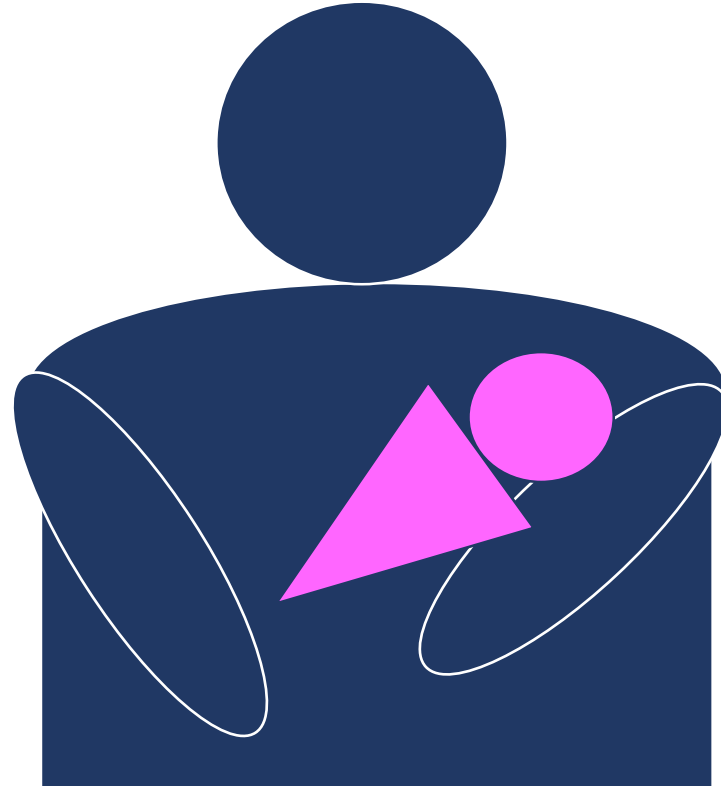




**Team M-Plus**



# An Indiana Mother



A Story

# Two Data Domains

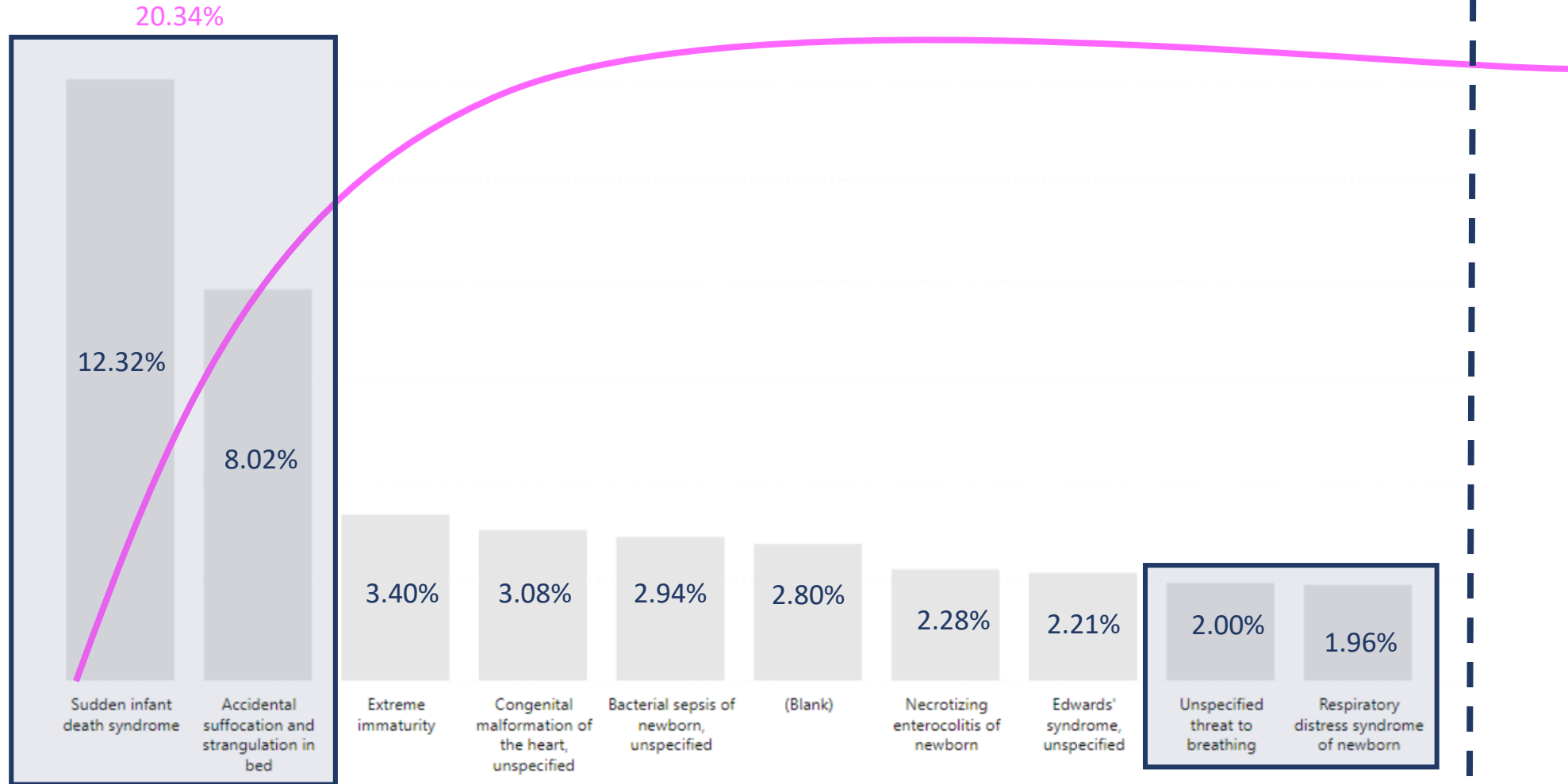


Policy Recommendation &  
Communities of Focus



Tools for Clinicians

# Population Level Analysis

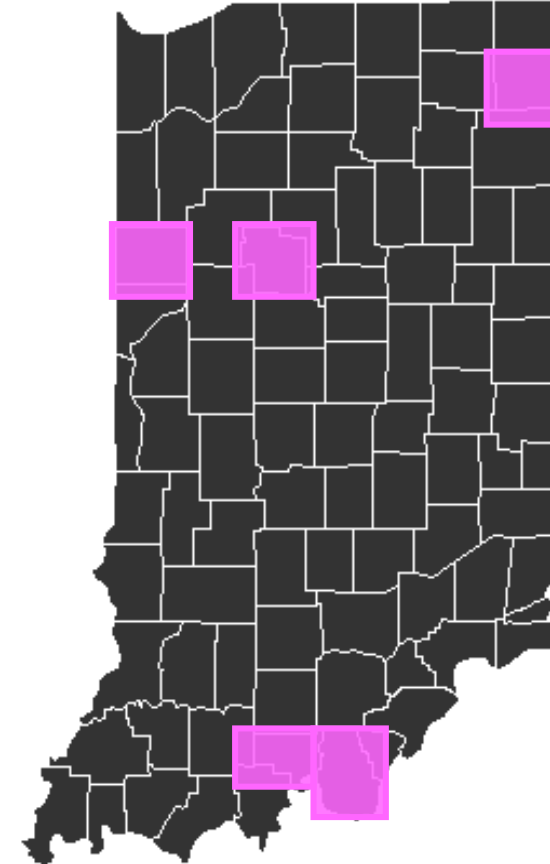


Causes of Death



# Population Level Analysis

County	SIDS & Accidental Suffocation Rate to All Deaths
CARROLL	60%
HARRISON	56%
BENTON	50%
CRAWFORD	50%
DEKALB	50%



County Analysis



# Two Data Domains

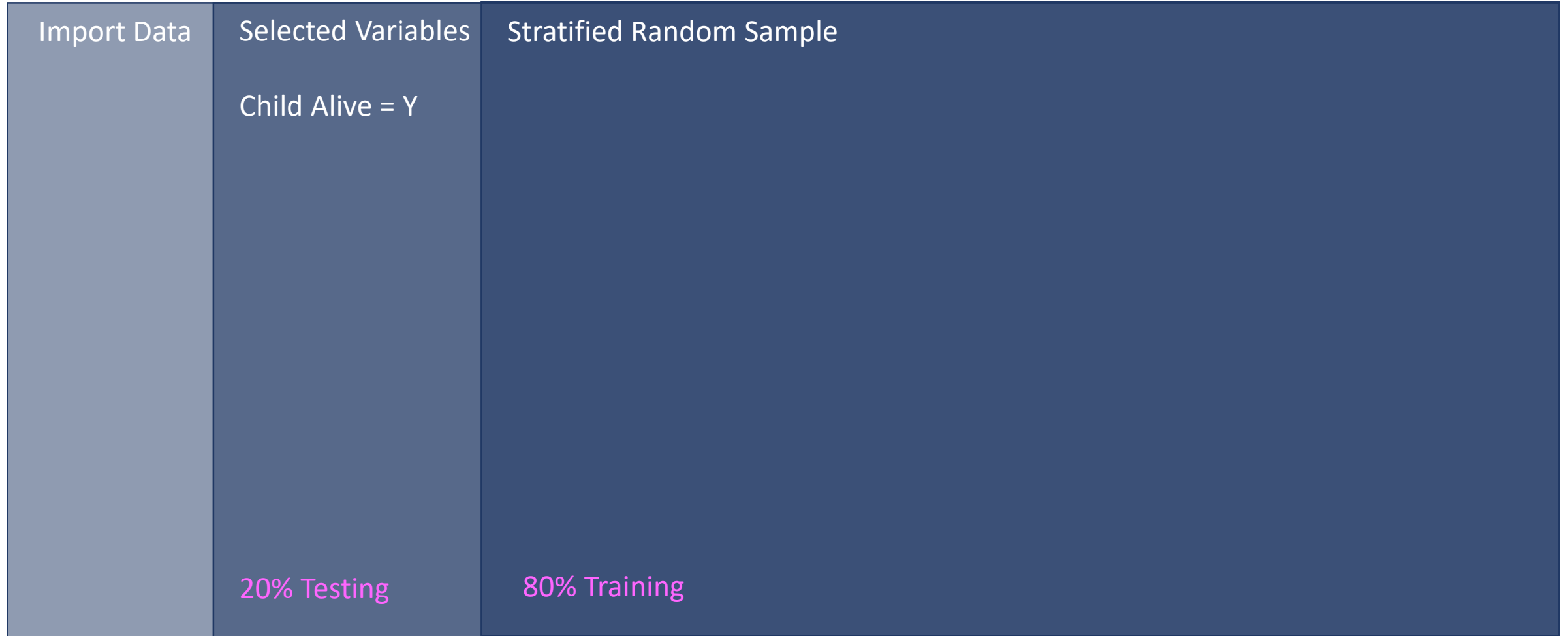


Policy Recommendation &  
Communities of Focus



Tools for Clinicians

# Patient Level Analysis

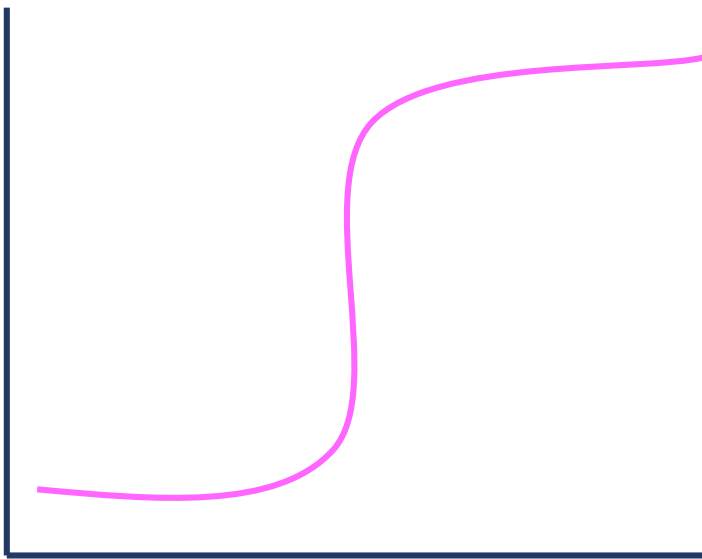


Data Cleaning

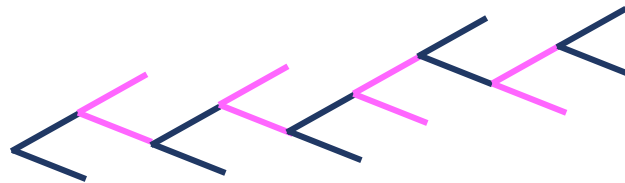


# Patient Level Analysis

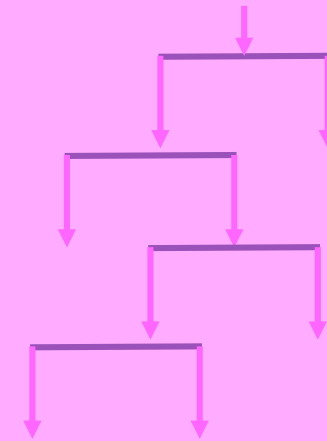
Logistic Regression



Gradient Boosted Machine



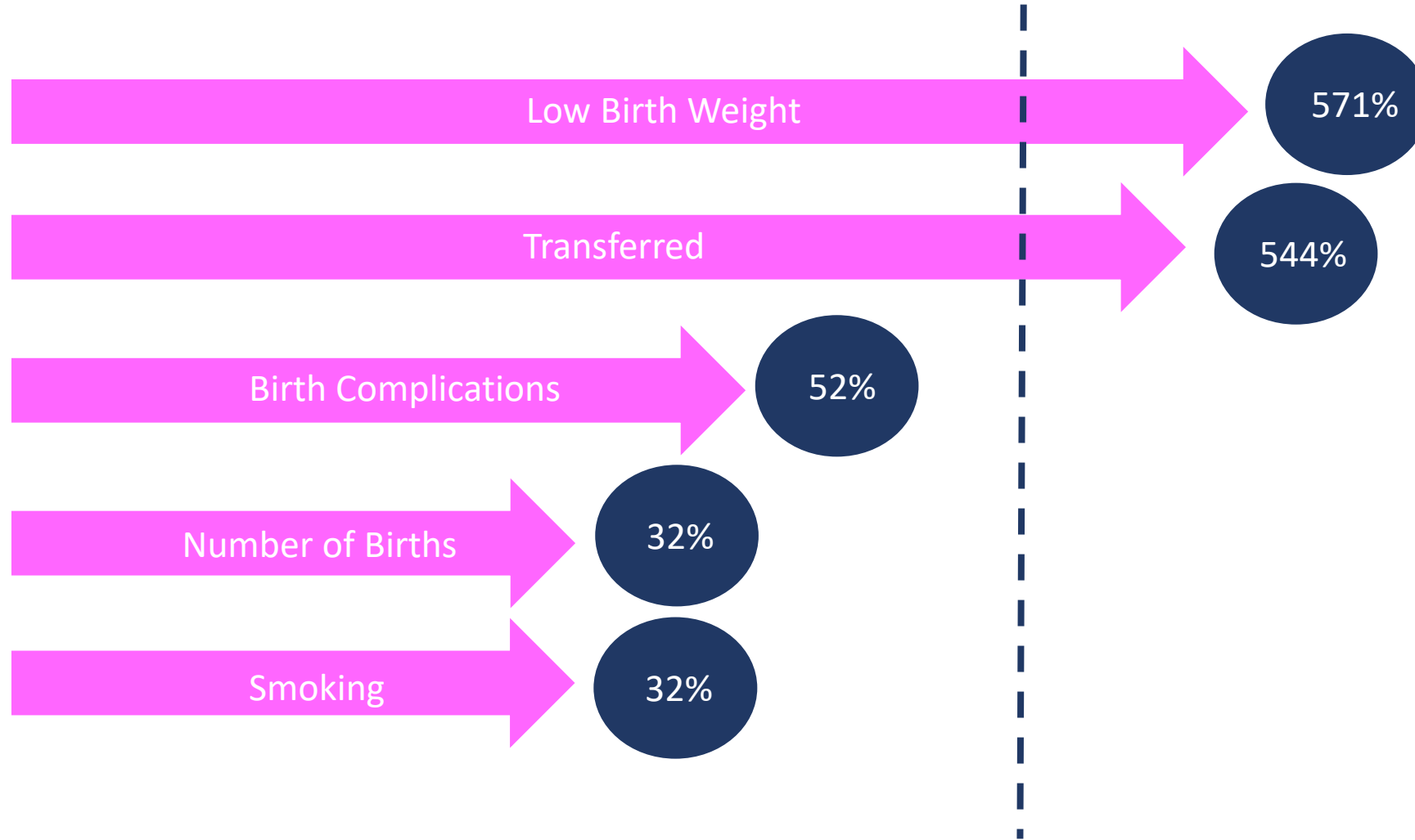
Decision Tree



Models Fit

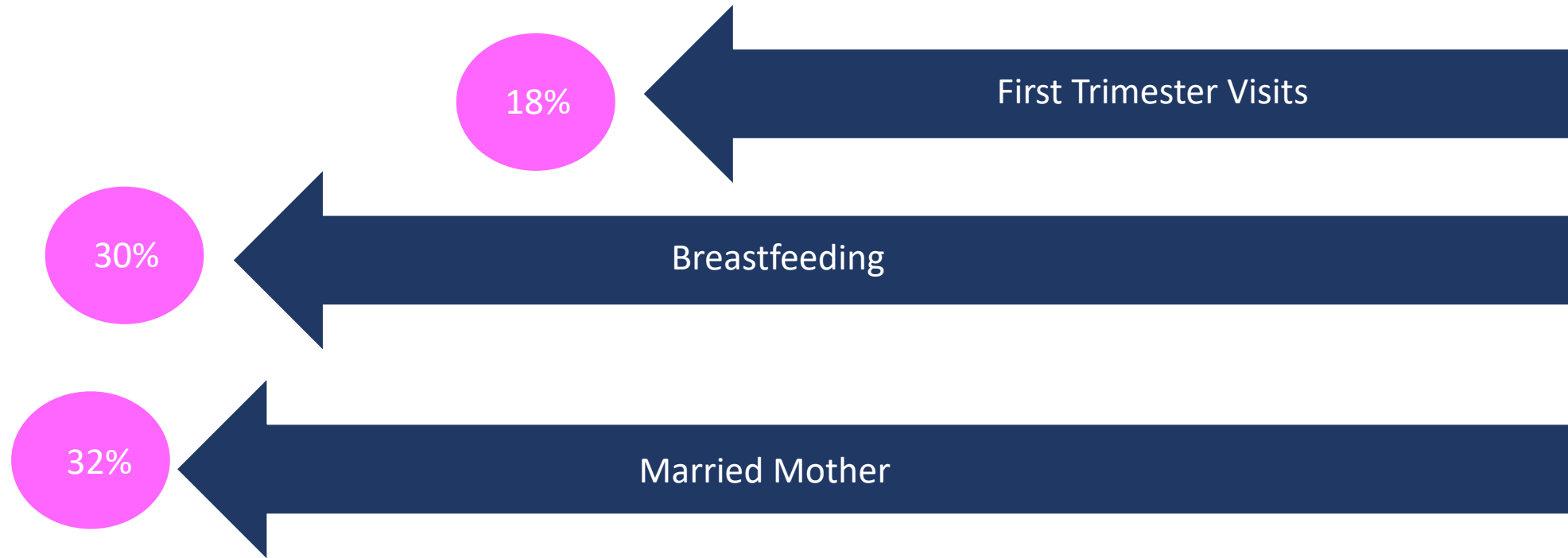


# Patient Level Analysis

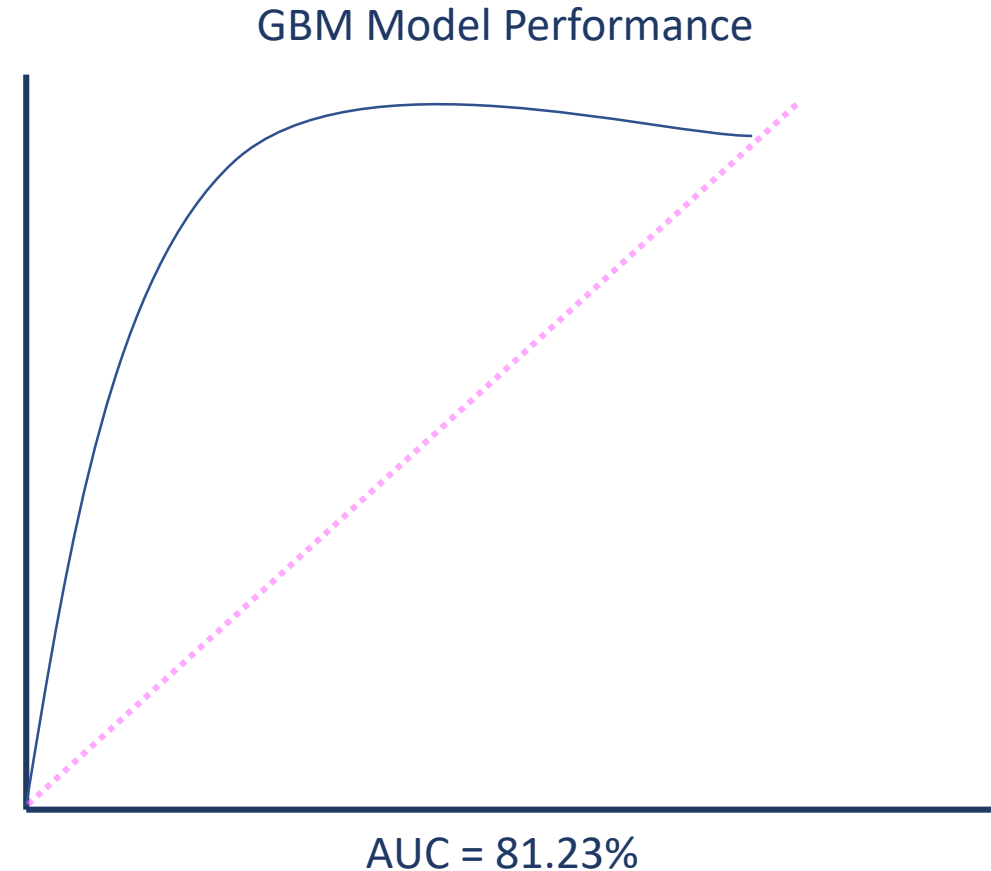
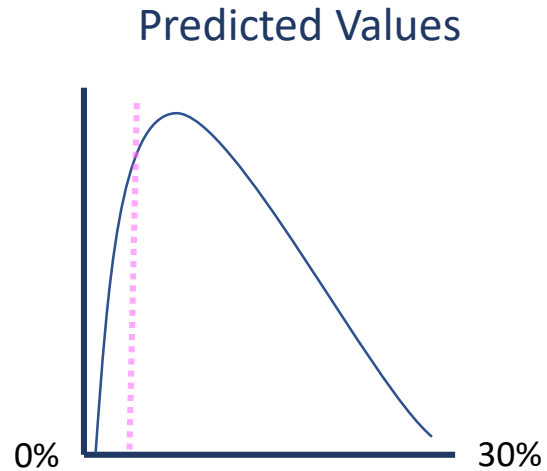


Logit – Contributing Factors

# Patient Level Analysis




# Patient Level Analysis



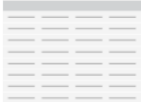
Variable	Influence
Child Transferred	46.31%
Low Birth Weight	40.40%
All Other Variables	13.29%

GBM


# Recommendation



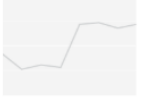
Risk List



Top Priority Patients



Model Performance



## Discharging Patients Risk

39

Patients Discharging Today

Patient ID	Child Gender	County Type	Mothers Marital Status	Mother Age Group	Low Birth Weight	Birth Complications	Mother Smokes	Risk of Mortality
10059	1	Urban	Never Married	18-25 Years	1	1	0	28.12 %
10172	0	Rural	Never Married	18-25 Years	1	1	1	30.79 %
10185	1	Urban	Never Married	18-25 Years	1	1	0	21.27 %
10998	1	Urban	Never Married	18-25 Years	1	0	1	25.23 %
11327	1	Rural/Mixed	Divorced	35-45 Years	1	0	0	25.01 %
11462	1	Rural	Never Married	18-25 Years	1	0	1	22.58 %
11801	0	Urban	Never Married	35-45 Years	1	0	1	20.58 %
12377	1	Urban	Never Married	18-25 Years	1	0	0	20.47 %
12468	1	Urban	Never Married	18-25 Years	1	1	1	22.62 %
2082	1	Rural/Mixed	Married	25-35 Years	1	1	1	21.67 %
2177	0	Urban	Married	25-35 Years	1	1	1	23.34 %
2506	1	Rural/Mixed	Never Married	25-35 Years	1	0	1	20.86 %
2510	1	Rural/Mixed	Divorced	25-35 Years	1	0	1	28.95 %
2591	1	Rural	Divorced	25-35 Years	1	0	1	26.99 %
2965	0	Urban	Widowed	25-35 Years	1	1	1	29.39 %
2974	1	Urban	Never Married	25-35 Years	1	0	1	26.21 %
3379	1	Urban	Never Married	25-35 Years	1	0	1	21.94 %
3545	1	Rural/Mixed	Never Married	25-35 Years	1	0	1	20.41 %
4096	1	Urban	Never Married	25-35 Years	1	0	1	21.10 %
5525	1	Urban	Divorced	35-45 Years	1	0	1	20.64 %
5589	1	Urban	Never Married	18-25 Years	1	0	1	23.07 %
5906	1	Rural/Mixed	Never Married	18-25 Years	1	0	0	20.97 %
6574	0	Urban	Never Married	18-25 Years	1	0	1	20.22 %
6644	0	Urban	Never Married	18-25 Years	1	0	0	20.16 %
<b>Total</b>	<b>29</b>				<b>39</b>	<b>11</b>	<b>30</b>	

# Recommendation

The sidebar contains the following elements from top to bottom:

- m+** logo
- Risk List**: A small table icon representing a list of patients.
- Top Priority Patients**: A section with a large exclamation mark icon and a right-pointing triangle, indicating a warning or alert.
- Model Performance**: A line graph icon showing data trends.

## Top Risk Patients

5

Patients Discharging Today

Patient ID	Child Gender	County Type	Mothers Marital Status	Mother Age Group	Low Birth Weight	Birth Complications	Mother Smokes	Risk of Mortality
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2965	0	Urban	Widowed	25-35 Years	1	1	1	29.39 %
<b>Total</b>	<b>3</b>				<b>5</b>	<b>3</b>	<b>4</b>	

# Recommendation

1

Smoking Cessation for  
Expectant Mothers

*A mother smoking during  
and after pregnancy  
increases an infant's risk for  
SIDS and suffocation in  
bed.*

2

Post-Natal Education and  
Follow-Up

*Education on proper sleep  
techniques and strategies  
for reducing risk have  
seen success on a national  
level.*

3

Community-specific  
implementation

*Different communities think  
differently about proper  
sleep habits for infants and  
respond differently to public  
health interventions. A  
community-specific  
implementation approach is  
needed.*

# Recommendation

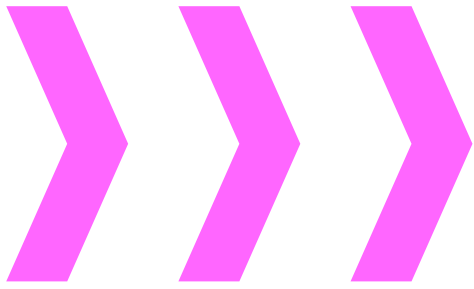
Future Data Elements: More Information at the Patient Level for Further Analysis & Understanding of Gaps

- ❑ Mothers Medical History
  - Major Risk Factors
  - Lab Values (Value Trend Summary)
  - Readmission History
  
- ❑ Infants Medical History
  - Time from Last Visit to Mortality
  - Cause of Death with that Mortality

Future Data / Research

**Future Research: Qualitative study to better understand community-specific implementation needs**

- ➔ What people of different ethnic, socioeconomic, geographic backgrounds think about infant sleep routines
- ➔ Attitudes around community health interventions
- ➔ Avenues for accessing community: leadership, networks & associations
- ➔ Deeper understanding of ethnic and other disparities relating to infant mortality in Indiana



Questions?

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[jsadowski@iuhealth.org](mailto:jsadowski@iuhealth.org)

