



# UNDERSTANDING SOCIAL DETERMINANTS OF INFANT AND MATERNAL MORTALITY

Jack Turman, Jr., Ph.D.  
Professor

Dept. of Social and Behavioral Science, Richard M. Fairbanks School of Public Health  
Dept. of Pediatrics, School of Medicine  
Director, Grassroots MCH Initiative  
Indiana University  
IUPUI

© Dr. Jack Turman Jr., Do not use without permission.



# What do High Infant and Maternal Mortality Rates Tell Us

- Infant and maternal mortality are critical indicators of population health
  - Health
  - Social stability
  - Well-being



<https://www.the-scientist.com/speaking-of-science/speaking-of-science-41544>



<https://www.kcl.ac.uk/news/reducing-maternal-mortality-in-low-and-middle-income-countries>



© Dr. Jack Turman Jr., Do not use without permission.



# FIRST A LOOK AT THE NUMBERS REFER TO:

[HTTPS://WWW.IN.GOV/HEALTH/MCH/FILES/2020-INFANT-MORTALITY-MORBIDITY.PDF](https://www.in.gov/health/mch/files/2020-infant-mortality-morbidity.pdf)

[HTTPS://WWW.IN.GOV/HEALTH/CFR/FILES/MATERNAL-MORTALITY-ANNUAL-REPORT-2022.PDF](https://www.in.gov/health/cfr/files/maternal-mortality-annual-report-2022.pdf)



# INFANT MORTALITY



# Infant Mortality Rates (IMRs)

2011-2020

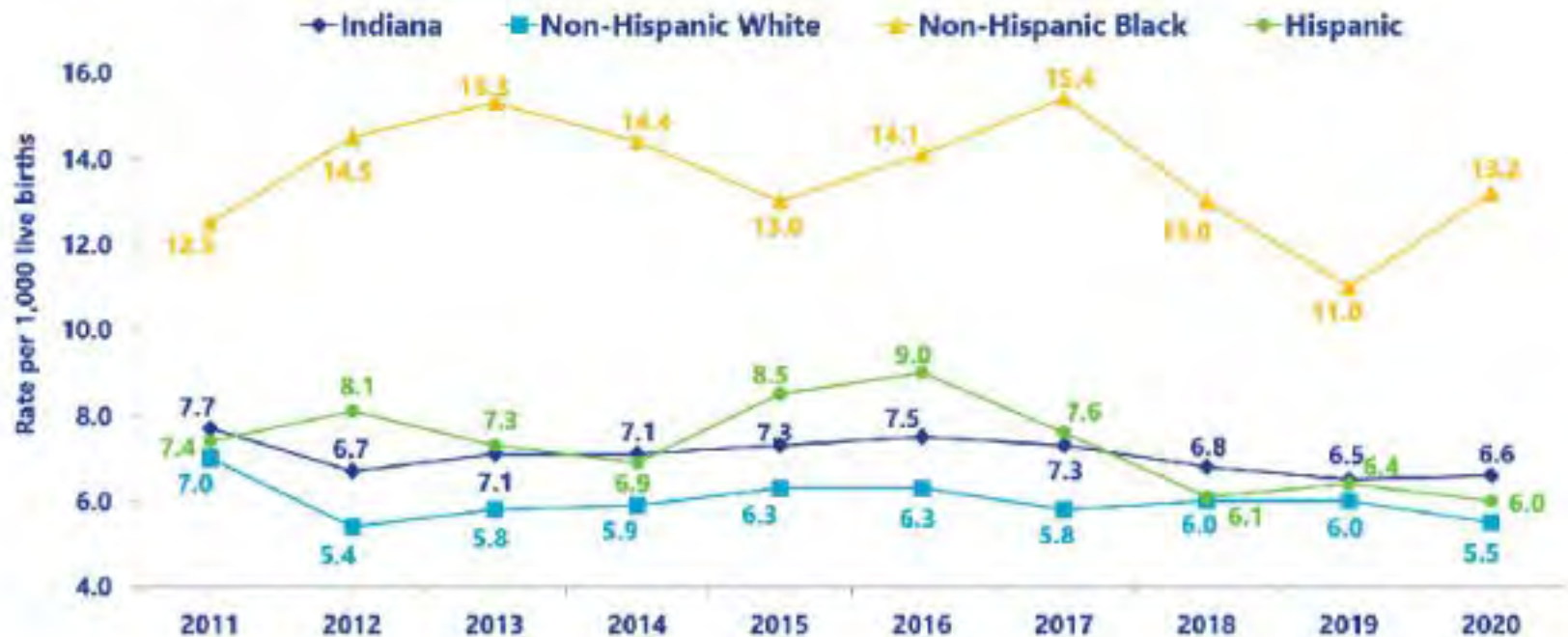


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
—■— Indiana	7.7	6.7	7.1	7.1	7.3	7.5	7.3	6.8	6.5	6.6
—●— U.S.	6.1	6.0	6.0	5.8	5.9	5.9	5.8	5.7	5.6	5.4
- - - HP 2020 Goal	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
- - - HP 2030 Goal	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0



# Indiana IMRs by Race and Ethnicity

## 2011-2020







## County Infant Mortality Rates Compared to the State 2016 - 2020



### Highest Stable Infant Mortality Rates

Adams, 8.8	Cass, 8.8
Delaware, 8.7	Grant, 8.6
Fayette, 8.4	Vigo, 8.4
Elkhart, 8.3	Noble, 8.3
Shelby, 8.3	Lake, 8.2

### Counties with Stable Rates Achieving HP2020 Goals

Pulaski, 4.2	Hendricks, 4.5
Johnson, 4.8	Hamilton, 4.9
Tippecanoe, 5.7	Floyd, 5.8



DATA SOURCE: (2016-2020) DEH-DIC-171; HENRICHSEN 2008-2016-2020-12-2022



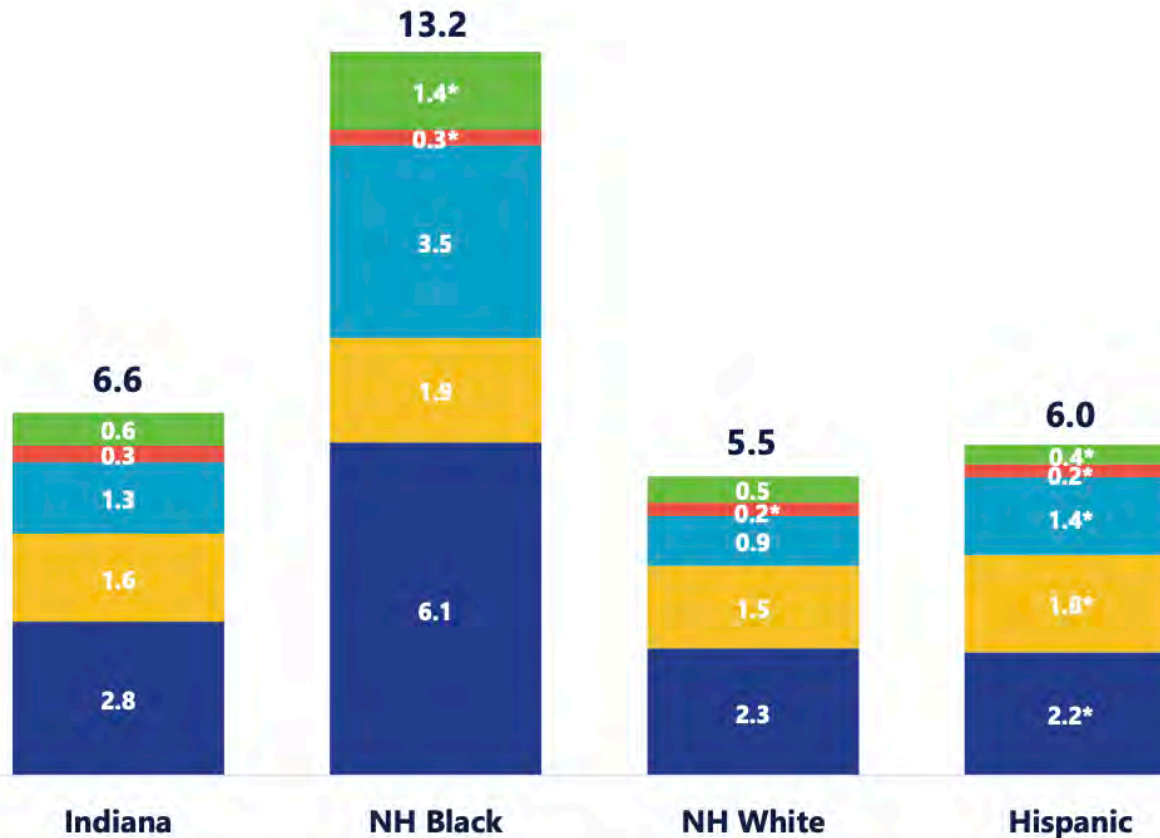
## Highest Infant Mortality Rates by ZIP Code 2016-2020

Zip Code	County	Births	Deaths	IMR	NH White IMR	NH Black IMR	Hispanic IMR
46404	Lake	1121	20	17.8	U	17.7*	U
46516	Elkhart	2823	40	14.2	7.7*	34.9*	11.7*
46628	St. Joseph	2050	26	12.7	5.2*	18.5*	U
47302	Delaware	1583	20	12.6	10.7*	26.7*	U
46219	Marion	2396	26	10.9	7.9*	17.7*	U
46806	Allen	2399	26	10.8	17.8*	11.8*	8.1*
46312	Lake	2068	22	10.6	U	17.0*	6.8*
46410	Lake	2164	23	10.6	U	14.5*	U
46514	Elkhart	2842	30	10.6	8.1*	26.8*	11.3*
46260	Marion	2471	26	10.5	U	18.9	U
46222	Marion	3033	31	10.2	U	19.6	4.3*
46218	Marion	2482	25	10.1	U	12.6	U
46203	Marion	2785	28	10.1	7.9*	15.6*	10.9*
46241	Marion	2587	26	10.1	10.2*	12.8*	U





# 2020 Cause-Specific IMR



- Other
- Assaults/Injuries
- SUIDs
- Congenital Anomalies
- Perinatal Risks

Infant Mortality Rates (IMRs) are per 1,000 live births.

Cause-specific IMRs may not add up to the overall IMR for each group due to rounding.

\* Rates based on counts less than 20 are considered unstable and should be interpreted with caution.

NH = Non-Hispanic



## 2020 Birth Outcomes by Race/Ethnicity

	Indiana	Non-Hispanic Black	Non-Hispanic White	Hispanic
Preterm (< 37 weeks gestation)	10.4%	14.7%	9.8%	9.8%
Low Birthweight (< 2500 g)	8.1%	14.2%	7.2%	7.1%
Very Low Birthweight (< 1500 g)	1.4%	3.1%	1.1%	1.3%
Not Breastfeeding (at discharge)	18.0%	26.7%	17.0%	14.8%
No Early Prenatal Care (1 <sup>st</sup> Trimester)	30.7%	43.7%	25.9%	44.9%
Smoking during Pregnancy	10.9%	7.8%	13.2%	2.7%
Births Covered by Medicaid	38.5%	61.7%	30.5%	62.6%
Teen Pregnancy	5.3%	8.4%	4.4%	8.7%



# MATERNAL MORTALITY



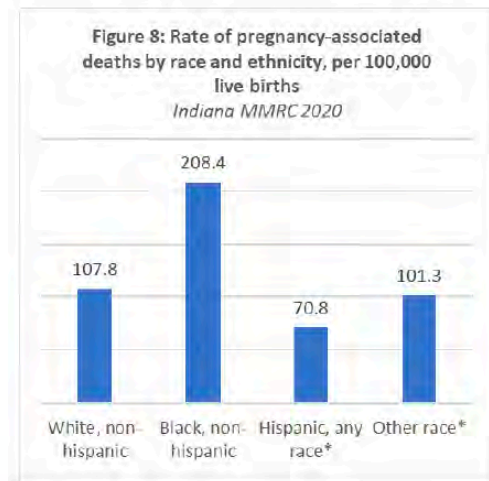
# 2020 Maternal Mortality Review

## Maternal Mortality Ratios for 2020

- **117.1 per 100,000 live births:** pregnancy-associated mortality ratio in Indiana in 2020
- **22.9 per 100,000 live births:** pregnancy-related mortality ratio in Indiana in 2020

Figure 7: Race/ Ethnicity (2020)

	N	%
White, non-Hispanic	61	66.3%
Black, non-Hispanic	22	23.9%
Hispanic, any race	6	6.5%
Other race	3	3.3%







# Profiles of the Women

Figure 11: Age at Death (2020)

	N	%	Rate
15-19 years	3	3.3%	72.7
20-24 years	19	20.7%	106.2
25-29 years	31	33.7%	123.5
30-34 years	19	20.7%	91.6
35-39 years	16	17.4%	181.8
40+ years	4	4.3%	214.9

Figure 22: Urban Status of Last Residence (2020)

	N	%
Metropolitan	69	67.4%
Micropolitan	15	16.3%
Rural	8	8.7%

Figure 24: Education Level (2020)

	N	%
Less than HS Grad	13	14.1%
HS Grad or GED	48	52.2%
Some College	18	19.6%
Associate's or Bachelor's	10	10.9%
Advanced Degree	2	2.2%
Unknown	1	1.1%

Figure 30: Insurance Status (2020)

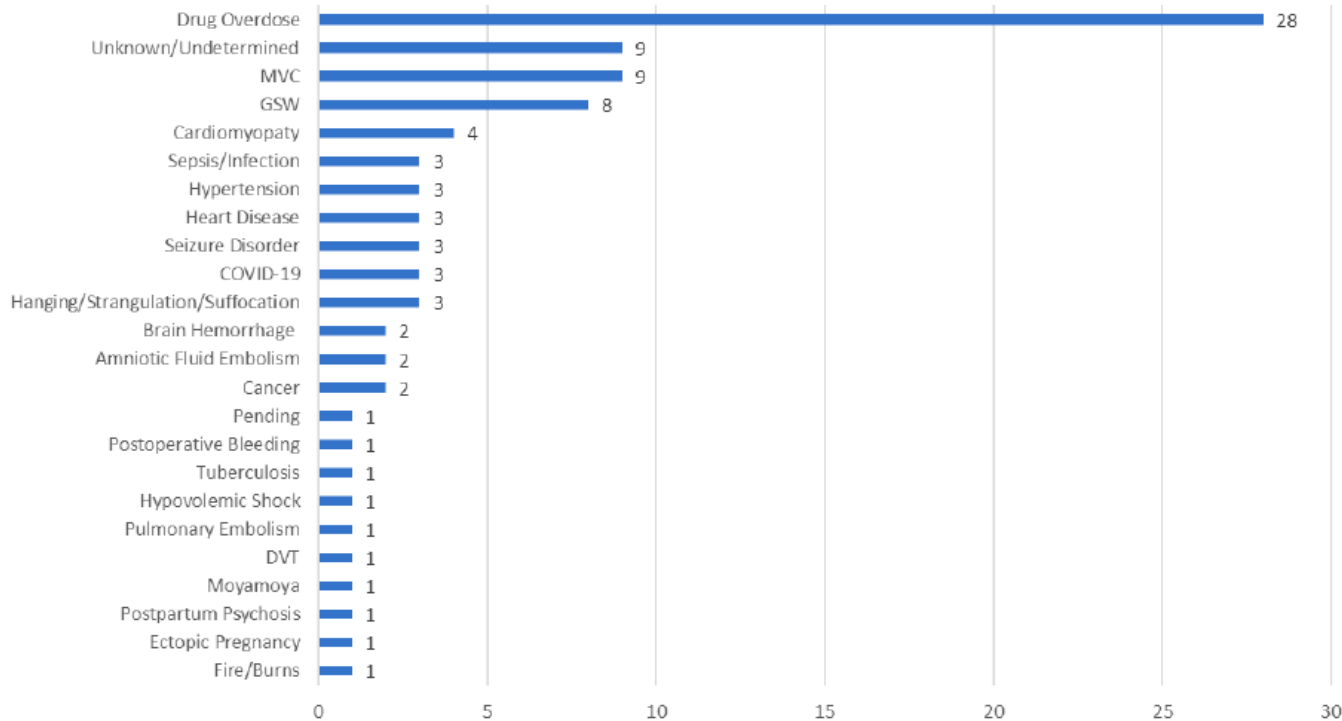
	N	%
Medicaid	69	75.0%
Private	19	20.7%
Self-Pay/None	3	3.3%
Other	1	1.1%





# Causes of Maternal Mortality

**Figure 36: Committee Determination Causes of Death for all 2020 Pregnancy-Associated Deaths**  
*Indiana MMRC 2020 (n=92)*





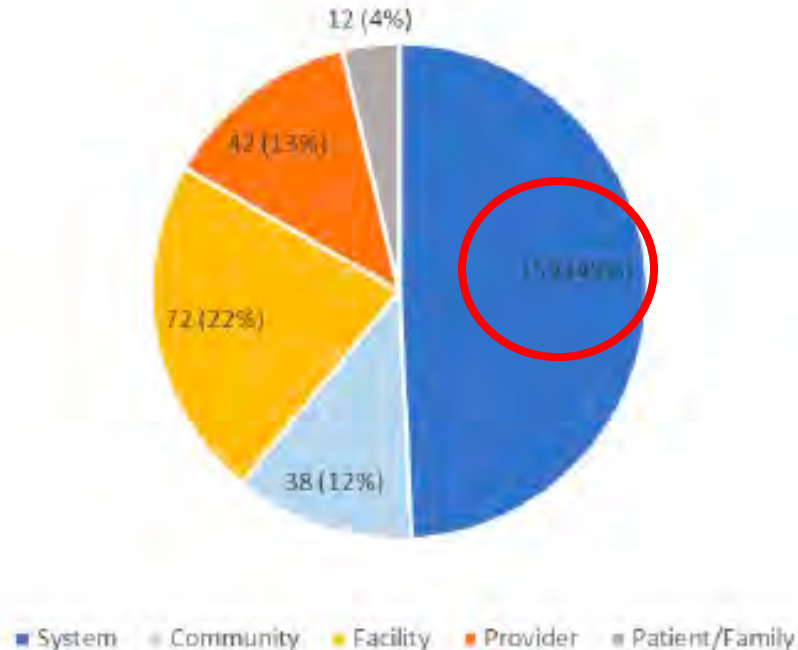
# Prevention!

- 79.3% of pregnancy-associated deaths were deemed preventable by the Indiana MMRC in 2020
- 77.8% of pregnancy-related deaths were deemed preventable by the Indiana MMRC in 2020



# Need for Systems Change

Figure 55: 2020 Categories of Committee Recommendations for Prevention of Pregnancy-Associated Deaths in Indiana  
*Indiana MMRC 2020*





# NOW, FOR THE BACK STORIES



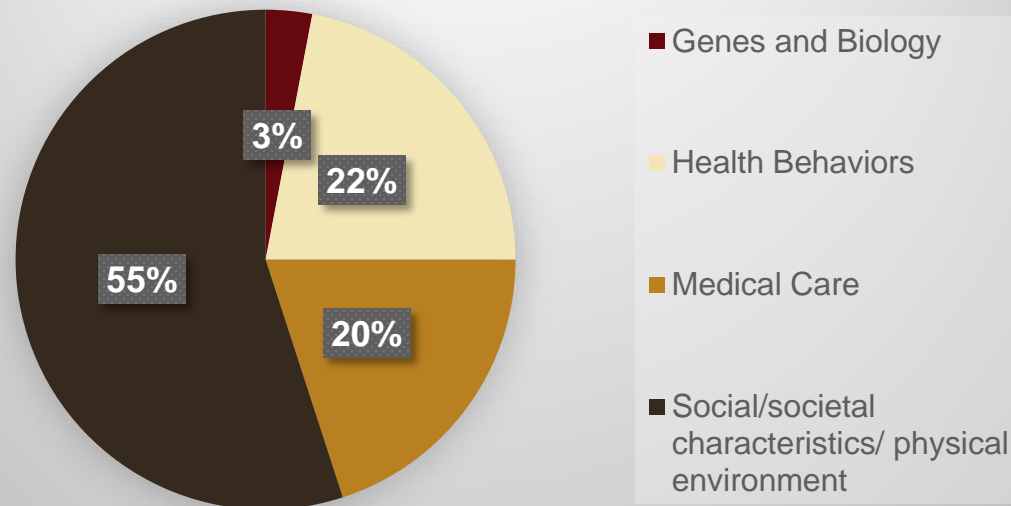
# **MOVING FORWARD WITH SOLUTIONS**





# The Need to Address Social Factors Surrounding the Families

## Estimates of how determinants of health contribute to population health



<http://www.cdc.gov/nchhstp/socialdeterminants/faq.html#c>

© Dr. Jack Turman Jr., Do not use without permission.



# The Five Social Determinants of Health: Addressing Social Systems to Cause Health Change

Healthypeople.gov



**RICHARD M. FAIRBANKS  
SCHOOL OF PUBLIC HEALTH**

INDIANA UNIVERSITY  
Indianapolis



# **EXAMPLE OF ADDRESSING THE SOCIAL DETERMINANTS OF HEALTH**



# The Number One Concern of Low-Income Mothers Across Indiana - Housing

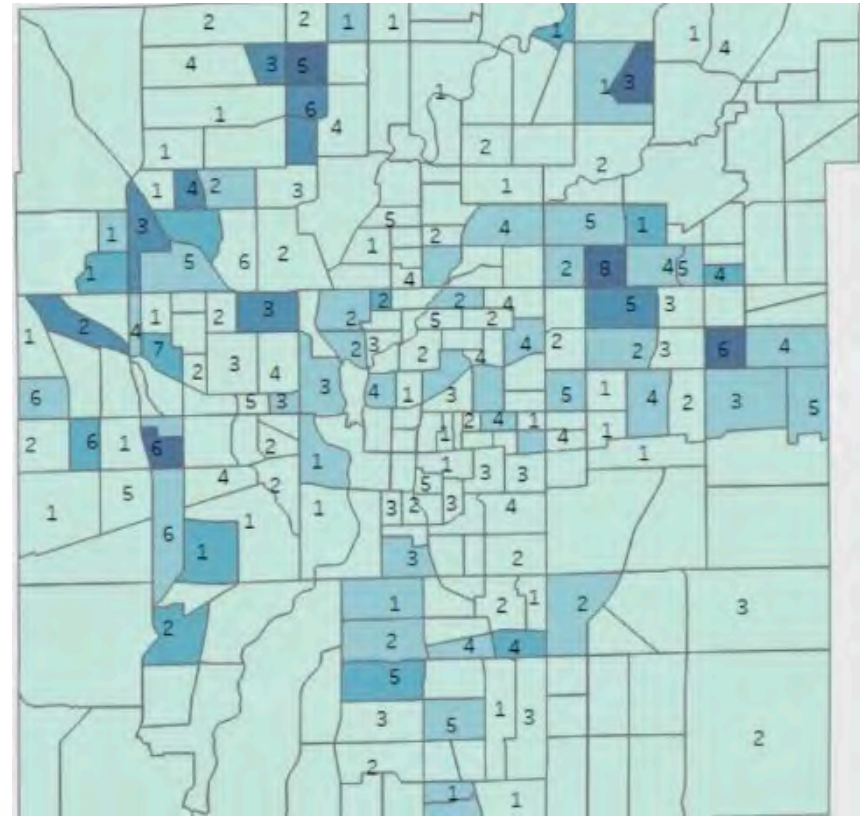
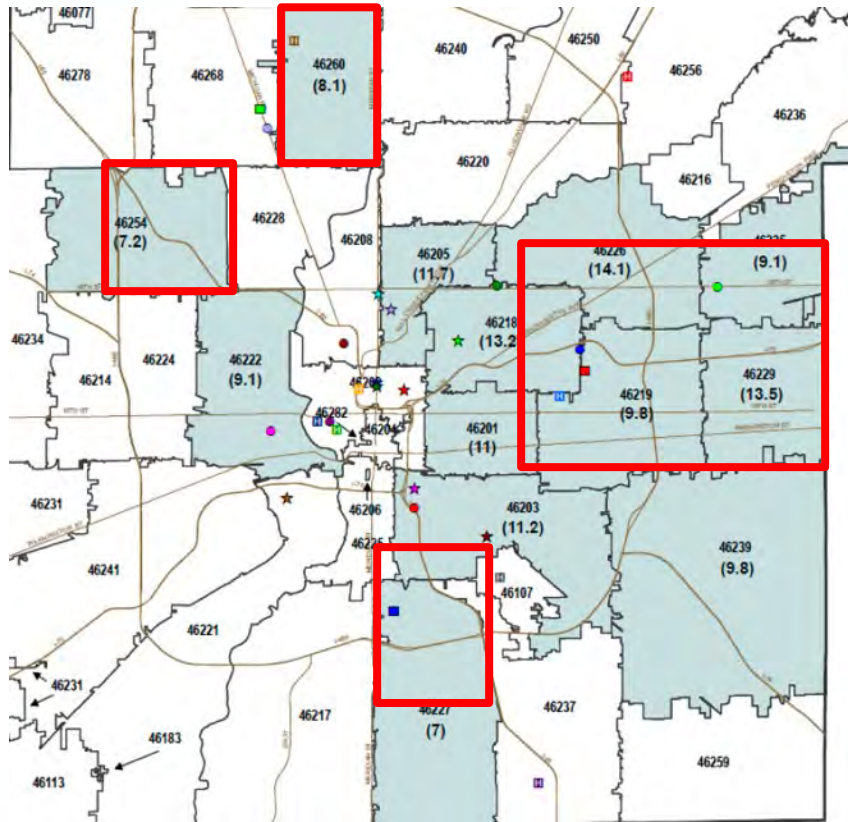
- Fort Wayne ranks 13<sup>th</sup> in nation for eviction
- Indianapolis ranks 14<sup>th</sup> in nation for eviction
- Indianapolis ranks 2<sup>nd</sup> behind New York for sheer number of evictions

<https://evictionlab.org/rankings/#/evictions?r=United%20States&a=0&d=evictionRate&lang=en>





# Looking at Evictions and Infant Mortality in Indiana







# A Winter's Night in Marion County – 2021 and 2022

## 2021

- Highest number of homeless individuals in 10 years
- 54% were Black or Hispanic
- 33% Women

## 2022



You'll soon start seeing striking images like this on sidewalks across Indianapolis, as part of a campaign to raise awareness about homelessness. *Courtesy Wheeler Mission*  
<https://www.indystar.com/story/sponsor-story/wheeler-mission/2018/07/18/wheeler-new-face-homelessness/774509002/>

© Dr. Jack Turman Jr., Do not use without permission.



# Homeless and Pregnant, Homeless and Parenting



- On average, more than 250 pregnant women and their infants experience homelessness in Marion County between 2017-2021
- In 2020, of 78 infant deaths reviewed by Marion County FIMR – more than half had housing related stressors.



# Addressing Housing Insecure Pregnant Women in Indy!

## Housing Equity for Infant Health Initiative



Two interventions comprising the Housing Equity for Infant Health Initiative.



## Housing Equity for Infant Health Initiative: Healthy Beginnings at Home

Intervention shown to reduce infant mortality, preterm birth, NICU stays, Medicaid spending in Ohio – CareSource.

### **Components**

Housing unstable pregnant women in 1<sup>st</sup> or 2<sup>nd</sup> trimester in Indy.

- Rental assistance for 24 months (tapered in last 9 months)
- Housing Navigation
- Case Management



# Housing Equity for Infant Health Health Justice Intervention

## **Health-justice interventions demonstrate systems-level impact by:**

- Identifying patterns in the social needs of vulnerable populations
- Leveraging legal expertise to change policies, laws, and regulations to improve their health and social outcomes.

## **Previous health-justice interventions have:**

- Successfully stabilized housing for vulnerable families
- Increased families' abilities to participate in infant well-care
- Prevented utility shut-offs for families with vulnerable children
- Increased access to nutritional supports for newborns.

## **Components**

### Education

- Know your rights materials and presentations.

### Strategic Litigation

- Filing appeals of evictions; enforcing lease and Indiana habitability rules.
- Filing amicus legal briefs.

### Legal analysis

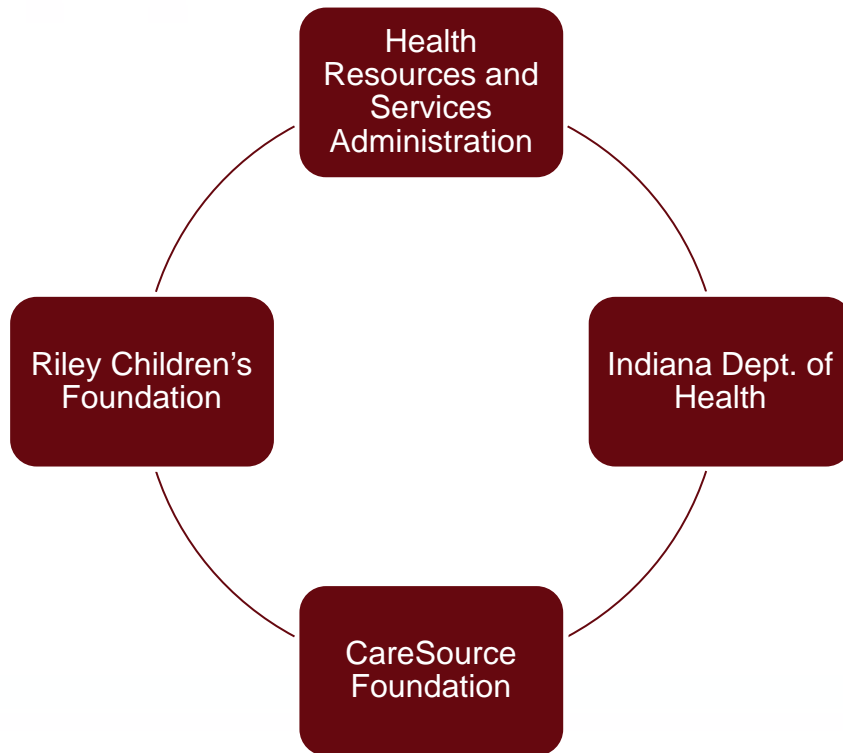
- Research and evaluation of Indiana eviction laws and processes.
- Comparative analysis with other states.
- Court rule analysis and amendments.





# A Great Team Effort

## Gratitude for Funders



## The Best Partners

Grassroots MCH Initiative Staff  
Grassroots MCH Leaders  
CareSource  
Indiana Justice Project  
IDOH  
Merchant's Affordable Housing  
Wheeler Mission  
Coalition for Homelessness  
Intervention and Prevention  
Hoosier Housing Needs Coalition  
Mayor's Office – Indianapolis  
Office of Public Health and Safety



# Some Final Thoughts About Policy Action.... Based on the Voices of Indiana Women Living in High-Risk Zip Codes



Affordable Housing  
Public Transportation  
Options  
Help Address Domestic  
Violence  
Workplace Space  
Sensitive to Pregnancy  
and Infant Parenting  
Access to Affordable  
Childcare



# To Learn More....

## Contact:

- Jack Turman, Jr., Ph.D., Director, ([jaturman@iu.edu](mailto:jaturman@iu.edu))
- 2022 APHA Thought Leadership Series Film: APHA TV Turman Film:  
<https://www.youtube.com/watch?v=RRE0W3jquwM&list=PL9CZabk3nD4HBRBttLBd4-KWgilWKPctl&index=17>

## Visit and Follow Us:

- Grassroots MCH Website: <https://go.iu.edu/3jkX>
- [Facebook](#), [Twitter](#), & [Instagram](#): @GrassrootsMCH
- YouTube: <https://rb.gy/umyp7u>
- LinkedIn: <https://rb.gy/4wjlf6>

© Dr. Jack Turman Jr., Do not use without permission.

