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HITTING THE POPULATION BRAKES

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10 June 2020

[Population](#)

Popular wisdom has it that everything is speeding up, including population growth. **Danny Dorling** shows just how wrong that is – and argues that we are actually in a time of slowdown. A tour of future population prospects for key hotspots



Credit: Ryoji-Iwata/Unsplash

In early 2019 awareness that human population growth was ending began to spread more widely. To much acclaim, Darrell Bricker, the chief operating officer of the polling firm Ipsos Public Affairs, and his colleague John Ibbitson published the book *Empty Planet: The Shock of Global Population Decline*. As one journalist put it: ‘It is full of fascinating speculation and written with an energy that degenerates only occasionally into jauntiness.’

Bricker and Ibbitson had amassed a wealth of evidence for their central claim that the United Nations had simply got its future projections very wrong. In particular they quoted Jørgen Randers, a Norwegian academic who in 1972 had predicted a sharp rise to an unsustainable world population of 15 billion people by 2030, but who has now changed his assessment because fertility rates have fallen so rapidly recently, saying: ‘The world population will never reach nine billion people... . It will peak at eight billion in 2040, and then decline.’

Randers, a professor of climate strategy based in Oslo, now believes that birth rates will decline faster than UN demographers currently project. Randers is no utopian.

Despite his belief that there will be around three billion fewer people than the UN demographers project in the next fourscore years, he notes that ‘the world will [still] be well on its way towards a climate catastrophe in the second half of the 21st century,’ with CO₂ emissions peaking in 2040, resulting in temperatures passing two degrees above what was recently normal by 2050.

Suggestions that even more rapid population growth slowdown will occur in the very near future are not predictions that all will soon be well. This is because the pollution problem was never a population problem.

Bricker and Ibbitson concentrated on population growth decline, not the wider picture, and so are far more optimistic. They reported that Wolfgang Lutz, one of the world’s best-respected demographers, along with his colleagues at the International Institute for Applied Systems Analysis in Vienna, now believes that the global human population will stabilize by 2050 and then begin to fall because the human slowdown is currently accelerating.

In 2018 Lutz and his colleagues stated that they would now forecast the world population peak to occur shortly after 2070. Their projection would mean between two billion and three billion fewer humans by 2100 than the UN currently estimates.

A growing body of opinion believes the UN is wrong. We will not reach 11 billion by 2100. Instead, the human population will top out at somewhere between eight and nine billion around the middle of the century, and then begin to decline.’ - Darrell Bricker and John Ibbitson, 27 January 2019

It has been obvious for some time to a small group of demographers that the human population slowdown began many decades ago, but just how rapid that slowdown is has been apparent only very recently. This is true when people are counted across the globe as a whole, but the slowdown began even earlier in certain countries and, especially when it comes to very low birth rates, within a few cities in those countries.

The global point of greatest change, the international pivot point, came around the year 1968. The evidence that slowdown is upon us with a vengeance is now so strong that Bricker and Ibbitson were able to quote a recent Deutsche Bank report by Sanjeev Sanyal that suggests the peak in human numbers on Earth will be reached at just 8.7 billion in 2055, and decline to 8 billion by 2100.

There is currently much criticism of many of the more dramatic population slowdown scenarios. The criticism is often aimed at the assumption that slowdowns will simply happen automatically, without further encouragement, such as the role and effect of expanding access to good-quality, free secondary education. I would add expanding free access to tertiary education, which appears to be the most effective contraception of all – not urbanization, as is often claimed.

Perhaps the strongest criticism of these low projections of growth is that they assume no world war in the next few decades, no great famine, no (very lethal) pandemic, no new disaster that upsets our established social orders, which would all probably have, long term, the opposite effect.

The idea that we will somehow avoid any such calamity in the 2020s, 2030s, 2040s, 2050s and 2060s seems like wishful thinking indeed, in these times of Covid-19, although compared to pandemics such as the 1918-19 influenza only HIV/AIDS begins to compare in terms of magnitude, but over many more years.

We find impending disaster captivating because it fits our current favourite (but probably incorrect) theory that the near future will be very different from the recent past. In 2018, 770,000 people died of HIV-related illnesses in the world – that was ‘old news’ and received very little attention. At the time of writing we have no idea of the total numbers that will succumb to Covid-19. But if you have any faith in our ability to learn from past mistakes, in the power of a far better educated global population than we have ever had before, and in more and more women securing positions of power, then you can have some hope.

THE SLOWDOWN IN WORLD POPULATION

Because this fact is so very important, it is worth reiterating that the slowdown in global population was evident some time ago, and it has been well known among demographers for all of this current 21st century. I was a little late to catch on: in 2013 I wrote a book titled *Population 10 Billion*. The publisher added the dramatic subtitle *The Coming Demographic Crisis and How to Survive It*, which did rather detract from the main point of the book – that there was no crisis, and that we could reasonably expect never to reach a global population of 10 billion. What I thought most likely at the time was that we would see a maximum of 9.3 billion around the year 2060, dipping perhaps to 7.4 billion by 2100.

I made the mistake of putting that crucial information on page 350. Almost no-one reads as far as page 350 in a book like that. I should have put the news on the cover. To be honest, though, I was a little worried about sticking my neck out. I had previously published those estimates in 2011 in an obscure statistical magazine. Statistical magazines are good places to hide things you are not sure of, just in case they turn out to be wrong. Even fewer people read them than get to page 350 of a book! So my estimate was that global human population would peak a little higher than the Deutsche Bank researcher Sanjeev Sanyal now estimates, but would also fall faster than many now think it may fall.

As events transpired, I was glad I had hidden my predictions. In the very week that *Population 10 Billion* was published, the United Nations upped its estimate of the future 2100 global human population total from 10 billion to 11 billion. I would have looked a little silly had I put the words ‘7.4 billion – don’t worry’ on the cover, but that would have been better than suggesting that the UN methodology was robust. In 2015 the UN published a revision that said the global population would reach 11.2 billion by 2100, and then in 2017 it suggested exactly the same number.

It almost seemed as if the organization was getting better and better at this guessing game, but it turns out it wasn’t. The UN’s demographers were simply becoming surer of themselves. The same issue remained, one that I and many others had spotted years before: the UN’s demographers had ignored a baby boom.

Their models did not take into account the fact that birth rates between 2011 and 2019 were high because these were the great-grandchildren of so many people born worldwide shortly after the Second World War – the original peak was simply working its way through the generations. The UN also failed to recognize what had made fertility so high in African countries in recent years (on which more below) or that the world was still experiencing a huge cultural shift regarding the rights of, and respect for, women.

You might have thought that demographers would know all about baby booms (if not about cultural shifts), but that is not how their international models work. To be fair to the UN’s demographers, the crucial baby boom was not well monitored in most of the world. At the time of the partition of India (1947) and the Chinese communist revolution (1949), there was enormous loss of life, but also many more babies were born than usual. When things appear to be going wrong, and when there is turmoil, we have more babies.

When they go well, we have far fewer. When we feel really safe, we have even fewer than that. When you can trust that society will look after you, then you can more happily choose to have no babies, or just one. You do not need the insurance policy of having children to look after you in the future – or a great number of children (which people have when their children’s individual chances of survival are poor). And when women are able to make their own choices about whether to have a child and how many to have, then – everything changes.

It will soon become clear who was right and who was wrong. However, the slowdown that the UN's demographers have already reported, the slowdown to their current prediction of 11.2 billion by 2100, is clearly dramatic enough. The timelines in this article use the UN projections that lead to 11.2 billion 80 years from now, even though I believe they are overestimates. I use them because they still show rapid slowdown and because I think these are conservative estimates – the greatest that future growth will likely be.

RUNNING OUT OF PEOPLE?

Population growth was enormous worldwide in the 1940s, 1950s, and at the start of the 1960s: the growth rate itself was growing! But then, quite suddenly, but also remarkably smoothly, the rate of growth began to slow, almost as if someone had pressed down on a giant brake pedal. Between 1980 and today, global human population growth rates became stable at around 80 million more people being added per year.

This stable growth is attributable to a combination of fewer births and, crucially, growth mainly because the people alive at that time were living longer. Next, because there are limits to the amount that life expectancy can increase, from 2020 onward that rate of worldwide population growth is itself projected to fall. The UN thinks that it will fall very steadily, to 70 million a year being added in 2030, 60 million in 2040, 50 million in 2050, 40 million in 2060, just over 30 million being added each year in 2070s, and then a little slowdown itself in the rate of slowdown. Why? Because the UN demographers currently believe that the whole world will move toward a two-child norm.

However, that key assumption has no historical or scientific basis. This, above all else, is why we should not necessarily expect to peak in our numbers as a species at the population maximum of 11.2 billion people in the near future. Everything has changed so much that choosing to have no children, or just one child, is for the majority of women worldwide now just as easy as – if not easier than – choosing to have two.

Sometimes insight can be found in the most unlikely places. Commenting on a February 2019 story in the British *Daily Mail* newspaper, sensationally headlined 'Will the world run out of people?' 'Paul' noted that there is no question that this is true, and that it has been obvious for a long time to anybody with a population chart and a basic understanding of

mathematics. He said that the ‘negative second derivative of population (namely, a decline in growth) is as clear as day and must lead eventually to a negative first derivative (a decline in population itself),’ concluding, ‘Why otherwise intelligent people (eg Stephen Hawking) can’t/couldn’t see this is astounding.’

Stephen Hawking’s warning had been made a year before: ‘Humans must leave Earth in the next 200 years if we want to survive.’ The human species is not, of course, neatly divided into two camps of remarkably clever and remarkably stupid people. We are mostly pretty average, and all of us are capable of being quite stupid from time to time. But occasionally someone, with time and space to think, is lucky enough to be in the right place at the right time to be the one to whom exceptional insight is later ascribed.

Were we cleverer, we would not do this ascribing so frequently. We would not be so quick to put a few people – the brilliant – on pedestals and claim that the rest of humanity is largely incapable of insight. The readers offering comments under this *Daily Mail* article will have been drawn from the most literate and highly educated tenth of the world’s population. The observations that followed Paul’s included: ‘The world will be a better place once all humans are gone’; ‘Over-population is becoming an issue, but Divine intervention will save the planet.’

God, in His infinite mercy and wisdom, will address this as always with famine, war and plague. Have faith!; ‘Genghis Khan killed so many people it cooled the planet (so it’s believed). Maybe he had the right idea?’; ‘I think Obama started this. We are doomed’; and (one of the nastiest) ‘Only partially true. The world will just run out of whites.’

Don’t despair. Just don’t expect great demographic insights either from the people who spend their lives studying the Big Bang and black holes, or from the tiny minority of men (and very occasionally women) who splash their rapid-fire views, like graffiti, in the comment boxes underneath online newspaper articles. Neither group has put their minds to the matter of human population numbers for very long. Although occasionally a few, such as Paul above, have thought a little more carefully than others.

“Slowdown” Fig 21 World Population 1-2100

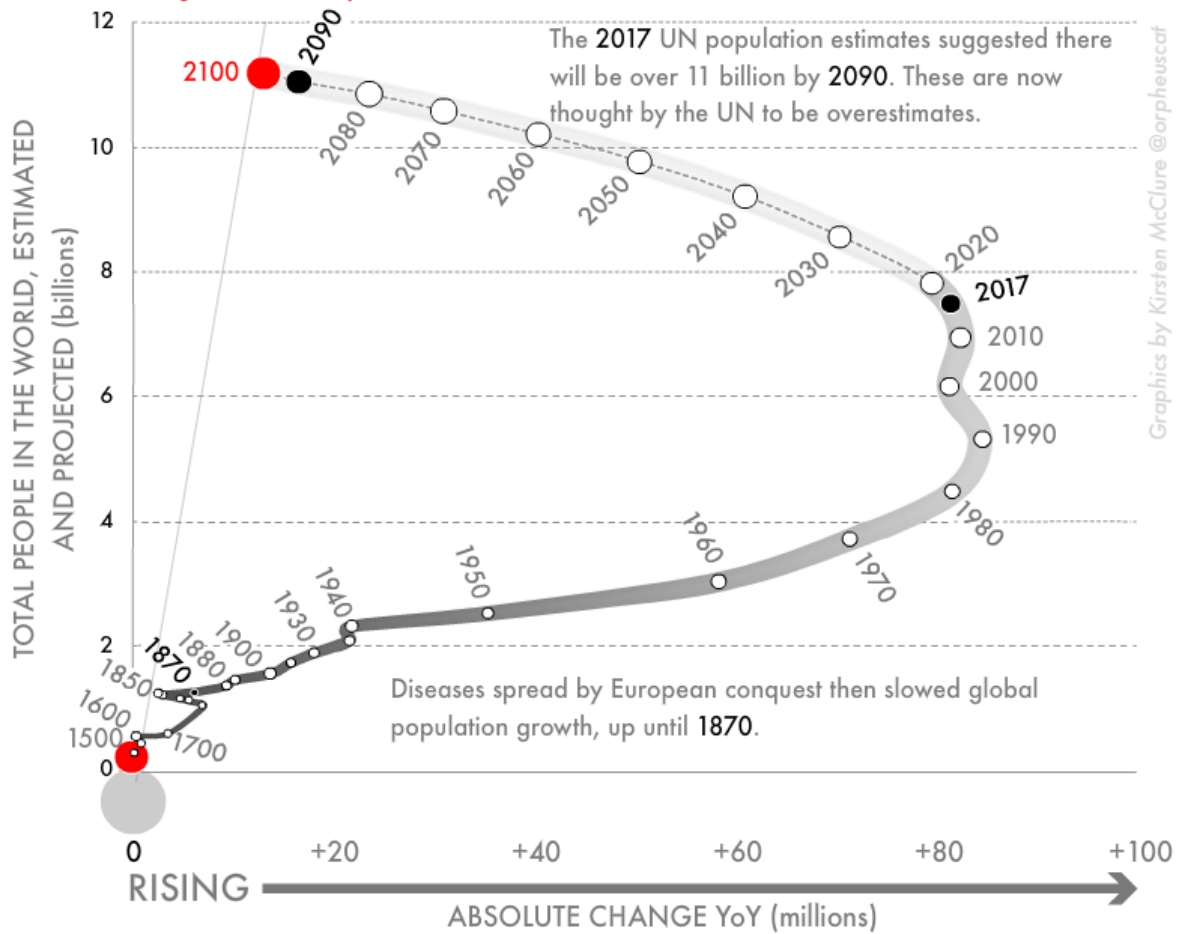


FIGURE 1

World: total population, years 1–2100.

(Data from the [Angus Maddison Project Database 2018](#), hosted by the University of Groningen, updated using data from UN Department of Economic and Social Affairs, *UN World Population Prospects: The 2017 Revision*)

“Slowdown” Fig 22 World Population (log-log scale) Year 1-2100

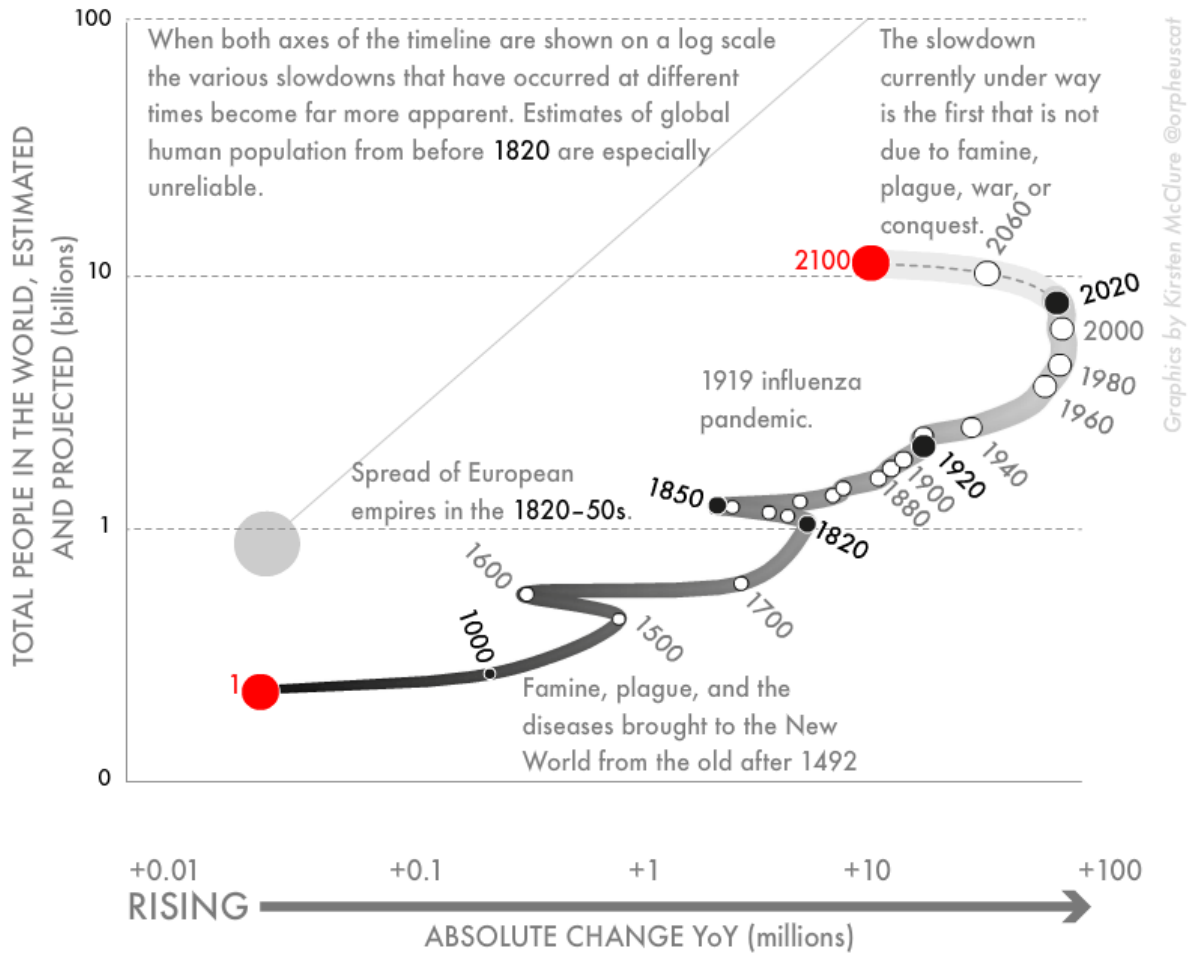


FIGURE 2

World: total population, years 1–2100 (log scale).

(Data from the Angus Maddison Project and *UN World Population Prospects 2017*.)

BOOM AND INVASION

If you look carefully at Figure 1, you’ll see that all but the most recent 170 years of human demographic history squeezes into the bottom 11th of the graph. Since that point, we have always had growth. The growth took off from around 1850, when the British Empire was beginning to approach its zenith. By this point Britain had already invaded some 171 of the present 193 members of the United Nations, although most were not yet actual countries. The effects of these invasions were devastating. The British were not alone in this kind of endeavour, or the first to undertake these practices, but they were certainly the most effective.

If you invade a continent that had previously been largely or entirely left alone, such as Australia or the Americas, you fundamentally disrupt societies every bit as much as if they had been invaded by aliens landing from outer space with unbelievable weapons, incredibly lethal attitudes, and the deadliest of previously unencountered germs. At first there is rapid population decline in the territories that are invaded. The decline is so great that overall worldwide human population slowdown occurs.

Look carefully at the decade prior to 1850 to see proof of this. The ‘scramble for Africa’ took place long after the rise of the European slave trade, which was established to populate the Americas with free labour (free in terms of not wage-paid). The transatlantic slave trade devastated Africa. After the initial shock and destruction, the social structures and norms that had developed over centuries across the continent (and everywhere else in the world that was invaded and colonized), norms that had before produced relatively stable populations, broke down.

Then acceleration set in. That acceleration resulted in the huge human population growth, worldwide, from the 1850s to the 1930s. In terms of total population Figure 1 shows that most of the slowdown is yet to come, but we know it has already begun because fertility has already fallen, and population continues to rise only because people are living longer. Figure 2 highlights the growth that comes after devastating events, including the invasion of the Americas and colonization of Africa.

World War Two, which began in 1939, brought a temporary halt in the then acceleration of population growth. Not only did many people die, many others avoided having children then, or were unable to have children because they were physically separated. Across Europe and North America fertility rates had fallen rapidly in the 1930s; then just a little later during the war, they plummeted. But once war was over, many couples that had delayed starting a family quickly began to have children.

This baby boom extended across the postwar rich world, but also in China (following the turmoil of the revolution), and in India (following the terrible death toll in the time just after the partition of 1947). A second, smaller baby boom in the 1960s prolonged the acceleration, but in the late 1960s the rate of growth began to fall (shown by the circles in the graph beginning to bunch closer together), with the last spurt of acceleration petering out when the grandchildren of that first postwar baby boom generation were born in the 1980s and, finally, most recently, when their

great-grandchildren appeared. It becomes clearer if you redraw Figure 1 on a log scale, as the timeline in Figure 2 shows.

Don't despair. Just don't expect great demographic insights either from the people who spend their lives studying the Big Bang and black holes, or from the tiny minority of men (and very occasionally women) who splash their rapid-fire views, like graffiti, in the comment boxes underneath online newspaper articles

Figure 2 actually employs a log-log scale. Not only is the total population number logged, but so too is the change. Three major interruptions in the growth of the global population become evident: the slowdowns from 1500 to 1600, 1820 to 1850, and 2020 onward. The first two ended in population explosions due partly to the great disruptions of those years.

If more frequent global estimates had been used, more interruptions would have been evident, such as those due to the Antonine plague of 165 CE, the plague of St Justinian that started in 541 (when around a sixth of the world's population died), and the Black Death which reached Europe in 1347 and wiped out about half of the population.

However, it is the impact of the diseases that Europeans brought to the Americas that show up most clearly. These resulted in the first sustained global slowdown in population growth, from 1500 to 1600, and are all too evident in Figure 2. The second occurs with the colonization of the majority of the world by Europeans at the start of the 19th century. The third great slowdown in the Earth's human population rise is taking place right now, arguably having begun with the faintest of signs in 1968, but with the greatest deceleration of all set to occur from 2020 onward.

You may look at Figure 2 and conclude that history could repeat itself. The current global slowdown could rebound again after 2100. Stephen Hawking may turn out to be correct after all, and within the next 200 years humans will leave the Earth and begin to expand rapidly in number again

(on other planets). However, this third great slowdown is a slowdown of our choosing, rather than one forced upon us or occurring without us realizing why, and the vast majority of people doing the choosing are women. Incidentally, successfully colonizing other nearby planets is also almost impossible – we are stuck on this one for some time to come.

Space travel, in the main, is an archetypal modern boys' dream. Choosing to have no children, or just one or two children, is largely a female prerogative, although for women to be able to exercise that choice, the circumstances have to be right. The circumstances are now right, although they differ in different places.

What we worry about (when we worry about population growth) is not growth, but death. We worry about too many people resulting in famines – because we have yet to learn that famines were never caused by there being too many people, but by politics. We worry that population growth will lead to mass migration – because we lack the collective imagination to see that migrants will be in huge demand and we should be afraid of having too few migrants, not too many. We think 'too many people' leads to war.

But it is just a very small number of men who start wars, and sadly it takes many people and usually the loss of many lives to stop wars. We worry that such a large mass of human beings could lead to the spread of new diseases, completely forgetting how deadly diseases used to be to us even when there were far fewer of us.

We are not going to escape the demographic time bomb by moving to outer space, not just because that is impossible, as there is not anywhere near enough to usefully get to, but because – there *is* no demographic time bomb. There never was a demographic time bomb. It is worth repeating that the projections given in this article are the UN's 2017 published 'most probable' estimates and that they had almost all been reduced in size slightly already when the UN numbers were updated in June 2019. There are many reasons to suspect that the slowdown in world population will be much faster than that first official downward revision.

QUE SERA? A TOUR OF FUTURE POPULATION PROSPECTS FOR HOT SPOTS

CHINA

China's population is now expected to peak in 2030 at 1.44 billion and then drop to below 1.4 billion in 2044, dip below 1.3 billion by 2060, below 1.2 billion just after 2070, below 1.1 billion in 2086, and fall below 1 billion around the year 2104 – but only if current projections turn out to be accurate. It could drop faster, since the relaxation of the one-child policy has not resulted in a substantial rise in births. Cultural attitudes to family size have changed in a way that would now be hard to reverse.

China's population growth has been slowing down since 1968, and the country will experience an absolute fall in just a decade from today. In contrast to the United States, China is still growing rapidly economically, although its economic growth is also, inevitably, slowing down. Furthermore, China's birth rate is currently dropping far more quickly than either the UN or official Chinese projections had envisaged.

In 2018 there were 15.2 million births in China, two million fewer than in 2017. This has resulted in the national population growth rate dropping from 0.53 per cent to 0.38 per cent in just one year. The slowdown is fastest in the cities to which people continue to migrate. Continued internal migration also brings more rapid slowdown to rural areas of China.

In Qingdao in 2018, a small city (of 'just' nine million people) in Shandong province in the populous east of the country, the number of births recorded between January and November fell by 21 per cent against the same period in 2017. Qingdao, the most economically successful city in its province, is a key eastern node on the current government's planned 'One Belt, One Road' economic route of prosperity. Progress means fewer babies.

AFRICA

By 2020 Africa's population will have grown to 1.35 billion people, which means it will still be less than that of China at 1.42 billion. However, very soon after 2020, as China slows down, and as most African countries are expected to continue to experience population acceleration, the continent as a whole is projected to far outstrip China in population. This will be the first time in many thousands of years that there will be more people living in Africa than in China.

The projected future rise of the population of so many African states relies on a demographic model that is beginning to look very questionable. It is certainly true that Africa is home to many of the countries that currently have the highest fertility rates in the world. But the supposition that birth rates across Africa will in future slow down only at a pedestrian pace is dubious. It assumes that what is going on in the rest of the world will have little effect on the continent.

With much of the rest of the world approaching a population shortage, out-migration from Africa may well rise in future in response to the growing need for younger people around the rest of the planet. This would further dampen the rate of acceleration of population growth across Africa below that which is currently predicted by the UN. With higher adult out-migration from Africa, fewer children would be born within Africa.

Furthermore, migrants who leave countries of high fertility tend to have fewer children over the course of their lives than those who remain. This, of course, also assumes that removal (by emigration) of some fraction of a peer group has no effect on the pace of fertility decline among those remaining. But what if conditions for those remaining also improve, access to secondary and tertiary education improves, and the reasons so many people had for leaving are reduced?

Recent years, 2000-15, had seen unusually high population growth across Africa. It is the projection forward of that unusual and very recent high rate of growth that drove the UN projection model published in 2017.

There is growing evidence that the most recent years in Africa have been an aberration. In February 2019, research published in the *Proceedings of the National Academy of Sciences* was widely reported around the world. The researchers found that it was most likely a disruption in access to

decent education in many African countries in the 1980s, especially for girls, that led to young women having more children, producing this recent (and very possibly temporary) aberration in what had previously been a faster rate of slowdown.

In the past 20 years, access to education for girls across Africa has improved markedly. None of this is taken into account in the UN's models. The disruption to education in the 1980s was during the worst recorded period of economic decline that the countries of Africa had ever collectively suffered, a decline that occurred under the structural adjustment policies introduced by the International Monetary Fund and the World Bank. Girls who couldn't attend school in the late 1980s and early 1990s due to structural adjustment became women who on average had children earlier and more children overall. Poverty, despair and ignorance increase fertility. The damage wreaked on the continent by those structural adjustment programmes was devastating.

INDIAN SUBCONTINENT

Improved infant survival chances after Indian independence meant that the population of the new state of India grew by more than 20 per cent every decade from 1951 onwards, right through until 2001-11, when growth slowed to just under 20 per cent in the final 10 years for which we have an accurate count. The population of Pakistan grew by just as much but slowed to 20.1 per cent growth between 2001 and 2011, and it has been estimated to be decelerating throughout the most recent years. Most important, Bangladesh has slowed down the fastest, with its population growing by only 16.9 per cent between 2001 and 2011, mostly due to people living longer, rather than more births, and with its rate of population growth also falling each year within that period due to the decline in births.

The period of acceleration of the population growth of the Indian sub-continent as a whole ended in 1995, when 24 million people were added in just one year. The slowdown has already begun. It started a quarter of a century ago in India, but it is currently projected to be a slow slowdown, with growth falling below the addition of 20 million people a year in 2020,

below 10 million a year in 2043, and reaching zero growth – peak Indian subcontinent population – in 2063 (or 2059, according to the 2019 UN estimates).

After that, the 2017 UN projections suggest the population will shrink by more than seven million people a year for the first time in 2094, when the total is still above two billion people, one billion having been reached in 1987. However, there are very good reasons to believe that the slowdown could be quicker than that, with the very recent falls in fertility being the most obvious sign that the UN's projections, those made in both 2017 and 2019, overestimated future population in its 'most probable' outcome. But the stories of other countries are telling, too. We can learn much from the recent past of other countries – as long as we look.

UNITED STATES

In 2006, when good quality data on the movement of peoples around the world first became available, my colleagues and I started to draw hundreds of world maps of the differences between countries and changes over time as part of what became known as the Worldmapper project. At that time we noted that most of the migration into the US that had taken place between 1990 and 2017 came from neighbouring Mexico (12.7 million people).

This resulted in Central America and the Caribbean accounting for just over 47 per cent (22.4 million) of the total migration to the United States in that period. Mexico was followed by China, India and the Philippines in importance, each contributing over two million people to the in-migration count. Six other countries contributed more than one million people to the US's immigration numbers: Puerto Rico, Vietnam, El Salvador, Cuba, South Korea and the Dominican Republic.

US politicians reacted to this acceleration with sanctions. The Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) was signed into law in September 1996. After IIRIRA came into effect, deportation from the United States went from being a rare phenomenon to a relatively common one.

In 2016 journalist Dara Lind explained: ‘More immigration enforcement is one big reason why there are so many unauthorized immigrants in the US today.’ People were actually more likely to remain in the United States because of the difficulty they encountered going back and forth to their country of origin, and obtaining legal status became much more problematic.

Population growth did turn from acceleration to deceleration in the United States upon the passing into law of IIRIRA, which really was an especially nasty piece of legislation, but that is coincidental. What sustained the deceleration in the wake of the IIRIRA was fewer and fewer births.

Unlike the rest of the Americas, in 2100 the US is still predicted to be growing in population size. However, far from being the land of the free when its demographic record is examined, the United States may well become a less popular place for migrants to try to reach in the near future when the legacy of the Trump era strikes.

I suspect the UN projections are especially over-optimistic as far as the United States is concerned and its population will actually fall at some point during this coming century.

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