Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Amanda Leigh Smith Date

BILLBOARDS FOR BLACK BABIES:

A GRANT PROPOSAL FOR A SIDS HEALTH PROMOTION PROGRAM INITIATIVE

By

Amanda Leigh Smith

M.P.H., Emory University

Prevention Science

Iris Smith, MPH, PhD

_____

Committee Chair

BILLBOARDS FOR BLACK BABIES:

A GRANT PROPOSAL FOR A SIDS HEALTH PROMOTION PROGRAM INITIATIVE

By

Amanda Leigh Smith

M.P.H., Emory University, 2022

B.S., University of North Georgia

Thesis Committee Chair: Iris Smith, MPH, PhD

An abstract of

A Thesis submitted to the Faculty of the Rollins School of Public Health of Emory University in partial fulfillment of the requirements of the degree of Master of Public Health in the Executive MPH program

2022

Abstract

BILLBOARDS FOR BLACK BABIES:

A GRANT PROPOSAL FOR A SIDS HEALTH PROMOTION PROGRAM INITIATIVE

By Amanda Leigh Smith

The National Center for Health Statistics found that in Georgia, 889 infants died before reaching their first birthday in 2018. A review of the literature reveals that there is a public health concern regarding infant sleeping habits among Black communities and a significantly higher infant mortality due to sudden infant death syndrome (SIDS). This thesis develops a public health grant proposal to implement a billboard initiative within the current Georgia campaign: ***Safe to Sleep.*** This program was designed to educate mothers, fathers, grandparents and caregivers about the importance of putting babies to sleep following the ABCs of Safe Sleep as recommended by the American Academy of Pediatrics. The overarching research question that this proposal explores is why there is a need for health promotional efforts to increase awareness for SIDS and safe sleep habits among lower socioeconomic populations, particularly Black mothers and caregivers. Ultimately, the goal is for the Billboards for Black Babies initiative to be adopted by Georgia's ***Safe to Sleep Campaign.***

BILLBOARDS FOR BLACK BABIES:

A GRANT PROPOSAL FOR A SIDS HEALTH PROMOTION PROGRAM INITIATIVE

By

Amanda Leigh Smith

M.P.H., Emory University, 2022

B.S., University of North Georgia

Thesis Committee Chair: Iris Smith, MPH, PhD

A Thesis submitted to the Faculty of the Rollins School of Public Health of Emory University in partial fulfillment of the requirements of the degree of Master of Public Health in the Executive MPH program

2022

ACKNOWLEDGEMENTS

First and foremost, I thank God for the blessings He has bestowed to allow me to make it this far in my educational journey. I sincerely thank my family for all their support through the years. I give my utmost gratitude to my thesis committee chair, Dr. Iris Smith. Her dedication to and achievements in her public health career are profoundly admirable. I aspire to follow a path as devoted as hers.

Table of Contents

Chapter 1: Introduction

Health promotion is one of public health's primary prevention strategies to empower individuals to be conscientious of his or her health and its determinants through multisectoral action to increase healthy behaviors. Health promotion addressees behavioral risk factors such as tobacco use, obesity, diet and physical inactivity, as well as the areas of mental health, injury prevention, drug abuse control, alcohol control, health behavior related to HIV, and sexual health. Supportive mechanisms include educational and social communication activities to promote healthy conditions, lifestyles, behavior and environments (WHO, 2021).

Problem Statement

Given the growing burden of preventable mortality in the United States, health awareness and promotion education are vital to all population's longevity. "Established in 1912, the Federal Children's Bureau focused on infant mortality as its first initiative, officially recognizing its importance" (Lindenmeyer, 1995). The infant mortality rate is not only seen as a measure of the risk of infant death, but it is used more broadly as a crude indicator of community health status, poverty and socioeconomic status levels in a community, availability and quality of health services, and medical technology" (State Infant Mortality Collaborative, 2013). Infant mortality significantly varies by race. In 2018, infants born to Black women had the highest mortality rate, followed by Hispanic and white infants in the United States (Ely & Driscoll, 2018). Sudden infant death syndrome (SIDS) was the fourth leading cause of infant mortality in 2018 (CDC, 2020). There continues to be a gap between races for infants who die from SIDS each year indicating racial or cultural barriers that need to be considered (Hauck, Moore, Herman, et al., 2002). During a National Public Radio (NPR) interview, Dr. Lori Feldman-Winter of Cooper University Health Care said, "Something continues to hamper the ability to get the message out

or for folks in different cultures to receive the message" pertaining to SIDS among lower socioeconomic populations including Black mothers or caregivers (Hobson, 2017). SIDS-related health promotion programs are lacking adequate community awareness to predominately Black populations that are consequently suffering from higher infant mortality rates compared to Hispanic and white populations in the United States.

Purpose of Grant Proposal (Purpose Statement)

The purpose of this grant proposal is to acquire funding to initiate the incorporation of Billboards for Black Babies (BBB) to current, implemented SIDS-related health promotional programs in the state of Georgia tailored towards predominantly Black mothers and caregivers of infants.

Georgia's Department of Public Health (DPH) currently implemented one major public health program for new mothers to provide resources in the prevention of sleep-related infant deaths: ***Safe to Sleep Campaign.*** This campaign promotes the ABCs of Safe Sleep recommended by the American Academy of Pediatrics to educate mothers, fathers, grandparents and caregivers about the importance of putting babies to sleep properly. The ABCs include the following:

Alone – infants should sleep alone in his or her own sleep space, close to but separate from their caregiver.

Back – infants should be placed on his or her back to sleep every time including naps.

Crib – infants should sleep in a crib or bassinet with a firm, flat surface with no extra items such as crib bumpers, blankets or toys.

Georgia's Black infant mortality rate mirrors the national trend with Black infants dying more frequently than white and Hispanic infants due to SIDS (CDC, 2016). The funding acquired from this grant proposal will be utilized to incorporate the public health awareness project,

Billboards for Black Babies (BBB). Public health awareness is imperative, especially since Georgia's DPH ***Safe to Sleep Campaign*** can address the critical racial disparity infant mortality gap among Black communities.

Research Questions Addressed by Grant Proposal

This thesis grant proposal explores the following research aims and questions:

- To design, implement and evaluate an awareness intervention in junction with Georgia's DPH ***Safe to Sleep Campaign*** to reduce the incidence of SIDS among African American infants.
- Why is there a need for a public health awareness project in the form of billboards among predominantly Black communities to be incorporated in Georgia?
- How to plan and implement BBB into Georgia's DPH ***Safe to Sleep Campaign*** effectively addressing the racial infant mortality gap among new mothers and caregivers?
- How to evaluate the additional benefits of BBB as an adjunct to the existing prevention efforts?

Significance Statement

This thesis examines the current public health efforts of Georgia's infant mortality rates and the racial disparities that exists. The ***Safe to Sleep Campaign*** is implemented across the state of Georgia to prevent sleep-related deaths among infants and provides resources for parents, caregivers, and medical professionals to promote safe sleeping habits. However, with the racial gap that continues to persist in Georgia, early public health intervention efforts need to be incorporated to increase and empower behavior change.

According to a healthcare marketing study, "billboards are useful across the patient patronage sequence, meaning that healthcare institutions can use the medium in capacities

beyond simple awareness-building tasks. Billboards are typically thought to be effective primarily at the awareness (early stage) level" (Fortenberry Jr., J. L., Elrod, et al., 2010; Berkowitz, 2006). This thesis develops a public health grant proposal to incorporate a billboard project under Georgia's DPH ***Safe to Sleep Campaign*** in predominantly Black communities. The implementation of an awareness billboard initiative will position the study and ***Safe to Sleep Campaign*** for replication in other southeast states e.g., Mississippi. Moreover, if this proposal is funded, a successful billboard project of the ***Safe to Sleep Campaign*** could position this program to alleviate the racial disparity of infant mortality. Currently, the efforts of the ***Safe to Sleep Campaign*** only target new mothers and caregivers within hospital settings. The additional BBB initiative will reach not only this population, but also the surrounding community. The BBB initiative will help address the racial disparities in infant mortality by addressing the current data in Georgia, placing Black infants on the billboards to encourage diversity, and enhance supports for maternal/caregiver communications.

Chapter II: Review of Literature

Over the decades, public health has rapidly increased its efforts in the battle to save infants from SIDS and other preventable deaths through evidence-based awareness campaigns, educational programs, and interventions implemented across the country (Young, J., p. 155, 2018). Nevertheless, in many ways, "future research should involve multidisciplinary approaches, and should continue to investigate new and innovative approaches to improve the safety of infant sleep, while recognizing the social and cultural importance of shared-sleep environments to many families" (Young, J. p. 201, 2018).

The increasing incidences of infants dying suddenly during sleep was not recognized by public health professionals until the 1990s and it wasn't until 1992 that the American Academy

of Pediatrics began to recommend proper sleep habits to parents and caregivers (Division of Reproductive Health, CDC, 1996). SIDS is defined as, "the sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history" (Willinger M, J.L., Catz C., 1991). The instrumental program that initially implemented safe sleep positioning education for infants was the *Back to Sleep* program in 1994 (U.S. Department of Health and Human Services). Through implementation, SIDS-related deaths decreased more than three times during 1990-1994 (Sudden infant death syndrome, MMWR, 1996). This program then became what is widely known as the ***Safe to Sleep Campaign.*** The more relevant campaign introduced other strategies to reduce the risk of SIDS such as co-sleeping, crib specifics, and ABCs. In 2007, SIDS was still ranked as the 3rd leading cause of death in infants, with 57 deaths per 100,000 live births (T.J. Mathews, M.S., and Marian F. MacDorman, 2011). Despite the decrease in infant deaths due to SIDS, racial inequalities still exist (Pickett, K.E., Y. Luo, et al., 2005).

Data from 2007 explains the racial gaps using vital statistics that linked death certificates to birth certificates for infants. In 2007, SIDS rates for non-Hispanic Black mothers were 1.9 times the rate for non-Hispanic white mothers (T.J. Mathews, et al., 2011). As of 2013, 3 infants died every week in Georgia due to majority preventable sleep-related causes *(Infant Mortality Report*. Georgia Department of Public Health, 2019). This statistic remains to be true according to the National Center for Chronic Disease Prevention and Health Promotion. Between 2016-2018, on average, the infant mortality rate per 1,000 live births in Georgia was highest for Black infants (11.1), followed by Hispanics (5.7), whites (5.1) and Asian/Pacific Islanders (3.4). Black infants were roughly 3 times as likely as Asian/Pacific Islander infants to die during the first year

of life during 2016-2018 (National Center for Health Statistics). This persistent trend reveals the need for public health's duty to increase awareness among predominantly Black communities to close the racial gap of infant mortality due to SIDS.

The Georgia DPH's ***Safe to Sleep Campaign*** created and disseminated a policy and education development guide for hospital personnel to reference that entails excellent evidence-based material. The guidebook entails common reasons parents or caregivers choose unsafe sleep behaviors that don't follow the AAP recommendations. Placing the infant in an unsafe sleeping position or not on its back and unsafe sleeping environments are highest among Black parents/caregivers (PRAMS, 2015). The dissemination of educational materials is evidently not sufficient enough to change the behaviors of parents or caregivers to adopt healthy sleep habits for infants, especially among Black populations. Given the current data on infant mortality in Georgia and the low rates to adopt healthy sleeping habits among Black parents, there is a prominent need for an additional intervention. There is a need for increased health education and awareness in predominantly Black communities and hospitals to alleviate the burden of SIDS. The hospital initiative ***Safe to Sleep Campaign*** was evaluated in March 2017 by the University of Georgia's College of Public Health. The DPH designated 24 hospitals (30.4%) that had completed all requirements as "Georgia Safe to Sleep hospitals," which encompassed four key objectives. The objectives are listed below.

1) All birth hospitals have a safe infant sleep policy

2) All safe infant sleep policies reference the AAP 20111 (or 2016) recommendations for safe infant sleep

3) All safe infant sleep policies specify the type and/or content of patient education on safe sleep

4) All hospitals require regular staff training on safe infant sleep to address changes in recommendations as research on sleep-related infant deaths continues

According to the findings, the hospitals reported providing parent education at multiple points in time, including when the infant was found in an unsafe situation (97.5%), at hospital admission (96.2%), at postpartum room orientation or after the infant is born (83.5%), at discharge (62%), and during prenatal/childbirth classes (24.1%). The hospitals also provided multiple types of parent education, primarily printed educational materials (from the NIH, DPH, or hospital-specific materials), the Georgia ***Safe to Sleep Campaign*** printed sleep gowns, books, and displayed posters in rooms and on the unit (*Georgia Safe to Sleep Hospital Initiative Process Evaluation Report, 2017)*. 73.4% of the hospitals reported experiencing challenges to the program implementation. The highest rating challenge was caregiver compliance (43.0%) and the second highest was staff compliance (31.6%). Not only did parents have issues with adhering to the provided safe sleep standards, but the medical staff were also neglecting to comply. This evidence suggests the need for an additional initiative to reach the overarching goal of decreasing infant mortality due to SIDS. This additional initiative does not involve educational handouts by medical staff or posters only to be misplaced or looked over. This initiative will be large, difficult to miss, and easily viewable over hospitals and highways.

In Georgia, sleep-related deaths accounted for the majority of reviewed infant deaths in 2014. Among 158 reviewed sleep-related infant deaths occurring in Georgia in 2014, 82 (51.9%) occurred among infants who were not sleeping on their backs, 95 (60.1%) occurred in an adult bed, and 99 (62.7%) occurred while the infant was sharing a sleep surface with someone else (Georgia Child Fatality Review Panel, 2016). According to the Georgia Pregnancy Risk Assessment Monitoring System, only 43.8% of mothers reported always placing their infant

supine while 48.9% reported never sharing a sleep surface with their infants (Georgia Department of Public Health, 2017). Hospitals are a crucial component of public health strategies to educate families on how to reduce sleep-related infant deaths. Hospitals reach nearly every new parent in the state. Further, health care providers can reinforce parental practices through education and modeling of safe sleep practice recommendations (Miller, T.J., Salm Ward, T.C., McClellan, M.M. et al., 2018). However, some studies have suggested that hospital staff do not always model safe sleep recommendations. For example, one study found that more than half of medical providers did not model safe sleep in a hospital setting (Mason, B., Ahlers-Schmidt, C. R., & Schunn, C., 2013), and another recent study found that only a quarter of infants in pediatric hospital settings were found in safe sleep environments (Macklin, J. R., Gittelman, M. A., Denny, S. A., Southworth, H., & Arnold, M. W., 2016). The occupation of a medical provider is extremely taxing. From high patient loads, long shift hours, and countless responsibilities, medical providers may not always be the initial source of healthy sleep information for new parents. The ideal ***Safe to Sleep Campaign*** would involve the implementation of a hospital advertising source that can provide education and awareness even months prior to giving birth. The billboards would include ***Safe to Sleep Campaign*** contact information for those who wish to obtain additional information about healthy infant sleeping habits.

Billboards are pragmatic, cost-effective public health awareness strategies to increase health outcomes among populations for better quality of life. Targeted populations may also be of specific interest for public health advertising to promote behavior changes, the need for annual medical appointments, or healthcare services (Parvanta CF, Nelson DE, Harner RN., 2018). According to the Institute of Medicine, “advertising works” (Institute of Medicine, 2006). In

2009, a New York study on African American females aged 21 to 49 years showed a significant association between the exposure to alcohol advertisements and alcohol consumption, which 13% of the participants resulted in "problem drinking," even after controlled for a family history of alcohol problems and socioeconomic status (Kwate, N. O., & Meyer, I. H, 2009). Though this type of advertising is of the opposite spectrum of health promotion, it is relevant to note that advertising can positively or negatively impact communities. There is a lack of evidence to support public health communication preferences among different racial populations that includes billboards. It is worthy to note that "billboard advertising is used to communicate with current and prospective customers" regardless of demographics, so parents and caregivers can gain safe sleep knowledge even before becoming parents or caregivers (Fortenberry JL Jr., 2010).

Public health educational strategies through advertising campaigns are by no means new. To control the undue prevalence of smallpox in Kansas City, Kansas, in 2005, the local health department resorted to the use of advertising. Hundreds of posters illustrating the disease in its worst form and urging vaccination as a preventative measure were utilized. The city schools were also involved. The Bureau of Public Health Education of New York City Health Department implements excellent advertising during epidemics in communities. Their methods include the use of posters, streetcar displays and advertising in the newspapers. The board of health almost always adopts such forms of publicity (Schevitz J. (2010). One long-term goal of such public health publicity and advertising is behavior change. The BBB initiative will be an effective health educational tool to increase SIDS awareness surrounding rural hospitals and medical facilities that predominately serve the target population.

Chapter III: Methodology

This thesis grant proposal has been crafted in response to a funding announcement from Department of Health and Human Services: Health Services Research on Minority Health and Health Disparities (R21 Clinical Trial Optional). This funding opportunity aligns with this grant proposal's overarching goal to "directly and demonstrably contribute to the reduction of health disparities among racial/ethnic minority populations, socioeconomically disadvantaged populations, and rural populations [that] continue to experience a disproportionate burden of disease and other adverse health conditions" (Grant Funding Announcement, See Appendix 1).

Health education research is often addressed and funded by national research organizations as well as smaller community foundations. Some examples of potential agencies include:

- National Institutes of Health (NIH)
- Health Resources and Services Administration (HRSA)
- Private Foundations
- State health departments
- Department of Health and Human Services

I selected this particular grant announcement because of its emphasis on the innovational challenge aspect to seek a shift in current research practice paradigms by utilizing novel approaches or methodologies, instrumentation, or interventions. Also, the opportunity to impact multiple populations at once was also desirable to address other sleep-related infant disparities among Georgia communities.

Budget for BBB

Program Allocation	Phase I (Year 1)	Phase II (Year 2)	COST
Totals	$97,500	$162,500	$275,000

Operations/Design Creative Staff Administrative assistance Free lancer	 $40,000 $15,000 $5,000	 $45,000 $15,000 $5,000	$125,000
Billboard Physical billboard -Rural area -South Georgia area	 $12,500 $20,000	 $35,500 $62,000	$135,000
Data collection/analysis software	$5,000	$15,000	$20,000

Justification for Budget Spending

Operations and Design will entail a creative team, free-lancer, and billboard agency. The creative staff will be a small unit within the ***Safe to Sleep*** program to create the actual signage of the billboards and selection of billboard location. A free-lancer will also be involved for a third-party, unbiased creative perspective to assist with the billboard signage. Free-lancers are also typically cheaper than corporate creative staffers. The billboard agency will be selected based on rates for rural and metro Georgia. According to Mandi Smith, Assistant General Manager of Lamar Advertising, "a billboard average rate for four weeks is $2,200." Rural billboards tend to be less costly billboards, which allows this proposal to allot majority of the funding to rural and South Georgia. Rural Georgia billboards run between $500-1,500 on a four-week rental depending on the location (M. Smith, personal communication, March 17, 2022). Data collection and analysis funds will be contingently based on Georgia DPH's contracts with privately sourced analytics and/or utilizes university graduate/PhD student programs.

There are several location ideas for the rural billboards. One target location is the surrounding area of Hancock County, which has the highest percentage of Black population. Highway 441 is a major highway that connects north and south traffic directly into other rural Georgia and intersecting into Atlanta, Georgia. According to the U.S. Census Bureau, Black families predominately reside in College Park and East Point neighborhoods and are two of the

lowest income neighborhoods in Atlanta, Georgia (U.S. Census Bureau QuickFacts). It would be beneficial to raise a billboard within these communities to reach the target population of this thesis. Hartsfield-Jackson International airport borders College Park, which would be an unintentional advantage for the billboard campaign to increase SIDS awareness. In rural areas, posting BBB billboards around colleges/universities such as University of North Georgia in Dahlonega, Georgia is a strategic plan to reach the community of Dahlonega and students. Rural churches are an ideal placement for the billboards to reach the rural community of mothers and caregivers. Mt. Bethel United Methodist Church located in Marietta, Georgia is the largest congregation in North Georgia with more than 4,000 members (*Disruption at Mt. Bethel United Methodist Church, Largest Congregation in north georgia annual conference*. 2021, June 8).

In the US, SIDS mortality rates in rural counties have been reported to be twice that in urban counties (Ely DM, Hoyert DL., 2015). In Georgia, 13.6% of rural infant deaths between 2011 and 2020 were caused by SIDS. "A Black infant born in rural Georgia is nearly twice as likely to die before their first birthday when compared to a White infant" (Warren, 2021). Reaching Black mothers and caregivers in rural Georgia is imperative because the health inequities are just as great if not greater than metro Atlanta. Research is discovering that Georgia rural hospitals are closing labor and delivery units at an accelerated pace. Since 1994, 33 rural hospitals have closed their OB units (Cota, 2015). Due to the downsizing of rural Georgia hospitals, the ideal locations for billboards in rural Georgia include the remaining birthing hospitals, churches, hair salons, and public parks. These locations are places of interest for billboards in rural Georgia because families repeatedly gather there and are usually places that elicit interpersonal conversations.

Human Subjects Protection

This proposal includes collecting demographic data from hospital systems including medical information as well as birth records. With the intention to keep all participants' information confidential, the data collected will be deidentified. Addresses of patients who gave birth less than twelve months prior to data collection will be used to send surveys. Data collection will begin at approximately six months post BBB intervention. The data collection will occur up to one year to populate a sufficient sample size. The surveys will be the initial surveys used by ***Safe to Sleep*** with addition to billboard exposure questions. A consent form will be provided to all consenting participants and comply with HIPPA and patient confidentiality regulations by NIH. The consent form will include the following language:

> You are invited to participate in this survey of BBB. I am interested in finding out your views about billboard exposure and increasing healthy infant sleep habits.
> Your participation in this study will require participation in a survey and possible completion of a questionnaire. This should take approximately 10 minutes of your time.
> Your participation will be confidential/anonymous and you will not be contacted again in the future. You will not be paid for being in this study. This survey does not involve any foreseeable risk to you and there are no direct benefits. However, the benefits of your participation may impact society by alleviating the burden of SIDS in Georgia.
> You do not have to be in this study if you do not want to be. We will be happy to answer any questions you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the campaign administration at (xxx) xxx-xxxx. If you have any questions about your rights as a research participant you may contact Emory University Institutional Review Board (IRB) at xxx-xxx-xxxx. An IRB is a group of people that reviews research studies to make sure that participant rights and safety are protected. Thank you in advance for you participation in this study.

Evaluation

The Economic Evaluation Research Group and Department of Health Promotion and Behavior of the College of Public Health at University of Georgia conducted a process

evaluation of Georgia's ***Safe to Sleep Campaign.*** The purpose of the evaluation was to "identify the safe sleep information and materials received by parents from the [participating] hospitals, as well as assess parental knowledge and behaviors regarding safe infant sleep." Parents and caregivers were invited through postcards to participate in online or phone surveys. The survey topic areas included: characteristics of the respondents, information and materials received from the birthing hospital, self-reported safe sleep knowledge and behaviors, and opportunities for parents to provide additional comments and information on their infant sleep practices (Walcott, R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S., 2018). The criteria of the survey are listed.

Eligibility:

1. The primary caretaker of an infant between 1-6 months old who was born in Georgia
2. All respondents completing at least 50% of the survey are included in this analysis

The final sample analyzed included 420 respondents. Most survey respondents (98%) indicated their relation to the infant as "Mother," and the remaining 2% identified as "Father" (Walcott, R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S., 2018). The evaluation of the BBB initiative will be measured by the results of the additional billboard exposure and safe sleep knowledge questions in a parent survey. Infants born in Georgia one to six months prior to data collection will be retrieved from hospital databases to send postcards to provided addresses to participate in an online or phone survey. Both surveys will be offered in English and Spanish. Parents will be asked open-ended as well as quantifiable questions. Data analysis will be conducted with R Statistics (R, 2014). Descriptive statistics will be obtained for maternal and newborn characteristics and compared to available Georgia population estimates using Chi square or t-tests for independence, as appropriate. Logistic

regression will be used to assess the parental characteristics and intervention components associated with safe sleep knowledge and behavior (Walcott, R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S., 2018).

Limitations

A limitation of the initial parent survey is its cross-sectional design. The telephone survey of the initial parent survey was offered in English only, while the new BBB survey will offer both English and Spanish. This thesis will not be able to determine from the analysis of the parent surveys if behavior *change* is the result of the exposure of billboards or other information sources provided by ***Safe to Sleep.***

Chapter IV: Incorporation of Reviewer Comments

Five (5) highly skilled and trained external reviewers were selected to review this grant proposal. They are listed in the table below. Each reviewer was provided a form that asked him/her to comment on five written prompts on a Likert scale. Additionally, each reviewer was asked to critique and add comments of the proposal. The reviews were not shared among reviewers. Instead, the reviews were provided individually.

Johanna Hinman, MPH, MCHES Adjunct Instructor, Executive MPH Emory University Rollins School of Public Health
Subhashis Pal, PhD Post-Doctoral Researcher Division of Endocrinology, Metabolism, & Lipids Emory University School of Medicine
Jessica Alvarez, PhD, RD Associate Professor of Medicine Division of Endocrinology, Metabolism & Lipids Emory University School of Medicine
Seyma Katrinli, PhD Post-Doctoral Research Fellow

Department of Gynecology & Obstetrics
Emory University School of Medicine

Iris E. Smith, PhD, MPH
Associate Professor Emeritus
Behavioral Sciences & Health Education
Faculty
Executive MPH Program
Emory University Rollins School of Public Health

I am especially appreciative of the five (5) external reviewers who graciously accepted the invitation to review this proposal and contribute to its overall improvement.

Reviewer 1 answered "**neither agree nor disagree**" to the following statement: The proposed work is innovative and sets the groundwork for future work in this area. Reviewer 1 answered "disagree" to the following statements: The submission is responsive to the call for proposals; and The PI makes a compelling case that the proposed research/project/program is necessary.

Reviewer 1 comments about suggestions/improvements that can be made:

Comment 1: "The proposal needs to be revised to present the problem statement more compellingly, then describe evidence to support the proposed activities (billboards) and why there is reason to believe they would make a difference in behaviors among the target population. The proposal lacks detail in terms of timeline of activities and lacks clear ties between the evaluation plan and the activities themselves."

Response to comment 1: I strongly feel that the proposal includes extensive detail and background information regarding the need for a health awareness initiative for healthy sleep habits among Black families. Billboards are not necessarily new to public health awareness but would benefit the current efforts to decrease SIDS in Georgia. The timeline was updated to include specific target deadlines and goals.

Comment 2: "The proposal needs to clarify how it fits with existing efforts from the health department and from local health systems."

Response to comment 2: The proposal details how the billboard campaign will be an addition to the current GA DPH ***Safe to Sleep*** program, which is a hospital-based initiative to educate mothers and caregivers about healthy sleep habits. The program also provides educational resources for parents in the hospital. The billboard campaign will work congruently with the program to increase public health awareness.

Reviewer 2 answered "**strongly agree**" to the following statements: The proposal is responsive to the RFA (request for applications); The PI makes a compelling case that the proposed research is necessary; and the proposed research is innovative and sets the groundwork for future work in this area. Reviewer 2 answered "**agree**" to the following statements: The proposal is well thought out and theoretically sound; and the PI makes a compelling case that she can accomplish what is proposed.

Reviewer 2 comments about suggestions/improvements that can be made:

Comment 1: "Using graphical representation of the existing data and flow diagram of the study design will make the submission more responsive."

Response to comment 1: Throughout the document, I included statistical data to provide sufficient evidence of the need for more health awareness of SIDS. The graphics and tables can be found at the end of the document.

Comment 2: "Including a baseline survey before starting the campaign will greatly help to improve the structure of the proposal."

Response to comment 2: This proposal is not intended to seek behavior change caused by billboard exposure alone. Although, this type of research would be an ideal study to be

conducted after the initial billboard campaign is complete after year 2, which would present rich data.

Comment 3: "A statewide comparison data in the field of SIDS to show where Georgia currently stands will greatly improve the argument of the proposal activity."

Response to comment 3: The document included the national and state averages of SIDS including rural versus metro Georgia statistics.

Comment 4: "Campaign strategy could include daycares as a potential location for billboards."

Response to comment 4: This suggestion is solid, and the document was changed to include daycares as an ideal location for rural Georgia SIDS awareness billboards.

Comment 5: "Try to increase the sample size of the survey to get a better quality of result."

Response to comment 5: A greater sample size will be imperative for greater accuracy. The billboard campaign staff must work diligently to have all eligible participants complete the survey.

Reviewer 3 answered "**strongly agree**" to the following statement: The PI makes a compelling case that she can accomplish what is proposed. Reviewer 4 answered "**agree**" to the following statements: The proposal is responsive to the RFA (request for applications); and the proposal is well thought out and theoretically sound.

Reviewer 3 comments about suggestions/improvements that can be made:

Comment 1: "The argument for the need for such an intervention is compelling, although the proposal seems to weight more heavy on the background and rationale than on the intervention and research methods."

Response to comment 1: The document revised the evaluation section to include a clearer understanding of the intervention effectiveness.

Comment 2: "The RFA states that projects that exclusively rely on patient reported data are not a priority for funding. Based on the evaluation section, it appears that you will use an existing survey (only) to assess the effects of the intervention."

Response to comment 2: The data will use the existing survey with additional questions regarding billboard exposure. The new participants will be selected from Georgia hospital census data with the criteria of women who gave birth less than twelve months who reside in Georgia. This information will be made clear in the final draft.

Reviewer 4 answered "**strongly agree**" for the following statements: The submission is responsive to the call for proposals; The proposal is well thought out and theoretically sound; The proposed work is innovative and sets the groundwork for future work in this area; and The PI makes a compelling case that the proposed research/project/program is necessary.

Reviewer 4 comments about suggestions/improvements that can be made:

Comment 1: "I would like to congratulate the PI for this innovative work, which addresses an important healthcare issue."

Response to comment 1: Thank you very much for your support and encouragement throughout my thesis journey.

Reviewer 5 answered "**agree**" for the following statements: The submission is responsive to the call for proposals; The PI makes a compelling case that the proposed research/project/program is necessary; The PI makes a compelling case that the research team will be able to accomplish the proposed activities with the resources and time allocated; and The proposed work is innovative and sets the groundwork for future work in this area.

Reviewer 5 comments about suggestions/improvements that can be made:

Comment 1: "This application is responsive to the RFA call for research to address health services disparities among minority populations. The specific aims of this proposal seek to design and implement a health awareness intervention specifically targeted to black women in rural Georgia to promote safe infant sleeping habits for black infants."

Response to comment 1: The proposal follows the RFA guidelines and grant call requirements for submission.

Comment 2: "The PI makes a strong argument for the need for additional intervention strategies specifically targeted at African American women in rural Georgia. The literature review makes a strong case for the potential effectiveness of billboards in health awareness campaigns. It would be helpful to engage members of the community in the design of the intervention to assist with creating a culturally relevant message for this population. You might want to give some thought to surveying a comparable county that was not exposed to this intervention to see if there is any difference in knowledge or behaviors. It is also not clear whether you will use the same sampling methodology used by Safe Sleep or whether you are proposing a different sampling strategy. Also, it isn't clear what geographic area you will sample you will draw your sample from. Since you are creating the intervention for a specific population in GA (rural), it would not be necessary to collect state level data."

Response to comment 2: The proposal includes an extensive literature review for the background knowledge and to defend the need for increased public health awareness in rural and metro Georgia. I will revise the evaluation section to entail a more detailed data collection description and the geographic samples. I will also include a more detailed methodology section to include the use of the previous ***Safe to Sleep*** survey with additional questions regarding exposure to the billboards.

Chapter V: The Final Version of the Proposal

SF424 (R&R) Application for the online Health Services grant funded by NIH below.

Investigators

Principal Investigator	
First Name:	Amanda
Middle Initial:	L.
Last Name:	Smith
Project Role (select one):	Independent Investigator
Clinical Appointment:	EMPH Student
Title:	Graduate Student
Institution:	Emory University, Rollins School of Public Health
Academic Appointment:	Emory University
Telephone: Email: City/Town: Province: Postal Code:	(410) 430-8389 Amanda.L.Smith@emory.edu Atlanta, Georgia USA 30306

Sponsoring Institution

Sponsoring Institution	
Institution Name:	National Institute of Health
Scientific/Research Contacts	
First Name: Last Name: Telephone Number: Email:	Jennifer Alvidrez 301-594-9567 jennifer.alvidrez@nih.gov
Research Ethics Approval:	Includes Human Subjects participation agreement form.
Clinical Trials Registration:	Not Required.

Study Summary

Research Project Title:	Billboards for Black Babies (BBB)
Type of Research:	Health Promotion Initiative
Funding Amount:	$275,000

Year One:	$97,500
Year Two:	$162,500
Duration of Project (maximum 2 years):	2 years
Lay Summary:	The funding acquired from this grant proposal will be used to promote SIDS-related healthy sleep habits for Black babies through billboards in various predominately Black communities. Health promotion is imperative to educate the public to increase positive behavior changes.
Resubmission	
Is this a Resubmission of a previously declined application to the Foundation?	N/A

Application Contents

Application Contents	
Please ensure all uploaded documents include identifying headings.	
Statement of Significance (1/2 page maximum) Please highlight the relevance and impact of this proposal on the health of :	See corresponding section in narrative below
Background, present state of knowledge, and innovation (6 pages maximum). List of reference for this section (2 pages maximum):	See corresponding section in narrative below
Research plan, methodology and evaluation (8 pages maximum). List of references for this section (1 page maximum):	See corresponding section in narrative below

Budget

Budget Items (items not fully justified in the rationale will not be considered)	Budget included in methodology, which includes all personnel and equipment needs.
Do you have a Personnel item to add?	Budget included in methodology, which includes all personnel and equipment needs.
Do you have an Equipment item to add?	Budget included in methodology, which includes all personnel and equipment needs.
Do you have a Materials and Supplies item to add?	Budget included in methodology, which includes all personnel and equipment needs.
*Do you have a Conference Presentations and Publications item to add?	No No

Do you have any Other Expenses item to add?	
TOTAL BUDGET REQUESTED	$275,000
Other Funding	
Results of funding from other sources may affect your approved budget, therefore please notify the Foundation immediately if you have received other funding. Have you applied / intending to apply for Other Funding for this study?	No

Appendices

Appendices Do you have any Refernces to add?	Yes

Significance Statement

This thesis examines the current public health efforts of Georgia's infant mortality rates and the racial disparities that exists. The ***Safe to Sleep Campaign*** is implemented across the state of Georgia to prevent sleep-related deaths among infants and provides resources for parents, caregivers, and medical professionals to promote safe sleeping habits. However, with the racial gap that continues to persist in Georgia, early public health intervention efforts need to be incorporated to increase and empower behavior change.

According to a healthcare marketing study, "billboards are useful across the patient patronage sequence, meaning that healthcare institutions can use the medium in capacities beyond simple awareness-building tasks. Billboards are typically thought to be effective primarily at the awareness (early stage) level" (Fortenberry Jr., J. L., Elrod, et al., 2010; Berkowitz, 2006). This thesis develops a public health grant proposal to incorporate a billboard project under Georgia's DPH ***Safe to Sleep Campaign*** among predominantly Black communities. The implementation of an awareness billboard initiative will position the study

and ***Safe to Sleep Campaign*** for replication in other southeast states e.g., Mississippi. Moreover, if this proposal is funded, a successful billboard project of the ***Safe to Sleep Campaign*** could position this program to alleviate the racial disparity of infant mortality.

Problem Statement

Given the growing burden of preventable mortality in the United States, health awareness and promotion education are vital to all population's longevity. "Established in 1912, the Federal Children's Bureau focused on infant mortality as its first initiative, officially recognizing its importance" (Lindenmeyer, 1995). The infant mortality rate is not only seen as a measure of the risk of infant death, but it is used more broadly as a crude indicator of community health status, poverty and socioeconomic status levels in a community, availability and quality of health services, and medical technology" (State Infant Mortality Collaborative, 2013). Infant mortality significantly varies by race. In 2018, infants born to Black women had the highest mortality rate, followed by Hispanic and white infants in the United States (Ely & Driscoll, 2018). Sudden infant death syndrome (SIDS) was the fourth leading cause of infant mortality in 2018 (CDC, 2020). There continues to be a gap between races for infants who die from SIDS each year indicating racial or cultural barriers that need to be considered (Hauck, Moore, Herman, et al., 2002). During a National Public Radio (NPR) interview, Dr. Lori Feldman-Winter of Cooper University Health Care said, "Something continues to hamper the ability to get the message out or for folks in different cultures to receive the message" pertaining to SIDS among lower socioeconomic populations including Black mothers or caregivers (Hobson, 2017). SIDS-related health promotion programs are lacking adequate community awareness to predominately Black populations that are consequently suffering from higher infant mortality rates compared to Hispanic and white populations in the United States.

Purpose of Grant Proposal (Purpose Statement)

The purpose of this grant proposal is to acquire funding to initiate the incorporation of Billboards for Black Babies (BBB) to current, implemented SIDS-related health promotional programs in the state of Georgia tailored towards predominantly Black mothers and caregivers of infants.

Georgia's Department of Public Health (DPH) currently implemented one major public health program for new mothers to provide resources in the prevention of sleep-related infant deaths: ***Safe to Sleep Campaign.*** This campaign promotes the ABCs of Safe Sleep recommended by the American Academy of Pediatrics to educate mothers, fathers, grandparents and caregivers about the importance of putting babies to sleep properly. The ABCs include the following:

Alone – infants should sleep alone in his or her own sleep space, close to but separate from their caregiver.

Back – infants should be placed on his or her back to sleep every time including naps.

Crib – infants should sleep in a crib or bassinet with a firm, flat surface with no extra items such as crib bumpers, blankets or toys.

Georgia's Black infant mortality rate mirrors the national trend with Black infants dying more frequently than white and Hispanic infants due to SIDS (CDC, 2016). The funding acquired from this grant proposal will be utilized to incorporate the public health awareness project, Billboards for Black Babies (BBB). Public health awareness is imperative, especially since Georgia's DPH ***Safe to Sleep Campaign*** can address the critical racial disparity infant mortality gap among Black communities.

Research Questions Addressed by Grant Proposal

This thesis grant proposal explores the following research aims and questions:

- To design, implement and evaluate an awareness intervention in junction with Georgia's DPH ***Safe to Sleep Campaign*** to reduce the incidence of SIDS among African American infants.
- Why is there a need for a public health awareness project in the form of billboards among predominantly Black communities to be incorporated in Georgia?
- How to plan and implement BBB into Georgia's DPH ***Safe to Sleep Campaign*** effectively addressing the racial infant mortality gap among new mothers and caregivers?
- How to evaluate the additional benefits of BBB as an adjunct to the existing prevention efforts?

Chapter III: Methodology

This thesis grant proposal has been crafted in response to a funding announcement from Department of Health and Human Services: Health Services Research on Minority Health and Health Disparities (R21 Clinical Trial Optional). This funding opportunity aligns with this grant proposal's overarching goal to "directly and demonstrably contribute to the reduction of health disparities among racial/ethnic minority populations, socioeconomically disadvantaged populations, and rural populations [that] continue to experience a disproportionate burden of disease and other adverse health conditions" (Grant Funding Announcement, See Appendix 1).

Health education research is often addressed and funded by national research organizations as well as smaller community foundations. Some examples of potential agencies include:

- National Institutes of Health (NIH)
- Health Resources and Services Administration (HRSA)
- Private Foundations

- State health departments
- Department of Health and Human Services

I selected this particular grant announcement because of its emphasis on the innovational challenge aspect to seek a shift in current research practice paradigms by utilizing novel approaches or methodologies, instrumentation, or interventions. Also, the opportunity to impact multiple populations at once was also desirable to address other sleep-related infant disparities among Georgia communities.

Program Allocation	Phase I (Year 1)	Phase II (Year 2)	COST
Totals	$97,500	$162,500	$275,000
Operations/Design			
Creative Staff	$40,000	$45,000	$125,000
Administrative assistance	$15,000	$15,000	
Free lancer	$5,000	$5,000	
Billboard			
Physical billboard			$135,000
-Rural area	$12,500	$35,500	
-Metro area	$20,000	$62,000	
Data collection/analysis software	$5,000	$15,000	$20,000

Evaluation

The Economic Evaluation Research Group and Department of Health Promotion and Behavior of the College of Public Health at University of Georgia conducted a process evaluation of Georgia's ***Safe to Sleep Campaign.*** The purpose of the evaluation was to "identify the safe sleep information and materials received by parents from the [participating] hospitals, as well as assess parental knowledge and behaviors regarding safe infant sleep." Parents and caregivers were invited through postcards to participate in online or phone surveys. The survey topic areas included: characteristics of the respondents, information and materials received from the birthing hospital, self-reported safe sleep knowledge and behaviors, and opportunities for parents to provide additional comments and information on their infant sleep practices (Walcott,

R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S., 2018). The criteria of the survey are listed.

Eligibility:

1. The primary caretaker of an infant between 1-6 months old who was born in Georgia
2. All respondents completing at least 50% of the survey are included in this analysis

The final sample analyzed included 420 respondents. Most survey respondents (98%) indicated their relation to the infant as "Mother," and the remaining 2% identified as "Father" (Walcott, R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S., 2018). The evaluation of the BBB initiative will be measured by the results of the additional billboard exposure and safe sleep knowledge questions in a parent survey. Infants born in Georgia one to six months prior to data collection will be retrieved from hospital databases to send postcards to provided addresses to participate in an online or phone survey. Both surveys will be offered in English and Spanish. Parents will be asked open-ended as well as quantifiable questions. Data analysis will be conducted with R Statistics (R, 2014). Descriptive statistics will be obtained for maternal and newborn characteristics and compared to available Georgia population estimates using Chi square or t-tests for independence, as appropriate. Logistic regression will be used to assess the parental characteristics and intervention components associated with safe sleep knowledge and behavior (Walcott, R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S., 2018).

References

(2017). (rep.). *Georgia Safe to Sleep Hospital Initiative Process Evaluation Report* (pp. 1–33)

American Academy of Pediatrics Policy Statement: The Changing Concept of Sudden Infant Death Syndrome: Diagnostic, Coding Shifts, Controversies Regarding the Sleeping Environment, and New Variables to Consider in Reducing Risk, 2005. Pediatrics 116:5 (1245-1255)

Berkowitz, E. N. 2006. Essentials of Health Care Marketing. 2nd ed. Sudbury, MA: Jones and Bartlett

Centers for Disease Control and Prevention. (2016). About sudden unexpected infant death and sudden infant death syndrome. Retrieved from http://www.cdc.gov/sids/

Centers for Disease Control and Prevention. (2020, September 10). Infant mortality. Centers for Disease Control and Prevention https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm

Cota, Pat. (2015, November 9). Georgia's Obstetrical Care System. [PowerPoint slides]. Georgia Obstetrical and Gynecological Society. https://www.senate.ga.gov/committees/Documents/GAOBGynSocietyWomensHealthStudyCommitteePres.pdf

Disruption at Mt. Bethel United Methodist Church, Largest Congregation in north georgia annual conference. Wesleyan Covenant Association. (2021, June 8). Retrieved June 19, 2022, from https://wesleyancovenant.org/2021/04/20/disruption-at-mt-bethel-united-methodist-church-largest-congregation-in-north-georgia-annual-conference/

Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion; Div of Vital Statistics, National Center for Health Statistics, CDC. (1996,

October 11). *Sudden Infant Death Syndrome -- United States, 1983–1994*. CDC Weekly MMWR. https://www.cdc.gov/mmwr/preview/mmwrhtml/00043987.htm

Ely DM, Driscoll AK. Infant mortality in the United States, 2018: data from the period linked birth/infant death file. Natl Vital Stat Rep. 2020;69(7):1–18

Ely DM, Hoyert DL. Differences Between Rural and Urban Areas in Mortality Rates for the Leading Causes of Infant Death: United States, 2013–2015. NCHS Data Brief. 2018:1–8

Fortenberry JL Jr. Health care marketing: tools and techniques. 3rd ed. Sudbury: Jones and Bartlett; 2010

Fortenberry Jr., J. L., Elrod, J. K., & McGoldrick, P. J. (2010). Is Billboard Advertising Beneficial for Healthcare Organizations? An Investigation of Efficacy and Acceptability to Patients. Journal of Healthcare Management, 55(2), 81–96. https://doi.org/10.1097/00115514-201003000-00004

Georgia Child Fatality Review Panel. (2016). *Georgia child fatality review panel 2014 annual report.* Atlanta, GA: State of Georgia

Georgia Department of Public Health. (2017). *Pregnancy risk assessment monitoring system.* Atlanta, GA: Georgia Department of Public Health. Retrieved from https://dph.georgia.gov/pregn ancy-risk-assessment-monitoring-system-prams

Hauck FR, Moore CM, Herman SM, et al. The contribution of prone sleeping position to the racial disparity in sudden infant death syndrome: the Chicago Infant Mortality Study. Pediatrics.2002;110(4):772–780

Hobson, K. (2017, May 15). Racial and ethnic disparities persist in sudden infant deaths. NPR. https://www.npr.org/sections/health-shots/2017/05/15/528173372/racial-and-ethnic disparities-persist-in-sudden-infant-deaths

Institute of Medicine (U.S.): Committee on Food Marketing and the Diets of Children and Youth, McGinnis JM, Gootman JA, Kraak VI: Food marketing to children and youth. Washington, DC: Natl Academy Pr; 2006

Kwate, N. O., & Meyer, I. H. (2009). Association between residential exposure to outdoor alcohol advertising and problem drinking among African American women in New York City. American journal of public health, 99(2), 228–230. https://doi.org/10.2105/AJPH.2007.132217

Lindenmeyer, K. (1995). The U.S. Children's Bureau and Infant Mortality in the Progressive Era. Journal of Education, 177(3), 57–69. https://doi.org/10.1177/002205749517700305

Macklin, J. R., Gittelman, M. A., Denny, S. A., Southworth, H., & Arnold, M. W. (2016). The EASE quality improvement project: Improving safe sleep practices in ohio's children's hospitals. *Pediatrics, 138(4)*, e20154267. https://doi.org/10.1542/ peds.2015-4267

Mason, B., Ahlers-Schmidt, C. R., & Schunn, C. (2013). Improving safe sleep environments for well newborns in the hospital setting. *Clinical Pediatrics*, 52(10), 969–975. https://doi. org/10.1177/0009922813495954

Miller, T.J., Salm Ward, T.C., McClellan, M.M. *et al.* Implementing a Statewide Safe to Sleep Hospital Initiative: Lessons Learned. *J Community Health* **43,** 768–774 (2018). https://doi.org/10.1007/s10900-018-0483-3

National Center for Health Statistics, period linked birth/infant death data. Retrieved October 01, 2021, from www.marchofdimes.org/peristats

National Institute of Child Health and Human Development: Continuing Education Program on SIDS Risk Reduction. NIH Publications, 2006

Parvanta CF, Nelson DE, Harner RN. Public health communication: critical tools and strategies.

Burlington: Jones and Bartlett; 2018

Pickett, K.E., Y. Luo, and D.S. Lauderdale, *Widening Social Inequalities in Risk for Sudden Infant Death Syndrome.* American Journal of Public Health, 2005. 95(11): p. 1976-1981

R: A language and environment for statistical computing [computer program]. (2014). Vienna: R Foundation for Statistical Computing.

Schevitz J. (2010). *Advertising as a force in public health education. 1915. American journal of public health, 100(7)*, 1202–1204. https://doi.org/10.2105/ajph.100.7.1202

State Infant Mortality Collaborative: Infant Mortality Toolkit. State Infant Mortality (SIM) Toolkit: A Standardized Approach for Examining Infant Mortality. N.p., 01 Nov 2013. Web<http://www.amchp.org/programsandtopics/dataassessment/InfantMortalityToolkitPages/default.aspx>

Sudden infant death syndrome--United States, 1983-1994. MMWR: Morbidity & Mortality Weekly Report, 1996. 45(40): p. 859

T.J. Mathews, M.S., and Marian F. MacDorman, Ph.D., *Infant Mortality Statistics From the 2007 Period Linked Birth/Infant Death Data Set.* National Vital Statistics Reports, 2011. 59(6): p. 1-30

U.S. Census Bureau quickfacts: Atlanta City, Georgia. (n.d.). Retrieved March 17, 2022, from https://www.census.gov/quickfacts/fact/map/atlantacitygeorgia/INC110219

U.S. Department of Health and Human Services. (n.d.). *Key moments in safe to sleep® history: 1994–2003*. Eunice Kennedy Shriver National Institute of Child Health and Human Development. Retrieved October 1, 2021, from https://safetosleep.nichd.nih.gov/safesleepbasics/moments/1994-2003

Walcott, R. L., Salm Ward, T. C., Ingels, J. B., Llewellyn, N. A., Miller, T. J., & Corso, P. S.

(2018). A Statewide Hospital-Based Safe Infant Sleep Initiative: Measurement of Parental Knowledge and Behavior. Journal of community health, 43(3), 534–542. https://doi.org/10.1007/s10900-017-0449-x

Warren, J.C. (2021, December 08). Infant Mortality in Rural Georgia. [PowerPoint slides]. School of Medicine. Mercer University. https://www.house.ga.gov/Documents/CommitteeDocuments/2021/Rural_Development_Council/December_8/Jacob_Warren_Infant_Mortality.pdf

Willinger M. SIDS prevention. Pediatr Ann 1995;24:358-64

Willinger M, J.L., Catz C., *Defining the sudden infant death syndrome (SIDS): deliberations of an expert panel convened by the National Institute of Child Health and Human Development.* Pediatr Pathol., 1991. 11(5): p. 677-684

World Health Organization. (2021). Eastern Mediterranean region. World Health Organization. http://www.emro.who.int/about-who/public-health-functions/health-promotion-disease prevention.html

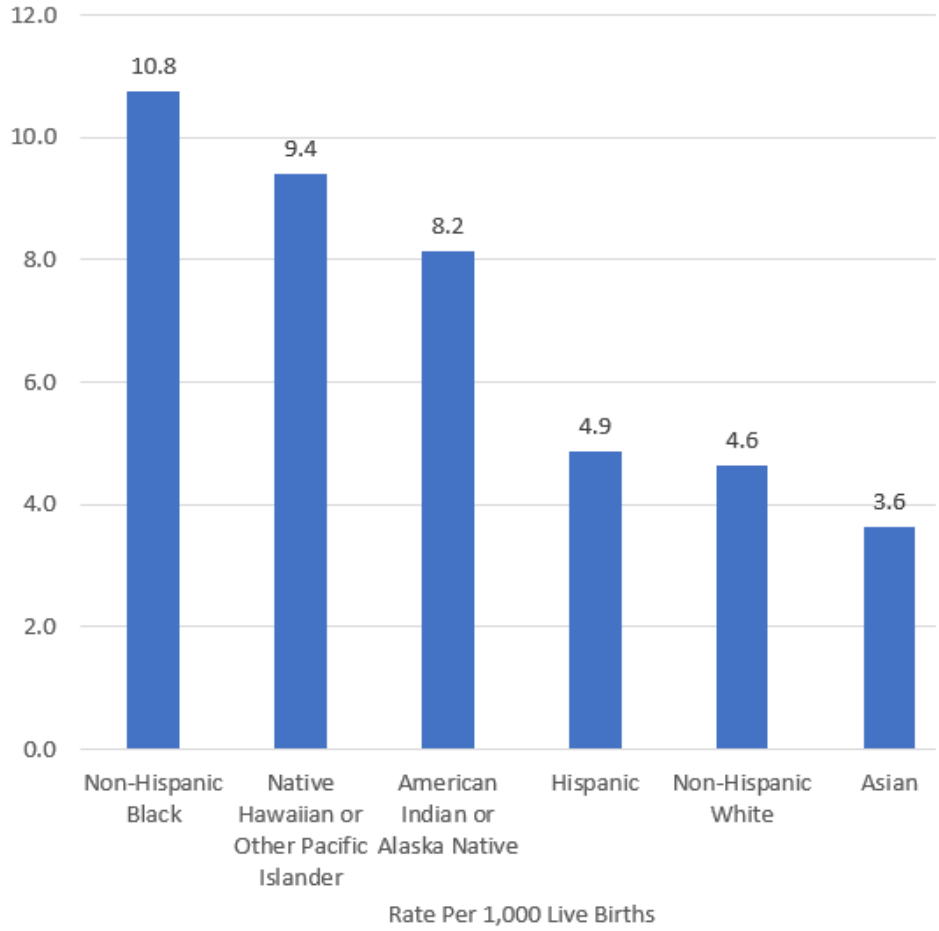
World Health Organization Statistical Information System (WHOSIS): Indicator definitions and metadata. http://www.who.int/whosis/indicatordefinitions/en/

Young J. Promoting Evidence-Based Public Health Recommendations to Support Reductions in Infant and Child Mortality: The Role of National Scientific Advisory Groups. In: Duncan JR, Byard RW, editors. SIDS Sudden Infant and Early Childhood Death: The Past, the Present and the Future. Adelaide (AU): University of Adelaide Press; 2018 May. Chapter 9. Available from: https://www.ncbi.nlm.nih.gov/books/NBK513385/

Tables

Table 1

Infant Mortality Rates by Race and Ethnicity, 2018

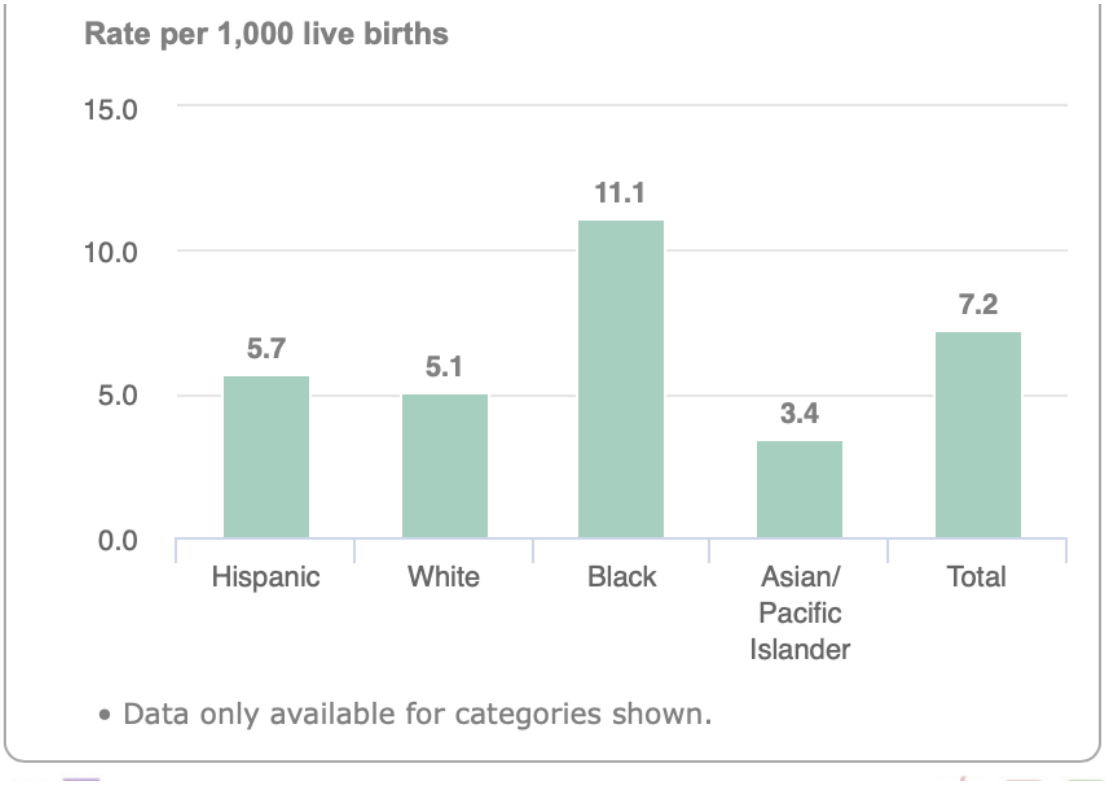


Source:

Ely DM, Driscoll AK. Infant mortality in the United States, 2018: Data from the period linked birth/infant death file. National Vital Statistics Reports, vol 69 no 7. Hyattsville, MD: National Center for Health Statistics. 2020.

Table 2

Infant mortality rates by race/ethnicity in Georgia between 2016-2018 average

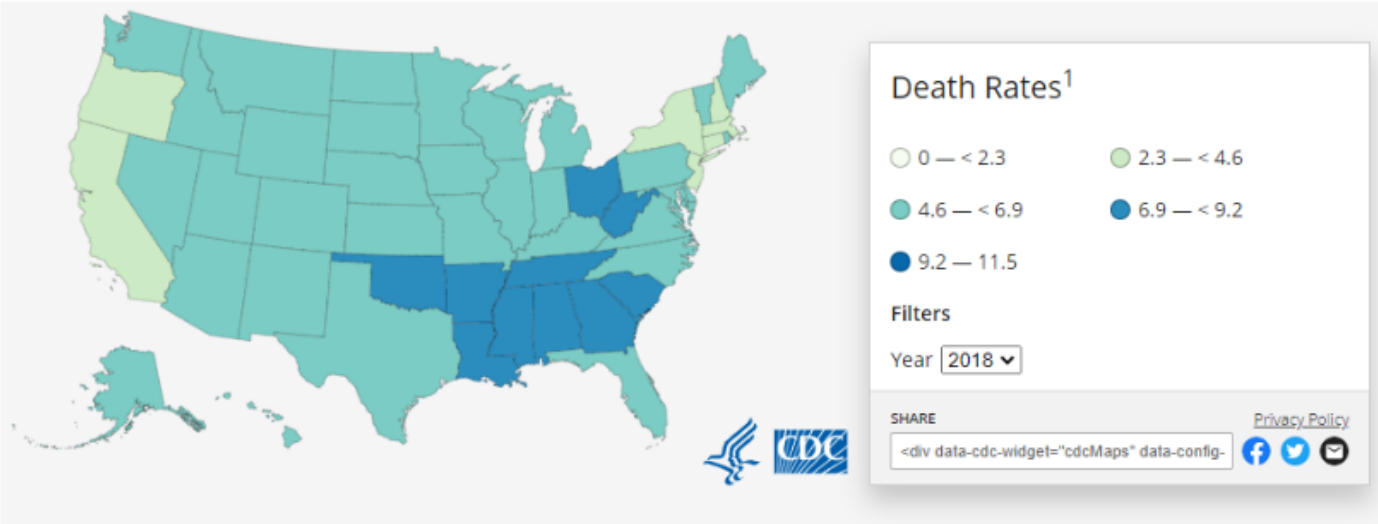


Source:

National Center for Health Statistics, period linked birth/infant death data. Retrieved March 28, 2022, from www.marchofdimes.org/peristats.

Figures

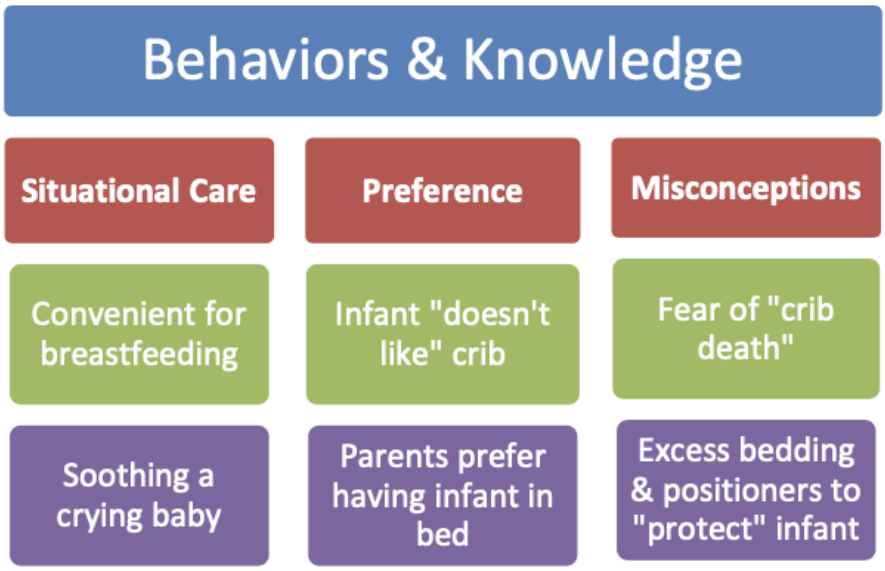
Figure 1. Infant Mortality Rates by State, 2018



Source:

https://wonder.cdc.gov

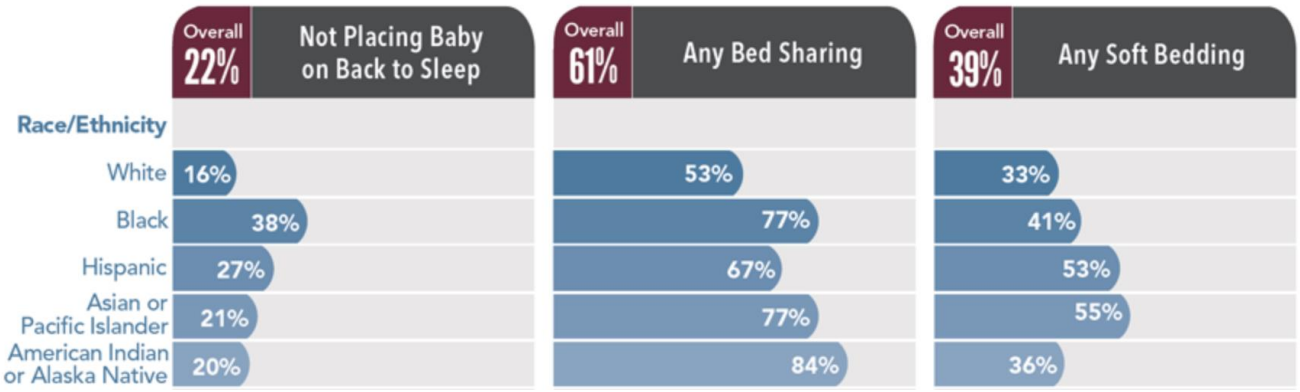
Figure 2. Common unsafe sleep behaviors



Source:

Georgia Division of Family and Children Services. Infant Safe to Sleep Guidelines and Protocol. October 2015. odis.dhs.ga.gov

Figure 3. Unsafe Sleep Practices with Babies



Source:

Pregnancy Risk Assessment Monitoring System (PRAMS), 2015.

Appendix 1: Full Grant Funding Announcement (as published)

Full Text of Announcement

Section I. Funding Opportunity Description

Purpose

Although scientific and technological discoveries have improved the health of the U.S. population overall, racial/ethnic minority populations, socioeconomically disadvantaged populations, and rural populations continue to experience a disproportionate burden of disease and other adverse health conditions.

As the Nation's steward of biomedical and behavioral research, NIH has devoted considerable resources to characterize the root causes of health disparities, uncovering a complex and multi-factorial web of interconnected and overlapping factors (i.e., biological, behavioral, environmental, and societal). As an important next step, research is needed that capitalizes upon this knowledge about causal pathways to directly and demonstrably contribute to the reduction of health disparities. Of particular importance is research that moves beyond an exclusive focus on the health status of individuals to examine and address how larger systemic factors cause, sustain, or minimize health disparities in communities, regions, and the Nation as a whole. Disparities in health care settings are a clear contributor to disparities in health outcomes. Differences in utilization patterns and quality of care indicators between health disparity populations and the general population have been well documented. More work is needed to understand how best to eliminate these inequities.

The purpose of this FOA is to encourage system-level health services research that can directly contribute to the improvement of minority health and/or the reduction of health disparities in health care settings.

The R21 activity code is intended to encourage new exploratory and developmental research projects. For example, such projects could assess the feasibility of a novel area of investigation or a new methodology that has the potential to enhance health-related research. Another example could include the unique and innovative use of an existing methodology to explore a new scientific area. These studies may involve considerable risk but may lead to a breakthrough in a particular area, or to the development of novel techniques, agents, methodologies, models, or applications that could have a major impact on a field of biomedical, behavioral, or clinical research.

Applications for R21 awards should describe projects distinct from those supported through the traditional R01 activity code. For example, long-term projects, or projects designed to increase knowledge in a well-established area, will not be considered for R21 awards. Applications submitted to this FOA should be exploratory and novel. These studies should break new ground or extend previous discoveries toward new directions or applications.

Research Objectives

Research encouraged under this FOA includes examination of health care services in health care systems such as private and public health insurance plans; physician groups; hospitals, nursing homes and assisted living facilities; academic medical centers; integrated delivery systems; and criminal justice settings. Projects may address health services pertaining to the treatment of particular health conditions, multiple health conditions, specific segments of the population, or more general indicators (e.g., access to primary care services, etc.) that may not be condition-specific. Projects may include observational/descriptive, simulation, or interventional studies and may involve primary data collection and/or secondary analysis of existing datasets. It is expected that all projects will involve the use of relevant health system-level data in some way. Projects

that also use patient-reported data are encouraged, but projects that rely exclusively on patient-reported data are not a programmatic priority for funding under this FOA. Projects should include a focus on one or more NIH-designated US health disparity populations, which include Blacks/African Americans, Hispanics/Latinos, American Indians/Alaska Natives, Asian Americans, Native Hawaiians and other Pacific Islanders, socioeconomically disadvantaged populations, underserved rural populations, and sexual and gender minorities.

The focus of this FOA is on system-wide health services research that encompasses the diversity of individuals served within these systems. It is expected that projects will include patient or participant samples that are representative of the population served by the particular health care system(s). Projects that focus on individual clinics or other treatment settings in isolation of the larger system(s) in which they are embedded are not a programmatic priority for funding under this FOA; examples of such projects include but are not limited to the following:

Projects that recruit participants from health care systems but do not involve the examination of the organization, operation, or service delivery of those systems.

Projects that test interventions, procedures, or service delivery approaches in a single health care setting, such an individual clinic. This applies to multi-site studies as well, if the sites reflect individual clinical sites rather than the larger health care systems to which they belong.

Projects that include a single hospital may be considered if hospital-wide services or practices are examined (e.g., the incorporation of automated patient/provider reminders in Electronic Health Records) rather one particular clinic or service within the hospital.

Note: Projects that examine the financing of health care or the cost and efficiency of health care service delivery, without linking such economic analysis to measurable health outcomes, are

considered outside of NIH's mission and will not be supported. See NOT-OD-16-025 for more information.

Specific Areas of Research Interest

Research topics of specific interest include but are not limited to:

Strategies to organize, manage, finance, and deliver health care to improve minority health or reduce health disparities.

Health information technologies to improve access to or utilization of health care services and/or improve quality of care.

Strategies to ensure that health disparity populations receive clinical preventive services consistent with national evidence-based recommendations.

Strategies to ensure that health disparity populations receive clinical services consistent with national evidence-based recommendations for management of specific chronic conditions, such as but not limited to diabetes mellitus, coronary artery disease, cerebrovascular disease, cognitive impairment, asthma, and mental and substance use disorders.

Strategies to improve patient safety and reduce medical errors in health disparity populations.

The use of allied health professionals, paraprofessionals or peer-led health services to supplement existing health care services.

Interventions to improve cultural competence of clinicians that demonstrate a clear link to improvement in patient outcomes.

Strategies to improve quality of health care for individuals with limited-English proficiency.

Analysis of efforts to implement National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care (the National CLAS Standards).

Analysis of local, state, or national policies relevant to health care systems that increase or reduce health disparities, such as those related to insurance coverage or reimbursement, language access policies, or organization of government-run or -funded health care services.

Analysis of initiatives to increase the supply of health care practitioners in medically underserved areas.

The incorporation of specific research tools or methodologies into system-level service delivery practices that identify or measure patient reported outcomes such as health-related quality of life, preference-based decision making, functional status, symptoms and adherence in health disparity populations.

Simulations that model the interaction of patient-, clinician-, system-,and community-level factors impacting health disparity outcomes to identify appropriate targets for intervention

In addition to the topics above, NIDA has a specific interest in the following topics:

Strategies to integrate evidence-based drug abuse and related behavioral health prevention interventions for health disparity populations into health care systems with supports for implementation and sustainability, including health system/community collaborations.

Strategies that leverage expansion of behavioral health prevention services under health reform to reduce health disparities, including those that take advantage of requirements for community health needs assessment and delivery of health services through the community benefit.

Strategies to improve the appropriateness, effectiveness, safety, and efficiency of prevention, treatment, and recovery interventions, and services delivered to individuals in a variety of settings including substance abuse and mental health treatment programs; schools; general health care settings; criminal and juvenile justice systems; child welfare systems, and social service agencies.

Implementation Research studies that seek to explain and ultimately improve the uptake of evidence-based prevention and treatment practices, including HIV prevention and treatment in real-world service delivery settings.

Studies that may have implications of policy change for service quality; such research may examine the impact (including unintended consequences) of local, state, and/or national policies that affect the organization or management of prevention and treatment services on quality of care and patient access, utilization, retention, and outcomes.

See the 2016-2020 NIDA Strategic Plan for further information:

https://www.drugabuse.gov/about-nida/2016-2020-nida-strategic-plan

Section II. Award Information

Funding Instrument

Grant: A support mechanism providing money, property, or both to an eligible entity to carry out an approved project or activity.

Application Types Allowed

New

Resubmission

Revision

The OER Glossary and the SF424 (R&R) Application Guide provide details on these application types.

Clinical Trial?

Optional: Accepting applications that either propose or do not propose clinical trial(s)

Funds Available and Anticipated Number of Awards

The number of awards is contingent upon NIH appropriations and the submission of a sufficient number of meritorious applications.

Award Budget

The combined budget for direct costs for the two year project period may not exceed $275,000. No more than $200,000 may be requested in any single year.

Award Project Period

The total project period may not exceed 2 years.

Section III. Eligibility Information

1. Eligible Applicants

Eligible Organizations

Higher Education Institutions

Public/State Controlled Institutions of Higher Education

Private Institutions of Higher Education

The following types of Higher Education Institutions are always encouraged to apply for NIH support as Public or Private Institutions of Higher Education:

- Hispanic-serving Institutions
- Historically Black Colleges and Universities (HBCUs)
- Tribally Controlled Colleges and Universities (TCCUs)
- Alaska Native and Native Hawaiian Serving Institutions
- Asian American Native American Pacific Islander Serving Institutions (AANAPISIs)

Nonprofits Other Than Institutions of Higher Education

Nonprofits with 501(c)(3) IRS Status (Other than Institutions of Higher Education)

Nonprofits without 501(c)(3) IRS Status (Other than Institutions of Higher Education)

For-Profit Organizations

Small Businesses

For-Profit Organizations (Other than Small Businesses)

Governments

State Governments

County Governments

City or Township Governments

Special District Governments

Indian/Native American Tribal Governments (Federally Recognized)

Indian/Native American Tribal Governments (Other than Federally Recognized)

U.S. Territory or Possession

Other

Independent School Districts

Public Housing Authorities/Indian Housing Authorities

Native American Tribal Organizations (other than Federally recognized tribal governments)

Faith-based or Community-based Organizations

Regional Organizations

Foreign Institutions

Non-domestic (non-U.S.) Entities (Foreign Institutions) are not eligible to apply.

Non-domestic (non-U.S.) components of U.S. Organizations are not eligible to apply.

Foreign components, as defined in the NIH Grants Policy Statement, are allowed.

Required Registrations

Applicant Organizations

Applicant organizations must complete and maintain the following registrations as described in the SF 424 (R&R) Application Guide to be eligible to apply for or receive an award. All registrations must be completed prior to the application being submitted. Registration can take 6 weeks or more, so applicants should begin the registration process as soon as possible. The NIH Policy on Late Submission of Grant Applications states that failure to complete registrations in advance of a due date is not a valid reason for a late submission.

Dun and Bradstreet Universal Numbering System (DUNS) - All registrations require that applicants be issued a DUNS number. After obtaining a DUNS number, applicants can begin both SAM and eRA Commons registrations. The same DUNS number must be used for all registrations, as well as on the grant application.

System for Award Management (SAM) (formerly CCR) – Applicants must complete and maintain an active registration, which requires renewal at least annually. The renewal process may require as much time as the initial registration. SAM registration includes the assignment of a Commercial and Government Entity (CAGE) Code for domestic organizations which have not already been assigned a CAGE Code.

NATO Commercial and Government Entity (NCAGE) Code – Foreign organizations must obtain an NCAGE code (in lieu of a CAGE code) in order to register in SAM.

eRA Commons - Applicants must have an active DUNS number and SAM registration in order to complete the eRA Commons registration. Organizations can register with the eRA Commons as they are working through their SAM or Grants.gov registration. eRA Commons requires organizations to identify at least one Signing Official (SO) and at least one Program Director/Principal Investigator (PD/PI) account in order to submit an application.

Grants.gov – Applicants must have an active DUNS number and SAM registration in order to complete the Grants.gov registration.

Program Directors/Principal Investigators (PD(s)/PI(s))

All PD(s)/PI(s) must have an eRA Commons account. PD(s)/PI(s) should work with their organizational officials to either create a new account or to affiliate their existing account with the applicant organization in eRA Commons. If the PD/PI is also the organizational Signing Official, they must have two distinct eRA Commons accounts, one for each role. Obtaining an eRA Commons account can take up to 2 weeks.

Eligible Individuals (Program Director/Principal Investigator)

Any individual(s) with the skills, knowledge, and resources necessary to carry out the proposed research as the Program Director(s)/Principal Investigator(s) (PD(s)/PI(s)) is invited to work with his/her organization to develop an application for support. Individuals from underrepresented racial and ethnic groups as well as individuals with disabilities are always encouraged to apply for NIH support.

For institutions/organizations proposing multiple PDs/PIs, visit the Multiple Program Director/Principal Investigator Policy and submission details in the Senior/Key Person Profile (Expanded) Component of the SF424 (R&R) Application Guide.

Appendix 2: "A Statewide Hospital-based Safe Infant Sleep Initiative: Measurement of Parental Knowledge and Behavior"

Table A contains the variables used in the analysis with their corresponding survey questions and responses. For dichotomous variables, the response coded as '1' is bolded.

Table A: Survey questions and responses for outcome variables and predictor variables

Variable	Survey question	Possible responses
Outcome Variables		
Knowledge – infant sleep position	What is the recommended sleep position for healthy babies?[S1]	**On the back only** Side or back is okay Side only Side or stomach is okay Stomach only I don't know
Knowledge – infant sleep location	What is recommended about where your new baby should sleep?[S1,S2]	**In parents' room, on a separate sleep surface** In parents' room, in parents' bed In own room Other (open-ended) I don't know
Behavior – infant sleep position	In which *one* position do you *most often* lay your baby down to sleep now?[S3]	On his or her side **On his or her back** On his or her stomach
Behavior – infant sleeps alone	In the *past 2 weeks*, how often has your new baby slept alone in his or her own crib or bed?[S3]	**Always** **Often** Sometimes Rarely Never
Behavior – room sharing	When your new baby sleeps alone, is his or her crib in the same room where *you* sleep?[S3]	No **Yes**

Behavior – bed sharing	How did your new baby *usually* sleep in the *past 2 weeks*?[S3]	In a crib, bassinet, or pack and play **On a twin or larger mattress or bed** On a couch, sofa, or armchair In an infant car seat or swing In a sleeping sack or wearable blanket With a blanket With toys, cushions, or pillows, including nursing pillows With crib bumper pads (mesh or non-mesh)
Predictor variables		
Received any info/materials	Did you receive any information, materials, and/or resources about safe infant sleep in the hospital?	No **Yes**
Received info-back to sleep	At the hospital, did you receive the recommendation: Back to sleep for every sleep?	No **Yes** Don't know/remember
Received info-room share	At the hospital, did you receive the recommendation: Room-sharing without bed-sharing?	No **Yes** Don't know/remember
Received sleep gown	Did you receive an infant **sleep gown** from the hospital where you had your baby?	No **Yes**
Received board book	Did you receive a *Sleep Baby Safe and Snug* **board book** from the hospital where you had your baby?	No **Yes**
Received bassinet	Did you receive a travel **bassinet** from	No **Yes**

	the hospital where you had your baby?	
Postnatal depression risk	Ten-question Edinburgh Postnatal Depression Scale[S4]	Cutoff score of 10 to identify mothers at risk for depression
How well does baby sleep	How well does your baby sleep?	4-Very well 3-Well 2-Somewhat well 1-Poorly 0-Very poorly
My baby lets me get reasonable sleep	Does your baby's sleep pattern allow you to get a reasonable amount of sleep?	No **Yes**
How often does baby cry	In general, how often does your baby cry?	0-Never 1-Hardly ever 2-Sometimes 3-Often 4-Very often
Breastfeed	Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?[S5]	No **Yes**
Behavior (Baby sleeps in crib)	How did your new baby *usually* sleep in the *<u>past 2 weeks</u>*?[S3]	**In a crib, bassinet, or pack and play** On a twin or larger mattress or bed On a couch, sofa, or armchair In an infant car seat or swing In a sleeping sack or wearable blanket With a blanket With toys, cushions, or pillows, including nursing pillows With crib bumper pads (mesh or non-mesh)
Additional Questions for BBB initiative to be included		
Exposure of billboard	Did you notice the billboard about SIDS?	Yes No

Exposure Occurrence	How often did you notice the SIDS billboard?	Every time Sometimes Once or twice Never
Knowledge- SIDS	Did you know what SIDS means prior to seeing the billboard?	Yes No
Knowledge- SIDS No follow-up	If you answered 'No' to the question above, did you inquire with a healthcare professional what SIDS means?	Yes No N/A- I know what SIDS means
Knowledge- SIDS Yes follow-up	Where did you learn what SIDS means?	Hospital staff (nurses, doctor, etc.) Prenatal visits Article Television Parents/caregivers Other N/A-Answered 'No'- Never learned about SIDS before seeing the billboard
Knowledge (BBB)	Are the billboards about SIDS and healthy sleep habits helpful?	Yes No N/A- never saw the billboards
What would you change	What suggestions would you give to make the billboard better?	Open-ended
Behavior (BBB)	How often do you place your baby in a healthy sleep position (alone, on his/her back, without toys, and no loose clothing/blankets)?	Always Often Sometimes Once or twice Never

[a] For dichotomous variables, the response coded as '1' is bolded.