



WHITE PAPER

**delivery decisions:  
using digital health  
tools to educate  
pregnant people  
about hospital  
quality**

**The U.S. has the highest maternal mortality rate of any developed country.<sup>1</sup> In spite of the fact that we spend more on healthcare than any other high-income nation,<sup>2</sup> our maternal deaths continue to rise,<sup>3</sup> even as studies show that the vast majority of pregnancy-related deaths are preventable.<sup>4</sup>**

One notable risk for birthing people in the U.S. is our high Cesarean section (C-section) rate. While many C-sections are medically necessary and life-saving, studies suggest that we're delivering far more babies by this method than we need to. And every C-section birth raises the risk for maternal complications. One of the contributing factors to unnecessary C-sections is the C-section rate of a birthing hospital: the more C-sections a hospital performs, the higher likelihood for unnecessary cesarean procedures.

To address this public health issue, Ovia Health partnered with [Ariadne Labs](#) and the [Harvard T.H. Chan School of Public Health](#) to conduct a randomized controlled trial to investigate if a digital health tool like Ovia could help pregnant people choose safer hospitals for their births.

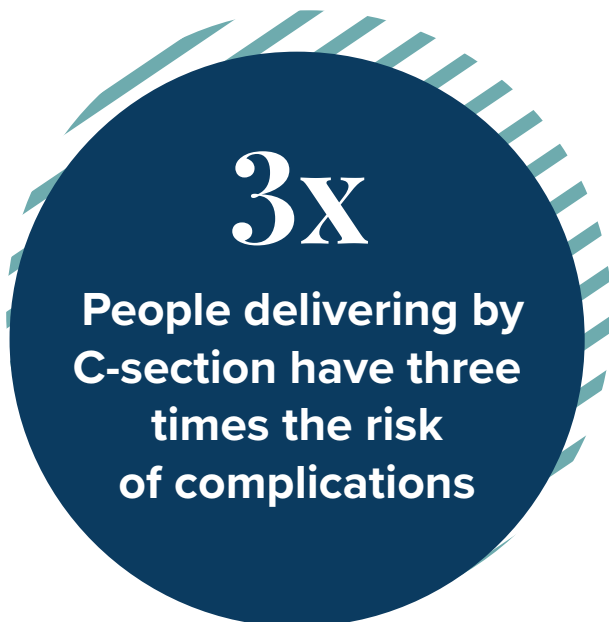


## The C-section epidemic

Reducing the C-section rate in the U.S. is critical. More than a million babies are born each year by C-section in this country — that's nearly a third of all deliveries.<sup>5</sup> But studies show that up to 45 percent of the procedures may be unnecessary.<sup>6</sup> In fact, the World Health Organization (WHO) has maintained since 1985 that C-section rates should be around 15 percent, with more recent data suggesting rates up to 19% are optimal.<sup>7,8</sup>

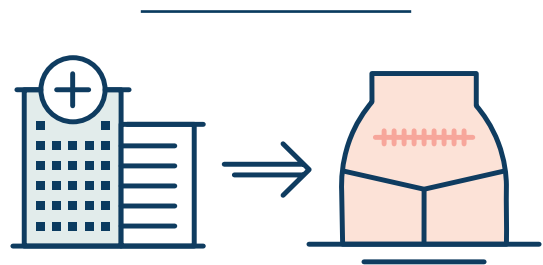
Our high rate of C-sections may be contributing to poorer birth outcomes. Compared to a vaginal delivery, people delivering by C-section have three times the risk of complications, including blood loss, blood clots, infections, challenges with future pregnancies, and death. C-section recoveries tend to take longer and be more difficult.<sup>9</sup>

Not only does the C-section rate impact maternal risks, it's clearly not aligned with what people want from their healthcare. More than three-quarters of pregnant people report that they would prefer not to have a C-section delivery.<sup>10</sup>



## C-section data and hospital choice

Studies suggest that, in addition to medical need, hospital choice is a significant factor in determining who will have a C-section. For example, researchers in Massachusetts discovered that hospital C-section rates in their state varied widely — from 14 to 38 percent. And that the variation remained, *even after they adjusted for clinical factors and socio-demographics*. They concluded that it's not just medical necessity — hospital practices and culture can raise a patient's risk for a C-section.<sup>11</sup>



## hospital practices and culture can raise a patient's risk for a C-section

With this idea in mind, several consumer advocacy groups have begun to report hospital-level C-section rates (including The Leapfrog Group, Consumer Reports, and U.S. News and World Report). Many states also provide this information — California is a model for publishing maternal health quality data.

Yet many pregnant people focus on choosing an obstetrician or midwife without realizing that *where* they give birth can impact *how* they give birth.<sup>12</sup> Even when they know that a specific hospital's maternity care quality trends make a difference, few people know that they can access that data and use it to inform their birth decisions.<sup>13</sup>

## Educating patients to improve birth outcomes: A randomized controlled trial

### Hypothesis

To help improve birth outcomes, Ovia Health investigated whether a digital tool with accessible, understandable C-section rate data would increase a pregnant person's likelihood of choosing a low C-section rate hospital. To conduct our first-of-its-kind randomized controlled trial, we collaborated with researchers at Ariadne Labs and the Harvard T.H. Chan School of Public Health.

### Methods

The trial included 120,621 volunteer participants (one of the largest randomized controlled trials in OB-GYN history). To be eligible for the study, participants had to be early in their pregnancy — between 1 and 3.5 months pregnant — or actively trying to conceive.

For the study, we designed an educational program that explained hospital C-section rates and provided an interactive tool to research C-section rates at hospitals near the participant. Hospital data was represented in a familiar format — an easy-to-understand star rating. Higher star ratings indicated lower C-section rates.

The control group received the educational program and a hospital choice tool without star ratings.

### Findings

We found that education and easy access to clear data impacted pregnant patients' decisions and consideration of quality. Those who received the interactive tool with star ratings were more likely to use C-section data to select a hospital, more likely to choose a hospital with lower C-section rates, and more likely to believe hospital choice could impact their likelihood of having a C-section:

- Of participants who reported their hospital choice, **19% in the intervention group selected 5-star hospitals**. Only 10.8% of those in the control group did.
- Among the intervention group, **38.5% thought that hospital choice would impact their chances of a C-section delivery**, compared to 33.1% in the control group.

This data suggests that it's possible to create positive behavior change in hospital choice by equipping people with the information they need to make informed decisions.

Our researchers also concluded that success depends on reaching pregnant people early, while they are still making decisions about their birth plans. It's also important to explain why C-section rates matter for the overall delivery experience, and to do so in an approachable, easy-to-understand format.

it's possible to  
create positive  
behavior change  
in hospital  
choice



**75.9%**

increase in selection of  
quality hospitals among  
participants



**38.5%**

thought that hospital  
choice would impact their  
chances of a C-section  
delivery



**16.3%**

increase in understanding  
of and belief in quality  
ratings among participant

## How Ovia Health worked hospital choice into our solution & how Ovia helps educate pregnant people to make safer birth choices

Based on the findings of our study — that it's possible to empower pregnant people to choose hospitals with lower C-section rates — Ovia added this new intervention to our permanent programming.

As a leading digital platform to support the full continuum of family care, Ovia's early pregnancy program already includes several proactive interventions. Our Care Team engages with members 1:1 to develop a birth plan. This process includes understanding each member's birth goals and providing personalized recommendations for in-network prenatal providers and hospitals. Ovia's recommendations are based on a member's preferences (such as a provider's race, language, and LGBTQ+-friendliness), the c-section rate at hospitals near them, their insurance network, and their unique risk profile.

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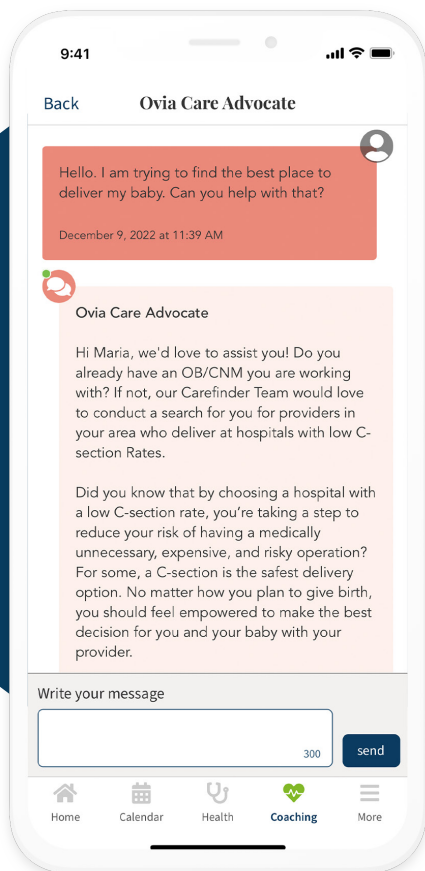
# 34%

On average, Ovia's programming yields a 34% reduction in c-section rates

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By working with the Ovia Care Team, members save hours of time and avoid the administrative burden of researching high-quality, in-network care. The Ovia Care Team is also available to discuss the pros and cons of different types of providers (OB-GYNs, midwives, etc.) and the safety of hospital births over other options.

Through our current interventions, Ovia reduces the average C-section rate by 34% for our members.



## Why C-section rates matter for payers and employers

While C-section rates can have a big impact on an individual patient's birth outcome, they also matter for payers' and employers' bottom lines. On average, C-sections cost \$7,000-9,000 more than vaginal deliveries, not including additional postpartum care or potential complications.<sup>14</sup>

Here's how those costs add up: There were 3,659,289 births in 2021 in the U.S.<sup>15</sup> The average cost of a vaginal delivery is \$13,024, while the average cost of a C-section delivery is \$22,646.<sup>16</sup> Given the current C-section rate in the U.S. (32.1 percent), we estimate that C-sections cost an average \$26.8 billion annually. Between 13 and 17% of these C-sections may be unnecessary.<sup>17</sup>

**If the C-section rate hovered at 15% instead of the current 32.1%, the U.S. could save \$14.7 billion each year if we eliminated medically unnecessary C-sections.**

Of course, it's not just the costs of the procedure. C-sections can have a major impact on the wellbeing of women and families. Consider that a C-section is major abdominal surgery. Recovery requires at least six weeks, and patients are at increased risk of infection, immobility, and pain.<sup>18</sup> With these additional burdens, new parents may have a harder time returning to work — especially those with only a few weeks of paid parental leave, or none at all, considering the U.S. has no mandated paid parental leave.

To improve employees' and members' wellbeing, and to manage costs, it's time to do everything we can to lower the rate of medically unnecessary C-sections. Employers and payers can help by embracing programs that improve health literacy and encourage behavior change.

**3,659,289**  
births in 2021 in the U.S.



$$\begin{array}{l} \$22,646 \\ \text{average cost of a C-section} \\ \text{delivery} \end{array} \times \begin{array}{l} 32.1\% \\ \text{current C-section rate} \\ \text{in the U.S.} \end{array} = \begin{array}{l} \$26.8\text{B} \\ \text{estimated average} \\ \text{C-sections cost annually} \end{array}$$

## How employers and payers can help reduce C-section rates

To help pregnant people find the safest possible birth choices, we need to reach them early. Most pregnant people select a prenatal provider shortly after they find out they are pregnant. That means there's a very limited window of time to educate them about the most important factors for choosing a provider and a hospital.

Of course, employers don't usually know about pregnancies until much later. That's where a partner like Ovia Health comes in. The majority of our members enroll within their first trimester or before, while trying to get pregnant — the ideal time for delivering educational content and

personalized support for birth decisions.

It's true that some people will always require C-sections to deliver safely — not every decision is within a pregnant person's control. But with education and proven tools for behavior change, we can help people leverage the decisions they can control. And that can make a huge difference when it comes to safety, costs, and the wellbeing of parents and their children.

**To discover more about Ovia Health, please visit [www.oviahealth.com](http://www.oviahealth.com).**

1. The Commonwealth Fund: <https://www.commonwealthfund.org/publications/issue-briefs/2020/nov/maternal-mortality-maternity-care-us-compared-10-countries>
2. Kaiser Family Foundation (KFF): <https://www.kff.org/slideshow/health-spending-in-the-u-s-as-compared-to-other-countries-slideshow/>
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9. The American College of Obstetricians and Gynecologists (ACOG): <https://www.acog.org/clinical/clinical-guidance/obstetric-care-consensus/articles/2014/03/safe-prevention-of-the-primary-cesarean-delivery>
10. Birth: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5484308/>
11. PLOS One: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0057817>
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14. Ovia Health: <https://www.oviahealth.com/guide/100426/c-section-cost-of-c-section/>
15. Centers for Disease Control (CDC): <https://www.cdc.gov/nchs/data/vsrr/vsrr020.pdf>
16. ValuePenguin: <https://www.valuepenguin.com/cost-of-vaginal-births-vs-c-sections>
17. Optimal C-section rates range between 15-19%, so the U.S. C-section rate is 13-17% higher than is recommended.
18. American College of Obstetricians and Gynecologists: <https://www.acog.org/womens-health/faqs/cesarean-birth>