HEALTH

The Calendar of Human Fertility Is Changing

American births have historically peaked in late summer. But our changing behaviors, technology, and environment are flattening that bump.

By Katherine J. Wu

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As the chair of the department of obstetrics and gynecology at UT Southwestern Medicine, Catherine Spong is used to seeing a lot of baby bumps. But through her decades of practice, she's been fascinated by a different kind of bump: Year after year after year, she and her colleagues deliver a deluge of babies from June through September, as much as a 10 percent increase in monthly rates over what they see from February through April. "We call it the summer surge," Spong told me.

Her hospital isn't alone in this trend. For decades, demographers have documented a lift in American births in late summer, and a trough in the spring. I see it myself in my own corner of the world: In the past several weeks, the hospital across the street from me has become a revolving door of new parents and infants. When David Lam, an economist at the University of Michigan who helped pioneer several early U.S. studies on seasonal patterns of fertility, first analyzed his data decades ago, "we were kind of surprised how big it was," he told me. Compare the peak of some years to their nadir, he said, and it was almost like looking at the Baby Boom squished down into 12 months.

Birth seasonality has been documented since the 1820s, if not earlier. But despite generations of study, we still don't fully understand the reasons it exists, or why it differs so drastically among even neighboring countries. Teasing apart the contributions of biology and behavior to seasonality is messy because of the many factors involved, says Micaela Martinez, the director of environmental health at the nonprofit WE ACT for Environmental Justice, who has been studying seasonality for years. And even while researchers try to track it, the calendar of human fertility has

been changing. As our species has grown more industrialized, claimed more agency over reproduction, and reshaped the climate we are living in, seasonality, in many places, is shifting or weakening.

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There is no doubt that a big part of human birth seasonality is behavioral. People have more sex when they have more free time; they have less sex when they're overworked or overheated or stressed. Certain holidays have long been known to carry this effect: In parts of the Western world with a heavy Christian presence, baby boomlets fall roughly nine months after Christmas; the same patterns have been spotted with Spring Festival and Lunar New Year in certain Chinese communities. (Why these holidays strike such a note, and not others, isn't entirely clear, experts told me.)

In addition to free time, family-focused celebrations probably help set the mood, Luis Rocha, a systems scientist at Binghamton University, told me. Cold weather might help people get snuggly around Christmastime, too, but it's not necessary; Rocha's studies and others have shown the so-called Christmas effect in southern-hemisphere countries as well. No matter whether Christmas falls in the winter or summer, around the end of December, Google searches for *sex* skyrocket and people report more sexual activity on health-tracking apps. In a few countries, including the U.S., condom sales rise too.

But cultural norms have never been able to explain everything about the *Homo sapiens* birth calendar. "It's pretty common for mammals to have a specific breeding season" dictated by all sorts of environmental cues, Martinez told me. Deer, for instance, mate in the fall, triggered by the shortening length of daylight, effectively scheduling their fawns to be born in the spring; horses, whose gestations are longer, breed as the days lengthen in the spring and into summer, so they can foal the following year.

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Humans, of course, aren't horses or deer. Our closest relatives among primates "are much more flexible" about when they mate, Élise Huchard, a behavioral ecologist at the University of Montpellier, in France, told me. But those apes are not immune to their surroundings, and neither are we. All sorts of hormones in the human body, including reproductive ones, wax and wane with the seasons. Researchers in the United States and Australia have found that couples hoping to conceive via in vitro fertilization have a higher chance of success if the eggs are retrieved during the summer. At the same time, summer conceptions appear to be less common, or less successfully carried to term, in some countries, a trend that sharpens at lower latitudes and, Lam told me, during hotter years. The subsequent spring lulls may be explained in part by heat waves dissuading people from sex. But Alan Barreca, an economist at UCLA, suspects that ultrahigh temperatures may also physiologically compromise fertility, potentially by affecting factors such as sperm quantity and quality, ovulation success, or the likelihood of early fetal loss.

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No matter its exact drivers, seasonality is clearly weakening in many countries, Martinez told me; in some parts of the world, it may be entirely gone. The change isn't uniform or entirely understood, but it's probably to some extent a product of just how much human lifestyles have changed. In many communities that have historically planted and harvested their own food, people may have been more disinclined to, and less physically able to, conceive a child when labor demands were high or when crops were scarce—trends that are still prominent in certain countries today. People in industrial and high-income areas of the modern world, though, are more shielded from those stressors and others, in ways that may even out the annual birth schedule, Kathryn Grace, a geographer at the University of Minnesota, told me. The heat-driven dip in America's spring births, for instance, has softened substantially in recent decades, likely due in part to increased access to air-conditioning, Lam said. And as certain populations get more relaxed about religion, the cultural drivers of birth times may be easing up, too, several experts told me. Sweden, for example, appears to have lost the "Christmas effect" of December sex boosting September births.

Advances in contraception and fertility treatments have also put much more of fertility under personal control. People in well-resourced parts of the world can now, to a decent degree, realize their preferences for when they want their babies to be born. In Sweden, parents seem to avoid November and December deliveries because that would make their child among the youngest in their grade (which carries a stereotype of potentially having major impacts on their behavioral health, social skills, academics, and athletic success). In the U.S., people have reported preferring to give

birth in the spring; there's also a tax incentive to deliver early-winter babies before January 1, says Neel Shah, the chief medical officer of Maven Clinic, a women's health and fertility clinic in New York.

Humans aren't yet, and never will be, completely divorced from the influences of our surroundings. We are also constantly altering the environment in which we reproduce—which could, in turn, change the implications of being born during a particular season. Births are not only more common at certain times of the year; they can also be riskier, because of the seasonal perils posed to fetuses and newborns, Mary-Alice Doyle, a social-policy researcher at the London School of Economics, told me. Babies born during summer may be at higher risk of asthma, for instance—a trend that's likely to get only stronger as heat waves, wildfires, and air pollution become more routine during the year's hottest months.

The way we manage infectious disease matters too. Being born shortly after the peak of flu season—typically winter, in temperate parts of the world—can also be dangerous: Infections during pregnancy have been linked to lower birth weight, preterm delivery, even an increased likelihood of the baby developing certain mental-health issues later on. Comparable concerns exist in the tropics, where mosquitoes, carrying birth-defect-causing viruses such as dengue or Zika, can wax and wane with the rainy season. The more humans allow pathogens to spill over from wildlife and spread, the bigger these effects are likely to be.

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Children born in the spring—in many countries, a more sparsely populated group—tend to be healthier on several metrics, Barreca told me. It's possible that they're able to "thread the needle," he said, between the perils of flu in winter and extreme heat in summer. But these infants might also thrive because they are born to families with more socioeconomic privilege, who could afford to beat the heat that might have compromised other conceptions. As heat waves become more intense and frequent, people without access to air-conditioning might have an even harder time getting pregnant in the summer.

The point of all this isn't that there is a right or wrong time of year to be born, Grace told me. If seasonality will continue to have any sway over when we conceive and give birth, health-care systems and public-health experts might be able to use that knowledge to improve outcomes, shuttling resources to maternity wards and childhood-vaccination clinics, for instance, during the months they might be in highest demand.

Humans may never have had as strict a breeding season as horses and deer. But the fact that so many people can now deliver safely throughout the year is a testament to our ingenuity—and to our sometimes-inadvertent power to reshape the world we live in. We have, without always meaning to, altered a fundamental aspect of human reproduction. And we're still not done changing it.

Katherine J. Wu is a staff writer at *The Atlantic*.

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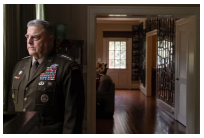

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