SOCIAL DETERMINANTS OF HEALTH IMPACTING **MATERNAL HEALTH**

AND THE OPPORTUNITIES TO IMPROVE OUTCOMES

2020

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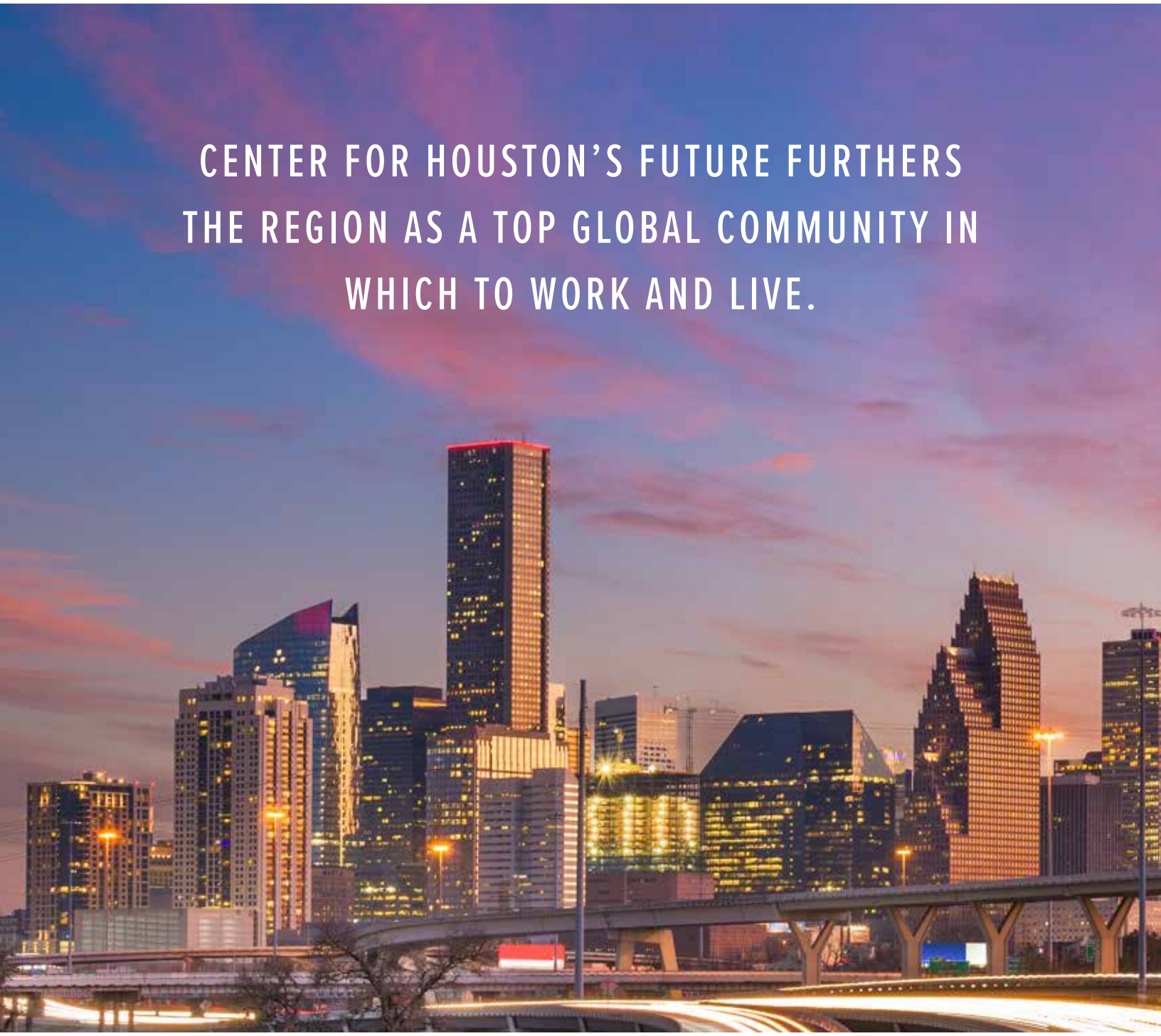
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THE REGION AS A TOP GLOBAL COMMUNITY IN
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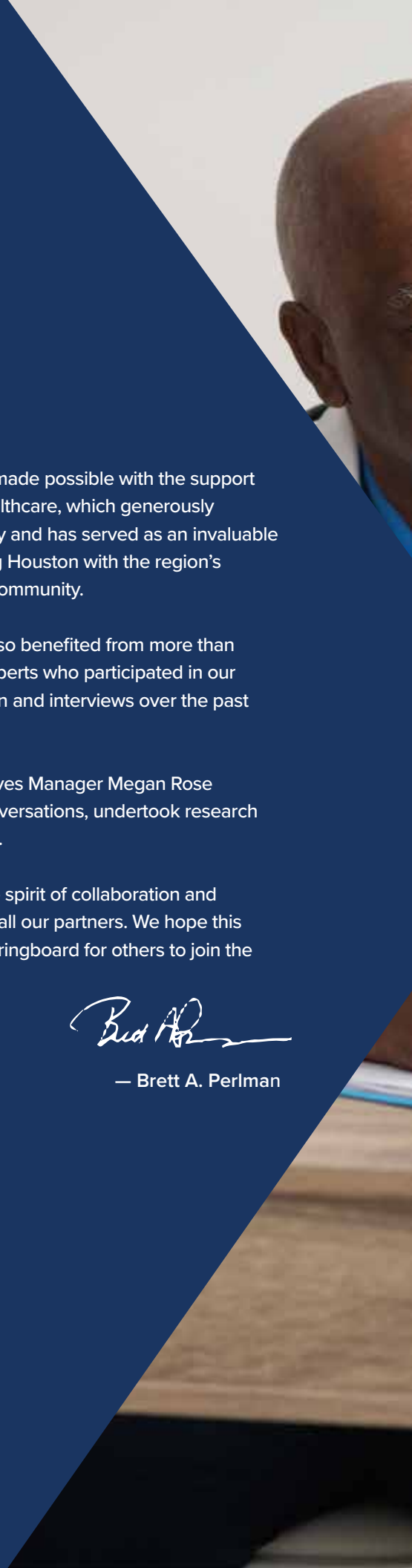
OUSTON'S FUTURE

ABOUT CHF

Center for Houston's Future, an independent affiliate of the Greater Houston Partnership, focuses on understanding future global trends and their impact on the Houston region. It brings business, government and community stakeholders together to engage in fact-based strategic planning, collaboration and action on issues of great importance to the success of our region. The Center's Business/Civic Leadership Forum also inspires leaders to help drive change.

LETTER FROM **THE CEO**



In 2021, Center for Houston's Future embarked on a project to delve more deeply into select topics as a follow-up to our 2020 report, **Houston's Economic Future: Health Care.**

That report concluded Houston faces a "paradox of plenty:" The Houston region has a world class health care system but faces poor health outcomes in many parts of the community. The report detailed that these outcomes are in part caused by underlying economic and social factors, known as social determinants of health (SDoH).

The first of several planned follow-up papers, this paper builds on findings in our original report and examines how social determinants of health affect maternal health. This report vividly illustrates the conclusion from our prior work. We found that the United States has the highest maternal mortality rate among wealthy developed nations despite spending a greater percentage of GDP on health care. Houston, in turn, has higher maternal mortality rates than the rest of the nation.

Given the Center's focus on envisioning and catalyzing ways for business engagement to improve our community, we identify, in this report, several areas in which business leaders could have a positive impact, leading to better health outcomes, higher worker productivity and economic growth.

This work has been made possible with the support of HCA Houston Healthcare, which generously underwrote this study and has served as an invaluable partner in connecting Houston with the region's greater health care community.

The Center's work also benefited from more than 30 subject-matter experts who participated in our roundtable discussion and interviews over the past year.

CHF Strategic Initiatives Manager Megan Rose facilitated expert conversations, undertook research and wrote this report.

We're grateful for the spirit of collaboration and common purpose of all our partners. We hope this report serves as a springboard for others to join the effort.

— Brett A. Perlman

> Maternal and child health care is one of the most important investments a country can make to build human capital and boost economic growth.

– Muhammad Ali Pate

Global Director, Health, Nutrition and Population (HNP) Global Practice of the World Bank and the Director of Global Financing Facility for Women, Children and Adolescents (GFF)

EXECUTIVE SUMMARY

The number of maternal deaths in the United States rose 14% in 2020 with COVID-19 exacerbating a trend of poor maternal health outcomes in our nation. The US continues to have the highest maternal mortality rate of all developed nations despite spending a greater percentage of GDP on healthcare. Maternal health is a leading indicator of any health system with broad economic impacts. A healthy economy depends on healthy people, and maternal death has a devastating effect on families and communities that is felt for generations. As a part of Center for Houston's Future mission to identify the most important long-range issues facing our region, we present this report on maternal health and the associated social determinants of health.

Research for this paper was conducted against the backdrop of the ongoing COVID-19 pandemic, which has laid bare the following three truths:

- **Social factors (SDoH) have a significant effect on the health of our communities.**
- **Gaps in our nation's social safety net lead to poor and inequitable health outcomes.**
- **These poor health outcomes are detrimental to our workforce and productivity.**

As we focused on maternal health, we found that the medical and social factors driving maternal health outcomes are the same factors driving COVID-19 outcomes and health overall. The health and resilience of our communities is rooted in our ability to address these social risk factors.

The findings in this paper are based on over 30 expert interviews, an extensive literature review and a roundtable meeting of health experts from a range of disciplines.

We started by interviewing maternal health experts including doctors, nurses, and medical administrators from hospitals, Federally Qualified Health Centers (FQHCs) and universities to identify issues in maternal health and the associated SDoH. We then talked to leaders of several social service agencies and research efforts focused on mothers and babies to learn about initiatives to address those SDoH.

In December 2021, Center for Houston's Future hosted a roundtable of 12 area experts to discuss the challenges and potential solutions to addressing the SDoH affecting maternal health. This diverse group of participants, with a wide range of experiences, came to a consensus on the following:

1. **Achieving meaningful improvement in maternal health requires a broad approach that addresses the cycle of need and applies to varied situations.**

2. **Successful initiatives are developed within (not for) a community to meet their unique needs and coordinated collaboratively to avoid gaps and duplication.**

3. **Houston has a strong history of leveraging public-private partnerships to tackle hard problems.**

Based on this work, we reached several important conclusions:

First, much work has been done to understand solutions for addressing SDoH in maternal health, but **sustainability** is a barrier to achieving better outcomes. Our roundtable of experts expressed a unified understanding of the SDoH driving maternal health and described the types of social interventions that would address those SDoH. But these experts also shared a frustration of having impactful programs gain the trust of local communities, begin to improve lives, and then be cut short by a lack of funding.

Second, many strong programs addressing SDoH and maternal health exist but are not well leveraged due to lack of **coordination**. These programs have grown up in "silos of excellence" without broad visibility to complementary programs. Several health navigator programs emerged to help clients access a range of services. However, adding another layer has also led to duplication and gaps in service.

Continued on page 8

The number of **maternal deaths** in the **United States** rose **14% in 2020.**

The Center challenged the expert panel, with these barriers in mind, to identify specific opportunities for the business community to engage in addressing maternal health and the contributing social factors. Three strategies emerged:

1. **Establish and participate in a pooled funding model to support "Collaborative Care Coordination" and related services.**

2. **Educate uninsured employees on available Federally Qualified Health Centers (FQHCs).**

3. **Support the adoption of a Best Places for Working Parents™ campaign in Houston to incentivize company policies that improve maternal health.**

It is evident the roundtable participants have ample energy, vision, and a clear desire to partner with the business community in exploring and enacting the strategies that they laid out. **Center for Houston's Future recommends the business community invest in sustainable funding for programs that improve maternal health outcomes and, in turn, bolster our economy.** Once funding models for public-private partnerships are established, they can be scaled to address other health issues in ways that improve the economy and increase the resilience of the Houston area.

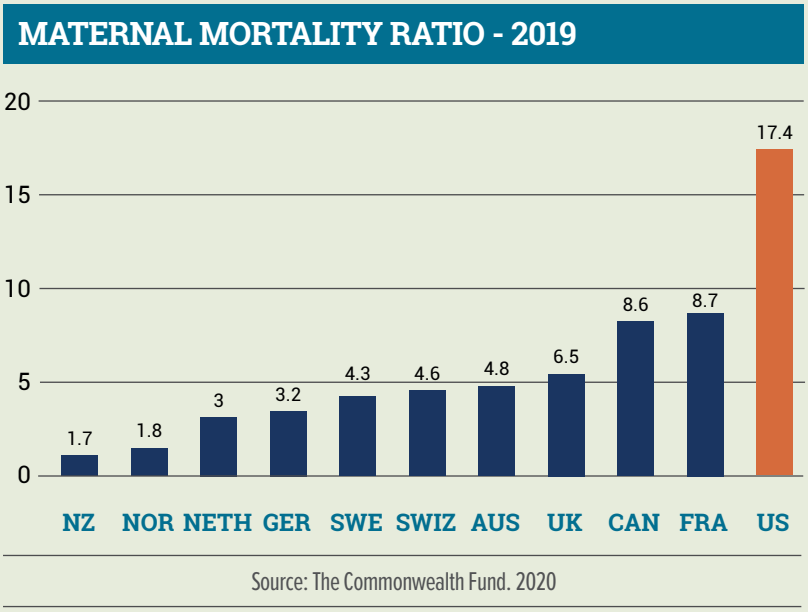
OVERVIEW

Maternal health is a vital barometer of any health system. It determines the health of the next generation and is reflective of the health of communities. Healthy pregnancies lead to healthy babies and productive adults. For this reason, the United Nations lists maternal health as one of its Sustainable Development Goals and the World Health Organization (WHO) uses maternal mortality as a key indicator of health systems.

Maternal health typically refers to the health of women during pregnancy, childbirth and the postnatal period. Key indicators are mortality, morbidity and preterm birth rates. Maternal health is a key determinant of infant health.

Continued on page 10

Figure 1: Maternal Mortality Ratios of 11 Developed Nations



Source: The Commonwealth Fund. 2020

Continued from page 9

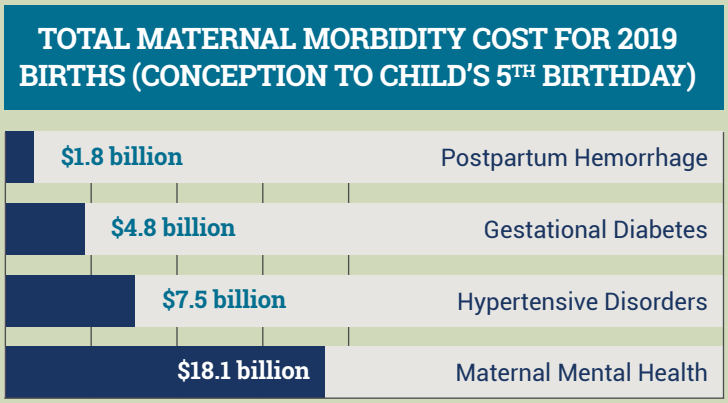
As such, it has been an issue of great concern in the United States and Houston for two decades. **The United States has the highest maternal mortality rate among wealthy developed nations despite spending a greater percentage of GDP on healthcare.** Poor maternal outcomes **cost the nation an estimated $32 billion** in 2019.[1]

Outcomes in Houston are worse than the national average. The 2021 March of Dimes Report Card assigned Houston an "F" versus the nation's rating of "C-" based on the number of pre-term births. Despite a broad recognition of the issue, maternal health outcomes are not improving. Even before COVID-19 reports showed a continued increase in the national maternal mortality rate in 2019 compared to 2018 (20.1 and 17.4 deaths per 100,000 live births respectively).[2]

Much like all health, maternal health is significantly affected by social factors beyond medical care. Chronic conditions that are present prior to pregnancy, such as hypertension, can be rooted in social factors like access to nutritious food and safe environments for exercise. And these can lead to pregnancy complications for mother and baby including death. This tells us that to **be effective, interventions will need to be holistic across a range of interconnected factors and span the life-cycle.** Currently the US is directing 90% of its $4.1 trillion healthcare expenditure toward medical care that only drives 20% of health outcomes, according to a study by University of Wisconsin Population Health Institute. Funding to address the remaining 80% of drivers of outcomes consist of small, short-term grants leading to disjointed solutions that end before their impacts can be realized. The solution needs to be more holistic, integrated, and fulsome, which will lead to better sustainability and outcomes.

Poor maternal outcomes cost the nation $32 BILLION in 2019.

Figure 2: Cost and Causes of Maternal Morbidity for 2019 Births



Sources: Houston Health Department 2019 report on Health Disparities and Health Inequities, The Commonwealth Fund

18% of **Texans** lack medical access **due to cost**

12% of households & **10% of mothers** are **food insecure**

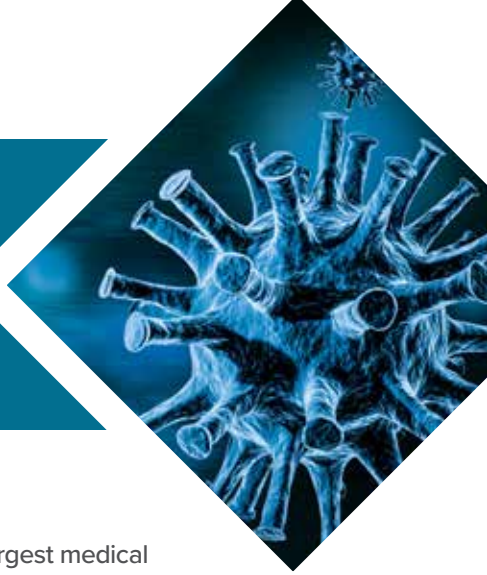
20% 1 in 5 households reported **severe housing problems**

Source: Houston Health Department 2019 report on Health Disparities and Health Inequities

These statistics are alarming, and they are also avoidable. **More than 60% of US pregnancy-related deaths are preventable.**[3] Given that one in ten babies in the US are born in Texas,[4] our community has an opportunity to provide thought leadership and to make a significant improvement in national maternal health.

1. *https://www.commonwealthfund.org/publications/issue-briefs/2020/nov/maternal-mortality-maternity-care-us-compared-10-countries*
2. *https://www.marchofdimes.org/mission/reportcard.aspx*
3. *https://www.cdc.gov/vitalsigns/maternal-deaths/index.html*
4. *https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_01.pdf*
5. *https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2782978*

> My greatest concern is letting pregnant moms know that it is critically important for them to get the COVID-19 vaccines. It is 100% safe for pregnant and breastfeeding moms, and it passes along immunity to their baby.
>
> — Dr. Cindy Celnik, Chief Medical Officer for The Woman's Hospital of Texas



The COVID-19 pandemic is exacerbating an already rising trend in maternal deaths. A recent report published by the National Center for Health Statistics (NHCS) found that in 2020 the number of maternal deaths rose 14% for all women in the US. That brought the maternal mortality rate in 2020 to 23.8 deaths per 100,000 live births from 20.1 deaths per 100,000 in 2019.

Populations most impacted by COVID-19 experienced the greatest increase in maternal mortality. The maternal mortality rate was highest for Black women at 55.3 deaths per 100,000 live births. Hispanic women – who historically saw lower maternal mortality rates than non-Hispanic White women – died at a rate on par with White women for the first time.

Health care workers we spoke to were very concerned about low COVID-19 vaccination rates among pregnant women, in part, due to delayed and unclear safety guidance. Current studies show that pregnant women are at increased risk of severe disease, hospitalization, and ventilation as well as adverse events to their babies if they have COVID-19. Those who give birth while infected with COVID-19 had significantly higher rates of intensive care unit admission and death.[5] Many of the factors that influence maternal health also drive public health and health resiliency. Therefore, efforts to improve SDoH impacting maternal health should also improve overall public health and resiliency.

Houston is uniquely positioned to lead this work with our robust economy, ample social services, **public-private partnerships,** strong base of influential corporations, and world's largest medical center. To improve outcomes, investments must be realigned and better synchronized to address the social factors that drive 80% of health outcomes. **Regional experts agree that key challenges in our area are a lack of coordination and sustainable funding.** This report looks to identify causes, impacts, and steps that can be taken to reduce preventable deaths and negative outcomes.

Center for Houston's Future interviewed over 30 health industry experts and convened a roundtable discussion with 12 professionals from a range of disciplines related to maternal health to inform this report. We examined dozens of current and past initiatives to identify challenges, lessons learned, and progress to build upon. These experts identified **three opportunities for business engagement:** sustained funding for successful coordinated programs, employee education, and employer support for family friendly policies.

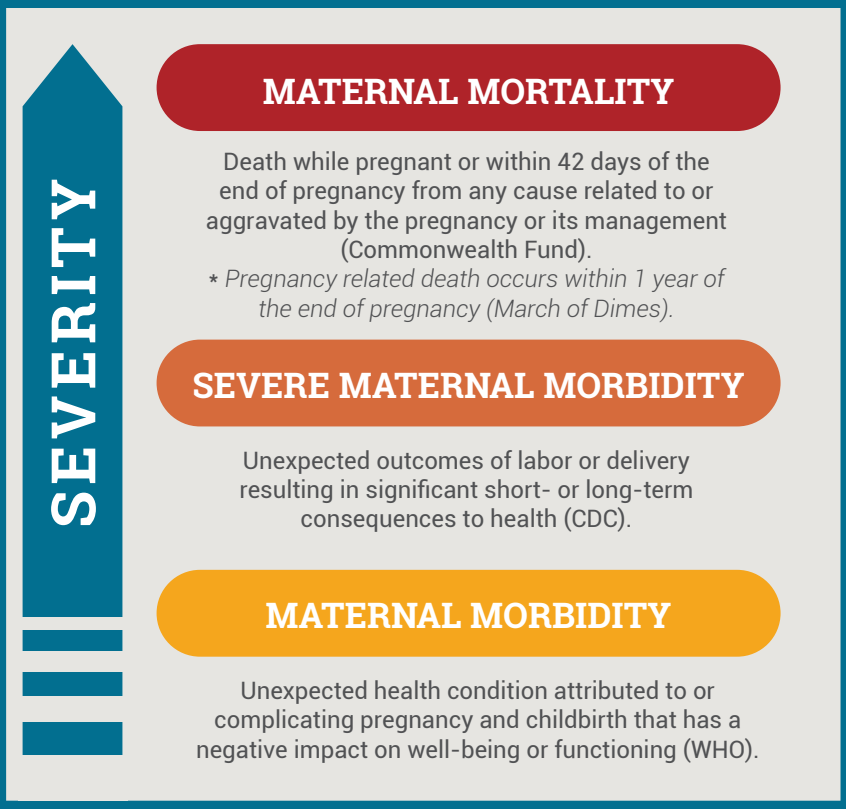
To set the stage for understanding opportunities to improve maternal health and drive down costs, this report will explore the state of maternal health nationally, statewide and locally. First, we review maternal health outcomes and their underlying factors, medical and social. Second, we evaluate current and past initiatives on maternal health to understand what has been achieved to date. These initiatives have not significantly improved maternal health outcomes. They did build a foundation and identify several needs and promising strategies. Finally, the experts we consulted shared ideas for how Houston's business community can help implement some of those strategies.

State of Maternal Health

Two to three women die each day in the US due to pregnancy-related complications,[6] which is more than double the rate of nations with similar income levels.

And 60,000 US women a year suffer severe maternal morbidity (SMM), or significant health consequences resulting from labor and delivery. A recent report from the Robert Wood Johnson Foundation shows that COVID-19 has exacerbated what was already a maternal health crisis and highlighted the underlying social factors.[7]

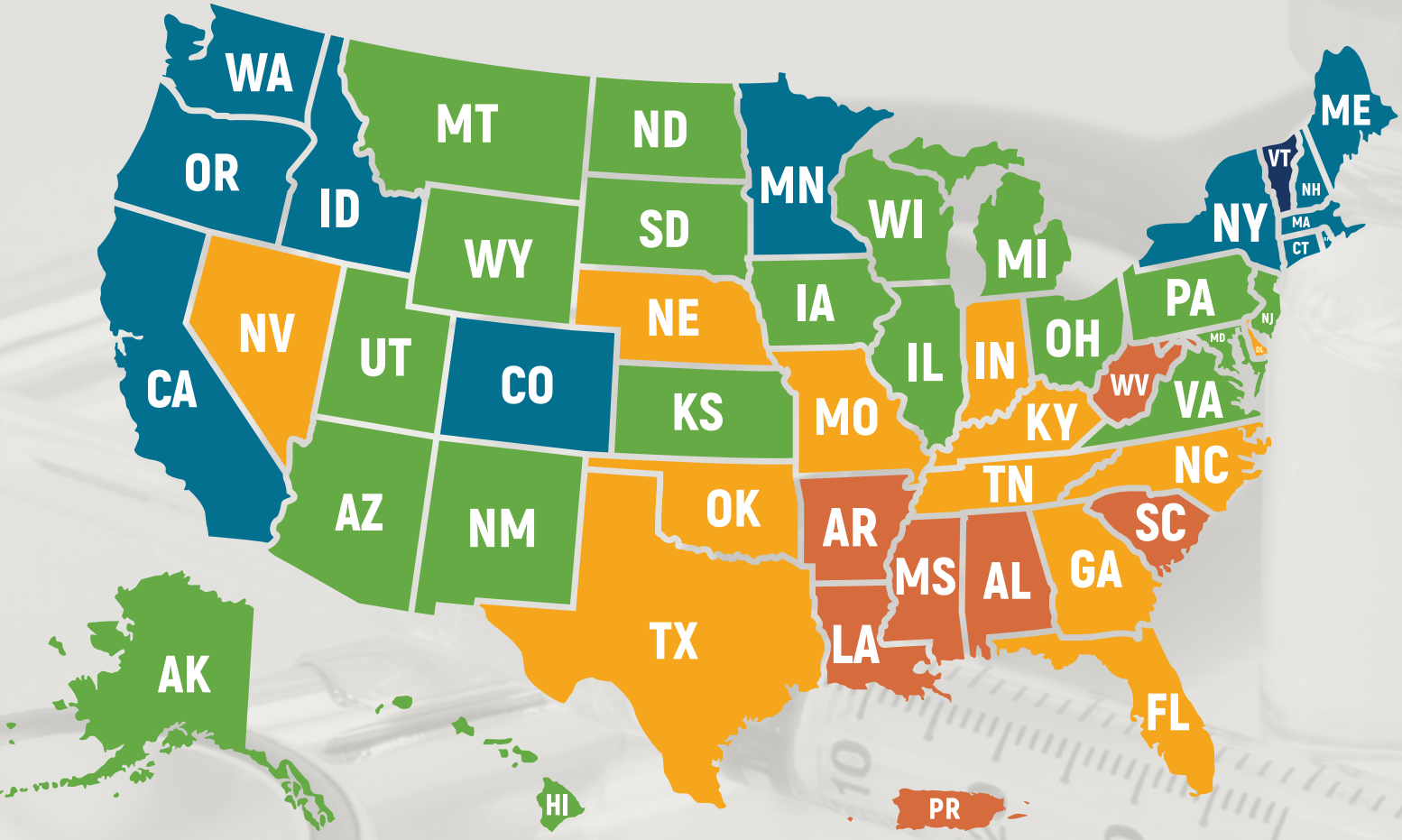
Figure 3: Maternal Mortality and Morbidity Defined



Severe maternal morbidity can be considered a near miss for maternal mortality because without identification and treatment these conditions can sometimes lead to maternal death.[8]

6. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-relatedmortality.htm
7. https://www.rwjf.org/en/library/research/2020/10/maternal-health-inequity-during-the-COVID-19-pandemic.html
8. https://pubmed.ncbi.nlm.nih.gov/27560600

Figure 4: March of Dimes 2021 Report Card



Maternal health in Texas is slightly worse than the national average, and statistics in Houston are among the worst in Texas. The March of Dimes Report Card provides national, state and city maternal health ratings. **They rate the US as a C-, Texas as a D and Houston as an F** (March of Dimes, 2021).

MARCH OF DIMES

GRADE

- A
- B
- C
- D
- F

USA	TEXAS	HOUSTON
C-	D	F

The Houston metro area, which accounts for one in four births in Texas, had preterm birth rates of 11.9% in 2019 (up from 11.7% in 2018). This is inferior to the national rate of 10.2%.

Race and zip code play a significant role in preterm birth rates in Harris County as in the rest of the US. Black women are 50% more likely to have a preterm birth than White women. Preterm birth rates vary by zip code from as high as 20.1% in under-resourced areas to below 9.4% in affluent areas according to 2020 data from the Department of State Health.

Figure 5: Harris County 2019 Preterm Births

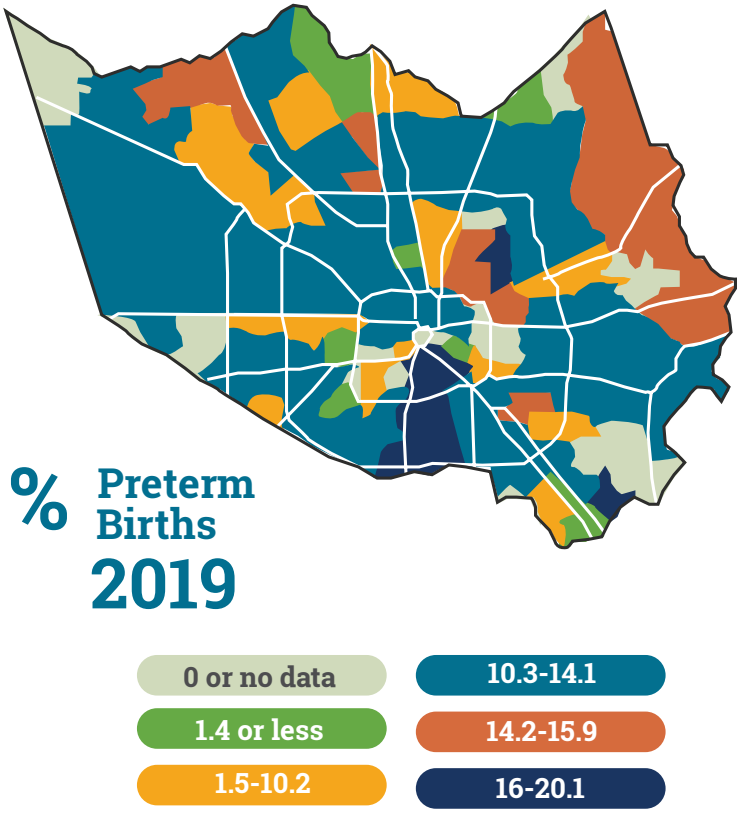
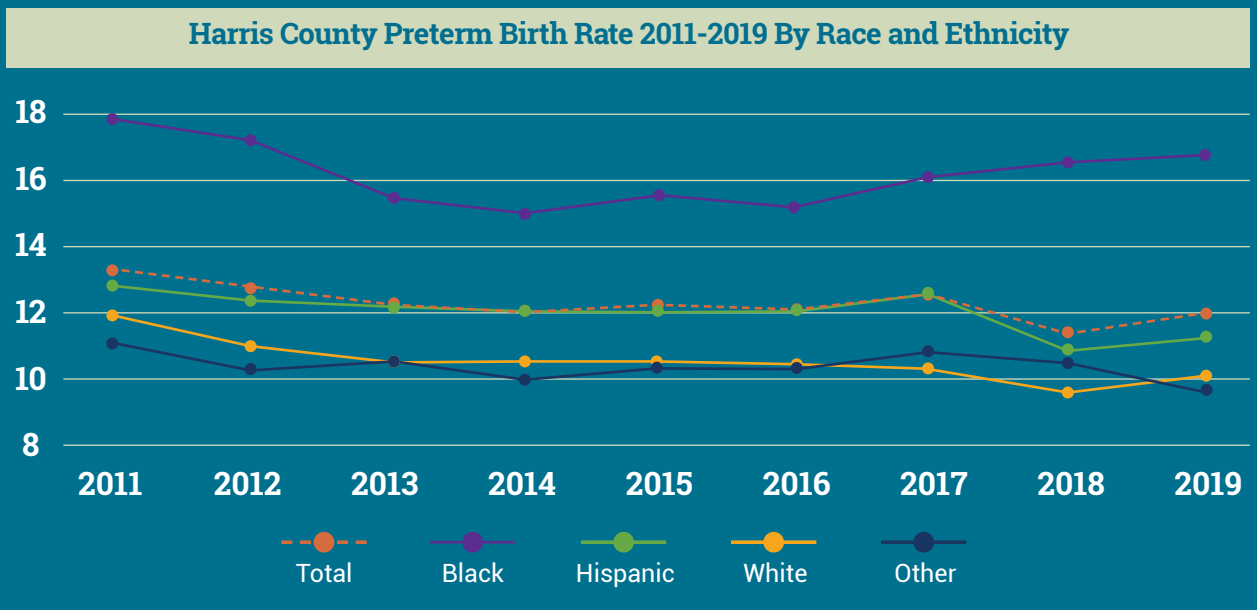


Figure 6: Harris County Preterm Births by Race

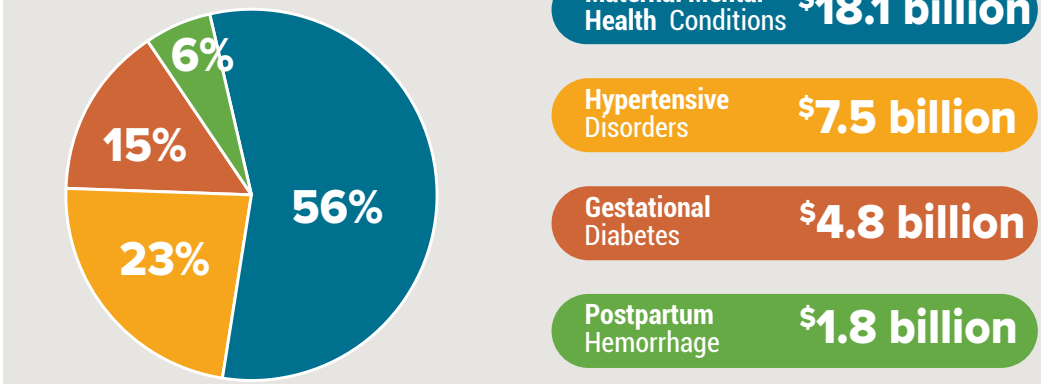


Source: Department of State Health Services Center for Health Statistics

The Cost of Maternal Morbidity

In 2021, The Commonwealth Fund modeled the economic toll of US maternal morbidity. The model reflects costs related to needed medical care and nonmedical costs such as productivity loss and use of social services (see figure below). It estimated total maternal morbidity costs for all US births in 2019 to be $32.3 billion from conception through the child's fifth birthday. **The largest costs by cause included:**

Figure 7: Cost of Maternal Morbidity 2019 Pie Chart



The resulting outcomes in the children with the highest costs were preterm birth ($13.7 billion), developmental disorders ($6.5 billion), and respiratory distress syndrome ($2.1 billion).[9]

9. https://www.commonwealthfund.org/publications/issue-briefs/2021/nov/high-costs-maternal-morbidity-need-investment-maternal-health

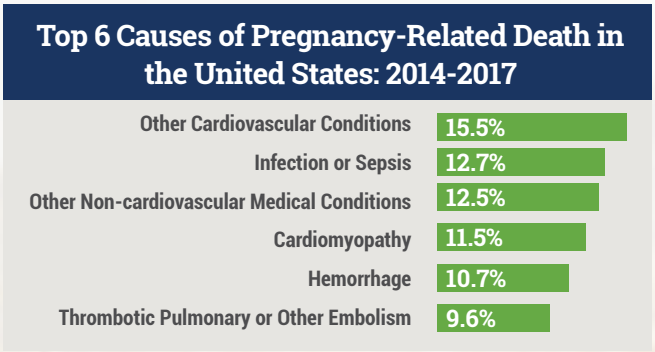
CONTRIBUTING FACTORS

Nationwide Contributing Factors

A deeper look into the medical conditions that cause or contribute to maternal mortality and morbidity shows us that these conditions often have social and systemic causes, and they start long before pregnancy. Nationwide, the Maternal Mortality and Morbidity Review Committee (MMRCs) identified that chronic conditions or health conditions that are present prior to pregnancy such as hypertension, diabetes, or obesity, can lead to pregnancy complications for mother and baby including death. This tells us that **interventions must be holistic across a range of interconnected factors and span the lifecycle to be effective.**

The Centers for Disease Control and Prevention (CDC) identified cardiovascular conditions and infection or sepsis, as shown, in Figure 8 as the leading causes of maternal death in the US.[10]

Figure 8: Cause of Pregnancy Related Death, US



Data Source: CDC Pregnancy Mortality Surveillance System (PMSS)

More recent studies identify **substance use disorders, mental health conditions, and intimate partner violence (IPV)** as key contributors.[11] Partners and ex-partners are the most frequent perpetrators of violence in cases of pregnancy-associated death.

A study of women who worked during pregnancy found that those who qualified for paid maternity leave reported 58% lower odds of IPV in the first twelve months postpartum compared to women who did not have access to paid maternity leave.[12]

A 2018 article titled ***"Preventing Intimate Partner Violence through Paid Parental Leave Policies"*** identified three mechanisms by which paid leave prevents IPV.

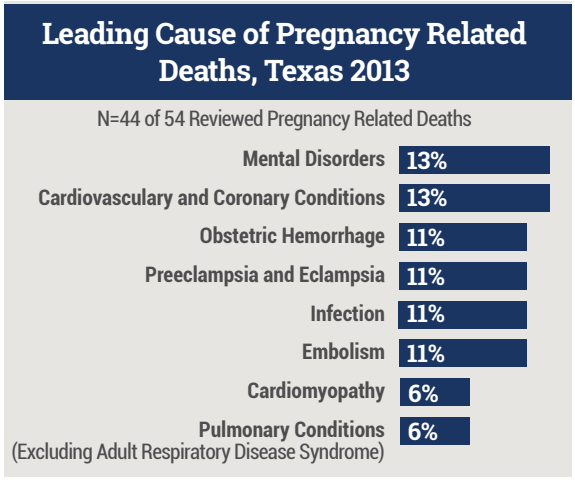
- "Paid leave maintains household income preventing financial stressors and associated relationship discord that can incite instances of relationship violence;
- paid leave increases egalitarian parenting practices and decreases the impact of work interruptions on women's advancement in the workplace, thereby increasing gender equity, which is associated with lower rates of IPV against women; and
- paid leave provides new parents a period of time to bond with a child free of conflict between work and family demands, which facilitates IPV protective factors and reduces risk factors in youth (e.g., healthy parenting practices, healthy relationships, good parental mental health, etc)." [13]

10. https://www.dshs.texas.gov/mch/pdf/DSHS-MMMRC-2020-UPDATED-11282020.pdf
11. https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm
12. Gartland, D et al. "Intimate partner violence during pregnancy and the first year postpartum in an Australian pregnancy cohort study." Maternal and child health journal vol. 15,5 (2011): 570-8. doi:10.1007/s10995-010-0638-
13. Gartland and colleagues (2011). D'Inverno AS, Reidy DE, Kearns MC. Preventing intimate partner violence through paid parental leave policies. Prev Med. 2018;114:18-23. doi:10.1016/j.ypmed.2018.05.024

Texas Contributing Factors

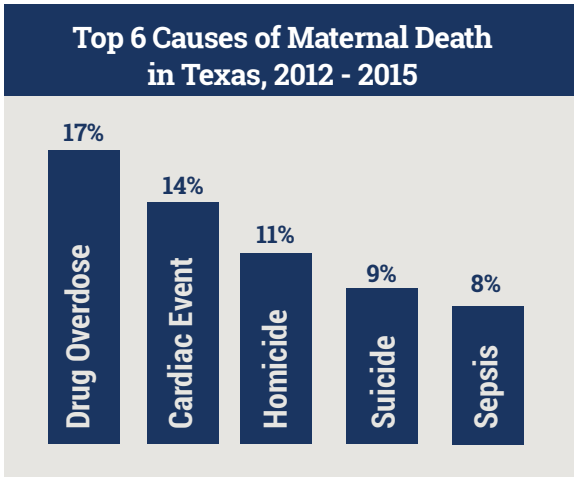
Texas sees similar factors hurting maternal health outcomes. The data allow for a more granular look at causes of maternal death at a state level. Texas Department of State Health Services (DSHS) identified **mental disorders and cardiovascular and coronary disease** as tied for the most common cause of maternal deaths in Texas in 2013. Another report from DSHS over a four-year span found **drug overdose and cardiac events** to be leading contributors as outlined in figures 9 and 10.

Figure 9: Cause of Pregnancy Related Death, Texas 2013



Data Source: 2013 Death Files, DSHS

Figure 10: Cause of Maternal Death, Texas 2012-2015



Source: Texas Dept of State Health Services MMTF Joint Report 2018

14. https://www.houstonendowment.org/wp-content/uploads/HE-Community-Plan-to-Improve-Maternal-Health-4-20-18-update.pdf
15. https://www.houstonendowment.org/wp-content/uploads/HE-Community-Plan-to-Improve-Maternal-Health-4-20-18-update.pdf

Harris County Contributing Factors

The 2018 Improving Maternal Health (IMH) Initiative provided a rare glimpse into local maternal health outcomes. The rate of severe maternal morbidity in Harris County in 2015 was 238 per 10,000 deliveries (2.4%).[14] That was 20% higher than the Texas average, which itself was above the US average. Research from the IMH also identified the risk factors behind those deaths and the percentage of women in Harris County reporting those risk factors.

IMH identified the following key risk factors for women in Harris County:

55% of women reported being at risk for being overweight or obese.

18% reported regularly taking prescription medication before pregnancy.

16% reported having had a doctor tell them they have a depressive disorder.

11% reported having had a doctor diagnose them with hypertension/high blood pressure.

2% reported partner abuse before, during or after pregnancy.[15]

Figure 11: Harris County Maternal Morbidity by Zip Code

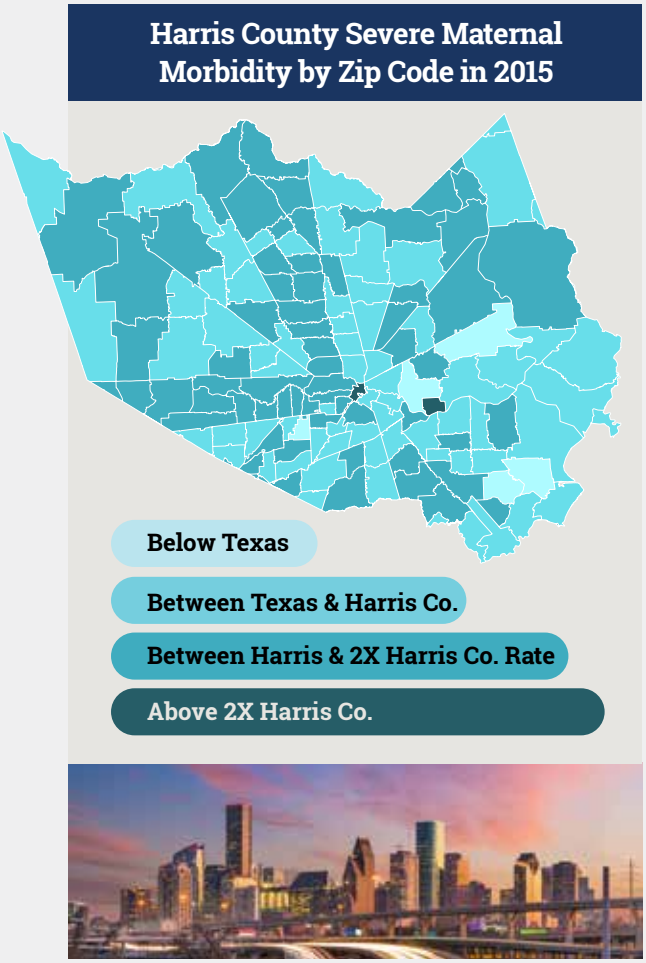
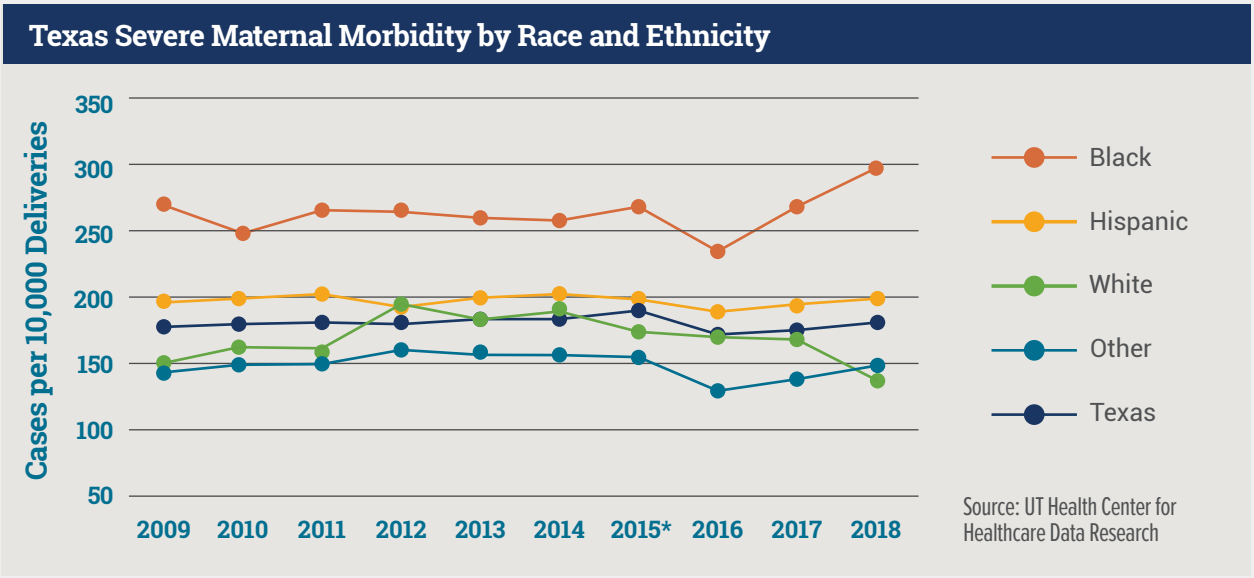


Figure 12: Texas Maternal Morbidity by Race



Source: UT Health Center for Healthcare Data Research

Contributing Factors by Race

Perhaps the most glaring statistics in maternal health are the ones revealing racial inequity. Black and Native American women are three times more likely to die in childbirth than White women, and Black women are more likely to experience complications during pregnancy and childbirth. This is not due to genetic or inherent factors. This disparity for Black women is specific to the United States.

A study by Johns Hopkins Medicine states that "Black women born outside the US saw a 26% lower chance of experiencing preeclampsia than Black women born in the US. What's more, foreign-born Black women who had spent less time in the US experienced better odds of good birthing outcomes."[16] These increased rates of preeclampsia, a pregnancy-related blood pressure condition, among Black women could account for part of that overall disparity.

16. *https://patientengagementhit.com/news/racial-health-disparities-persist-in-black-maternal-cardiac-outcomes*
17. *https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69_02-508.pdf Metro/non-Metro*

Figure 13: U.S. Maternal Mortality by Race, 2018

U.S. MATERNAL MORTALITY RATES PER 100,000 LIVE BIRTHS BY RACE AND METRO STATUS, 2018						
POPULATION	OVERALL	WHITE	BLACK	HISPANIC	METRO	NON-METRO
MATERNAL MORTALITY RATE	17.4%	14.7%	37.1%	11.8%	16.7%	21.6%

Source: Race/Ethnicity: "Maternal Mortality in the United States: Changes in Coding, Publication, and Data Release, 2018" National Vital Statistics Report [17]

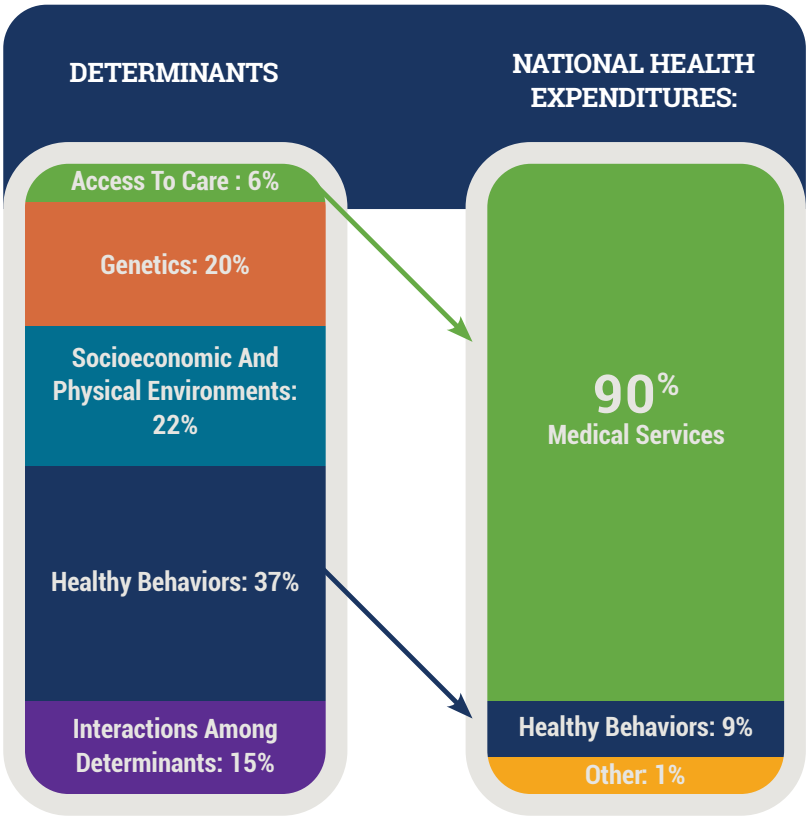
Spending Mismatch

Maternal health, like all health, is significantly affected by social factors beyond medical care. Currently, the US is directing 90% of its $4.1 trillion healthcare investment toward medical care that only accounts for 20% of health outcomes. Funding to address the remaining 80% of drivers of outcomes consist of small, short-term grants, which leads to disjointed solutions that end before they have time to make real change.

It is well established that these medical conditions that are causing or contributing to poor maternal health are driven by social and environmental risk factors.

Studies by the University of Wisconsin and the Robert Wood Johnson Foundation found that only 20% of health outcomes are the result of medical care, while genetics make up 10% of outcomes; health behaviors like smoking and exercise drive 30% of outcomes; and social determinants of health account for the majority, 40%, of health outcomes.[18]

Figure 14: Spending Mismatch Health Determinants v. Health Expenditures



Source: The spending mismatch: health determinants vs. health expenditures. Healthy People/Healthy Economy: An Initiative to Make Massachusetts the National Leader in Health and Wellness. 2015. Data from NEHI 2013. http://www.tbf.org/tbf/56/hphe/Health-Crisis. Accessed May 30, 2016.

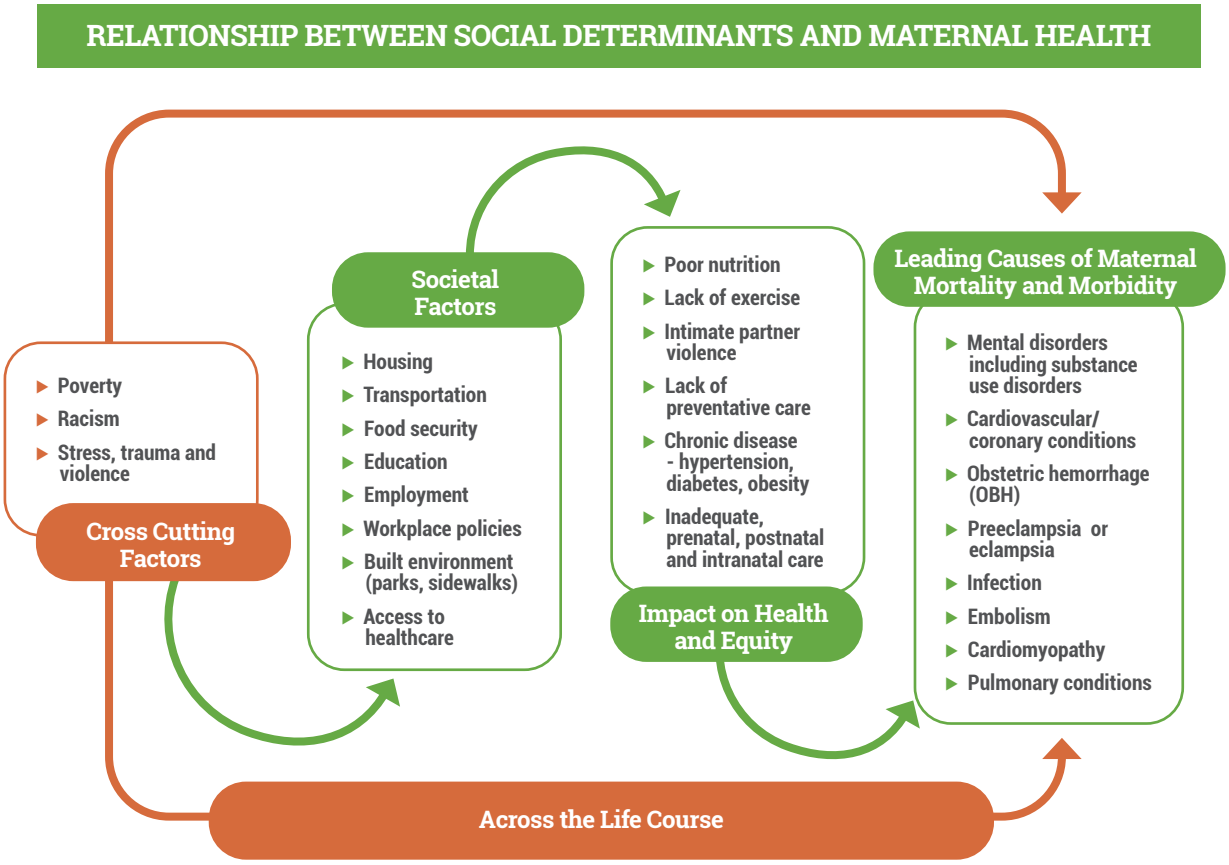
Such breakdowns vary slightly by research institutions, but the main takeaways do not. The Network for Excellence in Health Innovation, as shown in figure 14, attributes 6% of health outcomes to medical care.

This paradigm also holds true in maternal health. Social determinants of health are primary drivers of our maternal health crisis. Mental health and chronic disease are leading causes of maternal deaths and severe negative health outcomes for moms and babies. These are also the most expensive to our society – $18.1 billion and $12.3 billion respectively. Black and Native American people are affected disproportionately, with Black women being three times as likely to die in childbirth than White women.[19]

18. *https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model*
19. *https://www.prb.org/resources/black-women-over-three-times-more-likely-to-die-in-pregnancy-postpartum-than-white-women-new-research-finds/*

To gain better local insights, we conducted expert interviews and convened our roundtable discussion. We dug deep into the interconnected relationship between SDoH, medical conditions, and maternal mortality and morbidity, as illustrated in the figure below.

Figure 15: SDoH and Maternal Health



These factors are interdependent and must be addressed holistically to improve outcomes. An example provided at our roundtable: A pregnant mother at risk because she lacks safe housing, is having trouble registering for prenatal care, and is at risk of losing her minimum wage job. It is hard for her to prioritize prenatal care and nutrition until she has a safe place to sleep, and paid time off for medical visits. All these factors must be addressed together to improve health outcomes.

To achieve results, we must understand and address the social factors in Houston at the individual level (education and economic stability), and systemic level (transportation, housing, neighborhood conditions).

SDoH Linked to Maternal Health Outcomes in Houston

Several reports provide data on SDoH impacting Houston and include the magnitude of issues.

The Houston Health Department 2019 report on Health Disparities and Health Inequities identified the following statistics.

17% of **Black households do not have access to a vehicle**, compared to **5%** of Whites and **8%** of Hispanics.

NEARLY 1 IN 4 **children in Harris County faces food uncertainty** in whether adequate and nutritious food will be available in their homes.

1 IN 5 **households reported severe housing problems,** such as high housing costs, overcrowding, and the lack of a kitchen. Also there is a severe shortage of housing for low-income people.

30.4% of **Hispanic adults** reported that they had not been able to see a doctor when they needed to, due to cost.

According to a 2019 national survey of low-income women of reproductive age (ages 18 to 44),

- "Two-thirds of participants reported they had difficulty paying for food, housing, medical care, or heating.
- Twenty-three percent of respondents reported needing food for themselves and their families.
- Food-insecure mothers are twice as likely to experience generalized anxiety disorder and major depression and they are more likely to supplement or switch to formula due to concerns about the supply or quality of their breast milk."[20]

Between four to nine percent of pregnant women experience homelessness—and countless others face housing instability, which has been shown to have a significant association to adverse perinatal outcomes, such as preterm birth, low birth weight neonates, neonatal intensive care unit admission, and delivery complications.

— Nationally the Committee on Health Care for Underserved Women for the American College of Obstetricians and Gynecologists (ACOG)

20. *https://www.plannedparenthood.org/uploads/filer_public/33/97/33976d5a-f402-4b14-ab68-671aa58a0f00/210115-hcip-sdoh-what-about-her-update-v2.pdf*

Structural Racism Linked to SDoH and Black Maternal Health

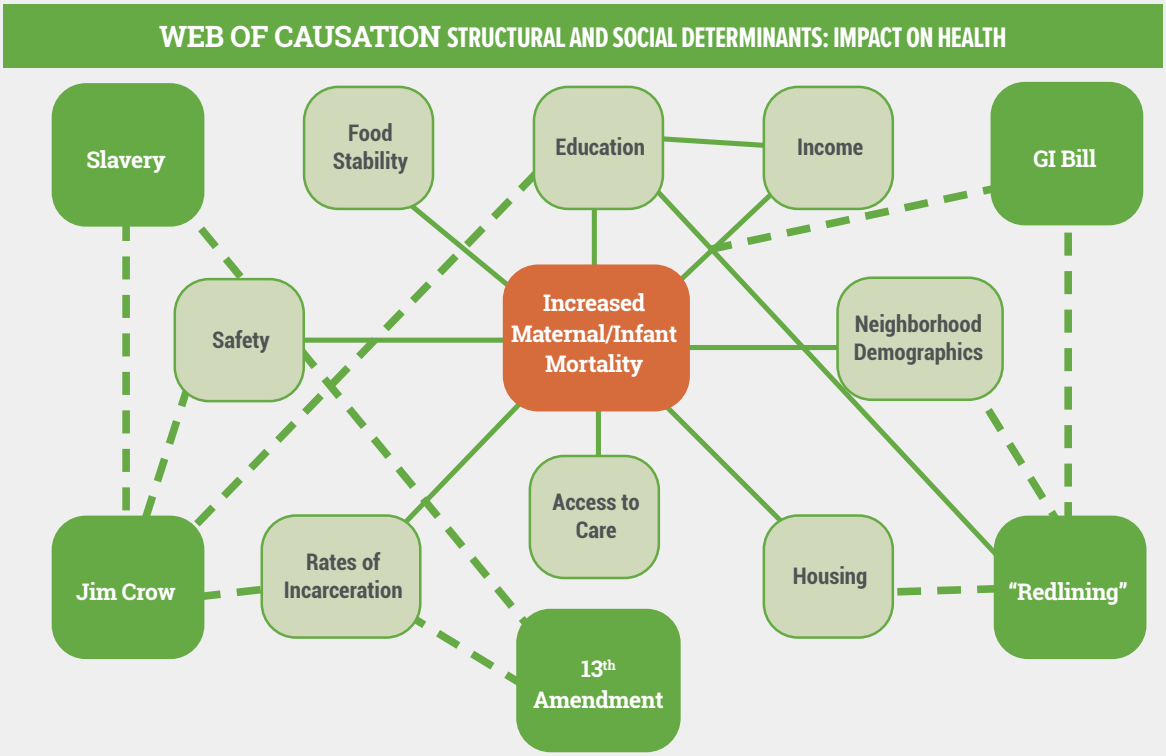
Disparities in these social factors cause poor health in disadvantaged and historically underserved communities. This does not, however, fully explain why Black and Native American mothers are 60% more likely to die from pregnancy related causes than White women. Structural racism and institutional policies restrict access to health promoting resources and opportunities, which, in turn, leads to poor maternal outcomes for Black mothers and infants. Even controlling for insurance status, income, age, and severity of conditions, people of color are less likely to receive routine medical procedures and experience a lower quality of care.

One recent study of hospital births in Florida found significant improvements in mortality for Black newborns who were cared for by Black physicians, pointing to the importance of culturally competent care.[21] The rarity of Black representation was highlighted by a recent medical illustration of a Black fetus by Chidiebere Ibe, which went viral because it was the first of its kind.[22]

The connection between SDoH and the history of racism is shown in the diagram below based on the ROOTT Theoretical Framework.[23] For example, exclusion from the GI Bill prevented educational and economic opportunities; redlining (home mortgage denial on the basis of race) led to a lack of transportation, safe spaces to exercise and access to healthy food; and reactions to the 13th amendment that abolished slavery led to mass incarceration based on racially targeted laws.

Any initiative aimed at improving maternal health must keep health equity and racial bias at the forefront. Cultural competency training and representation must be woven into our medical, social and care coordination systems starting with workforce recruitment and training.

Figure 16: Social and Structural Determinants of Maternal Health[24]



Source: ROOTT Theoretical Framework. This figure depicts the theoretical framework developed by ROOTT15 used to identify structural and social determinants of maternal and infant mortality in the United States.

CURRENT INITIATIVES TO ADDRESS MATERNAL HEALTH ISSUES

National Initiatives

Current initiatives have laid the groundwork for Houston to make substantial improvements in maternal health. The federal government has identified maternal health as a priority and directed significant resources to it. Public and private entities in Texas and Houston have done substantial work to develop programs and mechanisms needed to drive change. It is important to understand the work that is being done and has been done to learn from and build on those efforts.

The White House declared December 7, 2021, the first-ever Maternal Day of Action and announced substantial investments and a "new commitment to supporting safe pregnancies and childbirth." This was accompanied by the Department of Health and Human Services Action Plan and the Surgeon General's Call to Action.[25]

The Centers for Medicare and Medicaid Services (CMS) outlined opportunities to better address SDoH and lower overall health costs in a letter to Texas state health officials. CMS is improving the maternal health data infrastructure to capture data on social, racial and economic factors to identify root causes and inequities.[26] Similarly, the National Quality Foundation (NQF) identified actionable approaches to improve maternal morbidity and mortality measurement and reporting to better communicate health disparities and social determinants of health.[27] And the Gravity Project is a national collaboration between Health and Human Services to define standards for SDoH data sharing.[28]

March of Dimes has several national programs in our area, including Healthy Babies are Worth the Wait, Prematurity Collaborative, Mom and Baby Action Network and an exciting new initiative called **the Local Collective Impact.** Collective impact refers to the process of bringing together multi-sector partners to solve complex challenges. Through a set of core conditions including consensus building, and established commitment to the community, partners create a shared vision of change. The vision is to have all women in greater Houston attain optimal health in all phases of life, including healthy birth outcomes. The initiative is focused on three areas:

- **Women gain access to equitable and affordable care.**
- **Women, babies and families are empowered by connection to a supportive community.**
- **Families achieve economic independence.**

21. https://www.pnas.org/content/117/35/21194
22. https://www.cnn.com/2022/01/13/health/chidiebere-ibe-medical-illustrations-published-nigeria-spc-intl/index.html
23. https://library.smh.com/sites/default/files/Social%20and%20Structural%20Determinants%20of%20Health%20inequities%20in%20Maternal%20Health.pdf
24. Social and Structural Determinants of Health Inequities in Maternal Health. Joia Crear-Perry, Rosaly Correa-de-Araujo, Tamara Lewis Johnson, Monica R. McLemore, Elizabeth Neilson, and Maeve Wallace. Journal of Women's Health 2021 30:2, 230-235
25. https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/13/fact-sheet-biden-harris-administration-announces-initial-actions-to-address-the-black-maternal-health-crisis/
26. https://www.healthaffairs.org/do/10.1377/forefront.20210729.265068/full/
27. https://www.qualityforum.org/Publications/2021/08/Maternal_Morbidity_and_Mortality_Measurement_Recommendations_Final_Report.aspx
28. https://thegravityproject.net

Texas Initiatives

Statewide initiatives have focused on data, reporting and standardization of care. Texas, along with 49 states and a few cities, has established a **Maternal Mortality and Morbidity Review Committee,** which provides **our state and region with some of the most rigorous and reliable reporting** in the nation. In 2013, the Texas legislature formed a task force that was renamed the Texas Maternal Mortality and Morbidity Review Committee (MMMRC) in 2019 and awarded Centers for Disease Control and Prevention funding.[29]

Several initiatives across the state were initiated in 2016 due to a report published in the Journal of Obstetrics & Gynecology. This report erroneously showed 147 maternal deaths in Texas in 2012, up from 72 in 2010. The MMRC found the actual number was 56, which was significantly better but still alarming enough to require action.[30]

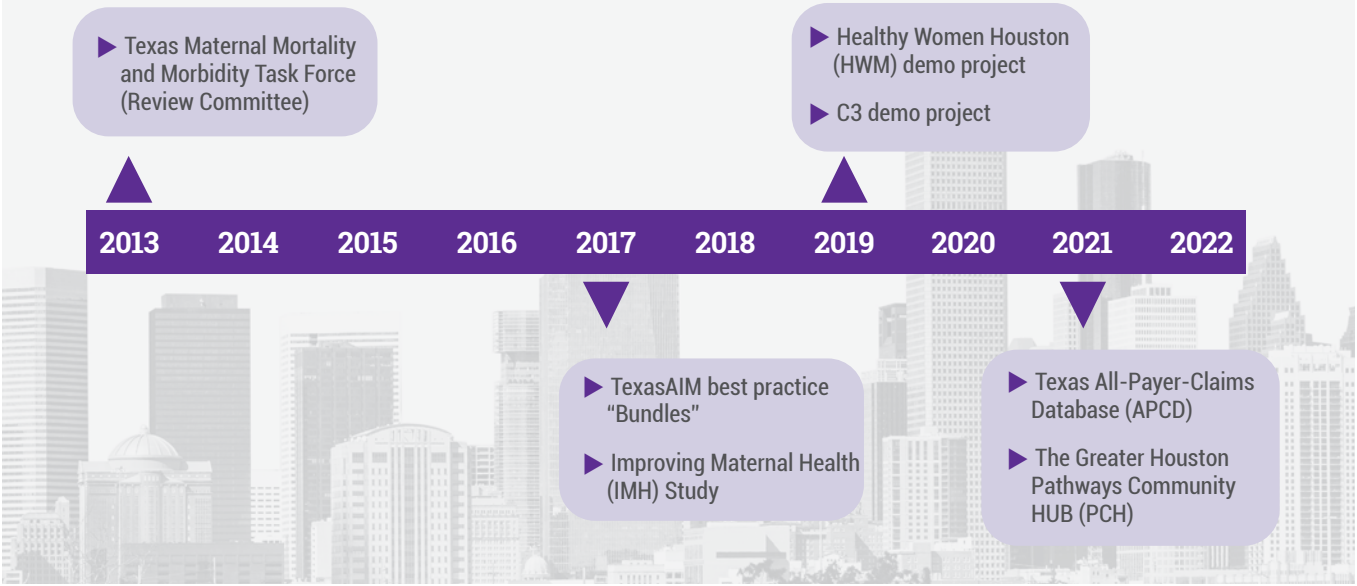
In 2017, the **TexasAIM** initiative was launched in response to the MMMRC's recommendations. The Alliance for Innovation on Maternal Health (AIM) provides **best practice "Bundles"** for improving outcomes related to the most preventable and frequent causes of severe maternal morbidity (SMM) and mortality. AIM Obstetric Hemorrhage Bundles are shown to reduce the rate of SMM among hemorrhage cases occurring during the initial intervention period by 14%. Most recently TexasAIM has worked to encourage COVID-19 vaccinations in pregnant women.[31]

In addition to the initiatives above, the Texas Department of State Health Services (DSHS) provides significant education and programming including:

- **The Texas Collaborative for Healthy Mothers and Babies (TCHMB) is a multidisciplinary network made up of health professionals throughout the state collaborating to advance health care quality, equity and patient safety for all Texas mothers and babies.**
- **The Maternal Health and Safety Awareness, Education, and Communication Campaign provides educational materials and outreach strategies.**
- **The Hear Her Texas Campaign aims to "empower women to know their health risks and warning signs and speak up when they have concerns."**
- **The High-Risk Maternal Care Coordination Services Program (HRMCCSP) Pilot study addresses high-risk patients through risk assessment tools, training programs and Community Health Worker services.**

The 2021 Texas Legislature approved **a new Texas All-Payer-Claims Database (APCD)** to be developed and maintained in Houston. It selected UTHealth Science Center, Houston's School of Public Health – Center for Healthcare Data, which provides some of the most advanced data collection and analysis capabilities in the country. Having a statewide repository for all insurance, Medicaid and Medicare data will help consolidate and significantly enhance reporting capabilities for all health conditions. Claims data for the estimated 64% of employees covered under employer self-insured arrangements[32] is not automatically collected. **Businesses that self-insure can volunteer to include claims data in the APCD to ensure state reporting represents all Texans and can accurately direct policy decisions.**

Figure 17: Timeline of Selected Maternal Health Initiatives in Texas and Houston



29. https://www.dshs.texas.gov/mch/Maternal-Mortality-and-Morbidity-Review-Committee.aspx
30. https://www.dshs.texas.gov/news/releases/2018/20180409.aspx
31. https://www.dshs.texas.gov/legislative/87th/FINAL-DSHS-SHHS-MMMRC-VSS.pdf
32. https://www.kff.org/health-costs/report/2021-employer-health-benefits-survey/

Houston Area Initiatives

Many local initiatives to improve maternal health depend on short-term grants that end before lasting results are achieved. This pattern damages trust between communities of need and well-intended health initiatives. The leaders of successful Houston initiatives we interviewed cited a continual need to apply for grants and funding sources. Despite this challenge, these organizations have accomplished impactful work. Some promising local initiatives include El Centro de Corazon FQHC Centering Pregnancy, Santa Maria Maternal Substance Use Disorder recovery, Shades of Blue maternal mental health initiative, and University of Houston Healthy Start in-home, whole-family case management initiative.

The most sustained efforts have occurred in hospitals, where consistent funding streams are established. Several area hospitals are doing innovative work beyond adopting the TexasAIM best practice Bundles.

For example, The Woman's Hospital of Texas has implemented guidelines on pain management after delivery in order to **reduce the number of substance-use disorders** developed during post-partum recovery. Hospital systems and payors also support work to address social determinants affecting their patients.

Memorial Hermann Health System has three **Community Resource Centers** across Houston to help improve the overall health of our community by providing one-stop locations where individuals and families can get help signing up for health care and social services.

Also, HCA Healthcare Foundation awarded a $135,000 grant to American Heart Association's **Heart Healthy Communities Mobile Food System.** This grant addresses nutritional insecurities in the Houston area through a collaboration among American Heart Association, Urban Harvest, the University of Houston College Medicine, and Federally Qualified Health Centers.

In 2016, area foundations worked to understand and address maternal health issues partly spurred by the erroneous report mentioned earlier. This included a series of projects: The Improving Maternal Health (IMH) research project and the Healthy Women Houston (HWH) demonstration project. These offered substantial learning and presented a model for a holistic solution through care coordination. Efforts are underway to implement this solution but are limited, once again, by the challenge of sustained funding.

In Houston, **Improving Maternal Health (IMH) Houston** was initiated in 2016 to address "the various and complex drivers of maternal mortality and other adverse outcomes through a comprehensive, long-term strategy."[33] The initiative is funded with support from Houston Endowment, Episcopal Health Foundation, Cullen Trust for Health Care and others, and includes more than 100 area maternal medical leaders and community leaders. Their findings are compiled in a comprehensive report, "Improving Maternal Health in Harris County: A Community Plan."

Findings from the "Improving Maternal Health in Harris County: A Community Plan" report were put into action via the **Healthy Women Houston (HWH) demonstration project** that served low-income pregnant and post-partum women. HWH was a vertically integrated collaboration of multiple community partners, including Avenue 360 Health & Wellness Clinic, Community Health Choice, The Council on Recovery, Harris County Domestic Violence Coordinating Council, HOPE Clinic, Interfaith Ministries for Greater Houston, and Memorial Hermann Health System, to name a few.

Overall, the HWH program was able to enroll 100 women, create a more seamless process for care, and ensure almost 100% of deliveries were at normal birthweight. This collaborative care coordination was based on the Pathways Hub model that has been effectively implemented in seventeen cities across the US. This model was developed by Drs. Sarah and Mark Redding and is supported by the Pathways Community Hub Institute (PCHI).

33. https://imhhouston.org/

The Pathways Community Hub (PCH) model is a "closed" referral system that addresses health risk factors, including mental health & substance use, and social risk factors by employing specially-trained Community Health Workers (CHW) to coordinate resolutions with available social services. Each pathway represents a SDoH, such as lack of transportation preventing a woman with preeclampsia from obtaining healthy food. The CHW will address each pathway by referring the client to a social service agency. This model has two distinguishing features.

- The Pathway is closed only once the client is connected to an organization to resolve the issue enabling resolutions to be tracked and reported.
- Reimbursement for closed pathways is pre-negotiated with health care payors such as Managed Care Organizations (MCO) and insurance providers.

PCH is shown to be effective in addressing social factors impacting a range of health outcomes including maternal health. The national institute, PCHI, offers a certification process to maintain consistency and quality of care across implementations of the models. The institute recommends starting with a narrow target population such as maternal mental health and expanding to more comprehensive health. Ideally, payor reimbursements will eventually cover the cost of the program, however additional funding is required to establish the program and cover ongoing overhead until it becomes self-sustaining.

Through the HWH initiative, some systemic changes were made, several concepts were tested, and additional needs were identified.

Donna Alexander, the director of HWH, shared a prime example of a simple systemic change with a huge impact: Adding one field to the Electronic Health Record (EHR) system can potentially save thousands of dollars per delivery. Most obstetric doctors at FQHCs do not have privileges to deliver at hospitals, which makes it difficult for their patients to pre-register and share medical records with the hospital. Without records, the delivering doctor may order thousands of dollars of tests and precautionary measures. HWH worked with Memorial Hermann to make a simple change to the Electronic Health Record (EHR) system, enabling pre-registration to improve safety, reduce stress, minimize disparities, and eliminate financial waste.

Programs like HWH show that the many smaller initiatives across Houston could be greater than the sum of the whole through collaboration.

The Greater Houston Pathways Community HUB (PCH) is a new initiative born out of two Houston-based demonstration projects that used the Pathways Hub model: the **HWH** project described above and c3, which was launched by the Network of Behavioral Health Professionals to serve low-income people with mental illness. The **c3** program reported mental health improvements for 93% of clients, resulting in fewer ER visits. That reduction in ER visits among a small group of patients saved $22k to $55k, which could have been as much as $600,000 if the project had been expanded.[34] [35]

HWH and c3 were built by listening to and working with 100 community organizations to understand needs, develop a plan and implement the project for community health improvement. After recognizing the success of the c3 and HWH demonstration projects in mitigating client risks, the groups decided to initiate a planning process aimed at fully implementing the PCH model in greater Houston: the new Greater Houston Pathways Community HUB (PCH).

Full implementations of PCH have seen success in other areas such as Ohio where a **236% ROI was realized** for every dollar spent on Pathway Hub activities to reduce barriers to non-clinical care. This figure reflects a lower cost of total care in a baby's first year of life. Calculations are based on the average increase in cost of care for low birthweight babies published by the Institute of Medicine. When active use of Pathways Hub is combined with traditional health plan care management, savings were achieved with mothers in all risk categories. The greatest savings occurred in high-risk pregnancies ($401 average savings). Most of those cost savings came from inpatient savings – 94% of cost savings for newborns born to mothers at high risk came from inpatient costs.[36]

The Greater Houston Pathways Community HUB (PCH) **will focus on maternal mental health, the costliest cause of maternal morbidity.** The business plan for this program was approved in January and the program is slated for a summer 2022 start. This Hub is on track to receive exclusive certification from Pathways Community Hub Institute (PCHI) for the Houston Region. The planning process has been community based and collaborative. Organizers engaged about 30 community organizations and collaboratives – representing over 100 organizations. The work is fact-based and supported by PCHI and other certified PCHs in Texas and Ohio. This work also incorporates information from recently conducted Houston/Harris County community needs assessments and other relevant local data.

The process was designed to ensure compliance with national PCHI prerequisites and standards required for certification. Work is underway to obtain sustainable funding sources including reimbursement contracts with payors.

34. https://www.nbhp.org/coordinated-care.html
35. January Advisors. "Community Coordination of Care (C3) Program Evaluation." July 2021. Lucas, B., Detty, A. "Lower First Year of Life Costs for Babies through Health Plan and Community Hub Partnership." December 2018. Buckeye-HealthPlan.com.
36. https://www.greatplacetowork.com/resources/blog/largest-ever-study-of-working-parents-reveals-the-business-gains-of-supporting-parents

Other programs that use collaborative care are also worth noting. In brief, they are:

- Accountable Health Communities: The **Centers for Medicare and Medicaid Services (CMS)** is running pilots across the US including one in Houston.
- **Texas Accountable Communities for Health (TACHI):** Episcopal Health Foundation has 6 pilot collaborative care programs across Texas. The Houston project uses the PCH model.
- **Complete Communities:** City of Houston is addressing SDoH for 10 underserved communities across the city.

Houston Community Information Exchange (CIE) is another exciting project underway to develop technology that enables seamless care coordination across medical and social agencies. The Health Equity Collective, a coalition of over 120 local organizations, is building the **CIE to enable communication between the medical Electronic Health Records (EHR) and community service organizations.** This tool will also provide a resource directory, client referral data and performance metrics. A few community service organizations already have technical tools to aid in both referring patrons to other services and internal reporting that will ideally be merged and connected with the Health Equity Collective CIE. This initiative holds great promise for enabling coordination, maximizing resources, and improving health.

> The innovation is the collaboration.
>
> — Ken Janda, Founder and Principal of Wild Blue Health Solutions, Former President and CEO of Community Health Choice

Government Policy Initiatives

The 87th Texas Legislative session (2021) included several bills and budget items related to maternal health as outlined below.

STATE BILLS

- **PASSED** HB 133, allows **mothers to keep Medicaid health coverage for at least six months** after childbirth rather than the two months previously allowed. The original bill called for 1 year of coverage.
- **PASSED** HB 2658, to improve administration and operation of the Medicaid managed care program including a provision to **prevent children from losing Medicaid** health coverage due to inaccurate midyear eligibility reviews.
- Stopped a planned cut to funding for Early Childhood Intervention (ECI) for infants and toddlers with disabilities and developmental delays.
- Failed to increase funding for ECI, women's health, and other programs to keep up with the state's needs.
- **FAILED TO PASS** HB 158 to provide Medicaid **coverage of doula services** even as research shows that support from a doula reduces c-sections and lowers preterm birth rates.

STATE BUDGET

- Continued $16 million over the biennium for a $500 Medicaid add-on payment for labor and delivery services provided **by rural hospitals.**
- Maintained $7 million over the biennium to **continue maternal health initiatives at the Department of State Health Services,** including the **TexasAIM** initiative to better equip hospitals to prevent pregnancy and birth complications.
- Maintained **flat funding for Healthy Texas Women (HTW) and Family Planning Program (FPP)** compared to the amount appropriated last biennium.
- Made funds contingent on **HHSC reporting the impacts of eliminating auto-enrollment** of new mothers from Medicaid to Healthy Texas Women and to make recommendations to reduce enrollment gaps.
- **CUT funding for the state workforce that enrolls Texans in Healthy Texas Women, Medicaid, CHIP, and SNAP**, potentially creating delays for children, pregnant women, and other Texans who need these services.

Many good steps were taken, but they are not enough. The co-morbidities that drive many of the poor maternity results need to be treated pre-conception and after six months post-partum. Nearly every expert interviewed cited a need for continuous coverage for low-income women under Medicaid expansion, along with more small employers offering coverage.

Federally, emergency family leave provisions have been extended beyond the 1993 Family and Medical Leave Act in response to the COVID-19 pandemic. These are expected to have a strong positive impact on maternal and infant health to mitigate the other issues introduced by the pandemic. Outside of the COVID-19 provisions, the 1993 Family and Medical Leave Act requires 12 weeks of unpaid leave for employees meeting stringent requirements that apply to less than two-thirds of the US workforce.

> With two million women dropping out of the workforce so far this year [2020], we've rolled back decades of progress on gender diversity — a reality that has massive implications for businesses for years to come.
>
> — Kate Ryder, Founder and CEO of Maven, the world's largest virtual clinic for women's and family health

At Plummer, being a great place to work is literally part of our vision statement, and family-friendly policies are a big part of realizing that vision. For us, this means anticipating that our employees who are mothers and fathers will likely need additional support when they welcome a new child. This thoughtful approach has not only been the right thing to do, but ultimately has helped us retain incredible talent and attract other employees who know that we provide a supportive, family-friendly culture.

— Chris Young, President/CEO at Plummer Associates, Inc a Dallas Based Best Place for Working Parents® Business

Company Policy Initiatives

Company policies affect many facets of an employee's wellbeing. These policies can extend beyond paid leave to lactation support, child-care assistance, and flexible work schedules. Many studies support the financial benefit of family-friendly policies to companies and society. These policies can help increase diversity through better retention of women in the workplace, close the wage gap, improve maternal mental health, and reduce burn-out:

- Companies that invest in employees and their families see **5.5 times more revenue growth** thanks to greater innovation, higher talent retention, and increased productivity.
- Underrepresented racial groups are more likely to be working parents, and they're more likely to experience burnout — 33% of Black mothers are experiencing burnout, in comparison to 25% of White mothers and 21% of White fathers.
- **Paid parental leave helps close the wage gap and allows parents to bring their best selves back to work.** Working mothers lose nearly a month of income on average from their allotted maternity leave, adding a financial burden to the physical and emotional challenges new parents face.[37]
- **30% of women without paid maternity leave the workforce.**[38]
- Introduction of paid maternity leave in five states led to a reduction in low birthweight and preterm births, especially for Black mothers[39]. A separate study estimates an increased cost of "$51,600 per infant born preterm … **and $11,200 in future lost productivity** in the household and labor force … per every preterm child."[40]

The Greater Houston Partnership launched The Best Place for Working Parents® – Houston Campaign. This program is in several cities including Dallas, Fort Worth and Austin. This enables employers to leverage their policies to attract employees by qualifying for and advertising the Best Place for Working Parents® designation.

This designation is backed by research from an organization called The Best Place for Working Parents® with the aim of proving that 'family-friendly is business-friendly.' It has identified 10 policies that benefit families and improve business' profitability: company paid health coverage, paid time off, parental leave, nursing benefits, childcare assistance, backup childcare, onsite childcare, flexible hours, working remotely, and Best Place for Working Parents® Certification. Businesses quality for the designation through a first of its kind, three-minute on-line survey.[41]

37. https://equitablegrowth.org/working-papers/reducing-maternal-labor-market-detachment-a-role-for-paid-family-leave/
38. https://www.nationalpartnership.org/our-work/resources/health-care/paid-leave-is-essential-for-healthy-moms-and-babies.pdf
39. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3395039/
40. https://bestplace4workingparents.com/
41. https://www.bcg.com/en-us/publications/2017/human-resources-people-organization-why-paid-family-leave-is-good-business

RECOMMENDATIONS

Approach to Improving Maternal Health Outcomes

Our roundtable discussion determined the need for an approach that moves beyond piecemeal work that addresses one SDoH or maternal health outcome at a time. Substantial and lasting change requires a new approach. The social and structural factors driving maternal health span the entire life cycle and are interconnected. Therefore, effective solutions must take a broad approach that addresses the cycle of need and applies to varied situations.

> The greatest need is a broad approach that addresses the cycle of poor outcomes and inequities in care, and applies to varied situations, populations, and points of intervention. — Dr. Shreela Sharma, Professor of Epidemiology at UTHealth School of Public Health & Co-founder Of Brighter Bites

Reducing maternal morbidity requires tackling the **interconnected range of factors** that can influence maternal morbidity. This starts with measurement of social factors influencing maternal outcomes. National efforts to collect this data are underway from the National Quality Forum and CMS for the first time. These measures support better policy and programs for holistic interventions.

Studies show that efforts to improve maternal health must extend **beyond pregnancy** and begin with promoting mental and physical health in young girls and continue throughout the reproductive years. Health issues prior to pregnancy, such as diabetes, have a significant impact on both maternal mortality and morbidity. Similar impacts result from health issues occurring in the time between pregnancies such as post-partum depression. This life course concept recognizes the opportunity to prevent and control diseases at key stages of life from preconception through pregnancy, infancy, childhood, and adolescence, through to adulthood.

Just like single-body part programs are not as effective as whole-body care, social assistance provides more benefit when it addresses key social factors simultaneously. Houston area experts agreed that Houston has a wealth of programs to address

medical and social needs, but a lack of coordination has led to duplication of services, gaps and confusion. In fact, some neighborhoods are being overwhelmed by multiple programs and health navigators.

Rather than more programs, Houston needs support for current programs that can coordinate resources, identify gaps and support community-driven approaches to filling those gaps. Our roundtable participants identified a promising program in development that is based on the proven effectiveness of comprehensive, team-based approaches to health care and maternal care. The Greater Houston Pathways Community HUB (PCH) supported by the Community Information Exchange (CIE) is implementing this broad approach to addressing SDoH and redistributing investments upstream to improve downstream health and expenses.

Although evidence on the effectiveness of cross-sector, place-based initiatives is just emerging, the clear trend is toward holistically addressing the social and clinical determinants of maternal and child health.

Strategies for Business Engagement

The Center's roundtable discussion culminated in **three strategies for the business community** to increase productivity, reduce costs and improve maternal health outcomes in the Houston region: internal policy implementation, employee education, and cooperative community investment. All three of these strategies have the potential for significantly more impact if implemented in collaboration with other employers.

STRATEGY 1

Houston businesses can implement family-friendly workplace policies to improve morale and employee retention. These policies, which are included in the **Best Place for Working Parents® Houston Campaign**, include dependent care flexible savings accounts, company-paid health care coverage, paid time off for maternal medical care, parental leave, breastfeeding benefits, child-care assistance, and remote work options. An international March of Dimes evaluation of paid leave policies showed that for every increase of 10 weeks of paid maternity leave, there was a **10% lower neonatal and infant mortality rate and a 9% lower rate of mortality** in children under age 5, even after controlling for other known risk factors for infant and child death. A 2017 EY survey found over 80% of companies that offer paid family leave reported an increase in employee morale, and more than 70% reported an increase in employee productivity.[42] A Rutgers Center for Women and Work report found women with a paid leave are 93% more likely to be working 9–12 months after childbirth than are those who did not take any leave.[43] Further, a new survey by Maven and Great Place to Work found companies that invested more in their working parents saw higher rates of reported retention, advocacy, and effort.

Figure 18: Impact of Family-Friendly Work Policies

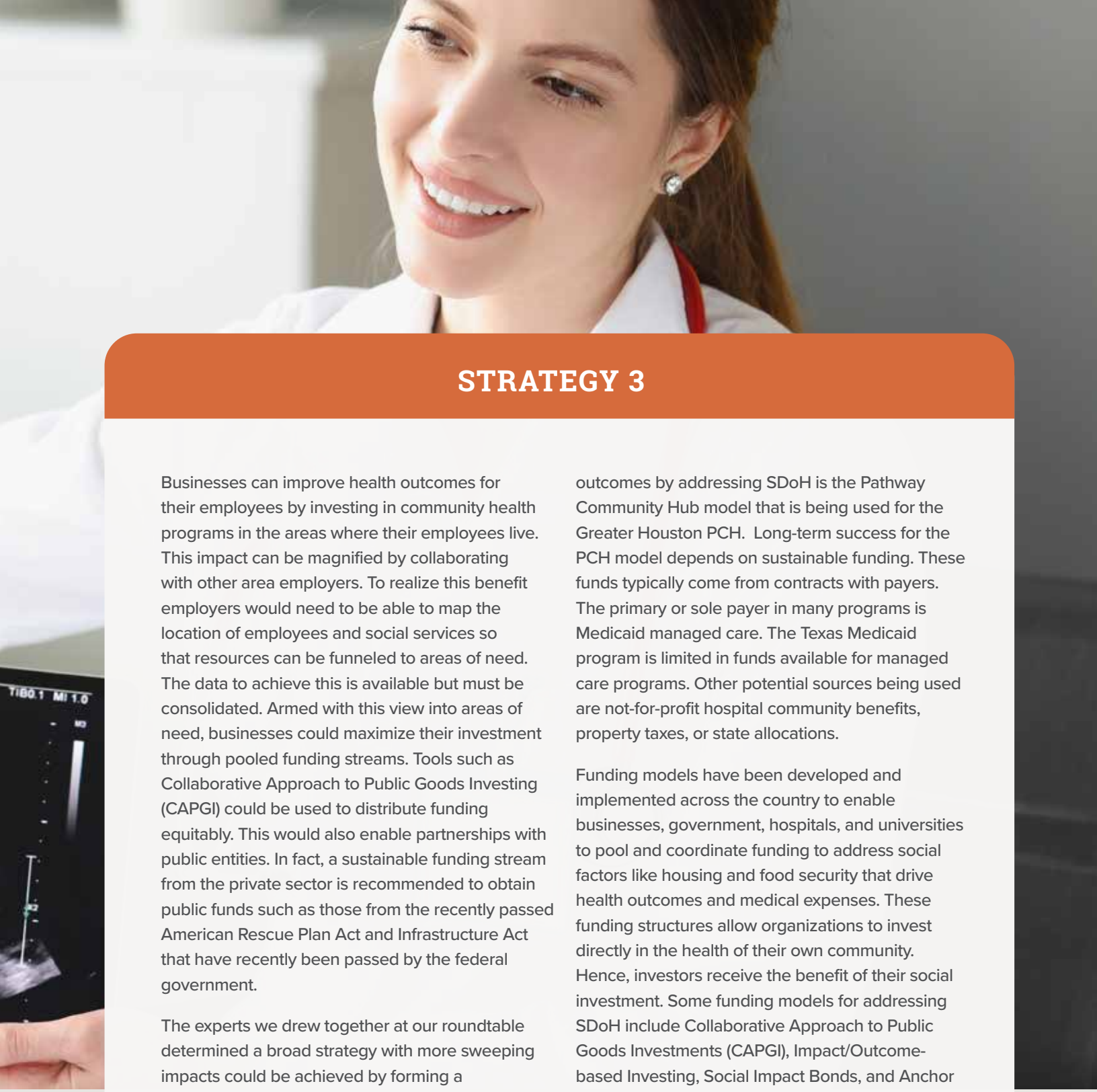
Source: Parents at the Best Workplaces

Businesses could maximize the positive impact of these internal policies by supporting and participating in the **Best Place for Working Parents®, Houston Campaign**. This enables businesses to capitalize on internal policies by creating a platform to communicate them to potential employees.

42. https://www.nationalpartnership.org/our-work/resources/economic-justice/other/pay-matters.pdf
43. https://www.earlymattersgreateraustin.org/the-business-case

STRATEGY 2

In cases where it does not always make economic sense for employers to provide health insurance benefits, they can provide education on available health services such as Federally Qualified Health Clinics. These providers offer quality comprehensive primary care and preventive care, including general, oral, and mental health/substance abuse services regardless of ability to pay or health insurance status. Dozens of FQHCs are located across the Greater Houston Area. By partnering with local FQHCs and their navigators, employers could help employees address health issues and SDoH. It should be noted that FQHCs are non-profit entities with limited resources. They depend on two funding streams: donations from businesses and foundations, and government reimbursements for Medicare and Medicaid patients. Employers can also encourage partnering FQHCs to prioritize racial representation and cultural literacy training.



STRATEGY 3

Businesses can improve health outcomes for their employees by investing in community health programs in the areas where their employees live. This impact can be magnified by collaborating with other area employers. To realize this benefit employers would need to be able to map the location of employees and social services so that resources can be funneled to areas of need. The data to achieve this is available but must be consolidated. Armed with this view into areas of need, businesses could maximize their investment through pooled funding streams. Tools such as Collaborative Approach to Public Goods Investing (CAPGI) could be used to distribute funding equitably. This would also enable partnerships with public entities. In fact, a sustainable funding stream from the private sector is recommended to obtain public funds such as those from the recently passed American Rescue Plan Act and Infrastructure Act that have recently been passed by the federal government.

The experts we drew together at our roundtable determined a broad strategy with more sweeping impacts could be achieved by forming a cooperative funding structure to address social factors driving maternal health outcomes. One program with a proven ability to improve health outcomes by addressing SDoH is the Pathway Community Hub model that is being used for the Greater Houston PCH. Long-term success for the PCH model depends on sustainable funding. These funds typically come from contracts with payers. The primary or sole payer in many programs is Medicaid managed care. The Texas Medicaid program is limited in funds available for managed care programs. Other potential sources being used are not-for-profit hospital community benefits, property taxes, or state allocations.

Funding models have been developed and implemented across the country to enable businesses, government, hospitals, and universities to pool and coordinate funding to address social factors like housing and food security that drive health outcomes and medical expenses. These funding structures allow organizations to invest directly in the health of their own community. Hence, investors receive the benefit of their social investment. Some funding models for addressing SDoH include Collaborative Approach to Public Goods Investments (CAPGI), Impact/Outcome-based Investing, Social Impact Bonds, and Anchor Institution/Collaborative Funding. (See appendix for more details on funding models.)

These three strategies identified by the roundtable participants are a strong starting point. Many in Houston have the expertise and desire to pursue these ideas and improve outcomes for our mom's and babies. Now the real work of planning and implementing begins.

Call to Action

Maternal health issues have a direct effect on Houston's economy. Sixty-three percent or 2.5 million Texas mothers are working and more than 1/3 of Texas families depends on a women's wage to cover the bills.[44] Globally, investments in women's health are associated with long-term economic productivity, while maternal morbidity places substantial financial burdens on health systems and societies.[45] [46]

One solution with proven results is the Pathways Community Hub program that improves maternal health by reducing barriers to non-clinical care (housing, education, etc). The most common funding mechanism for this program is through contracts with Medicaid. Texas has not funded the Medicaid program at the same level as other states.

However, Texas, including Greater Houston, has a strong tradition of leveraging public-private partnerships to support our citizens and maintain and grow a robust economy. The Federal Reserve Bank of New York recommends: "Full-system financing to address social determinants of health and housing. Full-system financing is where investors can partner with Medicaid to create an ecosystem that incorporates technology, full coverage for care in midwifery-led birth centers, doula support, high quality medical care, attention to social needs, housing, and financial planning."[47]

Our key recommendation is for business leaders to collaborate with health and community service leaders on the creation of a sustainable funding mechanism for business community investment in SDoH programs with the greatest effect on the health of the workforce. This work can begin with implementing a funding model to support the Greater Houston PCH. Both the funding model and PCH program, once proven, could then be scaled and/or used as a model to address additional target audiences and health issues.

The recently approved business plan for the Greater Houston PCH seeks $1.3 million for the first three years of operation. The goal is to serve 500 clients in the first two years and to double that number in the third year. The program director, Andrea Usanga, anticipates the ability to grow faster with additional funding. Expansion could be tied to specific target populations based on funder interest. Rough estimates show around 61,000 Medicaid pregnancies and 4880 high-risk Medicaid pregnancies in Houston per year. At that scale this program is projected to cost approximately $4.2 million.

Center for Houston's Future aims to host a second roundtable to add business leaders to the conversation. It is our hope that the information in this report will be a springboard for that conversation and lead to the sort of public-private partnership that is the cornerstone of Houston's many successes.

> We can't have a healthy economy without healthy people. Yet the U.S. maternal mortality ratio—the ultimate indicator of maternal health—has only worsened since 1987, despite medical advances. These tragic and mostly preventable deaths are profoundly harmful to families, communities, and the economy.
>
> — David Erickson, Senior Vice President & Head of Outreach & Education at Federal Reserve Bank of New York

44. https://www.earlymattersgreateraustin.org/the-business-case
45. https://tcf.org/content/commentary/maternity-maternal-health-economy-pandemic/?agreed=1
46. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4814064/
47. https://www.newyorkfed.org/medialibrary/media/newsevents/news/regional_outreach/2021/Maternal-Health

CONCLUSION

Houston is positioned to address the maternal health crisis that has been a blight on our region and country for twenty years.

We have the ingenuity, skill, and strategies to turn the tide on maternal health and in so doing establish a framework for addressing a range of health issues. Past efforts have created a foundation of improved data reporting and technologies to enable better collaboration. We have evidence that the greatest impacts can be made by funding "upstream" social determinants of health that will reduce the need for more expensive medical interventions "downstream." Work has also been done to establish funding mechanisms that allow for equitable cost sharing among public and private organizations. Together, these solutions hold promise for improving health equitably and addressing racial disparities.

It is our hope that this report will spur Houston's robust public and private sectors to join us in creating implementation plans for strategies in this paper. More specifically, we would like to bring leaders from business, health and community services together to form a sustainable funding model for "collaborative care" and targeted upstream investments. These strategies will increase the resilience of our public health in the face of an urgent and ongoing pandemic as well as future health emergencies. And these solutions can effectively target the maternal health crisis affecting our families and future generations.

APPENDIX: FUNDING FOR NON-MEDICAL DRIVERS OF HEALTH COST

Models

Anchor Collaborative Funding is an agreement between multiple Anchor Institutions with roots in the community, investing to address systemic inequities. Anchor institutions are nonprofit or public place-based entities such as universities and hospitals that are rooted in their local community. The concept extends beyond social service funding to include local hiring and purchasing aimed at building community wealth and spurring community investments.

Collaborative Approach to Public Good Investments (CAPGI) is a sustainable financing tool for communities to improve health and reduce medical expenses by addressing one or more social determinants of health. It was developed by Len Nichols, a research fellow with the Health Policy Center of the Urban Institute, to encourage multistakeholder investment by addressing the so-called free rider problem in which the benefit of the investment is not exclusive to the investor. This is accomplished by establishing a "trusted broker" to coordinate the investment amounts and distributions fairly.

Impact bonds (IBs) are outcomes-based contracts. They use private funding from investors to cover the upfront capital required for a provider to set up and deliver a service. A contractual party know as the commissioner pays for these outcomes. Commissioners are often government institutions. The service is designed to achieve measurable outcomes specified by the commissioner. The investor is repaid only if these outcomes are achieved.

- **Social impact bonds (SIBs)** refer to IBs in which the outcome payer is the government which represents the target group.
- **Development impact bonds (DIBs)** refer to IBs in which the outcome payer is a donor from outside the country where the investments are made - an aid agency of a government or multilateral agency, or a philanthropic organization.

Concepts

Capital absorption capacity framework is the ability of communities to effectively use investment capital to serve pressing needs. To make community investment possible, many stakeholders – from investment intermediaries to community groups and organizations to public agencies to the philanthropic sector to the mainstream investment community – must play a part.

Community investment (CI) is the application of capital to build equitable and sustainable cities. Elements include affordable financial services, access to healthy foods, community health clinics, charter schools, energy efficiency retrofits that lower the cost of living, small business lending, and transit-oriented development that links homes to jobs. Targeted investment to revitalize urban brownfields or to create broad-based economic development is also a CI goal. The capital to achieve these goals can come from a variety of private sources, including banks (CRA-regulated, CDFIs, or neither), foundations and private individuals, as well as federal, state, and local government sources. It may take the form of grants, debt, equity or guarantees and span the return spectrum from no return to below-market and market-rate investments.

Pooled funding describes the collection of funding from multiple sources for use in a common effort.

- **Blended funding** is a type of pooled funding where resources are combined, allocated and monitored together.
- **Braided funding** is a type of pooled funding where the funding resources are coordinated centrally but are allocated and monitored by the individual funders. This can be difficult to monitor and report

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