



# **Addressing Disparities in Perinatal Care Delivery**

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Dr. Profit serves as an unpaid Advisory Board Member of the NEC Society



# CPQCC

## QUALITY IMPROVEMENT IN ACTION

# By the numbers



17K

NICU  
ADMITS

CPQCC



138

MEMBER  
HOSPITALS



7K

ACUTE  
NEONATAL  
TRANSPORTS

CPeTS



9K

HIGH-RISK  
INFANTS  
REGISTERED

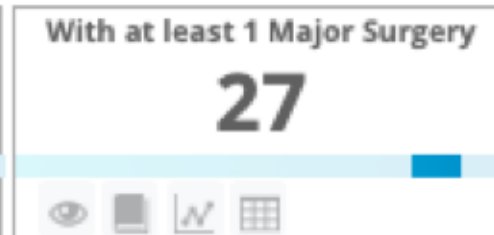
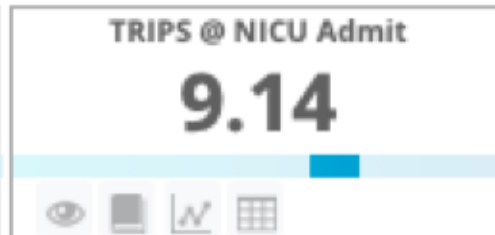
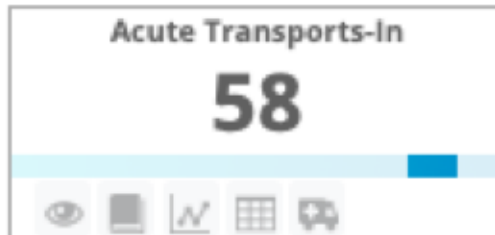
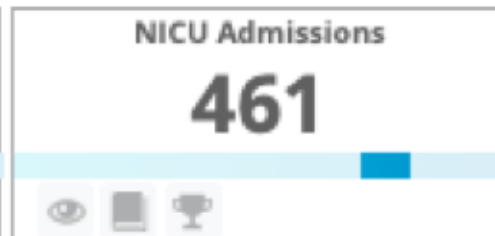
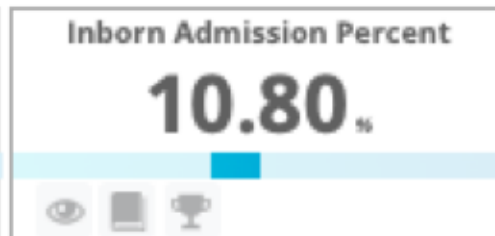
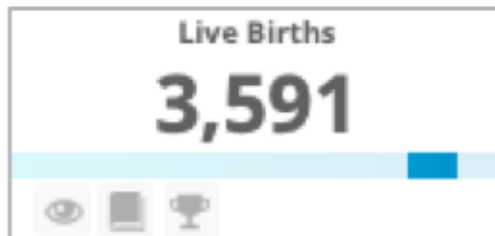
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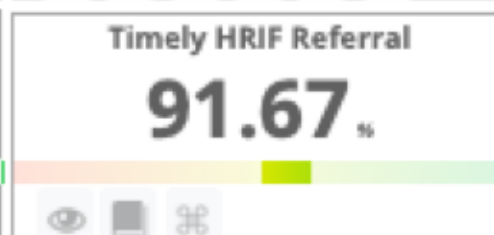
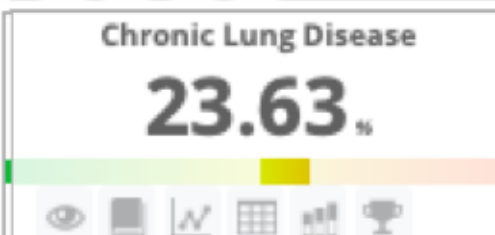
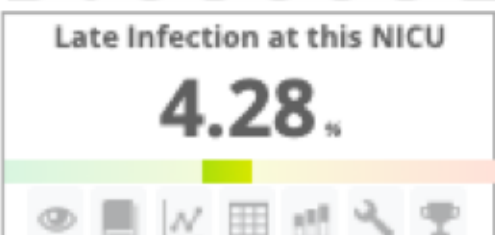
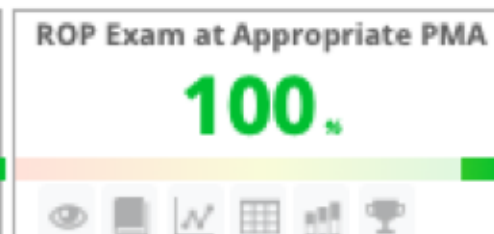
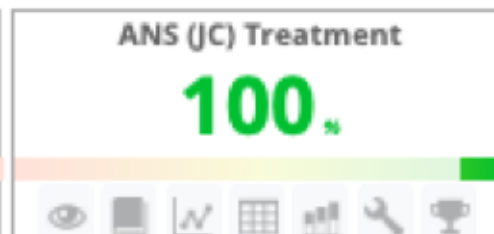
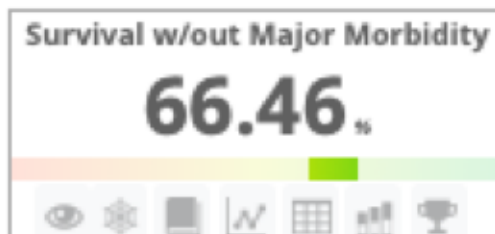
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BIRTHS

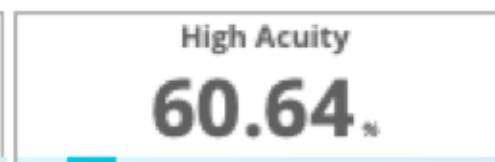
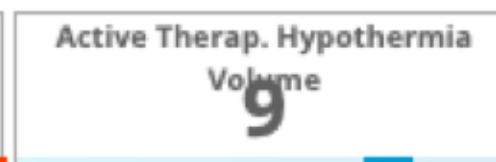
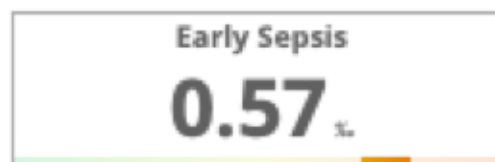
CMQCC



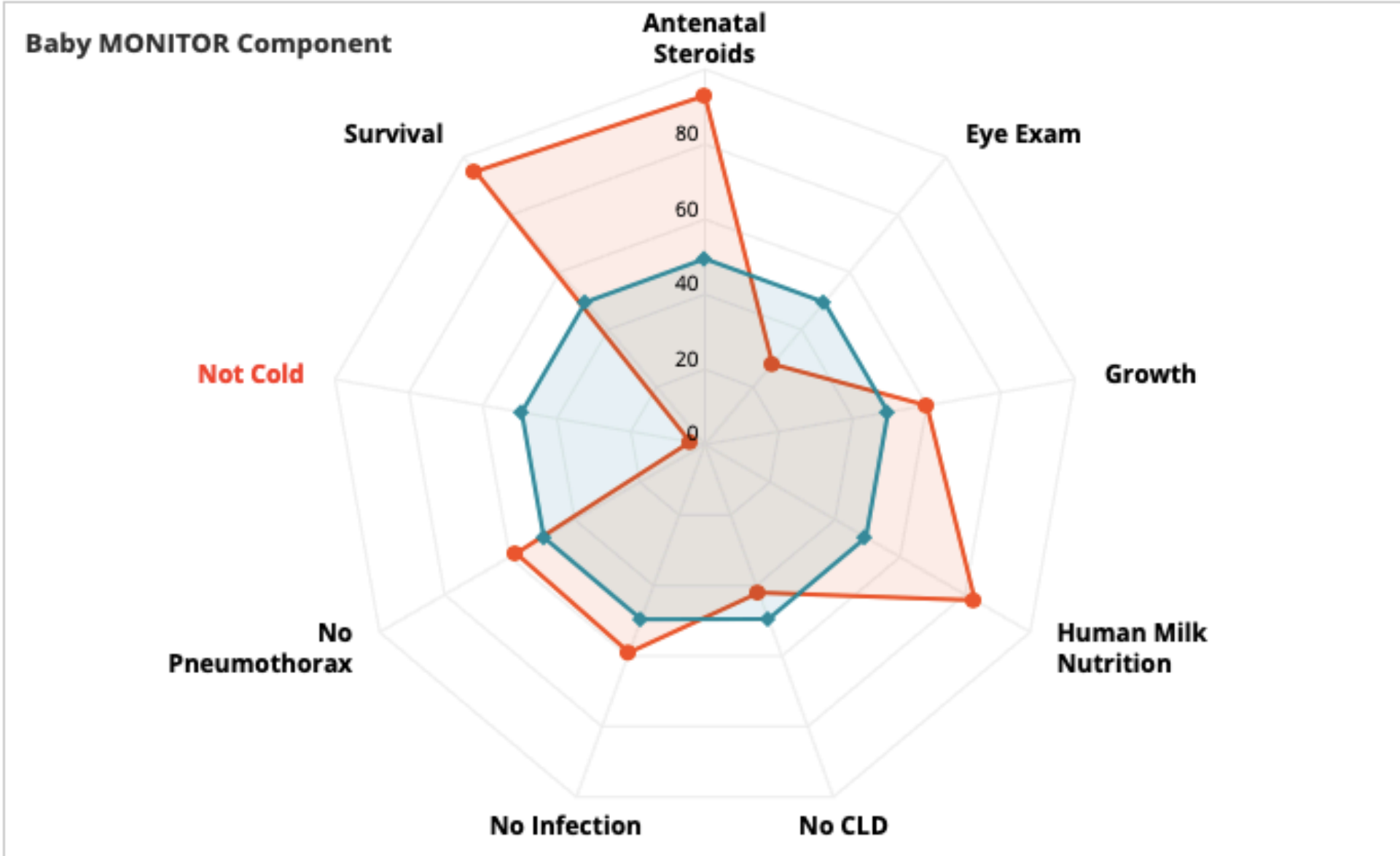
*VON Small Babies*



*Big Babies*



**CPQCC DASHBOARD**



Not Cold

Survival

Antenatal Steroids

Eye Exam

Growth

Human Milk Nutrition

No CLD

No Infection

No Pneumothorax

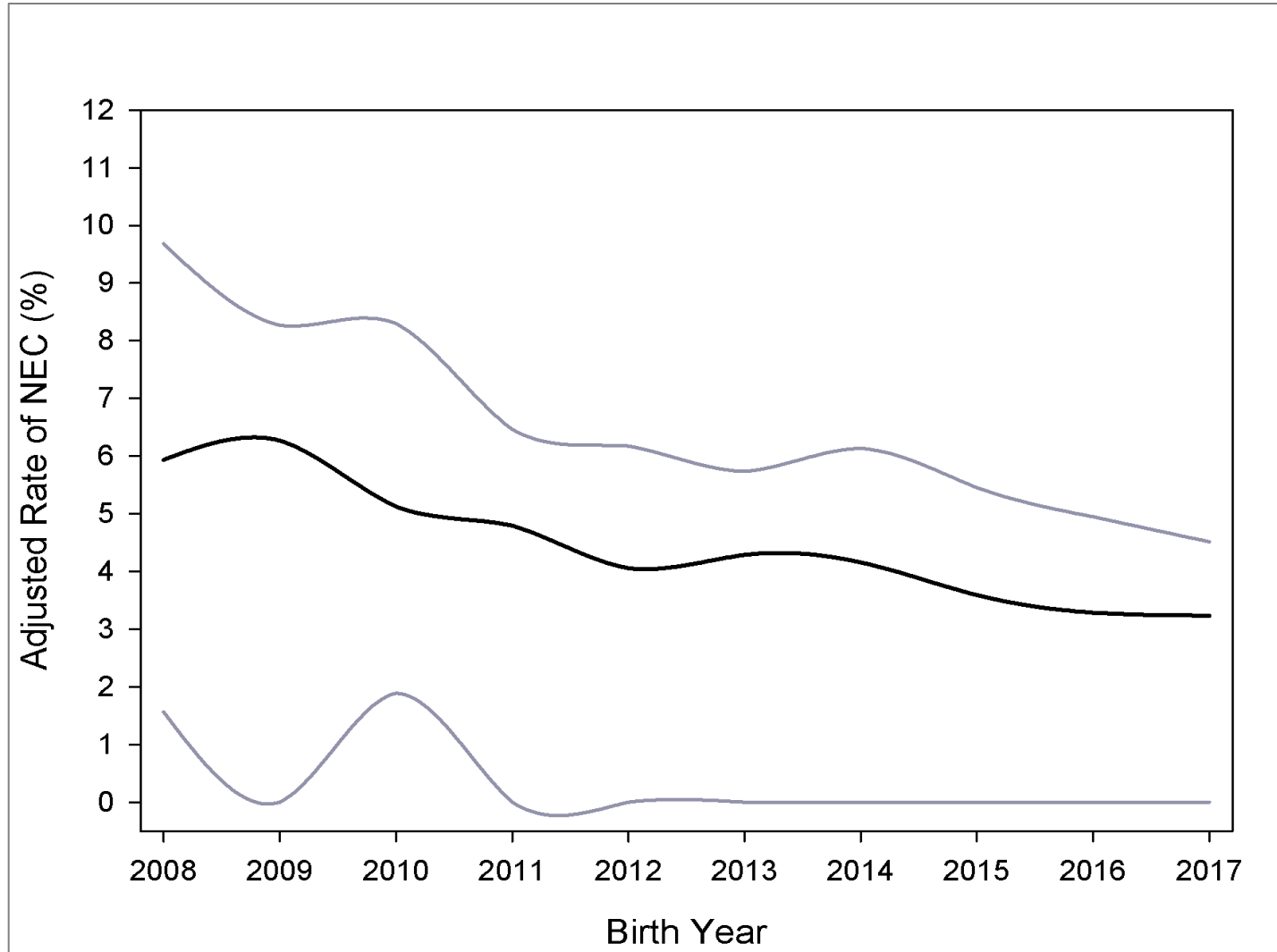
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# Quality Improvement – Turning data into action

- Use IHI Collaborative QI Model
  - 2018 projects include optimizing growth and nutrition (**Grow, Babies, Grow!**)
  - Quality Improvement Toolkits containing evidence-based “Promising Practices.”



# Necrotizing Enterocolitis



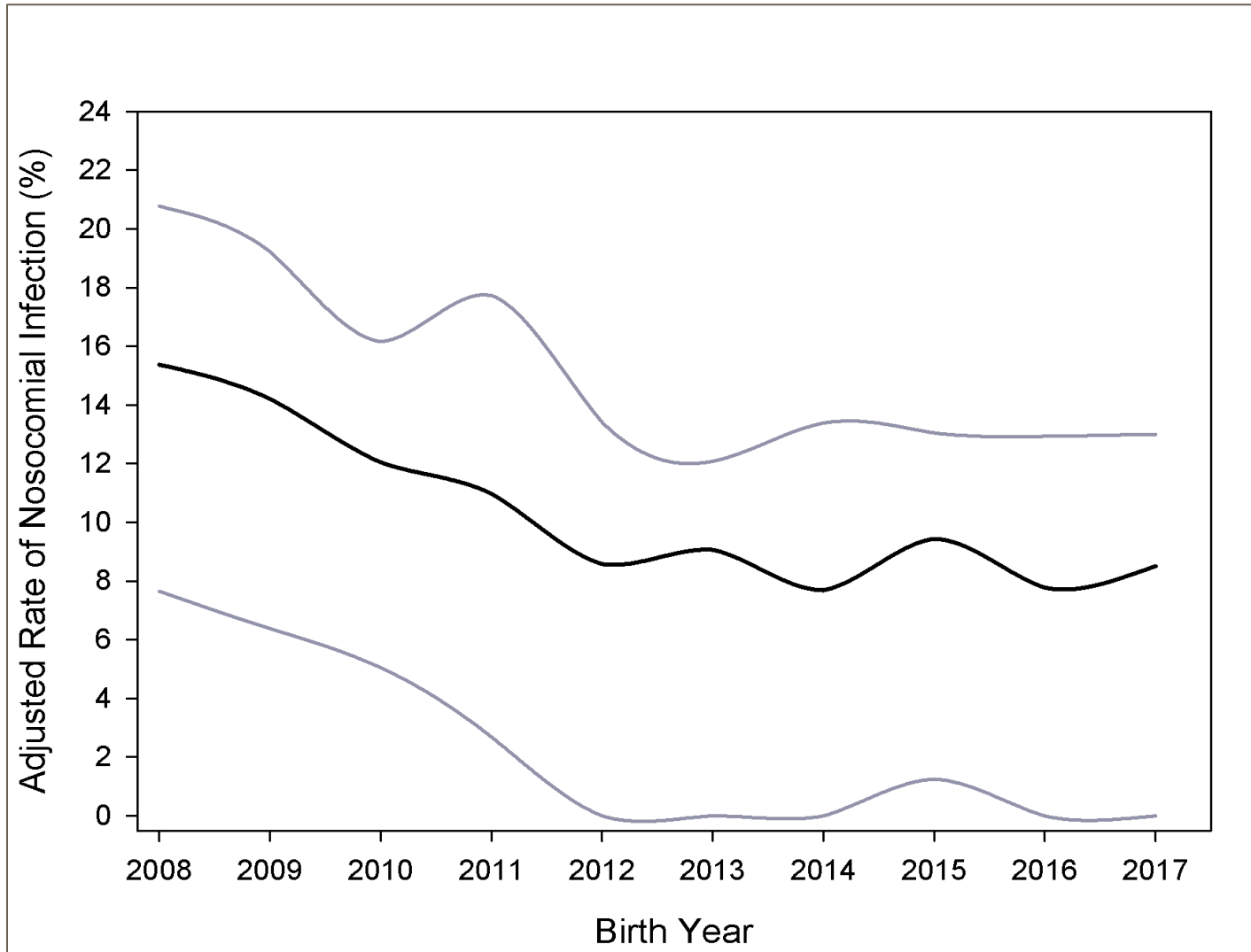
\* Lower and upper bands represent the 25<sup>th</sup> and 75<sup>th</sup> percentile (IQR)

**-46**  
**%**

Lee, Profit, et al. J Perinatol 2020, *in press*



# Healthcare Associated Infection



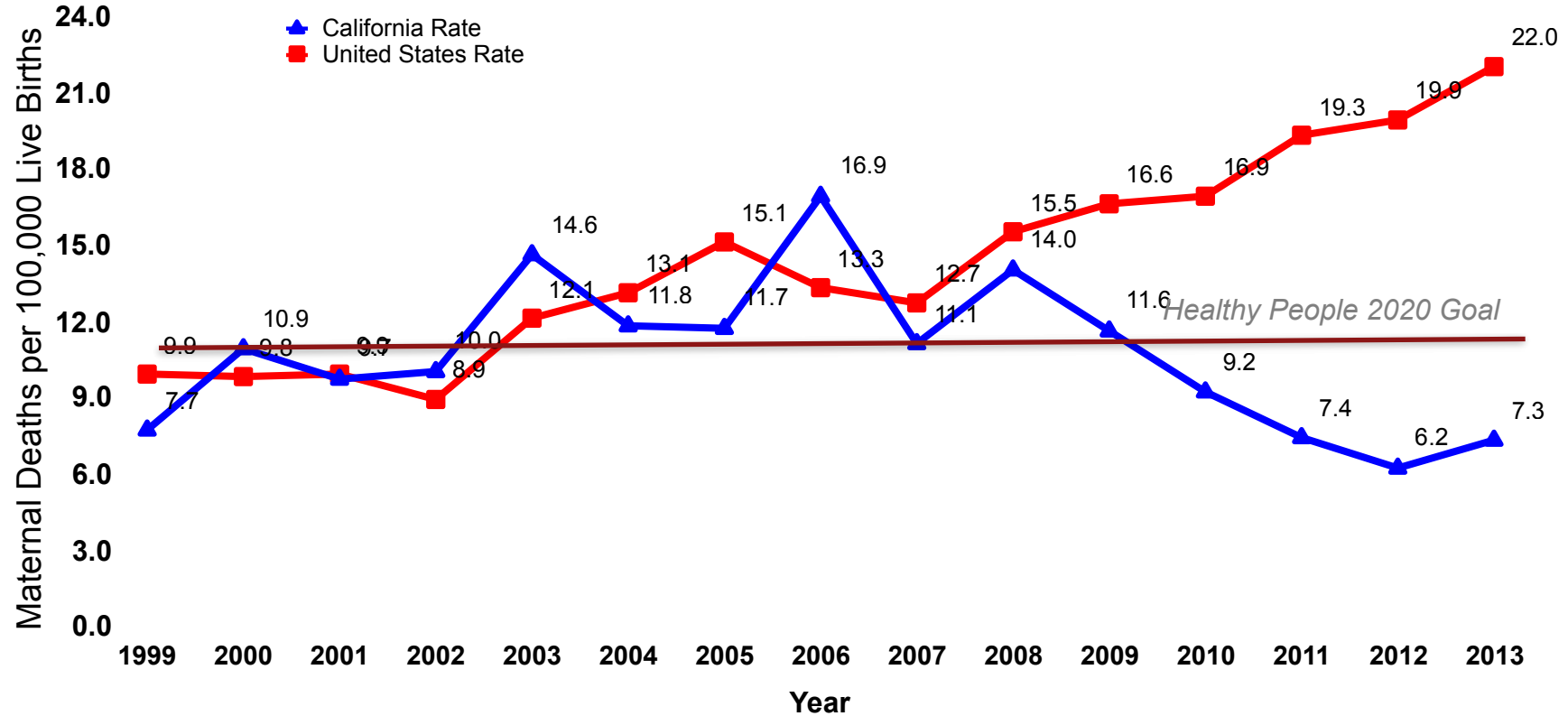
\* Lower and upper bands represent the 25<sup>th</sup> and 75<sup>th</sup> percentile (IQR)

**-45%**

Lee, Profit, et al. J Perinatol 2020, *in press*



# Maternal Mortality Rate, California and United States; 1999-2013



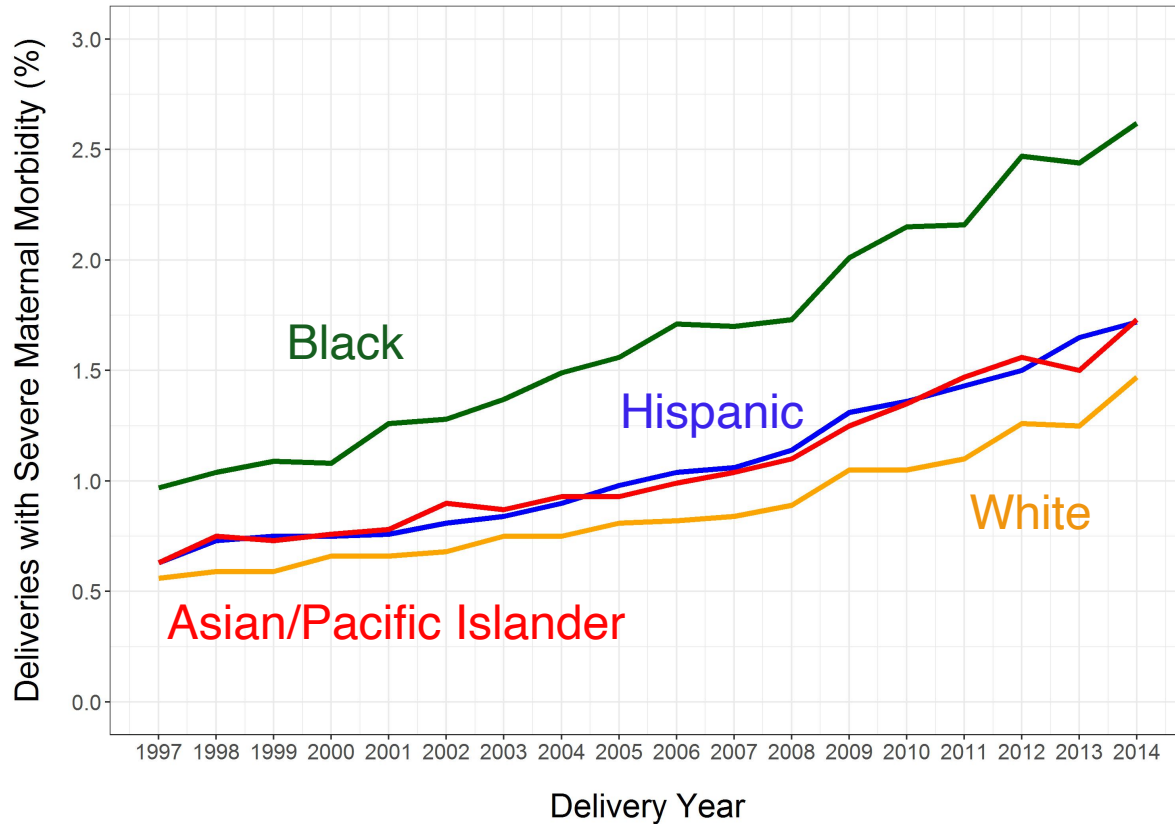
SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California (deaths  $\leq$  42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99). United States data and HP2020 Objective use the same codes. U.S. maternal mortality data is published by the National Center for Health Statistics (NCHS) through 2007 only. U.S. maternal mortality rates from 2008 through 2013 were calculated using CDC Wonder Online Database, accessed at <http://wonder.cdc.gov> on March 11, 2015. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, March, 2015.



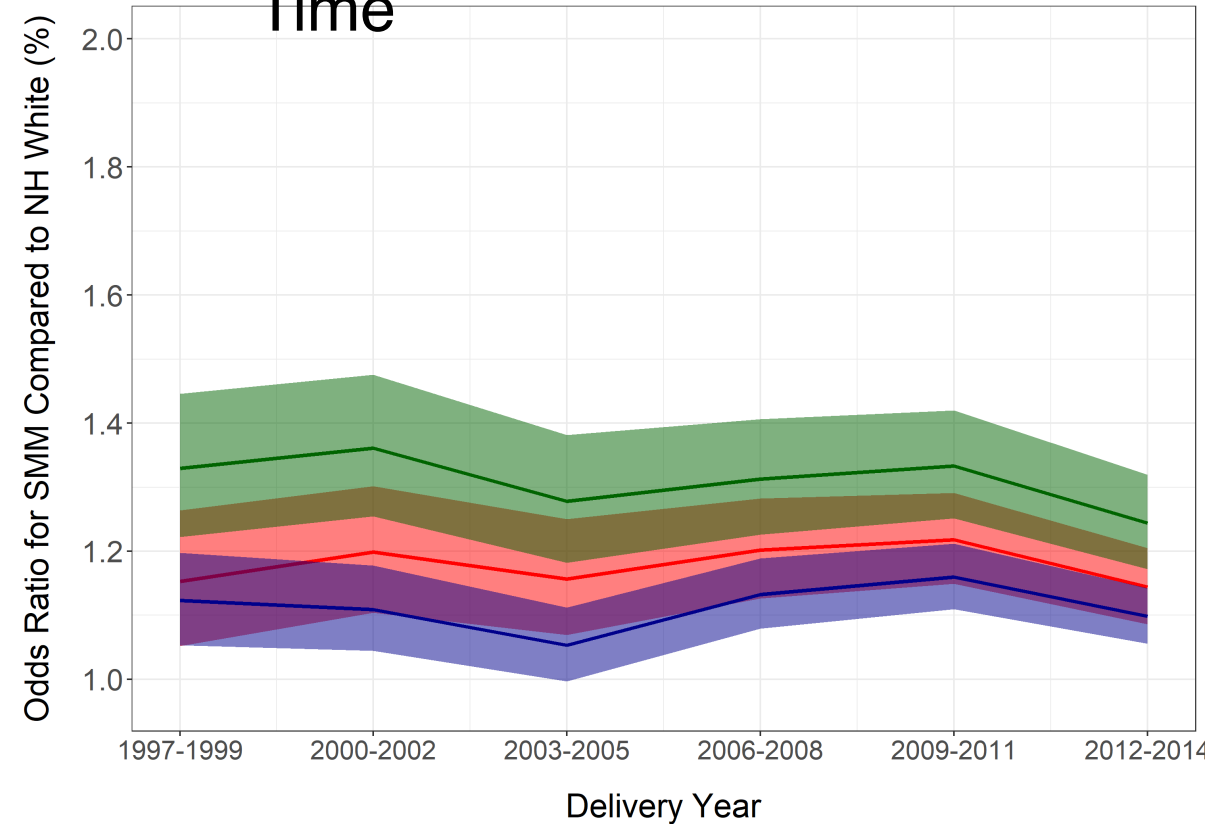
# Disparities in Severe Maternal Morbidity

Leonard S, Profit J, et al. Racial and Ethnic Disparities in Severe Maternal Morbidity Prevalence and Trends. *Ann Epi* 2019 May;33:30-36

## Observed Trend over Time



## Adjusted Disparities over Time





LOST MOTHERS

## Nothing Protects Black Women From Dying in Pregnancy and Childbirth

Not education. Not income. Not even being an expert on racial disparities in health care.

by Nina Martin, ProPublica, and Renee Montagne, NPR News, Dec. 7, 2017, 8 a.m. EST

## Serena Williams' Story of Not Being Listened To

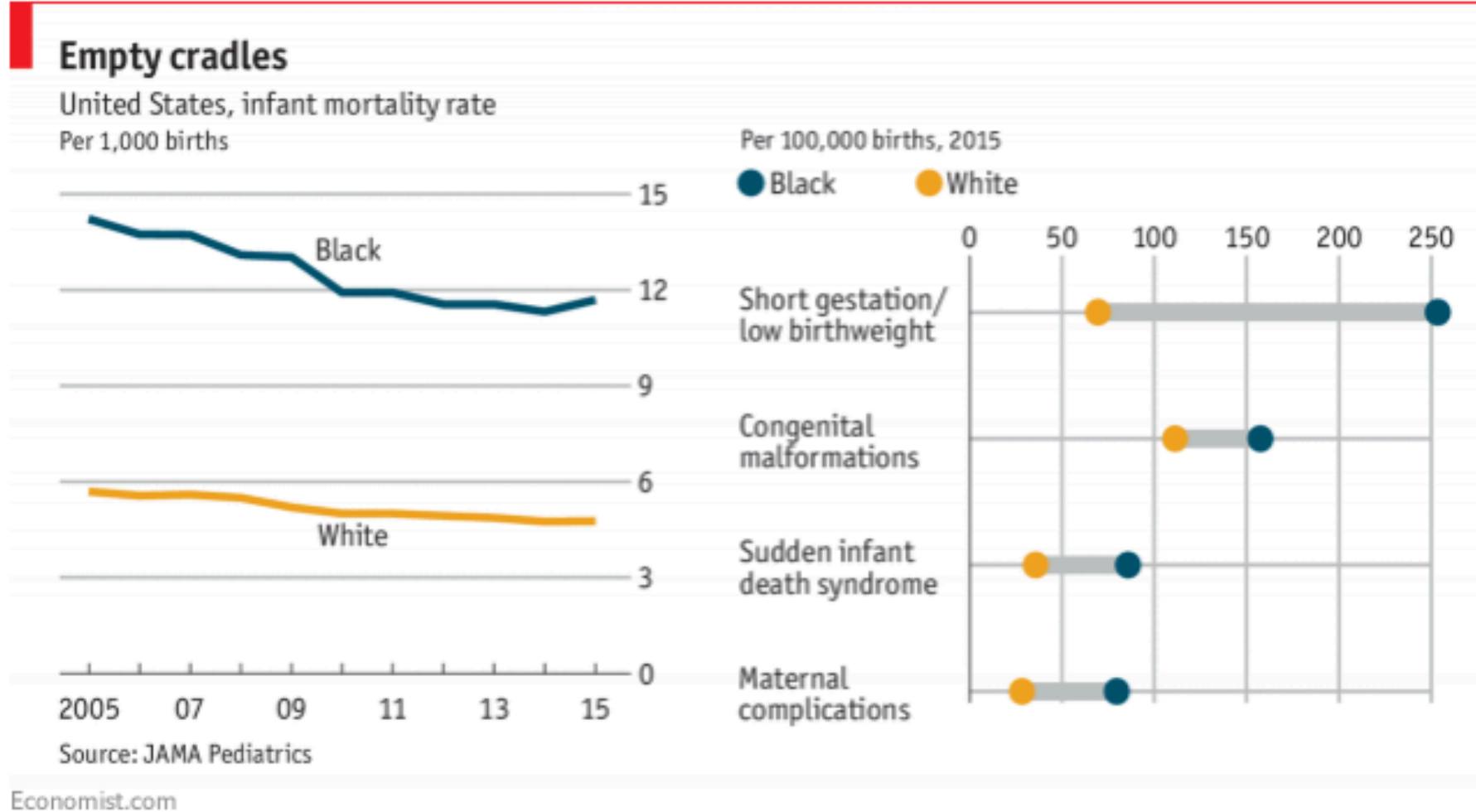
Despite history of multiple PE, her doctors and nurses minimized her PP complaints and refused a CT scan (later positive for multiple small PE)



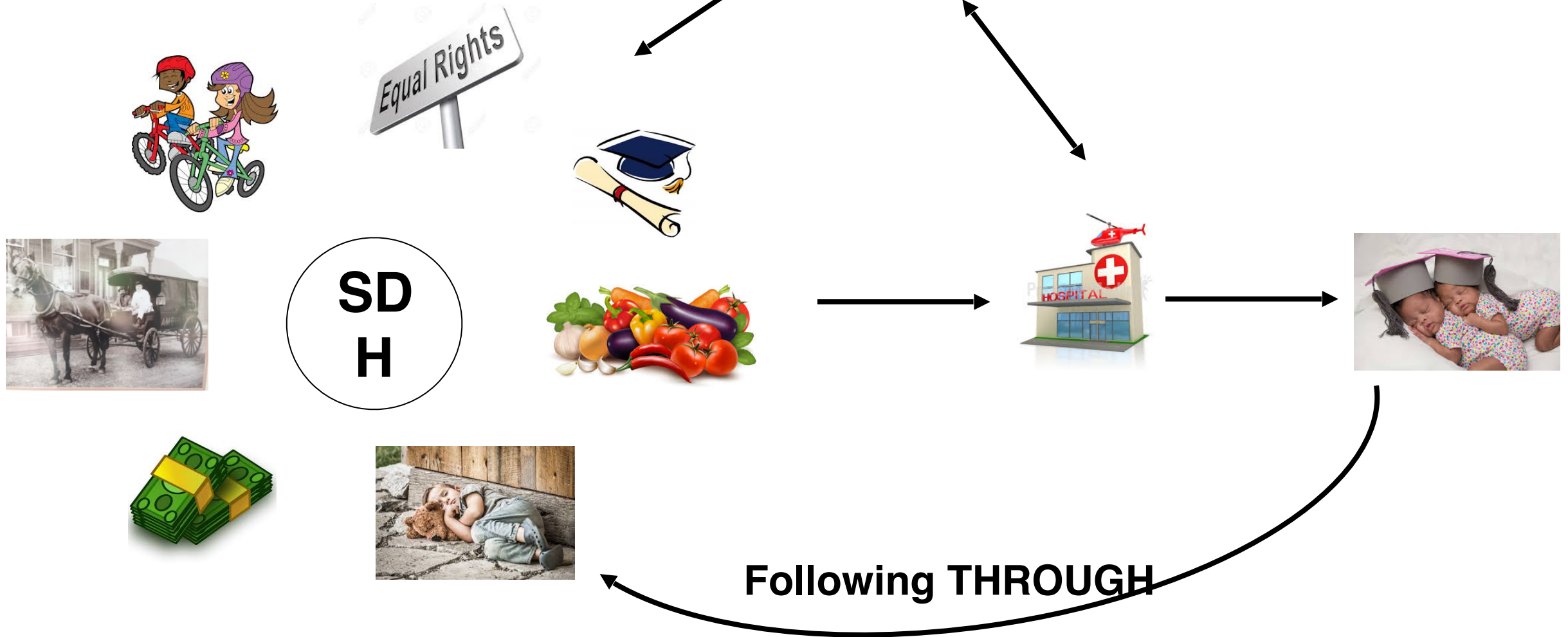
Soleil Irving "just lights up a room when she smiles," Wanda Irving, her grandmother, says. (Sheila Free Bright for ProPublica)



# Persistent disparity gap



# Origins of disparity



# Are there Disparities in Perinatal Care



# Context matters – always exposed to bias





**Sigurdson K, Profit J, et al.**  
Systematic Review of Disparities in  
NICU Quality of Care. *Pediatrics*  
2019 Aug, 144(2)

566 records identified through searches in  
PubMed, CINAHL, Scopus, and Web of  
Science (March 6, 2018)

96 duplicates removed

470 abstracts reviewed

382 abstracts excluded  
based on inclusion/  
exclusion criteria

88 full-text articles reviewed according to  
inclusion/exclusion criteria

52 articles excluded

36 articles selected for inclusion

4 articles added by  
hand search

40 articles selected for inclusion

**Structure (12)**

**Process (18)**

**Outcome (11)**

- 1. Nursing Characteristics
- 2. Appropriate setting
- 3. Geography
- 4. Minority Serving Hospitals
- 5. Military vs. Civilian Care
- 6. Composite Quality

- 1. Breastmilk
- 2. Post-dc Referral
- 3. Family Experience
- 4. Shared Decision Making  
Kangaroo Care
- 5. Surfactant Use/RDS

- 1. IVH
- 2. NEC/Intestinal Failure
- 3. Overall Mortality or  
Morbidity
- 4. Other Specific Outcomes

# What are the mechanisms for disparities in NICU Care?

# Mechanisms for Disparity

Minority mothers and neonates can have worse outcomes than whites because

1. Receive care from facilities that treat patients with poor quality of care (*BETWEEN*),
2. Receive worse quality of care than white mothers in the same facility (*WITHIN*)

## Racial Segregation and Inequality of Care in Neonatal Intensive Care Units Is Unacceptable

Elizabeth A. Howell, MD, MPP; Paul L. Hebert, PhD; Jennifer Zeitlin, DSc, MA

Despite significant improvements in the survival of very preterm newborns in neonatal intensive care units (NICUs) over the last decade, significant racial and ethnic disparities exist for very preterm infants.<sup>1-3</sup> While these disparities are rooted

in a complex web of factors, a growing body of evidence has documented the role of quality of care in creating disparities. Black and Hispanic very preterm infants are more likely to be born in hospitals with worse outcomes than white infants after adjustment for risk factors, and differences in hospital of birth explain a significant proportion of the black-white and Hispanic-white disparities for these vulnerable infants.<sup>2</sup> Additional research has documented that racial and ethnic disparities in quality exist between and within NICUs for very low-birth-weight infants.<sup>4</sup>

In this issue of *JAMA Pediatrics*, Horbar et al<sup>5</sup> explore the extent of segregation and inequality for very low-birth-weight and very preterm infants in NICUs across the United States. They developed indices at the hospital level to measure segregation (ie, uneven distribution of racial and ethnic groups across NICUs) and inequality (ie, concentration of racial or ethnic groups in lower-quality NICUs). Using data from the Vermont Oxford Network and a cohort of more than 117 000 infants born at 401 g to 1500 g or 22 to 29 weeks' gestation from 2014 to 2016, they measured segregation and inequality at the hospital level for black, Hispanic, and Asian infants relative to white infants. They found significant segregation across NICUs in the United States for all 3 racial and ethnic groups and regional variation in quality of care. Compared with white infants, black infants received care at lower-quality NICUs; Asian and Hispanic infants received care at higher-quality NICUs. Region of residence explained differences for Hispanic but not Asian or black infants.

This article has a number of strengths in relation to previous studies. First, Horbar et al<sup>5</sup> used a comprehensive measure of quality, the composite Baby-MONITOR (Measure of Neonatal Intensive Care Outcomes Research) score, rather than solely relying on risk-adjusted mortality or morbidity to assess hospital performance. The Baby-MONITOR score includes 9 infant-level process and outcome measures (eg, antenatal steroid exposure, hypothermia on admission, health care associated infection, and mortality) that have been used to measure quality in California NICUs.<sup>4,6</sup> Much of the previous literature on the contribution of quality of care to neonatal disparities has relied on measures of risk-adjusted neonatal morbidity and mortality ascertained through the use of administrative data. While morbidity and mortality are direct

measures of health and of most importance to families, they are indirect measures of quality, and comparisons between hospitals are more strongly reliant on the ability to carry out risk adjustment than process measures. Furthermore, they do not identify specific areas that can be targeted in the NICU to improve outcomes. While the use of administrative data, such as state discharge abstract data linked with birth certificate data, allow for population-based estimates, these administrative data lack many of the data elements necessary to measure quality more directly (eg, receipt of medications, vital signs, and growth).

Another strength is the use of a national data set that includes nearly 90% of very low-birth-weight and very preterm infants born annually in the United States, making it possible to confirm that previous findings from specific regions apply more broadly to the US population. Horbar et al<sup>5</sup> also propose an interesting index for inequality. In our previous research, we ranked hospitals by risk-adjusted morbidity and mortality and examined where black and Hispanic very preterm infants were born.<sup>2</sup> In this article, Horbar et al<sup>5</sup> rank NICUs by a direct measure of quality and examine the proportion of white infants in those NICUs. Their index of inequality has the potential to be used in future research investigating disparities. Future research would benefit from more granular data on race and ethnicity to measure disparities in care for specific subgroups of black, Hispanic, and Asian infants.

Patient-level quantitative measures of quality, such as those used in the study by Horbar et al,<sup>5</sup> are critical to solving disparities in the NICU because these measures have the potential to illuminate the pathways by which racial disparities in outcomes are realized. Minority mothers and their neonates can have worse outcomes than white mothers because (1) they receive care from facilities that treat all mothers with poor quality of care, (2) they receive worse quality of care than white mothers in the same facility, or (3) they have health and social risks that are beyond the control of the hospital.<sup>7</sup> Without patient-level measures of quality, we cannot distinguish the effects of the latter 2 pathways and therefore cannot say whether the solution lies within the hospital or not. Furthermore, this composite measure builds on previous work to identify evidence-based interventions in neonatology and illustrates the health impact of failure to implement them in current practice. This approach offers an opportunity for future research to identify which components of care contribute most to disparities. Although each component is weighted equally in the score, the authors point out that changing these weights would likely affect estimates of inequalities.

Howell E, et al. *JAMA Pediatr* 2019

# Poor care between hospitals

## Neonatal mortality by hospital in NYC

JAMA Pediatrics | Original Investigation  
 Differences in Morbidity and Mortality Rates  
 in Black, White, and Hispanic Very Preterm Infants  
 Among New York City Hospitals

Elizabeth A. Howell, MD, MPP; Teresa Janevic, PhD, MPH; Paul L. Hebert, PhD; Natalia N. Egorova, PhD, MPH;  
 Amy Balbierz, MPH; Jennifer Zetlin, DSc, MA

**IMPORTANCE** Substantial quality improvements in neonatal care have occurred over the past decade yet racial and ethnic disparities in morbidity and mortality persist. We examined whether disparate patterns of care by race and ethnicity explain these disparities in outcomes.

**OBJECTIVES** To examine differences in neonatal morbidity and mortality among non-Hispanic black (black), Hispanic, and non-Hispanic white (white) very preterm (VPT) infants and to determine whether these differences are explained by birth hospital.

**DESIGN, SETTING, AND PARTICIPANTS** Population-based study of nonanomalous infants born between 24 and 31 completed weeks of gestation in New York City hospitals using linked 2010 to 2014 New York City data sets. Mixed-effects logistic regression with a random-effects term for hospital was used to generate risk-adjusted neonatal morbidity and mortality rates for each hospital. Hospitals were ranked using the distribution of black, Hispanic, and white very preterm infants. The statistical analysis was performed in 2017.

**EXPOSURE** Race/ethnicity.

**MAIN OUTCOMES AND MEASURES** Composite of mortality or severe neonatal morbidity (bronchopulmonary dysplasia, intraventricular hemorrhage, retinopathy of prematurity stage 3 or greater, or intraventricular hemorrhage grade 3 or greater).

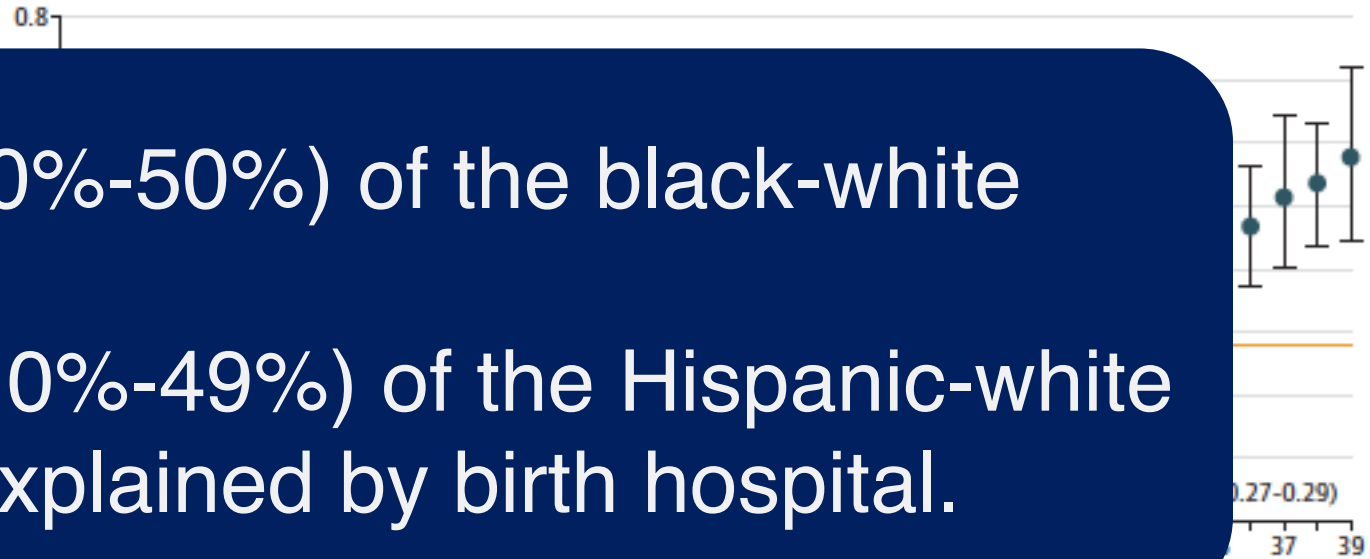
**RESULTS** Among 7177 very preterm births (VPTBs), mortality (28%) and was higher among black (893 [32.2%] and 22.5%)) VPTBs (2-tailed  $P < .001$ ). The risk-standardized mortality rate was twice as great for VPTB infants born in hospitals in the highest mortality tertile (0.40; 95% CI, 0.38-0.41) as for those born in the lowest mortality tertile (0.20; 95% CI, 0.14-0.18). Black (1204 of 2775 [43.4%]) and Hispanic (1024 of 2775 [36.9%]) VPTB infants were more likely than white (325 of 1418 [22.9%]) VPTB infants to be born in the highest morbidity and mortality tertile (2-tailed  $P < .001$ ). Among black, Hispanic, and white VPTB infants, 40% (95% CI, 30%-50%) of the black-white disparity and 30% (95% CI, 10%-49%) of the Hispanic-white disparity was explained by birth hospital.

**CONCLUSIONS AND RELEVANCE** Black and Hispanic VPTB infants are more likely than white VPTB infants to be born in hospitals with higher risk-adjusted neonatal morbidity and mortality rates. These differences contribute to excess morbidity and mortality among black, Hispanic, and white infants.

**Corresponding Author:** Elizabeth A. Howell, MD, MPP, Icahn School of Medicine at Mount Sinai, One Gustave L. Levy Place, Box 1077, New York, New York 10029 (elizabeth.howell@mountsinai.org).

JAMA Pediatr. doi:10.1001/jamapediatrics.2017.4402  
 Published online January 2, 2018.

Figure. Hospital Rankings for Risk-Adjusted Neonatal Morbidity and Mortality, New York City, NY, 2010-2014



40%(95%CI, 30%-50%) of the black-white disparity and 30% (95%CI, 10%-49%) of the Hispanic-white disparity was explained by birth hospital.

Howell et al. JAMA Pediatr 2018

# Poor care *between AND within* hospitals

## Disparities in Health Care–Associated Infections in the NICU

Jessica Liu, PhD, MPH<sup>1,2</sup> Charlotte Sakarovich, PhD  
Henry C. Lee, MD, MS<sup>1,2</sup> Jochen Profit, MD, MPH

<sup>1</sup>Perinatal Epidemiology and Health Outcomes Research Unit, Division of Neonatology, Department of Pediatrics, Lucile Packer Children's Hospital, Stanford University School of Medicine, Palo Alto, California  
<sup>2</sup>California Perinatal Quality Care Collaborative, Palo Alto, California  
<sup>3</sup>Division of Biomedical Informatics Research, Department of Medicine, Stanford University, Stanford, California  
<sup>4</sup>Medical Data Lab, Université Côte d'Azur, Nice, France

Am J Perinatol

### Abstract

**Objectives** This study examined the association between health care–associated infection (HAI) and race/ethnicity and its variation across hospitals.  
**Study Design** This is a retrospective cohort study of HAI between 2011 and 2014 in 100 NICUs.  
**Results** Risk-adjusted HAI rates were higher in NICUs with higher odds of HAI. Non-Hispanic black infants were more likely to be in the highest tertile of infection rates. Non-Hispanic white infants were more likely to be in the lowest tertile of infection rates. Ethnicities suffered similar rates of HAI across hospitals.  
**Conclusion** Hispanic infants were more likely to be in the lowest tertile of infection rates. Variation in infection across hospitals was similar across ethnicities.

### Keywords

- infant
- health care–associated infection
- disparity
- risk factors

Health care–associated infection (HAI) is a serious complication among very low birth weight (VLBW; <1,500 g) preterm infants hospitalized in the neonatal intensive care unit (NICU), and infection rates in these infants have ranged from 21 to 30%.<sup>1–4</sup> VLBW infants are especially susceptible to HAI. They are immune-incompetent hosts, require prolonged hospitalization, undergo frequent invasive procedures, and receive prolonged broad-spectrum antibiotics and intravenous nutrition.<sup>1,5–7</sup> In addition, infection risk is conveyed by a combination of maternal health and clinical practice–related factors.<sup>1–3,5,6,8–11</sup>

HAIs are associated with increases in neurodevelopmental impairment, mortality, length of stay, and as a result, increased financial costs of care.<sup>3,6,12–17</sup> Payne et al reported that the occurrence of just one single type of HAI would increase costs of treating VLBW infants by \$100 million.<sup>12</sup> Reducing HAI has been a priority in recent years, and successful efforts have been reported from individual NICUs and through collaborative networks, such as the Vermont Oxford Network and the California Perinatal Quality Care Collaborative (CPQCC).<sup>2,18–20</sup>

Vulnerable populations may be differentially affected by HAI because they may receive care in challenged hospitals, which provide lower quality of care,<sup>21–23</sup> or differential treatment within hospitals.<sup>24</sup> HAI is more dependent on

<sup>1</sup> At the time of this research, Dr. Sakarovich was a senior statistician at the quantitative sciences unit.

Blacks more likely cared for in hospitals with higher HAI rates

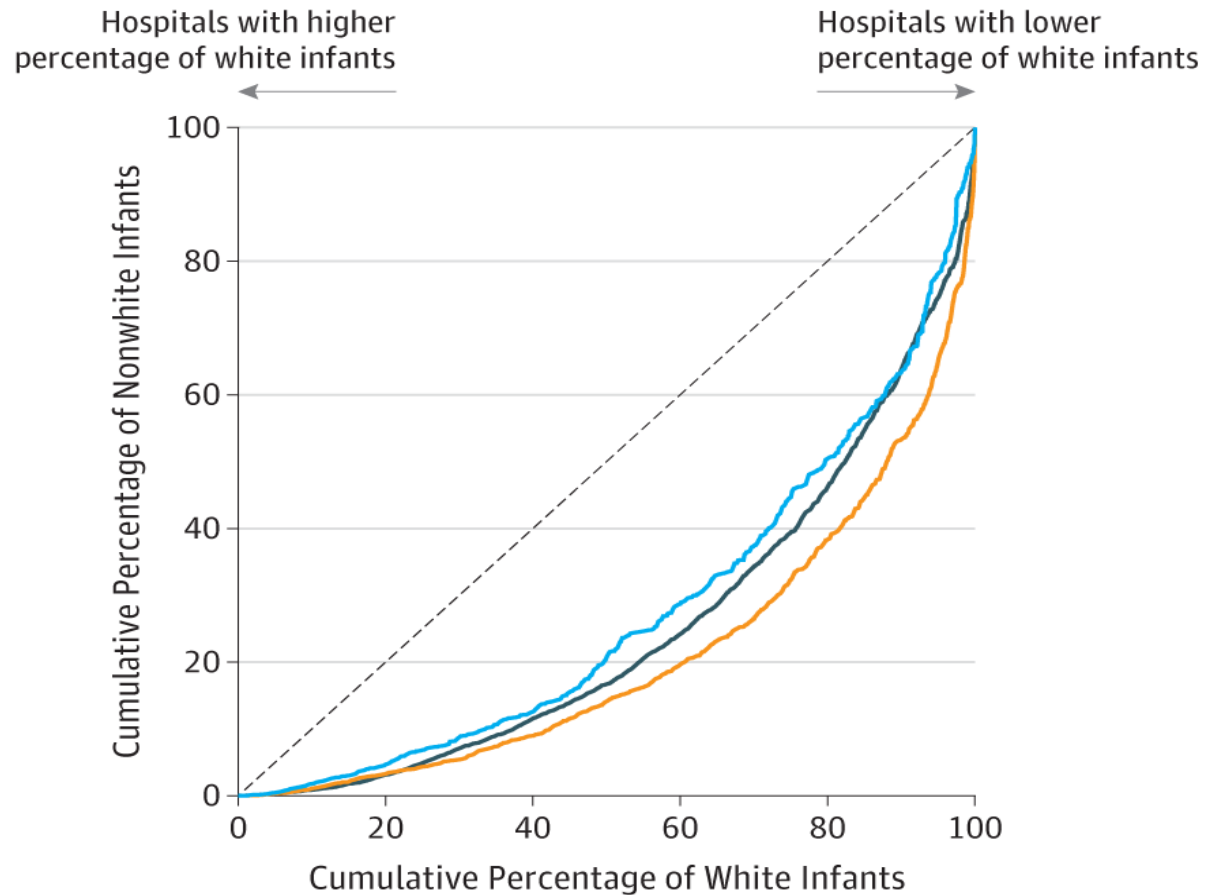
Hispanics more likely to have a HAI



Liu et al. Am J Perinat 2019; Apr 30

# Racial Segregation in the NICU

	NICU Segregation Index (95% CI)
Black	0.50 (0.46-0.53)
Hispanic	0.58 (0.54-0.61)
Asian	0.45 (0.40-0.50)



Jeffrey D. Horbar, MD; Erika M. Edwards, PhD; Lucy T. Greenberg, MS; Jochen Profit, MD; David Draper, PhD; Daniel Helkey, MS; Scott A. Lorch, MD; Henry C. Lee, MD; Garan S. Phipps, PhD; Jeannette Rogowski, PhD; Jeffrey B. Gould, MD; Glenn Firebaugh, PhD

**IMPORTANCE** Racial and ethnic minorities receive lower-quality health care than white non-Hispanic individuals in the United States. Where minority infants receive care and the role that may play in the quality of care received is unclear.

**OBJECTIVE** To determine the extent of segregation and inequality of care of very low-birth-weight and very preterm infants across neonatal intensive care units (NICUs) in the United States.

**DESIGN, SETTING, AND PARTICIPANTS** This cohort study of 743 NICUs in the Vermont Oxford Network included 117 982 black, Hispanic, Asian, and white infants born at 401 g to 1500 g or 22 to 29 weeks' gestation from January 2014 to December 2016. Analysis began January 2018.

**MAIN OUTCOMES AND MEASURES** The NICU segregation index and NICU inequality index were calculated at the hospital level as the Gini coefficients associated with the Lorenz curves for black, Hispanic, and Asian infants compared with white infants, with NICUs ranked by proportion of white infants for the NICU segregation index and by composite Baby-MONITOR (Measure of Neonatal Intensive Care Outcomes Research) score for the NICU inequality index.

**RESULTS** Infants (36 359 black [31%], 21 808 Hispanic [18%], 5920 Asian [5%], and 53 895 white [46%]) were segregated among the 743 NICUs by race and ethnicity (NICU segregation index: black: 0.50 [95% CI, 0.46-0.53], Hispanic: 0.58 [95% CI, 0.54-0.61], and Asian: 0.45 [95% CI, 0.40-0.50]). Compared with white infants, black infants were concentrated at NICUs with lower-quality scores, and Hispanic and Asian infants were concentrated at NICUs with higher-quality scores (NICU inequality index: black: 0.07 [95% CI, 0.02-0.13], Hispanic: -0.10 [95% CI, -0.17 to -0.04], and Asian: -0.26 [95% CI, -0.32 to -0.19]). There was marked variation among the census regions in weighted mean NICU quality scores (range: -0.69 to 0.85). Region of residence explained the observed inequality for Hispanic infants but not for black or Asian infants.

CONCLUSIONS AND RELEVANCE

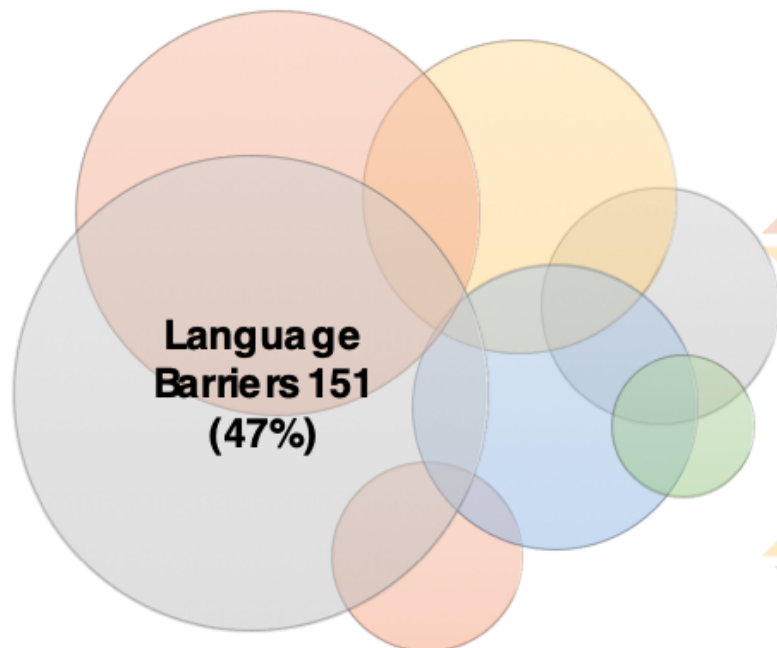
Editorial  
Supplemental content

Lorenz Curves for **Segregation** by Race/Ethnicity in US NICUs ranked by the proportion of white infants from highest to lowest, and the cumulative population percentages of white and minority infants were plotted on the x- and y-axes. If all NICUs had the same racial distribution as the overall population, the curves would fall on the diagonal.

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**But we treat all  
patients the same!**

## Overlapping Dimensions



**Language Barriers** 151 (47%)

**Social, Economic or Racial Privilege:** 12 (3%)

## Types of Disparate Care

**Neglectful Care:** 83 (26%). NICU staff ignore, avoid or neglect family needs (e.g. breastfeeding support) when considered difficult or unpleasant or when obstacles considered too great to overcome.

**Judgmental Care:** 82 (26%): Staff evaluate a family's moral status based on race, class or immigration. Circumstances or behaviors judged more harshly. Discrimination occurs through staff attitudes or resource allocation.

**Systemic Barriers:** 139 (44%): Staff unable or unwilling to address barriers families face such as transportation, child care, housing, employment, translation needs, or religious or cultural needs.

**Priority Treatment and/or Assertive Families:** 12 (3%). Families connected to NICU receive priority treatment. Assertive families receive more attention.

**Suboptimal Care:** 312 (96%)

**Privileged Care:** 12 (3%)

Sigurdson K, Profit J, et al. Disparities in NICU Quality of Care: A Qualitative Study of Family and Clinician Accounts. *J Perinatol* 2018 Apr 5.



# Neglectful care

A Spanish-speaking mother of a 23 week infant was **not provided with a translator before, during, or after delivery** to explain what has happening with her baby. I asked for an interpreter to come in to the hospital to help and faced push back because it was late at night. The L&D staff thought a translator phone should be sufficient. **I felt that the situation would not have been met with such a lack of empathy if the mother been of a different ethnicity.**



- MD regarding family identified as Hispanic or Latino.

# Judgmental care

I see this all the time... the way we treat Black moms is definitely different than how we treat White moms. And age plays a factor too - young moms are judged very unfairly. One black mom was judged very harshly for being late for a feeding even though she had a long and challenging transit ride to get to the hospital. A white mother who was late on the same day was greeted with sympathy. A small example I see moments like this every single day.



– Family advocate regarding family identified as Black

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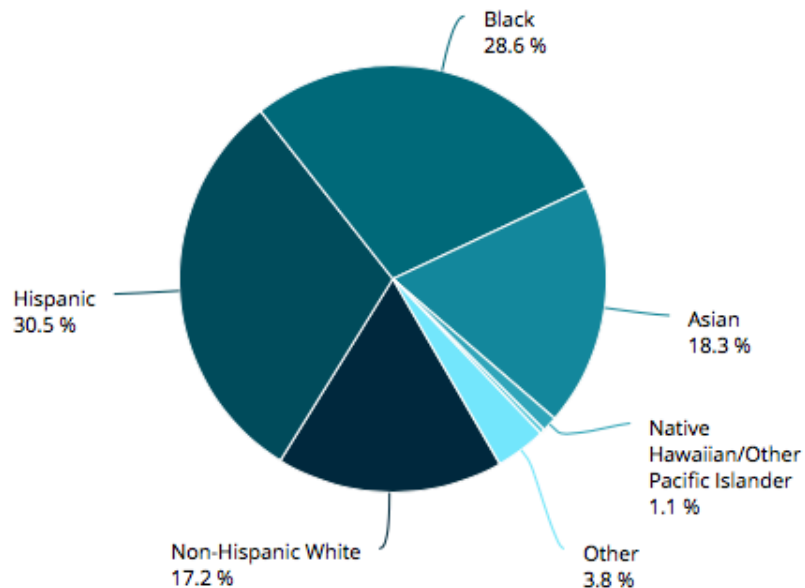
# Accounts told of disparate care of families, not strictly infants



# CPQCC EQUITY DASHBOARD

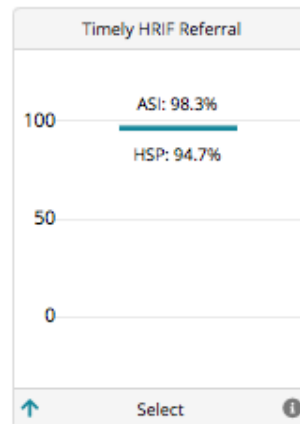
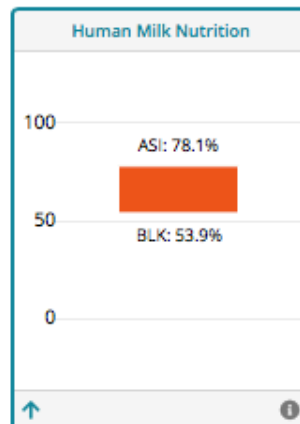
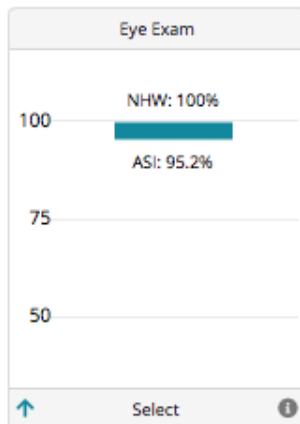
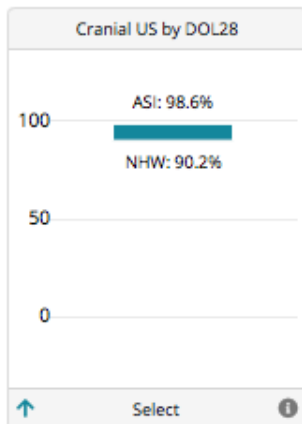
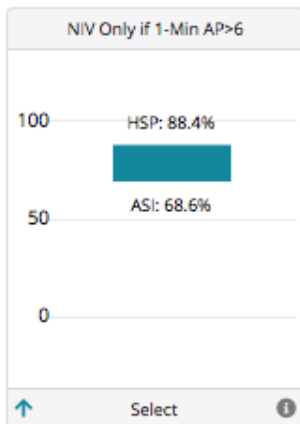
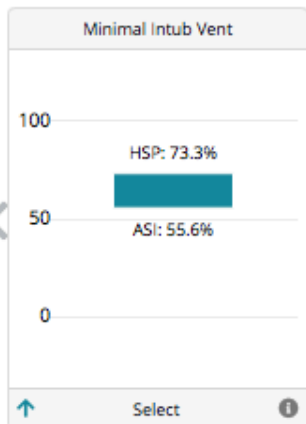
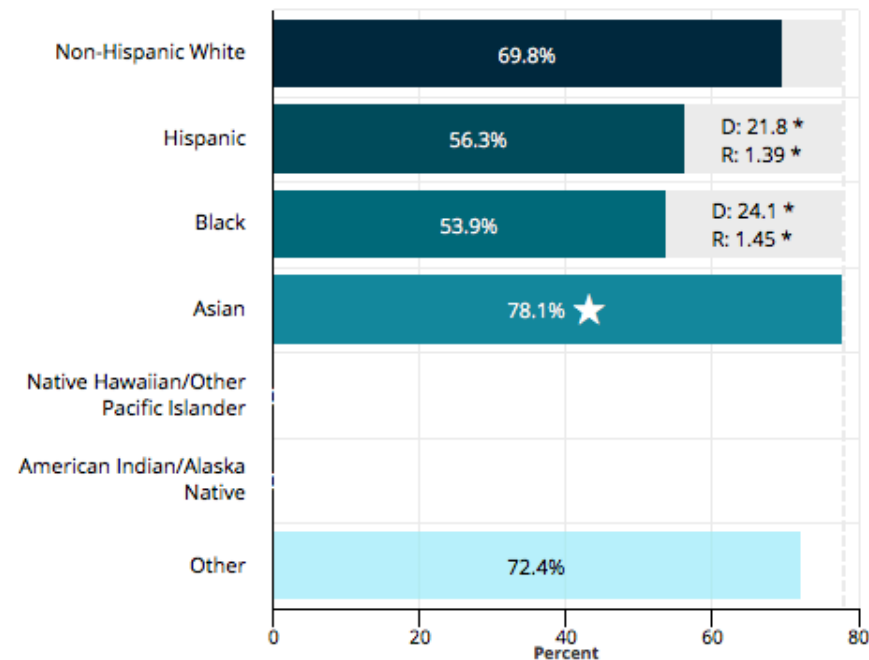


Race/Ethnicity Distribution for all VON Small Babies



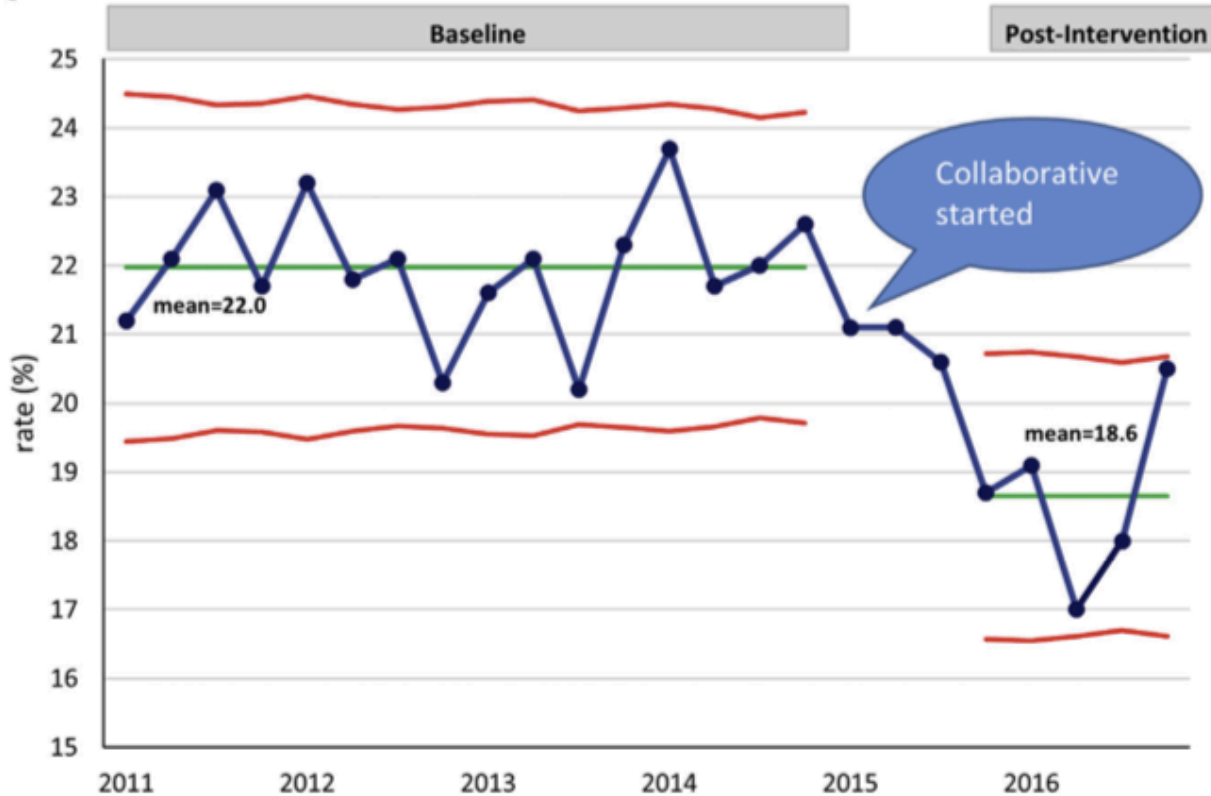
Human Milk Nutrition by Race/Ethnicity

Reset zoom

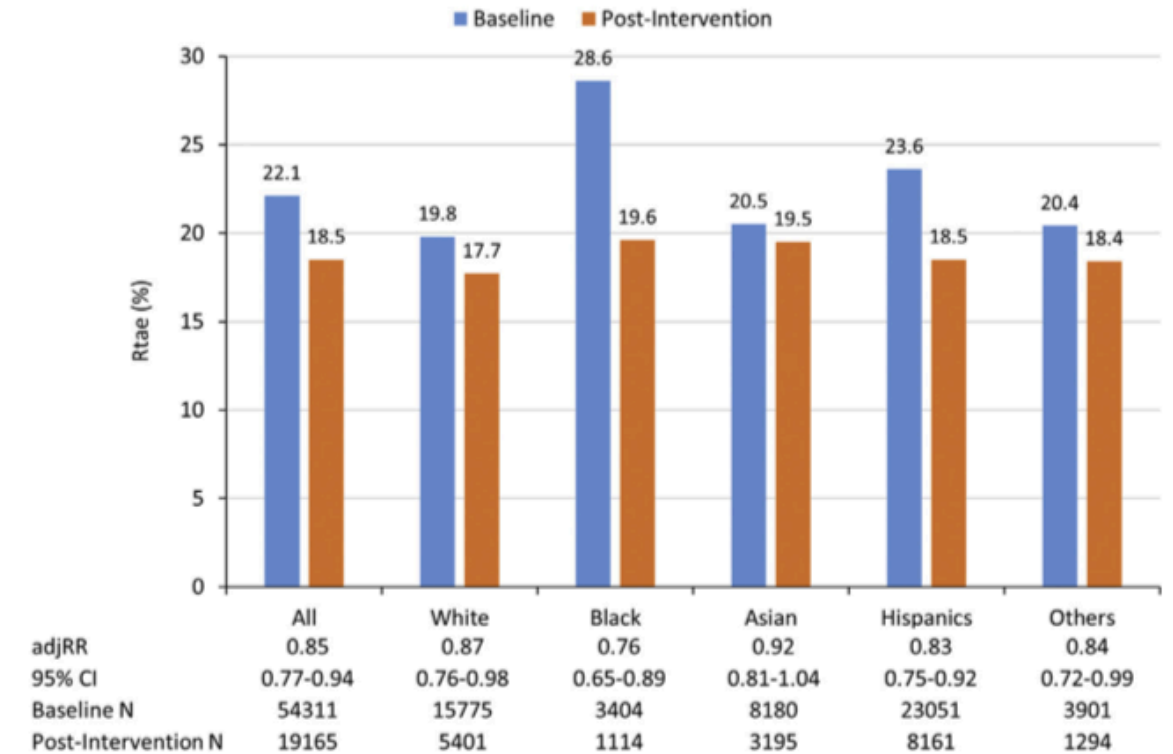


# Disparity reduction through technical QI

**A Severe maternal morbidity**

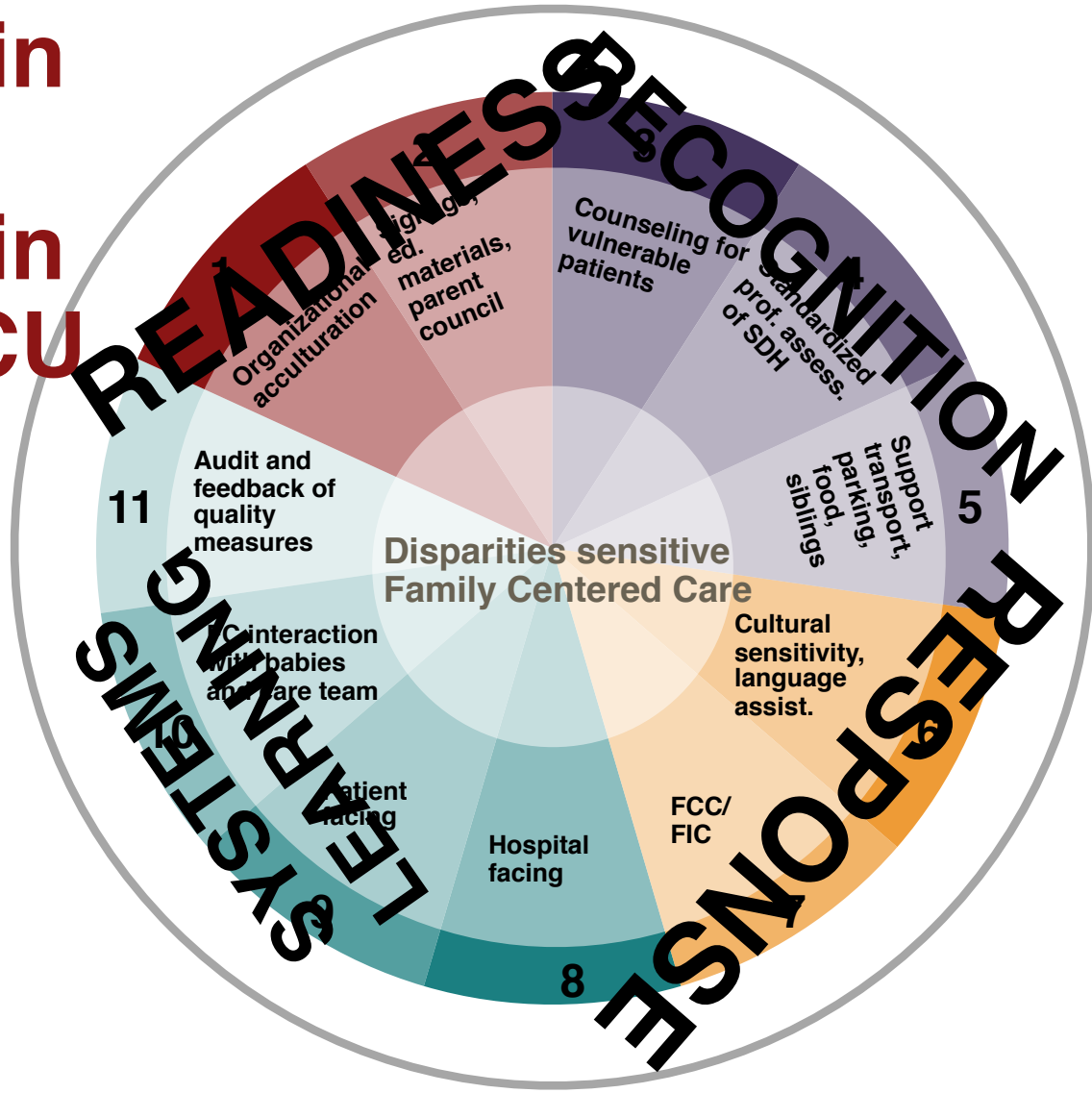


**A Severe maternal morbidity**



Main, Profit et al. AJOG 2020

# Changing what we do in the NICU



FCC or Family  
 Signage, education  
 Family feedback of  
 quality measures by  
 babriase/ethnicity team  
 in person or over the  
 phone/video  
 to-skin education  
 partner in your child's  
 care at ALL times."

- Language concordance

REVIEW ARTICLE **OPEN**

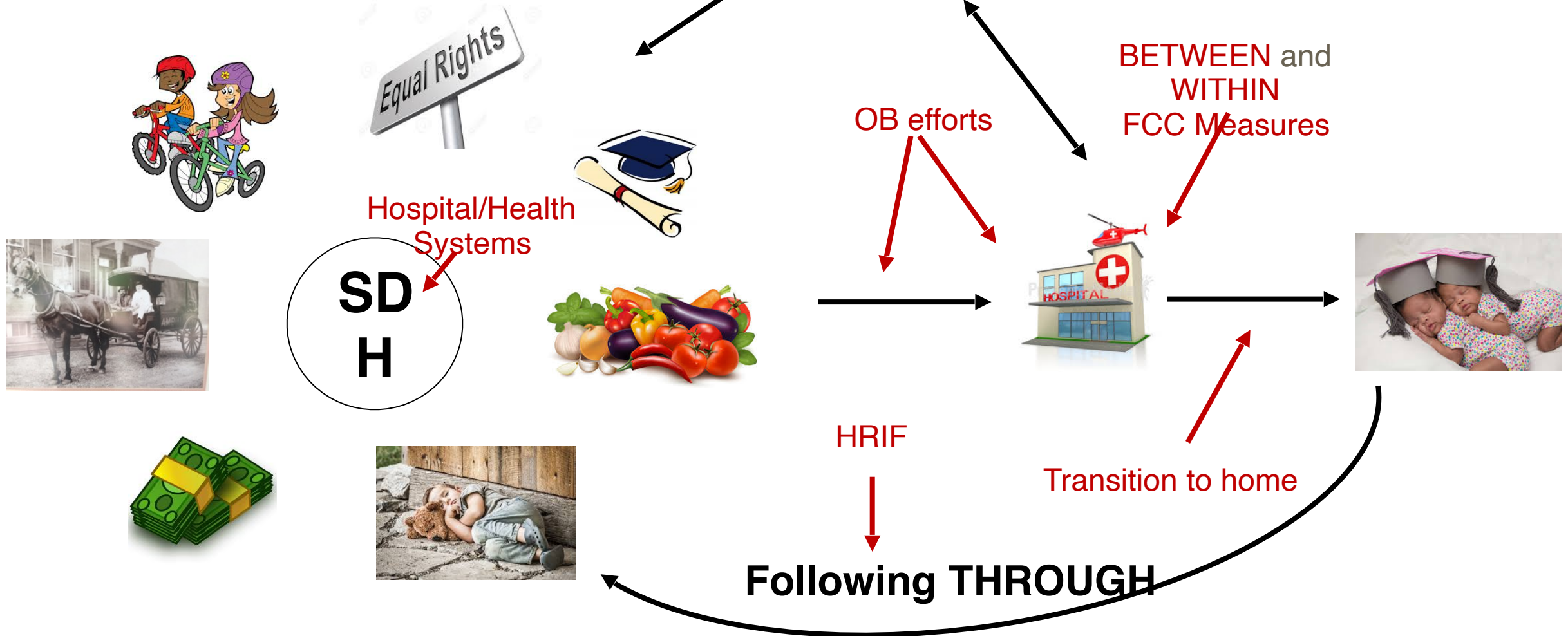
# The color of health: how racism, segregation, and inequality affect the health and well-being of preterm infants and their families

Andrew F. Beck<sup>1,2</sup>, Erika M. Edwards<sup>3,4,5</sup>, Jeffrey D. Horbar<sup>3,4</sup>, Elizabeth A. Howell<sup>6,7,8</sup>, Marie C. McCormick<sup>9,10,11</sup> and DeWayne M. Pursley<sup>9,11</sup>

1. Identify, prevent, and mitigate social risks
2. Recognize our responsibility does not end at NICU discharge
3. Develop robust quality improvement efforts to ensure equitable high quality NICU care
4. Advocate for social justice at the local, state, and national level

6  
2

# Equity Action





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# Summary

- **We don't practice in a social cocoon**
- Disparities in NICU care exist within and between NICUs
- Prioritize disparities
- Routinely measure processes and outcomes by race/ethnicity
- Incorporate disparities into all QI efforts
- Engage your family advisors
- Try Something Tomorrow!!



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[profit@stanford.edu](mailto:profit@stanford.edu)

**@ProfitJochen**

**@CPQCC**



**"OF ALL THE  
FORMS OF INEQUALITY,  
INJUSTICE IN HEALTH  
CARE IS THE  
MOST SHOCKING AND  
INHUMANE."**

**- Dr. Martin Luther King, Jr.**

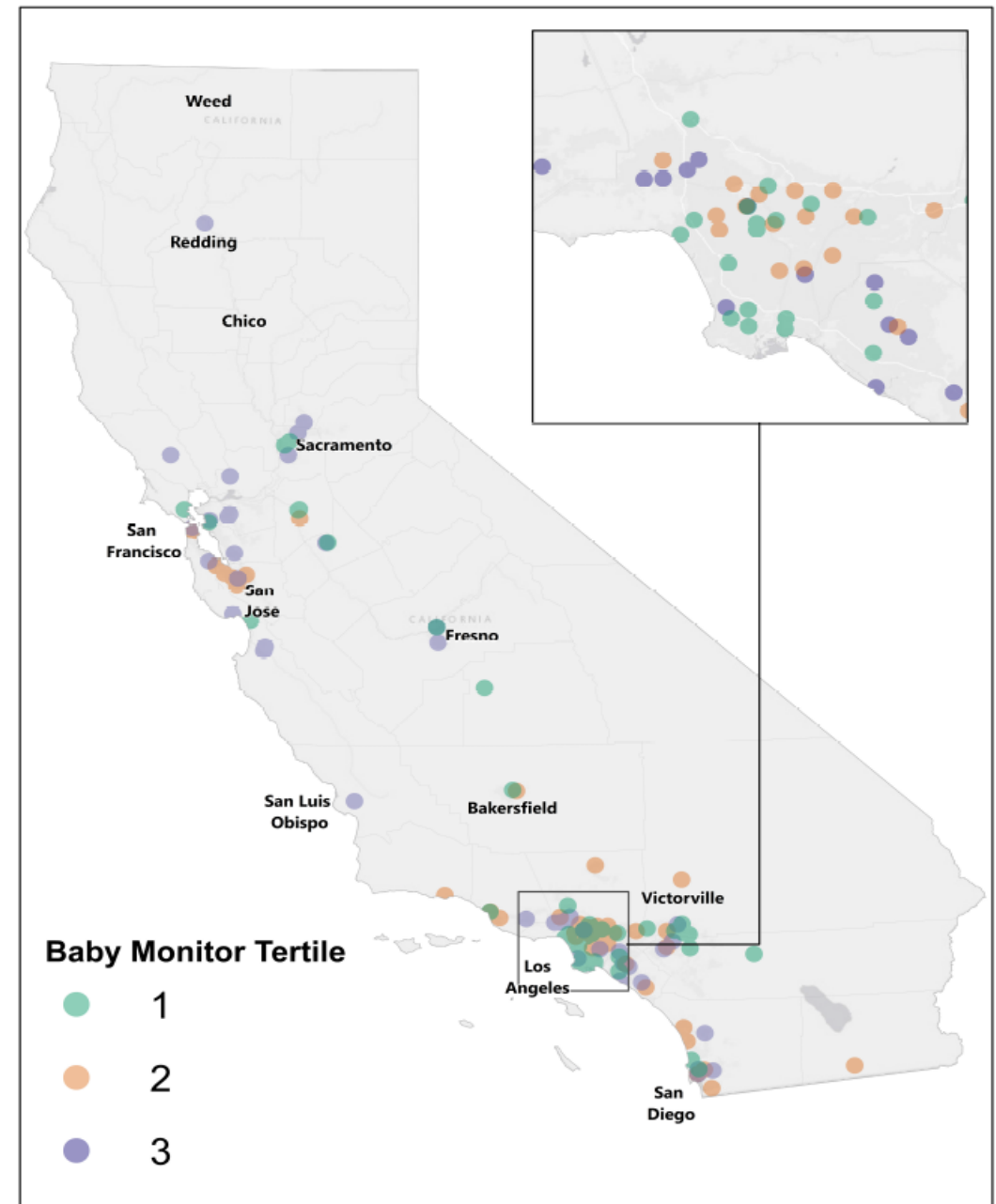
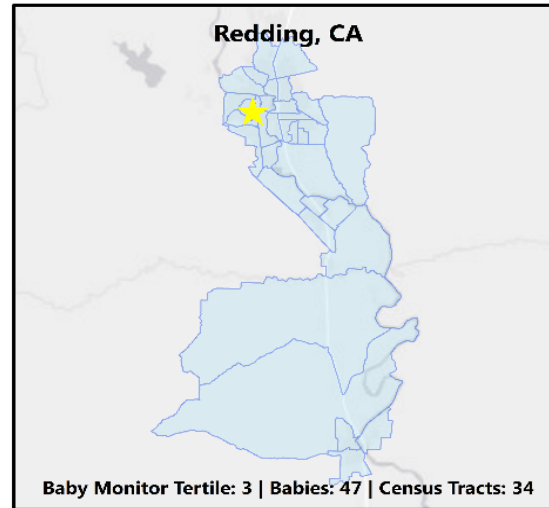
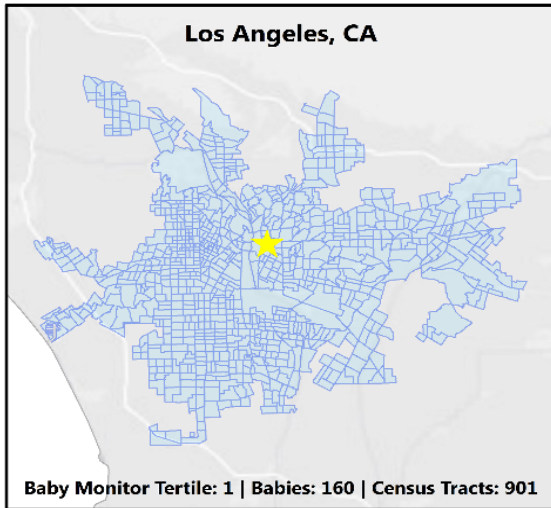
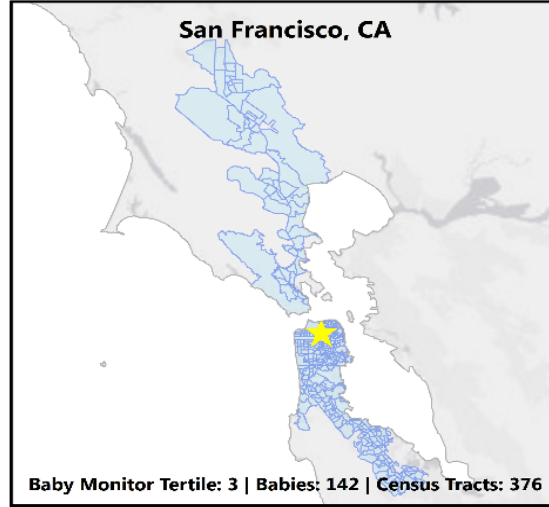
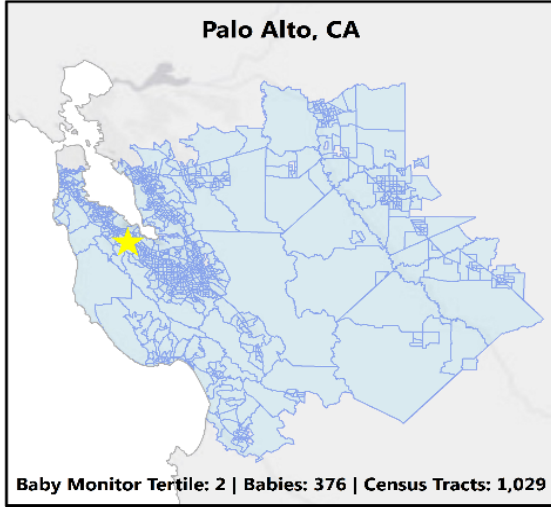
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# Acknowledgements

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- Briana Mitchell, BS; Christine Morton, PhD; Family Representatives: Lelis Vernon; Ashley Randolph
- Linda Franck, PhD, Ciaran Phibbs, PhD, Henry Lee, MD, Melissa Scala, MD, Jeffrey Gould, Jeffrey Horbar, MD
- National Advisory Board of Experts: Darius Bradley, Wally Carlo, Jimmy Collins, Wakako Eklund, Marybeth Fry, Balaji Govindaswami, Yolanda Ogbolu, Jean Raphael, Joaquin Rodriguez, Vincent Smith, Eileen Steffen, Paul Wise

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R01 HD083368-01, R01 HD084667, PI: Profit, J**

# Dashboard



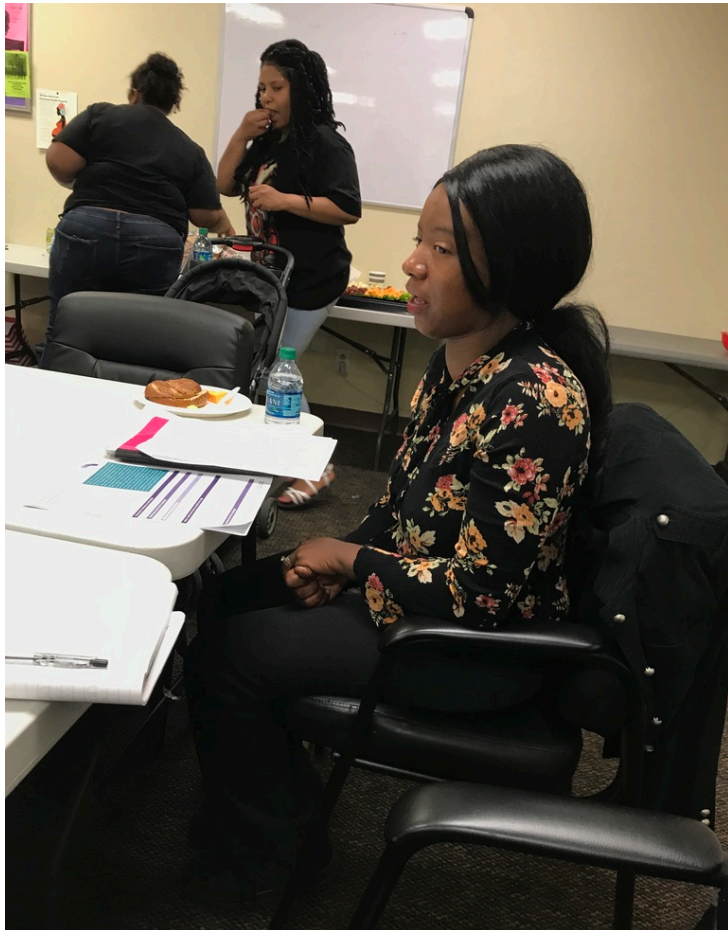
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# Measures of Family Centered Care

- **NICU family advisory council**
- **Days to first skin-to-skin care**
- **Time to priming with oral colostrum**
- **Delayed social worker encounter**
- **Frequency of updates to families by MD/NNP/RN**

*Point-of-care derived measures developed in collaboration with disadvantaged families. Measures selected through a modified Delphi panel that included family representatives.*

# Importance of community based participatory research



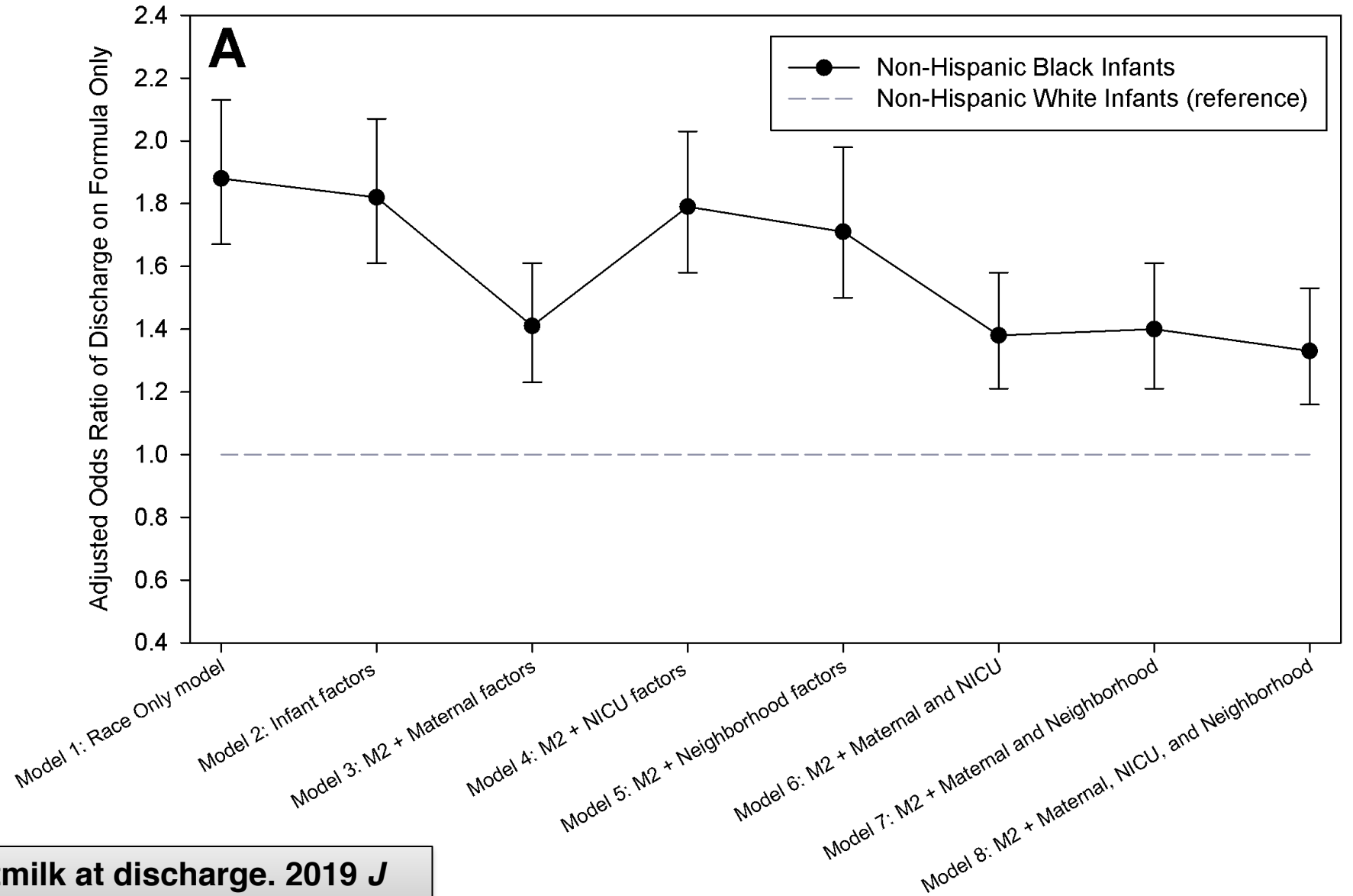
Former NICU moms  
conducting interviews and  
focus groups

Findings re: Latino  
families:

- Concept of family
- Perception of care quality



# Maternal Effects Greater than Neighborhood Effects



Liu J, Profit J, et al. Any Breastmilk at discharge. 2019 *J Pediatr*