3.21.2023 SHOW NOTES:

GLOBAL INFERTILITY RATES HAVE BEEN STEADILY INCREASING FOR YEARS

(All material is used for educational purposes only)

NOTE: I have tried to make sure that none of the stories in this collection are duplicates, but I am allowing for the possibility that I may have missed cross-over referencing.

FURTHERMORE: Many of the articles I have posted here have video links imbedded in them that did not copy over to this page. You might want to reference the original sources for further investigation.

RESEARCHGATE

Religion and the Decline of Fertility in the Western World

Renzo Derosas Frans VAN Poppel January 2006

Abstract

The impact of religion on family and reproduction is one of the most fascinating and complex topics open to scholarly research. **The linkage between family and religion has received no systematic treatment on a comparative basis, either in the social sciences or in historical studies.** This book provides new insights into the relationships between religion and demography during the crucial period of the nineteenth and early twentieth century. Apart from providing a wealth of descriptive information on family life and fertility in different national and religious settings, the major strength of the book lies in its conceptual insights. The book will attract and stimulate readers at the advanced undergraduate or at the graduate level in history, religious studies, women's studies, family studies, social demography, sociology, and anthropology due to its subject matter (moral issues related to fertility decline and family change played an important role in processes like secularisation, and religious secessions in the19th and 20th century), its analytical approach (all chapters make use of micro-level data on family and family size and use comparable statistical methods specifically suited for these kinds of data), and its theoretical orientation (the chapters explicitly focus on the variety of mechanisms via which religions had an effect on family life and fertility). The book is truly cross-cultural, showing the similarities as well as the differences in the positions of the various churches on matters important for reproduction in Western Europe, the US and Canada in the period 1850-1950. The consideration of the causes of variations in family size in the past provides a refreshing perspective on contemporary effects of religion on reproductive behaviour and the family. "This volume successfully promotes an agenda for research on the complex and diverse historical relationships between fertility, identity, community and religion." Simon Szreter, Fellow of St John's College, Cambridge "These well-researched and lucidly argued papers will provide important reading for all those interested in the religious history of the nineteenth century." Hugh McLeod is Professor of Church History at the University of Birmingham "This is a very valuable new resource for scholars, both established and new, to understand the role of religious institutions

in family and demographic behavior and the ways in which those behaviors change across long periods of time." Arland Thornton, Director, Population Studies Center, University of Michigan "This book shows also that modern demographic and social history is able to revive the past in ways unthinkable only a generation ago." Massimo Livi-Bacci is Professor of Demography, University of Florence, and honorary president of the "International Union for the Scientific Study of Population".

PREMIER HEALTH

What's Up with Rising Infertility Rates?

Feb 26, 2016

Infertility is more common than most people think. Today, as many as one in seven couples trying to have a baby will experience infertility. In fact, recent studies show that after a year of having unprotected sex, 15 percent of couples are unable to conceive a child. And, after two years, 10 percent of couples had still not achieved a successful pregnancy. That's dramatically different than it was 20 or 30 years ago. What's more, infertility is expected to increase in the future. By 2025, almost 10 million couples will encounter problems in having a baby.

SCIENTIFIC AMERICAN

Sperm Count Dropping in Western World

The trend has occurred over 40 years

By Kate Kelland, Reuters on **July 26, 2017**

LONDON (Reuters) - **Sperm counts in men from America, Europe, Australia and New Zealand have dropped by more than 50 percent in less than 40 years,** researchers said on Tuesday.

They also said the rate of decline is not slowing. Both findings -- in a meta-analysis bringing together various studies -- pointed to a potential decline in male health and fertility.

"This study is an urgent wake-up call for researchers and health authorities around the world to investigate the causes of the sharp ongoing drop in sperm count," said Hagai Levine, who co-led the work at the Hebrew University-Hadassah Braun School of Public Health and Community Medicine in Jerusalem.

The analysis did not explore reasons for the decline, but researchers said falling sperm counts have previously been linked to various factors such as exposure to certain chemicals and pesticides, smoking, stress and obesity.

This suggests measures of sperm quality may reflect the impact of modern living on male health and act as a "canary in the coal mine" signaling broader health risks, they said.

Studies have reported declines in sperm count since the early 1990s, but many of those have been questioned because they did not account for potentially major confounding factors such as age, sexual activity and the types of men involved.

Working with a team of researchers in the United States, Brazil, Denmark, Israel and Spain, Levine screened and brought together the findings of 185 sperm count studies from 1973 to 2011 and then conducted a so-called meta-regression analysis.

The results, published in the journal Human Reproduction Update, **showed a 52.4 percent decline in sperm concentration and a 59.3 percent decline in total sperm count among North American, European, Australian and New Zealand men.**

The former measures the concentration of semen in a man's ejaculation, while the latter is semen concentration multiplied by volume.

In contrast, **no significant decline was seen in South America, Asia and Africa. The researchers noted, however, that far fewer studies have been conducted in these regions.**

Experts asked to comment on the work said it was a comprehensive and well-conducted analysis and did a good job of adjusting for confounders that could have skewed its findings.

Daniel Brison, a specialist in embryology and stem cell biology at Britain's Manchester University, said the findings had "major implications not just for fertility but for male health and wider public health".

"An unanswered question is whether the impact of whatever is causing declining sperm counts will be seen in future generations of children via epigenetic (gene modifications) or other mechanisms operating in sperm," he said in an emailed comment.

Richard Sharpe at Edinburgh University added: "Given that we still do not know what lifestyle, dietary or chemical exposures might have caused this decrease, research efforts to identify (them) need to be redoubled and to be non-presumptive as to cause."

OUR WORLD IN DATA

Fertility Rate

by Max Roser First published in **2014**; substantive revision published on **December 2, 2017**.

This entry focuses on the number of births per woman in a population. The most commonly used metric is the Total

(TFR) – or often simply 'fertility rate' – which measures the average number of children per woman.[1]

The global average fertility rate is around 2.3 children per woman today. Over the last 50 years the global fertility rate has halved. And over the course of the modernization of societies the number of children per woman decreases very substantially. In the pre-modern era fertility rates of 4.5 to 7 children per woman were common. At that time the very high mortality at a young age kept population growth low. As health improves and the mortality in the population decreases we typically saw accelerated population growth. This rapid population growth then comes to an end as the fertility rate declines and approaches 2 children per woman.[2]

The first section of the entry presents the global empirical perspective on the number of children per woman. The long second section presents the academic research that answers the question why the number of children per woman declined. Particularly important are 1) the empowerment of women in society and in relationships – through education, labor force participation, and strengthened women's rights – and 2) the increased well-being and status of children.

BBC NEWS

'Remarkable' decline in fertility rates

By James Gallagher Published **9 November 2018**

There has been a remarkable global decline in the number of children women are having, say researchers.

Their report found fertility rate falls meant nearly half of countries were now facing a "baby bust" - meaning there are insufficient children to maintain their population size.

The researchers said the findings were a "huge surprise".

And there would be profound consequences for societies with "more grandparents than grandchildren".

How big has the fall been?

The study, published in the Lancet, followed trends in every country from 1950 to 2017.

In 1950, women were having an average of 4.7 children in their lifetime. The fertility rate all but halved to 2.4 children per woman by last year.

But that masks huge variation between nations.

The fertility rate in Niger, west Africa, is 7.1, but in the Mediterranean island of Cyprus women are having one child, on average.

In the UK, the rate is 1.7, similar to most Western European countries.

How high does the fertility rate have to be?

The total fertility rate is the average number of children a woman gives birth to in their lifetime (it's different to the birth rate which is the number of children born per thousand people each year).

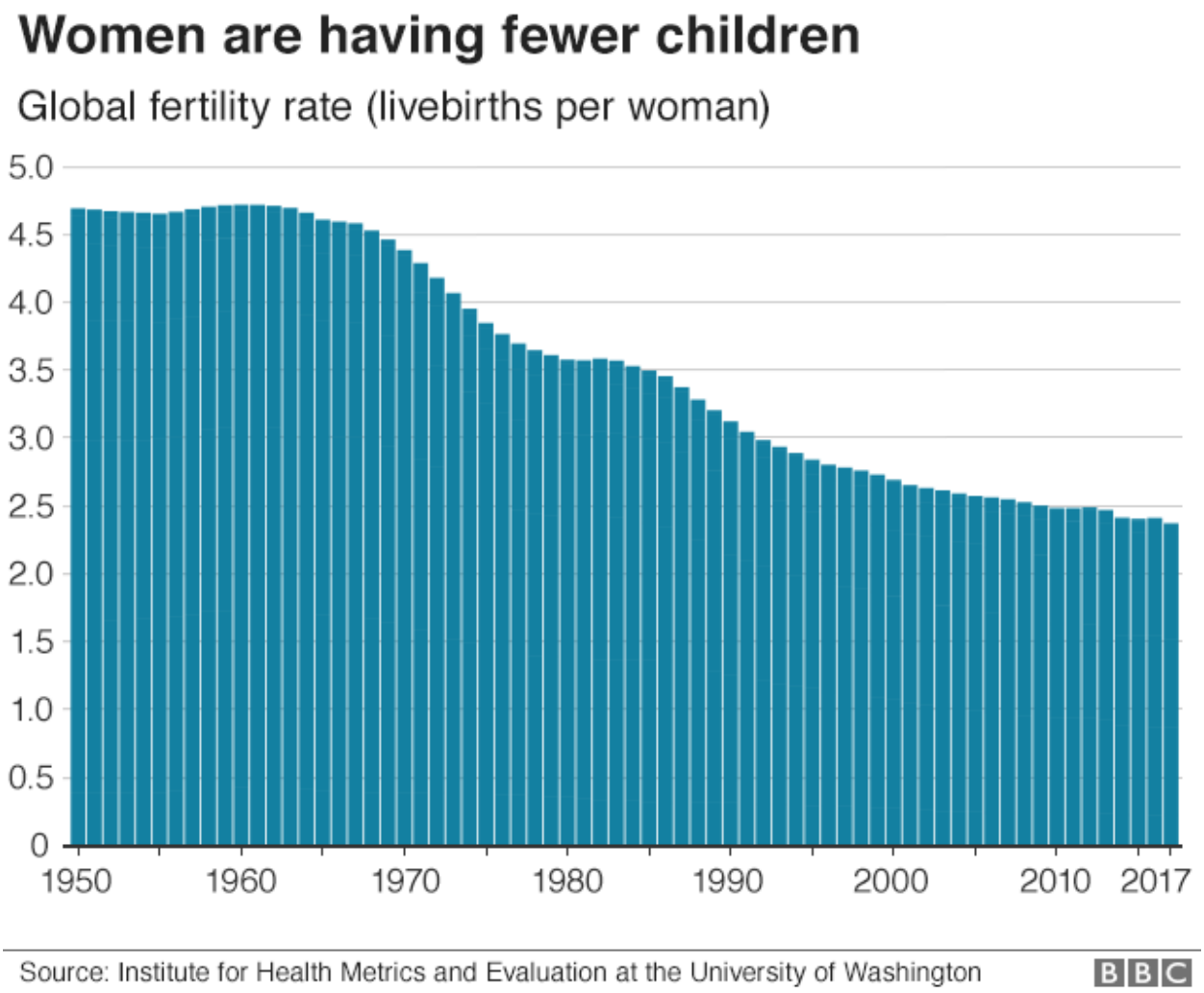
Whenever a country's rate drops below approximately 2.1 then populations will eventually start to shrink (this "baby bust" figure is significantly higher in countries which have high rates of death in childhood).

At the start of the study, in 1950, there were zero nations in this position.

Prof Christopher Murray, the director of the Institute for Health Metrics and Evaluation at the University of Washington, told the BBC: "We've reached this watershed where half of countries have fertility rates below the replacement level, so if nothing happens the populations will decline in those countries.

"It's a remarkable transition.

"It's a surprise even to people like myself, the idea that it's half the countries in the world will be a huge surprise to people."



Which countries are affected?

More economically developed countries including most of Europe, the US, South Korea and Australia have lower fertility rates.

It does not mean the number of people living in these countries is falling, at least not yet as the size of a population is a mix of the fertility rate, death rate and migration.

It can also take a generation for changes in fertility rate to take hold.

But Prof Murray said: **"We will soon be transitioning to a point where societies are grappling with a declining population."**

Half the world's nations are still producing enough children to grow, but as more countries advance economically, more will have lower fertility rates.

'We'd rather give our daughter the best of everything'

Rachael Jacobs, 38, of Kent, had her first and only child seven years ago

I'd always focused on my career. When I was pregnant I was still focusing on my career.

I know now that we can survive on what we earn as a family and still go on holiday every year. If we had more than one child we couldn't go on holiday.

We'd rather give our daughter the best of everything than have multiple children that we can just about feed and clothe.

My partner and I are also thinking about the future. We want to be in a position where we can help her financially with university or housing. I don't want to ever have to say that she can't go to a party or have a new Christmas jumper.

Why is the fertility rate falling?

The fall in fertility rate is not down to sperm counts or any of the things that normally come to mind when thinking of fertility.

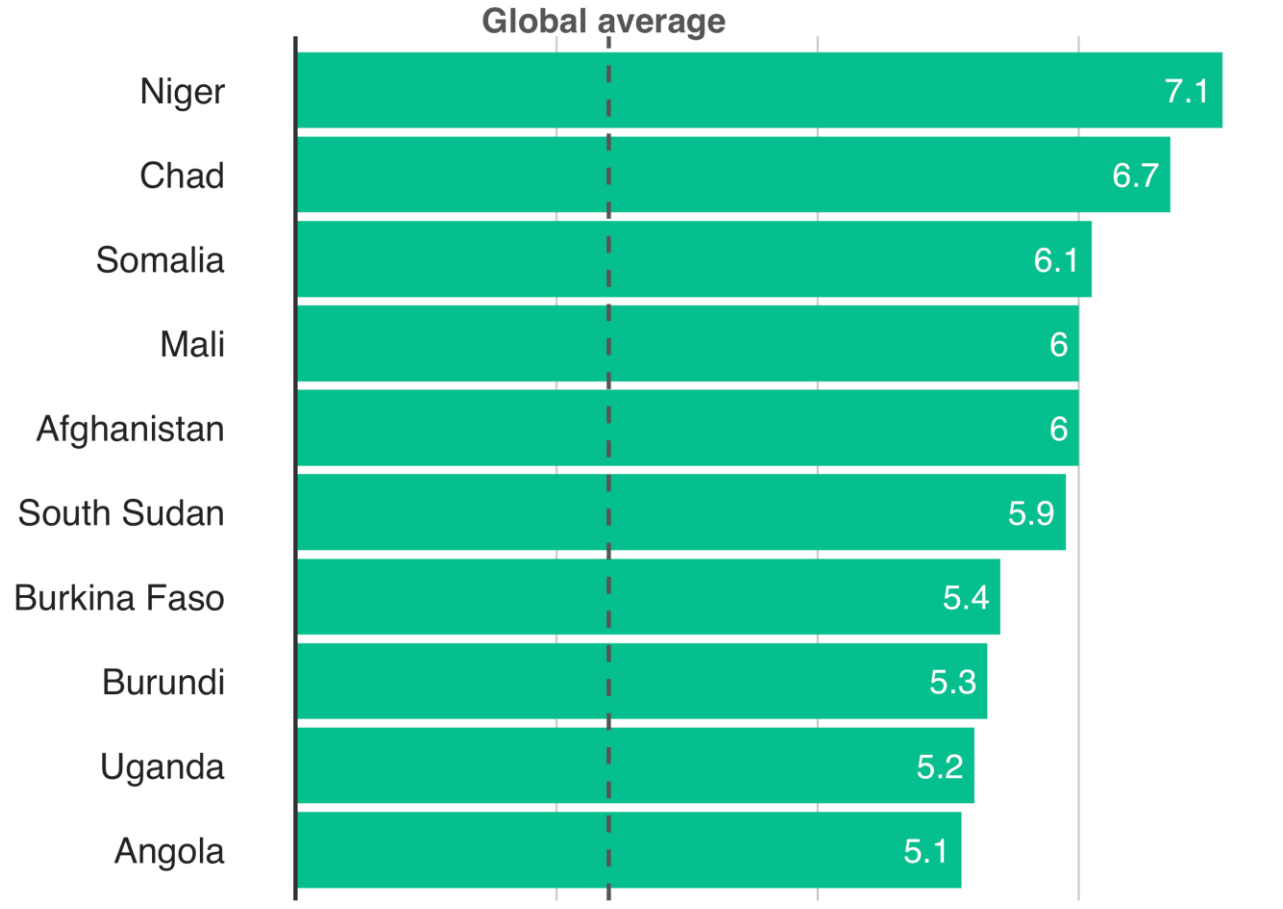
Instead it is being put down to three key factors:

- **Fewer deaths in childhood meaning women have fewer babies**
- **Greater access to contraception**
- **More women in education and work**

In many ways, falling fertility rates are a success story.

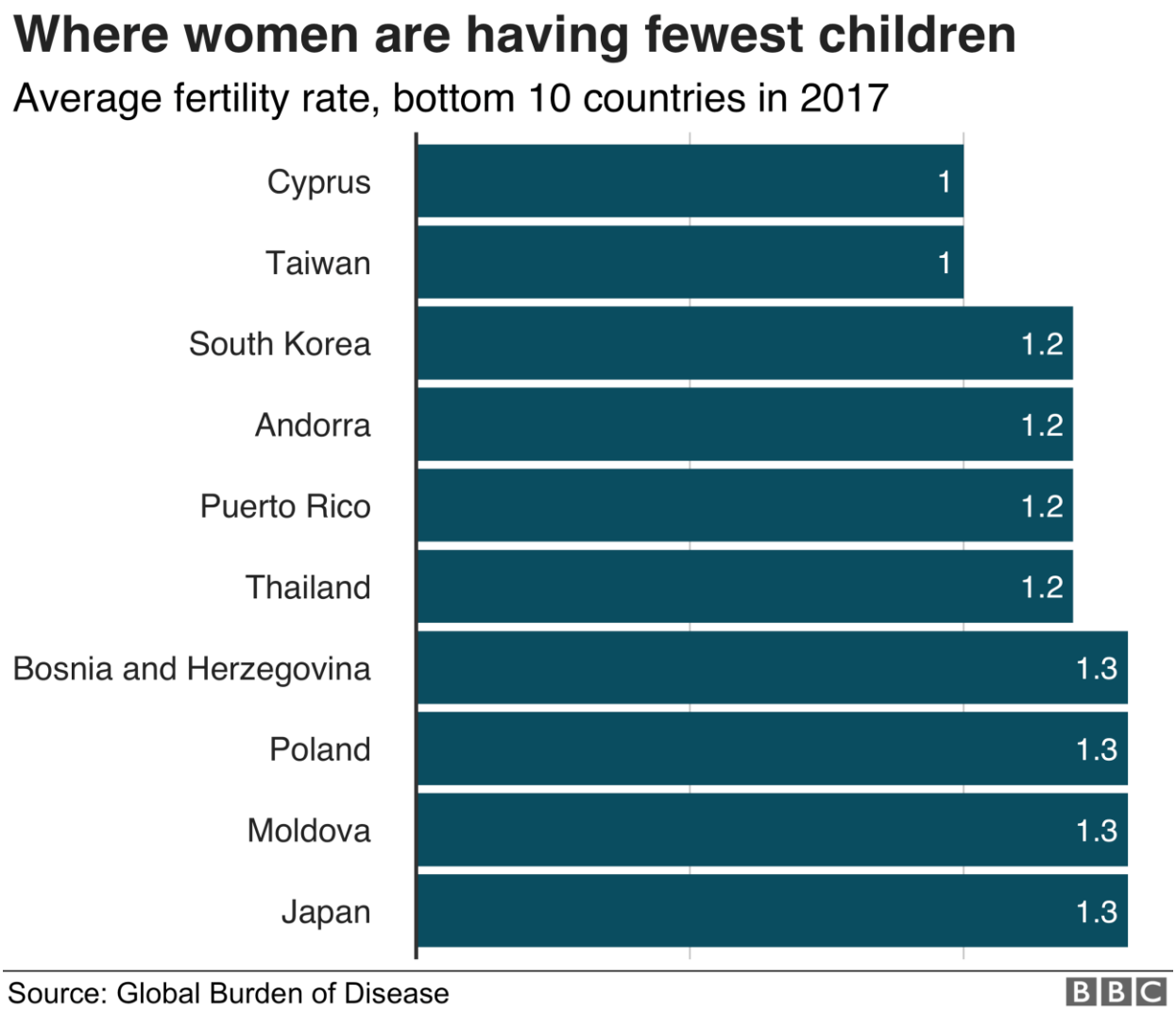
Where women are having most children

Average fertility rate, top 10 countries in 2017



Source: Global Burden of Disease

BBC



What will the impact be?

Without migration, countries will face ageing and shrinking populations.

Dr George Leeson, director of the Oxford Institute of Population Ageing, says that does not have to be a bad thing, as long as the whole of society adjusts to the massive demographic change.

He told the BBC: "Demography impacts on every single aspect of our lives, just look out of your window at the people on the streets, the houses, the traffic, the consumption, it is all driven by demography.

"Everything we plan for is not just driven by the numbers in the population, but also the age structure and that is changing, so fundamentally we haven't got our heads around it."

He thinks workplaces are going to have to change and even the idea of retiring at 68, the current maximum in the UK, will be unsustainable.

The report, part of the Global Burden of Diseases analysis, says affected countries will need to consider increasing immigration, which can create its own problems, or introducing policies to encourage women to have more children, which often fail.

Report author Prof Murray argues: "On current trends there will be very few children and lots of people over the age of 65 and that's very difficult to sustain global society.

"Think of all the profound social and economic consequences of a society structured like that with more grandparents than grandchildren.

"I think Japan is very aware of this, they're facing declining populations, but I don't think it's hit many countries in the West, because low fertility has been compensated with migration.

"At a global level there is no migration solution," Prof Murray says.

But while the change may challenge societies, it may also have environmental benefits given the impact of our species.

What about China?

China has seen huge population growth since 1950, going from around half a billion inhabitants to 1.4 billion.

But it too is facing the challenge of fertility rates, which stood at only 1.5 in 2017, and has recently moved away from its famous one child policy.

The reason developed countries need a fertility rate of 2.1 is because not all children survive to adulthood and babies are ever so slightly more likely to be male than female.

But in China, the report shows for every 100 girls born there were 117 boys which **"imply very substantial sex-selective abortion and even the possibility of female infanticide".**

That means even more children need to be born to have a stable population.

BBC NEWS

Fertility rate: 'Jaw-dropping' global crash in children being born

By James Gallagher Published **15 July 2020**

The world is ill-prepared for the global crash in children being born which is set to have a "jaw-dropping" impact on societies, say researchers.

Falling fertility rates mean nearly every country could have shrinking populations by the end of the century.

And 23 nations - including Spain and Japan - are expected to see their populations halve by 2100.

Countries will also age dramatically, with as many people turning 80 as there are being born.

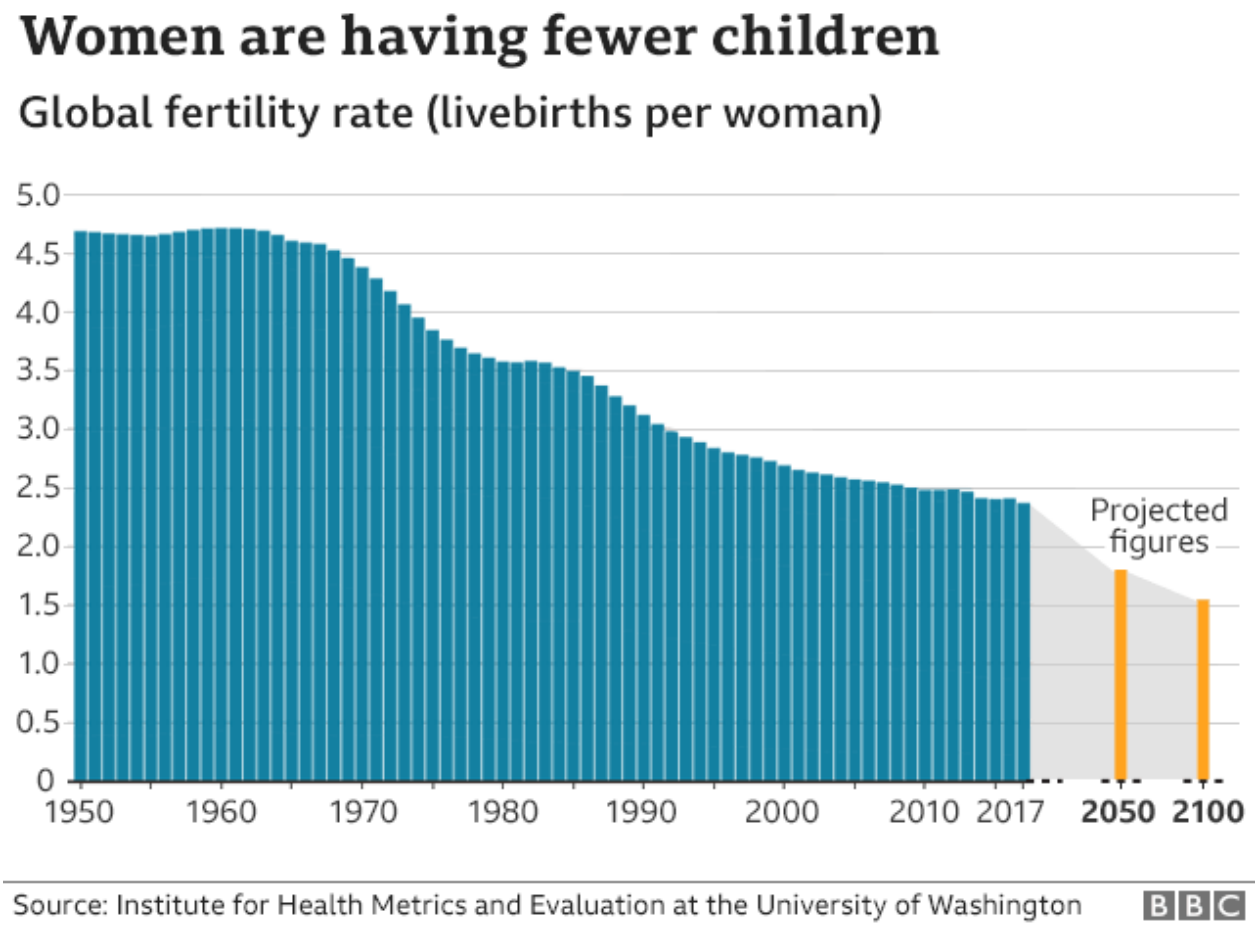
What is going on?

The fertility rate - the average number of children a woman gives birth to - is falling.

If the number falls below approximately 2.1, then the size of the population starts to fall.

In 1950, women were having an average of 4.7 children in their lifetime.

Researchers at the University of Washington's Institute for Health Metrics and Evaluation showed the global fertility rate nearly halved to 2.4 in 2017 - and their study, published in the Lancet, projects it will fall below 1.7 by 2100.



As a result, the researchers expect the number of people on the planet to peak at 9.7 billion around 2064, before falling down to 8.8 billion by the end of the century.

"That's a pretty big thing; most of the world is transitioning into natural population decline," researcher Prof Christopher Murray told the BBC.

"I think it's incredibly hard to think this through and recognise how big a thing this is; it's extraordinary, **we'll have to reorganise societies."**

Why are fertility rates falling?

It has nothing to do with sperm counts or the usual things that come to mind when discussing fertility.

Instead it is being driven by more women in education and work, as well as greater access to contraception, leading to women choosing to have fewer children.

In many ways, falling fertility rates are a success story.

Which countries will be most affected?

Japan's population is projected to fall from a peak of 128 million in 2017 to less than 53 million by the end of the century.

Italy is expected to see an equally dramatic population crash from 61 million to 28 million over the same timeframe.

They are two of 23 countries - which also include Spain, Portugal, Thailand and South Korea - expected to see their population more than halve.

"That is jaw-dropping," Prof Christopher Murray told me.

China, currently the most populous nation in the world, is expected to peak at 1.4 billion in four years' time before nearly halving to 732 million by 2100. India will take its place.

The UK is predicted to peak at 75 million in 2063, and fall to 71 million by 2100.

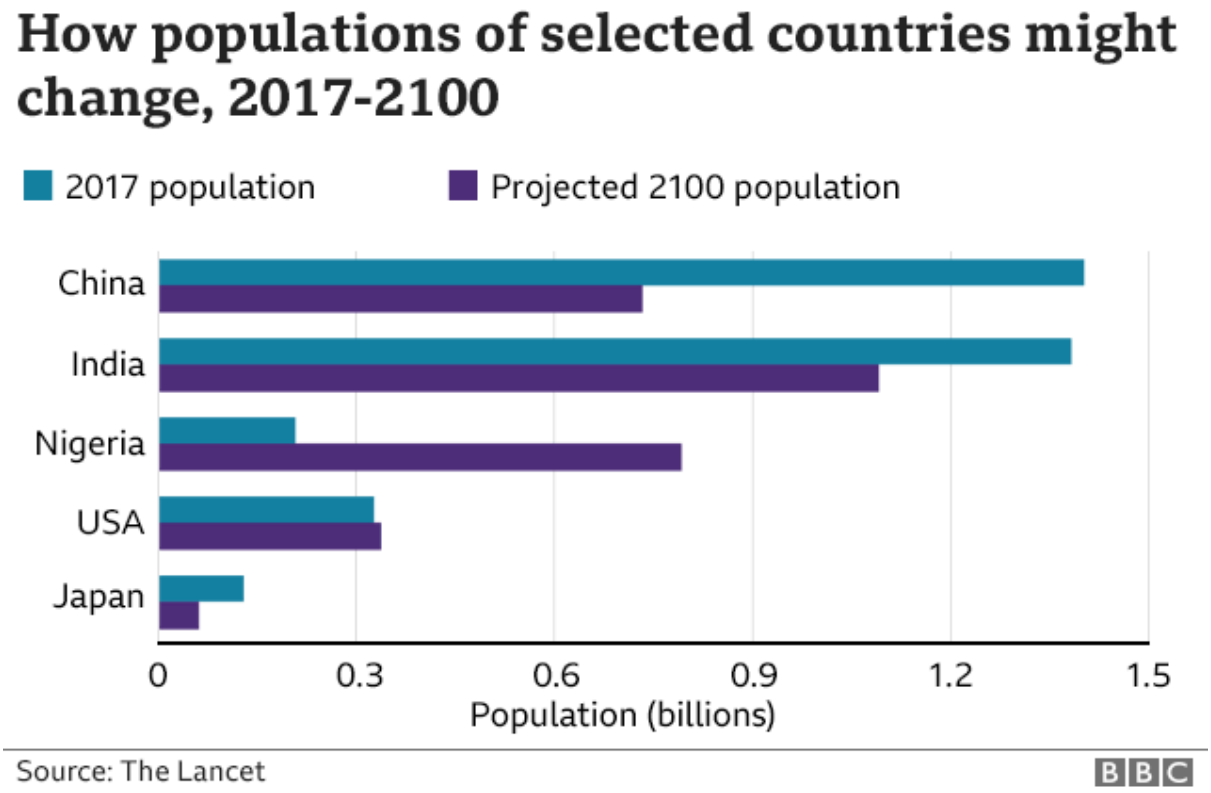


Image source, BBC Sport

However, this will be a truly global issue, with 183 out of 195 countries having a fertility rate below the replacement level.

Why is this a problem?

You might think this is great for the environment. A smaller population would reduce carbon emissions as well as deforestation for farmland.

"That would be true except for the inverted age structure (more old people than young people) and all the uniformly negative consequences of an inverted age structure," says Prof Murray.

The study projects:

- **The number of under-fives will fall from 681 million in 2017 to 401 million in 2100.**
- **The number of over 80-year-olds will soar from 141 million in 2017 to 866 million in 2100.**

Prof Murray adds: **"It will create enormous social change. It makes me worried because I have an eight-year-old daughter and I wonder what the world will be like."**

Who pays tax in a massively aged world? Who pays for healthcare for the elderly? Who looks after the elderly? Will people still be able to retire from work?

"We need a soft landing," argues Prof Murray.

Are there any solutions?

Countries, including the UK, have used migration to boost their population and compensate for falling fertility rates.

However, this stops being the answer once nearly every country's population is shrinking.

"We will go from the period where it's a choice to open borders, or not, to frank competition for migrants, as there won't be enough," argues Prof Murray.

Some countries have tried policies such as enhanced maternity and paternity leave, free childcare, financial incentives and extra employment rights, but there is no clear answer.

Sweden has dragged its fertility rate up from 1.7 to 1.9, but other countries that have put significant effort into tackling the "baby bust" have struggled. Singapore still has a fertility rate of around 1.3.

Prof Murray says: "I find people laugh it off; they can't imagine it could be true, they think women will just decide to have more kids.

"If you can't [find a solution] then eventually the species disappears, but that's a few centuries away."

The researchers warn against undoing the progress on women's education and access to contraception.

Prof Stein Emil Vollset said: "Responding to population decline is likely to become an overriding policy concern in many nations, but must not compromise efforts to enhance women's reproductive health or progress on women's rights."

What about Africa?

The population of sub-Saharan Africa is expected to treble in size to more than three billion people by 2100.

And the study says Nigeria will become the world's second biggest country, with a population of 791 million.

Prof Murray says: "We will have many more people of African descent in many more countries as we go through this.

"Global recognition of the challenges around racism are going to be all the more critical if there are large numbers of people of African descent in many countries."

Why is 2.1 the fertility rate threshold?

You might think the number should be 2.0 - two parents have two children, so the population stays the same size.

But even with the best healthcare, not all children survive to adulthood. Also, babies are ever so slightly more likely to be male. It means the replacement figure is 2.1 in developed countries.

Nations with higher childhood mortality also need a higher fertility rate.

What do the experts say?

Prof Ibrahim Abubakar, University College London (UCL), said: "If these predictions are even half accurate, migration will become a necessity for all nations and not an option.

"To be successful we need a fundamental rethink of global politics.

"The distribution of working-age populations will be crucial to whether humanity prospers or withers."

SCIENTIFIC AMERICAN

Reproductive Problems in Both Men and Women Are Rising at an Alarming Rate

A likely culprit is hormone-disrupting chemicals

By Shanna H. Swan, Stacey Colino on **March 16, 2021**

When you see or hear a reference to "the 1 percent," most people think of socioeconomic status—the people with the top 1 percent of wealth or income in the United States, which is how the term is commonly used in our culture.

Not us, though.

What we think of is the fact that the whole spectrum of reproductive problems in males are increasing by about 1 percent per year in Western countries. This "1 percent effect" includes the rates of declining sperm counts, decreasing testosterone levels and increasing rates of testicular cancer, as well as a rise in the prevalence of erectile dysfunction. **On the female side of the equation, miscarriage rates are also increasing by about 1 percent per year in the U.S.,** and so is the rate of gestational surrogacy. **Meanwhile, the total fertility rate worldwide has dropped by nearly 1 percent per year from 1960 to 2018.**

When people hear of this, there's often a natural instinct to shrug it off, believing that 1 percent per year isn't really a big deal. **But it is a huge deal! It adds up to more than 10 percent per decade and more than 50 percent over 50 years.** When you consider that sperm counts declined by 50 percent in just 40 years, as Shanna's meta-analysis published in a 2017 issue of the journal *Human Reproduction Update* showed, it's difficult to deny or discount how alarming this is.

So, we continue to wonder: Where is the outrage on this issue? The annual 1 percent decline in reproductive health is faster than the rate of global warming (thankfully!)—and yet people are up in arms about global warming (and rightly so) but not about these reproductive health effects. To put the 1 percent effect in perspective, consider this: scientific data show a 1.1 percent per year increase in the number of children diagnosed with autism spectrum disorder between 2000

and 2016, according to the Centers for Disease Control and Prevention. People have been rightly unnerved about this.

Why aren't people equally troubled by reproductive damage to males and females? Maybe it's because many don't realize that these worrisome changes are happening, or that they're marching along at the same rate. But everyone should. **After all, these reproductive changes can hardly be a coincidence. They're just too synchronous for that to be possible.**

The truth is, these reproductive health effects are interconnected, *and* they are largely driven by a common cause: the presence of hormone-altering chemicals (a.k.a., endocrine-disrupting chemicals, or EDCs) in our world. These hormone-hijacking chemicals, which include phthalates, bisphenol A, and flame retardants, among others, have become ubiquitous in modern life. They're in water bottles and food packaging, electronic devices, personal-care products, cleaning supplies and many other items we use regularly. And they began being produced in increasing numbers after 1950, when sperm counts and fertility began their decline.

Exposure to these chemicals is especially problematic during pregnancy because what happens during pregnancy doesn't stay in pregnancy. Rather, an expectant mother's exposure to toxic chemicals in the air she breathes, the water she drinks, the foods she eats and the products she slathers on her skin can enter her body (and hence the fetus) and influence her baby's reproductive development. This is particularly true early in pregnancy—in what's called the reproductive programming window—and it's especially true for male babies.

For example, if a woman is exposed to chemicals that block the action of androgens during the first trimester of pregnancy, this can affect the reproductive development of the male fetus in numerous ways. It can result in a shortening of the anogenital distance (AGD), the span from the anus to the base of the penis, which is significant because research has shown that a shorter AGD correlates with a smaller penis and, in the adult, a lower sperm count. In addition, prenatal disruption of the male hormonal system can result in reduced testosterone levels and increase the risk that a baby boy will have undescended testicles (cryptorchidism) or a particular type of malformed penis (hypospadias) at birth.

And if a boy is born with these genital defects, he will have an increased risk of low sperm count and testicular cancer as an adult.

This cluster of related reproductive problems—for both men and women—is presenting huge challenges to the world's population. There's the obvious challenge related to fertility issues and the declining birth rate. But endocrine disruption is also a culprit in rising rates of autoimmune disorders as well as the growing epidemic of obesity and metabolic syndrome (a cluster of conditions that increases the risk of heart disease, stroke and type 2 diabetes). Some of these reproductive effects are even associated with an increased risk of premature death.

To put it mildly, these issues are more important than the "1 percent" people usually pay attention to, which means: We need to shift our collective focus. It's time for us to make it a priority to demand that endocrine-disrupting chemicals in the everyday products are replaced with chemicals that don't affect our hormones and don't persist in the environment. It's also time to establish better testing methods and regulatory actions so that only safe chemicals can enter the market and our bodies. In other words, we need to stop using each other and our unborn children as lab rats for EDC exposures. The health and the future of the human race really do depend on it.

NEW YORK POST

Why more men are suffering from infertility than ever before

By Susannah Cahalan **February 20, 2021**

Sperm counts in Western countries have dropped by more than 50 percent since the 1970s. At the same time, men's problems with conceiving are going up: Erectile dysfunction is increasing and testosterone levels are declining by 1 percent each year.

"The current state of reproductive affairs can't continue much longer without threatening human survival," warns Mount Sinai fertility scientist Dr. Shanna Swan in her book, "Count Down" (Scribner), out Tuesday. "It's a global existential crisis."

Dr. Swan should know — she's been researching fertility for thirty years. She studied a miscarriage boom in Santa Clara, Calif., in the 1980s, which she eventually linked to toxic waste dumped into the drinking water by a local semiconductor plant. She moved on to sperm rates in 1997 and they've been her "canary in a coal mine scenario" since. In 2017, she sounded the alarm with a meta-analysis of 40,000 men that showed that sperm count fell a whopping 59 percent between 1973 and 2011.

We are already seeing the effects. Worldwide fertility has dropped by 50 percent between 1960 and 2015. The United States has a total birth rate that is 16 percent below what it needs to replace itself. Though there are obvious factors at play (couples are conceiving later and opting to have smaller families), **Swan argues that the issues run deeper than personal choice.**

Rates of miscarriages are on the rise and girls are experiencing earlier and earlier puberties (in some cases before the age of 8). "In some parts of the world, the average twenty-something woman today is less fertile than her grandmother was at 35," Swan writes.

It's no wonder then that the assisted reproduction technology market is worth about $21 billion and is projected to increase by 10 percent annually until 2025.

Still, fertility issues have been focused on women for too long.

“If women want to have a baby, they are often told, ‘Clean up your act,’ ” Swan writes. “But it’s probably more important for men to do so.”

Normal sperm count ranges from 15 million sperm per milliliter to 200 million per milliliter. Though the World Health Organization deems a rate below 15 million as “low,” Swan argues that anything below 40 million creates challenges for reproduction. **Today the average male is nearing that number at 47.1 million sperm per milliliter.** Compare him to his father, who had an average of 99 million sperm per milliliter, and it’s clear that this is a deeply worrying trend.

Not only do men today have less sperm than their fathers, but they also have lower testosterone levels. A 2006 study showed that a 65-year-old man in 2002 would have testosterone levels that are 15 percent lower than a 65-year-old man in 1987. A similar drop has been noted in young adults and adolescents, according to a 2020 Urology Times Journal article.

As a result, prescriptions for testosterone replacement therapies doubled between 2010 and 2013, according to Forbes, but there was one troubling side effect: “90 percent of men can have their sperm counts drop to zero while they’re on it,” Swan writes.

Sexual desire has followed a similar path. “A massive sexual slump is underway, due to declines in people’s sex drives and interest in sexual activity,” Swan writes. Men now seek help for erectile dysfunction on average seven years earlier than they did in 2005 and 26 percent of men who deal with it are under the age of 40.

On the more extreme end of things, there have been overall increases in genital abnormalities, including higher documented rates of undescended testicles and unusually small penises. These issues have been mirrored in the animal kingdom. Baltic gray seals have reduced reproductive abilities, polar bears have smaller genitals and lower-than-average testosterone levels, and alligators, panthers and minks have all shown increases in reproductive and genital abnormalities.

So, what is going on?

Many of us simply eat too many things that are not good for us, move too little, drink too much alcohol, and engage in habits that are actively hindering our reproductive abilities, Swan writes.

But other things are out of our control.

Swan points to the plastics and chemicals in our immediate environments, compounds that disrupt the hormonal systems of both men and women and make it harder to reproduce. She cites, for example, phthalates — near ubiquitous chemicals that make plastic more flexible and cosmetics and beauty products better able to absorb scent. These chemicals have been linked to the decreased production of hormones, like testosterone, and "male reproductive outcomes," according to a 2018 review of research.

Flame retardants found in mattresses and foam furniture also seem to alter the same hormones that cause infertility in men, according to a 2016 study in the Reproductive Toxicology journal. In addition, chemicals used as stain, water, and grease repellents in fast-food packaging, paper plates, and stain-resistant carpeting, among other household items, have been linked to a reduction in semen quality, testicular volume, and even penis length.

Pesticides also seem to have negative effects on male fertility. One herbicide in particular called atrazine, used to prevent certain weeds from growing in corn and sugarcane on lawns and golf courses, has been linked with lower sperm quality.

Infertility doesn't just alter a man's ability to make children, it also increases his mortality risk. Infertile men die younger than their infertile peers, according to a Stanford University study. Men with sperm concentration lower than 15 million per milliliter had a 50 percent greater chance of being hospitalized for any medical reason at all, and poor fertility has been linked with higher rates of diabetes, heart disease and cancers.

But there are some things we can do to help tip the scales.

The first step is to quit smoking, cut down on drinking, and maintain a healthy weight. Cigarette smoke is associated with reduced sperm count and increased sperm defects. Drinking heavily (more than 25 units per week) is also hazardous to sperm. (Interestingly, though, keeping to seven drinks a week seems to *increase* sperm production compared to those who don't drink.)

Meanwhile, men who cycle for ninety minutes or more per week had 34 percent lower sperm concentrations than those who didn't ride bicycles at all, according to one study. And saunas are notorious sperm overheaters. Binging on TV also reduces sperm count (perhaps because sitting for too long in one place can hurt sperm production), while men who work out vigorously tend to have higher sperm counts, according to a Chinese study on potential sperm donors. So stay out of the sauna, get off that bicycle, and find other ways to exercise.

Also, cut down on stress. A Danish study showed that men who reported the highest levels of work stress had 38 percent lower sperm concentrations. Swan's own research supports this. "Men who've experienced two or more recent stressful life events — such as the death or serious illness of a close relative, divorce or serious relationship problems, moving, or a job change — were more likely to have below-normal sperm concentration," she writes.

A high intake of full-fat dairy foods, especially cheese, has also been linked with greater sperm abnormalities. "These unfortunate effects might be due to the large amounts of estrogens in dairy products or to the presence of environmental contaminants such as pesticides and chlorinated pollutants in these products," Swan writes.

In addition, men who eat a lot of processed meats (hot dogs, bacon, sausage, salami) tend to have lower sperm counts and a lower percentage of normally shaped sperm. The theory is that "the curing of meat produces chemicals . . . that can cause cancer and also damage DNA, including DNA in sperm," writes Swan.

Research shows that couples who follow the Mediterranean diet (whole grains, good fats, lots of veggies) while undergoing IVF treatments had a 40 percent higher likelihood of conceiving than those who didn't. Swan also urges people to buy organic to avoid pesticides and herbicides that may mess with male hormones, especially items that tend to be most contaminated, like strawberries, spinach, kale, apples and grapes. She also suggests that people avoid any animal product that is not organic and try to buy animal products labeled as "raised without antibiotics" or "no added hormones."

She also urges people to avoid cleaners and skin-care products that are antibacterial, and favor products labeled "paraben-free" and "phthalate free." In addition, she urges ditching vinyl shower curtains, banishing air fresheners and

using nontoxic household cleaners to dodge some of those hormone-disrupting chemicals. Swan also advises that dusting more dutifully will help relieve your house (and body) of a nasty buildup of chemicals. A 2017 study showed that 45 potentially harmful chemicals, including phthalates and flame retardants, were found in dust buildup in 90 percent of the homes sampled in one study in the United States.

The goal here is to be more proactive about our reproductive health.

“We can no longer afford to behave as though it’s business as usual,” Swan writes. “The time has come for us to stop playing Russian roulette with our reproductive capacities. It’s up to us to heed the message and take steps to protect our legacies.”