

BofAML's Transforming World Atlas

Investment themes illustrated by maps

Bank of America
Merrill Lynch

04 August 2015 Corrected

Atlases educate, illustrate and illuminate our dynamic world

In our inaugural Transforming World Atlas we have produced a series of maps to highlight BofA Merrill Lynch's favorite cyclical and secular investment themes based on our Transforming World framework:

Themes

1. People – the allocation of scarce human resources
2. Earth – the allocation of scarce natural resources
3. Innovation – the disruptive role of technology
4. Government – the role of public policy
5. Markets – the allocation of scarce financial capital

Our maps cover topics ranging from aging populations to clean tech to the sharing economy – and many others. As you navigate complex investment decisions, we hope these maps provide unique and compelling perspectives.



Investment Strategy
Global

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clean tech sharing economy
geopolitics obesity
robotics megacities
default risks
migration
health inequality
social media terrorism stock market
urbanization default risks
aging
water stress
cyber-security
millennials
climate change

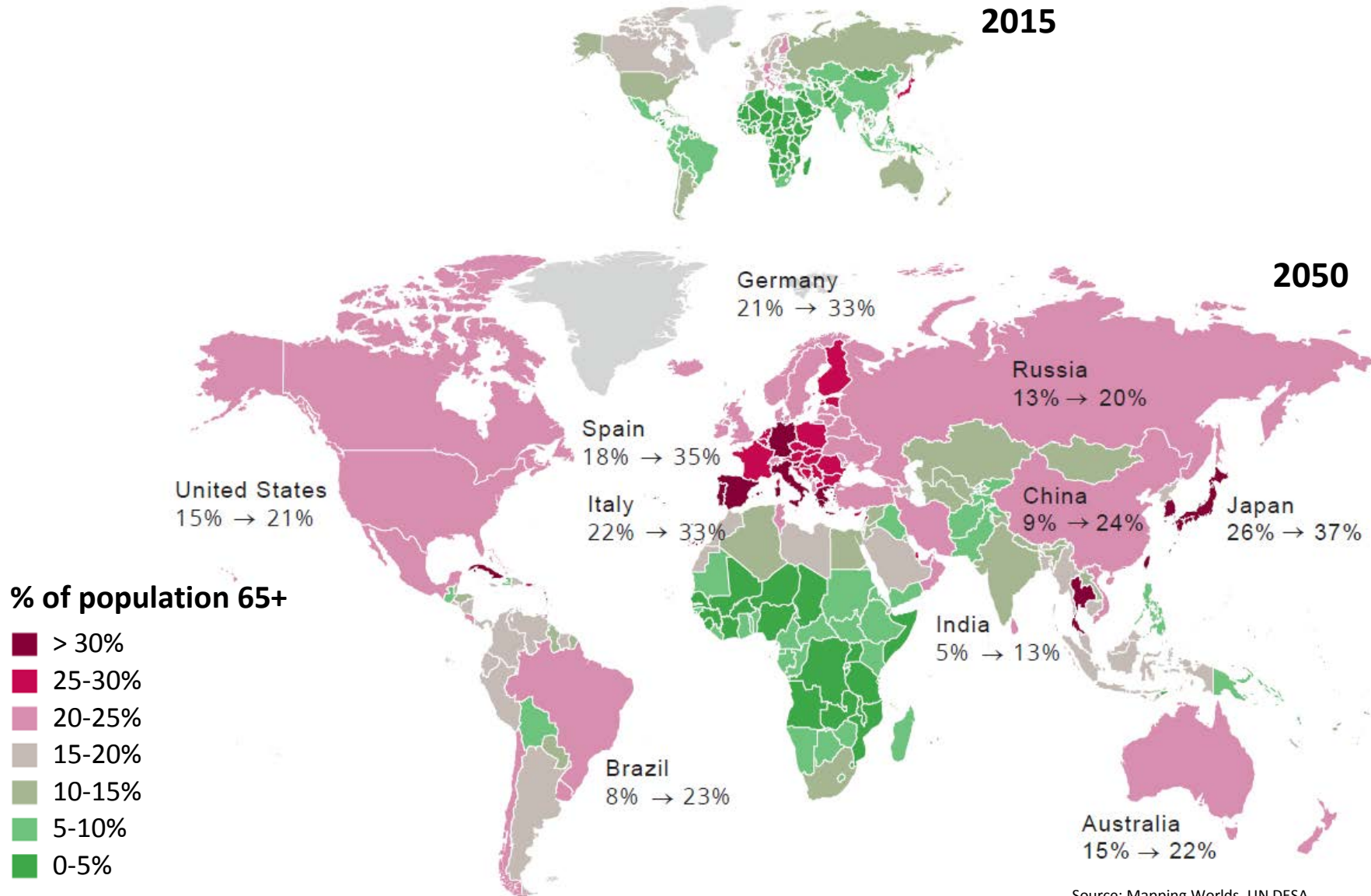
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 | People

The Aging of the World Population

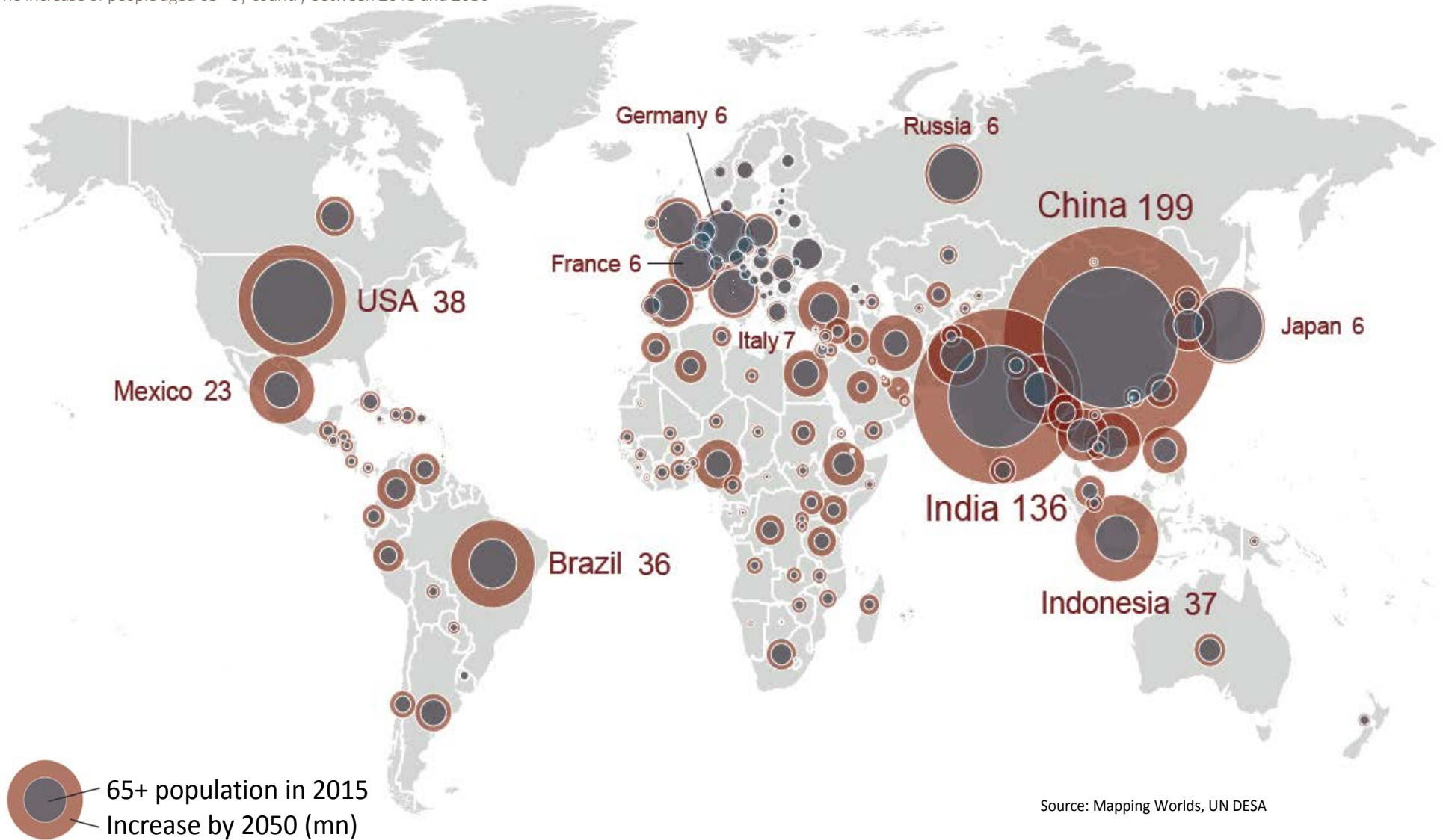
The proportion of people aged 65+ by country in 2015 and 2050



- The aging of the world population is a key People theme.
- By 2050, the Silver Generation (people aged 65 years and older) will outnumber children under 14 for the first time in human history.
- The countries with the largest proportion of old people in 2050 will be Japan (37%), Spain (35%), and Germany and Italy (33%).

The Growth of the Silver Generation

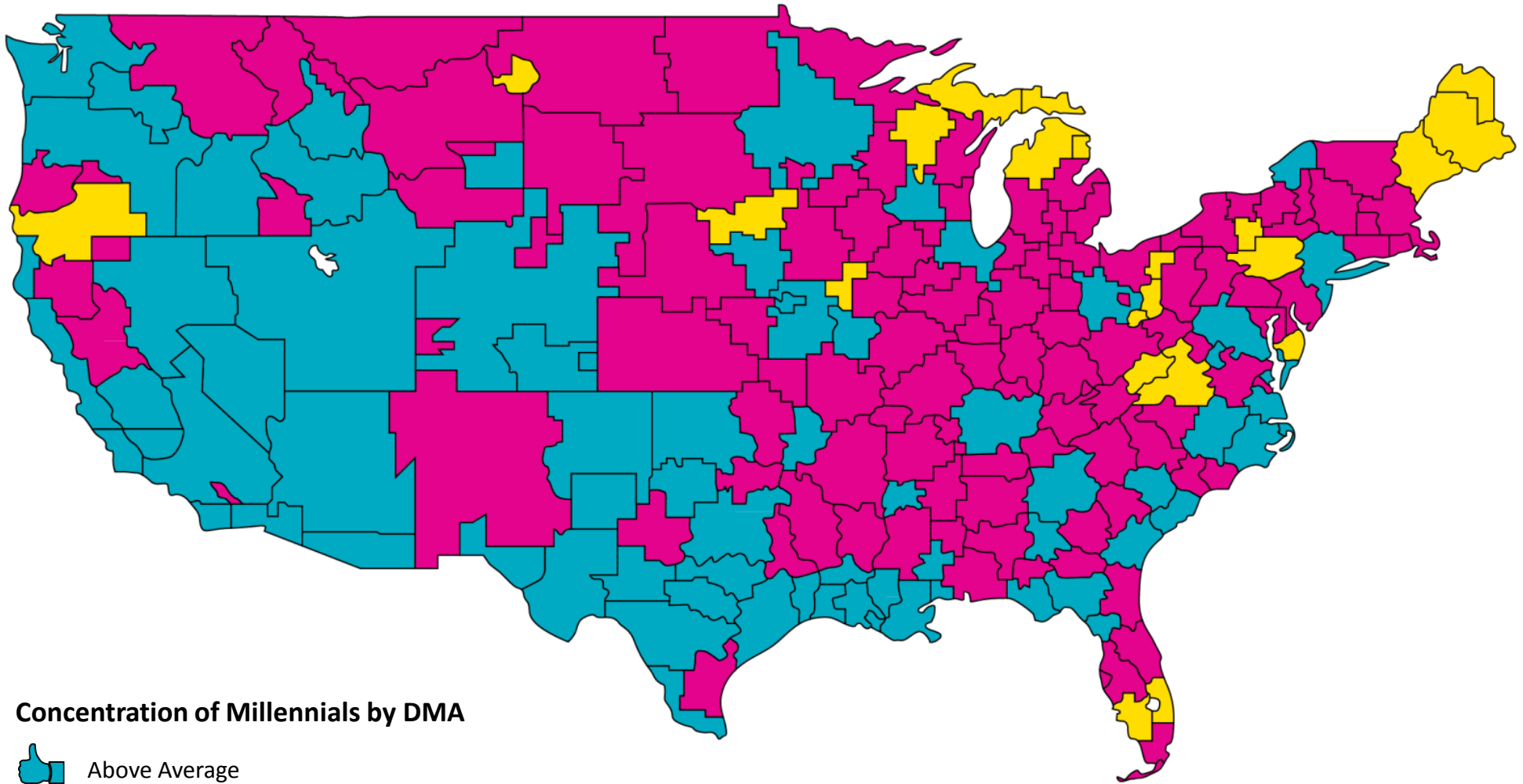
The increase of people aged 65+ by country between 2015 and 2050






- By 2050, the world's Silver Generation will increase by 885 million.
- China's Silver Generation will increase by 199 million, India's by 136 million and America's by 38 million by 2050.
- The spending and savings of the global "longevity sector" is a huge investment theme; the US longevity sector covering health, finance, and consumer services currently totals [\\$7.1 trillion](#).

Where the Millennials live

Concentration of Millennials in the US by Nielsen DMA



Concentration of Millennials by DMA

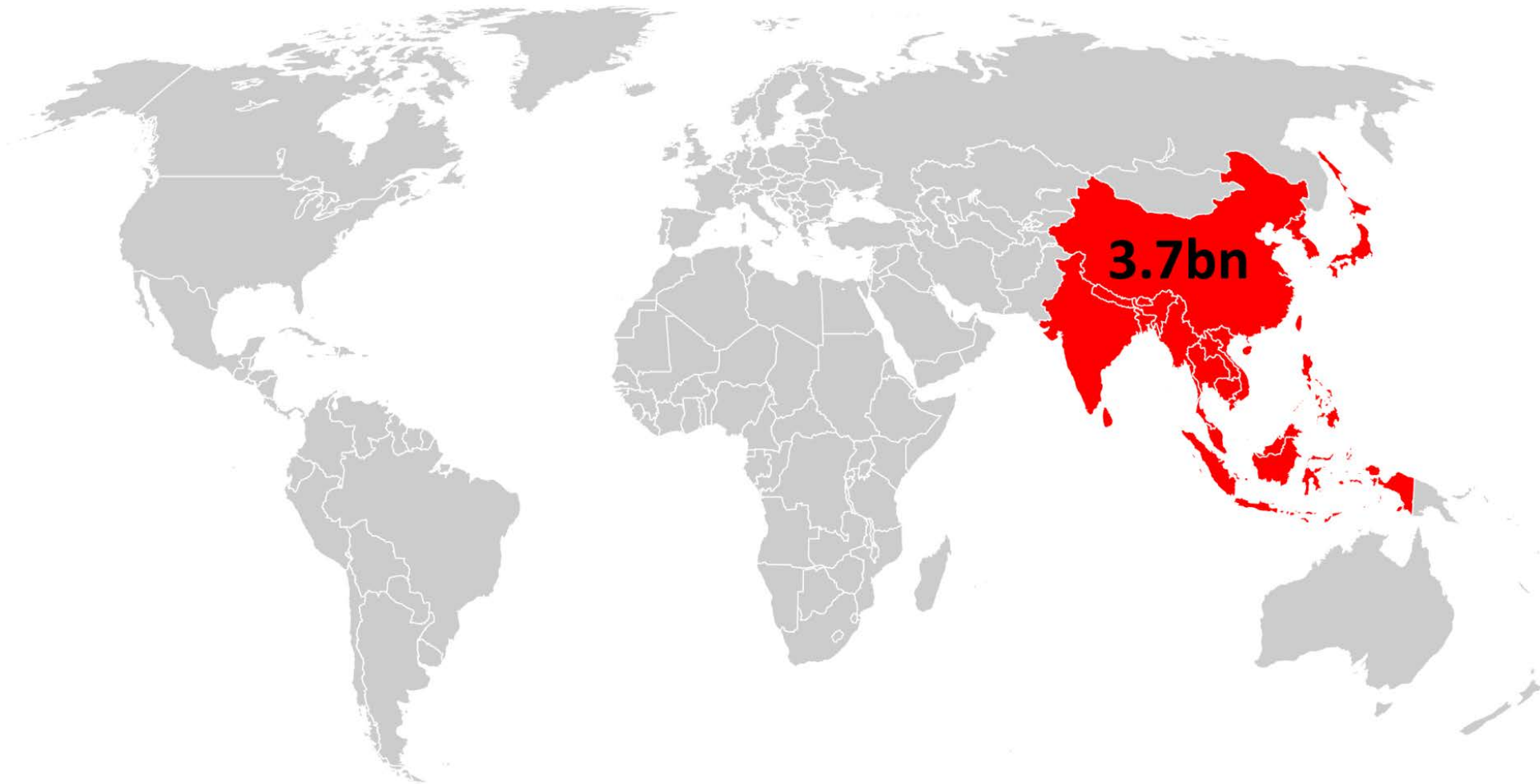
-  Above Average
-  Average
-  Below Average

Source: BofA Merrill Lynch Global Investment Strategy, Nielsen
DMA: Designated Market Area

- A second key demographic group is Millennials, people aged between 18 and 34 years old.
- Their annual income is forecast to reach [\\$8.3tn](#) by 2025 in the US alone.
- This map shows that Millennials are more concentrated in the western region of the US than in the rest of the country.

Asia's Dominance in the Global Population

More than half the people in the world live in the red region



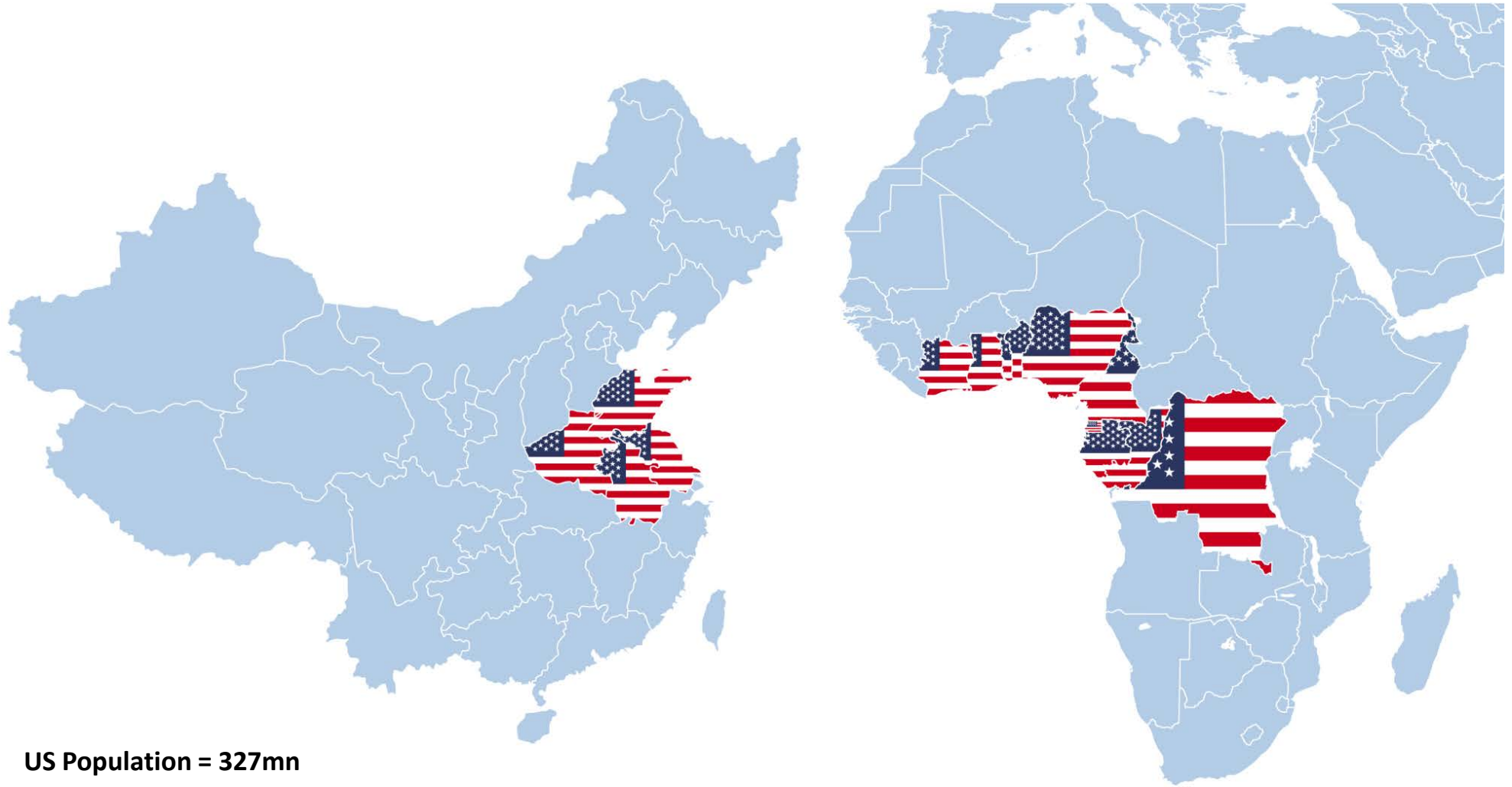
Source: BofA Merrill Lynch Global Investment Strategy, UN DESA

Total World Population = 7.25bn

- A third key demographic is the number of people in Asia; 3.7 billion people live in the red region depicted above.
- This population generates many long-term investment themes, such as Chinese and Indian [Healthcare](#), [Infrastructure](#) and [Tourism](#).

Asia & Africa: Densely Populated

The US population fits into four Chinese provinces and 10 African countries



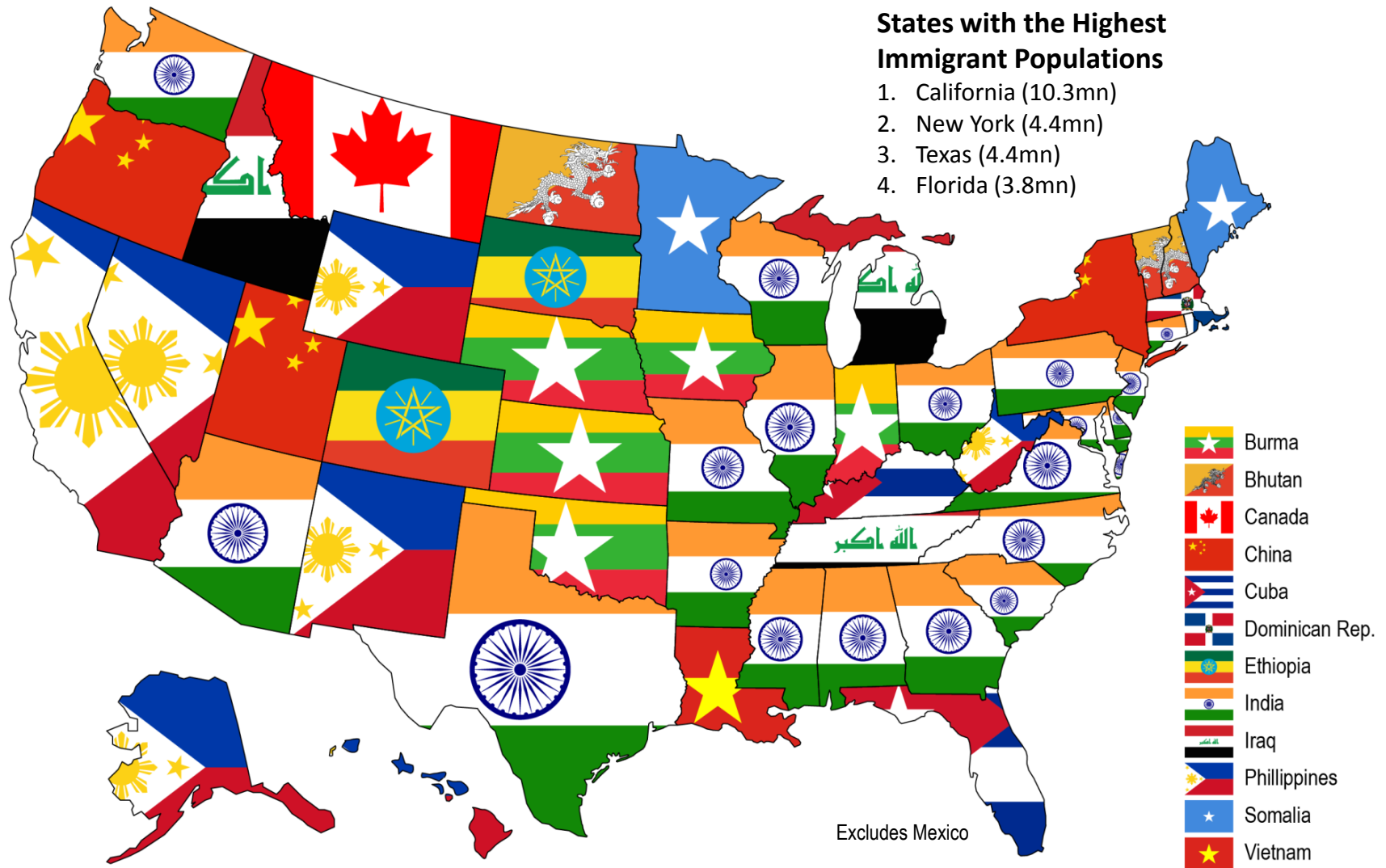
US Population = 327mn

Source: BofA Merrill Lynch Global Investment Strategy

- China's population is so vast that all of the 327 million US residents can fit into just four Chinese provinces.
- Africa's demographics should also be noted: the US population is less than one-third of Africa's 1.1bn population.
- Two-thirds of Africa's population has no access to electricity: with 300+ days of sunlight a year and no central grid requirements, BofA Merrill Lynch sees Africa as another source of [demand for solar](#).

US Immigration

The countries that supply the most immigrants to each state

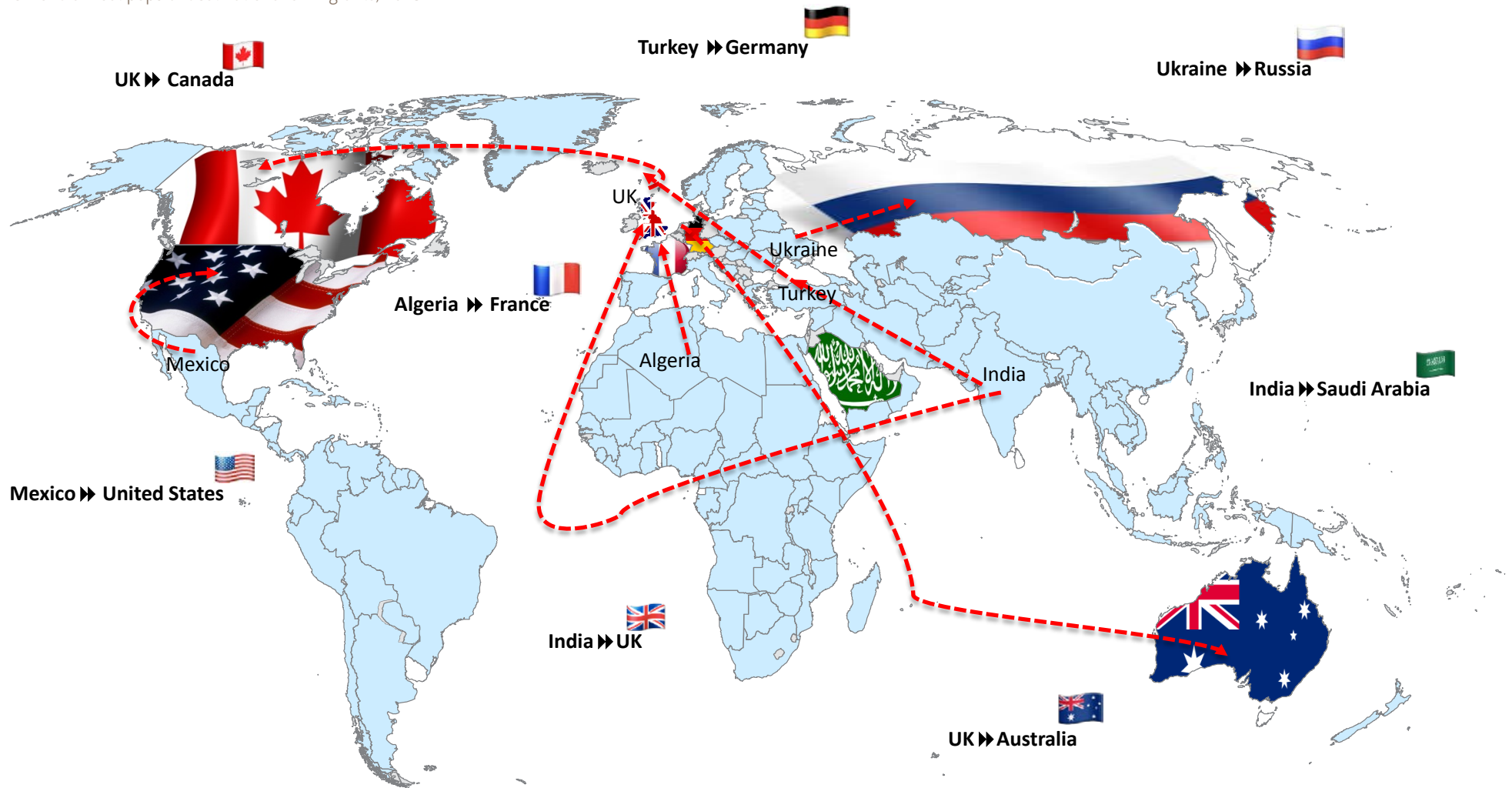


Source: Department of Homeland Security, Giorgio Cavagion

- Immigration to the US (around 500,000 immigrants arrive each year) is a source of population growth, economic stimulus, and social and political change.
- The states with the highest immigrant populations are California, New York, Texas and Florida.
- By state, excluding immigration from Mexico, Filipinos are the largest immigrant population in California, the Chinese in New York, the Indians in Texas and the Cubans in Florida.

Global Migration

The world's most popular destinations for migrants, 2013

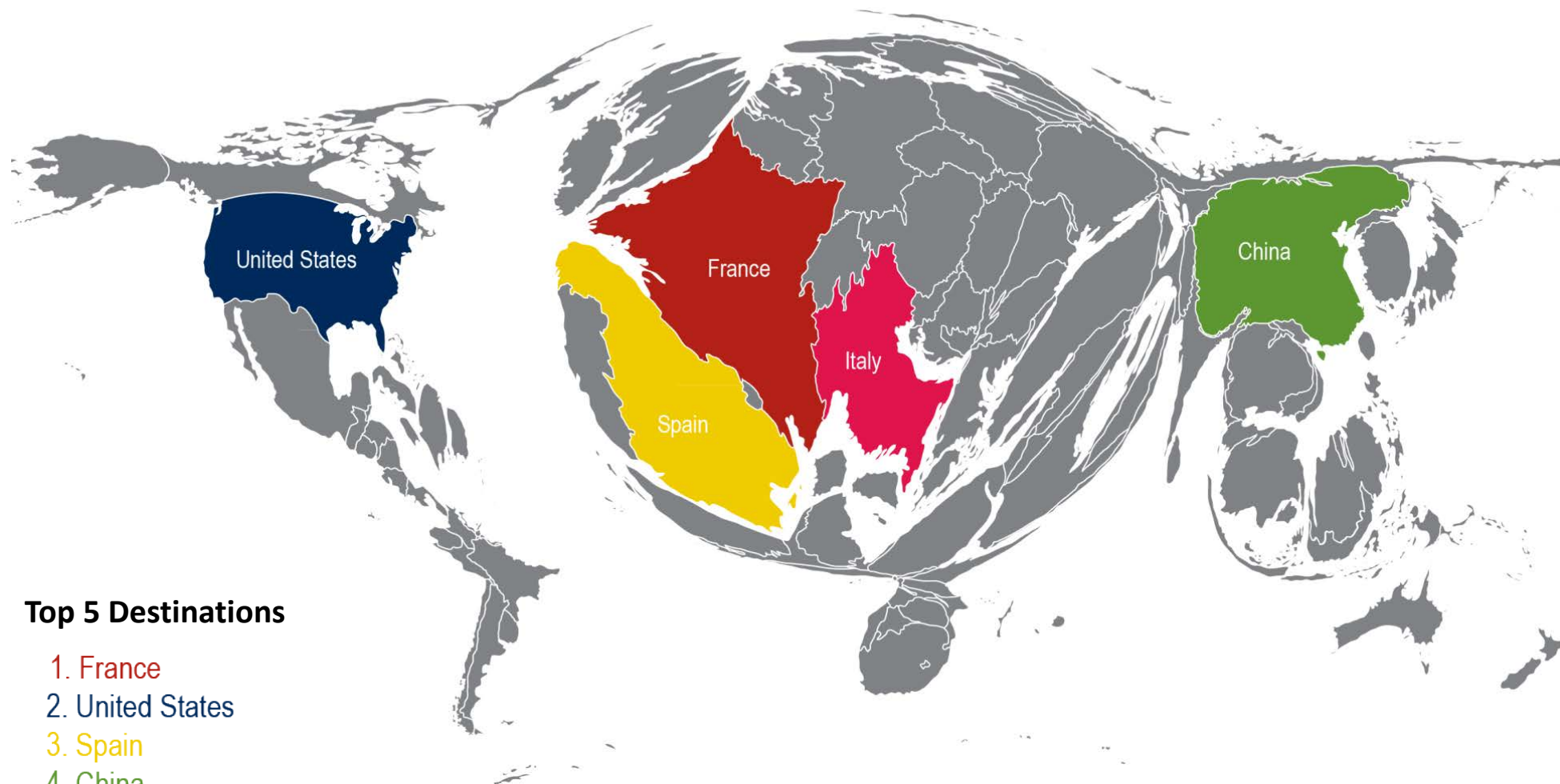


Source: BofA Merrill Lynch Global Investment Strategy, UN DESA

- 3.2% of the world's population, 232 million people, lived outside their country of birth in 2013.
- The top 8 destinations for migrants are the US, Russia, Germany, France, Saudi Arabia, UK, Canada and Australia, in that order.
- This map shows the top destination for Mexicans is the US, for Ukrainians it's Russia, and for Turks it's Germany.

Tourism

The world's major tourist destinations, 2014



Top 5 Destinations

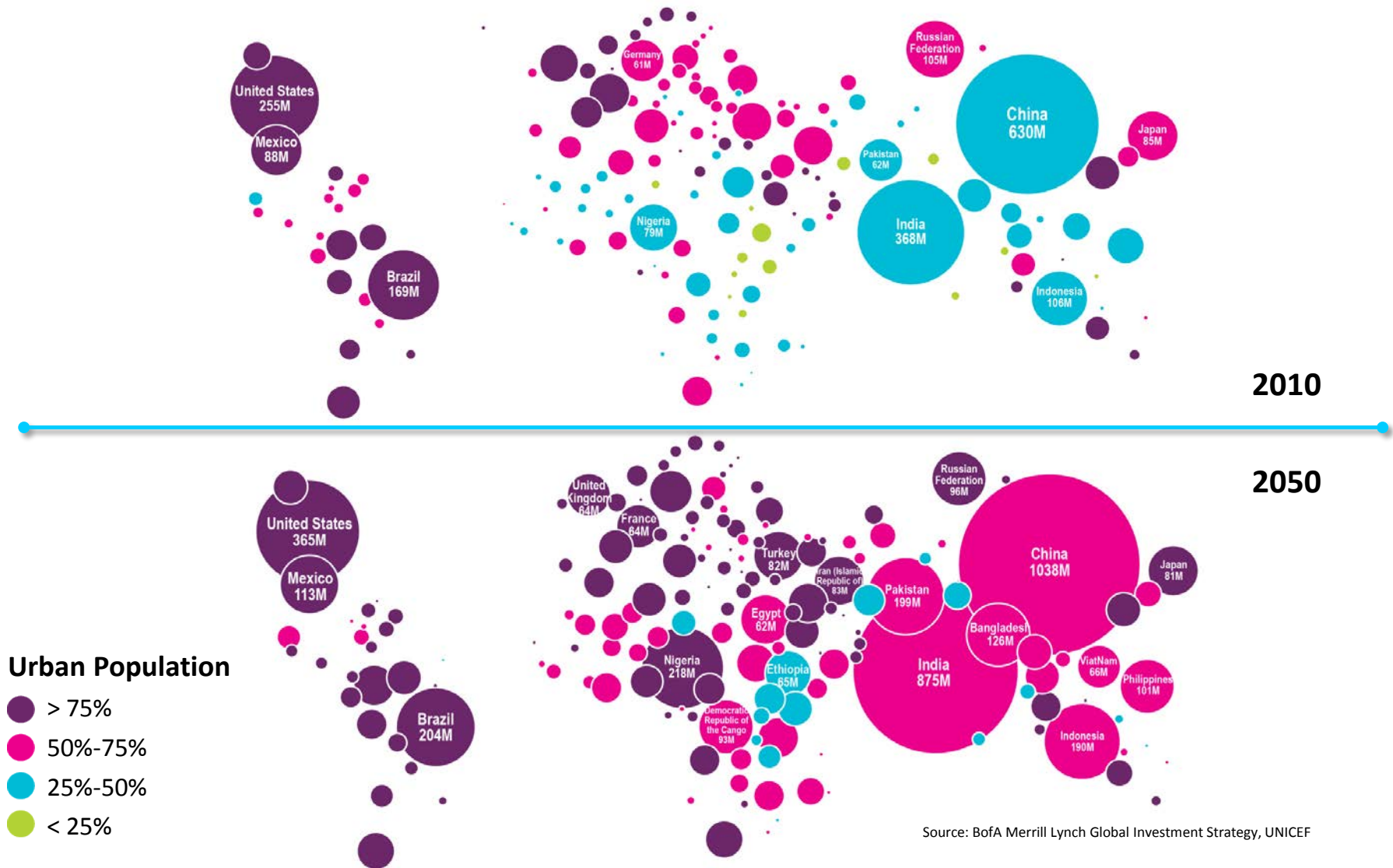
1. France
2. United States
3. Spain
4. China
5. Italy

Source: BofA Merrill Lynch Global Investment Strategy, UN World Tourism Organization

- 1.1 billion people traveled overseas as tourists in 2014.
- France was the most popular (84 million) tourist destination, followed by the US, Spain, China and Italy.
- The share of tourists traveling to emerging economies is forecast to rise from 45% in 2014 to 57% by 2030 (over 1 billion international tourist arrivals).

Urbanization

Urban population by country in 2010 and 2050

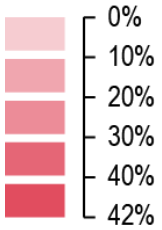


- In the next 10 years, the world's largest 600 cities will comprise nearly 65% of global growth.
- The countries with the greatest urban populations in 2050 will be China (1bn), India (875mn), US (365mn) and Nigeria (218mn).
- Urbanization has huge investment implications for infrastructure in the next [3-4 decades](#).

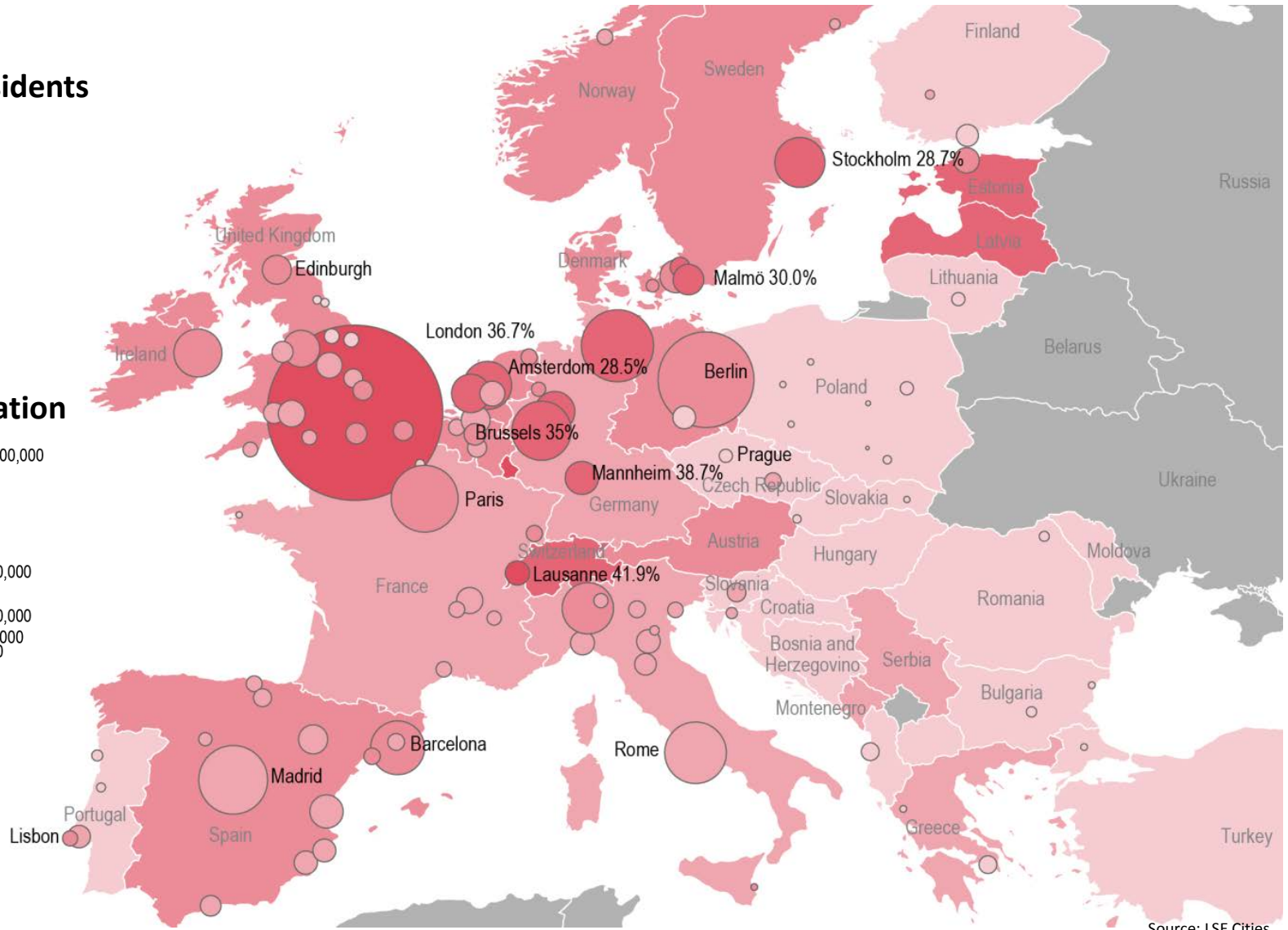
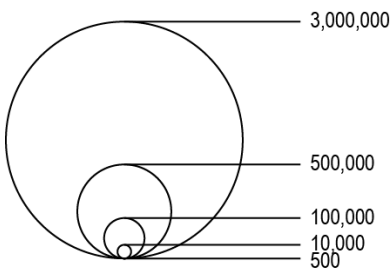
Mega-Cities

Migrant populations in Europe by city

% foreign-born residents



City migrant population



Source: LSE Cities

- London is Europe's megacity, the region's capital for economic growth, finance, wealth and people.
- London has by far and away the largest migrant population in Europe with 2.84 million in 2013, up from 1.99 million in 2001; 36.7% of London residents are foreign-born.
- The populations of Lausanne, Brussels, Stockholm and Amsterdam also have a large percentage of foreign-born residents.

The Age of Inequality

London housing sales as a % of England's housing sales, 2014



Total value of 2014 England housing sales = £231bn

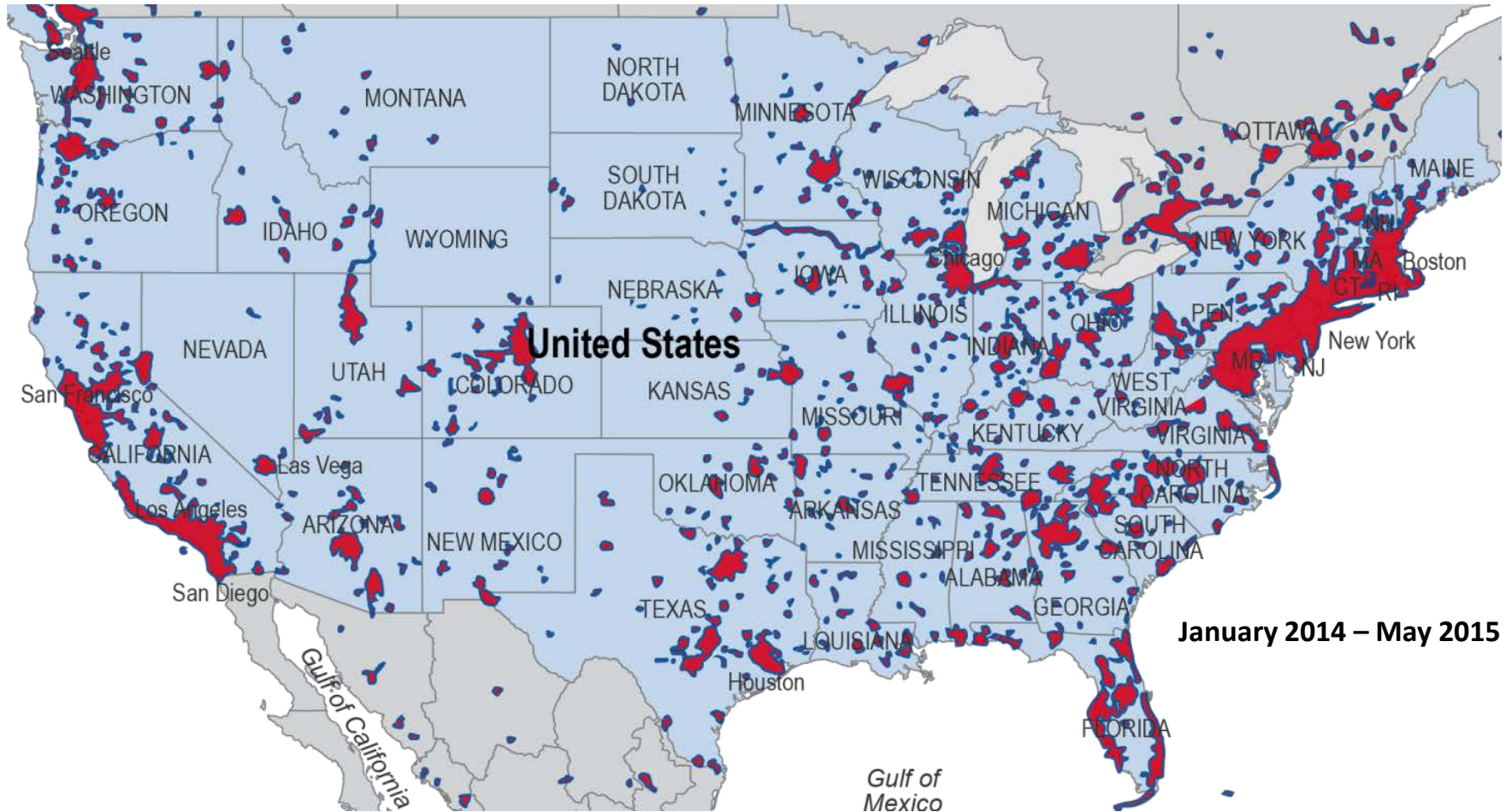
London housing sales = £61bn (26% of England)

Source: Worldmapper

- Megacities today enjoy a disproportionate amount of income and wealth, thanks to significant migration and real estate appreciation.
- The value of London's housing stock more than doubled between 2004 and 2014, outpacing the 57% rise in the UK's housing stock.
- London accounted for 26% of all English housing sales despite accounting for just a fraction (1%) of the total land area.

The Fitness Culture

A running and biking heat map, US, January 2014 to May 2015



Source: Strava



19mn runs

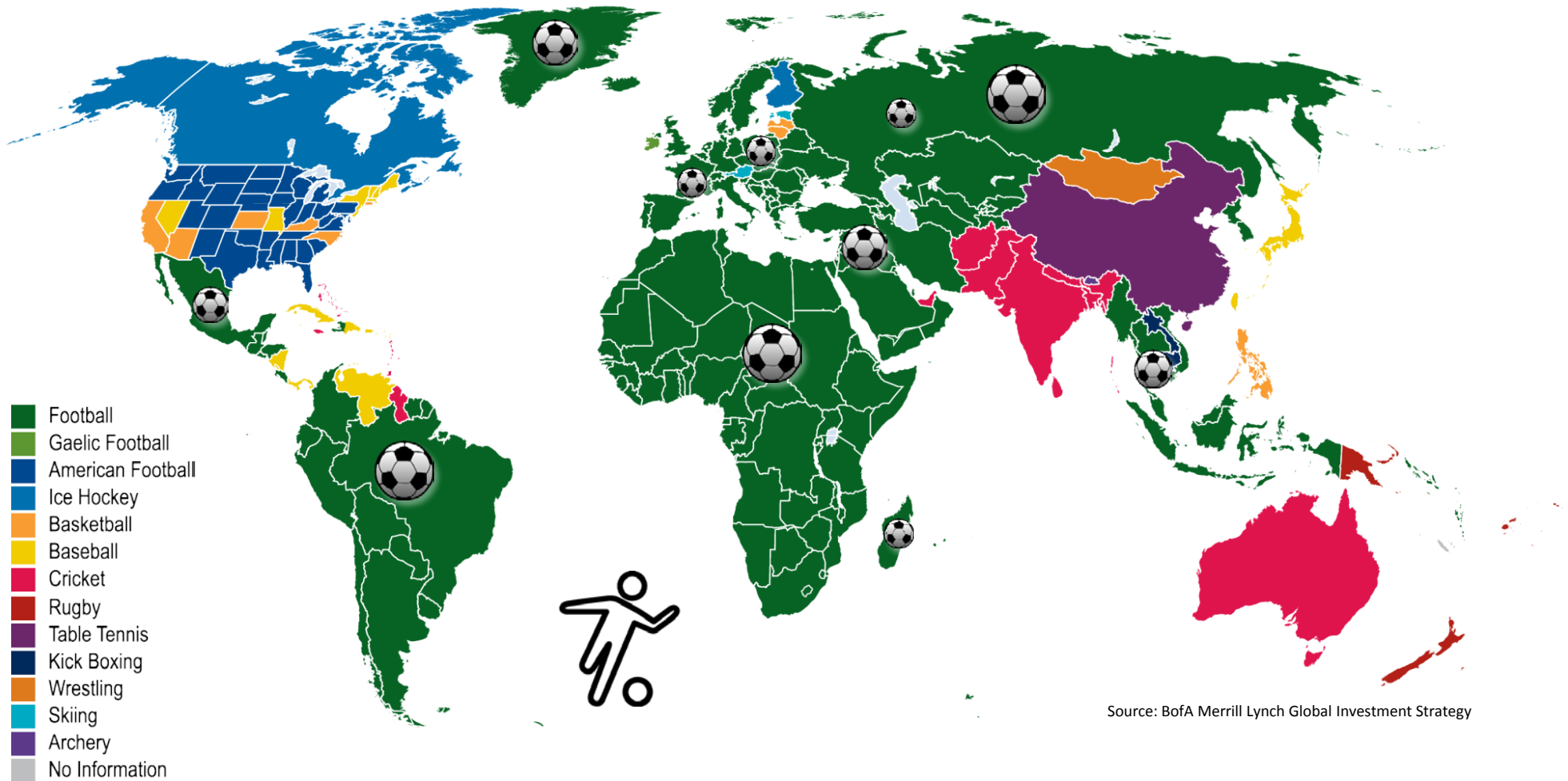


77mn bike rides

- Fitness is now a huge growth industry with health-conscious Americans running and cycling more than ever before.
- This heat map shows Americans took 77 million bike rides and 19 million runs in the past year and a half.
- US consumer purchases of sporting goods rose to \$65bn in 2015, boosting the [athletic apparel and footwear sector](#).

The Most Popular Sport by Region

Football (also known as soccer) is the world's most popular sport



Source: BofA Merrill Lynch Global Investment Strategy

- Football (also known as soccer) is the world's most popular sport.
- Sport is big business, and draws huge broadcasting audiences: the 2015 Cricket World Cup match between India and Pakistan was seen by nearly a billion people.
- Revenue from global sports events in 2014 (tickets, media rights, sponsorship) was close to \$80bn.
- The top 10 sporting franchises in the world are currently estimated to be worth \$56.8bn.

“Vanity Capital”

Top 5 countries for cosmetic surgery



Source: BofA Merrill Lynch Global Investment Strategy, International Society of Aesthetic Plastic Surgeons (ISAPS)

- An aging population and improved technology are the driving forces of growth in plastic surgery.
- Worldwide there were 23 million cosmetic procedures performed in 2013, with the US, Brazil, Mexico, Germany and Spain leading the way.
- BofA Merrill Lynch believes spending on Vanity Capital is approximately [\\$4.5tn](#), equal to the fourth largest economy in the world.



I Earth

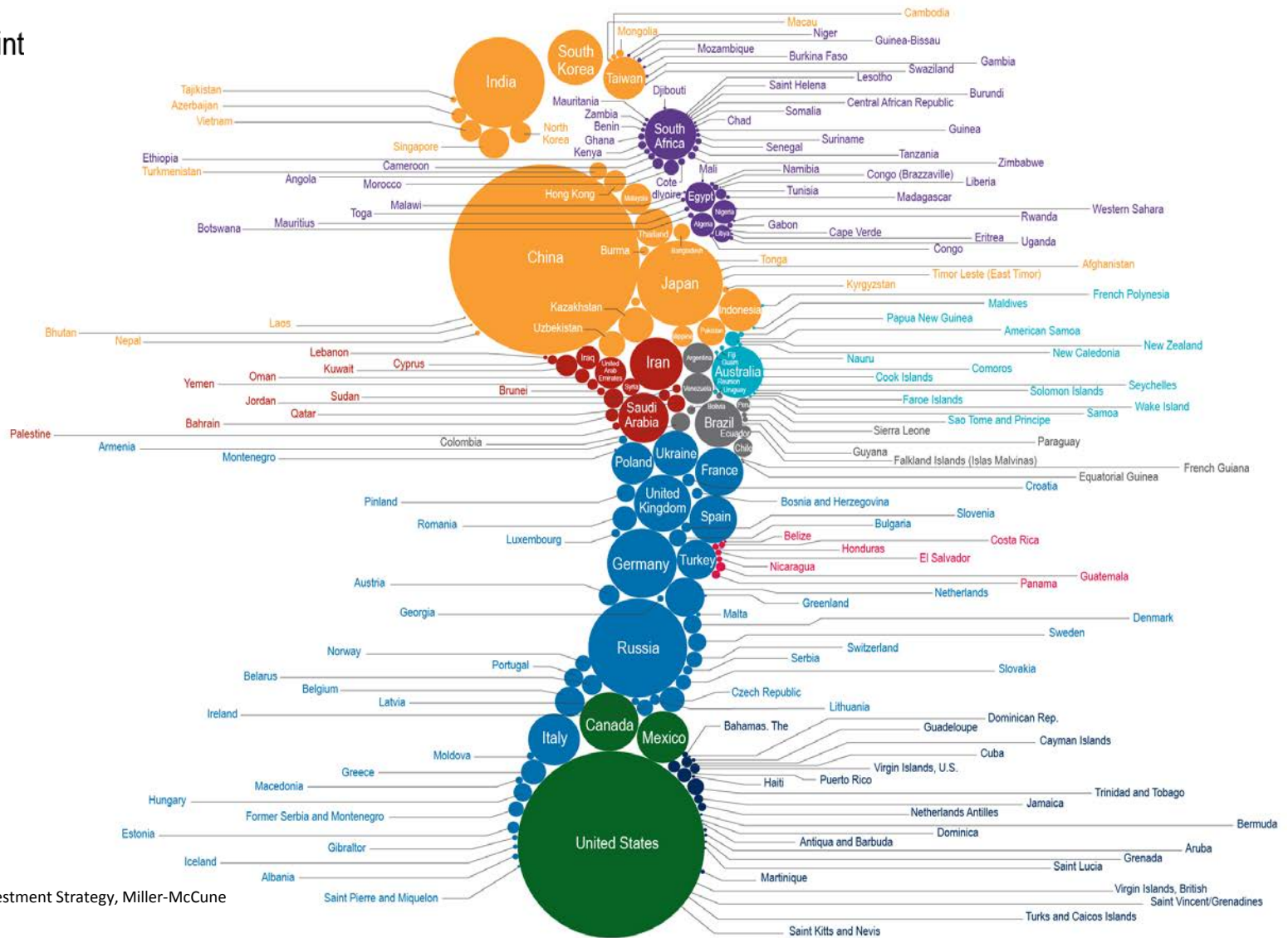
The World's Carbon Footprint

Total carbon dioxide emissions by nation

Global Carbon Footprint

Total emissions by nation

- Africa
- Asia
- Caribbean
- Central America
- Europe
- Middle East
- North America
- Oceania
- South America

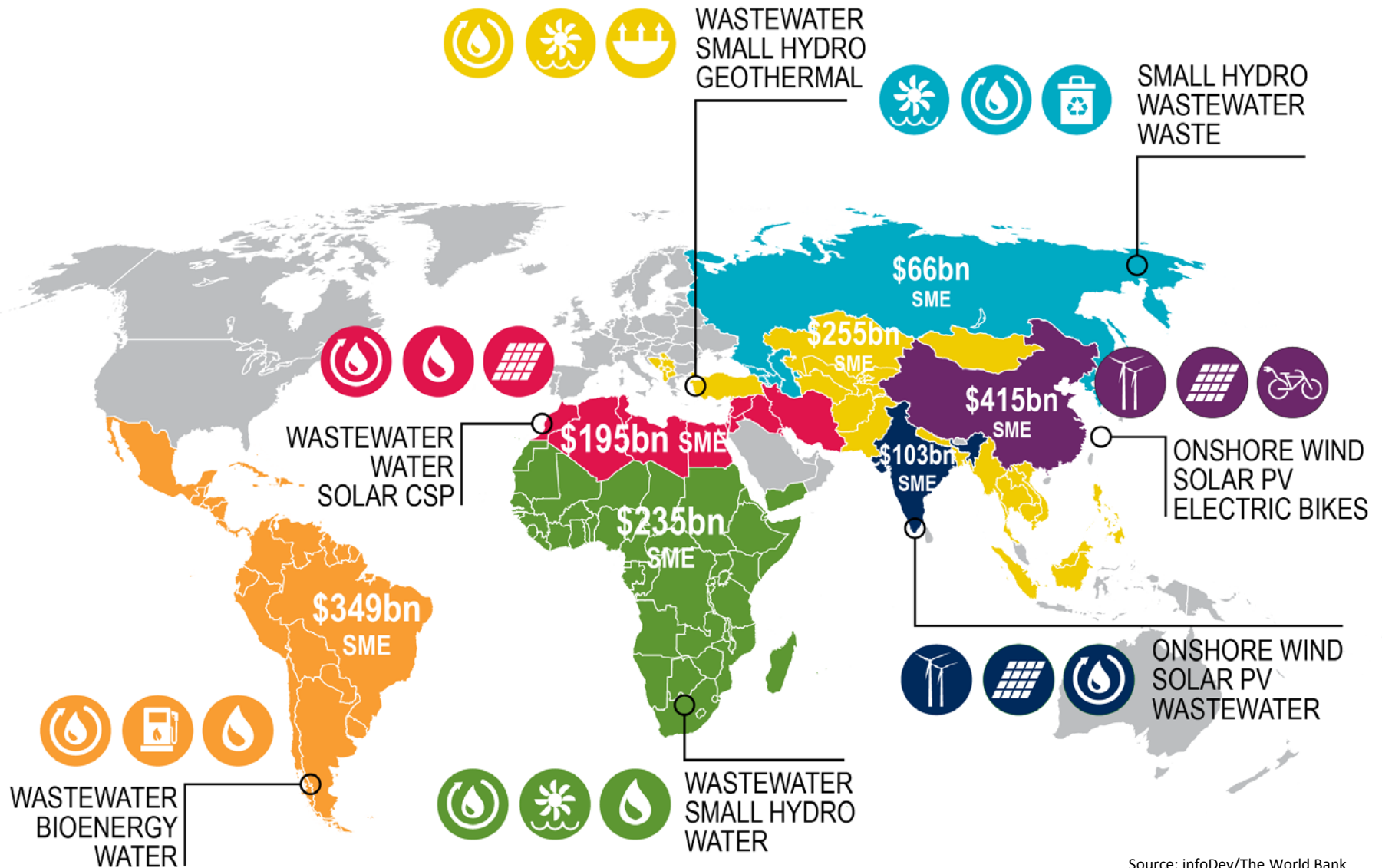


Source: BofA Merrill Lynch Global Investment Strategy, Miller-McCune

- In recent decades, carbon dioxide emissions and climate change have become major political, social and environmental issues.
- Half of all carbon dioxide emissions from fossil fuels have occurred since the mid-1980s.
- In 2014, China was the largest producer of carbon dioxide emissions at 27.5% of the global total, followed by the [US at 16.9%](#).

Energy Efficiency in Emerging Markets

Top 3 promising clean technologies for SME's in emerging markets



Source: infoDev/The World Bank

- Clean technology helps reduce carbon emissions (and reliance on the Middle East for energy supply).
- Clean technologies are growing quickly in Emerging Markets; China boasts the highest clean technology investments at \$415bn on Electric Bikes, Wind and Solar.
- Globally Wind and Solar clean technology will account for [80%](#) of global electricity capacity additions by 2030.

Climate Change

Potential worst-case outcomes of climate destabilization

The average temperature rise across the globe

4°C

The arctic rise will be as much as

16°C

Coastal areas of Britain and New Zealand will see temperatures rise by

2°C



Melting Glaciers

Himalayan glaciers will be significantly reduced by 2050 putting the water source of billions of people at risk. South America and the Alps will also see glaciers retreat.



Heatwaves

Extreme rises in temperature across the world. New York could see summer temperatures above 50°C and London could reach 40°C killing thousands of people



Sea Level Rises

Sea levels could rise by as much as 80cm by the end of the century. Combined with storm surges could pose a serious threat to the Netherlands and South East UK



Marine Ecosystems

Oceans will acidify as a result of absorbing carbon dioxide. Ocean acidification in the Arctic could destroy ecosystems by killing plants and animals, and dissolve the shells of mussels and other shellfish



Food Shortage

Maize and wheat yields reduction of 40 per cent in Africa, pushing many states towards starvation. Rice yields to fall by 30 per cent in Asia. Droughts in the South East will make it difficult to grow crops in the UK.



Forest fires

A rise in temperature will cause large areas of the Amazon to be lost, southern Europe, Australia and the US will also suffer more forest fires



Water Shortages

Availability will be limited to a further one billion people by 2080. River flow will be reduced in the Mediterranean, southern Africa and large areas of South America. Water metering will be implemented in the UK



Drought

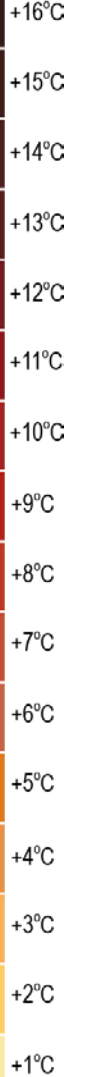
Drought events occur twice as frequently across southern Africa, South East Asia and the Mediterranean basin. The UK is also more likely to see droughts in the summer



Carbon Cycle

Rising temperatures and CO2 will result in "feedback" - the release of even more greenhouse gases. The melting permafrost in the Arctic will release methane into the atmosphere.

KEY
Change in temperature from pre-Industrial climate

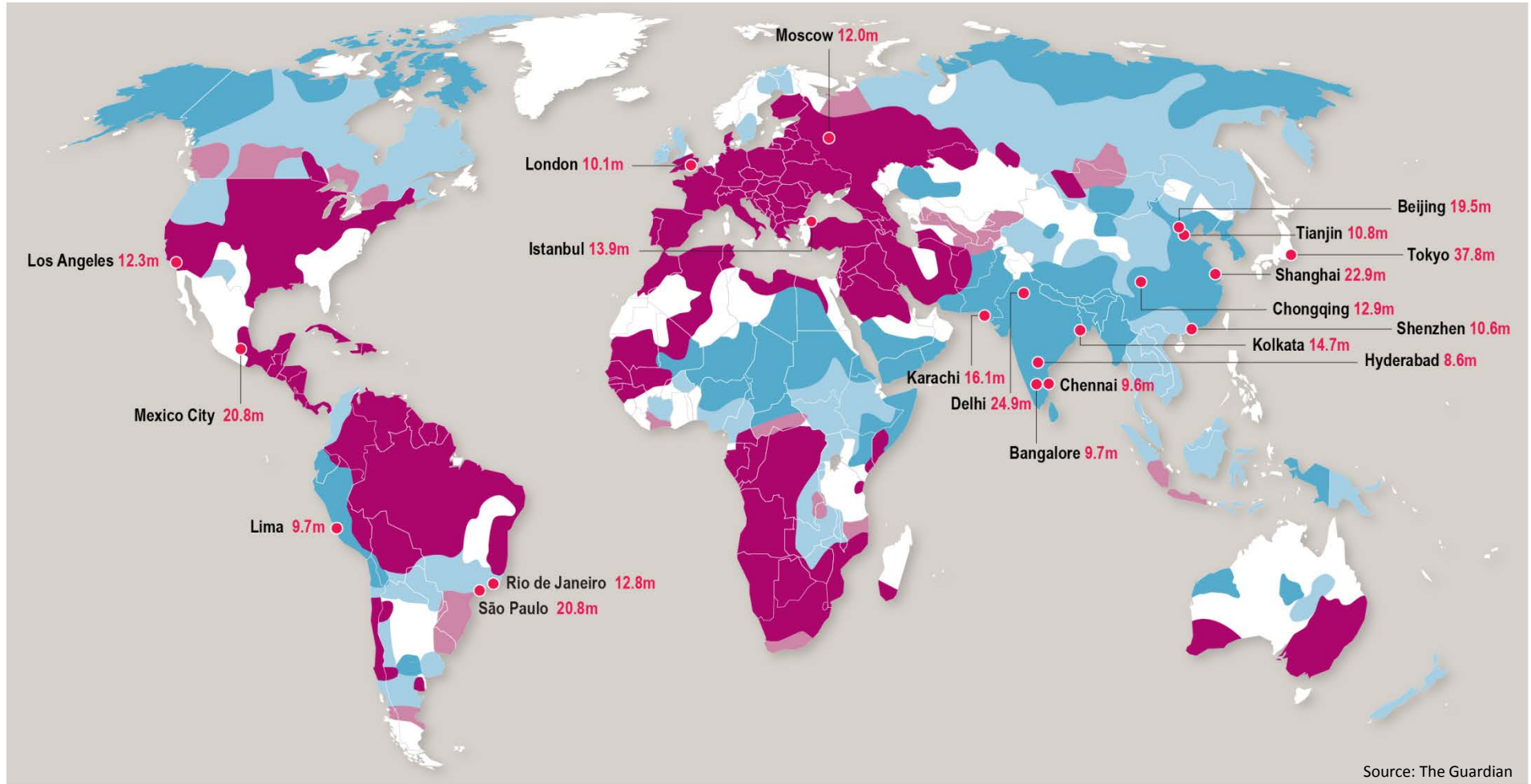


Source: The Telegraph

- Climate change is an Earth theme that is eliciting a strong government and corporate response.
- Climatic events, eg, [droughts](#) in Brazil and California, have recently had a major impact on commodity and financial asset prices.

Water Stress

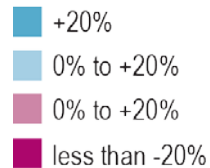
Top 20 cities facing greatest water stress by 2050



WATER STRESS AND CLIMATE CHANGE

Percentage change in water availability
from 1961-1990 (average) to 2050

Based on IPCC climate change scenario A1



Top 20 largest cities under water stress

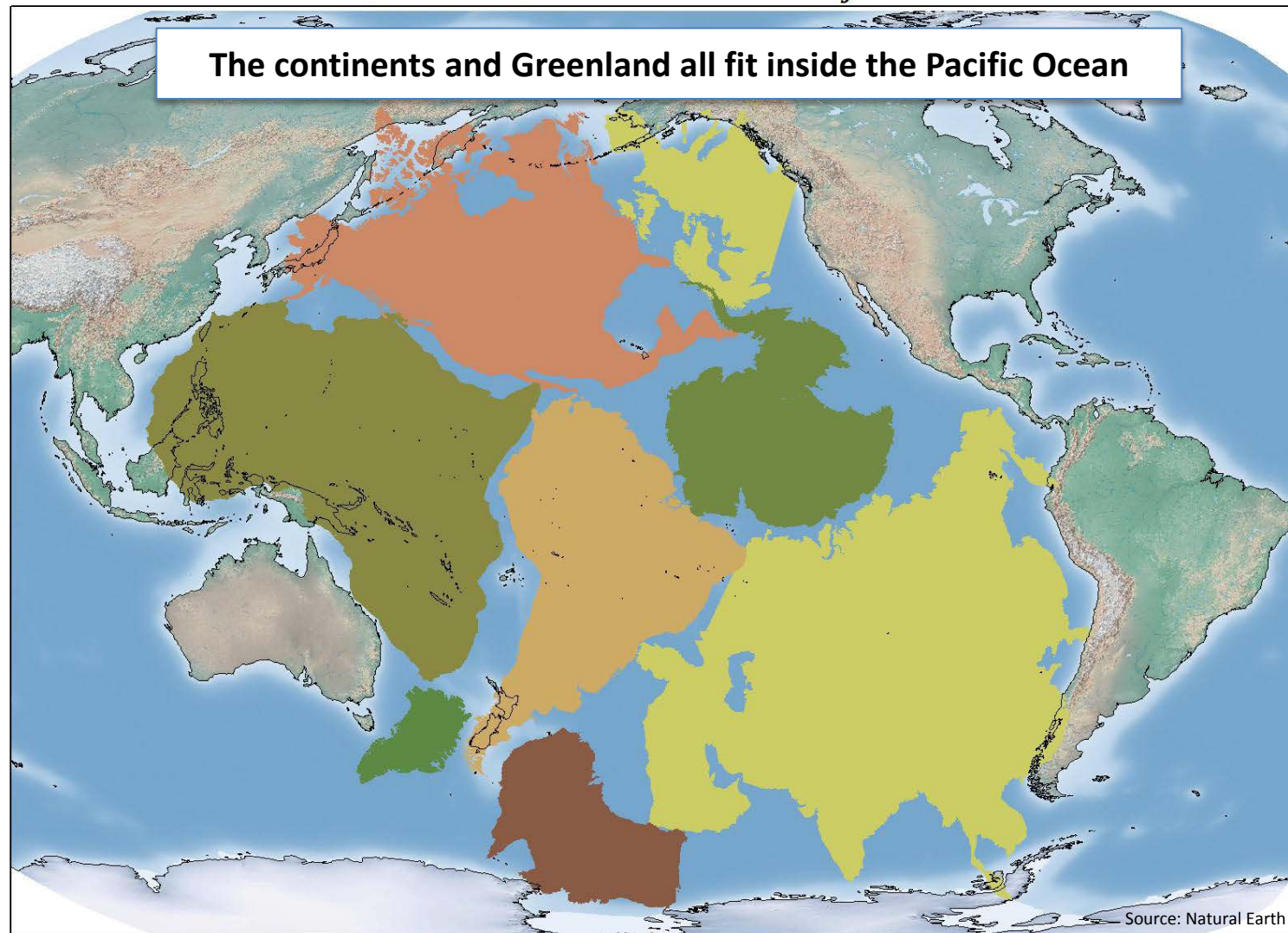
defined as cities that use at least 40%
of all available water from watersheds

● Tokyo 37.8m (2014 population)

- Shown above are the regions and top 20 cities facing the greatest water stress in coming decades.
- BofA Merrill Lynch forecasts that global water demand is set to exceed supply by 40% in coming decades; by 2050, 3.9 billion people could be living under “severe” [water stress](#).

Water Abundance

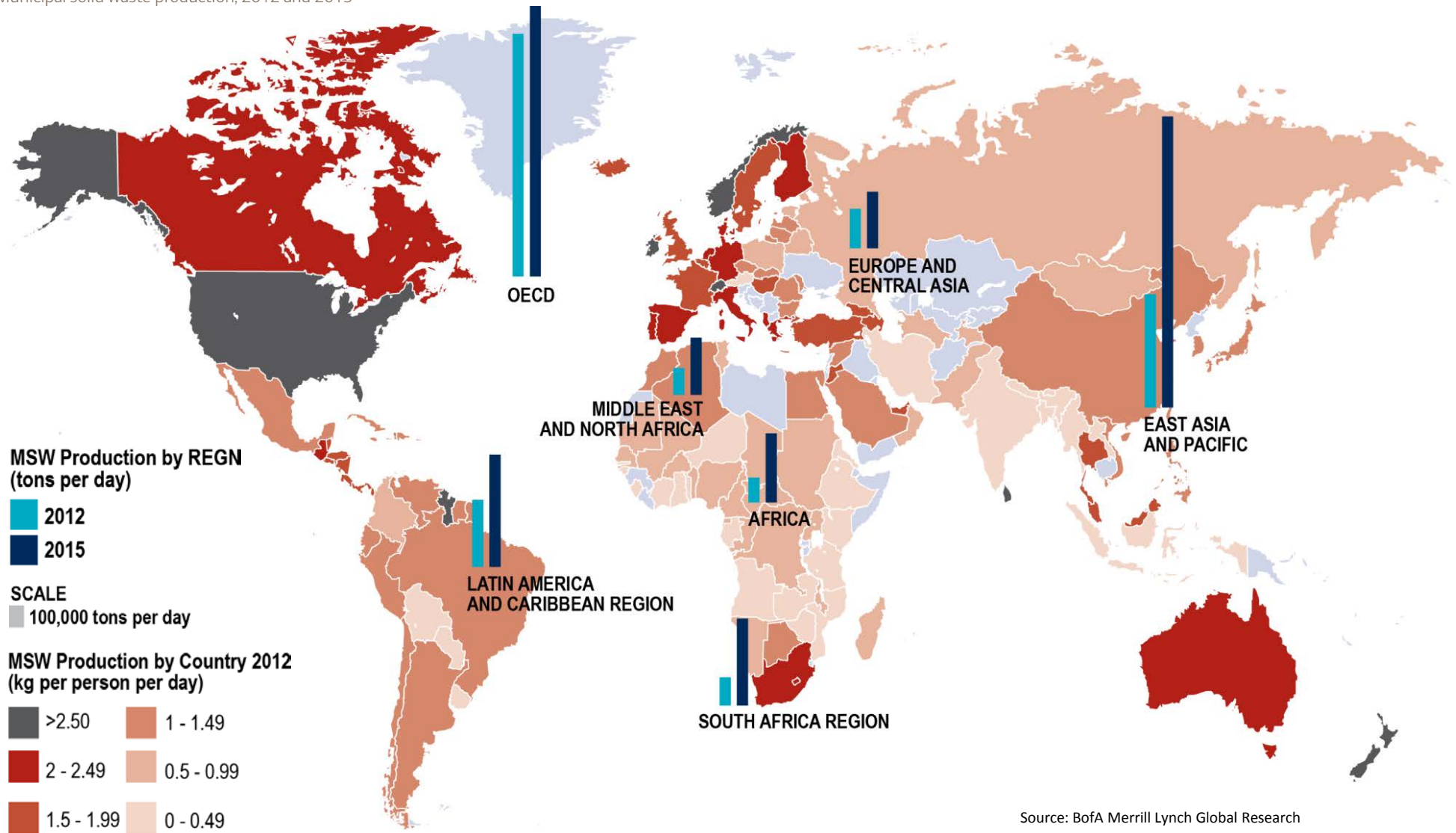
The continents of the world can fit inside the Pacific Ocean



- We live in an aqueous world, with more than two-thirds of its surface covered by oceans; all of the world's continents can fit inside the Pacific Ocean.
- Forty percent of the world's population lives within 100km of a coast: smart water grids and nanotech solutions for desalination could help reduce water stress in the future.
- The UN calculates that an average annual global investment of \$198bn by 2030 could help water use become more efficient, increasing agricultural, biofuel and industrial production.

Waste

Municipal solid waste production, 2012 and 2015

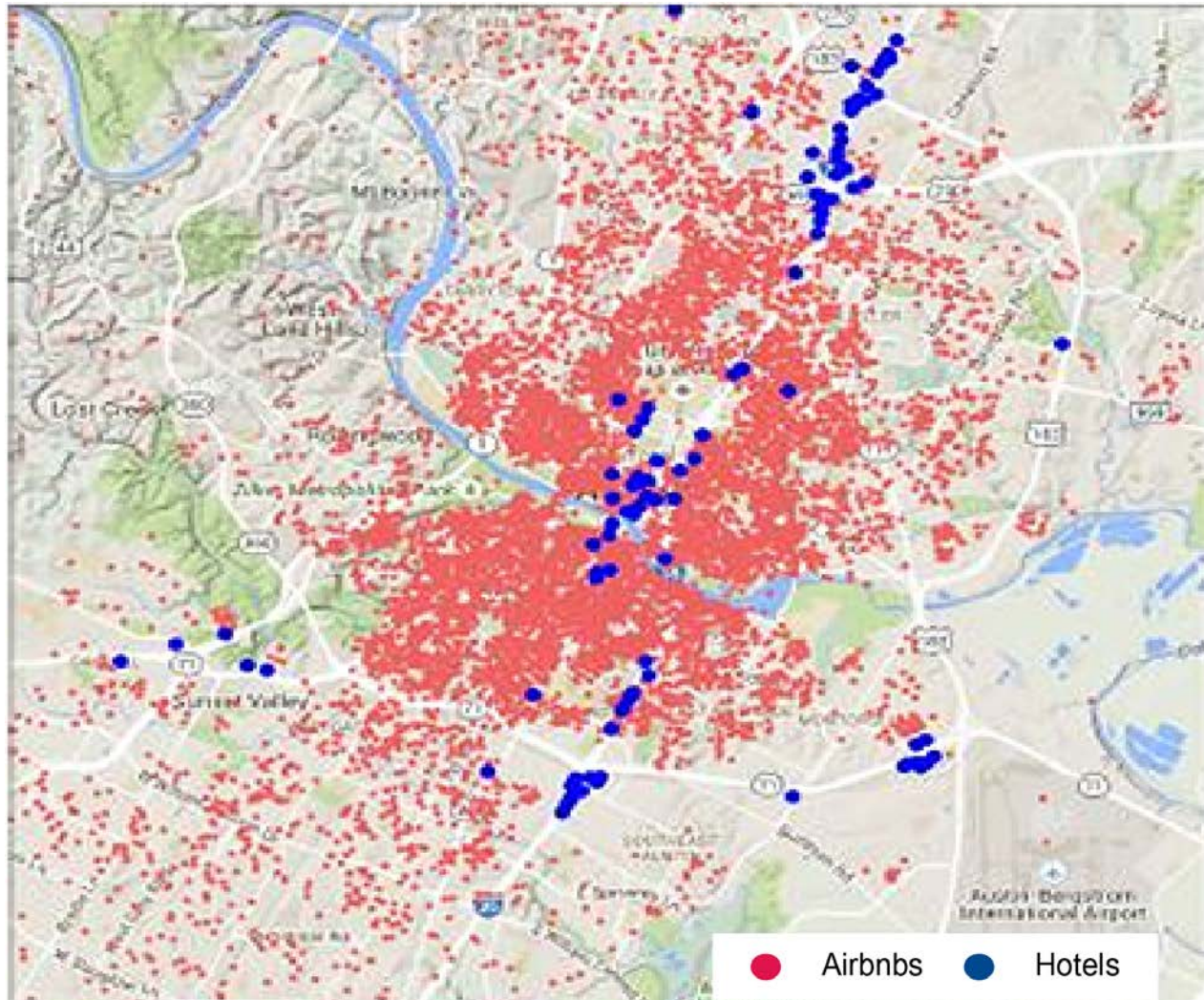


- Waste is another Earth theme; municipal solid waste has risen everywhere in recent years; and yet only 25% of the [11 billion tons](#) in waste collected annually is recycled or recovered.
- Americans generate 21.5 million tons of food waste each year; composting that food would reduce the same amount of greenhouse gas as taking 2 million cars off the road.

 | Innovation

The Sharing Economy

Hotel and Airbnb lodging supply in Austin, Texas



Source: Boston University

- Technological innovation is having a dramatic impact on the economy and financial markets in 2015.
- This map of Austin, Texas shows that the supply of lodging has grown exponentially thanks to disruptive technology, the sharing economy and Airbnb.
- And the price of lodging has declined: each 10% rise in Airbnb rooms listed in Austin has caused a 0.35% decline in hotel room revenue.
- Airbnb has jumped as a share of hotel room supply to 17% in New York, 12% in Paris and 10% in London.

Social Media

The global reach of social media

Facebook

1.4 billion monthly active users

Global social networking website



Tencent

Qzone : 540 million monthly active smart device users

Chinese social networking website



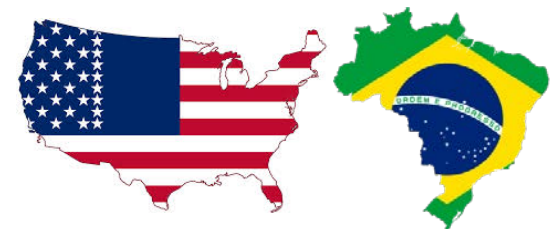
China

Population = 1.4 billion



USA & Brazil

Population = 529 million

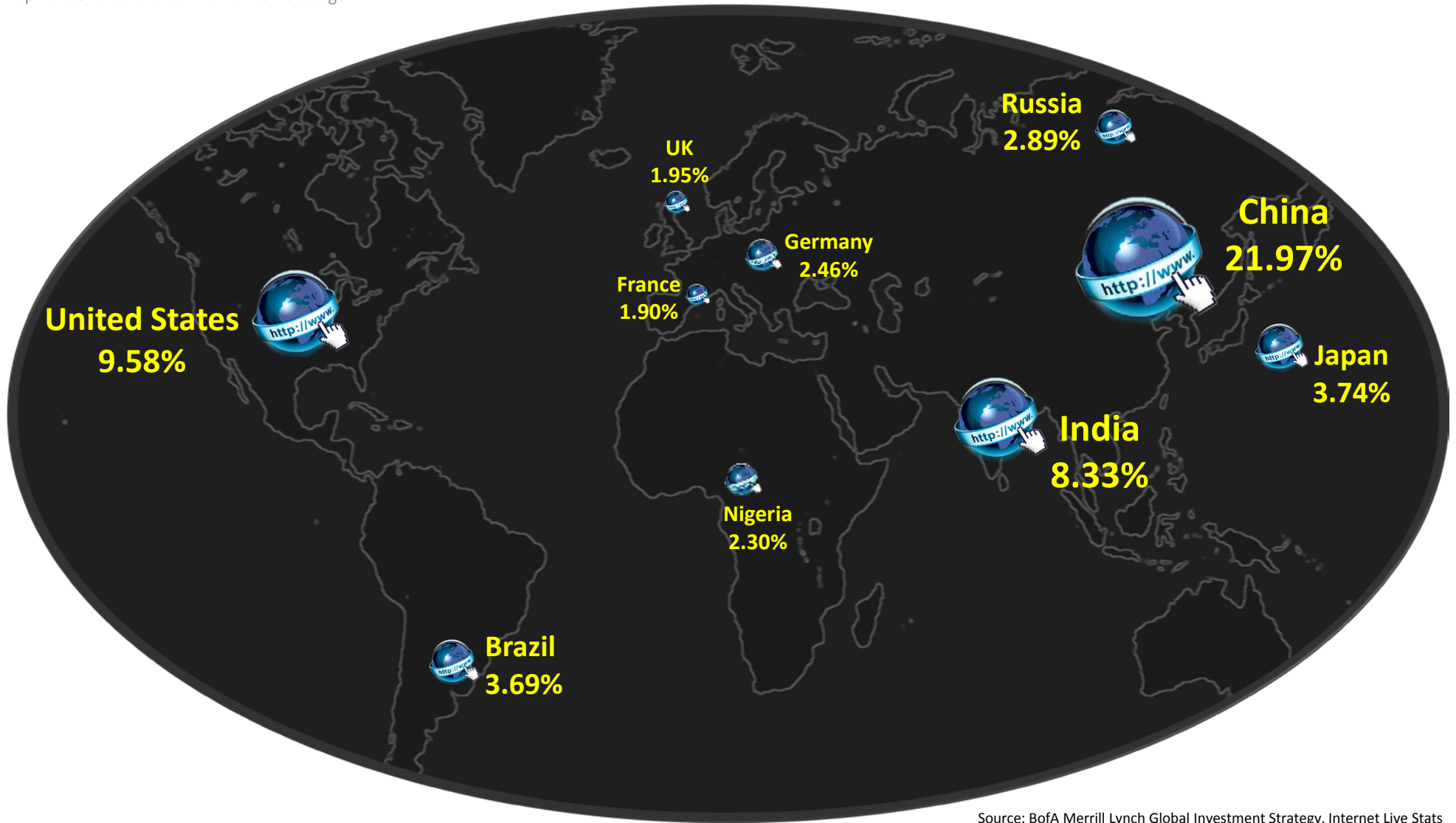


Source: BofA Merrill Lynch Global Investment Strategy, Facebook, Tencent, Worldometers

- Social media drives “the sharing economy.” BofA Merrill Lynch believes the sharing economy is a potential market opportunity of over [\\$450bn](#).
- Facebook’s global reach is massive with 1.4 billion monthly active users, equal to the current population of China.
- Tencent’s Qzone has 540 million monthly smart phone active users, greater than the combined populations of the US and Brazil.

The Internet

Top 10 countries' share of world internet usage

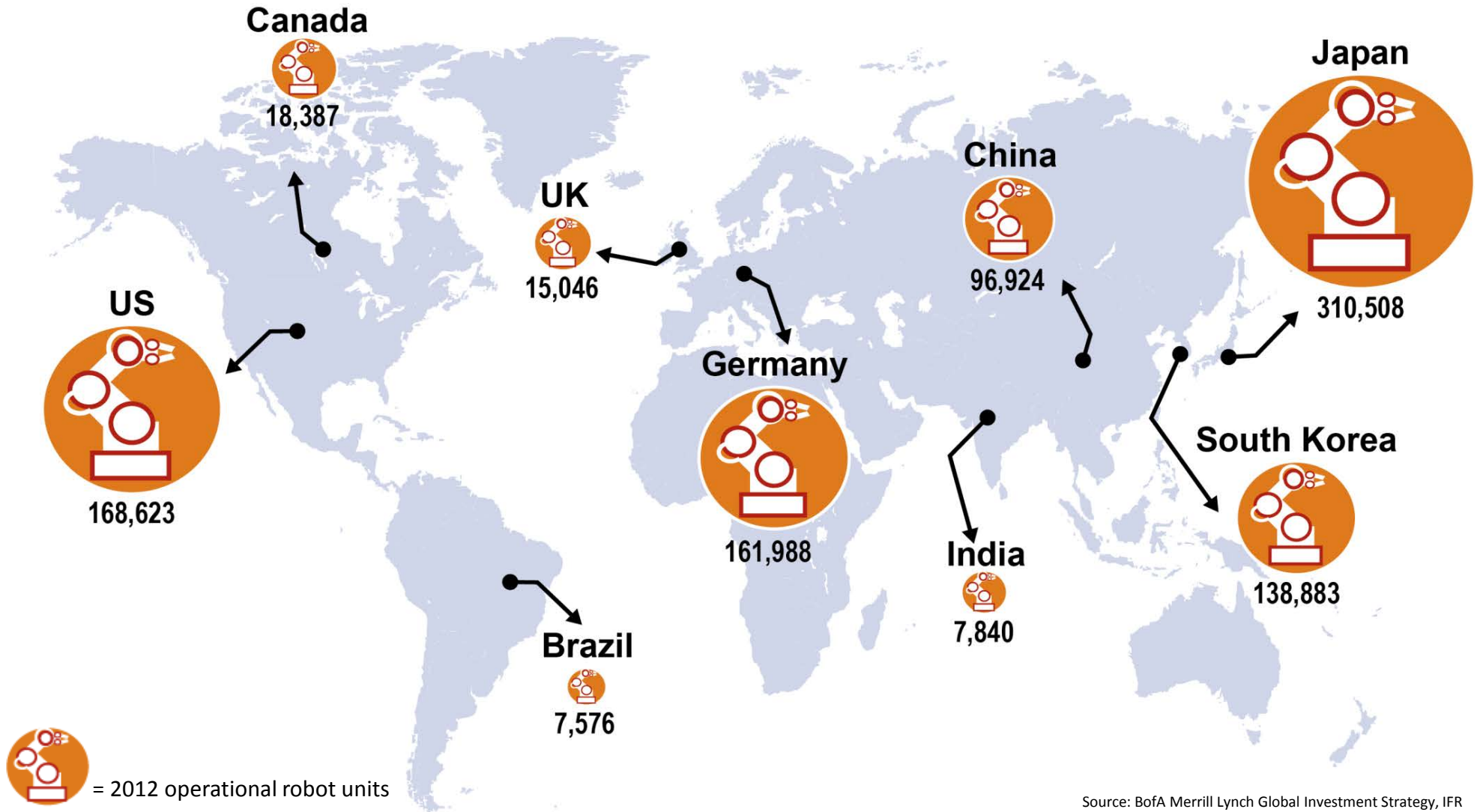


Source: BofA Merrill Lynch Global Investment Strategy, Internet Live Stats

- Around 40% of the world's population has an Internet connection today; back in 1995, less than 1% did.
- The number of Internet users has increased tenfold from 1999 to 2013; the first billion was reached in 2005, the second billion in 2010 and the third billion in 2014.
- BofA Merrill Lynch believes that the rise of the Internet makes the [Internet of Things](#) a potential \$7tn industry by 2020.

Robotics

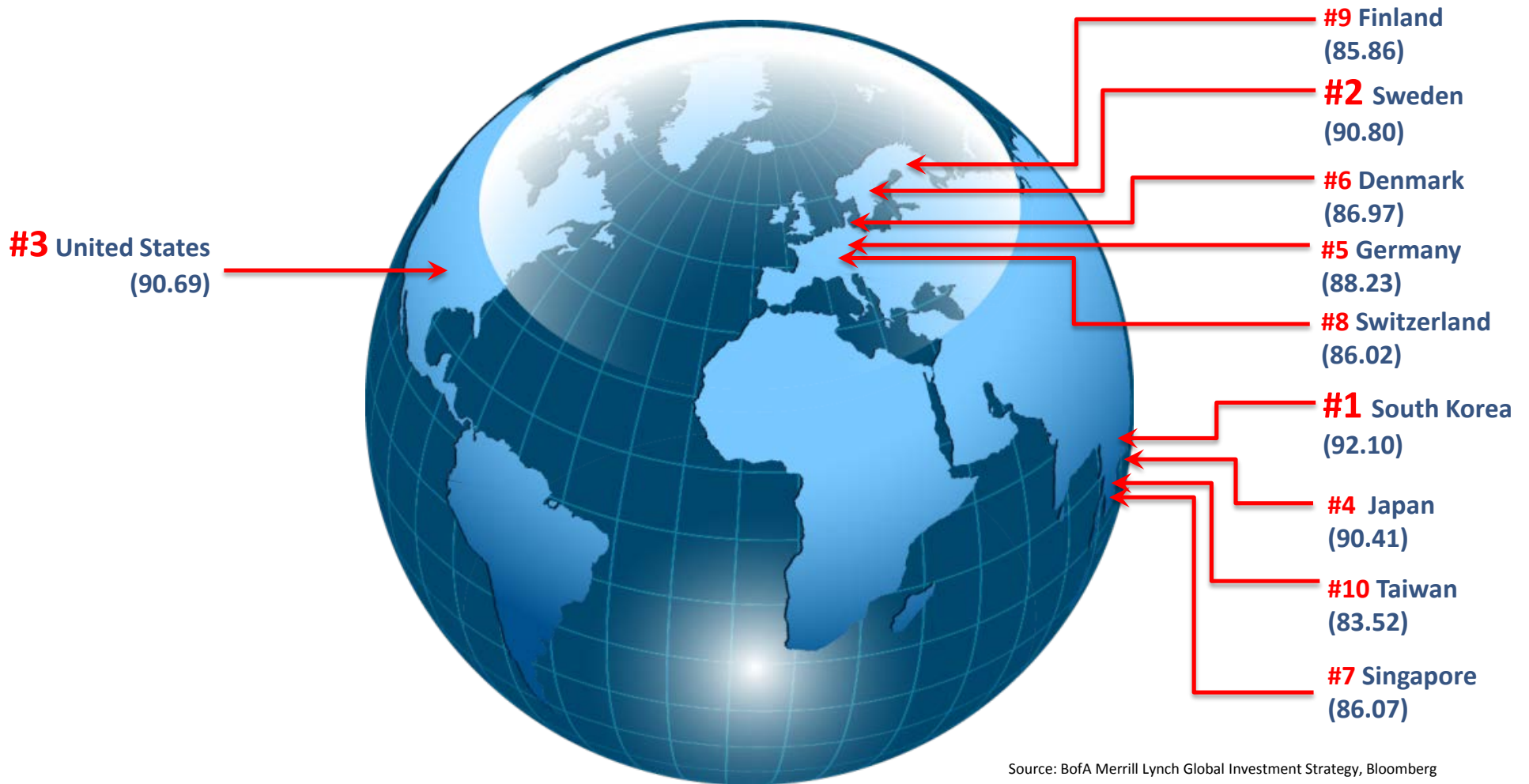
Operational robot units by region



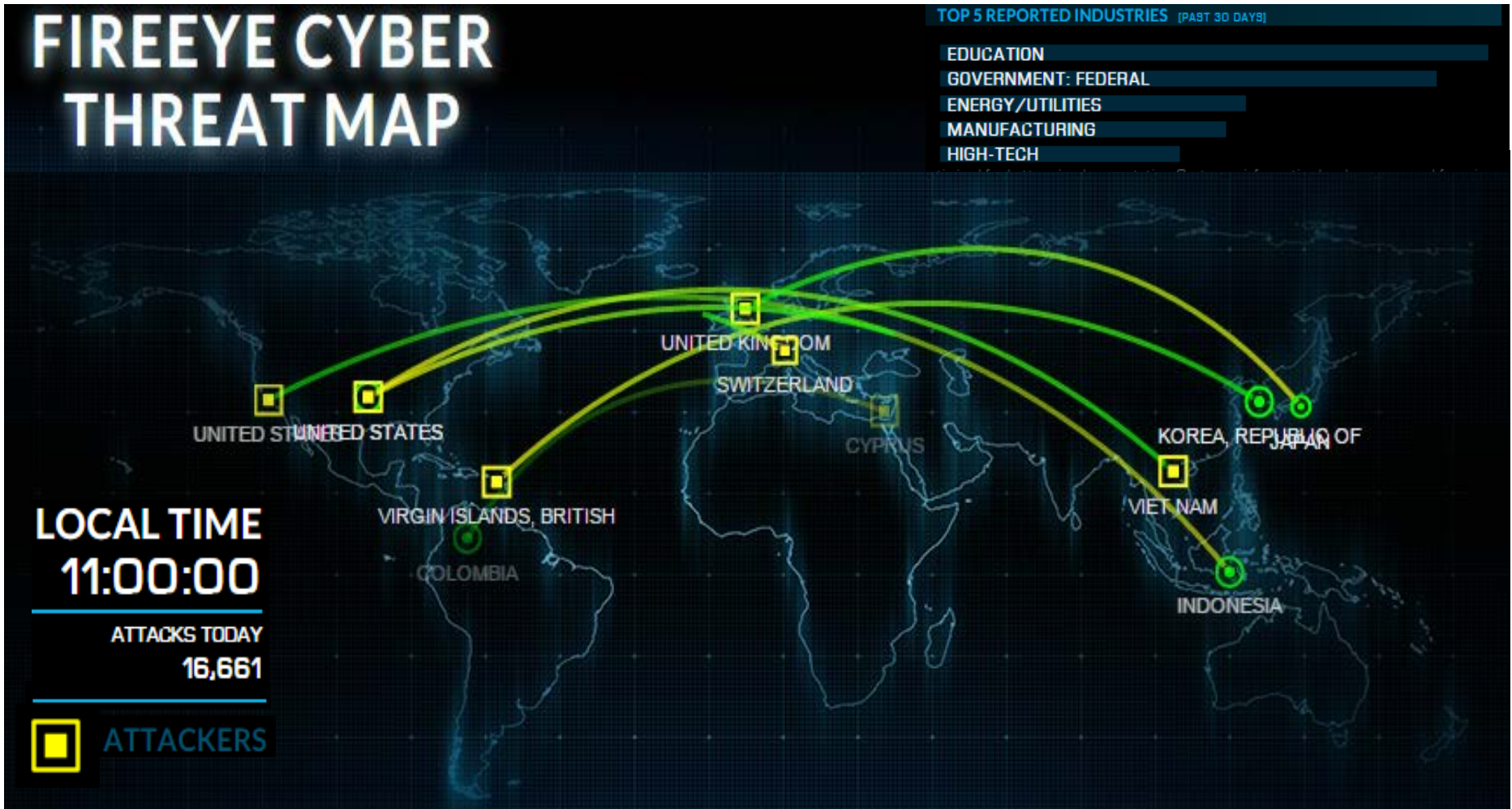
- The world's first hotel staffed almost entirely by robots opened this year in Nagasaki, Japan; a hotel room costs about \$80 per night.
- Japan had the highest number of operational robots at 310,508 in 2012.
- In the past 10 years, the number of global industrial robots has grown 72%, while the number of US manufacturing jobs has fallen [16%](#).

Innovation

Countries ranked by Innovation



- Bloomberg calculates that South Korea is the world's most innovative country.
- This ranking is based on seven weighted factors: R&D, manufacturing, high-tech density, researcher concentration, tertiary efficiency, productivity and patent activity.



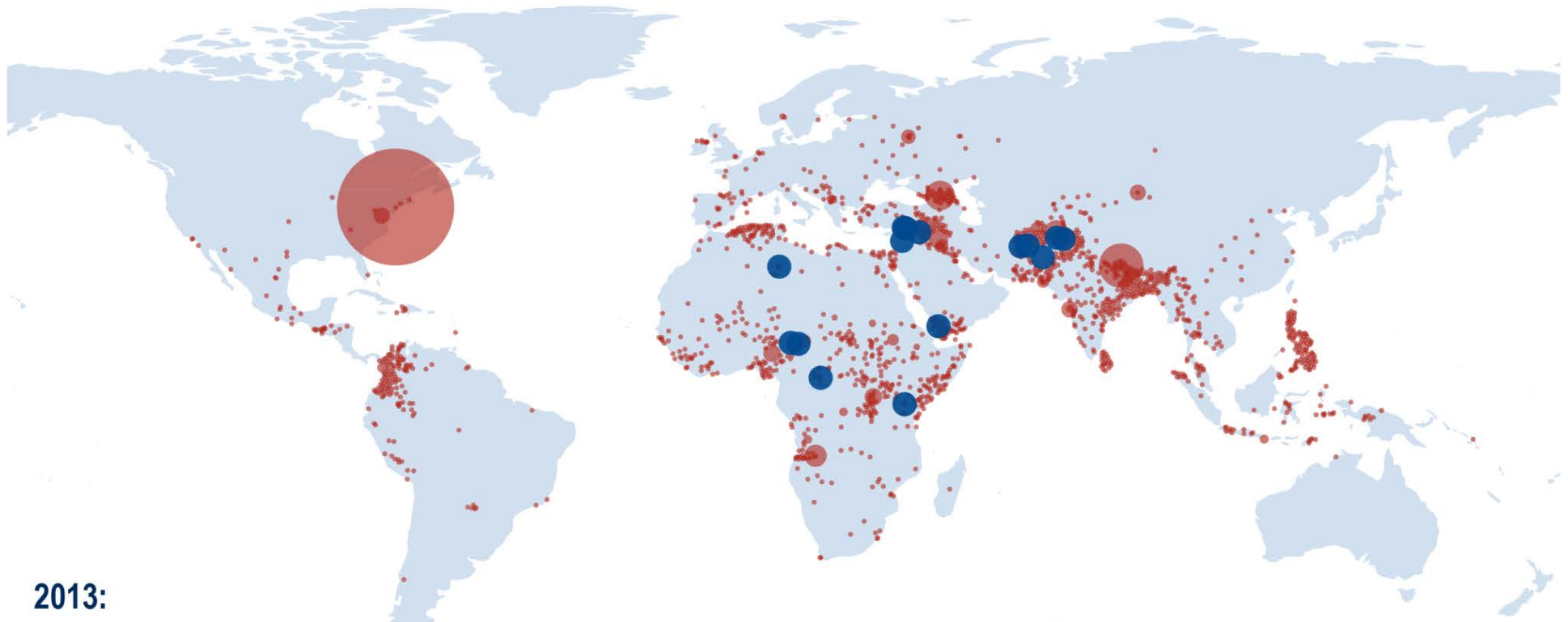
Note: the "FireEye Cyber Threat Map" is based on a subset of real attack data, which is optimized for better visual presentation
Source: FireEye

- As of 11am EST on August 4, 2015, there had been 16,661 cases of cyber-attacks across the globe.
- The estimated number of cyber-attacks per week is 122,000.
- With cybersecurity attacks and critical infrastructure breakdowns now known as one of the top five global risks today, cybersecurity costs are at record levels (\$500bn annually).
- BofA Merrill Lynch estimates the [Safety & Security](#) market is expected to exceed \$1.5tn by 2020.



| Government

The War on Terrorism
Terrorist attacks since 2000



2013:
9,814 Terrorist attacks in 87 countries
17,958 People killed in terrorist attacks
82% Killed in terrorist attacks were in just five countries

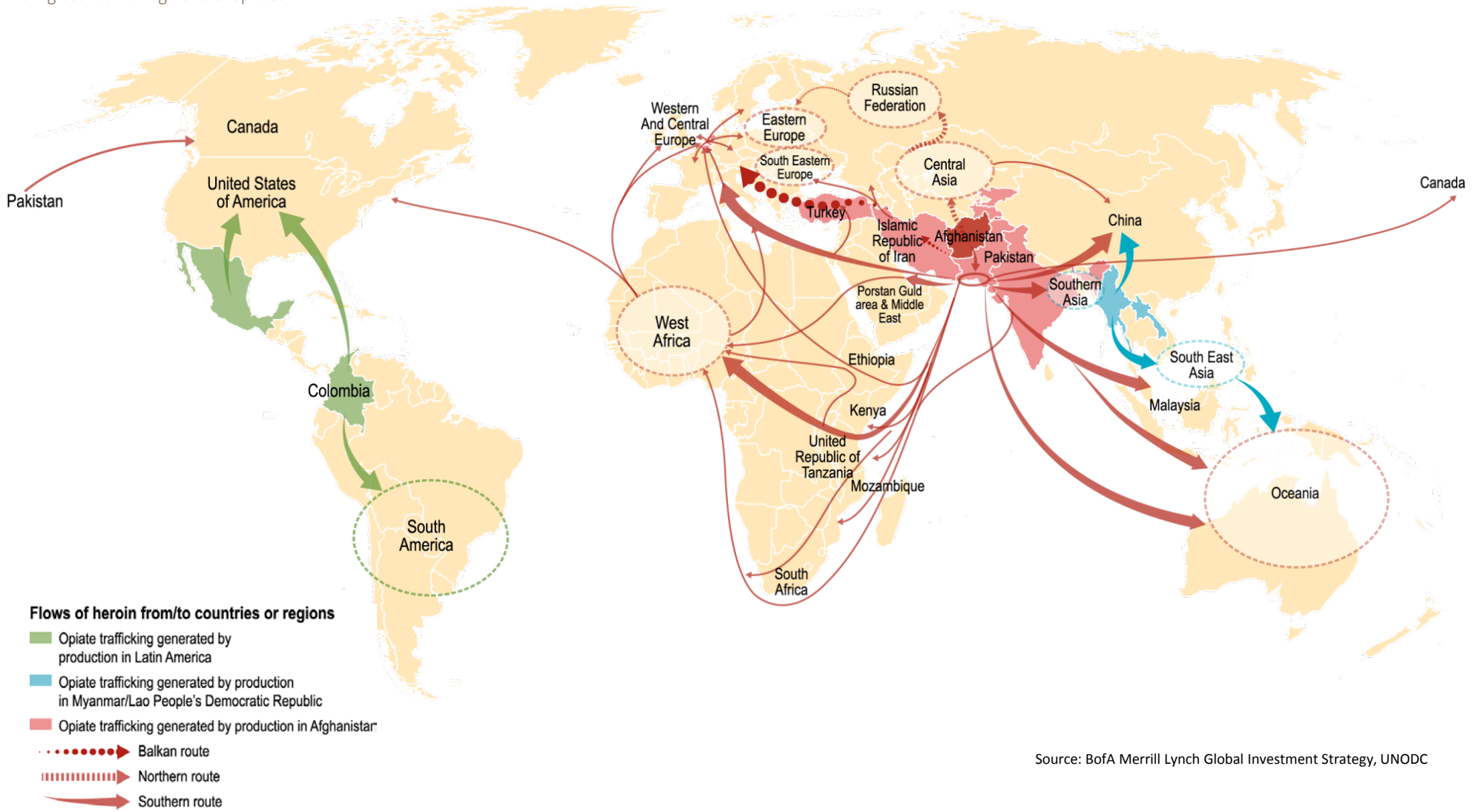
● All attacks since 2000 scaled by number of fatalities
 ● Worst attacks in 2013

Source: Global Terrorism Index 2014 Report, Institute for Economics and Peace

- BofA Merrill Lynch's Government theme examines the role of public policy.
- More government resources in recent years are being spent on security to deal with cybersecurity and terrorism.
- Since 2000 the number of deaths from terrorism has increased five-fold, from 3,361 in 2000 to 17,958 in 2013.
- In 2013 alone, there were 9,814 terrorist attacks and 17,958 people killed in those attacks.

The War on Drugs

Main global trafficking flows of opiates



Source: BofA Merrill Lynch Global Investment Strategy, UNODC

- The flow of illegal opiates around the world also has geopolitical consequences.
- The production and trade of illegal drugs has links with failed states, black economies and regional instability.
- Afghanistan remains the center of illicit opiate production.

America as Superpower

The world's largest defense budgets (\$bn)

United States



United Kingdom



Germany



France



Italy



Saudi Arabia



Russia



China



South Korea



Japan

India



Brazil



Australia

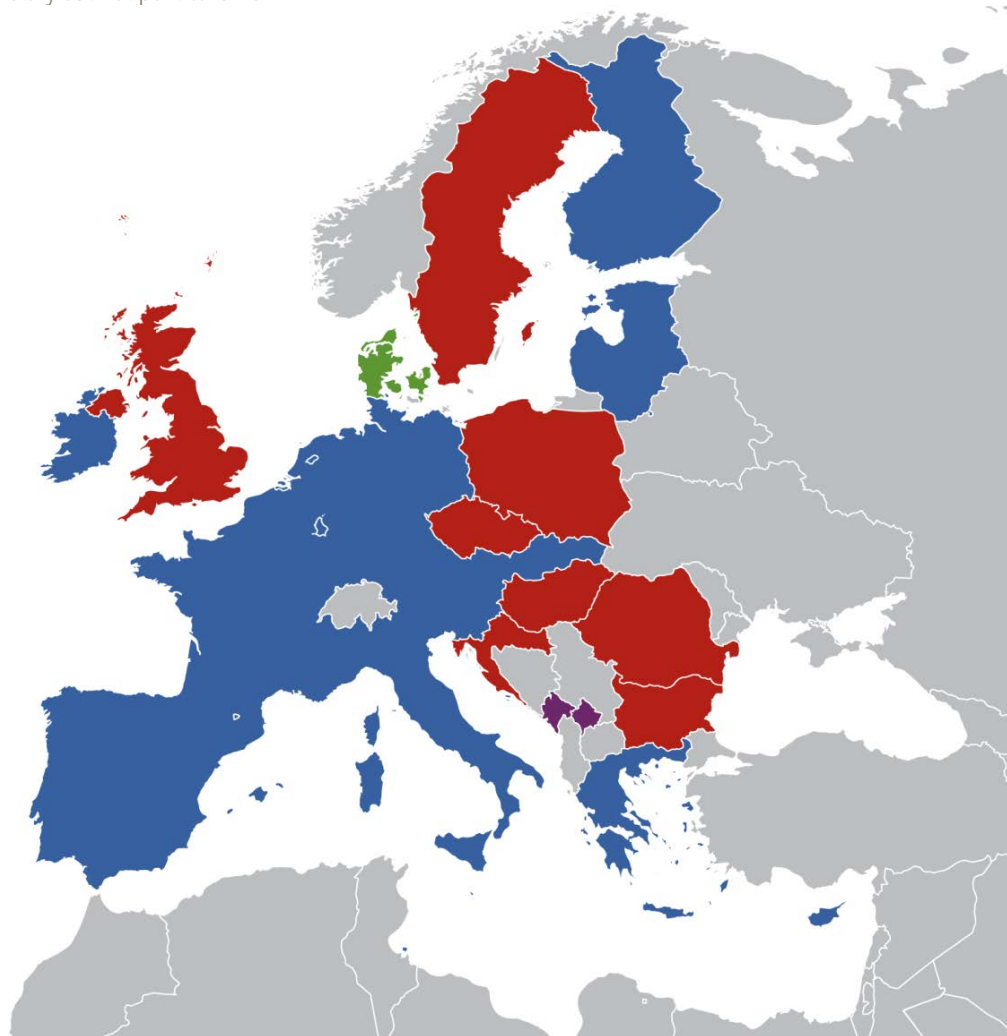


Source: Mapping Worlds, SIPRI

- The US spends more on its defense budget than the next 15 countries combined.
- The US Pentagon spends more than is spent on health, education, welfare, and safety by all 50 US states combined.
- In fact, the US has 5% of the world's population, but almost 50% of the world's total military expenditure.
- Military spending and technological superiority make the US the sole global superpower, providing geopolitical clout and expectations as to role as global policeman.

Europe

Europe's past = conflict; Europe's present = monetary but not political union



Source: BofA Merrill Lynch Global Investment Strategy, Wikimedia

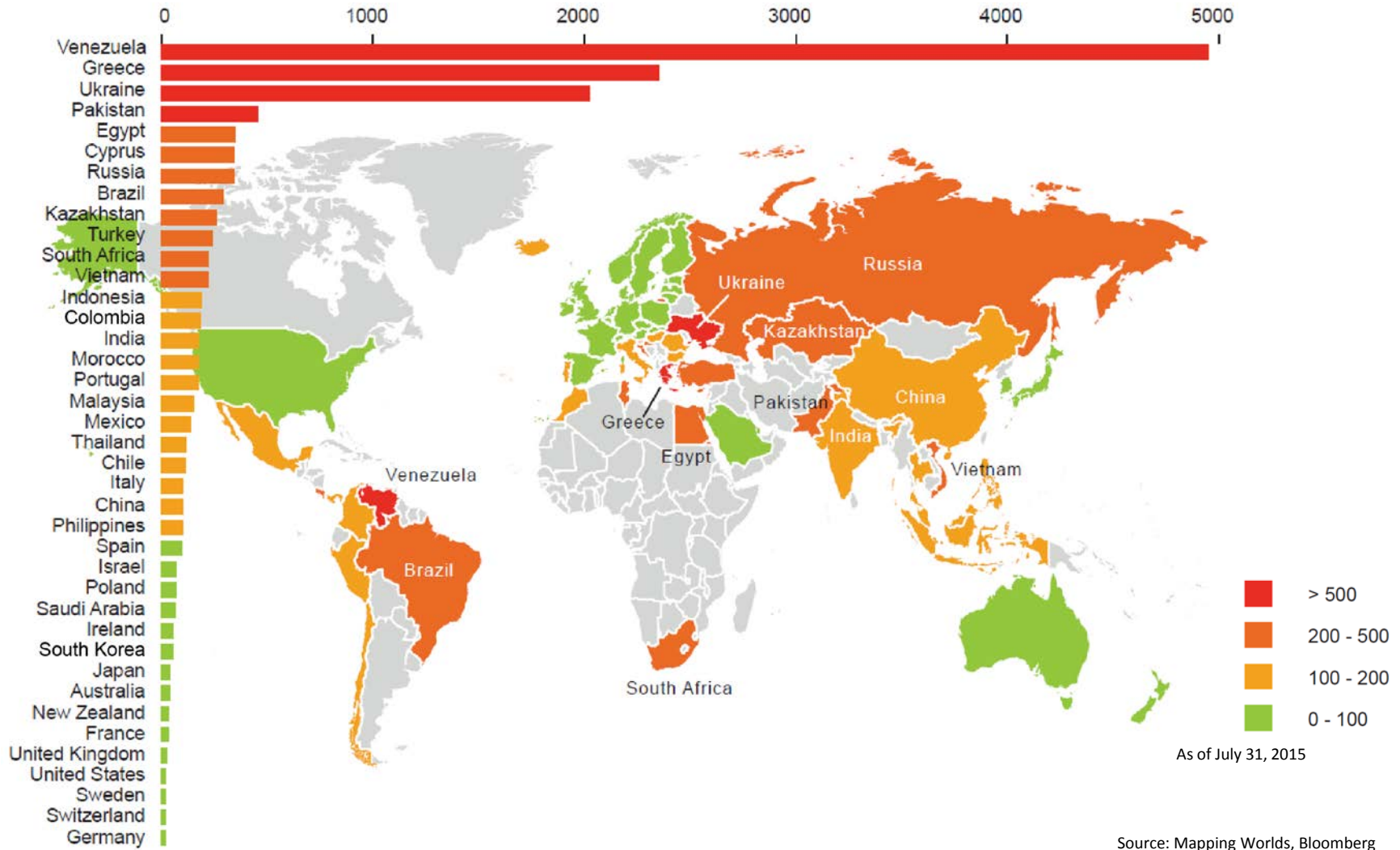
- Europe's history is one of empire, conquest, war, revolution and feudalism; in 2000 years there have been 486 European military conflicts.
- The European Union, the European Central Bank and the euro judged against this historic backdrop are successes.
- But Europe's current migrant crisis, huge levels of unemployment, historic regional antipathies, and the absence of fiscal and political union continue to cast doubt on the viability of monetary union.



| Markets

Credit Default Risk

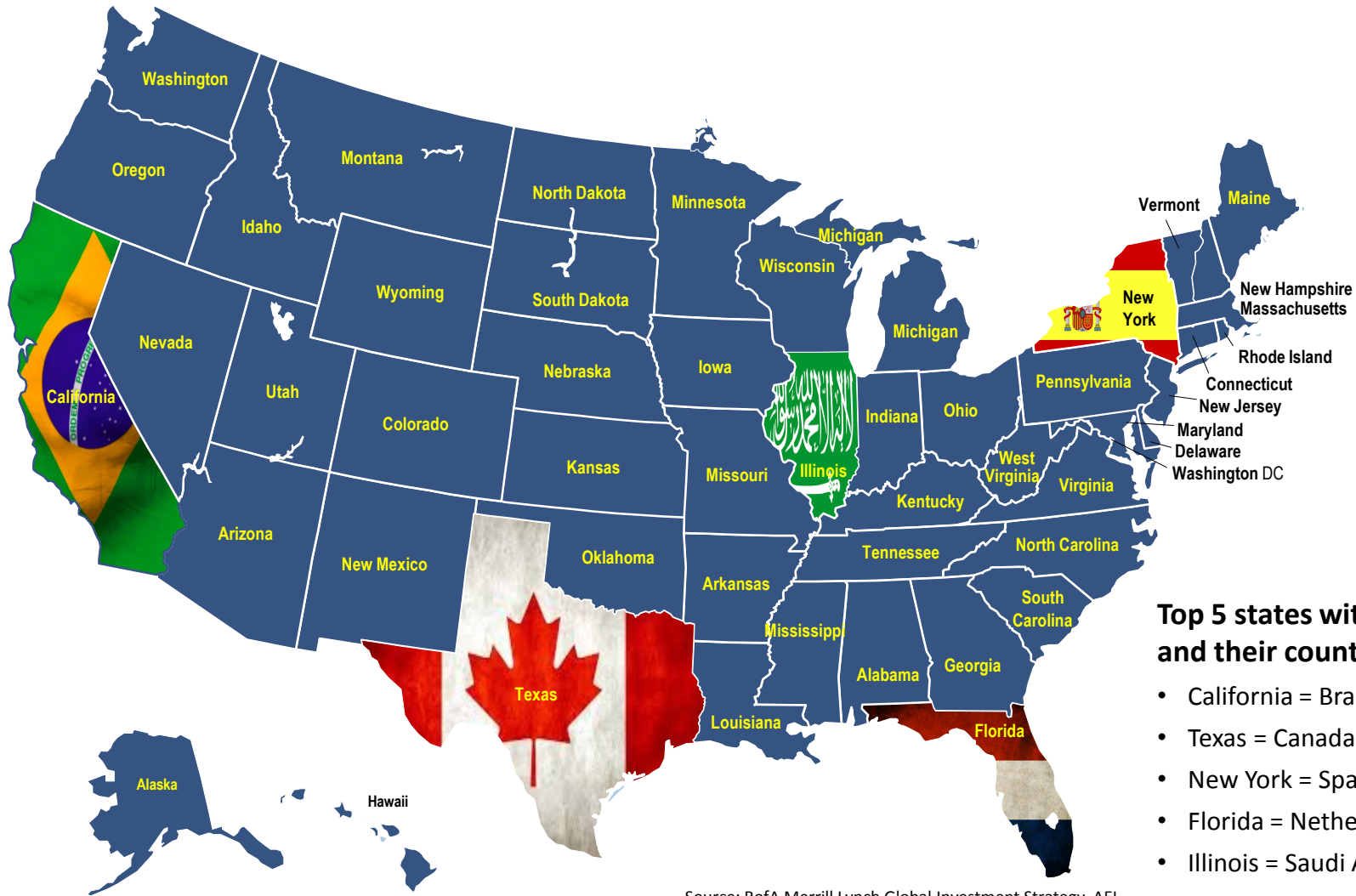
Sovereign credit default swap spreads (bps), July 31, 2015



- Sovereign Credit Default Swaps (CDS) are financial contracts which measure the risk of default on sovereign debt; the higher the spread, the greater the risk of default.
- Currently, Venezuela in the Americas, Ukraine and Greece in Europe, and Pakistan in Asia have the greatest sovereign credit risk in their respective regions.

Red, White & Boom

US states renamed with countries with similar GDP levels



Top 5 states with highest GDPs and their country equivalents

- California = Brazil
- Texas = Canada
- New York = Spain
- Florida = Netherlands
- Illinois = Saudi Arabia

Source: BofA Merrill Lynch Global Investment Strategy, AEI

- The US represents 23% of global GDP; it is the world's dominant economy.
- California's economy (\$2.3tn in 2014) is the same size as Brazil's; the GDP of Texas is equivalent to that of Canada; New York is as big as the Spanish economy.

Pax Americana

The world according to free-float equity market capitalization (\$bn)



Source: Mapping Worlds, Bloomberg

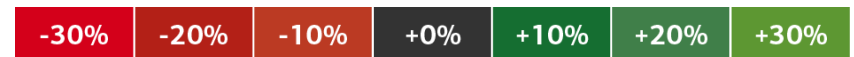
- US stock market capitalization is \$19.8tn (as measured by MSCI).
- The US currently represents 52% of world market capitalization, the highest since the 1980s.
- Next largest markets are Japan, UK, France, Switzerland, Germany and China.

The Stock Market Heat Map

2015 YTD performance



Source: BofA Merrill Lynch Global Investment Strategy, FinViz

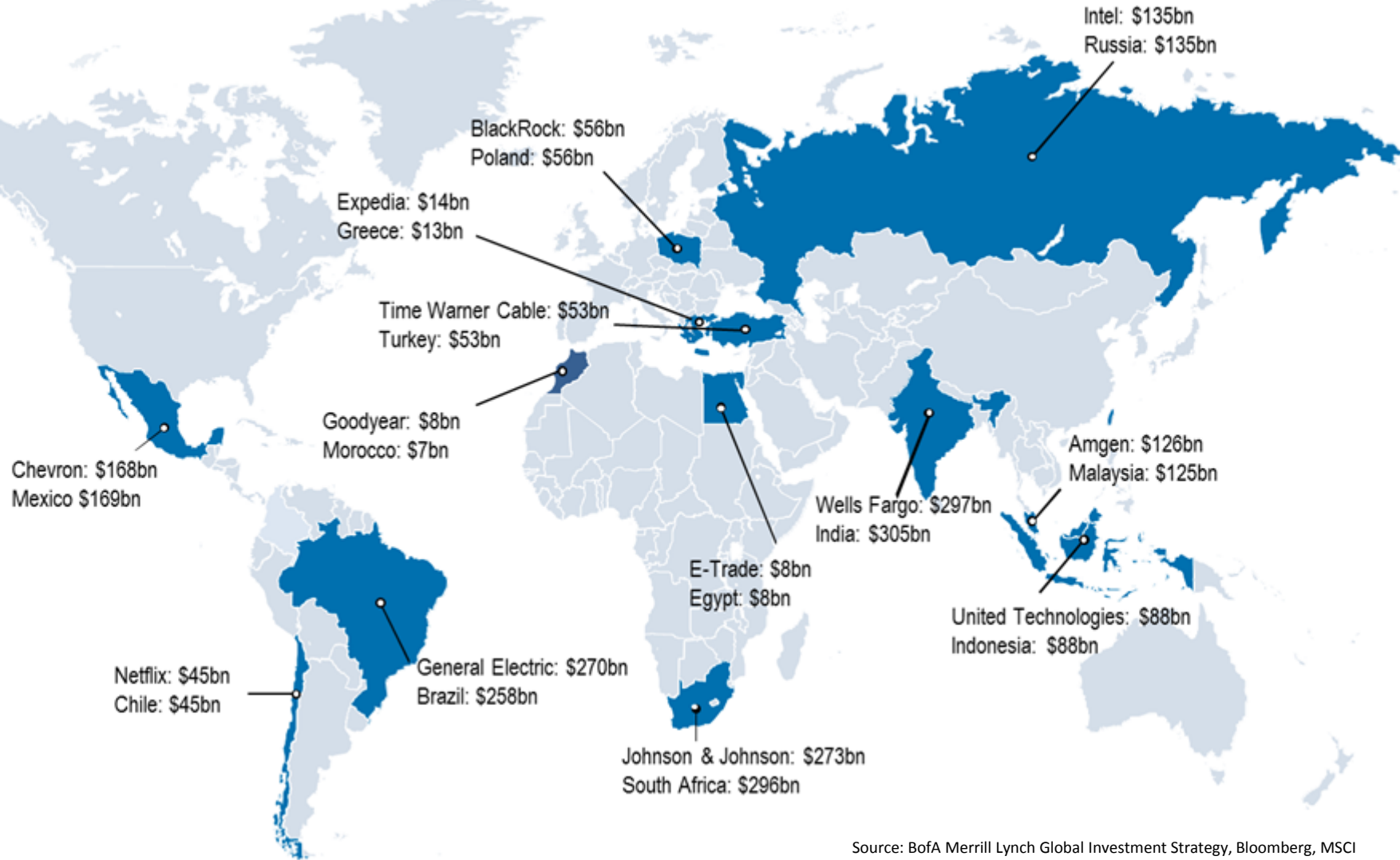


As of July 28, 2015. Note: Size of the boxes represents the size of the company market capitalizations.

- The Stock Market Heat Map shows 2015 YTD returns for the sectors and companies in the S&P 500 index, as of July 28, 2015.
- The top seven companies with the largest impact on the S&P 500 index during this time period are Amazon, Apple, Exxon, Chevron, Intel, Disney and Google.

The Map of Hubris & Humiliation

US companies vs. EM countries in free-float market capitalization terms



Source: BofA Merrill Lynch Global Investment Strategy, Bloomberg, MSCI
As of July 27, 2015

- 2015 has seen the emergence of two big trends: the risk of a bubble in US health care and technology and the crash in EM/Resources/Commodities.
- The two trends are best exemplified by the "Map of Hubris & Humiliation", which compares the market cap of various MSCI Emerging Markets with US corporations.

The Theme Park

Theme	Rationale	Investment	Reports/Primer Picks
Aging	<ul style="list-style-type: none"> Older persons (60+) are expected to more than double from 841mn in 2013 to 2bn+ by 2050E. The spending power of 60+ consumers is expected to reach US\$15tn by 2020E. US longevity sector alone is currently estimated at US\$7.1tn, making it the world's #3 economy. 	<ul style="list-style-type: none"> Pharma/Healthcare (age-related illness accounts for 66% of deaths). Financials/Insurance/Asset mgmt. (\$30tn in assets to be transferred over next 30-40 years). Consumer/Senior-living/Managed care (revenues in US senior living expected to reach US\$69.8bn by 2018E). 	<ul style="list-style-type: none"> The Silver Dollar – the longevity revolution Primer Managed Care Primer 2015 Managed Care Trend Tracker
Genomics	<ul style="list-style-type: none"> A potential healthcare revolution is developing within the field of genomics, which is a genetics discipline that applies recombinant DNA, sequencing methods to sequence and assemble genome structures. Genetic factors play a role in nine of the ten leading causes of death in the United States. There is vast potential for profitable novel gene therapies for heritable diseases. 	<ul style="list-style-type: none"> Particular biotech and pharma companies are concentrating on certain diseases such as; acute lymphoblastic leukemia, breast cancer, cystic fibrosis, heart disease and diabetes, all of which have genetic components which could be addressed with a genomic approach. Investment entry-points include biotechnology, pharmaceuticals, and research & testing facilities. 	<ul style="list-style-type: none"> What's in store for biotech in 2015? DNA sequencing update Competitive trends in key therapy areas – 2015
Millennials	<ul style="list-style-type: none"> Millennials are emerging as a new dominant economic force. They are the largest generation by workforce headcount in the US. Millennials account for \$1.3tn in direct annual consumer spending. Annual income expected to grow to \$8.3tn by 2025E in the US alone. 	<ul style="list-style-type: none"> BofAML identifies attractive sectors that are poised for growth in the next three to five years, including accommodation, autos, eating-out, finance, media, technology, and travel. 	<ul style="list-style-type: none"> Generation Next – Millennials Primer
Urbanization	<ul style="list-style-type: none"> 300 million Chinese now living rurally will move to cities by 2025. China's urban population growth is higher than that of the rest of Asia. The world's urban population is expected to surpass 6bn by 2045. 	<ul style="list-style-type: none"> Investment entry-points include home-building, infrastructure construction, civil engineering, air/road transport, and utilities. 	<ul style="list-style-type: none"> Construction: The cycle with upside Pan Asia Real Estate Monthly Asia Pac RE: 2015 Year Ahead India Infrastructure
China	<ul style="list-style-type: none"> China is the key global growth driver – since 2012, it has been the world's largest "outbound tourism" market by number of travelers (109mn in 2014) and by spending (US\$164bn). BofAML expects AsiaPac casino gaming market to hit US\$84bn by 2019 (CAGR of 7%) with Chinese gamers contributing US\$61bn. 	<ul style="list-style-type: none"> High potential are sectors that will be positively impacted by the high growth in Chinese traveler numbers. Sectors include: Gaming, lodging, also transport and retail. Gaming: Asia market revenue CAGR of 7% in coming years. Lodging: China generated US\$37bn in room revenue with 1.7mn rooms. 	<ul style="list-style-type: none"> China Tourism Primer Asia Economics: Demographics & Deflation
Education	<ul style="list-style-type: none"> 100m children have never having attended school. There are 800m illiterate adults. The cost of attending a private US university is rising at 4.5% pa. Private US college tuition (4yr) is set to rise to \$356,000 by 2029. The global education market is expected to be US\$6-8bn by 2017E. Every dollar invested in education returns US\$10-15. 	<ul style="list-style-type: none"> Education for all offers an opportunity to build healthy, prosperous and equitable societies. Investment entry-points include post-secondary for-profit colleges, publishing & content, educational technology, digital & on-line course providers (Massive Open Online Courses - MOOCs). 	<ul style="list-style-type: none"> Global Education Primer 2015 Education Year Ahead
Globesity	<ul style="list-style-type: none"> Obesity rates have doubled over the past 30 years, and globally 1.4bn people are overweight and 500mn obese (2013: WHO). By 2030, 50-60% of the population in many countries, including the US and UK, are on target to be classified as obese. Large proportion of health care spending results from obesity, with HC costs over 40% higher for those obese than not. 	<ul style="list-style-type: none"> Investment entry-points: <ol style="list-style-type: none"> 1) Pharma, Healthcare & Medical technology; 2) Food, Food Retail, Quick Casual & Beverages; 3) Commercial Weight Loss, Diet Management & Nutrition; 4) Sports Apparel & Equipment. 	<ul style="list-style-type: none"> Globesity Primer Globesity Primer Picks Global food security European Food: Globesity: trimming the fat & working out the winners Global athletic report
Vanity Capital	<ul style="list-style-type: none"> "Vanity Capital" is the pursuit of, and the accumulation of, attributes and accessories to augment self-confidence by enhancing one's appearance and prestige. BofAML believes spending on Vanity Capital is approximately US\$4.5tn, larger than the US\$3.7tn German economy, and 4th largest in the world. 	<ul style="list-style-type: none"> Luxury beauty and personal care products. Luxury cars, private jets, yachts, cruises. Haute couture, bespoke clothing-wear, luxury hotels and residential units. High-end accessories; Art, High-end jewelry, Luxury watches Fine wines/spirits. 	<ul style="list-style-type: none"> Vanity Capital: The global bull market in narcissism 2015 Consumer Discretionary Year Ahead Luxury in a post ECB world...

People

Theme	Rationale	Investment	Reports/Primer Picks
Energy Efficiency	<ul style="list-style-type: none"> Traditional global oil exploration has plateaued and associated reserves are likely to diminish in the decades ahead. Current primary energy demand accounts for 7-9% of GDP and demand is expected to grow by at least 1/3 by 2035. The US shale exploration revolution has reduced import dependence, but other economies will require alternative energy sources. Energy efficiency standards are continuously rising. New battery technologies are enabling a transition to greater electrically powered transport systems. 	<ul style="list-style-type: none"> End-use energy efficiency offers the greatest potential to lower energy demand – incremental demand is forecast to save 3.5mn b/d by 2018 via energy efficiency innovations. Longer-term, EU importing energy from the US, Germany restarting nuclear supply, Poland and even the Ukraine developing shale gas. Global solar energy demand to grow 15% YoY in 2015. Wind and solar expected to comprise 80% of new power generation capacity to 2030. 	<ul style="list-style-type: none"> Global Energy Efficiency Primer Renewable Energy: Primer Demand & Pricing driving Solar Renewable Energy: Wind turbines Japan environment ministry & coal power China Wind Industry
Extreme Weather	<ul style="list-style-type: none"> 2014 was 29th straight year of global temperature > 20th century avg. 2014 was the hottest year on record since 1880; beating 2010. 10 warmest years on record have all occurred since 1997. Extreme weather is the new normal and impacts 10% of globe. Estimates of hurricane costs, e.g., Sandy (2012), run to \$60bn+. 	<ul style="list-style-type: none"> By 2030E, global food demand is set to increase by over 50%, water demand by up to 40% and energy demand by up to 50%. All the above will be challenged by extreme weather. Main entry-points: water; crop science; farming and agri-equipment; new generation biofuels; and Cleantech. 	<ul style="list-style-type: none"> Weather Primer 2015 Property/Casualty Insurance Primer FY2016 US Government budget clean energy focused
Water Scarcity	<ul style="list-style-type: none"> 750m people have no access to clean drinking water. 2.4bn people have no access to proper sanitation. Water demand is set to exceed supply by 40% by 2030E. \$28bn in US water spending expected over 20Y; 7-10% EPS CAGR. By 2050E, 3.9bn people will live under “severe” water stress. circa 45% of GDP in China is produced in water stressed provinces. 	<ul style="list-style-type: none"> Water is a \$600bn market today, but could be worth \$1tn by 2020. Asia and South America have the greatest growth potential. Entry-points include desalination and waste treatment facilities, infrastructure providers, and water-friendly energy sectors. 	<ul style="list-style-type: none"> Global Water Primer
Waste	<ul style="list-style-type: none"> Only 25% of the 11bn tons of waste collected annually is recycled and recovered. 3.5bn people lack access to basic waste management services. Global waste is a 4-11bn ton challenge & a US\$1tn+ opportunity. 	<ul style="list-style-type: none"> By 2020, the waste industry could be worth US\$2tn, with Europe facing the toughest strategic challenges, & Asia/South America seeing the fastest growth. Entry-points are waste management, recycling, waste-to-energy, and sustainable packaging. 	<ul style="list-style-type: none"> Waste Primer Waste Treatment Industry Overview
Food Security	<ul style="list-style-type: none"> Increasing water scarcity and an expanding global population, future food security will be an increasingly important challenge. 805mn people in the world are going hungry. There will be 9.6bn people to feed by 2050E. 70% more food production needed in coming years. There is a \$2.3tn food and agriculture market. 	<ul style="list-style-type: none"> BofAML identifies the following entry-points: Agri equipment, agribusiness and protein, farming, safety inspection firms, water treatment, health and wellness, waste reduction. 	<ul style="list-style-type: none"> Feed the World: global food security primer South African Food Producers Latin America Agribusiness & Food Primer
Disruptive Technology	<ul style="list-style-type: none"> By 2023, M2M could exceed 10% of global mobile service revenue (currently less than 1%). The BofAML Tech team believes that innovative hardware, social/mobile consumer, and cloud collaboration will be top pick stocks to outperform in the years ahead. 	<ul style="list-style-type: none"> Seek new companies with innovative, low-cost, secure and disruptive products. Entry-points include shale drillers, cybersecurity firms, online consumer services, electric vehicles, and sharing economy facilitators, nextgen auto safety & cashless society. 	<ul style="list-style-type: none"> Creative Disruption Technology: The Wearable Wave Digital Banking Revolution Cloud Wars VII
Internet-of-Things	<ul style="list-style-type: none"> The internet-of-Things (IoT) is expected to have a market opportunity of \$7tn by 2020. The number of connected devices is set to double in the next three years to over 20bn. 	<ul style="list-style-type: none"> Wi-Fi key technology in low-end consumer M2M apps, cellular technology should dominate for high-value applications. Other entry-points include, smart homes, integrated workplaces and targeted personalized mobile advertising & marketing. 	<ul style="list-style-type: none"> M2M: Third wave of mobile growth Disruptive IoT space
Robotics	<ul style="list-style-type: none"> In the past 10 years, the number of global industrial robots has grown 72%, while the number of US manufacturing jobs is fallen 16%. Industrial automation market is estimated to be worth around \$140bn pa. 	<ul style="list-style-type: none"> There are a number of long term industry drivers related to productivity which will drive growth, including global cost competition, energy efficiency, outsourcing, quality and EM wage inflation. 	<ul style="list-style-type: none"> Automation for the people Autonomous cars
Cybersecurity	<ul style="list-style-type: none"> Cybercrime costs are at record levels, approx. US\$500bn in annual costs. Cybercrimes are estimated to cost >\$2 trillion globally by 2019E. 	<ul style="list-style-type: none"> Cybersecurity is one of the fastest growing IT sub-sectors with an estimated CAGR of 11.3% from 2012 to 2017. Entry-points include cybersecurity consulting, software services and secure cloud storage facilities. 	<ul style="list-style-type: none"> Global Security Primer Safer World primer picks
eCommerce	<ul style="list-style-type: none"> eCommerce is a top growth story with estimated global growth of 23%. China's eCommerce market is set to double the US in size by 2016. India e-commerce is expected to increase from current US\$7bn to US\$200bn (CAGR of 36%). 	<ul style="list-style-type: none"> Mobile user experience continues as a top focus area for marketplaces; cross border trade is the biggest 5 year opportunity. BABA and AMZN are prime examples of leading eCommerce. 	<ul style="list-style-type: none"> 2015 – Internet Year Ahead eCommerce: year ahead eCommerce is going global Indian eComm: Clash of Titans

	Theme	Rationale	Investment	Reports/Primer Picks
Government	Geopolitics	<ul style="list-style-type: none"> Impactful future challenges include, Middle Eastern energy (oil and nuclear), US/China trade policy (TPP), ISIS/Turkey, Russia/Ukraine, China/Taiwan, EU member exit risks, FX wars/strategic devaluations, and the future role of the US military. 	<ul style="list-style-type: none"> The Chinese defense sector is a good area for the government to spend stimulus money on and is one positive consequence of geopolitical tensions. 	<ul style="list-style-type: none"> Defensive in an age of turbulence Deciphering Defense – An Industry Primer 2015 Disruptive forces in defense
	Income Inequality	<ul style="list-style-type: none"> Quantitative Easing has inflated wealth of equity of owners. Top wealthiest 1% own 40% of global wealth; bottom 80% own 7%. Top 1% pay 24% of US taxes, while 68% of taxes are paid by top 10%. Technological innovation has been a cause of greater automation and thus unskilled labor unemployment. 	<ul style="list-style-type: none"> Capital flight in emerging economies that are in need of reform likely exacerbate excessive valuations of real estate assets in chic western cities. Investment entry-points include niche high-value brands of luxury products and other high-end discretionary stocks. 	<ul style="list-style-type: none"> Piketty & Plutonomy Luxury Goods: The haves & have nots Luxury 2015 Year Ahead Financials: 2015 Year Ahead
	Reform	<ul style="list-style-type: none"> Global capital gravitates to wherever there is financial liberalization and tough and credible regulatory reform. China and India governments have vowed to implement reform programs. New Japanese corporate governance guidelines encourage companies to be more efficient and return cash to shareholders. 	<ul style="list-style-type: none"> Countries that have seen significant improvements in CA a/c balances and/or have enacted reform should outperform. Key beneficiaries include SOEs in competitive sectors, and private companies potentially gaining entry into previously protected areas of the economy. 	<ul style="list-style-type: none"> China: Tax Reform Update Reform Scoreboard China – Local Govt. Reform LatAm Strategy: SOE reform? Japanese governance of insurance China Power Industry Reform Japan's New Governance Code
	Regulation	<ul style="list-style-type: none"> The number of government regulations in the US has increased from 834,949 in 1997 to 1,040,940 in 2012. In 2014, an estimated \$182bn in new US regulatory costs were introduced. Following the Global Financial Crisis, western governments have begun to readdress regulatory frameworks, impacting financial and non-financial sectors alike. 	<ul style="list-style-type: none"> Healthcare reform in the US has been a boon for the HC insurance industry; S&P healthcare is up 155% (20% pa) since the new HC regulations came into effect March 2010. Financial regulations have impacted the permissible investments of banks and insurance companies, which in turn have greatly impacted higher-risk bond market sectors. Large cap companies have a greater capacity than smaller companies to bare the added costs of new regulations. 	<ul style="list-style-type: none"> Navigating regulatory constraints 2015 Regulatory Outlook Global Bank Regulation Handbook New Australian audit reporting
	Inflation	<ul style="list-style-type: none"> Since the global financial crisis, the global economy has had only a sluggish recovery marked by deflation risk. There is an outright war on deflation, making inflation our preferred contrarian strategy. Indebtedness has the potential to induce inflation in years ahead. 	<ul style="list-style-type: none"> Investment entry-points to consider are TIPS, gold, small-caps, REITs, and banks, all of which tend to outperform in an inflationary environment. 	<ul style="list-style-type: none"> The War on Deflation
Markets	The Great Rotation	<ul style="list-style-type: none"> The decade-long trend of inflows into bond funds/outflows from equity funds has started to unwind. Great Rotation is now public policy in Japan. The announcement that the \$2tn managed by GPIF and others need be more weighted towards risky assets is start of new period of capital outflow & yen carry-trade. 	<ul style="list-style-type: none"> This multi-year theme will be bearish for the Japanese yen and bullish for Japanese stocks. As the Fed contemplates rate hiking, this is bullish for ZIRP losers like banks, large-cap equities and the US\$. Equities > Bonds; IG > HY; Real Estate > Commodities; US\$ > Gold; DM > EM, LC > SC. 	<ul style="list-style-type: none"> The Great Rotation, the Great Rebalancing & the Great Risks Japan's alpha potential My world is my bond: a look at asset allocation trends
	Best of Breed	<ul style="list-style-type: none"> Strong balance sheets are likely to be favored over low quality balance sheets, at least until the financial system heals and credit creation resumes. As US interest rates begin to rise, financial leverage will raise costs and will likely be a financial drag to many overly leveraged companies. 	<ul style="list-style-type: none"> Creditors over debtors. Companies over countries. 	<ul style="list-style-type: none"> Global Best of Breed keeps delivering High Quality Strategy Screen Quality is so expensive

Notes

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Source: Burdett, Ricky, Griffiths, Peter, Heeckt, Catarina, Moss, Francis, Vahidy, Shan, Rode, Philipp and Travers, Tony (2015) Innovation in Europe's cities: a report by LSE Cities on Bloomberg Philanthropies' 2014 Mayors Challenge. Burdett, Ricky (ed.) LSE Cities, London, UK.

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Source: Boston University: "The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry."

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Source: Internet Live Stats data a compilation of International Telecommunication Union (ITU), United Nations Population Division, Internet & Mobile Association of India (IAMAI), World Bank (2014).

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Notes: The trafficking routes represented on this map should be considered broadly indicative and based on data analyses rather than definitive route outlines. Such analyses are based on data related to official drug seizures along the trafficking route as well as official country reports and responses to annual report questionnaires. Routes may deviate to other countries that lie along the routes and there are numerous secondary flows that may not be reflected. The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted lines represents approximately the Line of Control in Jammu and Kashmir agreed up by India and Pakistan. The final status of Jammu and Kashmir has not been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined.

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Source: Map from a June 10, 2015, post by Mark Perry on the AEIdeas blog. Republished with permission from the American Enterprise Institute.

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