The Preterm Babies in v-safe Came Earlier

Among v-safe users who wrote about a premature birth, more than twice as many babies arrived before 28 weeks as in pre-pandemic US births

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When the CDC launched v-safe in December 2020, it was meant to be a safety net: a smartphone check-in system where newly vaccinated people could report how they felt. Alongside the check boxes there was a free-text box, and many people used it to describe what was happening to them in their own words.

Some of those people were pregnant.

At **OpenVSafe** (a project of OpenVAERS) we have made the full v-safe dataset searchable. One of the things we wanted to know was simple to ask and hard to answer: **when pregnant v-safe users wrote about a premature birth, how early did those babies come?** And how does that compare with what was normal before COVID-19 vaccines existed?

What we counted

v-safe never asked "how many weeks pregnant were you when you delivered?" So we read it out of the free text. We built a set of rules that pick up phrases like:

- "my baby was born at 33 weeks"
- "emergency c-section at 25 weeks and 2 days"
- "gave birth at 36+4"
- "baby came 6 weeks early" (counted against a 40-week term, so 34 weeks)

The rules only count text that is about a birth. "My period came 2 weeks early" doesn't count, and neither does "I was 25 weeks pregnant when I got my first dose." We kept only deliveries before 37 weeks, which is the medical definition of preterm.

That gave us **240 people** who wrote down the week of a premature delivery.

What we compared it with

For a baseline we used the CDC's own final birth data for 2019, the last full year before the pandemic and before any COVID-19 vaccine: *Births: Final Data for 2019* (National Vital Statistics Reports, vol. 70, no. 2). Table 21 breaks down every US birth that year by week of pregnancy and by the mother's age.

Mothers' age matters, because older mothers have more preterm births. v-safe mothers skew older than US mothers overall, so we weighted the 2019 figures to the same age mix as the v-safe group. That way an older group can't explain the difference.

(Adjusting for age made the gap slightly *bigger*, not smaller.)

One important point before the numbers

v-safe has no count of all the healthy, full-term births, because nobody writes "had a healthy baby at 39 weeks" in a box meant for problems. So we **cannot** compare how *often* babies were born preterm.

What we *can* compare is the **shape** of preterm birth: of the babies who were born early, what share came very early versus just a little early? Every percentage below is a share of preterm births only.

The results

Preterm births by how early they came

Each figure is a share of preterm births only (born before 37 weeks)

WEEKS AT DELIVERY	V-SAFE (N=240) 95% CI	US 2019, AGE-MATCHED	V-SAFE ÷ 2019
Under 28 weeks	13.8% (10.0–18.7)	6.1%	**2.25×**
28–31 weeks	14.2% (10.3–19.1)	9.0%	**1.57×**
32–33 weeks	12.9% (9.3–17.8)	11.7%	**1.10×**
34–36 weeks	59.2% (52.9–65.2)	73.2%	**0.81×**
Before 32 weeks	**27.9%** (22.6–33.9)	**15.1%**	**1.85×**

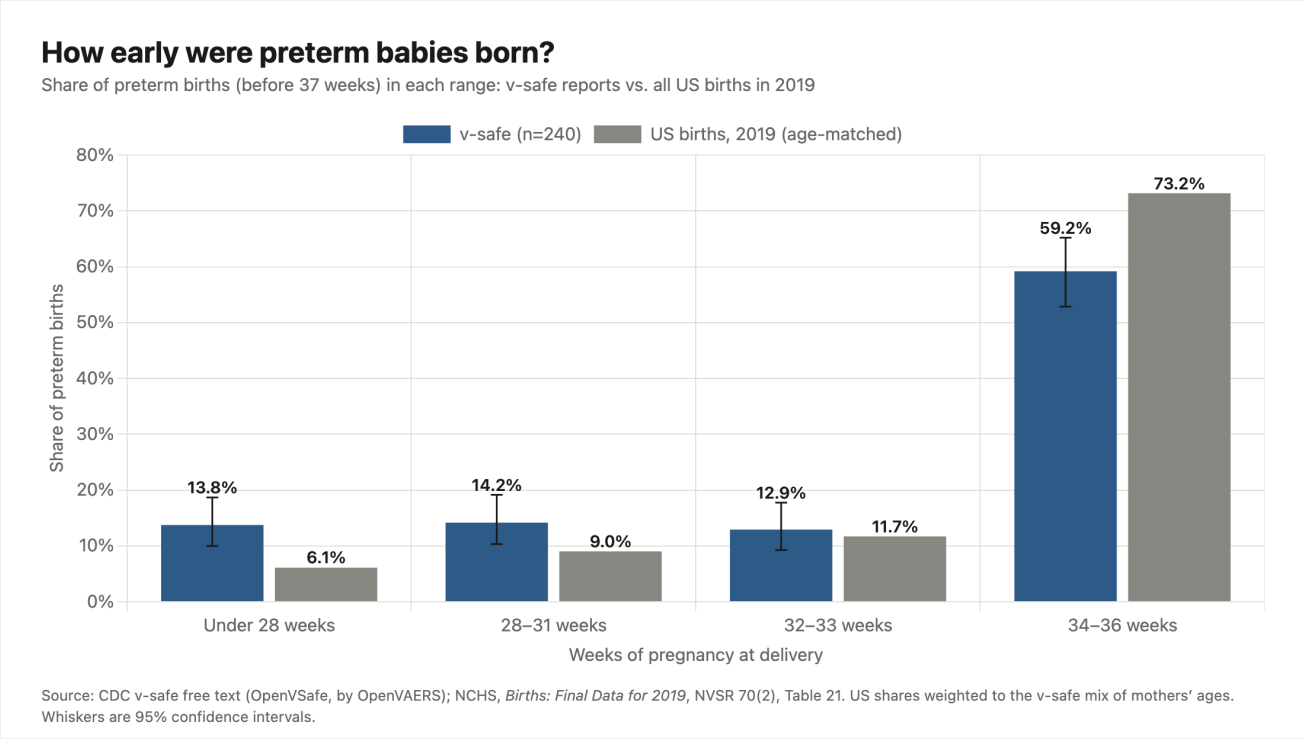
Chi-square 36.6, 3 df, $p < 0.0001$. Source: CDC v-safe free text (OpenVSafe, by OpenVAERS); NCHS, *Births: Final Data for 2019*, NVSR 70(2), Table 21. US shares weighted to the v-safe mix of mothers' ages.

In 2019, most preterm babies in the US, about 73%, arrived in the last few weeks before term (34 to 36 weeks). Only about 6% came before 28 weeks, the range doctors call *extremely* preterm.

In v-safe the picture shifts toward the early end:

- **Before 28 weeks:** 13.8% of v-safe preterm births, against 6.1% in 2019. That is **2.25 times** the pre-pandemic share.
- **28 to 31 weeks:** 14.2% against 9.0%, about 1.6 times.
- **32 to 33 weeks:** close to normal (12.9% against 11.7%).
- **34 to 36 weeks:** fewer than expected (59.2% against 73.2%).

Put another way: **more than one in four v-safe preterm babies (27.9%) were born before 32 weeks, compared with about one in seven (15.1%) in 2019.**



The black whiskers on the v-safe bars show the 95% confidence intervals: the range the true value probably falls in, given that we have 240 cases rather than millions. For the two earliest ranges, even the bottom of that range sits above the 2019 figure.

Is the difference just chance? A chi-square test across the four ranges gives a value of 36.6, with **$p < 0.0001$**. The odds of a gap this large showing up by luck alone are less than one in ten million.

Did the survey itself make a difference?

Some pregnant v-safe users also answered v-safe's pregnancy follow-up questions. We checked whether those respondents told a different story from everyone else. They didn't: 26.7% of those respondents' preterm babies came before 32 weeks, against 29.2% for everyone else. The early shift shows up in both groups.

What could explain it?

There are two possible explanations, and the data alone cannot decide between them.

1. Which births got written about. It's possible that people were more likely to write about a very early, very frightening delivery than about a baby who came at 36 weeks and went home after a few days.

2. A real shift toward earlier delivery. The alternative is that the shift is real: that preterm births after vaccination tended to come earlier.

Some things weigh against the first explanation. The early v-safe users were heavily weighted toward healthcare workers, the first group offered the vaccine. These were people trained to report, signed up for a system whose whole purpose was to record what happened after vaccination. A mother in that position who delivered at 35 weeks had every reason to write it down, just as she would at 27 weeks. And a premature birth at any week is a significant event: a NICU stay, a hospital transfer, weeks of uncertainty.

What the data *can* say is that this is not a small wobble. The preterm births reported in v-safe look clearly different from pre-pandemic US births, and age doesn't explain it.

Limits worth knowing

- **Small numbers.** 240 births is enough to show a clear difference, but not enough to break down by vaccine brand or trimester at vaccination. We tried comparing mothers who were pregnant when vaccinated with those who got pregnant afterward, and the second group had only 7 preterm births: far too few to say anything.
- **Free text is messy.** Our rules were tested against a set of tricky examples, but some entries will be missed or misread.
- **Other differences.** Matching on age doesn't make the groups identical. v-safe mothers differ from US mothers in other ways too, including race and income, and the v-safe data doesn't let us match on those.

- **Ages are approximate.** v-safe records age in five-year bands (31–35, for example), so we matched each band to the nearest CDC age group (30–34). The shape of preterm birth barely changes with age, so this has very little effect.

Why this matters

The CDC built v-safe to watch for exactly this kind of signal. The data was collected from people who did what they were asked: they got vaccinated, they checked in, and when something went wrong, they wrote it down.

An extremely preterm baby is not a statistic. Babies born before 28 weeks face the highest risks of death and lifelong disability of any group of newborns. If the share of preterm babies arriving that early more than doubled among the people reporting to the CDC's own safety system, that deserves a proper look: one done with the full data on how many births there were in all, which the CDC holds and we don't.

You can explore the data yourself on the **OpenVSafe** pregnancy survey page and search the free-text entries.

Sources

- CDC v-safe free-text responses, searchable at OpenVSafe (by OpenVAERS).
- Martin JA, Hamilton BE, Osterman MJK, Driscoll AK. *Births: Final Data for 2019*. National Vital Statistics Reports, vol. 70, no. 2. National Center for Health Statistics, 2021. Table 21. https://www.cdc.gov/nchs/data/nvsr/nvsr70/nvsr70-02-508.pdf
- Martin JA, Hamilton BE, Osterman MJK. *Births in the United States, 2019*. NCHS Data Brief no. 387, 2020. https://www.cdc.gov/nchs/products/databriefs/db387.htm

Method notes

Preterm deliveries were read from v-safe free text with pattern rules (weeks 20 to under 37; "N weeks early" counted as 40 − N). The 2019 US shares for each gestational range were taken by mother's age group from NVSR 70(2), Table 21, and weighted by the age mix of the 240 v-safe mothers. Confidence intervals are Wilson 95% intervals. The comparison uses a chi-square goodness-of-fit test with 3 degrees of freedom.