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# 2018 Annual Report to the Community

St. Joseph County Department of Health-Fetal Infant Mortality Review Program  
August 1, 2019



- **Welcome & Introductions**
- **Infant Mortality Rate Comparisons**
- **FIMR Data 2015 – 2018 – Telling the Story**
- **Recommendations and Community Action**
- **Questions and Discussions**



# Infant Mortality in the World and USA.

# Infant mortality

is an internationally recognized measure of a society's ability to provide food, housing, income, education, employment and healthcare to citizens.



**Infant mortality is  
measured by the:**

**Number of Deaths  
of infants  
up to 1 year old**

**Per  
1000 Births**

# Afghanistan

## Infant Mortality Rate - 110/1000

- Decades of armed conflict
- Among lowest living standards in the world.
- Shortages of housing, water, electricity and jobs.
- 34.9 million people.
- 54.5% Poverty
- 80% speak Afghan Persian or Dari
- 99.7% are Muslim
- 25% Urban
- 38.2% Literacy Rate.
- No universal health care



# Finland

**Infant Mortality Rate –  
2.5/1000**

- Peace
- Highly industrialized, largely free market economy.
- 5.5 million people
- 6.5% Poverty
- 87.9% speak Finnish
- 71.9% Lutheran, 26% unspecified
- 85% Urban
- Universal Health Care
- Paid Family Leave

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html>



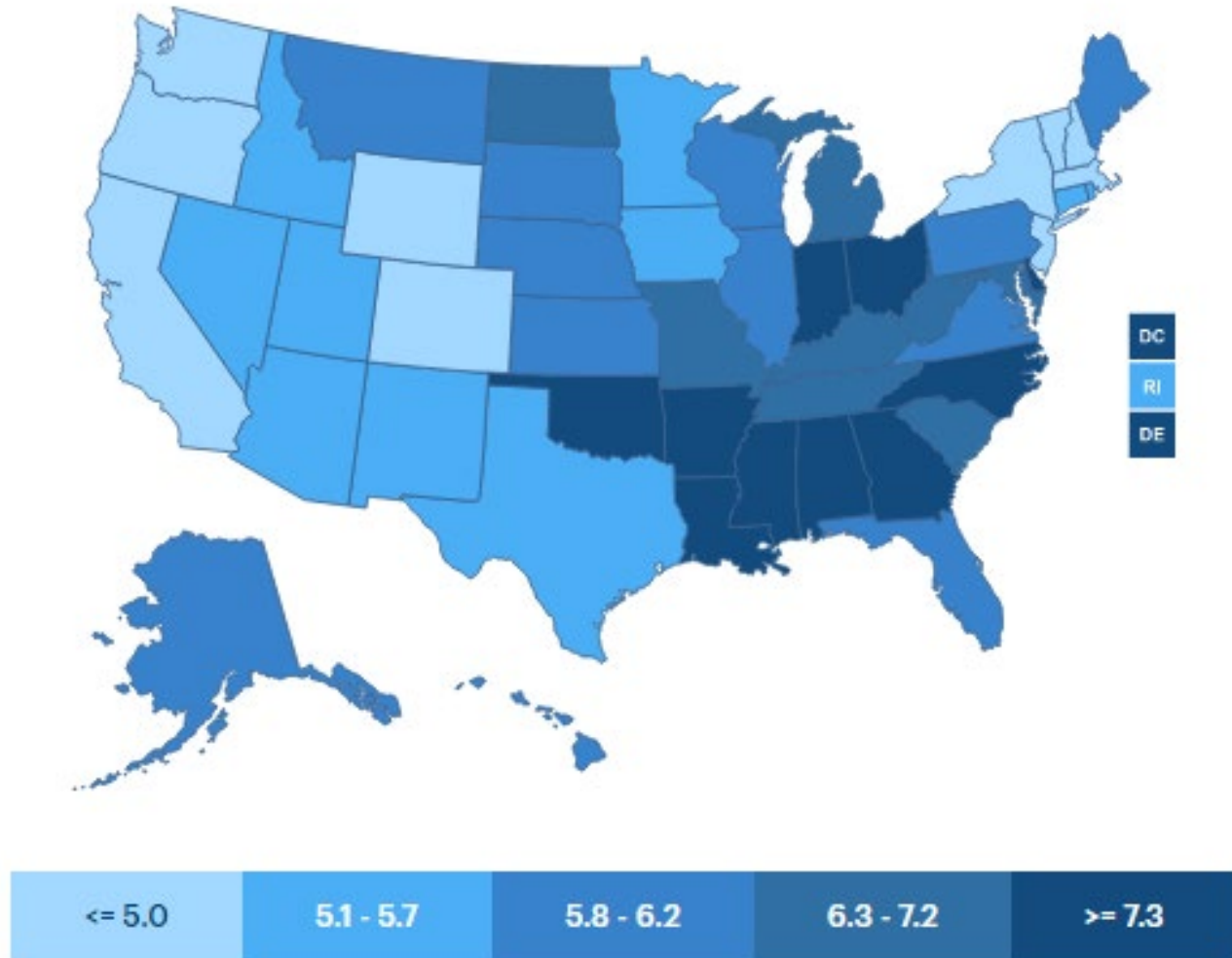


# United States

## Infant Mortality Rate - 5.8/1000

- Remains the most technical, powerful economy in the world, but falling behind China as investment in infrastructure, science, industry and human capital lags.
- 329.3 million people
- 15.1% Poverty
- 72.4% white, 12.6% black
- 78.2% English, 13.1% Spanish
- 46.5% Protestant, 20.8% Catholic, 22.8% unaffiliated.
- 82.3% Urban.
- No universal healthcare
- No universal paid leave

Number of infant deaths (before age 1) per 1,000 live births (2-year average)



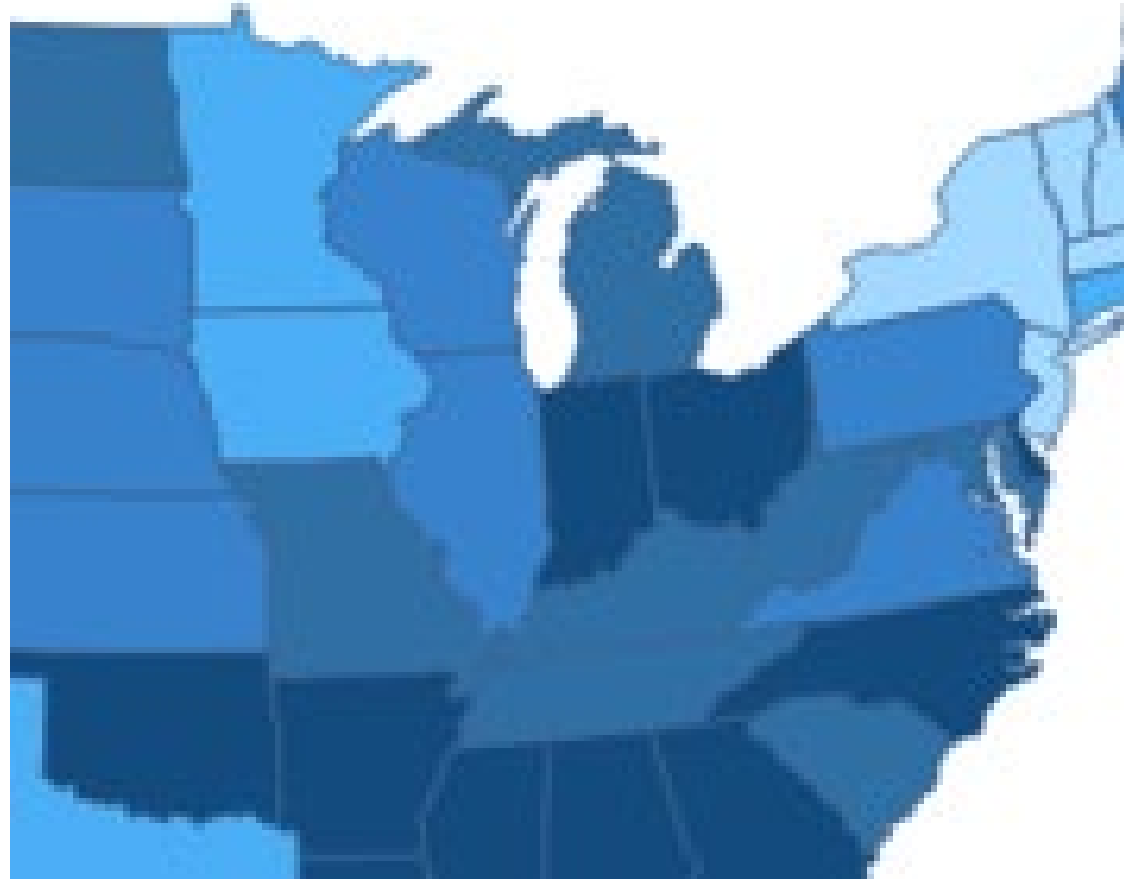
Source:

<https://www.americashealthrankings.org/explore/annual/measure/IMR/state/ALL>

# Indiana

**Infant Mortality Rate -  
7.3/1000**

NYC	4.6
Minnesota	5.1
Iowa	5.1
Illinois	6.2
Wisconsin	6.0
Michigan	6.5
Ohio	7.3



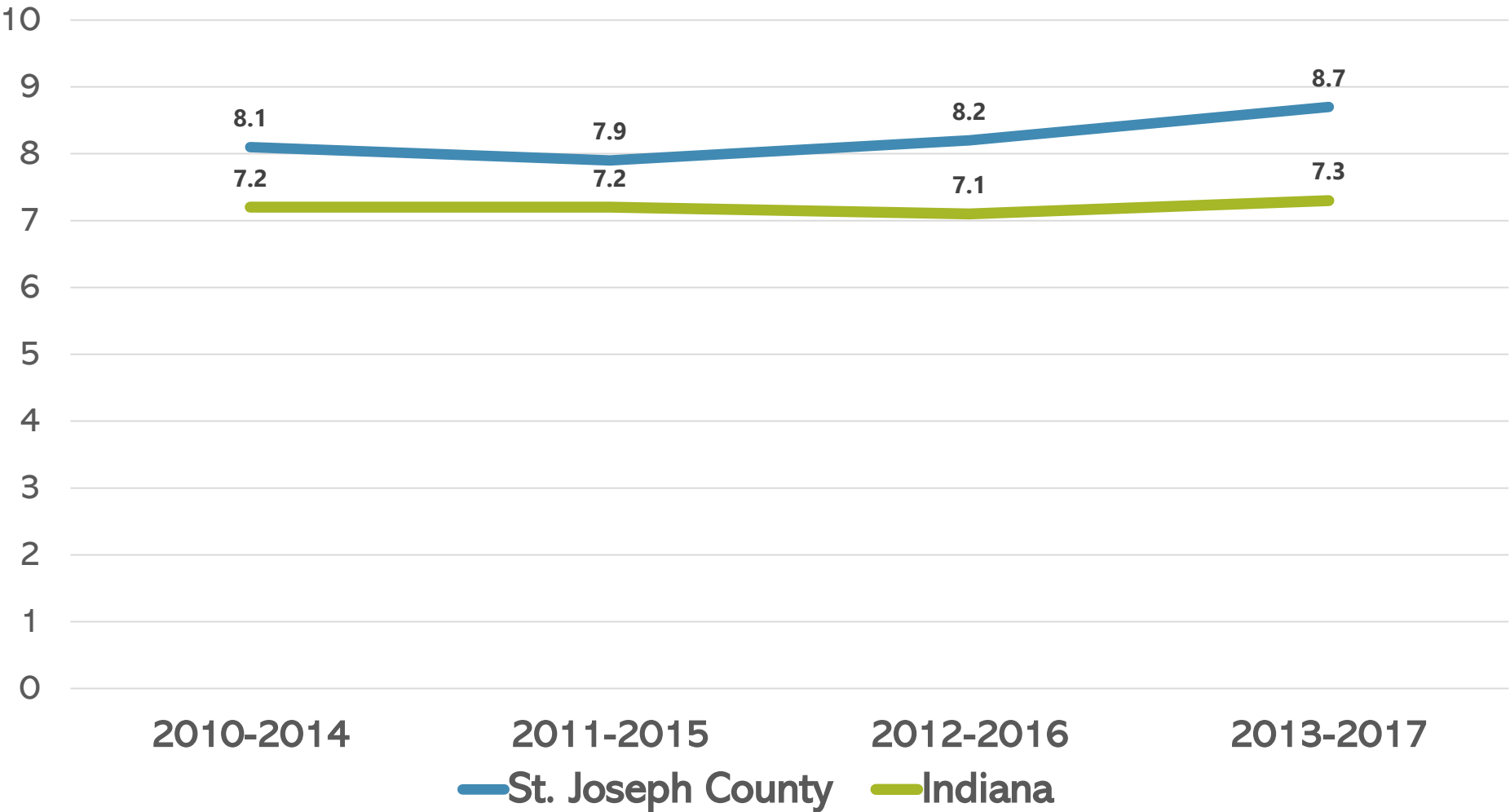
**Goal to be Best in the  
Midwest by 2024  
Governor Holcomb**

<https://www.americashealthrankings.org/explore/annual/measure/IMR/state/ALL>



# Infant Mortality Rate in St. Joseph County and Indiana using 5 year periods of time

Source – Indiana State Department of Health

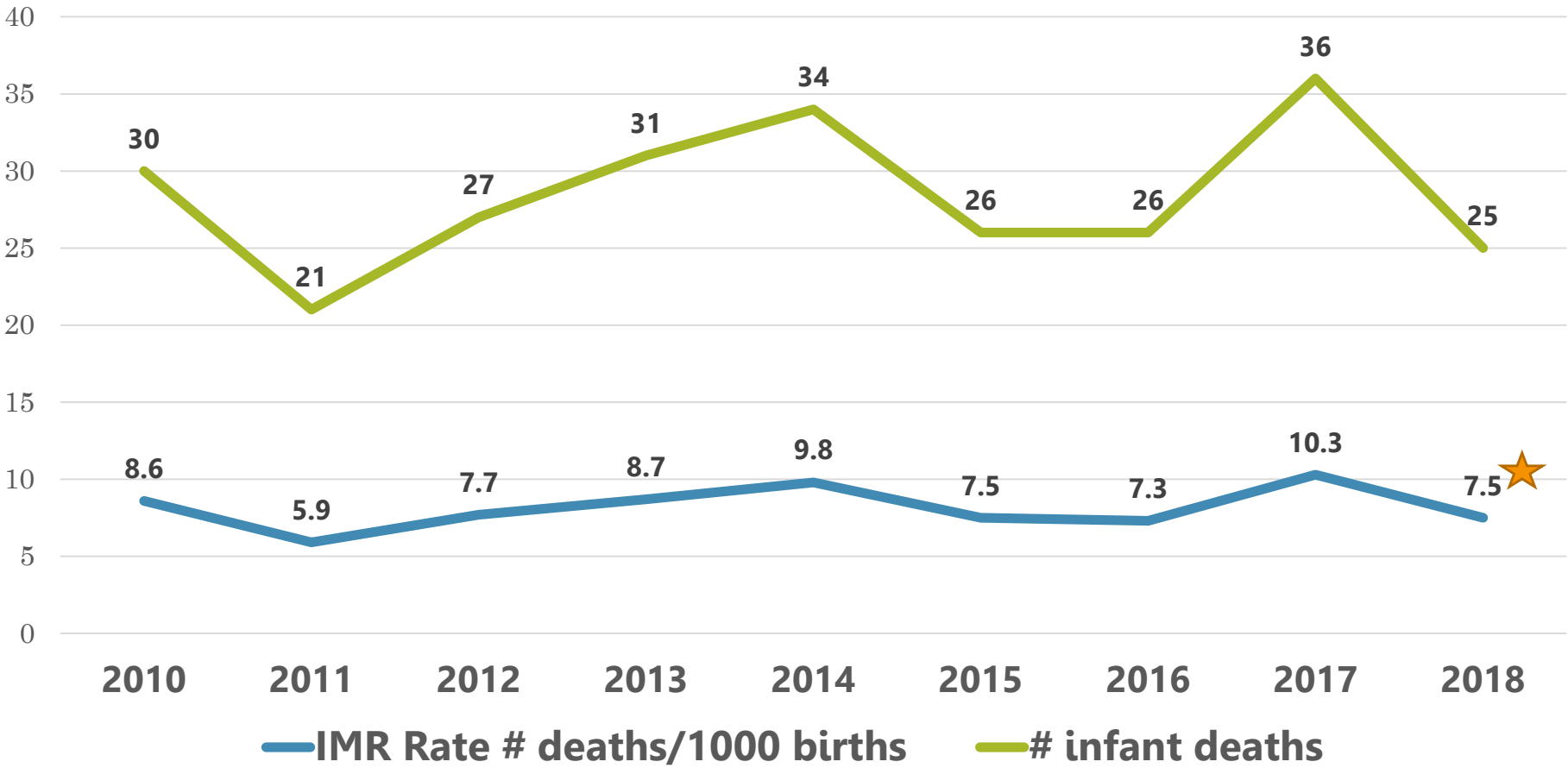


# St. Joseph County 2010 -2018

ISDH Mortality Data

★ 25 deaths/3298 SJC births x 1000  
Tentative based on available data.

### IMR Rate and # Infant Deaths



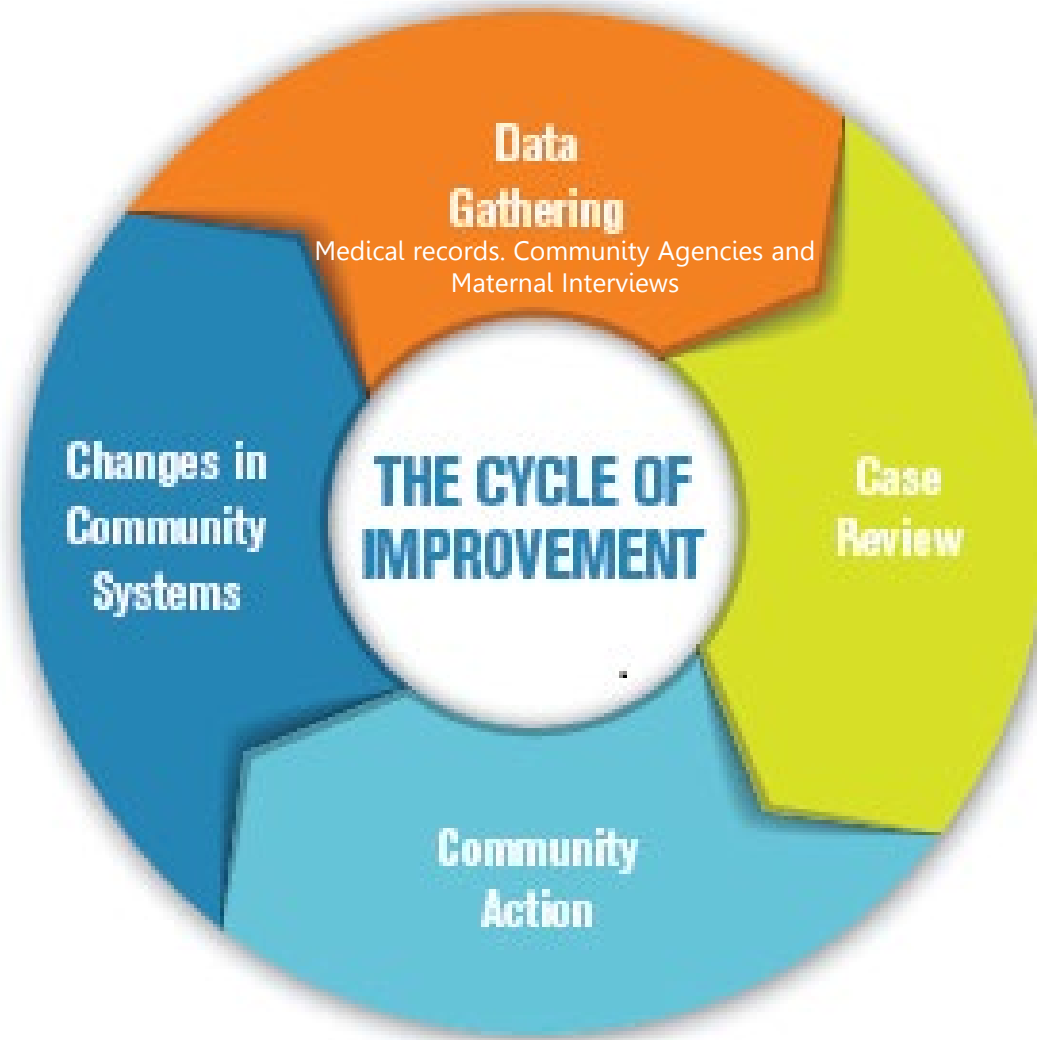


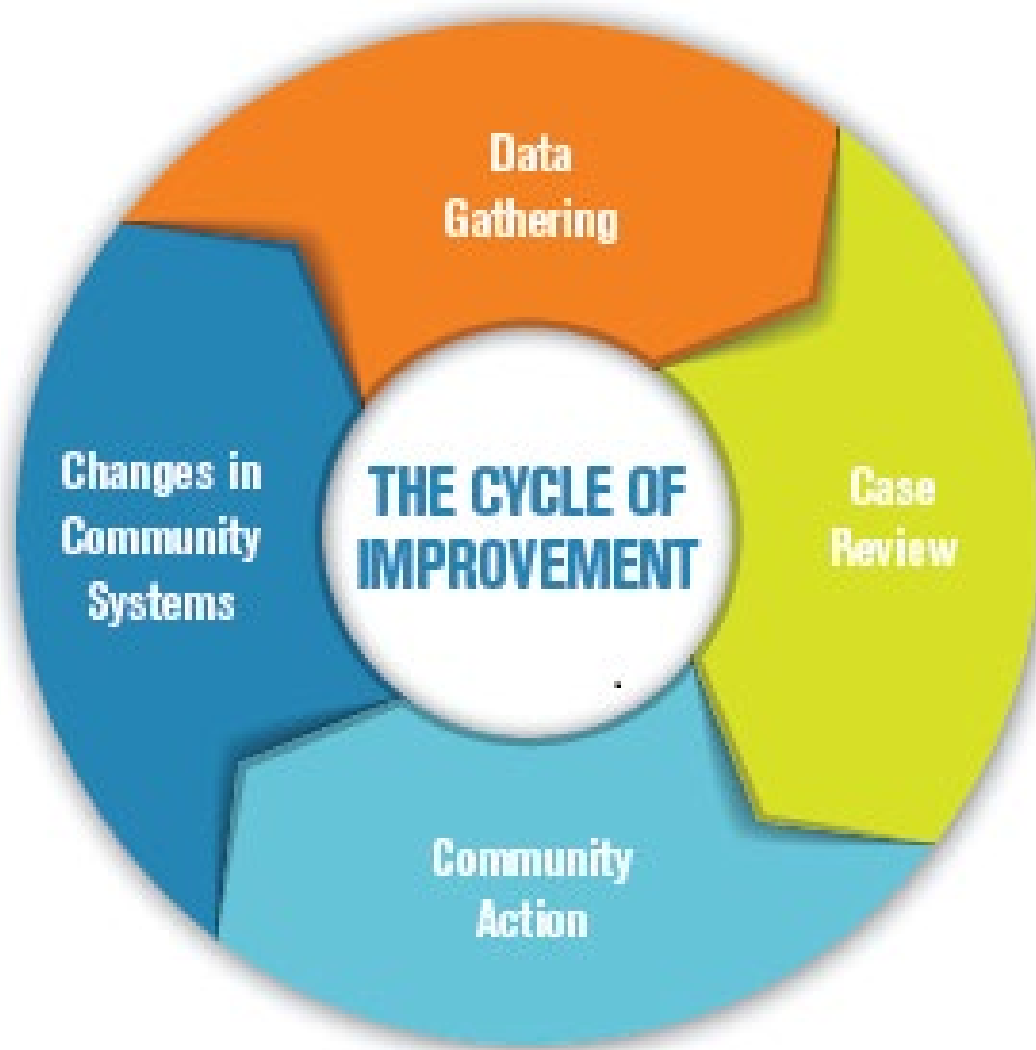
# St. Joseph County FIMR Data 2015-2018

# The FIMR Process

Brings together key members of the community to:

1. Review information from individual cases of fetal and infant death
2. To identify factors associated with those deaths.
3. Establish if they represent system-level problems or gaps in care that require change.
4. Develop recommendations for change.
5. Assist in the implementation of change.
6. Determine community effects.





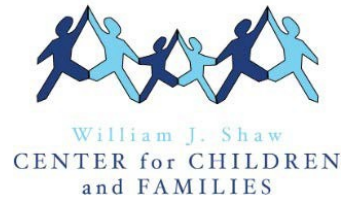
Nationwide evidence demonstrates that FIMR is an effective perinatal systems intervention.

The presence of FIMR appears to significantly improve a community's performance of public health functions as well as enhance the existing perinatal care system's goals, components and communication mechanisms.

Association of Maternal and Child Health Programs - 2008  
<http://www.amchp.org/AboutAMCHP/Newsletters/Pulse/Archive/2008/Sept08/Pages/feature1.aspx>

Neonatology  
Obstetrics  
Pediatrics  
Maternal Fetal Medicine  
Nursing  
Social Work  
Community Health  
Home Visiting  
Navigators  
Education  
Bereavement  
Community Resources  
Government

# St. Joseph County FIMR Team



St. Joseph County Child Fatality Review Team

Thank you to  
these  
businesses.





# Definitions

## Perinatal

Generally refers to 20 weeks of completed pregnancy to 7 days after birth

## Perinatal Risk

Chronic maternal illness, certain maternal infections, toxin exposures and nutritional deficiencies. Risk factors in the perinatal period include pregnancy related complications, prematurity and low birthweight and infection exposure during pregnancy and at the time of birth.

## Sudden Unexpected Infant Death

is the unexpected death of an infant less than one year of age and includes Sudden Infant Death Syndrome, Accidental Asphyxia or Strangulation and Undetermined causes.

## Congenital Anomaly

or birth defect. Can be structural or functional anomalies that occur during intrauterine development and are identified prenatally, at birth or later in life.

## Definitions

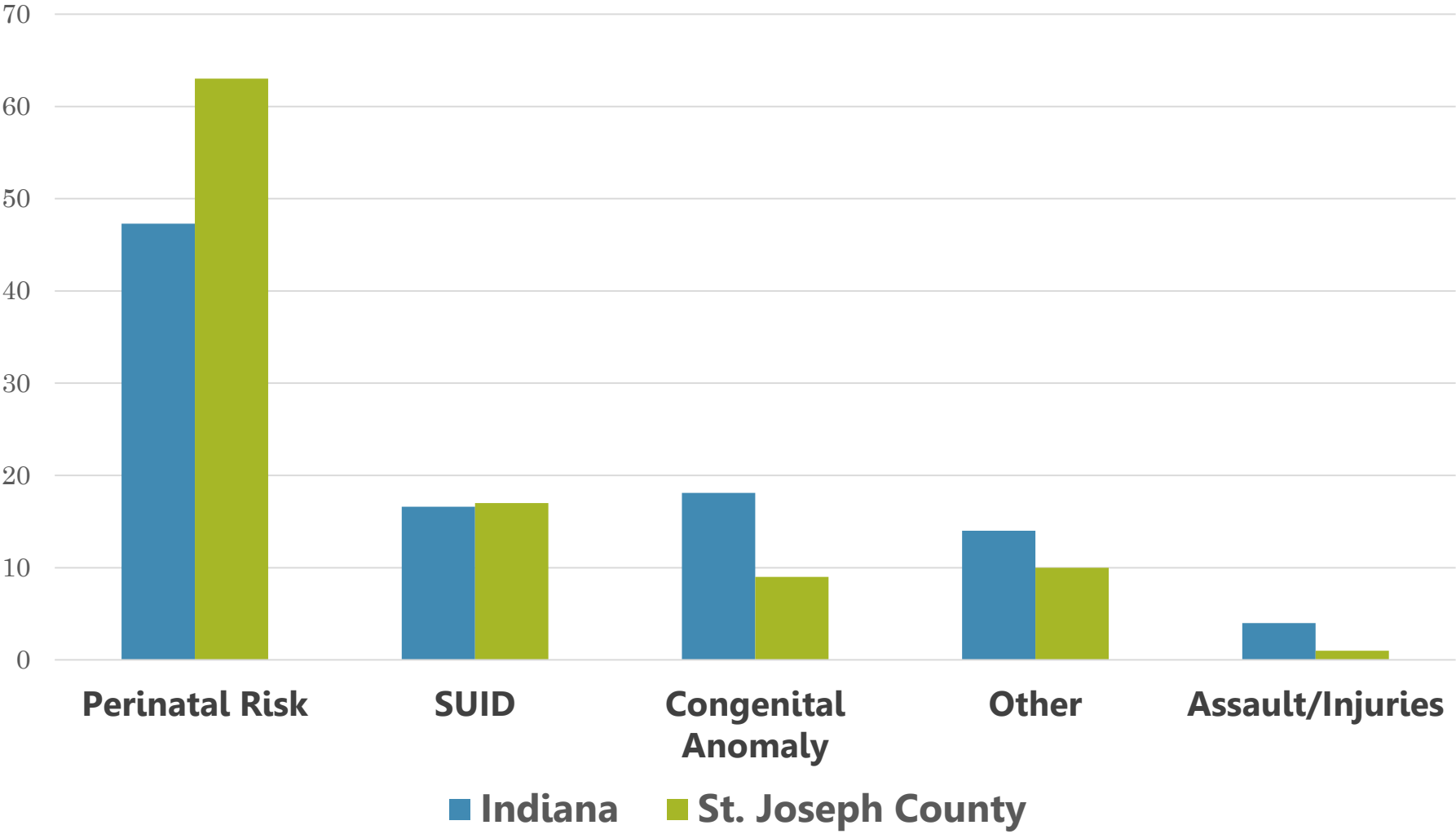
### Infant

Live birth at any gestation through 1 year of age

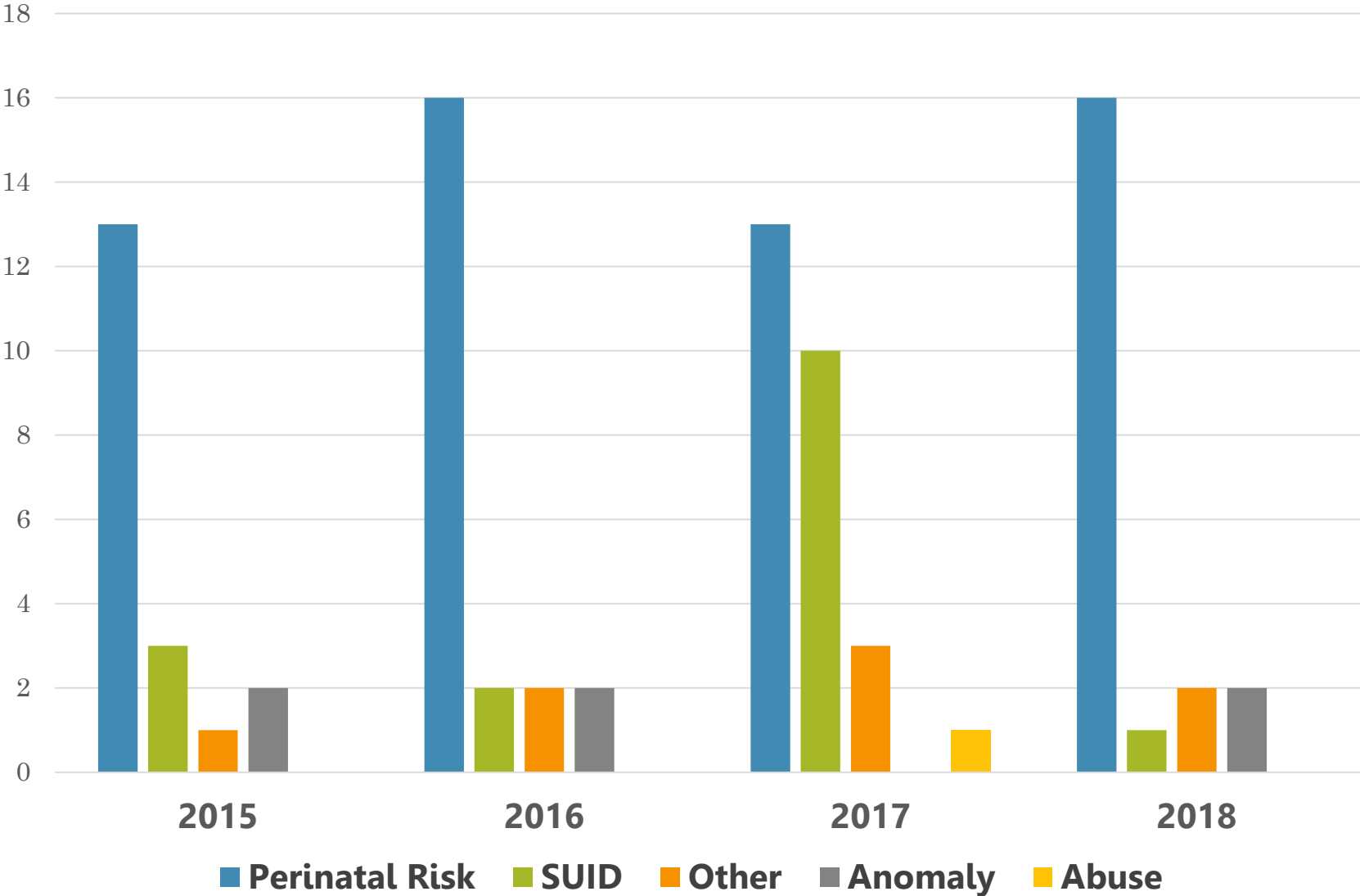
### Fetal

A stillbirth after 20 weeks

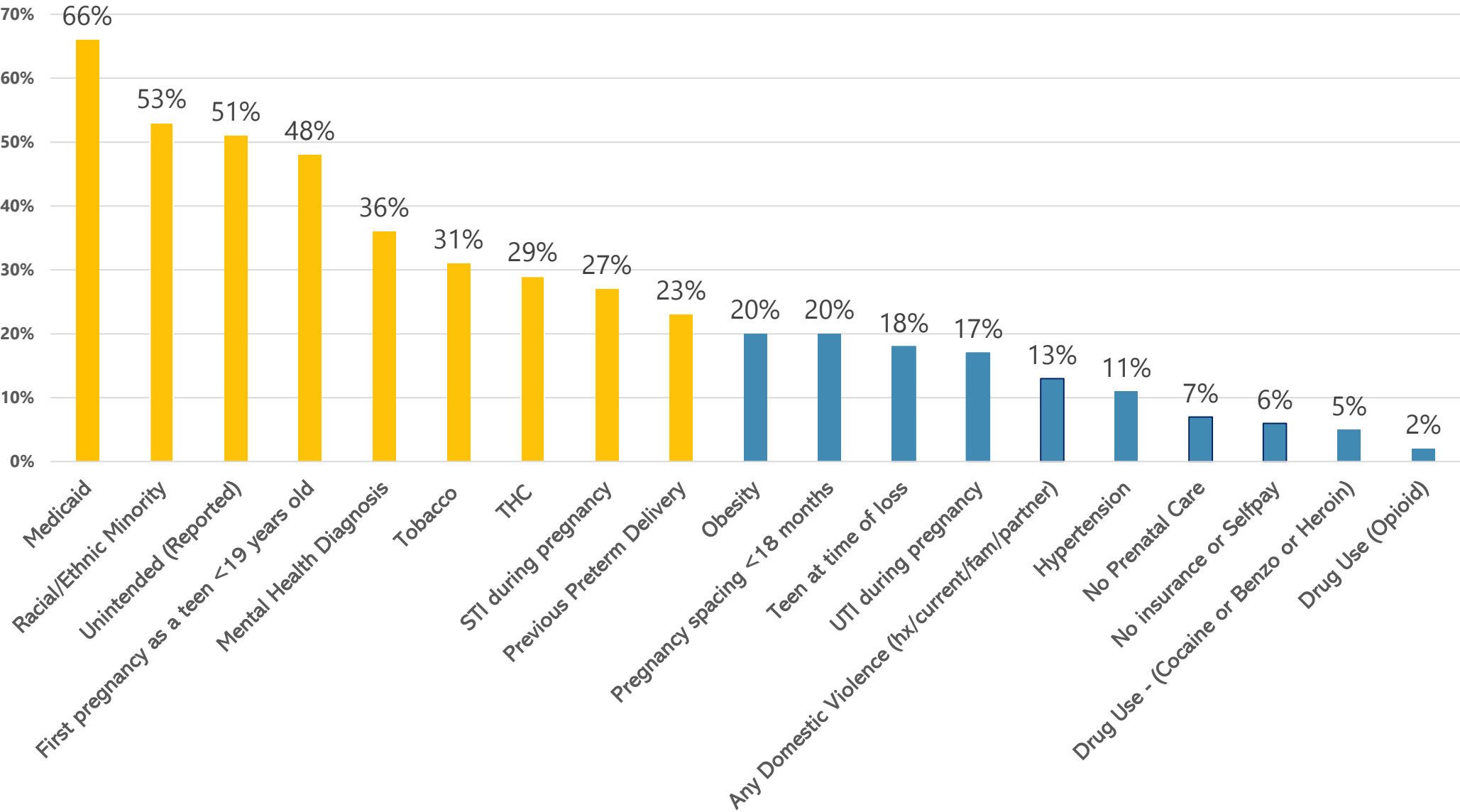
# Comparison of Main Causes of Infant Mortality St. Joseph County and Indiana 2015-2018



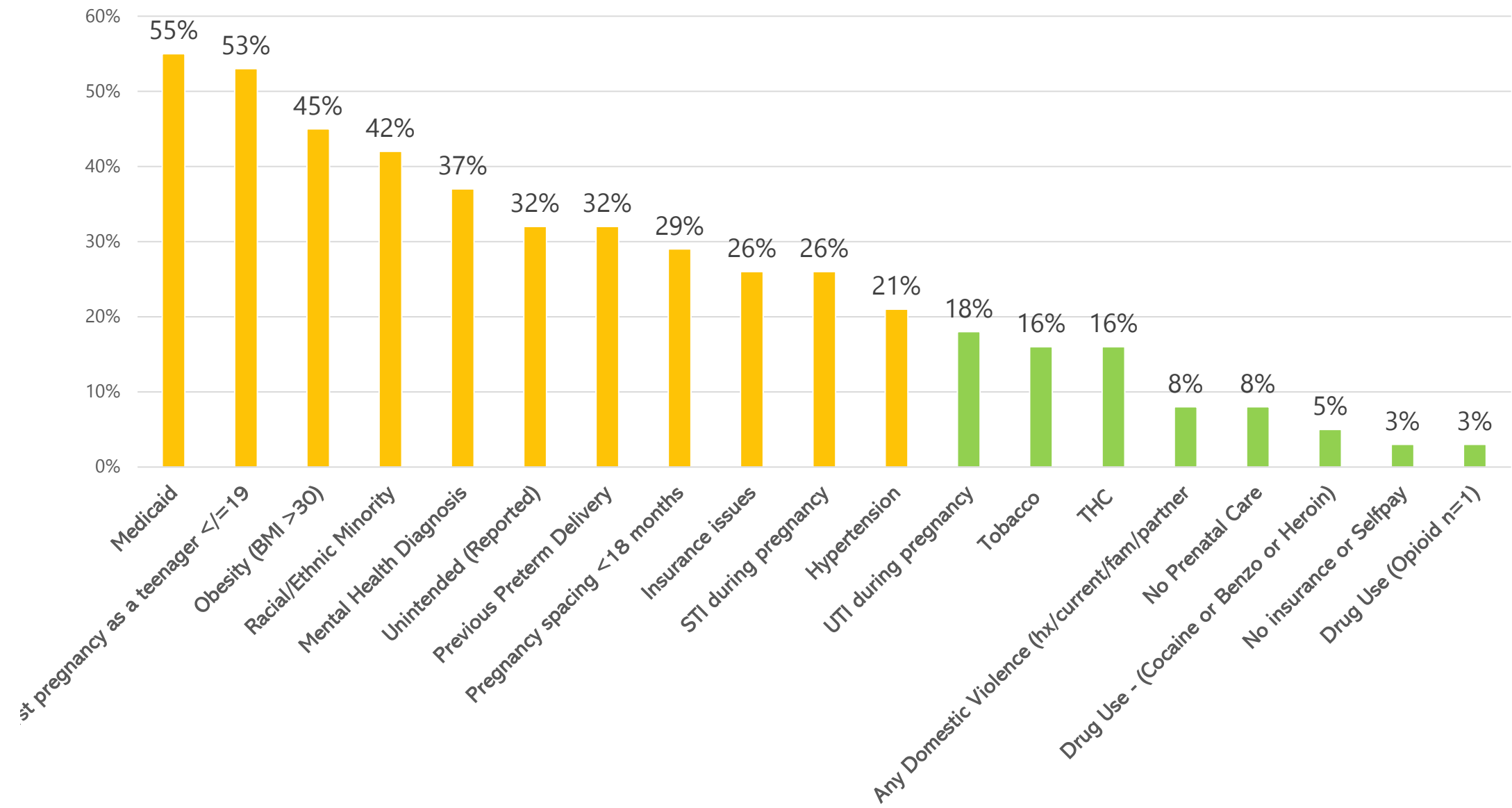
# 2015 -2018 St. Joseph County – Reviewed Cases by Category and Year



# 2015 – 2018- 84 Reviewed Infant Cases: Factors Present



# 2017 – 2018 Reviewed Fetal Cases: Factors Present





# Telling the Story of Infant Mortality in St. Joseph County





Each year in Indiana,  
600 babies die before  
their first birthday

# 3 reasons 600+ Indiana babies die each year and how to stop it

**IndyStar.**

INDIANAPOLIS -- Every year, roughly 600 Hoosier babies die before they get to celebrate their first birthday.



**RTV6**  
INDIANAPOLIS



**88%**

of infants were born before 37 weeks

**29%**

were born before the age of viability (23 weeks)

**42%**

survived less than one day

**71%**

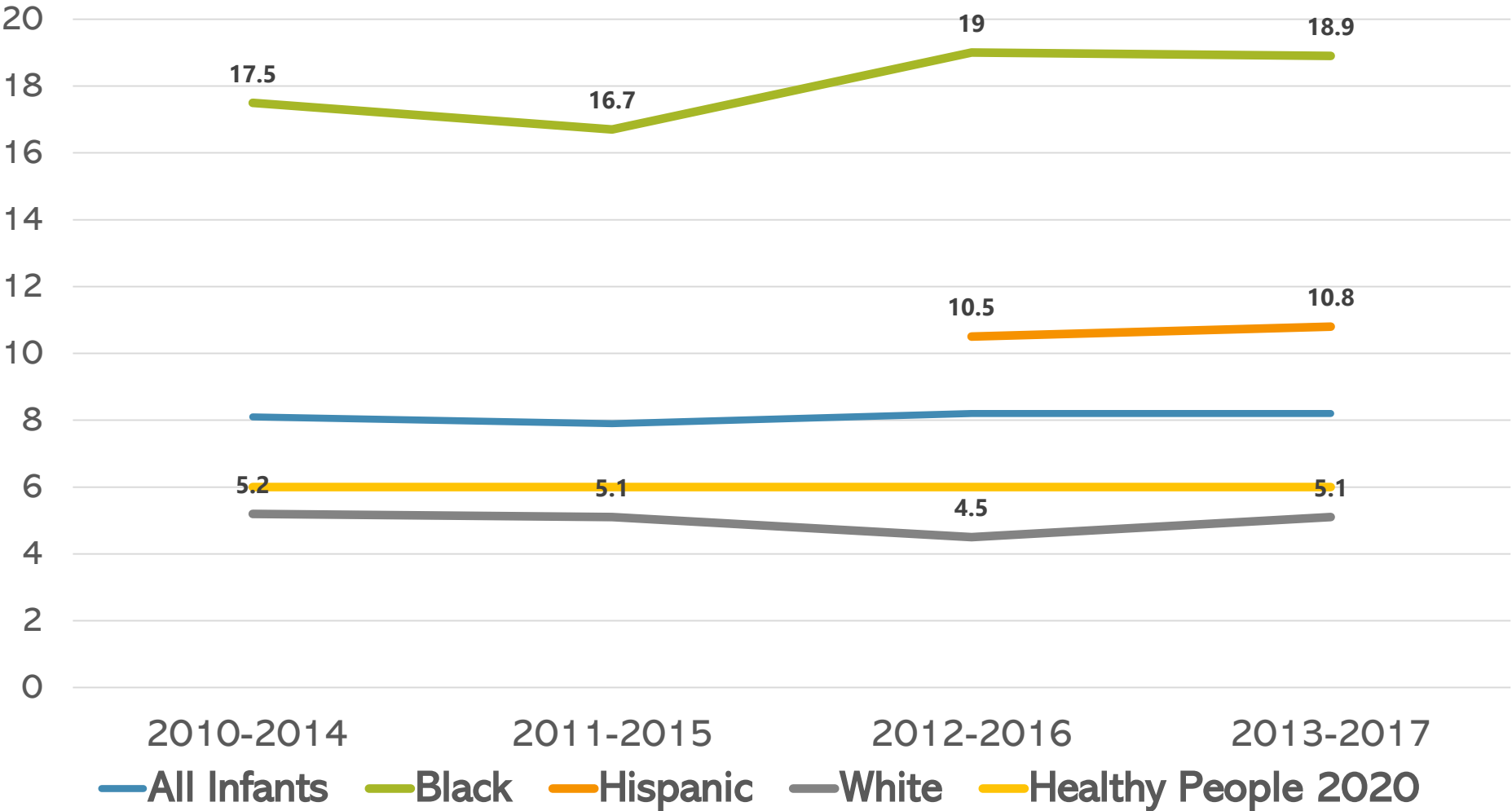
never went home from the hospital



Since 2015, 84 babies died in  
St. Joseph County.

Most of these babies were born prematurely  
and never went home from the hospital.

Infant Mortality Rate by Race in St. Joseph County  
Over last 9 years using 5 year time frames.





**The New York Times Magazine**

## **Why America's Black Mothers and Babies Are in a Life-or-Death Crisis**

The answer to the disparity in death rates has everything to do with the lived experience of being a black woman in America.

By LINDA VILLAROSA APRIL 11, 2018



## **Racism-induced stress linked with high black infant mortality rates**

<https://www.hsph.harvard.edu/news/hsph-in-the-news/racism-induced-stress-black-infant-mortality/>

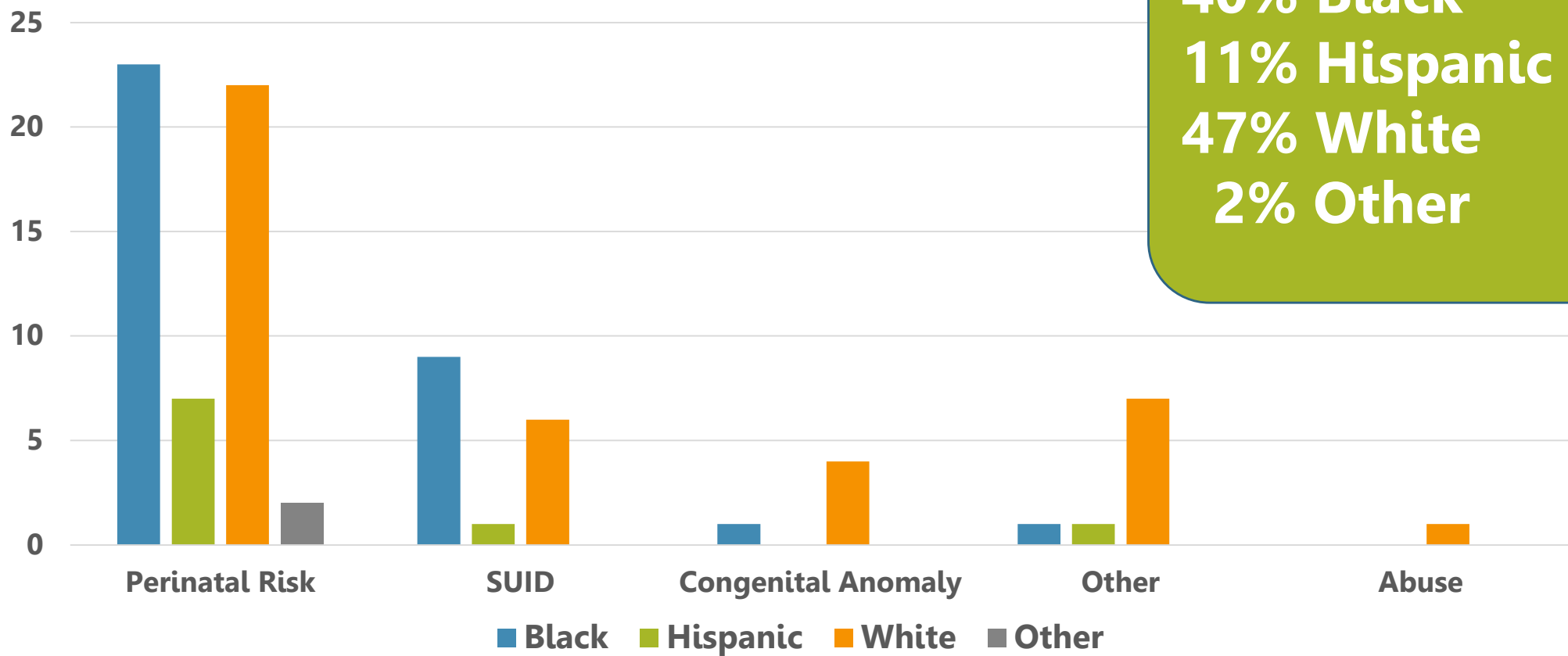


## **How Racism May Cause Black Mothers To Suffer The Death Of Their Infants**

<https://www.npr.org/sections/health-shots/2017/12/20/570777510/how-racism-may-cause-black-mothers-to-suffer-the-death-of-their-infants>

# **Racial Disparity for Infant and Maternal Mortality**





## Infant Mortality Reviewed Cases 2015 – 2018 by Categories and Maternal Race

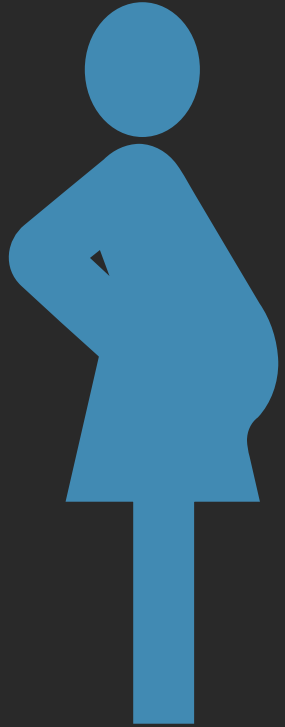




## Racism and Infant Mortality

<https://www.nytimes.com/2018/04/11/magazine/black-mothers-babies-death-maternal-mortality.html>

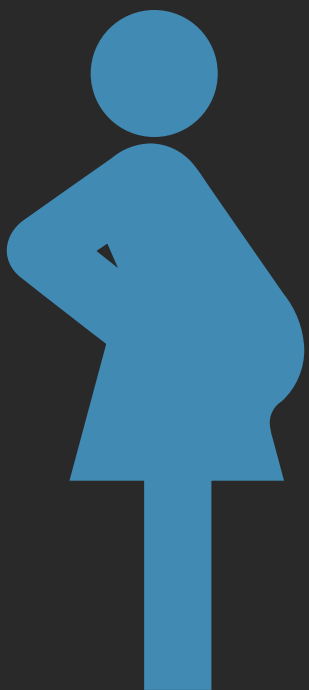
- Nationally, the infant mortality rate for black infants is two times the rate of white infants. (4.8 vs 11.7) A wider disparity than in 1850.
- Majority of premature births are to black mothers.
- Growing consensus that racial discrimination over a lifetime is a root cause.
- Previously thought to be poverty & lack of education.
- St. Joe County, Medicaid infant mortality rate is 7.1
- But, a college educated black woman is more likely than a white woman with a high school degree to deliver prematurely.



## Racism and Infant Mortality

<https://www.nytimes.com/2018/04/11/magazine/black-mothers-babies-death-maternal-mortality.html>

- One theory was genetics, but if that were true, then immigrant women from West Africa would have similar outcomes, but their rates but are more like white babies.
- What's different growing up black in the US is discrimination.

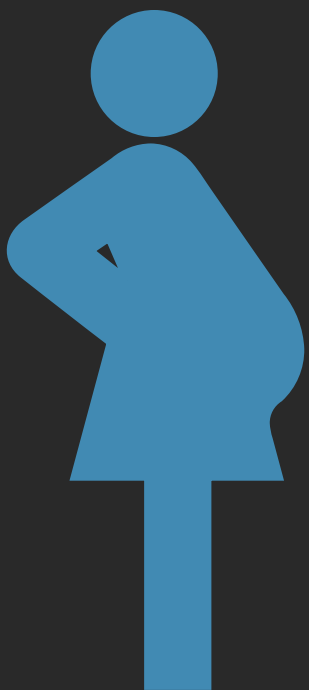


## Racism and Infant Mortality

## Disparities and Stressors

<https://www.npr.org/sections/health-shots/2017/12/20/570777510/how-racism-may-cause-black-mothers-to-suffer-the-death-of-their-infants>

- Employment
- Buying a home or a car
- Finding housing
- Getting an education
- With same education, tend to get less pay.
- 2004 Study in American Journal of Public Health found housing/income/health habits and discrimination was a better predictor of very low birthweight outcome than smoking cigarettes.



## Racism and Infant Mortality

## Disparities and Stressors

<https://www.npr.org/sections/health-shots/2017/12/20/570777510/how-racism-may-cause-black-mothers-to-suffer-the-death-of-their-infants>

Being called names.

Followed in stores.

High incarceration rates for men.

Disparities in sentencing, especially for drugs.

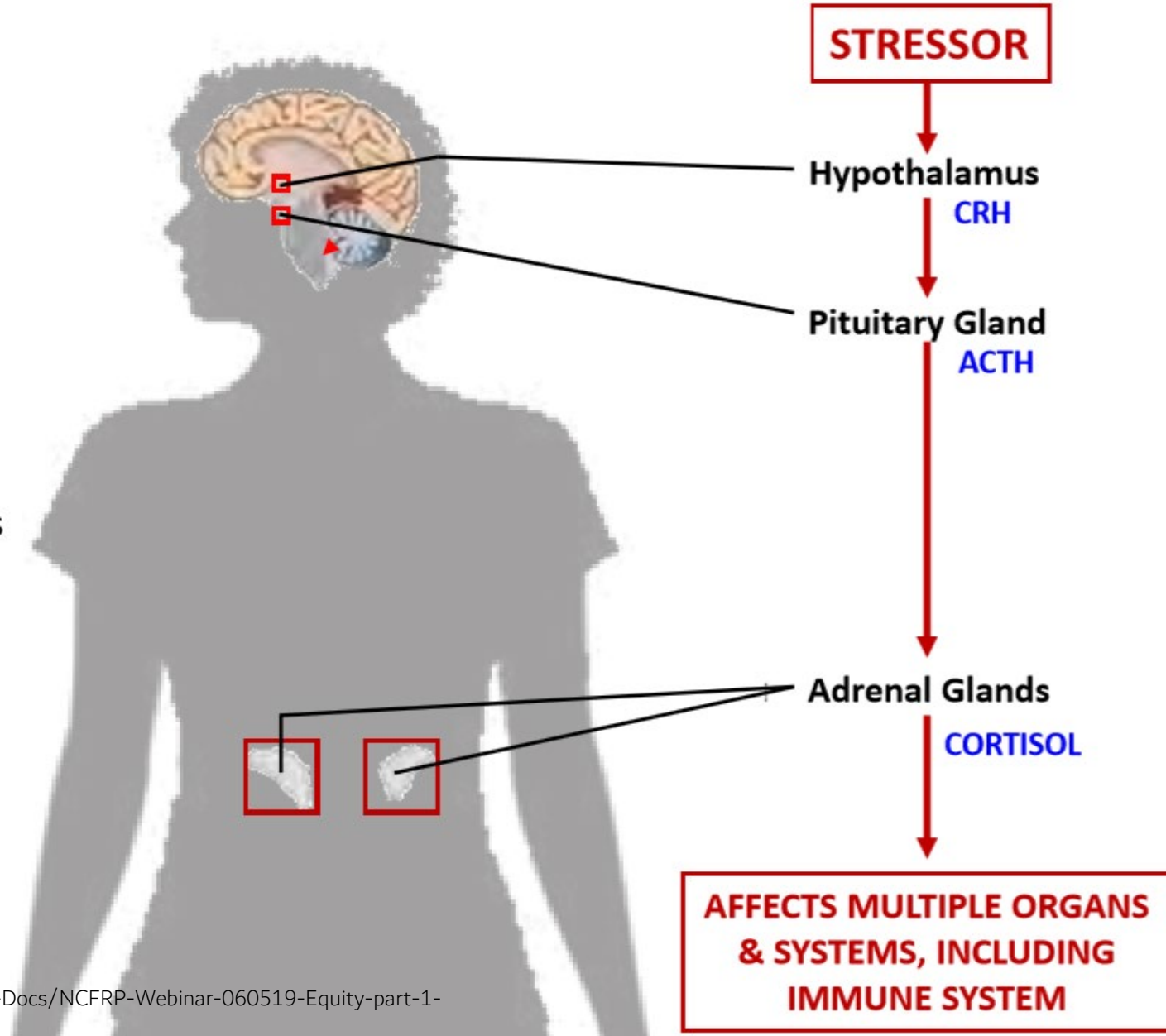
High unemployment for men.

Elevated stress hormones increase likelihood of premature labor

# The stress → PTB link: Biologically plausible?

## How does stress and cortisol contribute to pregnancy complications?

- Anxiety
- Depression
- Digestive issues
- Headache
- Heart Disease
- Sleep problems
- Weight gain
- Memory and concentration problems



# Prenatal Care Start\* by Race in Infant Mortality Cases

\*Known prenatal care start.

	Black	Hispanic	White
First Trimester	63%	70%	64%
By 14 Weeks	78%	77%	72%
By 23 weeks	92%	85%	87%
Began during the 3 <sup>rd</sup> trimester	7%	0	4%
None/Presented at Delivery	0	15%	9%
Unknown	3 cases	0 case	4 cases

## Impact of Public Policy

**Redlining** – public policy explicitly segregated every metropolitan area in the US and the effects endure today.



# GREATER SOUTH BEND AND MISHAWAKA

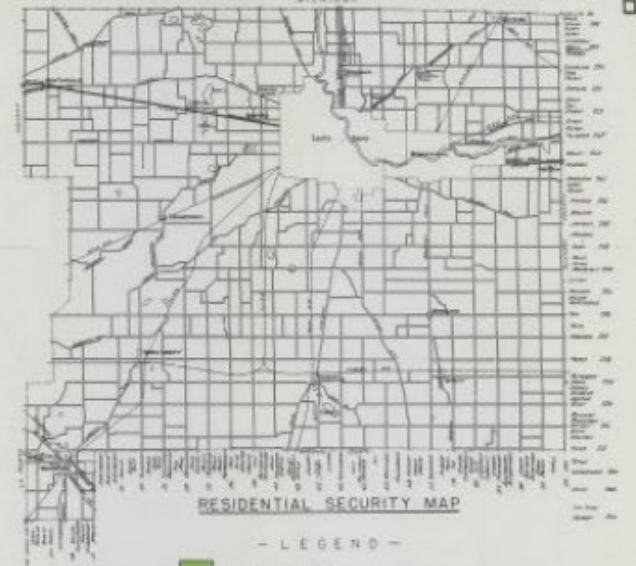
Scale 

Published by Louis V. Brugger  
South Bend, Ind.

Copyright 1935 by Louis V. Brugger

## CONVENTIONS

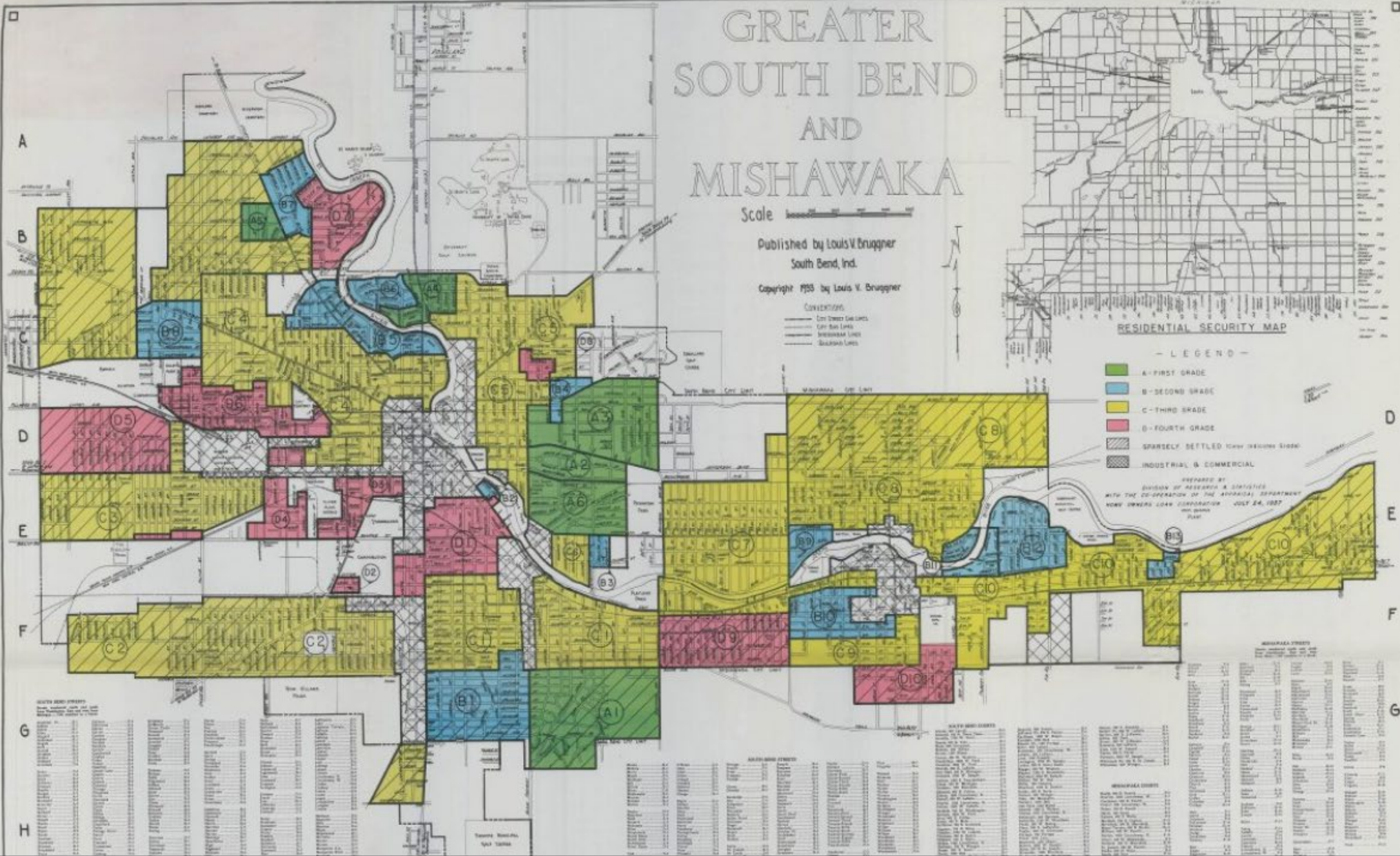
- City Street Line
- City Block Line
- Township Line
- School Line



## — LEGEND —

- A - FIRST GRADE
- B - SECOND GRADE
- C - THIRD GRADE
- D - FOURTH GRADE
- SPARSELY SETTLED (LOW DENSITY) SHOWN
- INDUSTRIAL & COMMERCIAL

PREPARED BY  
DIVISION OF RESEARCH & STATISTICS  
WITH THE CO-OPERATION OF THE AVALANCH DEPARTMENT  
NEW YORK LOAN CORPORATION JULY 24, 1937



**Prenatal Care is important  
but it won't be enough.**





## **We have to purposefully address Social Determinants of Health.**

**Health.....is more like a web of overlapping, constantly shifting influences, which include our environment, income, education, and social identity.**

**Because we see health through a curative lens, when we think we are talking about health, we are often actually talking about healthcare, and when we think we are investing in health, we are actually investing in doctors and medicines, rather than in improving the socioeconomic conditions that truly shape health.**

*Dr. Sandro Galea, Dean at the Boston University School of Public Health*

Photo credit New York Times Magazine

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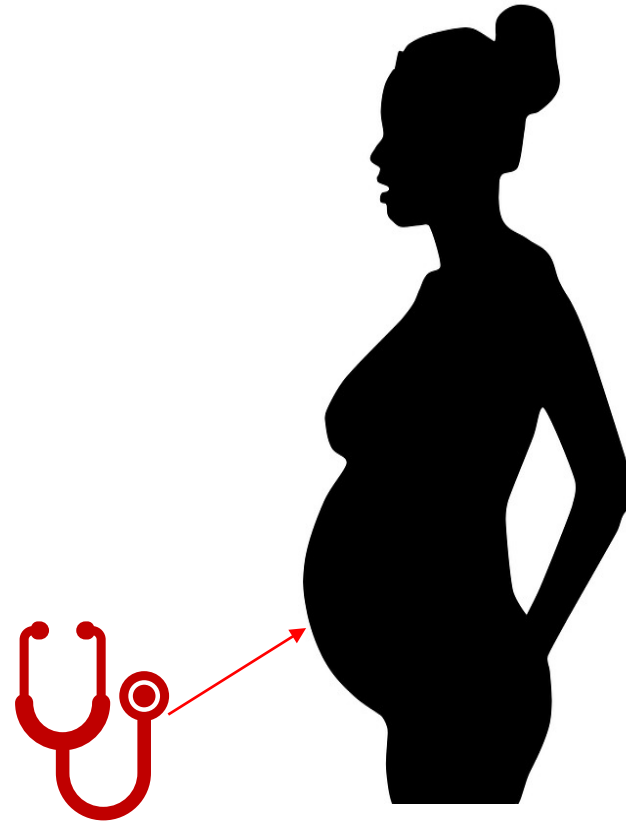
## Infant mortality

is an internationally recognized measure of a society's ability to provide food, housing, income, education, employment and healthcare to citizens.

# Resources for Health



# Resources for Health





# FIMR Recommendations and Community Action

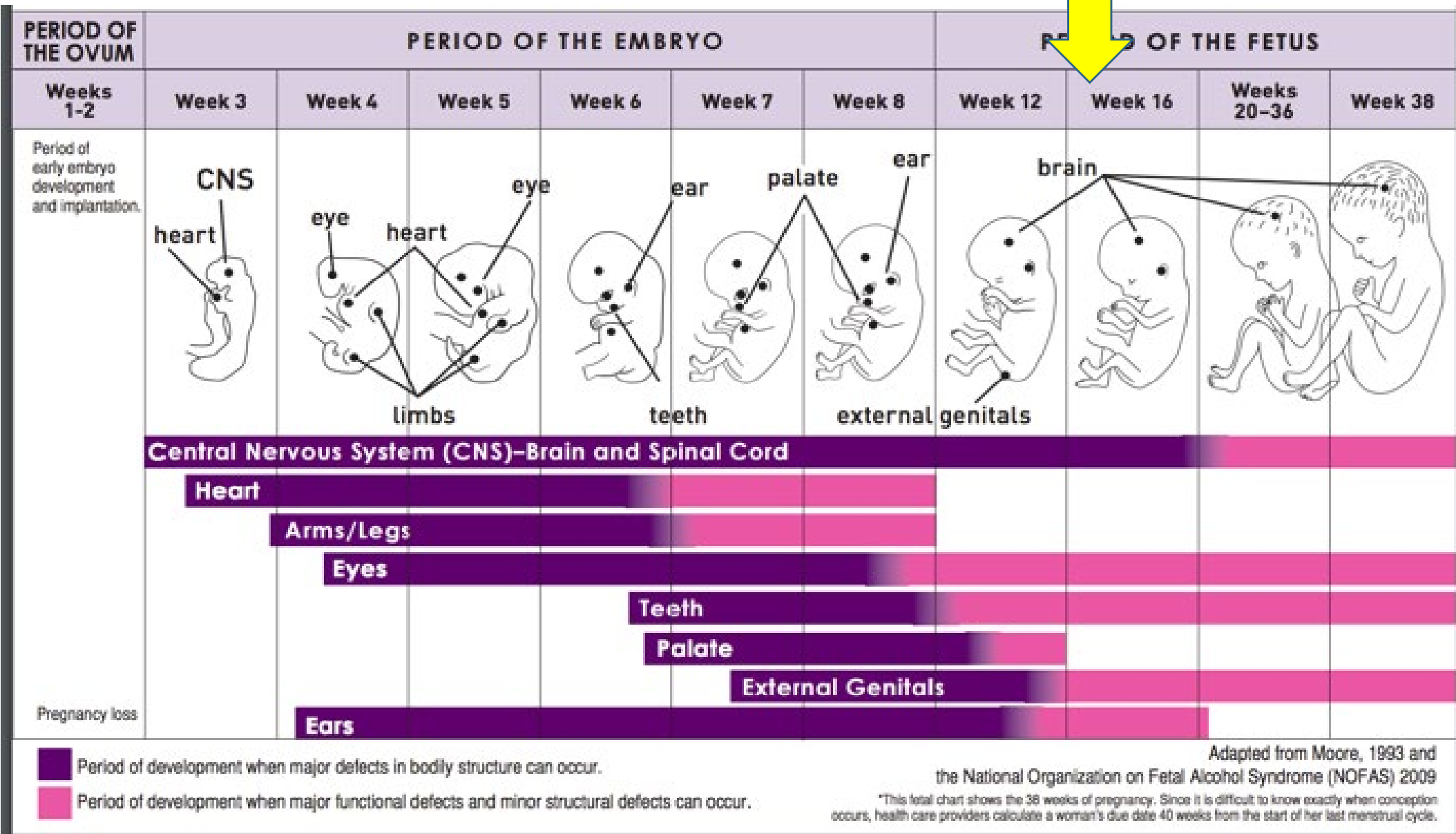


“States with the lowest infant mortality rates simply start out with healthier mothers.”

Indiana Perinatal Quality Improvement Collaborative

## Preconception and Interconception Health





# Pregnancy pushes the body nearly as much as extreme endurance sports

<https://qz.com/1635811/pregnancy-pushes-the-body-nearly-as-much-as-endurance-sports/>

## **Physiological Changes:**

- Increase plasma volume by 50%
- Iron need increases 2-3x
- 10-20x need for folate
- 2x for Vitamin B12
- Alteration of balance of coagulation system in favor of clotting
- Increased cardiac output
- Changes to kidneys
- Increased oxygen demand.

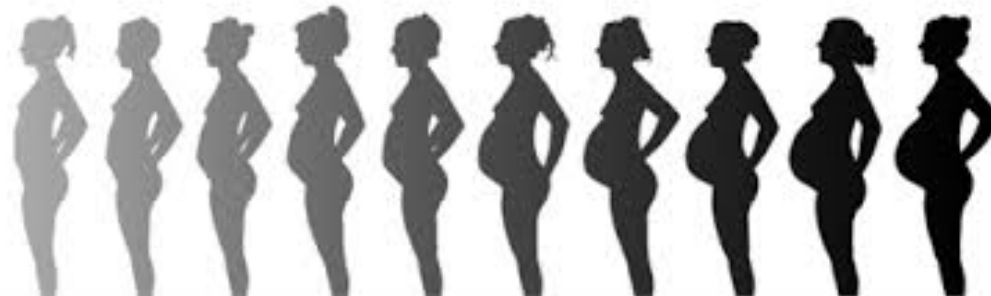
# What does health prior to pregnancy look like:

- **Pregnancy Intention\*\*\***
- **Access to Care\*\*\***
- Preconception Use of Folic Acid
- **Tobacco Avoidance\*\*\***
- **Absence of uncontrolled depression at first prenatal care assessment\*\*\***
- **Healthy pre-pregnancy BMI\*\*\***
- **Absence of STD at first prenatal assessment\*\*\***
- Optimal glycemic control
- Avoidance of known teratogens before conception



## Prenatal Care Goals

- To ensure the birth of a healthy baby while minimizing the risk to the mother.
- Early, accurate estimation of gestational age.
- Identify pregnancies at risk for maternal or fetal morbidity and mortality.
- Ongoing assessment of health status.
- Includes: Weight check, urine sample, blood tests, ultrasounds, education, prescriptions.
- Typically recommend visits every 4 weeks till 28 weeks, then every 2 weeks till 36 weeks and then every week until delivery.



# Primary Care

Increase intended pregnancies.  
Increase preconception health.

# The One Key Question ®

## Pregnancy Intention Screening

Would you like to  
become pregnant in  
the next year?



# OKQ logarithm

Power to Decide.com

Yes

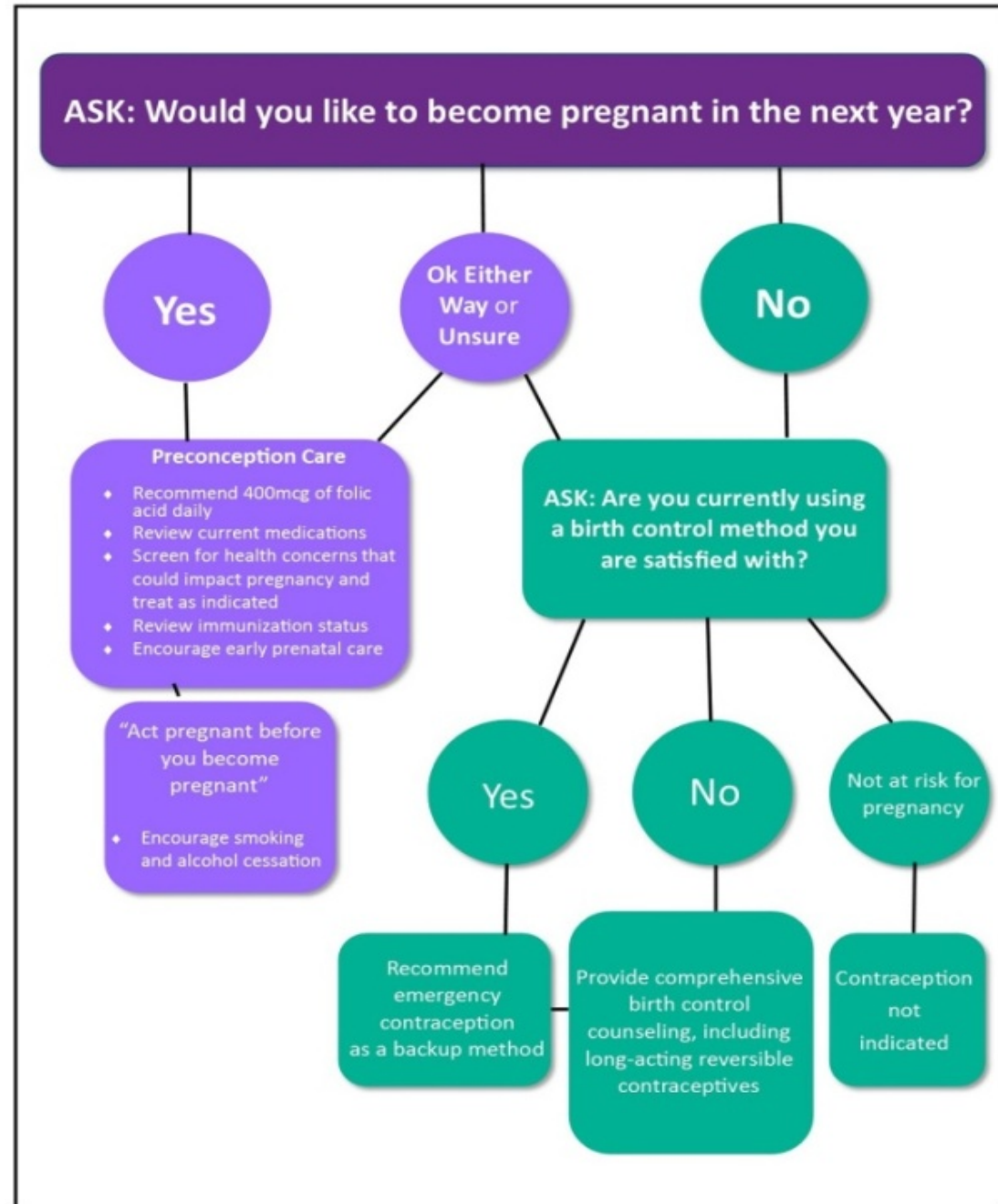
OK  
Either  
Way or  
Unsure

No

Women with ambivalent attitudes toward pregnancy use contraceptives less consistently and effectively than those with clear, firm motivation to avoid pregnancy.

**95% of unintended pregnancies are attributable to the 1/3 of women who don't use contraception or use it inconsistently.**

Guttmacher 2007-2008





Working through primary care providers to facilitate a conversation with women about their pregnancy intentions.

August 8, 2019




**POWER  
TO DECIDE**

the campaign to prevent unplanned pregnancy



# Teens need evidence-based reproductive health education based on a life course model.

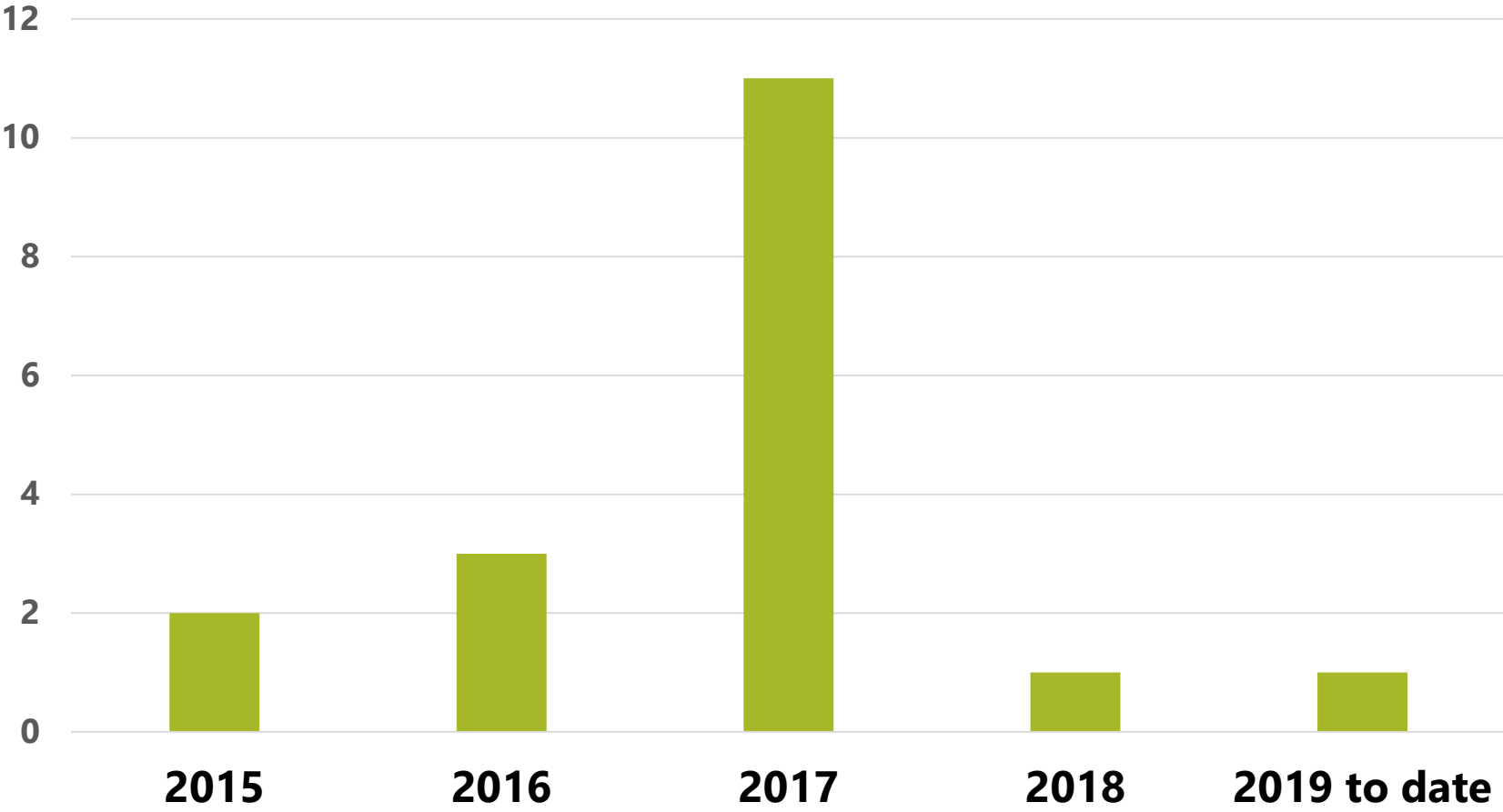
- ❖ Despite declining rates, teen pregnancies and births remain a public health issue.
- ❖ Reducing teen fertility further will be difficult to achieve as long as the United States rejects evidence-based policies (medically accurate sexual health education and low-cost, confidential contraception ) that are common in countries with low teen birth rates.
- ❖ Preventing teen births also requires mitigating high rates of US poverty that lead to disadvantaged and disaffected youth to “drift” into parenting in search of meaning and fulfillment.

A close-up, side-profile photograph of a young Black baby sleeping peacefully in a crib. The baby is wearing a light grey, long-sleeved onesie with white buttons. They are lying on a blanket with a geometric pattern of triangles in shades of grey, teal, and beige. The background is a soft, out-of-focus white.

**SAFE SLEEP IS  
AS EASY AS**

**ALONE.  
BACK.  
CRIB.**

# SUID Cases by year, St. Joseph County.



**2015 – 2018:** n-16

**The main factors present in cases of SUID in St. Joseph County were:**

- Sharing an adult bed with a one or both parents or a sibling.
- The presence of pillows, blankets, or other items including boppy positioners.
- Nearly 50% of infants were exposed to tobacco during pregnancy.
- In half of the cases, the infant had one or more medical complications at the time of delivery including prematurity, small for gestational age, infection or hypoxic injury.
- Parental drug use at the time of the infant death was not a factor in St. Joseph County cases. And no infant was sharing a bed with a non-parent adult.

# FIMR Community Action Beginning in July 2017

- A goal of having all providers and agencies share a common message.
- Contract with New York City Department of Health to adopt the Stay Close. Sleep Apart. message.
- FIMR Coordinator shared over 30 presentations with hospital staff, providers, first responders, families, church about safe sleep guidelines and what we learned from our cases and families.
- Identify and explain the increased risk low birthweight, prematurity, babies with illness, overtired parents.




**STAY CLOSE. SLEEP APART.**

**Your baby sleeps safest alone**  
on her back in a crib or bassinet free of toys,  
blankets and pillows.


 To learn more, call 574-245-6756 or visit  
sjchd.org and click on "health education."  
St. Joseph County Health Department, Indiana.

Copyright 2017, New York City Department of Health and Mental Hygiene. Adapted with permission.




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St. Joseph County Health Department, Indiana.

Copyright 2017, New York City Department of Health and Mental Hygiene. Adapted with permission.

# Stay Close. Sleep Apart.

Partnership with the New York City Health Department. SUMMER 2017 - ongoing



The FIMR team recognizes that opinions about infant sleep are personal and cultural, however, any decisions about infant sleep must follow the guidelines of placing a baby on their back, on a firm, flat surface without blankets, toys, or pillows, for the first year; for every sleep.

**Families should ask their baby's doctor about safe sleep.**

"Babies **will choke** if they lay on their backs."

TRUTH

Babies who sleep on their stomachs are more likely to choke than babies who sleep on their backs.



In 2017, more Indiana babies died from unsafe sleep than all children killed in vehicle collisions, from 0 to 18 years of age.



Keep your babies safe by putting them **Alone,** on their **Back,** in a **Crib.**





"I don't move in my sleep.  
*I'm a light sleeper.*"

# TRUTH

The weight of  
an adult arm  
on a baby's chest  
is enough to  
prevent the infant  
from getting  
enough air.



In 2017, more Indiana babies  
died from unsafe sleep than  
all children killed in vehicle  
collisions, from 0 to 18 years of age.



Keep your  
babies safe  
by putting  
them **Alone,**  
on their **Back,**  
in a **Crib.**



# What about breastfeeding?



- Breastfeeding is protective against SIDS not accidental suffocation or asphyxia.
- **No baby was placed to sleep observing safe sleep guidelines**
- In several cases the mother was exclusively breastfeeding but also bedsharing with a combination of blankets/pillows/boppy pillow present, additional family members or propping the baby's head.
- One case appeared to be breastfeeding mother without risk factors.

# Safe Sleep is about Safety



# Working Towards Screening

## For Risk of Sudden Unexpected Infant Death

Prenatal  
Postpartum  
Well baby care  
Referral to home visiting

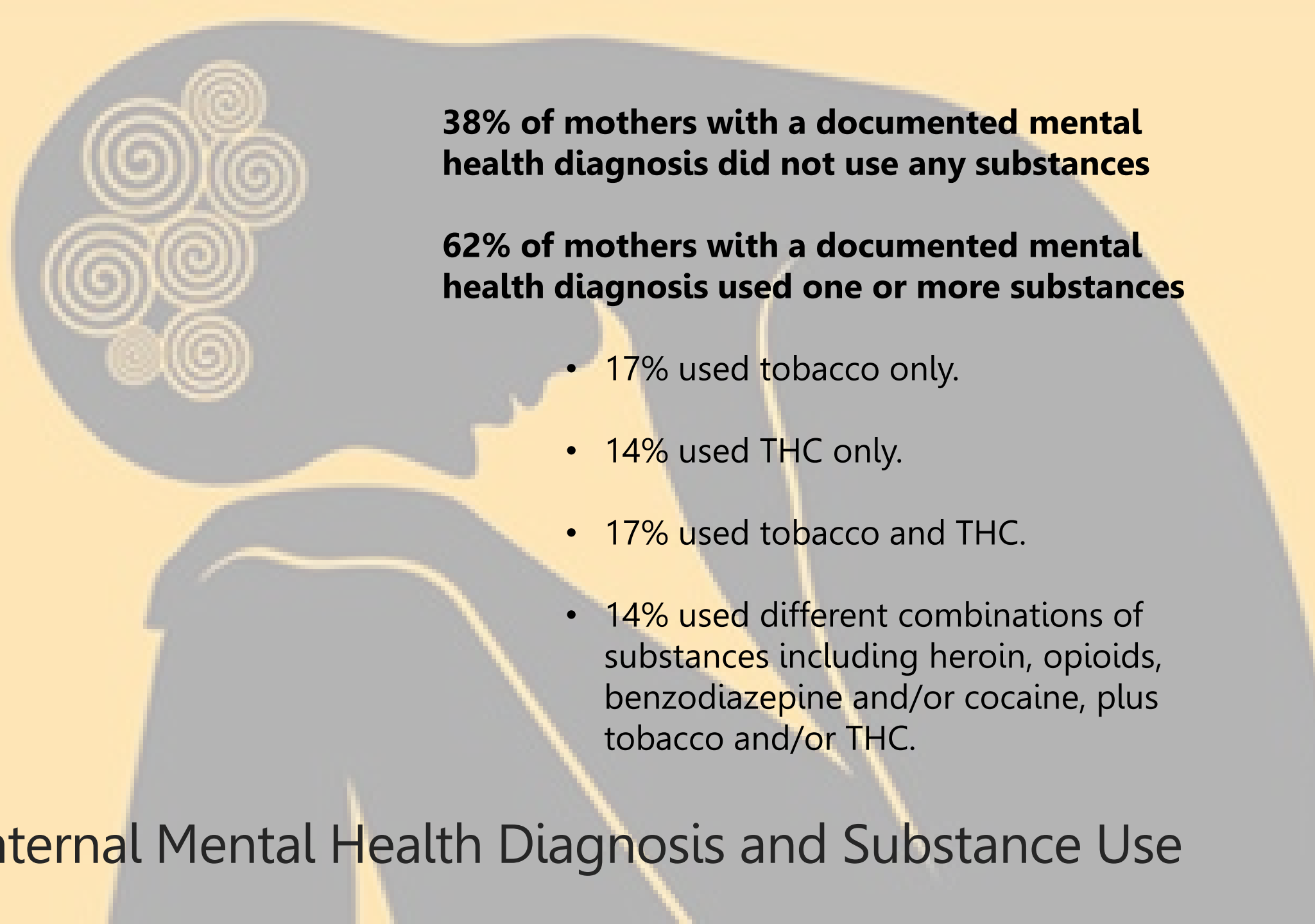
- ✓ History of maternal smoking and/or 2<sup>nd</sup> hand smoke exposure following delivery.
- ✓ History of prematurity or other birth complications requiring a NICU admission.
- ✓ Later or no prenatal care.
- ✓ History of substance or alcohol abuse.
- ✓ Age < 20
- ✓ Low birth weight
- ✓ History of placental abnormalities
- ✓ Lack of family support
- ✓ Examples of unsafe sleep practices during hospital stay after redirection.

# Smoking & Pregnancy

**Smoking is one of the most important modifiable causes of poor pregnancy outcomes in the United States.**

*American College of Obstetricians  
& Gynecologists Committee  
Opinion  
October 2017*

# Mental Health and Pregnancy

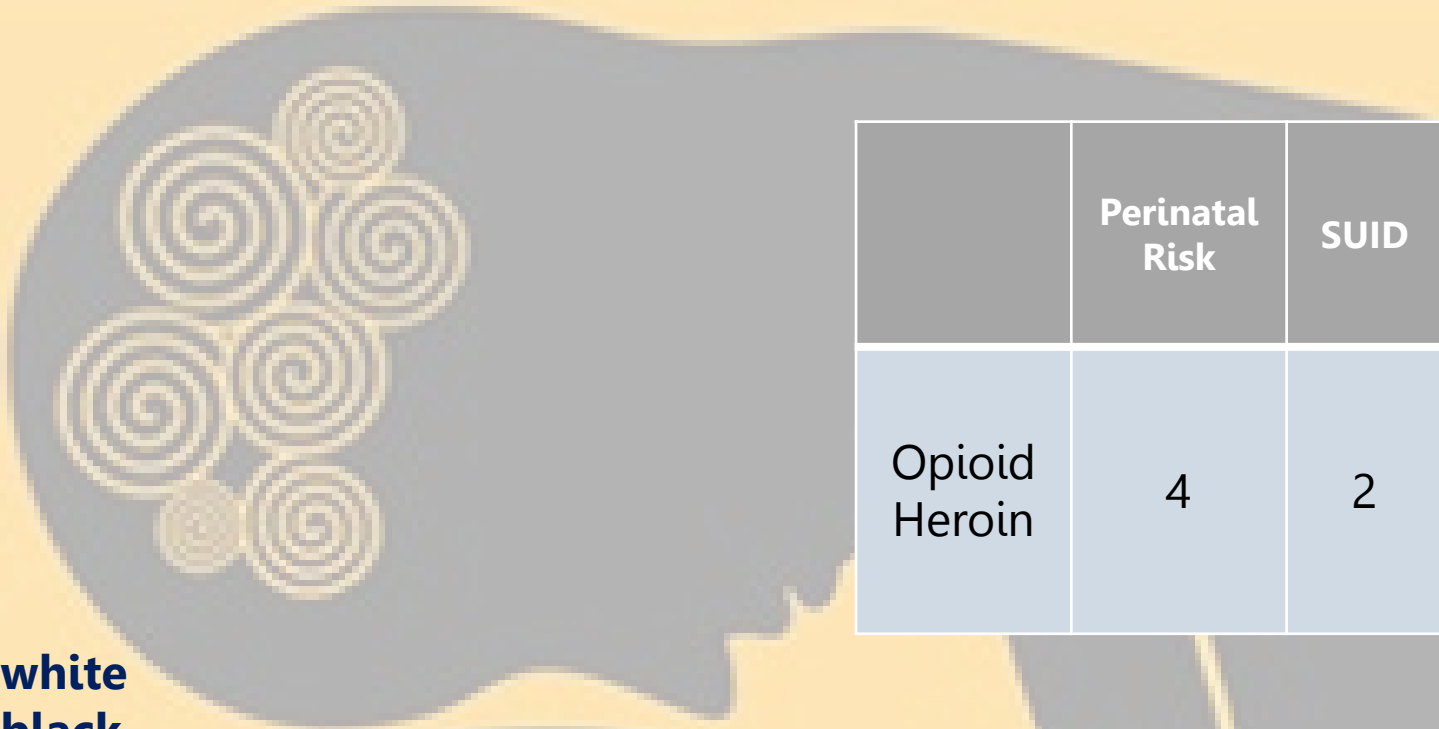


**38% of mothers with a documented mental health diagnosis did not use any substances**

**62% of mothers with a documented mental health diagnosis used one or more substances**

- 17% used tobacco only.
- 14% used THC only.
- 17% used tobacco and THC.
- 14% used different combinations of substances including heroin, opioids, benzodiazepine and/or cocaine, plus tobacco and/or THC.

## Maternal Mental Health Diagnosis and Substance Use



	Perinatal Risk	SUID	Anomaly	Other	Fetal
Opioid Heroin	4	2	0	0	1

**71% white**  
**29% black**

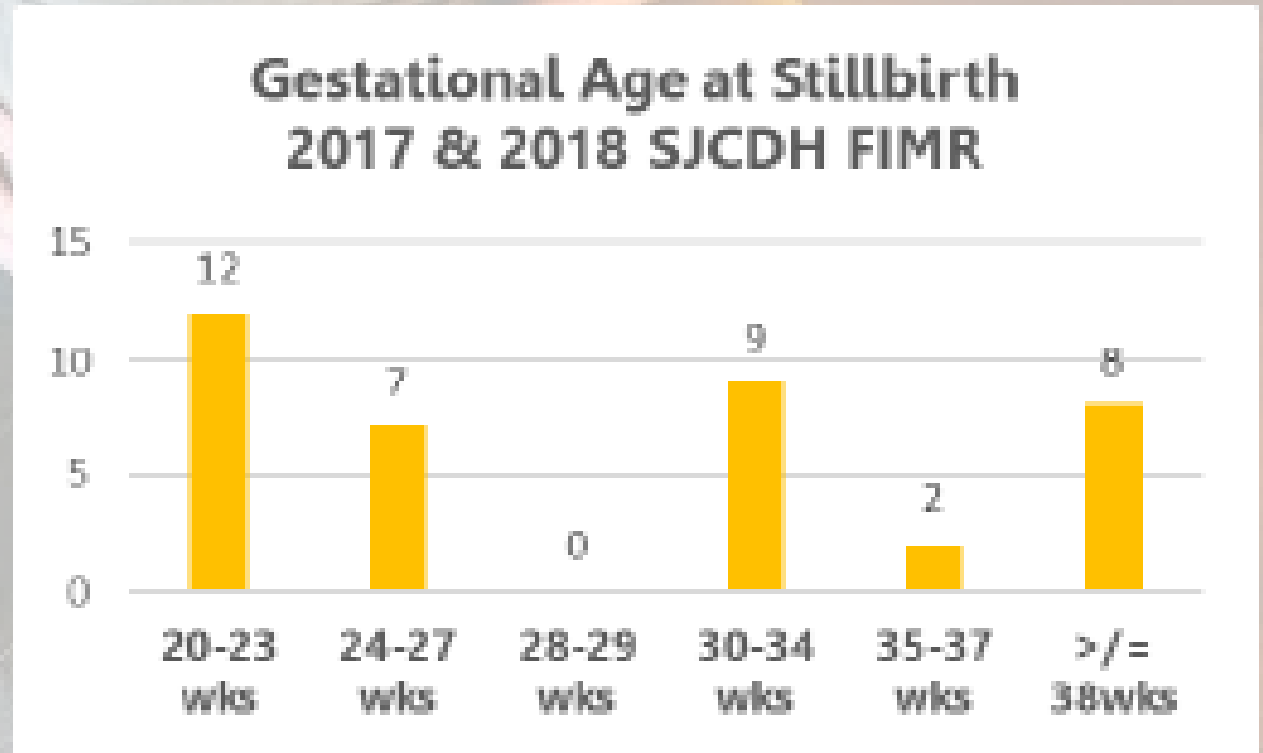
**All have mental health diagnosis: Bipolar, ADD,  
Depression.  
And Social complexity.**

**1 - 2018**  
**3 – 2017**  
**1 – 2016**  
**2 – 2015.**

Maternal Mental Health Diagnosis and Substance Use

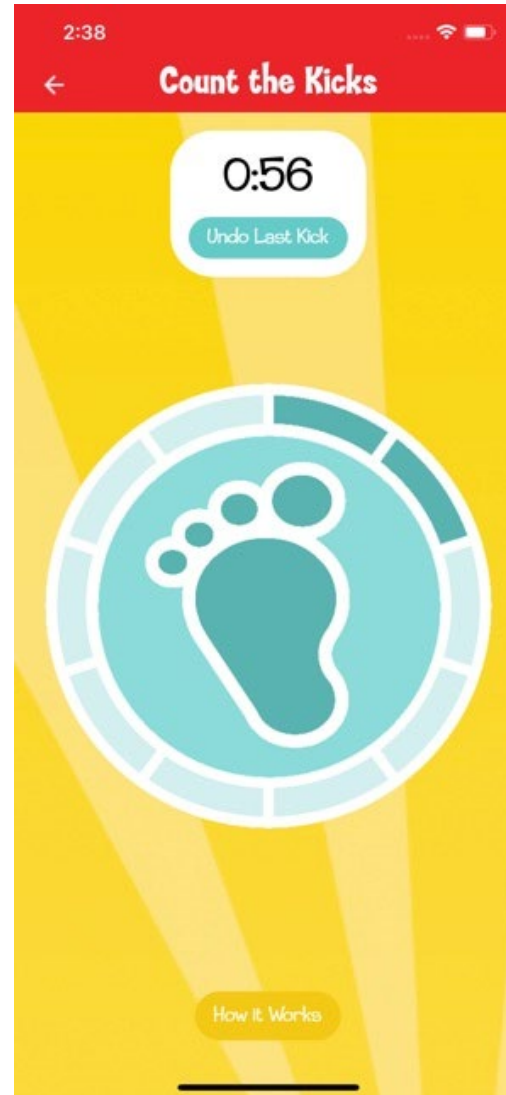
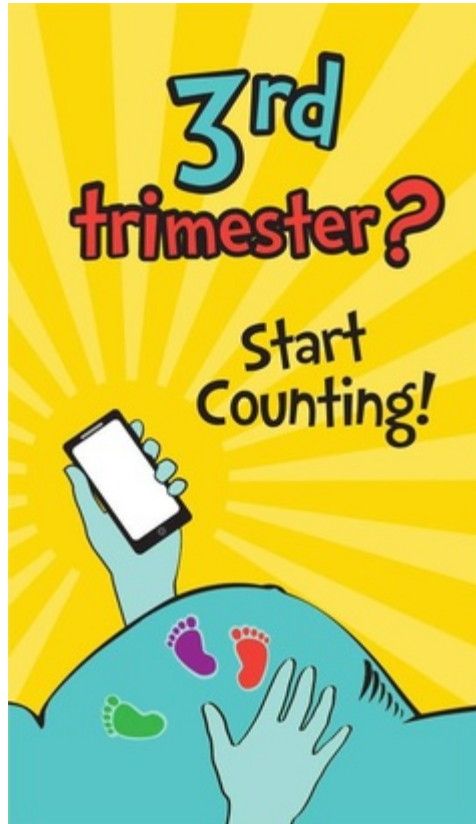


# Reducing Third Trimester Stillbirths



**11 of 19 mothers  
who had a stillbirth in the 3rd trimester  
experienced decreased fetal movement**  
ranging from a few hours to a few days  
leading up to the identification of the fetal loss.

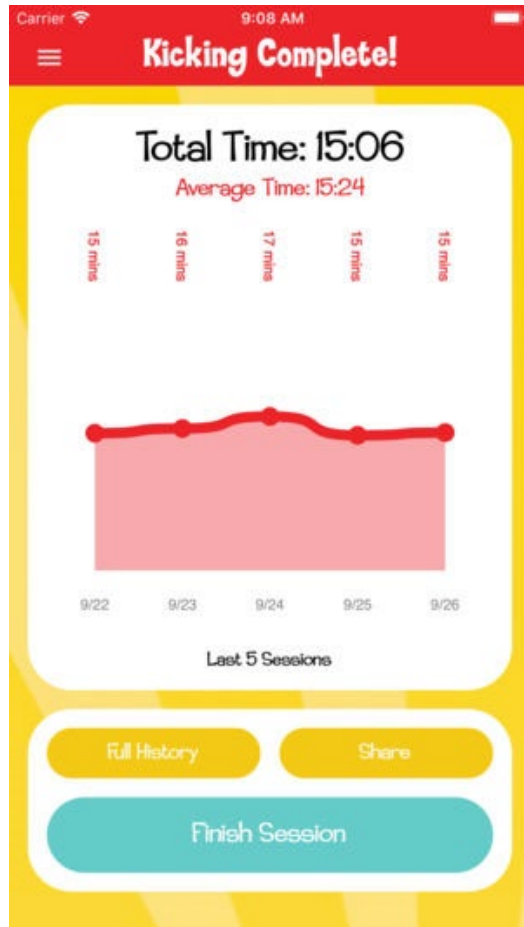
# Count the Kicks



## Benefits:

- Establishes a baseline
- Gives mothers confidence in their intuition
- Objective data.
- Normal is 10 kicks in 2 hours

<https://www.countthekicks.org/founders-story/>  
<https://www.countthekicks.org/state/indiana/>  
<https://www.countthekicks.org/app->



## The Count the Kicks App

- In the First Five Years of use in Iowa – the stillbirth rate decreased by 29% and went from 33<sup>rd</sup> worst to 3<sup>rd</sup> best stillbirth rate in the country.

# Amplify mothers' voices from maternal interviews



Appreciation of bereavement care at both hospitals and grief support

Believing that their concerns or symptoms were ignored

Regret for not following instincts. Feeling responsible.

Wanting to help other mothers with loss. Finding meaning. Honoring memory.

Supportive family and friends but they move on with their lives.

Not understanding why interventions were taken or not taken



# Strengthen Families and Communities

We need more  
than a referral  
or pamphlet,  
website or  
app.

"We have the  
opportunity to  
rethink how local  
organizations work  
together to allocate  
resources and  
follow the lead of  
their communities."

[www.healthleadsusa.org](http://www.healthleadsusa.org)

Our system is  
designed around us,  
not them.

Let  
Start asking  
what people  
actually need.



# Navigating the System





Home Visiting  
to address Social Determinants of Health

# Using Home Visiting to -

- Bridge Social Services and Medical Care
- In person navigation –websites aren't enough.
- Make Connections where mothers present for care:
  - Emergency Department
  - Women's Care Center
  - OB unit
  - Primary Care
  - Ob/Gyn Providers
  - School
  - Community Locations



## Social Determinants of Health: Overcoming the Greatest Barriers to Patient Care.

Healthcare leaders and front-line clinicians have long understood the connection between essential needs- such as food, housing and transportation – and the health of their patients. Leading studies indicate **social and environmental factors account for nearly 70 percent of all health outcomes.**

## Comparison of Access to Health System and First Prenatal Visit

	Access System by 12 weeks	First Prenatal Visit by 12 weeks	Access system by 14 weeks	First prenatal visit by 14 weeks	Access system by 19 weeks	First prenatal visit by 19 weeks	No prenatal care (Presents at delivery)	Unknown prenatal care start
<b>Perinatal risk</b> (Preterm Labor or Maternal Health n=53)	92%	84%	92%	90%	93%	92%	4%	4%
<b>Sudden Unexpected Infant Death</b> n=16	60%	47%	73%	53%	87%	73% ((7% -3 <sup>rd</sup> trimester)	13%	7%
<b>Other</b> (neonatal sepsis, other medical) n=10	88%	43%	86%	75%	100%	88%	12%	0
<b>Congenital Anomaly</b> n=7	71%	43%	86%	62.5%	86%	86.5% (12.5% - 3 <sup>rd</sup> trimester)	0	0

## Care beginning after 12 weeks.

- When appointment was available.
- Home test positive. Had only missed one period. Made appointment but US showed was 16 weeks.
- Social issues: moving a lot, homeless, marital separation, unsafe home.
- Lack of understanding of what prenatal care is and includes.
- Unstable home. Living with relative out of state.
- Unaware of pregnancy.
- Problems with insurance, couldn't get an appointment.
- Accessed system out of county with primary care, Parents would not consent to care.
- Not understanding the system.

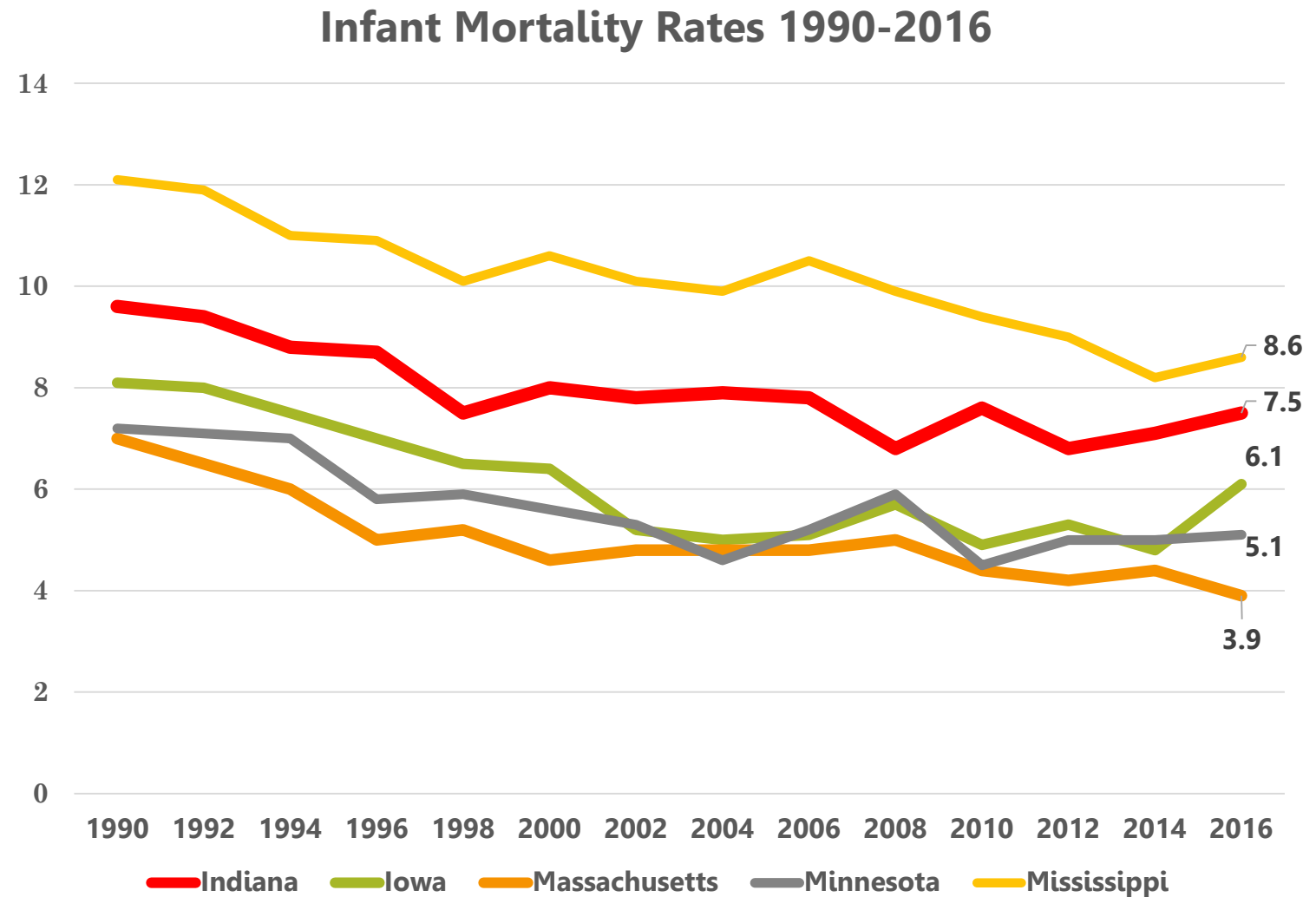


# Eliminating the Obstacles

Governor Holcomb's  
Goal  
Best in the Midwest  
by 2024

# Infant Mortality

March of Dimes Data.





## 2019 Indiana General Assembly – Bills Passed

- **OB Navigation**
- **Substance Use Universal Verbal Screening**
- **FIMR Program Authority**
- **Teen Consent for Care**
- **Medicaid Coverage for Doulas**

Governor Holcomb's Goal: Best in the Midwest by 2024

## **Not Passed**

**Increase smoking age to 21**

**Increase tax by \$2 with funds raised to go to tobacco prevention and cessation.**

**Increase tax by \$1 and increase smoking age to 21.**

**Pregnancy Accommodations in the Workplace**

**Paid Family Leave**

**Minimum Wage**

**Governor Holcomb's Goal: Best in the Midwest by 2024**

## Tobacco Policy Tax on Cigarettes

- Higher taxes and prices for cigarettes are strongly associated with lower infant mortality rates in the United States, according to a study from Vanderbilt University and the University of Michigan released in December, 2015 in the journal *Pediatrics*.
- Researchers found that for every \$1 tax increase per pack of cigarettes, about two infant deaths were averted each day.
- Overall, there was an estimated 3.2 percent decrease in annual infant mortality rates, or 750 fewer infant deaths per year, associated with the tax increase, the study revealed.

<https://pediatrics.aappublications.org/content/pediatrics/137/1/e20152901.full.pdf>

- National data shows that about **95 percent of adult smokers begin smoking before they turn 21.**
- The ages of 18 to 21 are also a critical period when many smokers move from experimental smoking to regular, daily use.
- While less than half of adult smokers (46 percent) become daily smokers before age 18, four out of five do so before they turn 21.

<https://www.tobaccofreekids.org/what-we-do/us/sale-age-21>

## Tobacco Policy Raise the Smoking Age



Age of smokers in infant loss cases

15-19y	2
20-24y	13
25-29y	7
30-35y	2

Home » [AJPH](#) » August 2016

## The Effect of an Increased Minimum Wage on Infant Mortality and Birth Weight

Kelli A. Komro PhD, MPH, Melvin D. Livingston PhD, Sara Markowitz PhD, and Alexander C. Wagenaar PhD

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**Results.** Across all models, a dollar increase in the minimum wage above the federal level was associated with a 1% to 2% decrease in low birth weight births and a 4% decrease in postneonatal mortality.

**Conclusions.** If all states in 2014 had increased their minimum wages by 1 dollar, there would likely have been 2790 fewer low birth weight births and 518 fewer postneonatal deaths for the year.

## State Comparisons: Infant Mortality, Cigarette Tax, Public Health Investment and Minimum Wage.

State	2018 Infant Mortality	Tax per pack of cigarettes	Smoking Age	Public Health Rank - \$ per capita	Pregnancy Smoking rate %	Household smoking rate %	Minimum Wage \$/hour
Massachusetts	4.1	\$3.51	21	#12 - \$112.00	5.7	14.1	12 (15 by 2023)
California	4.3	\$2.97	21	#16 - \$108.00	1.7	10.9	12 (15 by 2022)
New York	4.5	\$4.35	75%/21	#4 - \$149.00	5	14.5	11.10 (index to inflation till hits 15)
Minnesota	5.1	\$3.04	18	#19 - \$ 99.00	9.4	14.5	9.86 Index to inflation
Illinois	6.2	\$1.98	21	#37 - \$ 68.00	6.6	18.2	8.25 (15 by 2025)
Michigan	6.5	\$2.00	18	#41 - \$58.00	12.3	18.6	9.25 (12 by 2030)
Ohio	7.3	\$1.60	16 cities/21	#46 - \$ 53.00	15.2	21.6	8.55 (indexed)
Indiana	7.4	\$ 0.995	18	#48 - \$ 51.00	14.3	22.2	7.25 (no planned increase)

Thoughts

Questions

Comments

