

The US Supreme Court is wrong to disregard evidence on the harm of banning abortion

Fifty years of research shows that abortion access is crucial for health care and important for equality.

Abortion could soon cease to be legal across the United States, according to a leaked draft of a US Supreme Court opinion, published by news outlet *Politico* on 2 May (see go.nature.com/38eu8es). The court's chief justice, John Roberts, confirmed that the 98-page document is authentic, but not necessarily final. If the draft does represent the court's final position, it will fly in the face of an overwhelming body of evidence from economists and reproductive- and public-health researchers who point to the dire, immediate and unequal impact this ruling will have on hundreds of thousands of people.

The draft, written by justice Samuel Alito on behalf of the majority of the nine-member court, declares a stunning end to the precedent set by a decision in the 1973 case *Roe v. Wade*, in which the court ruled that abortion rights were protected by the US Constitution. Mississippi's state government is arguing against that landmark decision in its case against the state's sole licensed abortion clinic, Jackson Women's Health Organization.

The Mississippi legislature was emboldened by the composition of the Supreme Court when the court agreed to hear this case last year. Former US president Donald Trump appointed three justices, leading to a six-to-three conservative majority. All six have said previously that they disagree with abortion precedents in US law. Notably, justice Amy Coney Barrett vowed in 2006 to end "the barbaric legacy of *Roe v. Wade*". This was before she replaced the late Ruth Bader Ginsburg, who had fought to protect abortion rights.

Should the 50-year precedent end, some 25 US states are poised to outlaw most abortions. Some have 'trigger bans' that go into effect as soon as *Roe* is overturned; others have been moving towards restrictive laws.

Caitlin Myers, an economist at Middlebury College in Vermont, estimates that abortion bans in these 25 states will close so many clinics that roughly 18 million women of child-bearing age will end up more than 200 miles (322 kilometres) from an abortion provider. The Supreme Court might deviate from the leaked draft in its final decision, which is due to be published in the next two months. Even so,

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analysts expect the ruling to curtail abortion significantly, putting the United States out of line with an overall global trend towards abortion liberalization. Last year, Argentina legalized the procedure, recognizing the public-health consequences of prohibition. Some 32 other countries have expanded abortion access in the past 25 years.

Moving in the opposite direction runs contrary to 50 years of research from around the world showing that abortion access is a crucial component of health care and is important for women's equal participation in society. After the Supreme Court agreed to hear Mississippi's case, *Nature* covered some of this evidence, submitted to the court by US scientific societies and more than 800 US researchers in public health, reproductive health, social sciences and economics, in advance of the case's hearing in December (see *Nature* 599, 187–189; 2021).

Empirical evidence

Some outcomes of outlawing abortion can be predicted by what's known. Researchers expect overall infant and maternal health to decline in the United States in the wake of abortion bans, because more unintended pregnancies will be brought to term. These are associated with an increased risk of health problems for babies¹, and often for mothers², for several reasons – including reduced prenatal care.

Maternal health is also expected to decline overall. One straightforward reason is that the risks of dying from pregnancy-related causes are much greater than the risks of dying because of a legal abortion. A predicted rise in maternal mortality among Black women in the United States is particularly distressing, because the rate is already unacceptably high. In one study³, sociologist Amanda Stevenson at the University of Colorado Boulder modelled a hypothetical situation in which abortions are banned throughout the United States, and found that the lifetime risk of dying from pregnancy-related causes for non-Hispanic Black women would rise from 1 in 1,300 to 1 in 1,000. (*Nature* recognizes that transgender men and non-binary people might become pregnant and seek abortion care. We use 'women' in this story to reflect how participants are reported in the studies we cite, and how people are referred to in court briefs.)

One claim made by abortion opponents in this case is that abortions no longer benefit women and even cause them harm, but studies contradict this⁴. Abortion bans extract an unequal toll on society. Some 75% of women who choose to have abortions are in a low income bracket, according to one court brief (see go.nature.com/3fnppp3) submitted ahead of the December hearing and signed by more than 150 economists. Travelling across state lines to receive care will be particularly difficult for people who do not have the funds for flights or the ability to take time off work, or who struggle to find childcare.

Unfortunately, some of the justices seem to be disregarding these data. At the hearing, Julie Rikelman, a lawyer at the non-profit Center for Reproductive Rights, headquartered in New York City, brought up studies presented in the economists' brief; Roberts interrupted her and suggested "putting that data aside". In the leaked draft opinion, Alito

also elides a body of research on abortion policy, writing that it's "hard for anyone – and in particular for a court – to assess" the effect of the right to abortion on women's lives.

Such an attitude suggests that the justices see research as secondary to the question of whether the US Constitution should protect abortion. But the outcome of this ruling isn't an academic puzzle. The Supreme Court needs to accept that the consensus of research, knowledge and scholarship – the evidence on which societies must base their laws – shows how real lives hang in the balance. Already, the United States claims the highest rate of maternal and infant mortality among wealthy nations. Should the court overturn *Roe v. Wade*, these grim statistics will only get worse.

1. Shah, P. S. et al. *Matern. Child Health J.* **15**, 205–216 (2011).
2. Moaddab, A. et al. *Obstet. Gynecol.* **131**, 707–712 (2018).
3. Stevenson, A. J. *Demography* **58**, 2019–2028 (2021).
4. Miller, S., Wherry, L. R. & Foster, D. G. *NBER working paper No. 26662* <https://doi.org/10.3386/w26662> (2020).

Why NASA should lead humanity's return to the Moon

The Artemis programme plans to send astronauts to the Moon in 2025 – a worthy goal for science and humanity in bleak times. The US Congress should cough up the cash.

It's half a century since astronauts walked on the Moon, leaving boot prints in the lunar dust and capturing iconic views of Earth. If NASA has its way, it will soon be sending people back: its Artemis programme is scheduled to carry out its first test of a rocket capable of reaching the Moon this year, and to culminate in a human mission to the unexplored southern polar region in 2025. It will be the first time people have set foot on the Moon since NASA's Apollo programme ended in 1972. Named after the twin sister of the Greek god Apollo, Artemis aims to rekindle the wonder of humans visiting other worlds.

Scientists are excited. A rich range of scientific questions can be answered through human exploration of the Moon, such as how much water is frozen in the shadowy craters near its poles and how the Earth–Moon system formed in an ancient cosmic collision. But sending astronauts to worlds beyond Earth transcends pure research. Apollo, which put 12 men on the Moon over the course of several years from 1969, boosted *Homo sapiens'* spacefaring credentials and is one of humanity's great achievements. Going back is crucial to developing the skills and technologies needed for people to push onwards to goals such as Mars.

Since Apollo ended, NASA has struggled to regain momentum in human space flight. Subject to the whims

of changing presidential administrations and Congress, it has sent dozens of astronauts to the International Space Station, but has not managed to break beyond Earth orbit to send astronauts into deep space. Meanwhile, so far only the United States has sent people to the Moon.

This year, NASA plans to launch its long-awaited deep-space rocket, the Space Launch System. With no crew, it will be the first test flight of the Artemis programme, which aims to put the first woman and the first person of colour on the surface of the Moon (see page 212). Congress should give NASA the resources it needs.

Artemis faces formidable stumbling blocks, such as how to build new-generation spacesuits that can protect astronauts in the frigid temperatures of the lunar south pole. Another unknown is the type of spacecraft that will carry the astronauts on the final leg of their journey, down to the lunar surface; the 1960s-era Apollo landing module will not work with NASA's new-generation rocket. The private company SpaceX, based in Hawthorne, California, is responsible for designing and building the Artemis lander, but few details of it have emerged so far.

Solving these problems will require large sums of money. Each of the first four Artemis launches, which include three crewed flights, is estimated to cost US\$4.1 billion, according to a report from NASA's office of the inspector general, which puts the total cost of Artemis up until the mid-2020s at \$93 billion. Although a huge sum, this is comparable to the Apollo programme, which included six crewed Moon landings and cost \$25.8 billion – \$257 billion in 2020 dollars (C. Dreier *Space Policy* <https://doi.org/hs4b>; 2022).

It could be argued that NASA should not keep building incredibly expensive rockets to repeat an incredibly expensive venture. Its Moon-rocket programme is years behind schedule and tens of billions of dollars over budget. Why reward such inefficiency, especially when private companies such as SpaceX are developing their own deep-space rockets?

The answer is that NASA has the knowledge, stability and standing as a publicly funded agency to lead the way into deep space. What's more, human space exploration is a global endeavour and Artemis is an international effort, with the European Space Agency providing a key part of the Orion spacecraft that will carry a crew to the Moon. China is also currently working to fly astronauts to the lunar surface, and a range of nations and companies plan to launch uncrewed missions soon (see page 208).

But Artemis's funding is still far from guaranteed. NASA has funded some parts of the programme, such as the upcoming uncrewed test flight, from its \$24-billion annual budget. But it is now asking Congress for more than \$7 billion to fly a second, crewed Artemis flight and then prepare for the Moon landing.

Now is the time to make Artemis happen. Like other nations, the United States faces a host of challenges – from the pandemic to the war in Ukraine to climate change – that demand attention and strain the public purse. But Congress should lift its eyes to the skies. Humanity will return to the Moon, a worthy scientific destination and a ray of light in dark times. NASA is best placed to lead the way.

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