# Protecting Indiana's Newborns

NATIONAL RURAL HEALTH ASSOCIATION

ANNUAL CONFERENCE

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# Learning Objectives

- Identify the leading risks and indicators for infant mortality
- Use risk stratification algorithms to identify and target patients for interventions
- Use tools and insights to help you address the tragedy of infant mortality locally

**Disclosure:**
Project made possible thanks to generous funding from the Indiana State Department of Health, Maternal and Child Health Division (Safety PIN grant).

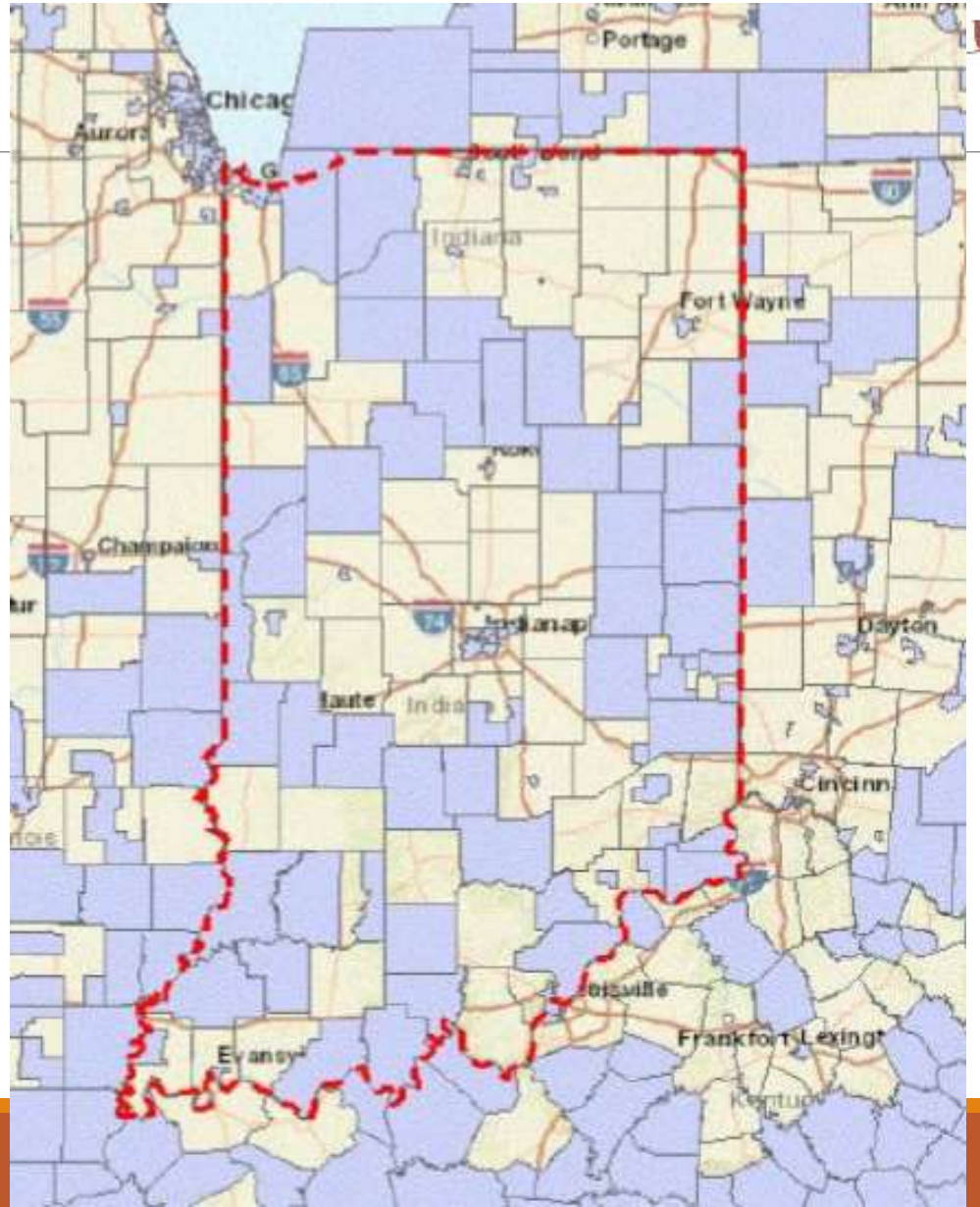
Mission

*Advancing rural health through education, innovation, and collaboration.*

# HPSA

Chicago
Aurora
Gary
Indiana
Fort Wayne
Lafayette
Kokomo
Muncie
Champaign
Indianapolis
Dayton
Terre Haute
Cincinnati
Louisville
Evansville
Frankfort
Lexington

# MUA/P


Portage
Aurora
Fort Wayne
Champaign
Dayton
Cincinn
Frankfort

# “Our Babies are **Dying**!”

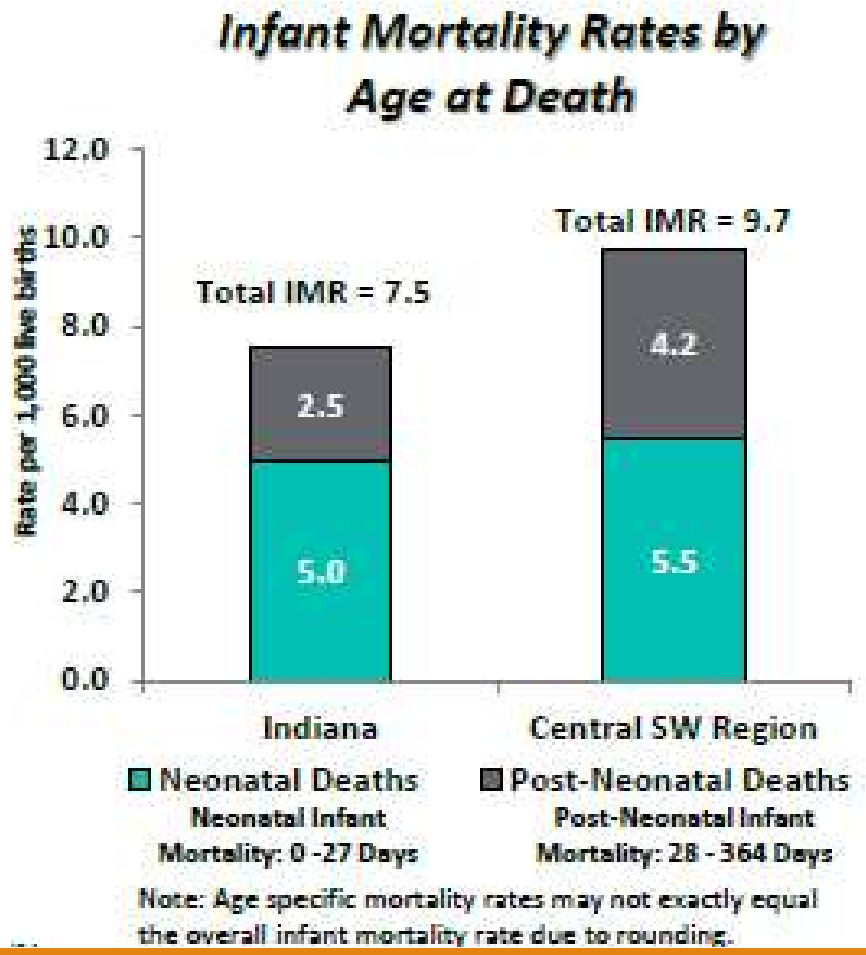
# Population Health Dilemma – Babies Dying

Dr. Adams Visit

Problem: Regional IMR Rates

Encouragements to join statewide effort (http://www.in.gov/laboroflove/)

Labor of Love
*Helping Indiana Reduce Infant Death*



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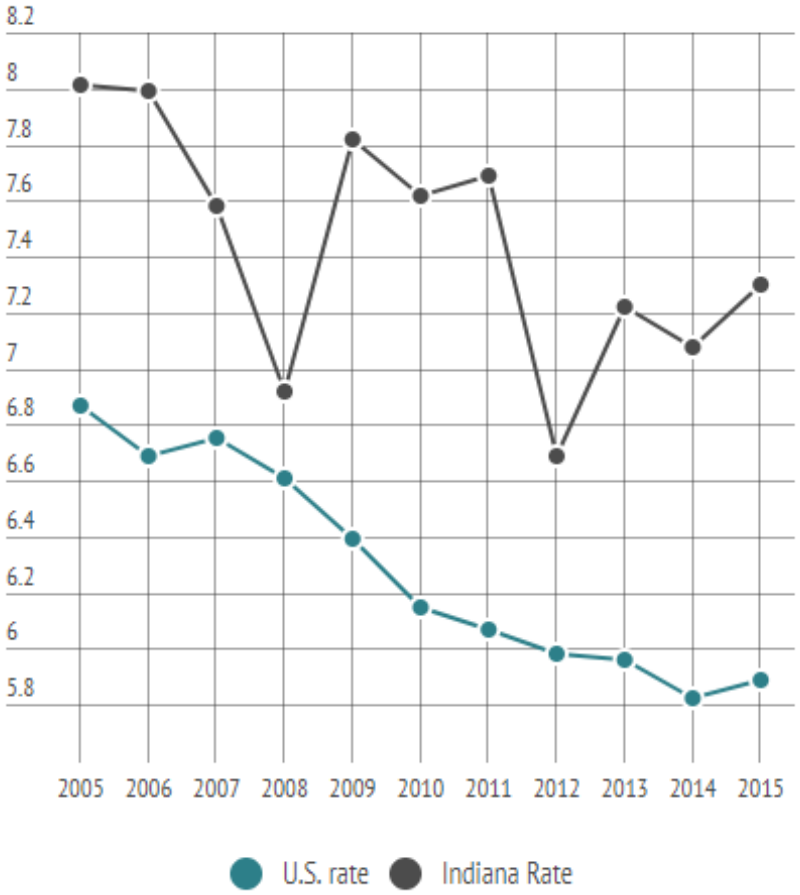
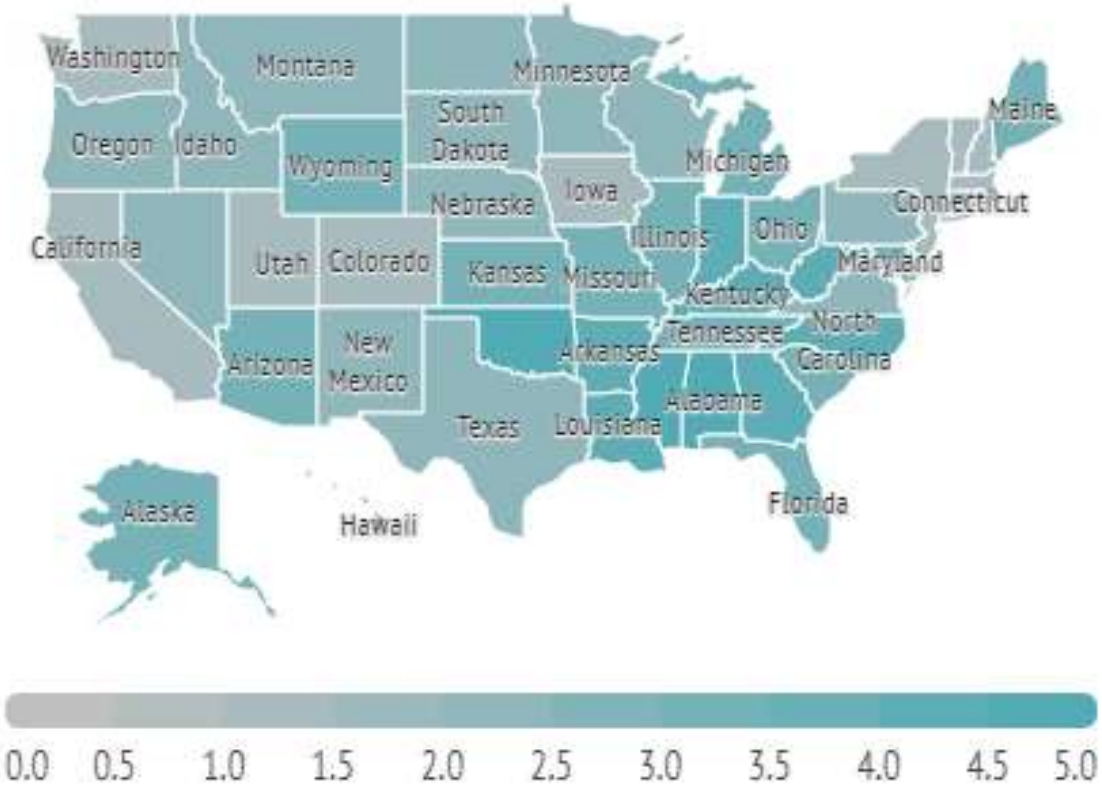
# Infant Mortality Facts

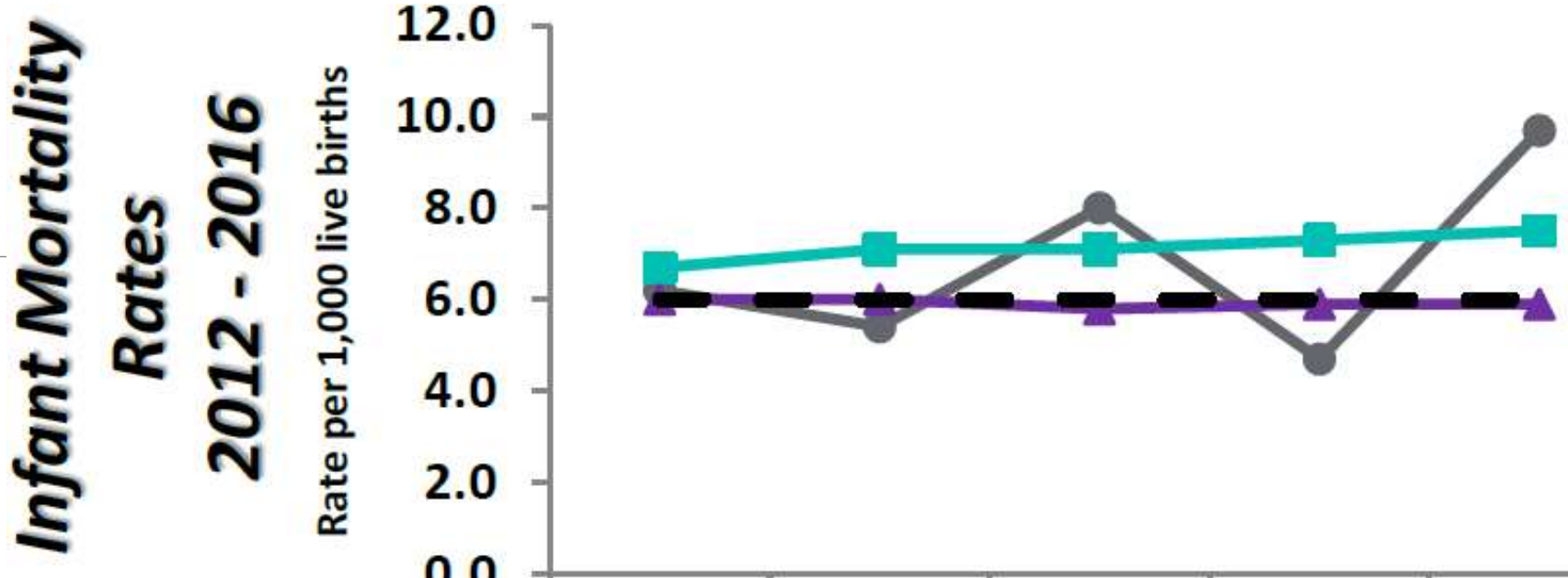
- Death of a baby before his or her first birthday
- Infant Mortality Rate (IMR) is the number of babies who die in the first year of life per 1,000 live births
- Black infants are 2.5 times more likely to die than white infants in Indiana
- Neonatal Infant Death = 0-27 Days
- Post Neonatal Infant Death 29-364 Days

# IN vs. US – IMR (2005 – 2015)



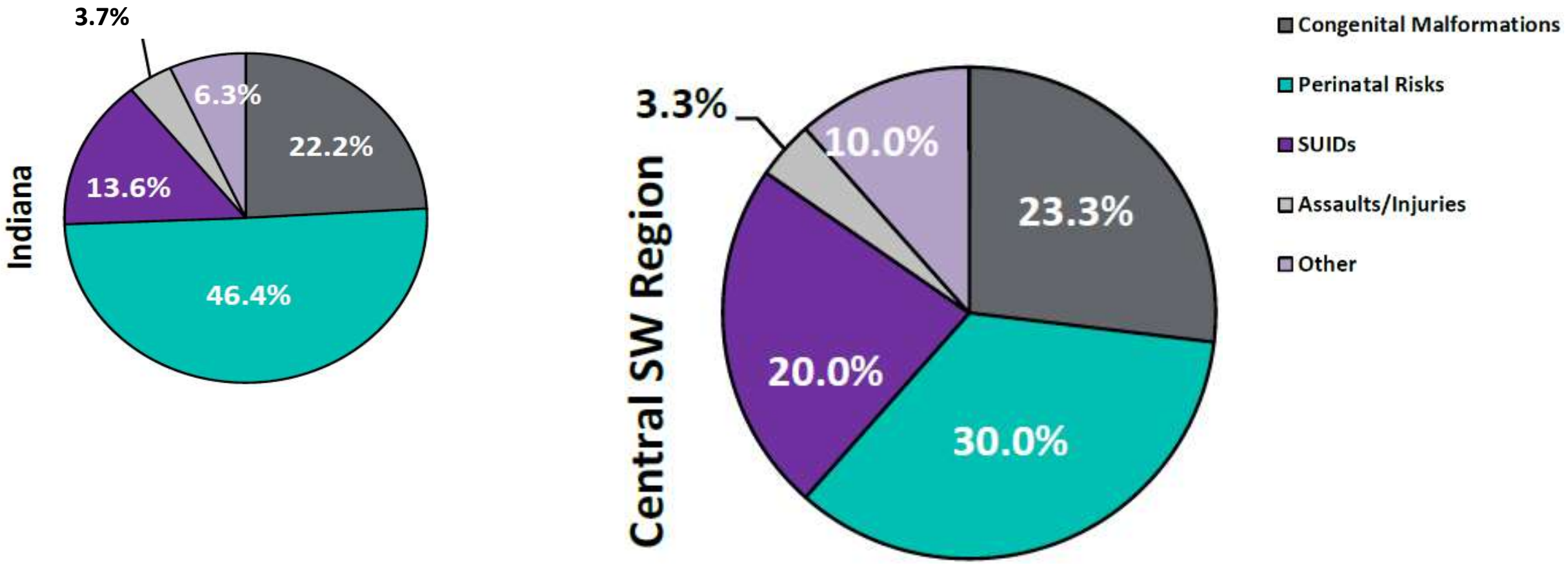
# Infant Mortality Rates 2012 - 2016




| | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Central SW Region | 6.2 * | 5.4 | 8.0 * | 4.7 * | 9.7 |
| Indiana | 6.7 | 7.1 | 7.1 | 7.3 | 7.5 |
| U.S. | 6.0 | 6.0 | 5.8 | 5.9 | 5.9 |
| HP 2020 Goal | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |

* Numerator less than 20, rate instable

# Causes of Infant Mortality



JAMA | Original Investigation

## Association Between Loss of Hospital-Based Obstetric Services and Birth Outcomes in Rural Counties in the United States

Katy B. Kozhimannil, PhD, MPA; Peiyin Hung, PhD, MSPH; Carrie Henning-Smith, PhD, MPH, MSW; Michelle M. Casey, MS; Shailendra Prasad, MBBS, MPH

Editorial and Viewpoint

Supplemental content

**IMPORTANCE** Hospital-based obstetric services have decreased in rural US counties, but whether this has been associated with changes in birth location and outcomes is unknown.

**OBJECTIVE** To examine the relationship between loss of hospital-based obstetric services and location of childbirth and birth outcomes in rural counties.

**DESIGN, SETTING, AND PARTICIPANTS** A retrospective cohort study, using county-level regression models in an annual interrupted time series approach. Births occurring from 2004 to 2014 in rural US counties were identified using birth certificates linked to American Hospital Association Annual Surveys. Participants included 4 941 387 births in all 1086 rural counties with hospital-based obstetric services in 2004.

**EXPOSURES** Loss of hospital-based obstetric services in the county of maternal residence, stratified by adjacency to urban areas.

**MAIN OUTCOMES AND MEASURES** Primary outcomes were county rates of (1) out-of-hospital births; (2) births in hospitals without obstetric units; and (3) preterm births (<37 weeks' gestation).

**RESULTS** Between 2004 and 2014, 179 rural counties lost hospital-based obstetric services. Of the 4 941 387 births studied, the mean (SD) maternal age was 26.2 (5.8) years. A mean (SD) of 75.9% (23.2%) of women who gave birth were non-Hispanic white, and 49.7% (15.6%) were college graduates. Rural counties not adjacent to urban areas that lost hospital-based obstetric services had significant increases in out-of-hospital births (0.70 percentage points [95% CI, 0.30 to 1.10]); births in a hospital without an obstetric unit (3.06 percentage points [95% CI, 2.66 to 3.46]); and preterm births (0.67 percentage points [95% CI, 0.02 to 1.33]), in the year after loss of services, compared with those with continual obstetric services. Rural counties adjacent to urban areas that lost hospital-based obstetric services also had significant increases in births in a hospital without obstetric services (1.80 percentage points [95% CI, 1.55 to 2.05]) in the year after loss of services, compared with those with continual obstetric services, and this was followed by a decreasing trend (−0.19 percentage points per year [95% CI, −0.25 to −0.14]).

**CONCLUSIONS AND RELEVANCE** In rural US counties not adjacent to urban areas, loss of hospital-based obstetric services, compared with counties with continual services, was associated with increases in out-of-hospital and preterm births and births in hospitals without obstetric units in the following year; the latter also occurred in urban-adjacent counties. These findings may inform planning and policy regarding rural obstetric services.

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The JAMA Network

JAMA Journal of the American Medical Association

KB Kozhimannil and coauthors

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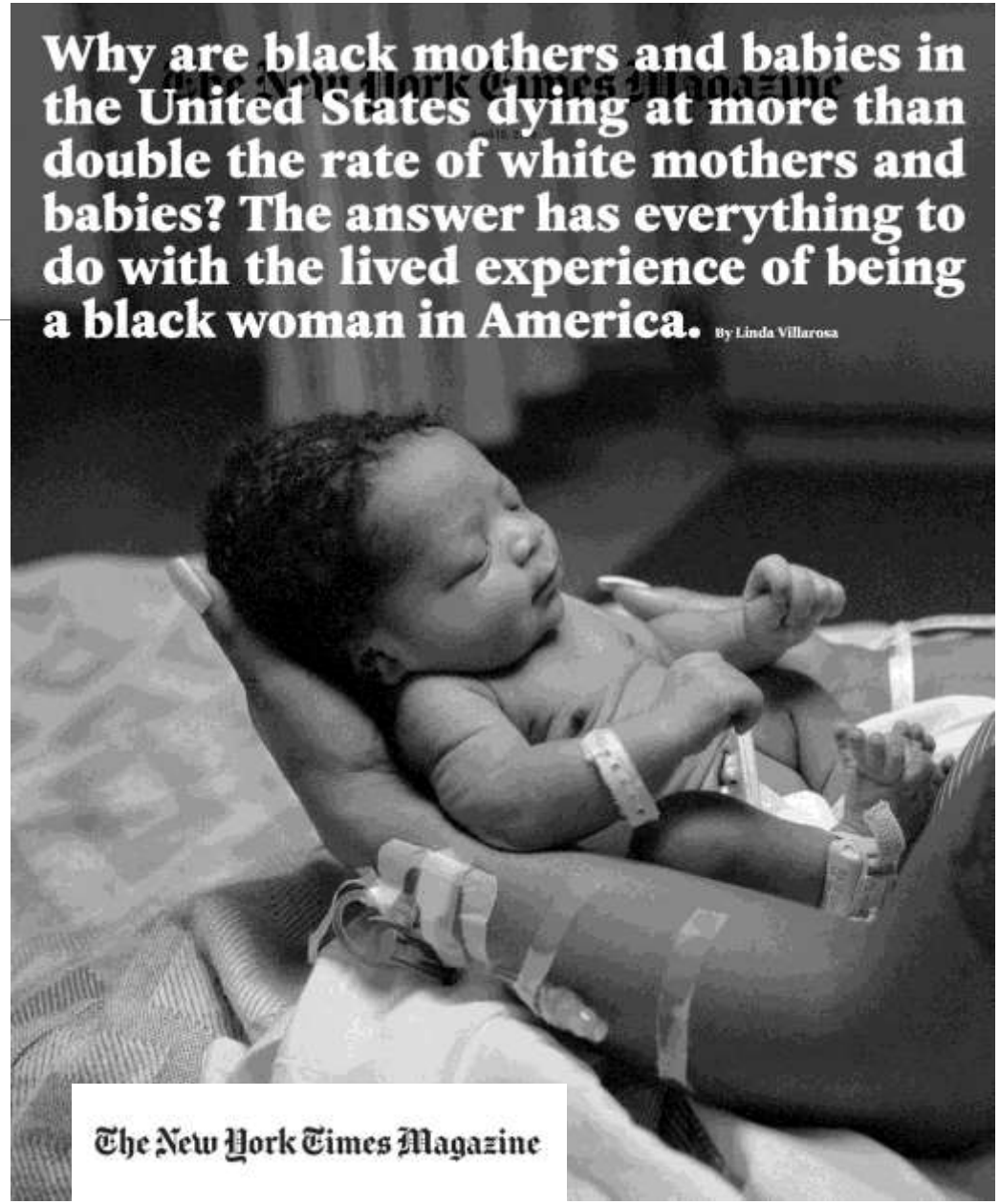
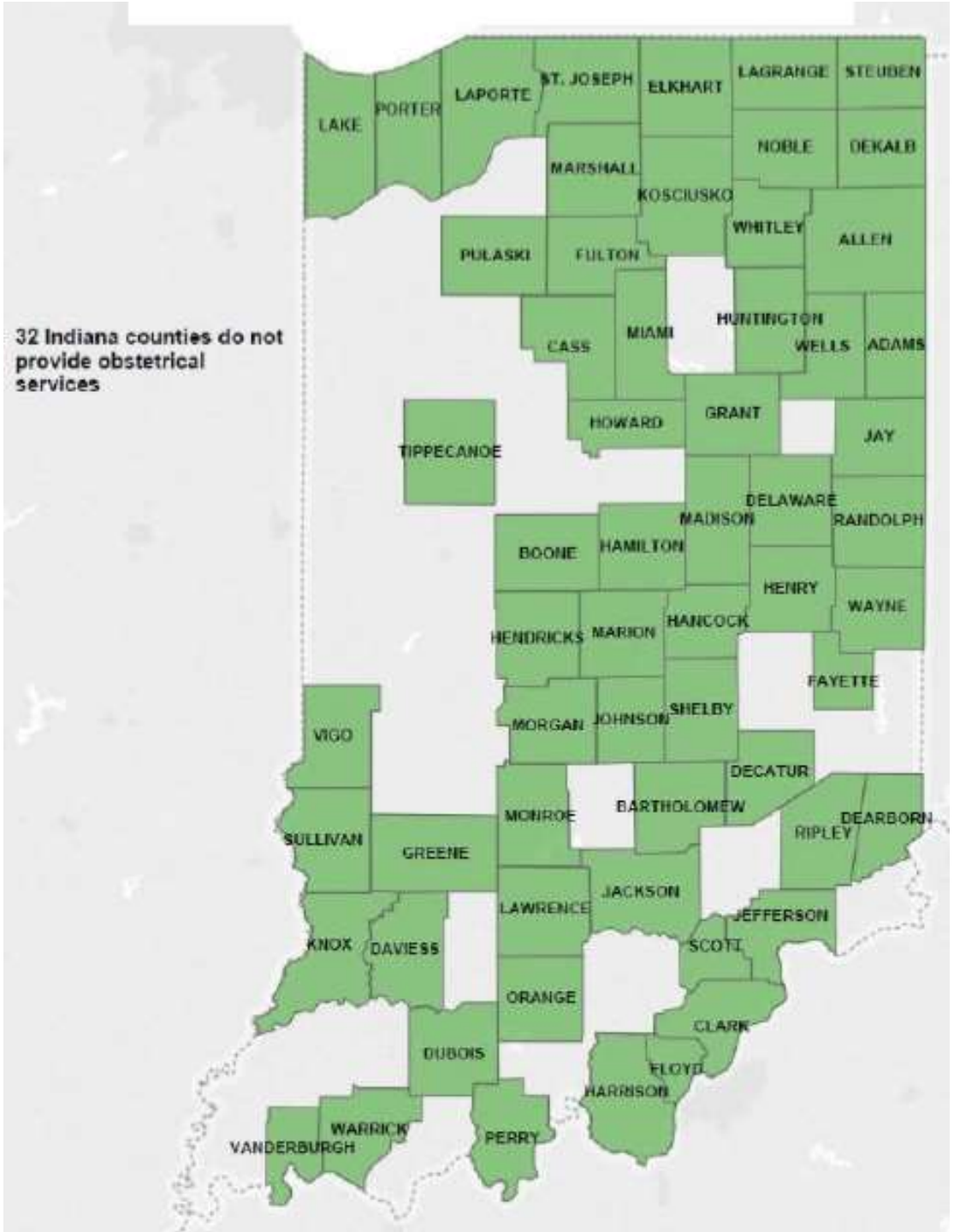


# Availability of OB Services

*Source Indiana Hospital Association*



# Practices to Reduce Infant Mortality

- Improve overall health for women of child bearing age
- Promote early & adequate prenatal care
- Decrease early elective deliveries before 39 weeks
- Decrease prenatal smoking & substance abuse
- Increase breastfeeding duration & exclusivity
- Support birth spacing & interconception wellness
- Promote the ABC's of safe sleep: place baby to sleep **a**lone, on his or her **b**ack, in a **c**rib

# Putting the pieces together

## UH FOUNDATION INVESTMENTS

**Smoking**

**No tobacco while pregnant.**
Smoking increases the likelihood of premature birth.

**Sleep**

**Safer sleep practices.**
Babies sleep safest when they sleep alone, on their backs and in a crib.

## OTHER INITIATIVES

Baby & me™ Tobacco Free

Cribs for Kids®
Helping every baby sleep safe

INDIANA WIC

# Safety PIN Grant - Approach

- Understand the causes
  - Participate in FIMR
  - Internal & External Metrics
- Systematically implement Best Practices
- Reach those at the Highest Risk
  - Prenatal Navigation

More information at: https://www.lugarcenter.org/pnn

# Perinatal Navigators

## Sarah

Sarah's healthcare career is grown in the Wabash Valley; beginning as a nurse associate and then transitioned to an RN in an Emergency Department. Sarah holds a MS in Nursing Education and has spent time as faculty for Ivy Tech Community College. She is also a founder of The Goodnight Project, a project that provides Pack 'N Plays to infants. Sarah merges her passion for nursing and educating parents in her role as Perinatal Navigator.

## Christina

Christina spent the last five years working for the local Health Department as the Health Educator and comes to Union Hospital with a Masters in Healthcare Administration. She has spent portions of her professional career educating and researching infant mortality in the state of Indiana. She currently serves as co-chair on the region's Fatality Review Team and is excited to be able to work one-on-one with patients and families to help keep babies and families safe and healthy.

## Shane

Shane has over two decades of nursing experience spent mostly in a busy Emergency Department where she spent time educating parents and children on various illnesses and injuries. Her time in the emergency department coupled with a desire to do what is right and educate the community on infant mortality mix in her role as a perinatal navigator. Shane feels it is a blessing to work with mothers and families and help them understand how to stay healthy and safe.

| | % LBW (<2,500 G) | % PRETERM (<37 WKS GESTATION) | % NO EARLY PNC (1ST TRIMESTER) | % SMOKING | % NOT BREASTFEEDING | % MOTHER ON MEDICAID |
|---|---|---|---|---|---|---|
| CLAY | 7.2 | 11.0 | 35.5 | 22.8S | 26.6 | 49.7 |
| GREENE | 7.7 | 11.3 | 20.8S | 24.0S | 20.2 | 46.3 |
| OWEN | 5.7* | 11.0 | 24.1 | 30.3S | 18.0 | 44.7 |
| PARKE | 4.4* | 7.9* | 40.8 | 14.9 | 17.5 | 41.7 |
| PUTNAM | 5.0* | 8.0 | 19.3S | 20.2 | 21.8 | 45.3 |
| SULLIVAN | 3.4* | 7.3* | 29.6 | 18.9 | 29.6S | 46.1 |
| VERMILLION | 3.6* | 4.7* | 32.0 | 27.2S | 25.4 | 53.3 |
| VIGO | 9.1 | 10.4 | 33.6 | 20.1S | 25.7S | 59.6S |
| CENTRAL SW REGION | 7.0 | 9.6 | 30.3 | 21.5 | 23.8 | 51.9 |
| INDIANA | **8.0** | **9.6** | **30.7** | **14.3** | **19.5** | **43.0** |

* = Unstable rate due to fewer than 20 birth outcomes.
S = Significantly different from state.

# PNP – At Risk Assessment Tool

- Completed by navigators
- A patient is At-Risk if:
  - Use illegal drugs (Q5)
  - Safety concerns (Q8)
  - 4+ check marks on bolded items

1. What is your current employment status?
   - ☐ **Unemployed**
   - ☐ Part time
   - ☐ Full time
   - ☐ Other _____

2. What is your current marital status?
   - ☐ **Single**
   - ☐ Married
   - ☐ Other _____

3. What is your current housing situation?
   - ☐ **Homelessness/Transient**
   - ☐ Apartment
   - ☐ House
   - ☐ Other _____

# PNP – At Risk Assessment Tool *(continued)*

4. What is your highest level of education completed?
   - ☐ **Some high school education**
   - ☐ High school diploma/GED
   - ☐ Some college
   - ☐ College diploma
   - ☐ Other _____

5. Do you use any substances that can be harmful to your growing baby?
   - ☐ None
   - ☐ **Cigarettes**
   - ☐ **Alcohol**
   - ☐ **Illegal drugs** *[automatic qualifier]*
   - ☐ Other _____

6. Do you have a significant pregnancy history?
   - ☐ First pregnancy
   - ☐ Past miscarriage(s)
   - ☐ **Previous baby went to NICU**
   - ☐ **History of postpartum depression or anxiety**
   - ☐ Other _____

7. Do you have any financial stressors?
   - ☐ Difficulty paying the bills
   - ☐ Difficulty putting food on the table
   - ☐ Difficulty clothing your children
   - ☐ Difficulty providing basic hygiene items
   - ☐ Difficulty finding transportation
   - ☐ Other _____

8. **Are there any safety concerns in your home?**
   - ☐ None
   - ☐ Current or previous DCS case *[automatic qualifier]*
   - ☐ Incarcerated
   - ☐ Other _____

Postpartum at-risk qualifiers:
- ☐ **Father not listed on birth certificate**

Infant Qualifiers
- ☐ Positive toxicology
- ☐ NICU admission
- ☐ Low Birth Weight
- ☐ Other _____

# Milestones

- 68% of all births
- 1,100 patients
- 29 “Red”
- **Who are these patients?**

| Births | | | | | | |
|---|---|---|---|---|---|---|
| **Quarter** | 2017Q1 | 2017Q2 | 2017Q3 | 2017Q4 | 2018Q1 | Totals |
| **Births** | 485 | 466 | 514 | 442 | 412 | 2319 |
| **C/Sections** | 136 | 121 | 122 | 149 | 126 | 654 |
| **Percentage** | 28.0% | 26.0% | 23.7% | 33.7% | 30.6% | 28.4% |
| **Premature** | 31 | 28 | 42 | 59 | 46 | 206 |
| **No Prenatal Care** | 4 | 3 | 3 | 0 | 0 | 10 |

# Learning to drive on a bumpy road!

- Doctor!
- Finding the patients
- EMR Documentation
- Patient Engagement
  - Prior Experiences
  - Incentives
  - Focus Groups

# What Can **YOU** Do?

## PRACTICES TO REDUCE INFANT MORTALITY

- Improve overall health for women of child-bearing age
- Promote early & adequate prenatal care
- Decrease early elective deliveries before 39 weeks
- Decrease prenatal smoking & substance abuse
- Increase breastfeeding duration & exclusivity
- Support birth spacing & interconception wellness
- Promote the ABC's of safe sleep: place baby to sleep *a*lone, on his or her *b*ack, in a *c*rib

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# Where to Start?

- Community / Physician Engagement
- Needs Assessment
- Navigation Services (connecting with resources)
  - Community Health Workers
  - Community Paramedics
  - Family Nurse Partnership
- Target, target, target!
- Leverage free resources (non-traditional partners)

# Resources – examples

## DOSE TRAINING

How First Responders can proactively reduce sleep related infant death

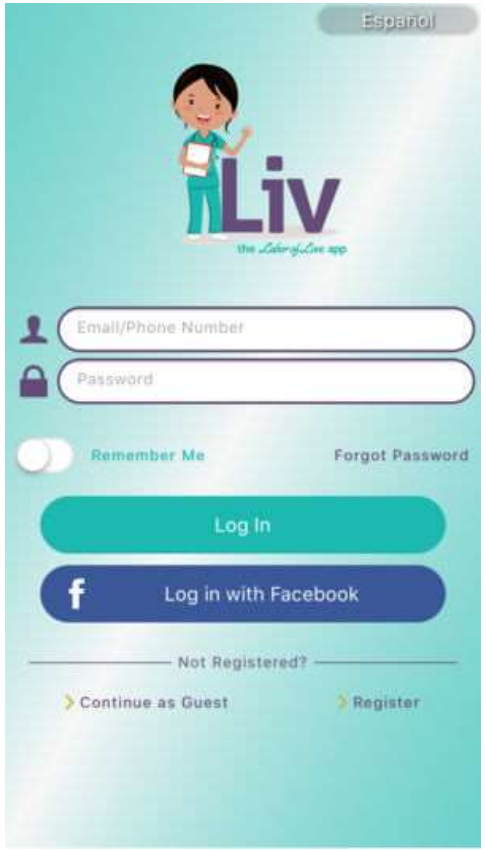
DOSE
Direct On Scene Education™

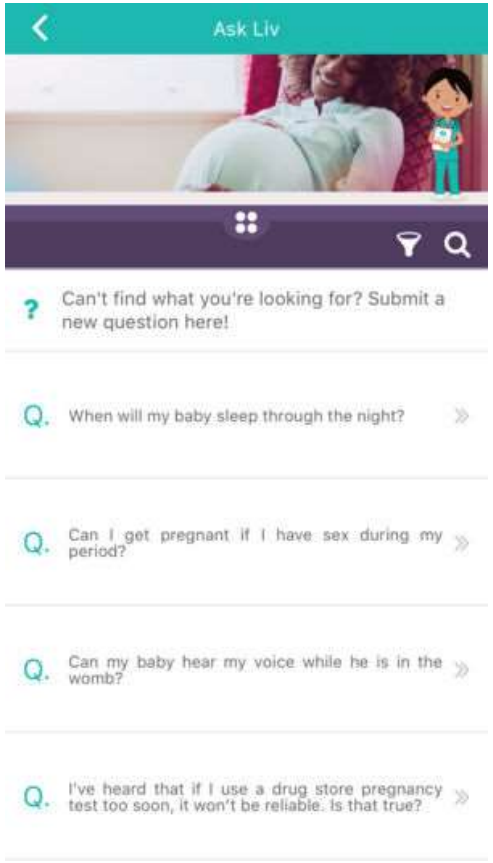
## CRIBS FOR KIDS

Provide cribs to babies whose mothers could not afford them and educate mothers about the dangers of unsafe-sleep environments

Cribs for Kids®
Helping every baby sleep safer

# Liv: A Pregnancy App



Download it from
Google Play or App Store

Indiana State Department of Health

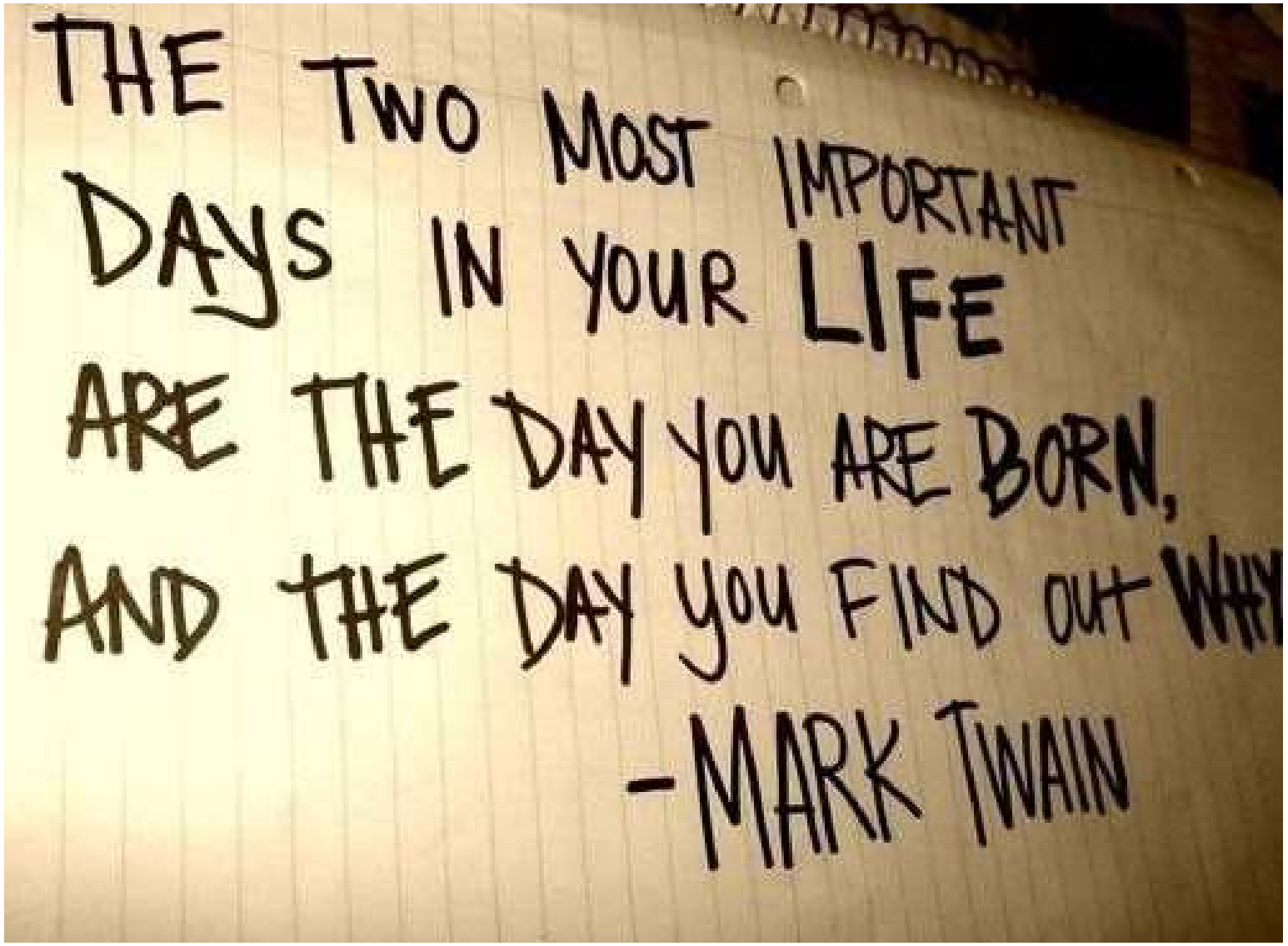
# Additional Community Resources

- March of Dimes
- Chances and Services for Youth (CASY)
- Extension Offices (Purdue University – Safe Sleep)
- Healthy Families (Post delivery visits up to school age)
- Women Infants & Children (WIC) & Public Health Department (Prenatal)
- Community Mental Health Center
- Crisis Pregnancy Center (parenting classes / vouchers)
- Others (Women's league, Goodwill, etc.)

# Clinical Process Changes

- In-take (clinic and/or hospital)
- Navigators in patient care conferences
  - Home needs
  - Support
- Post-partum screening
  - More systematic & consistent
- Dept. Child Services Referrals Processes
  - Parallel Process
- Staff Awareness & Education
- Safe Sleep Education – Global to entire family!

# Reflecting Back

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# Thank you

# Incentives Schedule

## PERINATAL

| When | Mother to Be Attends/Completes | Reward |
|---|---|---|
| 1st Trimester Appt. | 1st Trimester Appts. | Enrolled in Program & Free Prenatal Classes |
| 2nd Trimester: 20-24 Week Visit | 2nd Trimester Appts. | Enrolled in Program/Baby Bundle (WHO Code Compliant Healthy Baby Bag) |
| 3rd Trimester: 36 Weeks | 3rd Trimester Appts. | |
| 34 Weeks-Term | PNN Home Visit | PNN Brings Baby Hygiene Products (Baby Bathtub & Baby Wash) |

## POSTPARTUM

| 1 Mo. After Delivery | 1 Mo. Appointment | Baby Essentials: Tylenol, Gripe Water, Gas Drops, Nasal Saline & Aspirator |
|---|---|---|
| 3 Mo. After Delivery | PNN Home Visit | |
| 6 Mo. After Delivery | PNN Home Visit Or Children's Museum Visit | Children's Museum Visit (if no home visit at 6 Month) |
| 9 Mo. After Delivery | PNN Home Visit Or Children's Museum Visit | Children's Museum Visit (if no home visit at 9 Month) |
| 12 Mo. After Delivery | Year Old Birthday | Toddler Convertible Car Seat |