

In this detailed satellite image of the Earth at night, the size of countries and continents has been distorted in order to show population density. (The most densely populated areas have been magnified. Unpopulated areas have been shrunk to nothing.) The dark areas show parts of the world in which people find it hard to access electricity, or use less of it. Ben Hennig, senior research fellow in the University of Sheffield's department of geography, created the image using 2012 data.

# Census and sensibility

Ahead of the UN's World Population Day next week, **Danny Dorling** considers how the global academy is bending to the winds of demographic change

There is a lot of angst about the size of the world's human population and what those numbers mean for the future of our overstretched planet.

With the United Nations predicting that by 2100 there will be 11 billion of us, academics, policymakers and others are understandably and rightly worried about food supplies, resources, the environment and sustainability.

But looked at another way, 11 billion might also be a figure of hope. As vast a number as it sounds, it actually represents a slowdown in world population growth, and there are many reasons to be optimistic about our ability to respond to the challenges we face.

Many will look to universities for solutions but demographic trends are relevant to higher education in other ways, too, influencing the shape and direction of the sector far more than is often realised.

When, for example, UK student numbers dipped during the 1950s, it had as much to do with low birth rates in the 1930s as with education policy in a period of austerity. Similarly, university expansion in the 1960s was partly needed to cater for all the extra children born after 1945 – the “baby boom” associated with the end of the Second World War.

Importantly, changes in population can also affect young people's chances of getting into university. In England we have recently seen a slowdown in the expansion of student numbers but this has not necessarily greatly reduced the opportunities open to university

applicants: a sharp fall in the number of babies born 18 years ago limited the pool of young people who might have applied last year. This in turn may have been a result of changing trends in university participation a little earlier, because women who enter higher education are likely to become mothers later in life than they otherwise might. Around the world, the birth rate will fall as more women are educated – especially to university level.

The growing number of international students will also help to accelerate this global trend towards declining fertility. (It would take a brave person to move abroad to study and have a baby at the same time.)

So education and fertility are intertwined. Universities alter our demography as well as being influenced by it.

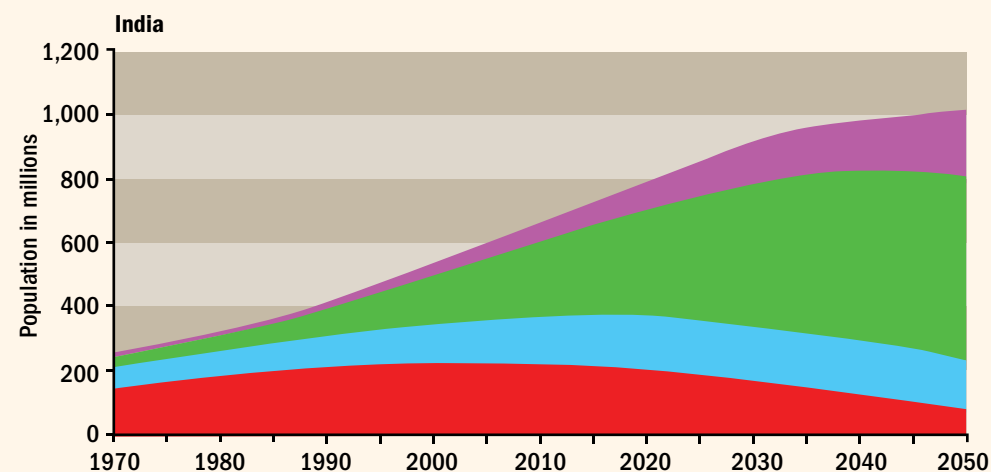
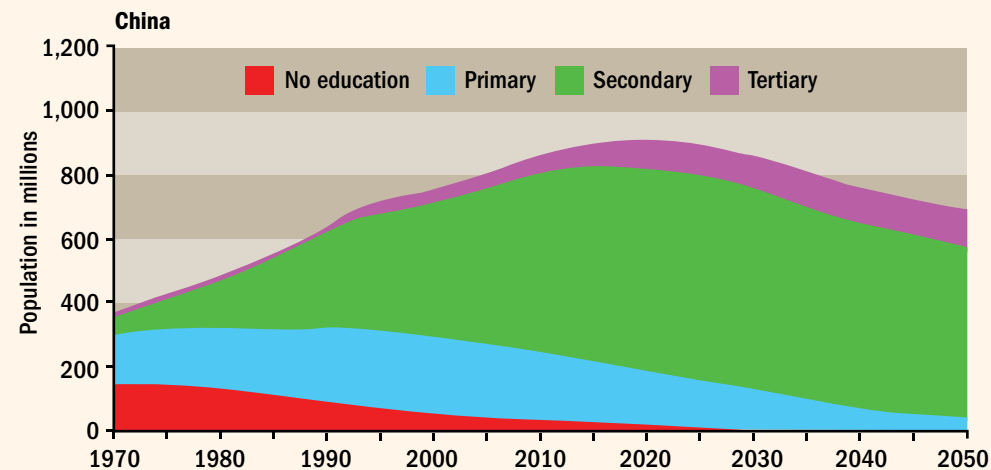
Globally, the rate of increase in levels of education is so rapid that in some countries hundreds of new universities are being planned. In the coming years, nations faced with declining populations will seek to grow their international student numbers to make up for falling demand at home. They might look to India, for example, where the population is expected to grow for many decades to come. In contrast, the number of young adults in China is expected to decline rapidly: these will be the grandchildren of those born under the one-child policy, introduced in 1978 (see graphs, below).

Demographers also examine migration,



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Numbers (in millions) accessing different levels of education, 1970-2050 (projected)



Source: Samir, K.C., Barakat, B., Goujon, A. et al. (2010) 'Projection of populations by level of educational attainment, age and sex for 120 countries for 2005-2050', *Demographic Research*, 22: 383-472.



REUTERS

and the pull of higher education is, of course, a strong and growing influence on the movement of people around the world. The flow of students between countries is changing net migration rates (“natural” change, meanwhile, measures the difference between live births and deaths over a given period).

The UK’s young people, too, will start to look further afield: after all, for many, getting away from home and experiencing something new is what being a student is all about and, as we move through the 21st century, travelling across England to another town is less likely to pass muster.

The fact that English students have not yet realised the extent to which they can access universities across Europe is something of a conundrum but surely it will not be long before they wake up to the opportunities. It did not take long for young adults from the Republic of Ireland to work out that they could study in Scotland for free.

At some point we should expect to see an increase in the migration of English 18-year-olds to mainland Europe, not only to experience a different culture for three years but also to access less expensive higher education – and through courses that will probably be taught in English.

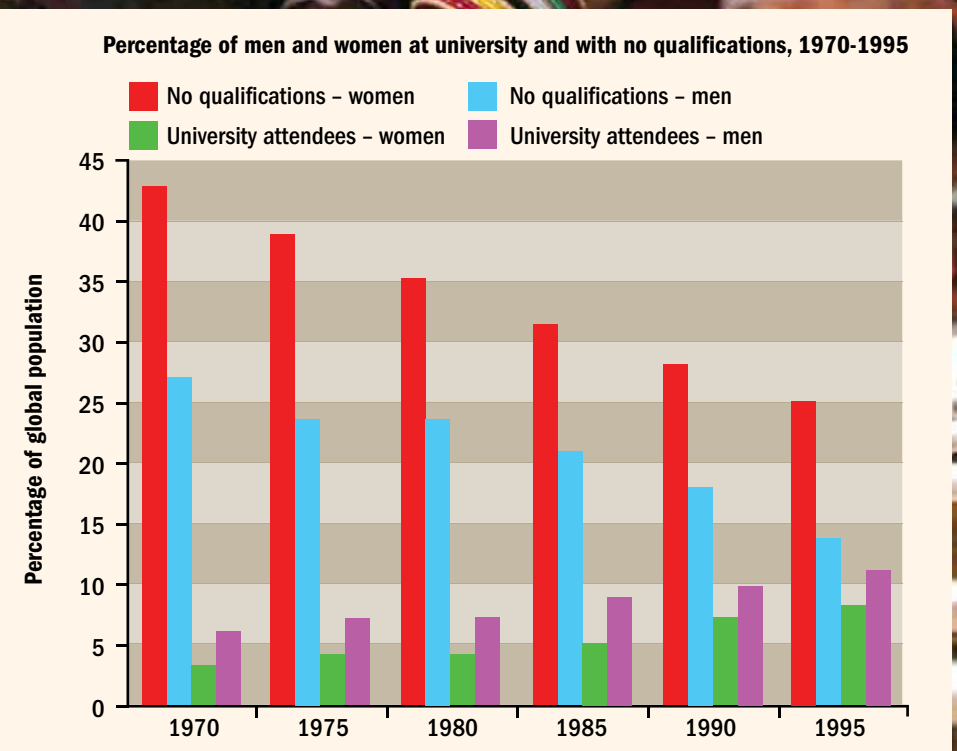
There is already anecdotal evidence of small increases in the number of British students, often from the most elite public schools, travelling to the Sorbonne or Harvard University. What is first done by the upper class is often mimicked by the middle class of the next generation and the working class after that – as was once said of the use of opiates.

Meanwhile, recent funding reforms have resulted in different fee models in England, Wales, Scotland and Northern Ireland, and while early signs have hinted at some price sensitivity, it will be interesting to witness developments as the experiment continues (even if it is an unethical one, as the students involved get no say about whether they want to be experimented on).

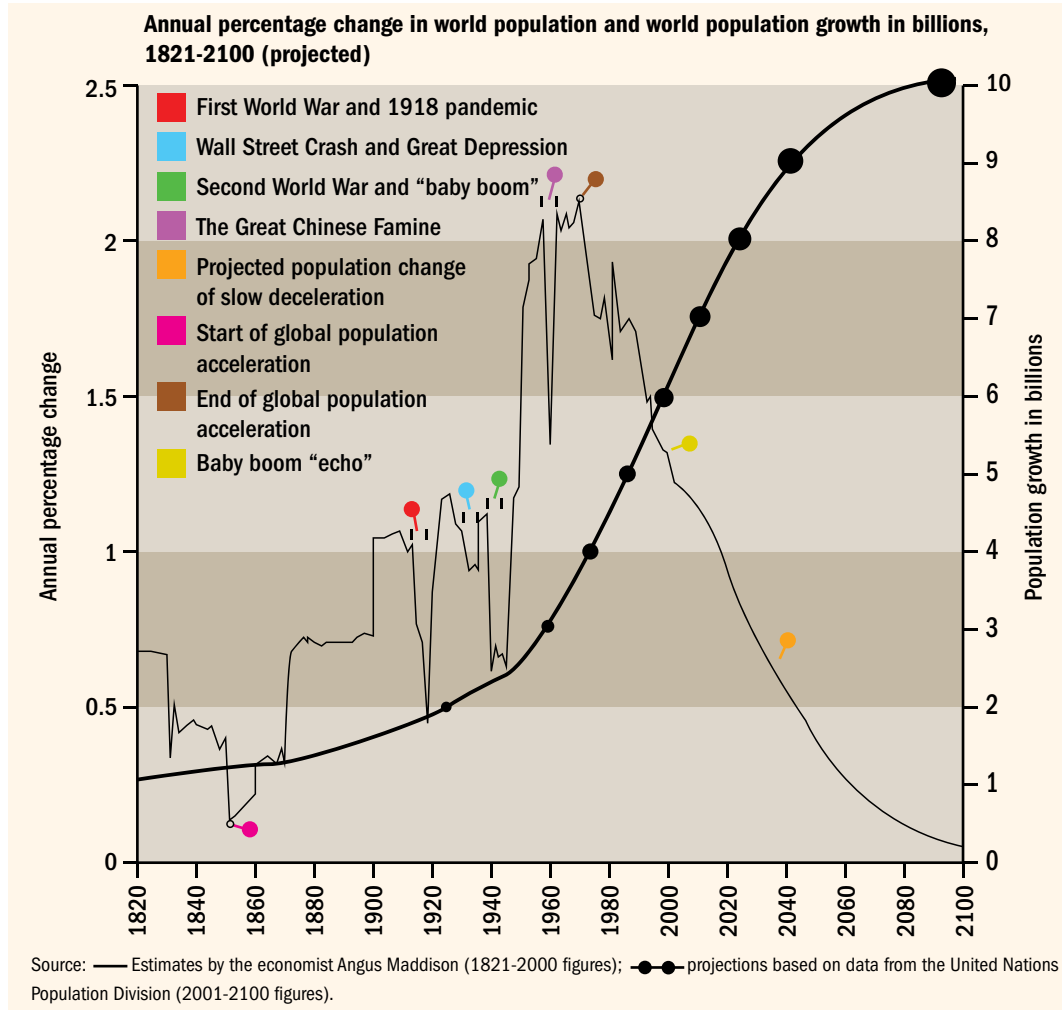
The same is true of international student numbers. Although we know that they will grow, as yet we have little idea of just how big the “market” will eventually become. Recent changes in numbers have been too fast and too volatile to offer a clear picture of what lies ahead.

**O**ne thing we can be sure of, however, is that demand for young people is about to grow in the West. For example, fertility rates across Europe fell to around 1.5 children per woman in 2005 and remain low (see graph, page 40). A rate just above two is needed for stability and that is nowhere to be seen across the continent.

A slight recovery in European fertility has been forecast by the UN but that may have to be reconsidered in the wake of the 2008 economic downturn. After the 1929 crash that led to the Great Depression, a dearth of babies was born across most of Europe and that may now be repeated worldwide, including in Africa. Even in that continent, fertility has plummeted as infant mortality reaches a historic low (it fell faster last year than at any other time in history). This may sound counterintuitive, but when fewer babies die, people choose to have fewer babies – perhaps



Source: Lutz, W., Goujon, A., Samir, K.C. and Sanderson, W. (2007) *Vienna Yearbook of Population Research*.



Source: — Estimates by the economist Angus Maddison (1821-2000 figures); ● projections based on data from the United Nations Population Division (2001-2100 figures).

because the chances of their children surviving are greater, perhaps because they are less fearful of the idea of an old age supported by fewer offspring.

As we are all well aware, the world's population is ageing, creating a different set of challenges. This is another reason why young people will become more precious. Ageing is contributing to the rising global population: as there are more of us around for longer, the growing population count is not made up solely of extra people but also of extra people-years. The most recent increase in the world's population is mainly down to lengthening life expectancy.

Anyone looking forward more than a dozen years needs to take a deep breath, but by many estimates (including those I have most faith in), the globe's total population is forecast to stop rising within a century, or perhaps even sooner than that.

The graphic on page 39 highlights changes in the patterns of population growth. As you would expect, university expansion worldwide was fastest when global population growth was most rapid, between 1945 and 1971. Since 1971, there has been a slowdown in growth, and "peak baby" (the year in which more babies were born than in any year before or after) occurred in 1990. Fewer babies have been born worldwide every year since then.

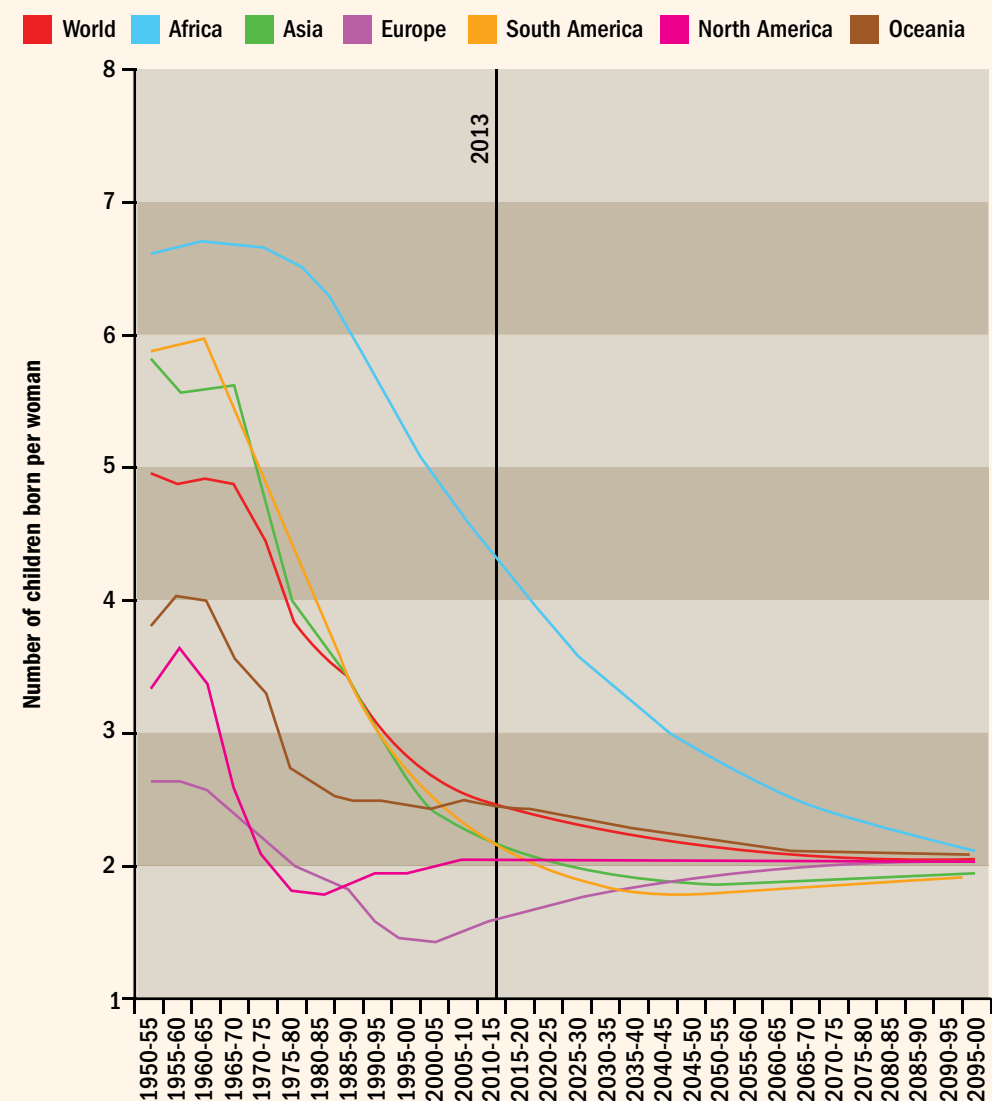
The UN forecast is for far fewer babies to be born in the years to come but because each will, on average, live a little longer than in the past, the population slowdown will lag behind the fertility decline. Such factors are key to the accuracy of our current forecasts.

The slight "bump" in the graph shortly after the year 2000 is the echo of an earlier baby boom responsible for the recent upgrading of the UN's 2100 population forecast (from 9 billion in 2003 to 11 billion in 2013). The estimate may have to be revised downwards again after the blip has passed.

The fastest reductions in fertility are in the most urban areas and among the middle classes. In most parts of the world, fertility is already below replacement levels and in some of the most urban areas, having no children at all is now more common than having two or three. In many East Asian cities but also in much of urban Europe, fertility rates are nearer one child per couple than 1.5. The pressure to achieve on the sole grandchild of four grandparents can be very high but universities should not just see this as a "market opportunity" – they must realise that they will be dealing with young people who have the weight of heavy expectations on their shoulders.

Just as we have passed "peak baby", we will pass "peak potential graduate". That peak

Worldwide fertility rates according to region, 1950-2100 (projected)



Source: United Nations



was not simply 18 years after 1990 because of the higher rates of infant mortality at the time. Indeed, the proportion of young people who graduate may rise for many decades yet (as fewer people are born, a higher percentage of their cohort can go to university). And whereas most of today's babies will have internet access, most of their grandparents were illiterate, at least until young adulthood. Global demand for education is likely to continue to grow even where populations are declining – but this will not result in the kind of expansion made possible by the rapid population growth we have recently experienced.

**H**ow might policymakers respond to these shifts and changing patterns? Faced with an ageing population, one positive change would be to incentivise higher education study at any point in adult life. I would like to see the gradual introduction of such an approach in England, perhaps with the price of attending university being lower the longer you put off going.

Until now, higher education has focused on the 18-21 age group. This was understandable when the number of young people was always growing – there were always more to be educated, more schools to be built and more lecture theatres needed. But that time is drawing to a close. We no longer have to get as many 18- to 21-year-olds through the education system as quickly as possible because more are coming up behind them who need their seats in the class.

Changing demographics should cause policymakers to reflect on which fee and funding models might be most appropriate. When the UK population was growing, it was easier to fund a small number of graduates out of the overall tax base. There are now plans to sell large tranches of student loans to private investors, but this will rely on those investors having faith that somehow aggregate salaries of the young will rise overall – and this at a time when being a graduate is about to become as common a qualification as five "good" O levels were when I left school in the 1980s. But future generations will have been taught more (my generation mostly left education at 16) and will have had longer to think (because they will live longer), so they may well come up with new ideas of their own about how we could better arrange our finances.

Population slowdown worldwide changes many things, not least how and who we teach as well as what and when we learn. For the first time, the Earth's population is about to fall not because of war, famine, diktat or pandemic, but because we have, collectively, chosen to have fewer children – and it is fascinating to reflect that this may be partly because we have taught so much to so many. ●

Danny Dorling is professor of human geography in the University of Sheffield. His latest book, *Population 10 Billion*, has just been published. He is speaking on population change at the Royal Society of Arts and Commerce in London on 10 July.