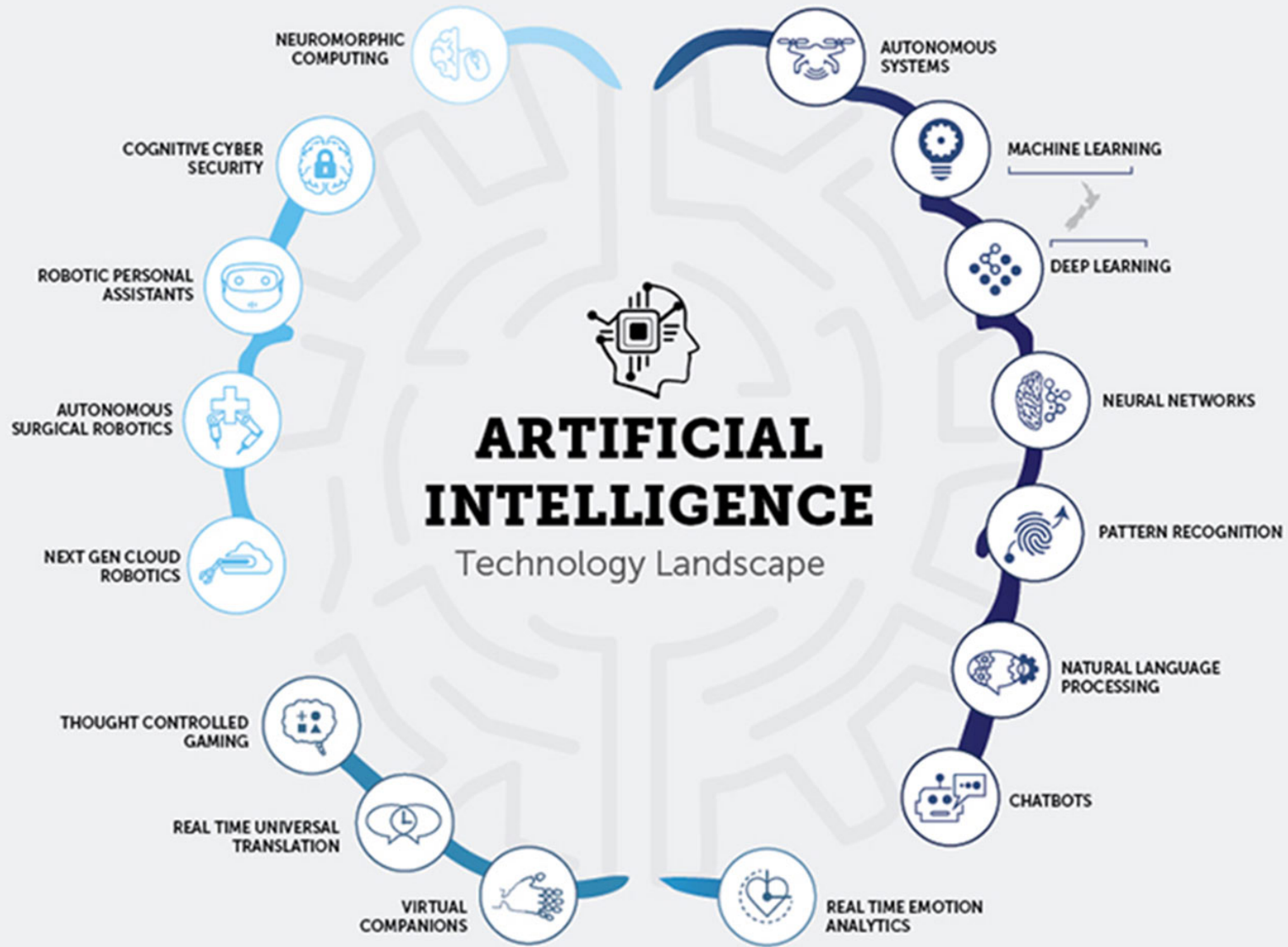
- Primary cause of forest loss and/or severe degradation
- Important secondary cause of forest loss and/or severe degradation
- Less important cause of forest loss and/or severe degradation
- Not a cause of forest loss and/or severe degradation

	LIVESTOCK	LARGE-SCALE AGRICULTURE	SMALL-SCALE AGRICULTURE & COLONIZATION	UNSUSTAINABLE LOGGING	PULP PLANTATIONS	FIRES	CHARCOAL AND FUELWOOD	MINING	INFRASTRUCTURE	HYDROELECTRIC POWER
AMAZON	■	■	■	■		■		■	■	■
ATLANTIC FOREST/GRAN CHACO	■	■		■	■	■	■	■	■	■
BORNEO		■	■	■	■	■		■	■	■
CERRADO	■	■					■	■	■	■
CHOCÓ-DARIÉN	■	■	■	■				■	■	
CONGO BASIN	■	■	■	■			■	■	■	
EAST AFRICA	■	■	■	■		■	■	■	■	
EASTERN AUSTRALIA	■		■	■	■			■	■	■
GREATER MEKONG		■	■	■	■		■		■	■
NEW GUINEA		■	■	■	■	■				
SUMATRA		■	■	■	■	■			■	



Artificial Intelligence





Implications



What are the Consequences

By 2050

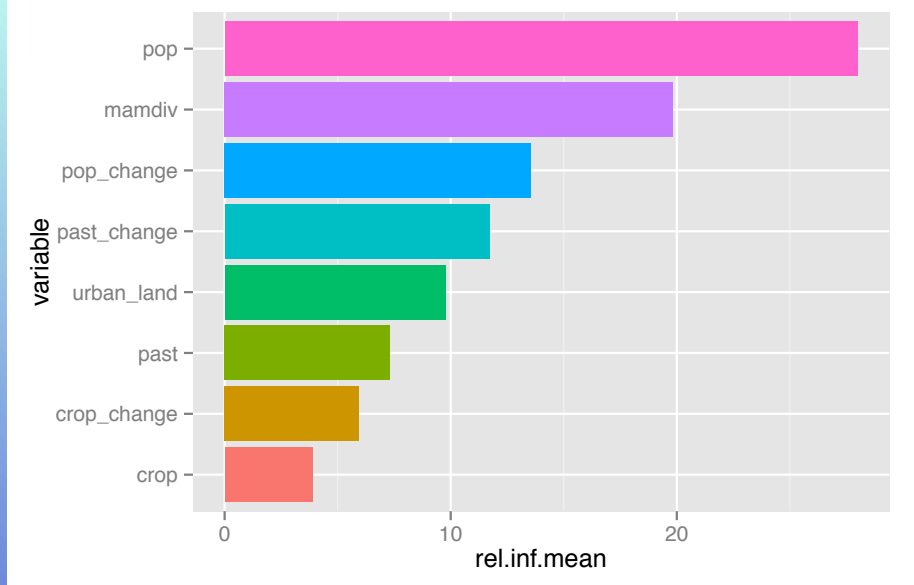
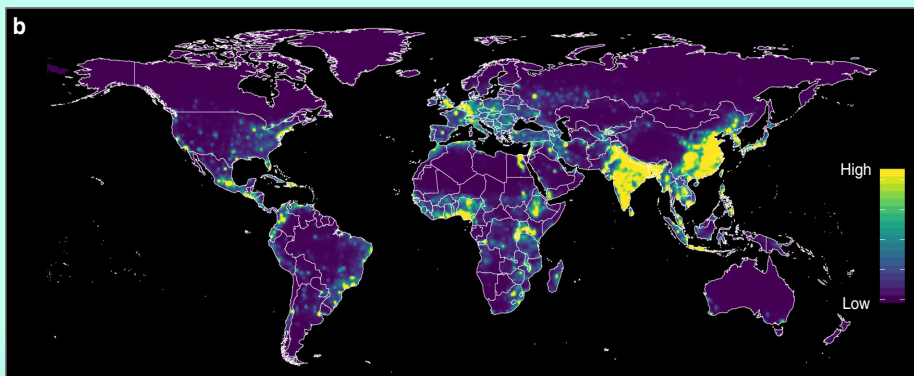
- Global Population increase >2 billion, mostly Africa
- Nearly 70% will be urban
- Economies will be increasingly consumer driven
- Livestock production will more than double globally
- Increasing environmental impact
- Globally and intra-regionally connected
- AI will be transformative and disruptive



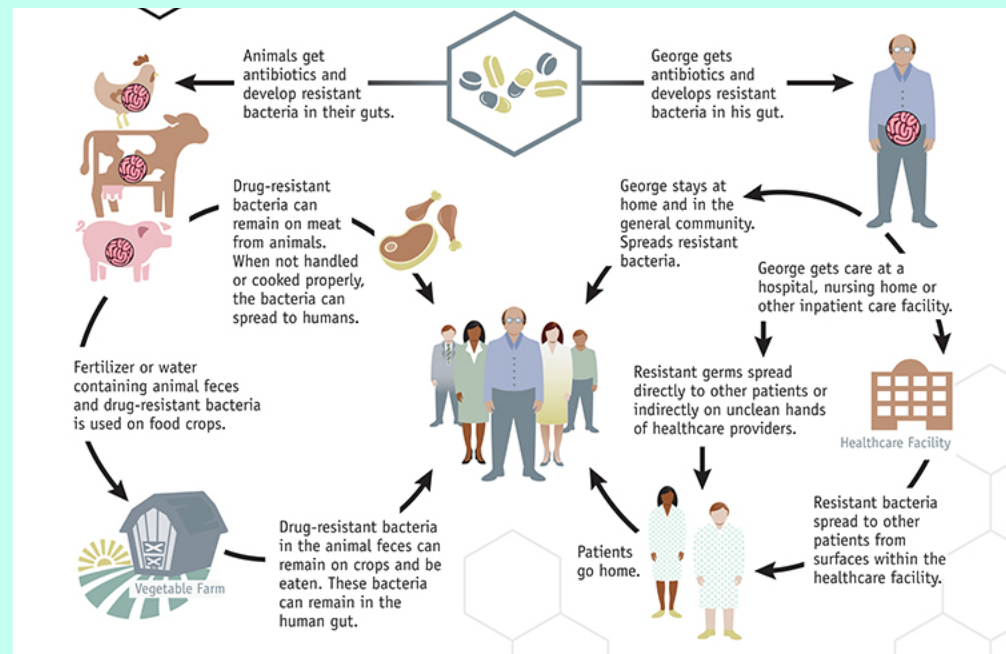
Consider Likely Impact on Zoonosis and AMR



Drivers of Zoonosis and AMR

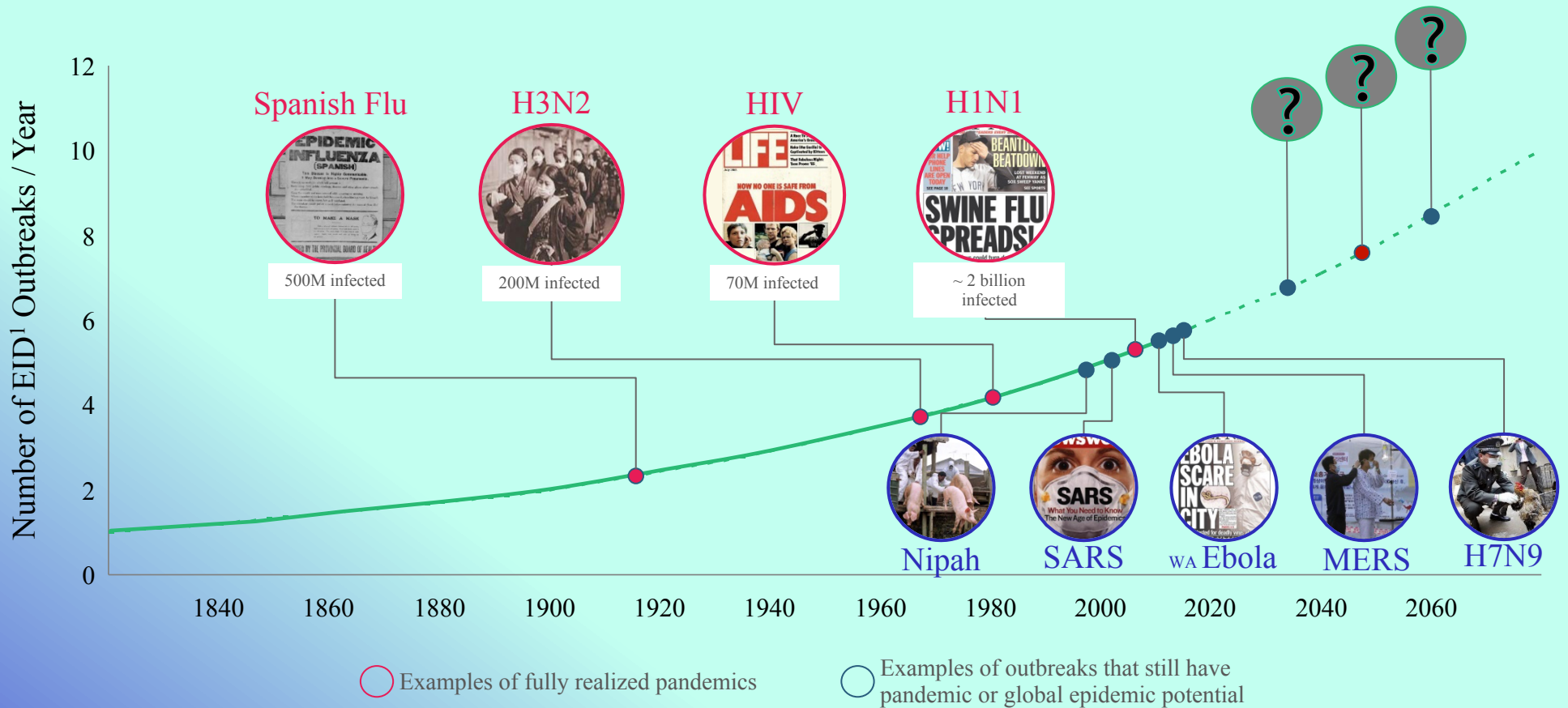


Source: USAID Predict/EcoHealth Alliance



The threat of viral outbreaks will grow rapidly...

Largely driven by population growth, wildlife encroachment, and globalization



1. EID: emerging infectious disease; only diseases with zoonotic emergence are included; Reference for graph: Allen et al. (2017) Nature Communications



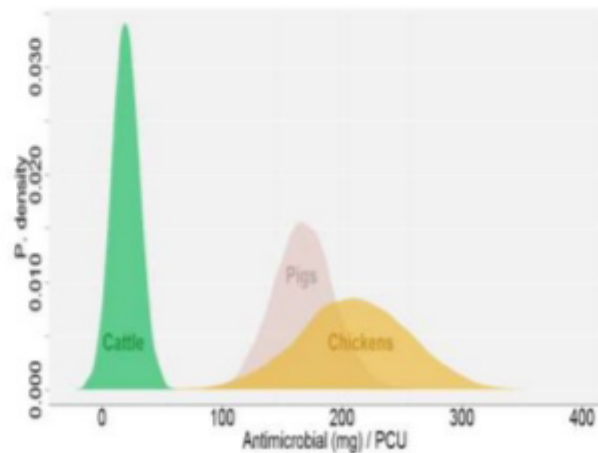
Expanded Antimicrobial Use in Livestock



Global trends in antimicrobial use in food animals

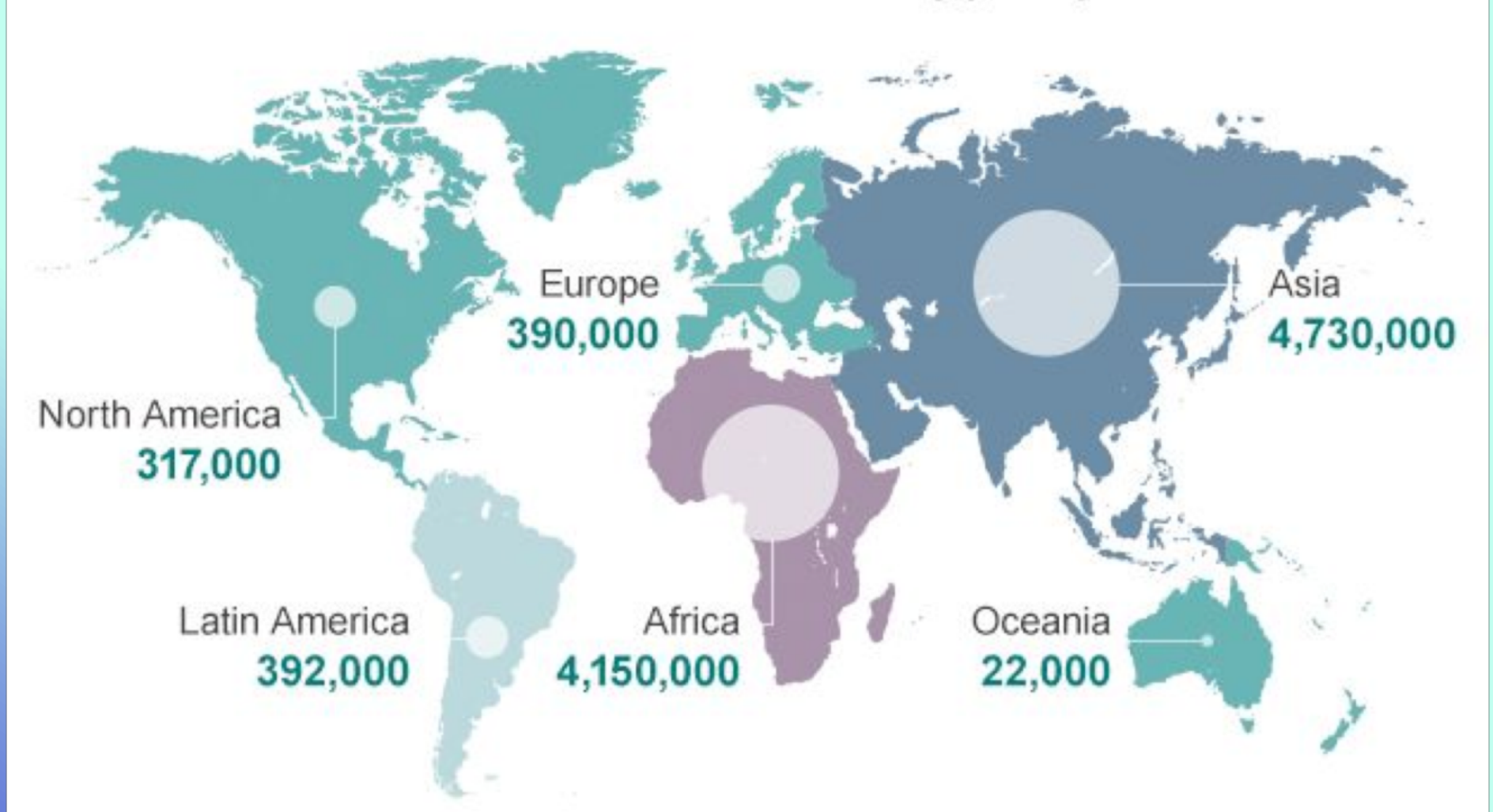
Thomas P. Van Boeckel^{a,1}, Charles Brower^b, Marius Gilbert^{cd}, Bryan T. Grenfell^{a,e,f}, Simon A. Levin^{a,g,h,1}, Timothy P. Robinsonⁱ, Aude Teillant^{a,e}, and Ramanan Laxminarayan^{b,e,j,1}

- Total consumption in the livestock sector in 2010 estimated at 63,151 tons
- Global antimicrobial consumption will rise by 67% by 2030
- It will nearly double in BRICS
- Poultry > pork: e.g. in Asia, chicken by 129%, pork 124% by 2030



Global Threat from Antimicrobial Resistance

Deaths attributable to antimicrobial resistance every year by 2050



What are the Implications for One Health?

Is our “OH Workforce vision” aligned with the future?”

- What skills does the future require?
- What is the organizational framework required to empower a future OH workforce?
- What policies need to be in place to enable the success of the Work Force?
- Are government and academic communities and their private sector counterparts planning for the future together?



The Role of a One Health Workforce

You ARE the “change agents” – *bringing a new multisectoral vision and understanding to the challenges we face*



“We can’t solve problems by using the same kind of thinking we used when we created them”

Albert Einstein



