

Why Are America's Infant Mortality Rates so High?

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November 10, 2023

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Let's begin with the headlines.

From the World Health Organization by Mikkel Oestergaard:
In the world for neonatal mortality, the US health care system is to blame for our rank which is 41st in the world

From an NBC report by Maggie Fox: The US infant mortality rate has stalled the latest government report finds, giving Americans one of the worst rates in the developed world

From a CBS News story by Michelle Castillo: US has highest first-day infant mortality out of industrialized world, group reports

And from Liz Whyte in the *Wall Street Journal*, November 1: Jump in Infant Mortality Rate Reverses Long Decline

And looking at headlines for a companion cohort:

From Whattoexpect.com: 10 Reasons Why the Maternal Mortality Rate is Higher in the US Than in Other Developed Nations

From the [commonwealthfund.org](https://www.commonwealthfund.org) blog from 2022, echoed verbatim by Dr. Richard Feldman, former Indiana state Health Commissioner. The US Maternal Mortality Crisis Continues to Worsen

And from the *Fort Wayne Journal Gazette*, Laura McCloskey, public health professor, Indiana University: A Matter of Life and Death

Similar headlines can be found from the Gates Foundation, Washington Post, NPR and CNN. making this a worthy Quest topic.

But as Paul Harvey used to say, "You know what the news is -- in a minute, you're going to hear the *rest* of the story."

I have divided this paper into four parts:

Definitions and historical data

US comparisons to other countries

Mortality causes

Potential solutions

Definitions

Let's start with some definitions. Neonatal mortality refers to the death rate during the first **28 days** of life.

Infant mortality is defined as the death rate during the first **year** of life.

And, perinatal mortality encompasses death from 29 weeks of gestation to 28 days of life.

Switching to maternal mortality, according to the Centers for Disease Control and Prevention it refers to death of a woman during pregnancy, at delivery or soon after delivery.

While the terms should not and are not used interchangeably in the professional literature, they often are in popular press publications. Certainly, each is individually concerning.

I have chosen to speak to both infant and maternal mortality today since they are so intimately related.

Next, a bit of history. Vital statistics in 1915, the earliest records the United States has on the subject of infant mortality, revealed a rate of 100 deaths per 1000 live births.

Today, the national figure is 5.67 deaths for every 1000 live births. Obviously, that is a dramatic decline from 10 percent down to 0.57 percent.

This drop can be attributed to the development of antibiotics and their use, fluid and electrolyte replacement, safe blood transfusion, neonatal intensive care units, prenatal care paid by Medicaid, treatment of respiratory distress syndrome, vaccines, infants sleeping on their backs and perhaps fetal surgery. Sometimes we take for granted how medical care has advanced in our lifetime.

From the Vital Statistics Rapid Release Report (No. 26) from January 2023 statistics did NOT significantly change from 2020 to 2021 so the numbers do NOT seem to be rising - at least in 47 states and the District of Columbia. In Indiana, the figure from 2021 compared to 2020, was the single state that had a statistically significant decrease in infant mortality.

The authors were looking specifically for changes due to Covid 19, during the second year of the pandemic. But, there seemed NOT to be a worsening of the statistics.

So, we, in the US are experiencing an approximate infant mortality rate of 0.5 - 0.7 percent.

The CDC reports infant mortality rates vary from state to state; Massachusetts' rate is the lowest at 3.7 deaths per 1000 while Mississippi has the worst rate of 8.6 deaths per 1000. Indiana Department of Health reports our rate in 2021 was 6.7 per 1000 live births.

There is a significant difference if we examine race and ethnicity. The highest infant mortality rates in Indiana (and the country) are non-Hispanic Blacks; the Hispanic population has about 60 percent fewer infant deaths while non-hispanic Whites have the lowest figure.

Let me add the CDC figures I've noted and the Indiana Department Health figures are not exactly the same; the Indiana figures I'm referring to are from a February 2023 report looking at 2021 data. Last week's *Wall Street Journal* column cited CDC's PROVISIONAL numbers for 2022. The government is notorious for revising estimated figures, so we'll want to wait a bit on the 2022 numbers.

Mass General Brigham and the Institute for Health Metrics and Evaluation at the University of Washington, an often quoted resource for infant mortality, confounds their data by reporting on modeling estimates, not actual data. So, we might question their credibility.

The Indiana Department of Health also reports the data by hospital region, by county and then zip code. Northern Indiana has the highest rate in the state. In northeast Indiana, our locale, the numbers are about at the midpoint of the state figures. Many of you here are likely aware that in Allen County, our 46806 zip code fares the worst in our region.

But, with mortality rates so high in a country which spends more on medical care per capita than any other nation, this is concerning and frankly puzzling. So, let's hear the story from foreign countries and why their numbers appear so stellar.

Is there something we are missing? Or as I say to my students, "Does that sound right to you?"

US comparisons to other countries

That brings us to US comparisons to other countries' infant and maternal mortality figures. We will first focus on counting.

We can assume that many of the poorest countries do not record mortality statistics. But leaving them aside, that still leaves the published US mortality numbers similar to Romania and Bulgaria.

A 2008 study showed that three quarters of the world's neonatal deaths were counted in **household surveys** not by hospitals nor health care professionals. In these numbers it is thought, that there exists underreporting and questionable reliability in reporting.

Further, a shallow dive into reporting also shows that, in the US, we do count differently. We count broadly. In the US, we record every single birth and death. Our peer countries count differently which at the very least is misleading.

Here are a couple examples of counting discrepancies. In many countries, a baby has to weigh one pound before it is counted as a live birth. In other countries, a baby at 21 weeks' gestation will not be counted as a birth. Those countries would classify these as stillbirths and not count them in their infant mortality statistics.

While admittedly the chance of survival for these babies is quite limited, the US does consider these very low birth weight and premature babies as born, once delivered. It is these pre-term births that explain the biggest statistical difference between US numbers and those of many other countries.

Belgium, France and Spain only count live births if the baby has survived a certain amount of time. Again, we should note that the death rate is highest immediately after delivery and within the first 24 hours. So, in this one example, the smallest and most premature infants are not registered as a birth so no deaths are recorded.

The US standard is "any evidence of life".

The countries of Belgium, Denmark, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, Sweden and the UK, though obviously highly developed countries with infant mortality rates all better than the US, would have rates 14 to 40 percent higher if they used the US standard of a live birth.

So, technically that CBS headline we heard was kind of correct; we have the highest one day infant mortality rate because we count ALL births while many other countries do not.

In a similar fashion, late maternal deaths (from 42 days to 1 year after delivery) are not counted in Australia, France, South Africa, Denmark, Ireland, Finland and the UK. Again, the disparity in numbers make the headlines but are inaccurate when the playing field is leveled by definition, and all deaths are counted. (Loftis)

We, in the United States, also see higher rates of Cesarean sections compared to other countries; this again, likely reflects medical care availability. Complications for the mother post-C-section are 4-5 times higher than a vaginal birth so higher rates in general, may be contributing to poor statistics. The US C-section rate is almost 33 percent; Indiana's rate is better at 23.5 percent.

Whether this counting is disingenuous or unintentional amongst other countries, we don't know. But a 40 percent swing is noteworthy.

To this we should also remember that the US has so many more medical options compared to other countries which allows more US babies to be born and aggressively supported medically despite the fact survival is unlikely.

So, the US likely does NOT have significantly worse infant and maternal mortality rates compared to the rest of the world as the figures are difficult to accurately measure because there are NO consistent standards.

Infant Mortality

We will switch our focus to causes of mortality and begin with infant mortality.

For infant deaths, the top ten leading causes have been stable for decades. Sources sometimes use different terminology, but generally, first in the list is congenital defects or malformations which account for approximately 20 percent of infant deaths.

As a brief nutrition aside, it has long been known that the B vitamin, folate, plays a role in decreasing the incidence of neural tube defects. Folic acid is the synthetic form of folate which functions in cell division. Because the vitamin is so important from conception, our food supply, specifically grains like breads, cereal, rice and pasta are fortified with folic acid.

This was mandatory in 1998 but many food companies had started fortification prior to that. Many sources suggest that these specific types of birth defects were cut in half by the initiation of folic acid fortification. There is also some possible benefit of folic acid preventing cleft palate and some evidence of it decreasing the incidence of congenital heart defects.

The health negatives to folic acid fortification on the entire population might be the subject of a different Quest paper.

To delve a bit into risk factors for birth defects, research lists: family history of birth defects, prenatal exposure to tobacco smoke, alcohol or drugs, certain medications, maternal age greater than 35, untreated infections, untreated gestational diabetes and insufficient prenatal care.

While preconception health isn't often specifically mentioned in the published literature, those habits, conditions or lifestyle are typically continued throughout pregnancy so looking into earlier health of women in the child-bearing years seems worth mentioning.

Following birth defects, the second most common cause of infant death is preterm birth and low birth weight infants that we previously mentioned when we looked at how we count deaths in the US. Pre-term birth is defined as prior to 37 weeks gestation. Low birth weight is less than 5 pounds, 8 ounces.

Key among factors contributing to low birth weight babies is from smoking while pregnant. Exposure to second hand smoke is another risk factor.

Preterm births have similar risk factors but adding to that, low pre-pregnancy weight, insufficient weight gain during pregnancy, low socioeconomic status, intimate partner violence and untreated intrauterine infections. Pre-term births among Blacks are reported as 40 percent higher compared to the rate in Whites.

Accidents (suffocation and drowning), sudden infant death syndrome or more broadly sudden unexpected infant death, pregnancy complications come next among causes.

Considering the rates of low birth weight and pre-term babies, we should also note that in the US, in vitro fertilization creating multiple gestation pregnancies add to the issue. These pregnancies are less likely to continue to term so there might be a layered affect somewhat unique to the US.

Compared to singleton births, the mortality rate for twins is four times and for triplets 12 times greater.

In the developed world, infant mortality rates are consistently higher in the minority populations (Atlas).

Maternal Mortality

Next we will focus on maternal deaths.

Risk factors for maternal mortality, according to the CDC, are hypertension, diabetes, chronic heart disease, race, insufficient hospital care, untreated infections and insufficient prenatal care.

Dr. Feldman, our former Health Commissioner, states that in Indiana, 15 percent of maternal deaths received no prenatal care and 50 percent of maternal deaths lacked early prenatal care.

Dr. Feldman further offers the statistic that drug overdose is the cause of 30 percent of maternal deaths. The Mass General numbers Feldman cited were the deaths between 1999 and 2019.

Immediate causes of maternal death include: excessive bleeding, infection, heart disease, suicide and drug overdose according to a *Journal of the American Medical Association* article published July 10 of this year.

They separated out regions of the country and racial and ethnic groups. The largest percentage increase in maternal deaths were for American Indians and Alaska Natives. Second largest increase was in white mothers in Georgia, Indiana, Louisiana, Missouri and Tennessee.

In Indiana, it is mothers in rural counties who make up the largest number of maternal deaths. (McCloskey)

Readmission to the hospital after delivery is 80 percent higher in Blacks compared to Whites and maternal mortality, as previously mentioned, is thought to be 3-4 times greater in Blacks v Whites.

According to Dr. Lauren Dungy-Poythress, obstetrician with IU Health who presented to a Fort Wayne audience June 15 of this year suggested that social reasons explained the race disparity; she cited factors affecting maternal health including: neighborhood/environment, community safety, education, social service resources and support, housing, employment/work environment, domestic violence, government policies (social, economic, health), income, transportation, food stability, police brutality, air/water quality, personal/family/friend experiences, hate crimes and microaggressions.

Other researchers suggest that there are more unknowns offering this example back to infant mortality: non-Hispanic white women who smoke have lower mortality rates than African American women who do NOT smoke. Smoking, as previously mentioned is a known risk factor during pregnancy.

A second example: The same scientists report foreign-born women of African descent outside the US have a lower mortality rate compared to African American women.

Population health, as you would imagine, is influenced by social and economic conditions. Pre-conception health is especially important and reports on the increasing rates of obesity in reproductive-age females is likely contributing to the problem as obesity is linked to gestational diabetes and maternal hypertension.

A July issue of *Epidemiology* points out that having children at a more advanced age combined with chronic health conditions worsens both infant and maternal mortality rates. Older, we know is NOT better in this instance. The CDC reports the average maternal age in the US is 27.3 years. On the subject of age, Dr. Dungy-Poythress suggested that it is "cumulative stress" which adds 10 years to the African American women's chronological age.

Statista Research Department recording maternal ages and trends over a 20 year period in the United States indicates declines in pregnancies in the 15-19 year old range.

But, for women in the 35-39 year old range, pregnancies rose 35 percent and in women 40-44, there was a 73 percent rise in pregnancies. Again, advanced age corresponds with common and chronic health conditions.

We have the medical know-how and capacity to have children at an older age but our older pregnant population starts pregnancy heavier and with it concomitant conditions: diabetes, heart disease, hypertension and so on.

On a personal note, I can say that my own label as a geriatric pregnancy, defined as after the age of 35, has been renamed today as advanced maternal age pregnancy. Renaming the issue, though, doesn't change the increased likelihood of complications.

According to IU public health professor McCloskey, Indiana has the 10th highest maternal death rate in the US and highlights the dismal number for Black infant mortality. In response, Indiana University, gives an eight-week training course to medical students called Implementing Conversations to Advance Racial Equity - ICARE.

Mental health issues which include mood disorders like postpartum depression seem to be more prevalent, That is often layered with social isolation, lack of social support, poverty, lack of transportation or health care providers.

Opioid use during pregnancy increased four-fold in the period from 1999-2014. While this is old data, it's hard to imagine, in our current climate, that drug use has decreased significantly and we might guess this figure is higher today. Estimated in this article was that 30 percent of maternal deaths could be due to overdose or suicide.

In a similar fashion, a commentary article in the journal *Pediatrics* (vol 146, no 50) the authors use the term social determinants of health and list them as:

“maternal health, quality of and access to medical care (prenatal and hospital), socioecomic conditions, public health practices, birth defects, preterm birth and low birth weight and pregnancy complications and injuries”.

Issues that are currently in the news and potentially affecting infant and maternal mortality rates, but beyond the scope of this paper include: hospitals closing maternity units (often in rural areas). As mentioned, rural settings have worse infant and maternal mortality rates than urban centers. In August, Parkview announced they were closing two area birthing units.

Other issues include inadequate nurse staffing of units, change in abortion laws, COVID 19 illness and vaccines, single motherhood, telehealth, and in vitro fertilization.

That begs the question: Are we doing anything in the United States to address the known issues?

Potential Solutions

While we can accept that this is a national problem, I believe the most impactful solutions are local.

With a brief online search, we can see Indiana offers free prenatal services under the Pregnancy Promise Program; Hoosier Healthwise covers prenatal care without any co-pays.

IU Health offers their Family Vitality Initiative for free. We can assume most health systems within the state offer similar services. Prenatal care IS available to all who want it.

We will look at three specific local programs and see what is at the heart of them; what has made them potentially successful in helping reduce mortality for both moms and babies.

Briana Oser, writing in the *Washington Examiner* in July of this year, explains one Indiana program: **My Healthy Baby**.

My Healthy Baby is described as “holistic support”. Its intention is to go beyond financial help and supply human connections. My Healthy Baby connects pregnant women to a mentor from day one through one year post-delivery. A person who lives in the same community and meets with the mother one-on-one. Financial resources, in Oser’s opinion, are only a part of the story.

The program began in January of 2020 and coalesces resources of the Indiana Department of Health, Family and Social Services Administration and the Department of Child Services. My Healthy Baby is available in all 92 Indiana counties and serves women on Medicaid. So, it is a connector to the multitude of other services offered like in-home visits from health care professionals, mental health support for both moms and dads.

A second local program is sponsored by **Healthier Moms & Babies**, an organization headed by Paige Wilkins who pointed out in a June 2023 *Journal Gazette* article identifying diapers as a critical issue. Diapers are an item that many of us would not consider at our 30,000 feet view.

Lack of clean diapers increases the incidence of urinary tract infections, among other adverse health issues including maternal mental health. Wilkins stated that the number one cause of maternal mortality in Indiana is mental health related problems and diapers are one worrisome issue that the local community can solve. So, one of many programs of Healthier Moms & Babies focuses on diaper collection and distribution.

Breast feeding could be an effective third local topic. In a study summarized in a July issue of *Science Daily*, the importance and value of breast feeding was highlighted with regard to infant mortality. In the post perinatal period, that was defined in this study from day 7 to day 364, breast feeding was a protective factor.

This was a study of 10 million infants born between 2016 and 2018. The calculation was that breast feeding was associated with a 33 percent reduction in infant mortality.

The American Academy of Pediatrics, World Health Organization along with other authorities note that breast feeding is the “preferred normative nutrition”. As you might guess, the disparity among regions of the country have varying rates of initiation of breast feeding, Those regions where more mothers breast feed, northeast and mid-Atlantic US have lower rate of infant mortality compared to the southeast US which has the lowest breast feeding rates.

In 2019, initiation of breast feeding in Indiana was a healthy 86 percent but it fell to only 21 percent at 6 months which a key timeline measure.

One of the researchers of this study, Ardythe Morrow, University of Cincinnati College of Medicine said, “Though breast feeding is widely recommended, nevertheless, some may still consider it to be of minor importance. We hope that our findings will change the narrative.”

The emphasis on breast feeding doesn’t lend itself to legislation, and, like the other two efforts I mentioned it must be a local effort.

Let us return to the *Journal Gazette* article, A Matter of Life and Death, from July 1 of this year. Author McCloskey writes:

The publicized death of Tori Bowie - the Olympic gold medal track star who died alone in her bed of eclampsia (stroke) as she delivered her stillborn baby - highlights the tragedy of maternal mortality in America.

Bowie was Black and lived in Florida; McCloskey highlighted racial differences and continues at the end of the article::

Tori apparently rejected prenatal care, which could have saved her life by flagging the pre-eclampsia. The majority of women do take advantage of prenatal visits and rely on hospitals for delivery.

The rest of this story? Bowie, additionally, had a diagnosis of bi-polar disorder. She was seen sleeping on the floor in a rec center in Florida, another time on a park bench near her house. Concerned neighbors contacted her sports agent who posited that Bowie did not need help. Bowie died in her 8th month of pregnancy; she weighed 96 pounds and was 5'9".

This IS a tragic story. Wouldn't this story be just as tragic if the woman was not a gold medal Olympic track star?

Summary

In summary, America's infant and maternal mortality rates ARE a problem. But like most serious human health issues, getting to zero is likely unrealistic.

Secondly, we are unable to honestly compare America's infant and maternal mortality numbers with those published by other developed nations because of a lack of standardization in counting. By sensationalizing the issue through headlines and cherry-picked anecdotes, it seems as if we are ignoring the numerous resources that may improve our mortality numbers.

On your tables is a publication from the St. Joseph Community Health Foundation - a directory highlighting what is in our own community. I would guess many of you know of and support these efforts.

Seventy-one pages of local resources: free supplies, phone apps, websites, organizations and agencies, translation services, mental health counseling services, and immunization clinics are just a few. Help IS available.

I don't believe there's a lack of caring or concern, I don't believe there's a lack of money being invested or a lack of legislation. And I don't believe a booklet is the answer.

What I think is missing from the conversation is the human network. Our efforts should be focused on making connections.

Programs and resources are available but it will take another mom, a peer, a friend, a relative, an employer, a neighbor, or maybe you, in addition to health care professionals who will connect moms and babies to these potentially life-saving services.

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