



Maternal Mortality Trends in the United States (2019–March 2025)

A Data Analytics Project on Ethnicity & Age Disparities



Project Overview

Maternal mortality remains a critical public health issue in the United States. Recent reports show concerning increases in deaths among certain demographic groups, particularly African American women. This project analyzes maternal mortality trends from January 2019 to March 2025, focusing on ethnicity and age group to understand which populations are most impacted and how rates have changed over time.

The goal of this analysis is not to assign blame or assume causation, but to provide an objective, data-driven look at patterns and disparities.

Objectives



1. Calculate maternal mortality rates per 100,000 live births across ethnicities and age groups.
2. Identify trends in mortality over time (pre-pandemic, pandemic, post-pandemic periods).
3. Compare mortality rates between major ethnic groups.
4. Identify age groups at highest risk and how risk varies by ethnicity
5. Create a set of non-biased insights based solely on the evidence.



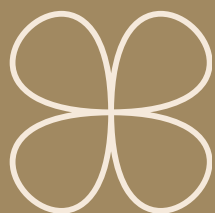
Data Sources

U.S. national maternal mortality records (2019–March 2025)

A black and white photograph of a person's torso, showing a beaded necklace and hands holding a small plant.

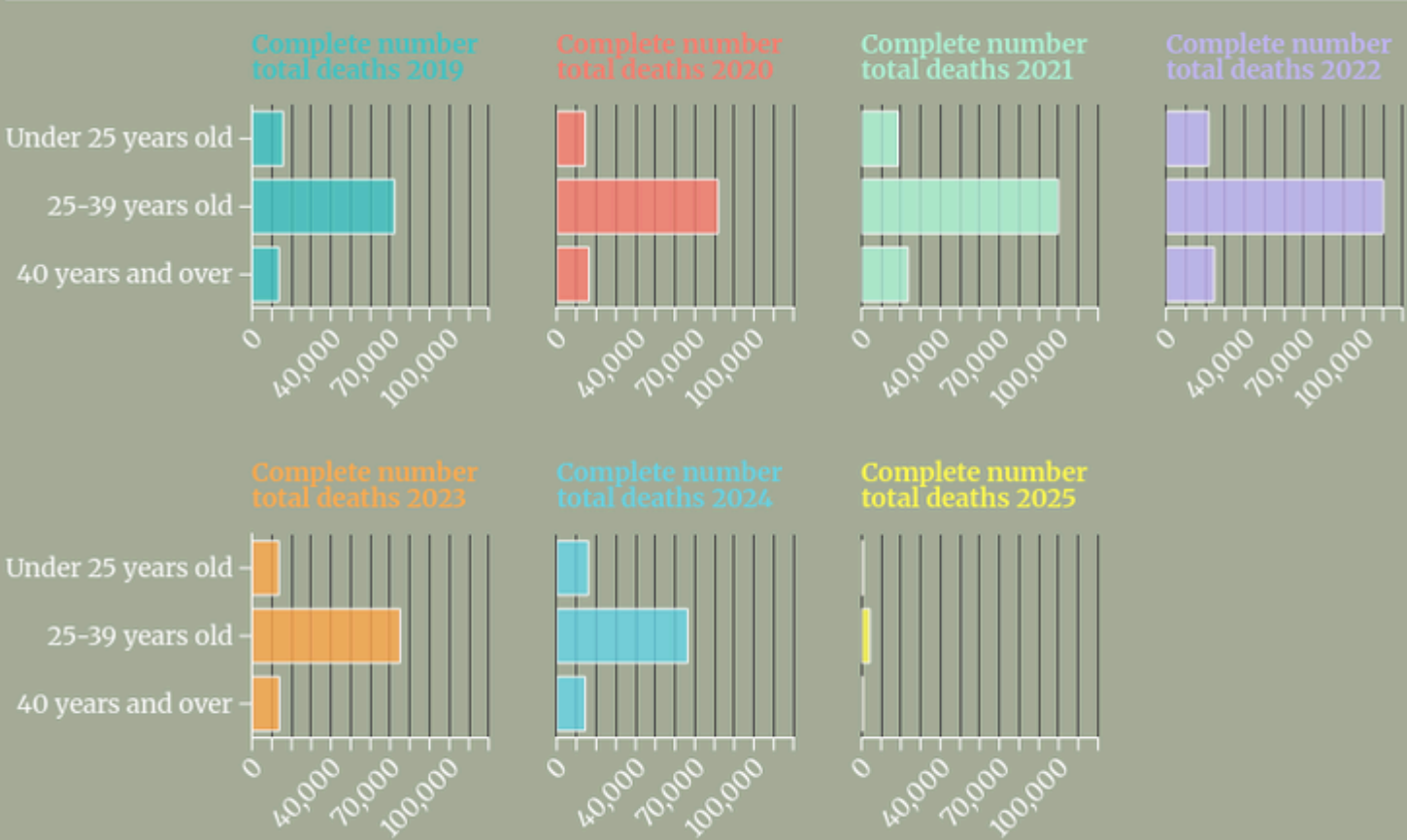
Questions

- How has maternal mortality changed over time?
- Which ethnicities have higher mortality rates?
- Which age groups are most impacted?
- How did mortality shift during COVID-19 years
- What ethnic groups show consistent trends (increasing, decreasing, stable) over time?
- Which demographic groups may benefit most from targeted interventions based on observed data?
- Do different ethnic groups experience increases in mortality rates at similar or different time periods?

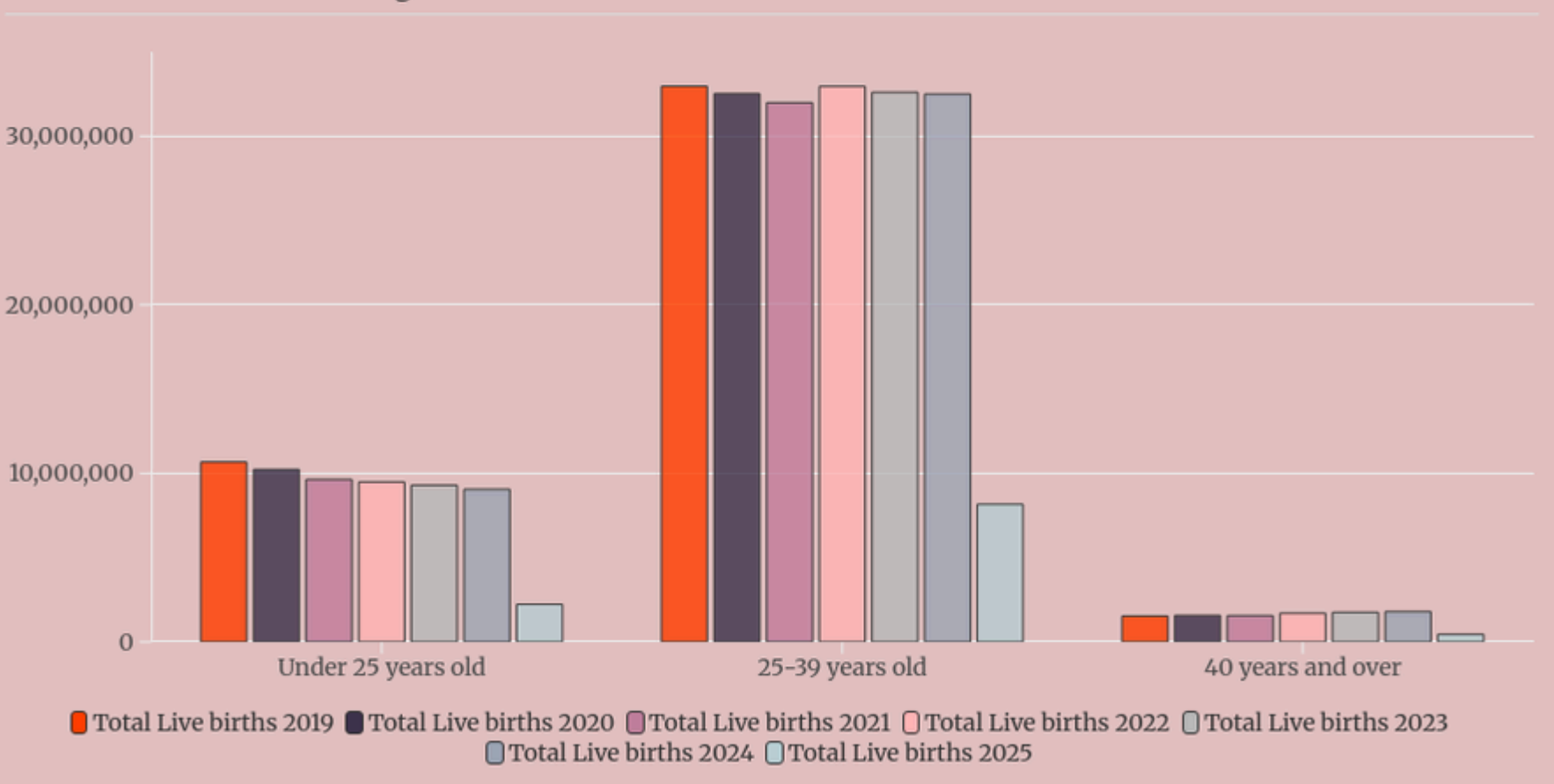


Maternal Mortality Trends based on Age

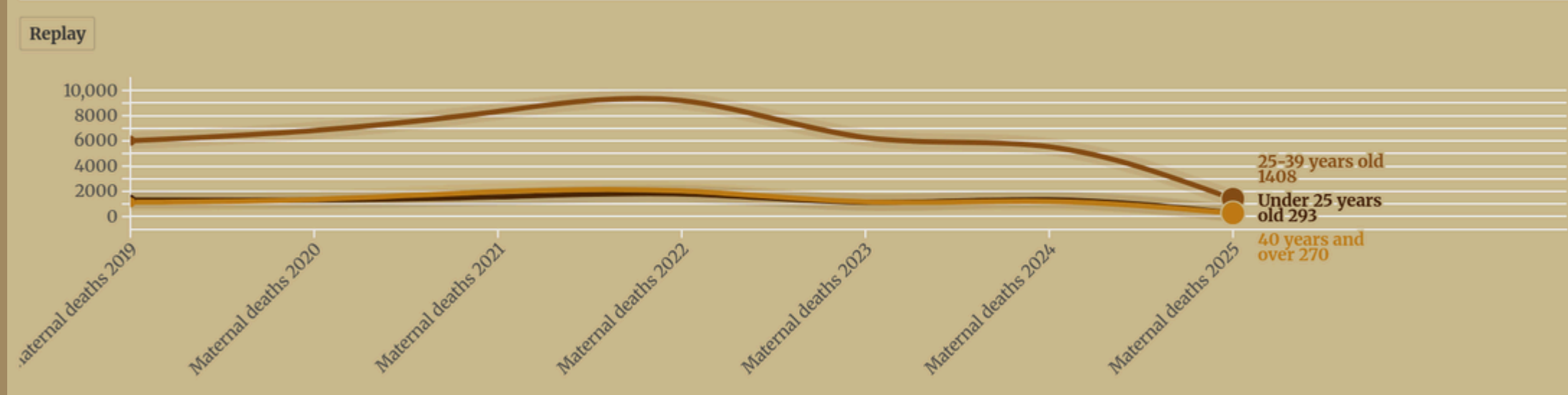
Mortality Rate Trends Based on Age



Live Birth Trends Based on Age

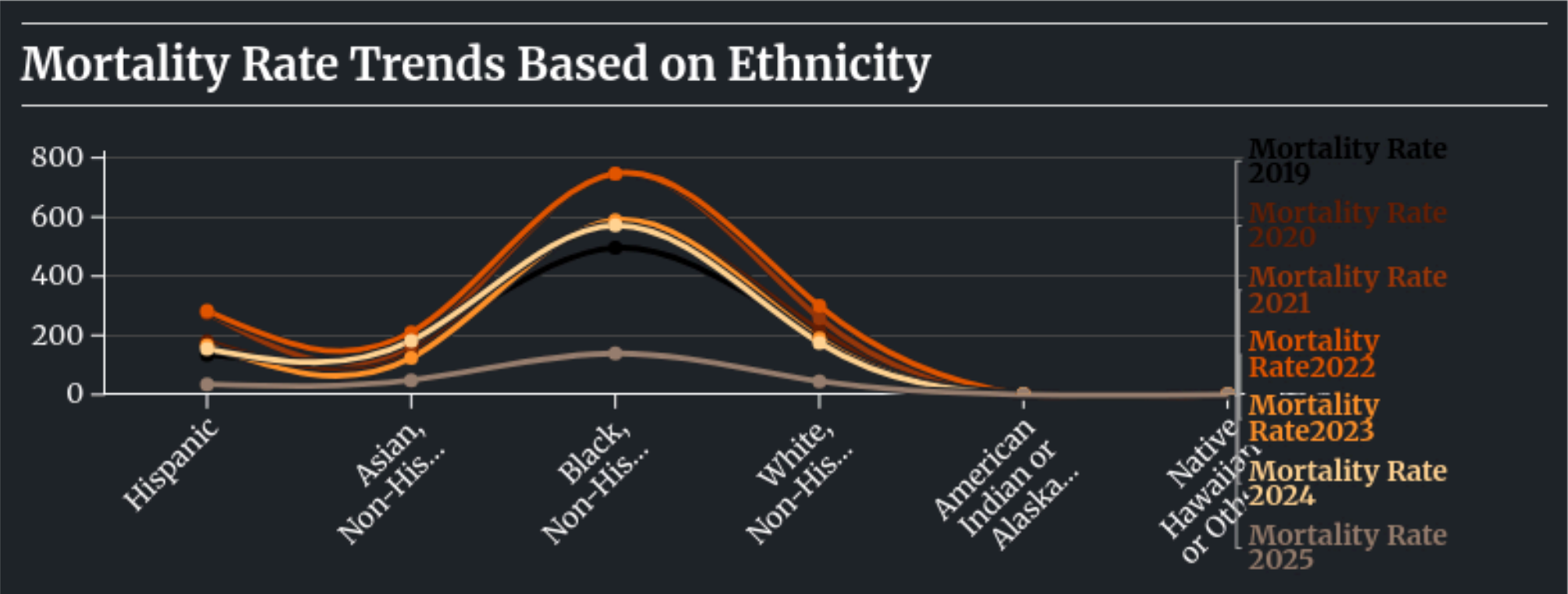
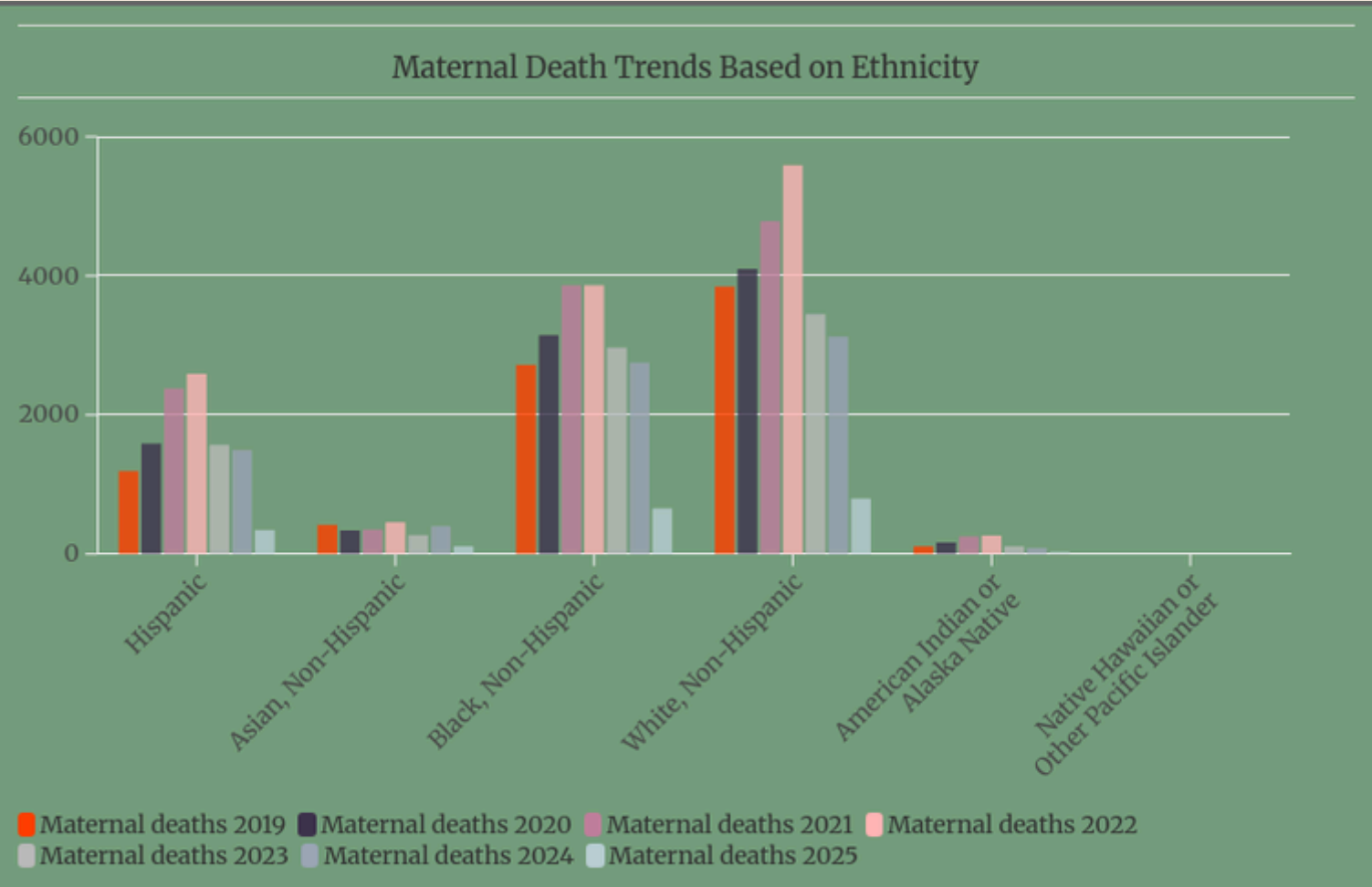


Maternal Death Trends Based on Age



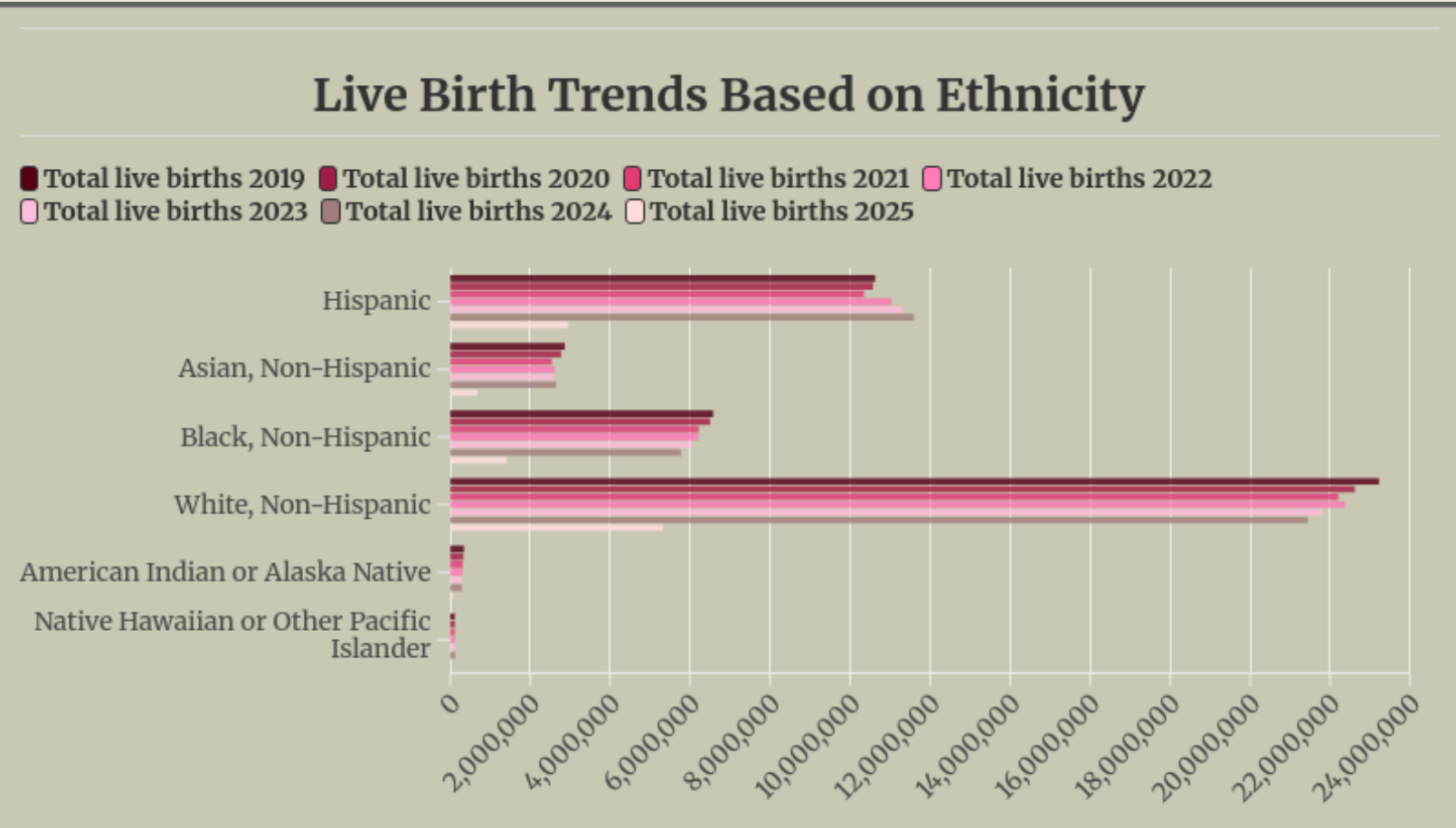
Across all age groups, mortality rose sharply between 2020 and 2022, aligning with the COVID-19 pandemic. Total maternal deaths increased each year from 2019 to a peak in 2021-2022, with the 40+ age group experiencing the steepest proportional rise in mortality during this period. This confirms that older maternal age significantly increased vulnerability during the public health crisis.

Maternal Mortality Trends Based on Ethnicity



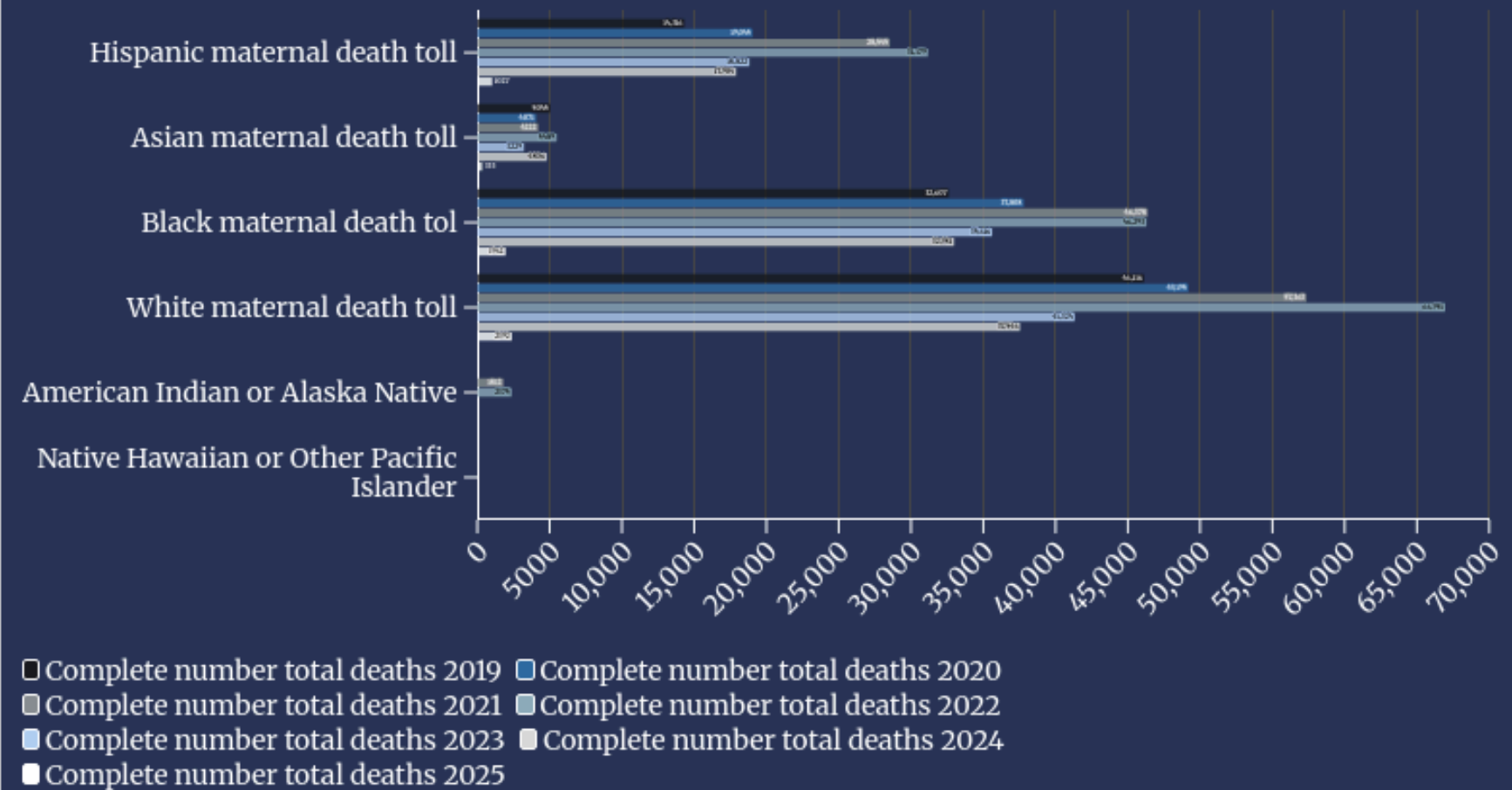
Across ethnicities, Black, Non-Hispanic women face the highest maternal mortality rates every year, with especially severe spikes in 2021-2022.

White, Hispanic, and Asian women also experienced rising mortality during the pandemic, though to a lesser magnitude and followed by substantial improvement after 2022. American Indian or Alaska Native data show suppressed mortality rates (appearing as zero), but the recorded death counts indicate meaningful risk that is masked by small-population reporting issues. All major ethnic groups experienced pandemic-era increases at roughly the same time, though the intensity of the spike varied greatly.



More detailed mortality death trends by person

Total Mortality Death Trends Based on Ethnicity



Across ethnicities, Black mothers consistently experienced the highest total deaths, followed by White and Hispanic mothers. All groups showed similar timing in their increases, but the magnitude of the spike was disproportionately larger for Black and Hispanic women, highlighting ongoing racial disparities in maternal health outcomes.

The original formula for finding the maternal mortality ratio was:

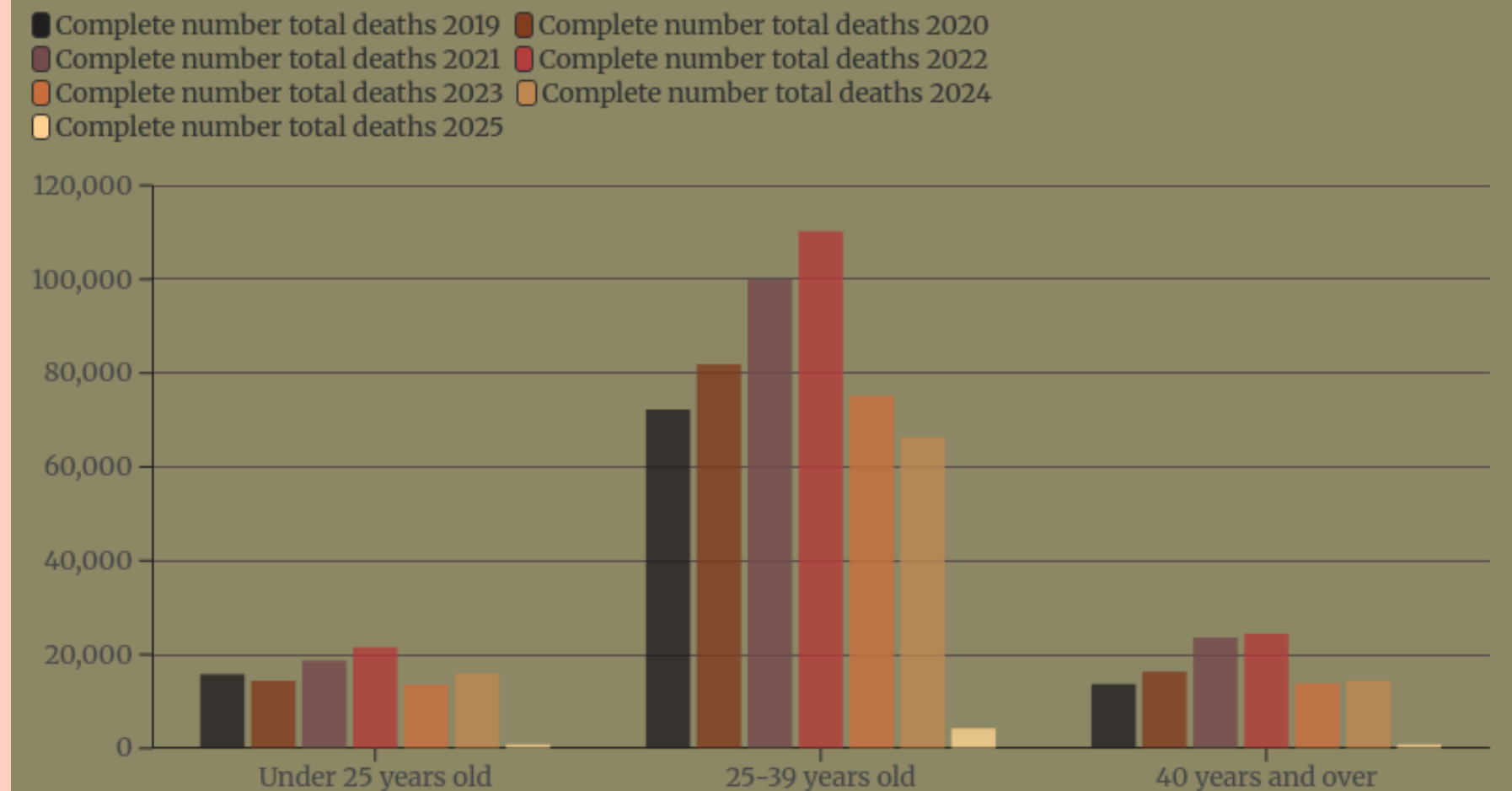
$$\text{MMR} = \frac{\text{Maternal deaths}}{\text{Live births}} * 100,000.$$

However, I wanted to get a bigger picture of a estimate of the complete total of deaths. I collected the data I needed and used a different formula to figure out the overall estimate of deaths per person. The formula I used was:

$$D = \text{MMR} / 100,000 * (\text{total live births})$$

Unfortunately the original data that I analyzed was for "Death per 100,000 live births," this put the mortality rate at 0 for a large amount of data for American Indian or Alaska Natives and Native Hawaiian or Other Pacific Islander.

Total Mortality Death Trends Based on Age



Conclusion

Overall, the combined data on maternal mortality by ethnicity, age, and year reveals a consistent and impactful pattern: maternal deaths rose sharply during the COVID-19 pandemic, peaking in 2021–2022, and then declined steadily from 2023 onward. This trend appears across every demographic group, indicating that the pandemic had broad effects on access to care, health system functioning, and maternal health outcomes nationwide.

Despite these overall shifts, significant disparities persist. Black mothers consistently experienced the highest mortality totals, followed by White and Hispanic mothers, with Black and Hispanic groups showing the steepest increases during the pandemic years. Asian mothers had lower mortality levels but still demonstrated the same spike and recovery pattern. Age-based data showed that while women aged 20–39 accounted for the greatest number of deaths due to higher birth rates, women aged 40+ faced disproportionately higher risk per person. All age groups reflected the pandemic-era rise and post-pandemic decline.

Together, the datasets highlight both the system-wide impact of the pandemic and the long-standing inequities that place certain communities—particularly Black and older mothers—at greater risk. While the post-2023 decline is encouraging, the findings emphasize the ongoing need for targeted maternal health interventions, improved access to high-quality care, and strategies focused on reducing racial and age-related disparities to ensure safer maternal outcomes moving forward.

Proposed Solutions

Key solutions include improving equitable access to high-quality prenatal and postpartum care, strengthening community-based maternal support programs, and expanding screening for pregnancy-related complications—especially among high-risk groups. Increasing culturally informed and patient-centered care models can help reduce barriers faced by minority mothers, while enhanced data collection and earlier identification of risk factors can support targeted interventions.

On a system level, investing in maternal health infrastructure, expanding insurance coverage, reducing care deserts, and supporting continuity of care during crises (such as pandemics) can help prevent future spikes. Focused interventions for Black and older mothers—who consistently experience the highest mortality—are critical.

Together, these solutions emphasize proactive support, accessible healthcare, and strengthened public-health preparedness to reduce disparities and promote safer pregnancies for all demographic groups.

