



Louisiana Child Death Review Report

2008-2010



**DEPARTMENT OF HEALTH
AND HOSPITALS**
Bureau of Family Health

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2012 State Child Death Review Panel Members

Position	Current Incumbent
Attorney General or Designee	Katherine K. Green
Commissioner of the Department of Insurance or Designee	Emma Fontenot
District Attorney	Leon Cannizzaro, Jr.
Executive Director of Highway Safety Commission of the Department of Public Safety and Corrections or Designee	Col. John A. Le Blanc
Executive Director of the Louisiana Maternal and Child Health Coalition	Janie Ward Martin
Member of the House of Representatives	The Honorable Scott M. Simon
Pathologist Experienced in Pediatrics	Deborah Cavalier
Secretary of Department of Children and Family Services (DCFS) or Designee	Rhenda H. Hodnett
Secretary of the Department of Health and Hospitals (DHH) or Designee	Dr. James E. Hussey
Sheriff	Lauren Meher
State Fire Marshal or Designee	Cindy Gonthier
State Health Officer or Designee	Dr. Jimmy Guidry
State Registrar of Vital Records or Designee	Devin George
Superintendent of the Office of State Police or Designee	Lt. Kevin Rhodes
Coroner At Large	*
Forensic pathologist certified by the American Board of Pathology and licensed to practice medicine in the state	*
Health professional with expertise in SIDS- appointed from a list of three names submitted by the Louisiana State Medical Society.	*
Member of the Senate	*
Pediatrician with expertise in diagnosing and treating child abuse and neglect - nominated by the state chapter of the American Academy of Pediatrics	*
Police Chief	*
Citizen-At-Large, representing different geographic areas of the state (4)	Dr. Dawn R. Vick
	*
	*
	*

*information currently unavailable or open position

2012 State Child Death Review Panel Staff
Amy Zapata, M.P.H.
Takeisha Davis, M.D.
Alexa Erck, M.P.H.

Executive Summary

Established as part of state legislation in 1992 (RS 40:2019), the Louisiana Child Death Review Panel is required to review all unexpected deaths of children aged 14 years and younger, including suspected Sudden Unexpected Infant Death (SUID) cases. In Louisiana, child death reviews are completed by a state panel and a local panel in each of the nine public health administrative regions. These multidisciplinary, multi-agency panels seek to understand and prevent child deaths by retrospectively examining relevant records and reports. This information helps to identify gaps in services to create recommendations, plan future initiatives and implement new programs to bring about community prevention of child and infant deaths.

From 2008-2010, 2,324 children in Louisiana aged 14 years and younger died. Of those deaths, 70 percent were infants, under 1 year of age, (N=1,636) and 30 percent were children between the ages of 1 and 14 years (N=688).

The 3-year infant mortality rate was 8.5 deaths per 1,000 live births and rates decreased by 16 percent from 2008-2010 ($p < 0.05$). Among infants, sex and race significantly impacted 3-year mortality rates. The Black infant mortality rate was two times that of the White infant mortality rate. Natural causes, those associated with a health condition, excluding suspected Sudden Infant Death Syndrome (SIDS) cases, accounted for 75 percent of all infant deaths. Fewer than 1 percent of all infant deaths were categorized as intentional.

Of the 407 infant death cases eligible for review by a CDRP, 84 percent were abstracted. Nearly half of cases reviewed were suspected SIDS, a quarter of the cases reviewed were because of external causes of mortality (injury), the fourth leading cause of infant death from 2008-2010, and the remaining were undetermined or unknown causes of death. Strategies for infant death prevention from CDRP reviews focused on the education of parents, providers and the greater community.

Child deaths were comprised of 45 percent aged 1 to 4 years, 22 percent aged 5 to 9 years and 33 percent aged 10 to 14 years. The 3-year child mortality rate was 26.5 deaths per 100,000 children, and rates decreased by 23 percent from 2008-2010. Sex and race significantly impacted 3-year mortality rates, with the male rate being 1.4 times that of the female rate and the Black rate being 1.9 times the White rate. Male children and Black children demonstrated a greater burden of death, given the demographics of the population, with Black male children having the greatest burden of death.

External causes of mortality resulting from injury and not associated with a medical condition were the leading cause of child death from 2008-2010. Under the classification of injury, motor vehicle, other and unspecified transit accidents accounted for 20 percent of all child deaths, accidental drowning and submersion accounted for 8 percent of all child deaths, and accidents caused by exposure to smoke, fire and flames accounted for 5 percent of child deaths. Of all child death cases, 10 percent were categorized as intentional.

A panel reviewed about 20 percent of the 297 eligible child (1 to 14 years of age) death cases from 2008-2010 (N=52). From the cases reviewed, state and regional CDRP teams made 93 recommendations, planned 23 initiatives and implemented 41 programs including prevention strategies targeting accidents because of motor vehicles, other and unspecified transport accidents; prolonged exposure to weather or extreme temperatures; drowning; submersion; fire; guns; and child abuse. Although education was the primary focus of the panels' preventive strategies, recommendations and actions also included expanded services, creating new and amending previous laws and ordinances, and modifying environmental factors.

Healthy People 2020 benchmarks were used to add context to Louisiana's infant and child mortality rates. Of the 14 Healthy People 2020 goals highlighted, Louisiana has achieved two and reached the targeted 10 percent decrease in an additional eight goals.

In examining national infant and child mortality rates (non-comparable to other rates in this report because of collection timing differences of statistical data submission) Louisiana’s rates were consistently higher. All selected characteristics of Louisiana child mortality rates examined were significantly higher than respective national child mortality rates. Louisiana’s child mortality rate has decreased by 15 percent from 1999-2009 while the national child mortality rate has decreased by 24 percent.

Figure 1. Louisiana Department of Health and Hospitals (DHH) Administrative Regions



Table 1. Louisiana Department of Health and Hospitals (DHH) Administrative Regions

Region	Area	Parishes within Region
1	New Orleans	Jefferson, Orleans, Plaquemines, St. Bernard
2	Baton Rouge	Ascension, E. Baton Rouge, E. Feliciana, Iberville, Pointe Coupee, W. Baton Rouge, W. Feliciana
3	Houma	Assumption, Lafourche, St. Charles, St. James, St. John the Baptist, St. Mary, Terrebonne
4	Lafayette	Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, Vermillion
5	Lake Charles	Allen, Beauregard, Calcasieu, Cameron, Jefferson Davis
6	Alexandria	Avoyelles, Catahoula, Concordia, Grant, La Salle, Rapides, Vernon, Winn
7	Shreveport	Bienville, Bossier, Caddo, Claiborne, DeSoto, Natchitoches, Red River, Sabine, Webster
8	Monroe	Caldwell, E. Carroll, Franklin, Jackson, Lincoln, Madison, Morehouse, Ouachita, Richland, Tensas, Union, W. Carroll
9	Hammond/Slidell	Livingston, St. Helena, St. Tammany, Tangipahoa, Washington

Child Death Review Overview

The Louisiana Child Death Review Panel is a multidisciplinary group of professionals who examine child deaths to better understand risk factors and focus on future preventive action. The state level panel was founded in 1992 under state legislature and established within the Louisiana Department of Health and Hospitals (DHH). Under Louisiana legislation, R.S 40:2019, the state panel has grown from a 10-member team reviewing unexpected deaths of children under the age of seven to a 25-member team ensuring the review of all deaths of children aged 14 years and younger.

The objective of the Child Death Review process is to:

- Protect the health and welfare of Louisiana children
- Collect data of unexpected deaths to help protect and reduce infant and child deaths
- Identify risk factors and trends relevant to unexpected and/or unexplained child injury and death
- Improve local investigations by participating agencies of unexpected and unexplained child deaths
- Share information among agencies that investigate child death and/or provide services to children and families
- Improve existing services and identify gaps in services at the local level
- Educate the community about the causes of child injury and death and preventive measures

The establishment of the Maternal and Child Health (MCH) Injury Prevention Coordinators made local level panels possible starting in 2001. Louisiana is made up of 64 parishes (counties), which are divided into nine public health administrative regions (Figure 1). In addition to clarifying the jurisdiction of each local panel, the regional structure of the state allows for a more careful examination of region specific circumstances surrounding infant and child deaths as well as the ability to identify target areas for future services, create preventive initiatives, and implement educational campaigns. Regional mortality rates are important to monitor over time to observe trends and differences, as there is greater variance from year to year because of a smaller number of events and population size. Given this, regional information should be interpreted with caution.

The role of a panel is not to investigate an active case, but rather, retrospectively review completed birth and death certificates in conjunction with relevant reports and records, such reports include, police reports, child protective services records, hospital records and autopsy reports. Cases reviewed are a convenience sample of all cases in death records. For a case to be eligible for review by a panel, it must have a manner of death categorization in Louisiana Department of Health and Hospitals - Vital Records as accidental, undetermined, pending investigation, or be a suspected Sudden Infant Death Syndrome (SIDS) case (categorized as natural manner of death). Although only a percentage of all infant and child deaths are reviewed by a panel at this time, by looking in-depth at a sample of all cases, modifiable risk factors and preventive measures can be identified and put into action to prevent future adverse events.

Data Sources and Methods

To understand and analyze child deaths, information was used from the United States Census, Louisiana Department of Health and Hospitals - Vital Records of birth and death certificates and Child Death Review Panel Case Reports. Cases analyzed were infant deaths (less than 1 year of age) and child deaths (1 to 14 years of age) occurring in 2008, 2009 or 2010. Number, percent, crude rates, rate ratios and percent change of rates were computed using SAS 9.2 and 95 percent confidence intervals (95 % CI) were calculated using SABER.

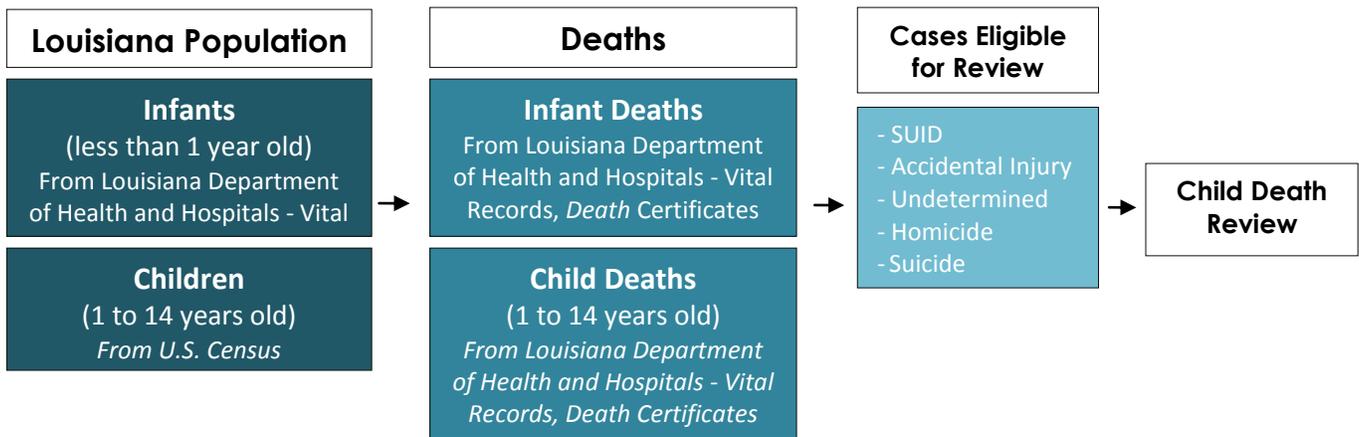
Louisiana Department of Health and Hospitals - Vital Records death certificates were used to identify cases and provided information on frequency, manner of death, race, ethnicity, sex and age. The at-risk population for

infants were the total number of live births during each respective year. Louisiana Department of Health and Hospitals - Vital Records birth certificates were used to determine the number of live births for 2008, 2009 and 2010. Infant mortality rates were computed using live birth and death certificates from 2008-2010.

For the 1-to 14-year-old population of Louisiana, U.S. Census mid-year population estimates and counts were used for the number of people at risk for the outcome- in this case, death. Because of the displacement and relocation of many Louisianans following hurricanes Katrina and Rita, adjusted population estimates were used for 2008 and 2009. The newly released 2010 U.S. Census counts were used for the 2010 population of children aged 1 to 14. Child mortality rates were determined using reported child deaths from Louisiana Department of Health and Hospitals - Vital Records death certificates and U.S. Census mid-year population estimate data for the 1 to 14-year-old population by single year from 2008-2010.

Because the child death review process represents a convenience sample of all infant and child deaths, reviewed cases were not used to determine rates. Instead, reviewed cases provide an in-depth understanding of circumstances and risk factors within those cases reviewed.

Figure 2. Data Sources



Rates were calculated only when the number of events was at least 20. Data were analyzed by year when feasible or aggregated to provide a 3-year rate. Counts less than five were suppressed to maintain confidentiality.

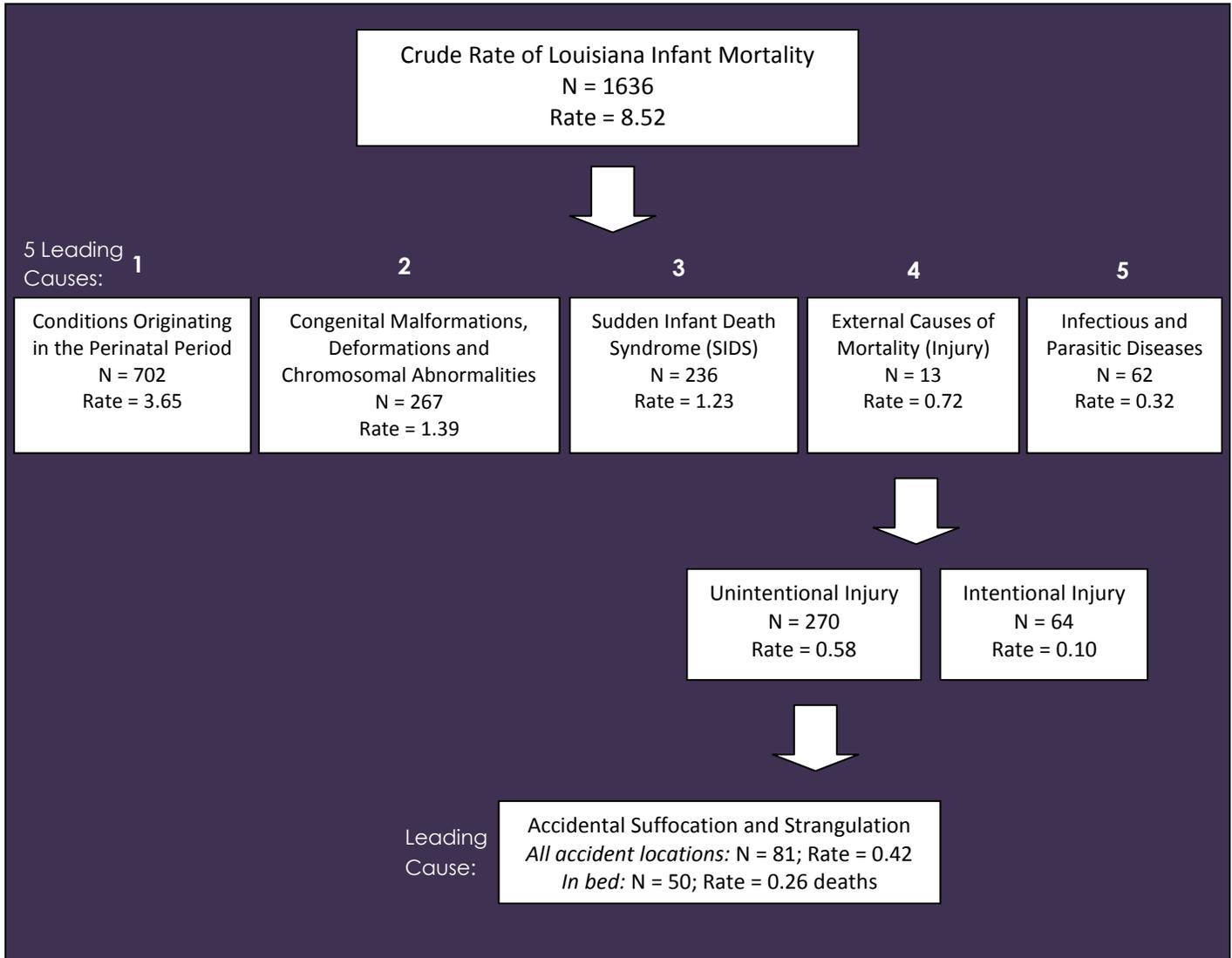
The National Vital Statistics System (NVSS) collects and reports vital statistics of the United States and individual states by maintaining the National Vital Statistics Records (NVSR) of births, deaths (including fetal deaths), marriages and divorces. The timing of statistical data submission differs at the state and national levels, resulting in numbers of events that are not an exact match. Therefore, internal state data cannot be compared to national data. NVSR data for 2010 have not yet been made available and could not be included in this report. Overall infant and neonatal mortality rates, as well as those by race, were used to compare Louisiana to national rates.

In order to compare the Louisiana child mortality rate to the national child mortality rate, the CDC WONDER database was accessed. The overall child mortality rate and the child mortality rates by age group were not yet available for 2010. As with NVSR, the rates from CDC WONDER differed in timing of data submission from those used throughout this report and thus cannot be compared to other sections.

Infant Death in Louisiana

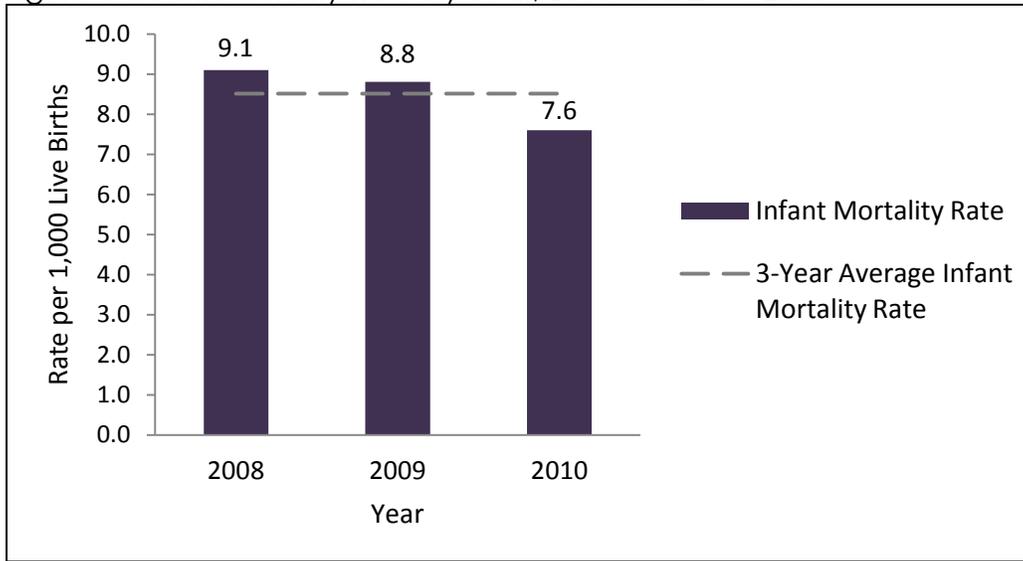
Of the 192,113 Louisiana resident live births from 2008-2010, 1,636 infants died. The 3-year infant mortality rate was 8.5 deaths per 1,000 live births, with the infant mortality rate decreasing significantly from 2008-2010 by 16 percent ($p < 0.05$).

Figure 3. Crude Infant Mortality Rates and Five Leading Causes of Death, Louisiana 2008-2010



Source: Louisiana Department of Health and Hospitals - Vital Records
Rates Expressed in Deaths per 1,000 Live Births

Figure 4. Infant Mortality Rate by Year, Louisiana 2008-2010



Louisiana Department of Health and Hospitals- Vital Records

Demographic Profile of Infant Deaths and Burden of Death

For 2008-2010, neonatal infant deaths (0-27 days of age) accounted for 56 percent of infant deaths and post-neonatal (28 days to 1 year of age) deaths accounted for 44 percent. A large number of neonatal deaths are caused by prematurity and congenital anomalies, which emphasize the importance of health before and during pregnancy.

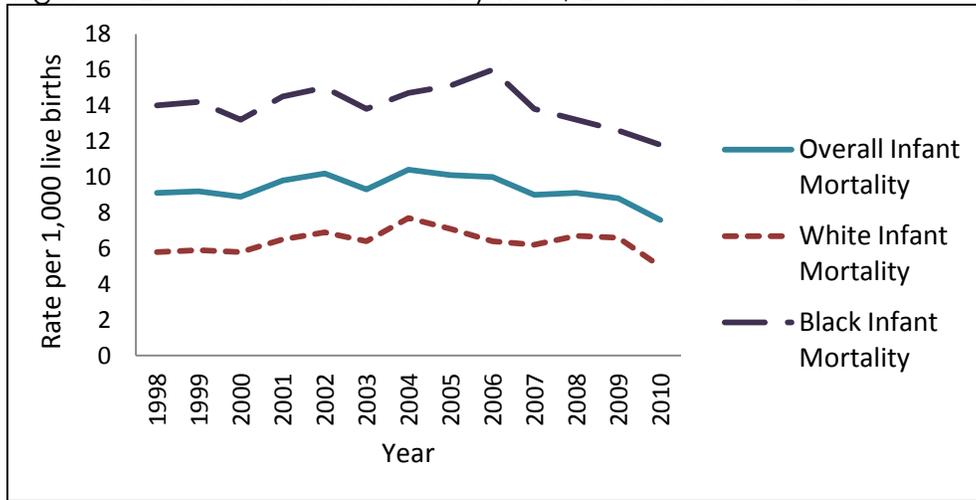
Table 2. Infant Mortality Rates by Selected Characteristic, Louisiana 2008-2010

	3-year Rate per 1,000 live births	% Rate Change from 2008 to 2010
Infant Mortality	8.5	-16.4 %
Age Neonatal Mortality Rate	4.7	-14.0%
Post-neonatal Mortality Rate	3.8	-19.3%
Race White Infant Mortality Rate	6.1	-25.4%
Black Infant Mortality Rate	12.5	-9.6%

Louisiana Department of Health and Hospitals - Vital Records

Table 2 shows that from 2008-2010, the neonatal death rate was 1.25 times that of the post-neonatal death rate ($p < 0.05$), Black infants had a mortality rate two times that of White infants ($p < 0.05$) and the White infant mortality rate was the only rate by specific characteristic to change significantly ($p < 0.05$). Louisiana infant mortality rates from 2008, 2009 and 2010 continue to demonstrate a disparity by race. Figure 5 shows that since 1998, the Black infant mortality rate has been about two times that of the White infant mortality rate.

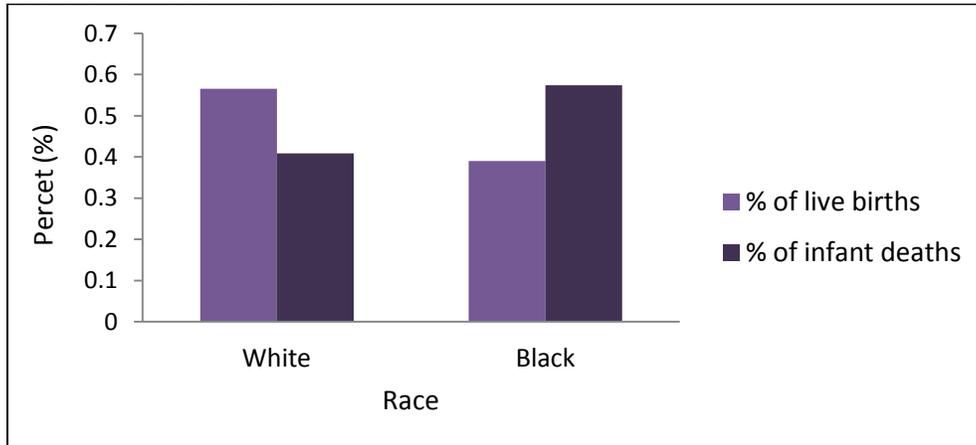
Figure 5. Louisiana Infant Mortality Rate, Louisiana 1998-2010



Louisiana Department of Health and Hospitals - Vital Records

Of Louisiana live births from 2008-2010, 57 percent were White, 39 percent were Black, and 4 percent were of other races. Between 2008 and 2010, 41 percent of infants who died were White, 57 percent were Black and 2 percent were of other races. A higher burden of death among Black infants was demonstrated in comparison with the demographic distribution of the population of infants born in Louisiana.

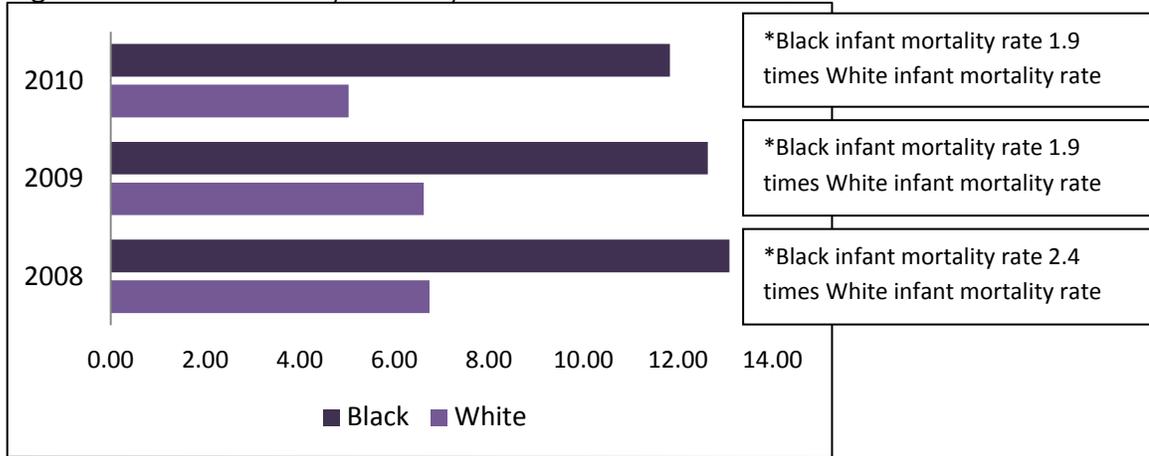
Figure 6. Racial Demographics of Live Births and Infant Deaths, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records

Black infant mortality rates were consistently and significantly higher than their White counterparts in 2008, 2009 and 2010, with an overall 3-year mortality rate of Black infants being two times that of White infants ($p < 0.05$). Because of small aggregate frequencies, infant mortality rates for other races were unstable.

Figure 7. Infant Mortality Rate by Black and White Race, Louisiana 2008-2010



*(p<0.05)

Louisiana Department of Health and Hospitals - Vital Records

Hispanic Origin

Fewer than 6 percent of live births in Louisiana were of Hispanic origin from 2008-2010 (5.4 percent in 2008, 5.7 percent in 2009 and 5.8 percent in 2010). Over this 3-year time period, a total of 40 infants of Hispanic origin died, with the 3-year Hispanic infant mortality rate being 3.7 deaths per 1,000 live births of Hispanic origin. Single-year rates were unstable, as was any analysis in regard to manner of death. Similarly, too few cases were of Hispanic origin to report any meaningful group level findings. Continued monitoring of the Hispanic population is necessary to identify any emerging trends.

Regional Breakdown

As previously mentioned, it is imperative to continue to observe regional infant mortality rates over time because of increased variability and the opportunity for targeted action. None of the infant mortality rates by region changed significantly (p>0.05).

Table 3. Infant Mortality by Region, Louisiana 2008-2010

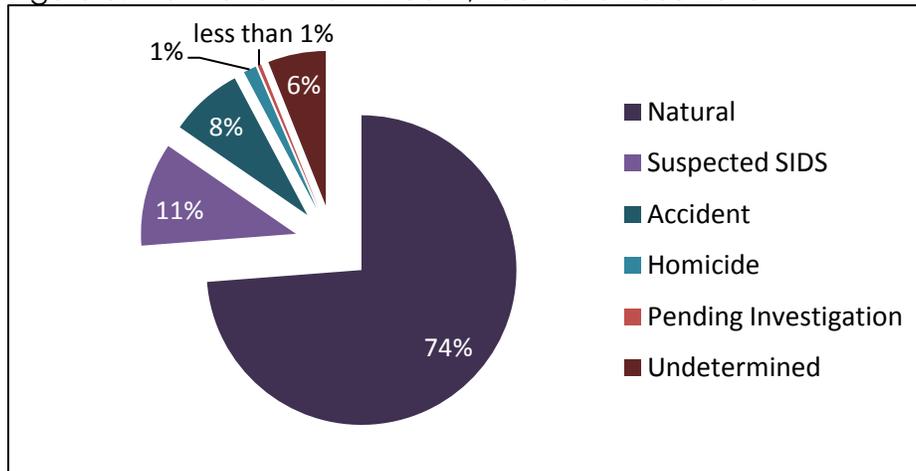
Region	Location	Live Births (N)	Infant Deaths (N)	Infant Mortality Rate (per 1,000 Live Births)
	Louisiana	192,113	1,636	8.5
1	New Orleans	33,827	248	7.3
2	Baton Rouge	28,103	291	10.4
3	Houma	13,918	100	7.2
4	Lafayette	20,766	167	8.0
5	Lake Charles	12,370	98	7.9
6	Alexandria	22,716	157	6.9
7	Shreveport	23,490	258	11.0
8	Monroe	15,124	146	9.7
9	Hammond/Slidell	21,799	171	7.8

Louisiana Department of Health and Hospitals - Vital Records

Manner of Infant Death

Natural causes of infant death, those causes because of medical conditions (excluding suspected Sudden Infant Death Syndrome (SIDS) cases), comprised 74 percent of all infant deaths from 2008-2010. Accidental and undetermined causes of infant mortality made up about 15 percent of all infant deaths. All cases identified as undetermined, pending investigation, accidental or natural but suspected to be SIDS were eligible for review by a panel.

Figure 8. Manner of Infant Death, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records

Leading Causes of Infant Death

Between 2008 and 2010, the leading cause of infant deaths was conditions originating in the perinatal period. These conditions include: disorders related to length of gestational age and fetal growth, affects from maternal factors and complications, infections specific to the perinatal period, hemorrhage and hematological disorders, and other perinatal conditions (ICD-10 P00-P96).

Congenital malformations, deformations, and chromosomal abnormalities (ICD-10 Q00-Q90) moved from the third to second-leading cause of death between 2008 and 2009; subsequently, SIDS (unconfirmed, ICD-10 R95) became the third-leading cause of death of infants after falling from second in 2008. Injury remained the fourth-highest cause of infant mortality between 2008 and 2010, and infectious and parasitic diseases completed the top five leading causes of infant mortality beginning in 2009.

The rate change because of SIDS, a decrease of 44 percent, was the only leading cause to have a significant change ($p < 0.05$). Although congenital malformations, deformations and chromosomal abnormalities increased in numerical rank of leading cause of infant mortality over the 3-year time period, the rate did not change significantly. All other leading cause-specific rates had a non-significant decrease from 2008-2010.

Table 4. Leading Causes of Infant Death by Year, Louisiana 2008-2010

Rank	2008	2009	2010
1	Conditions originating in the perinatal period (n=252; 3.87 per 1,000)	Conditions originating in the perinatal period (n=256, 3.79 per 1,000)	Conditions originating in the perinatal period (n=204, 3.28 per 1,000)
2	Sudden infant death syndrome (SIDS)‡ (n=103; 1.58 per 1,000)	Congenital malformations, deformations, and chromosomal abnormalities (n=88, 1.36 per 1,000)	Congenital malformations, deformations, and chromosomal abnormalities (n=86, 1.38 per 1,000)
3	Congenital malformations, deformations, and chromosomal abnormalities (n=93, 1.43 per 1,000)	Sudden infant death syndrome (SIDS)‡ (n=78, 1.2 per 1,000)	Sudden infant death syndrome (SIDS)‡ (n=55, 0.88 per 1,000)
4	Injury (n=49, 0.75 per 1,000)	Injury (n=52, 0.80 per 1,000)	Injury (n=37, 0.59 per 1,000)
5	Diseases of the respiratory system (n=17, *)	Infectious and parasitic diseases (n=27, 0.42 per 1,000)	Infectious and parasitic diseases (n=23, 0.37 per 1,000)

* unstable rate (n<20)

‡ unconfirmed SIDS cases

Louisiana Department of Health and Hospitals - Vital Records

Rates expressed as deaths per 1,000 live births

Sudden, Unexpected Infant Death (SUID) 3-Year Rate: 1.8 deaths per 1,000 live births

Sudden unexpected infant death (SUID), also known as sudden unexpected death in infancy (SUDI), is the sudden and unexpected death of an infant less than 1 year of age without an immediately obvious cause prior to investigation (CDC, 2012). Although SIDS is included, SUID more broadly encompasses a wider range of causes of death, including metabolic diseases, suffocation, asphyxia, entrapment, infection and both accidental and intentional trauma (Task Force on Sudden Infant Death Syndrome, 2011).

- SUID includes ICD-10 codes R-95, R-99 and W-75.
- There was no significant change in infant mortality because of SUID rate from 2008-2010.

SIDS (n=236) 3-Year Rate: 1.2 infant deaths per 1,000 live births

- Includes: “the sudden death of an infant less than 1 year of age that cannot be explained after a thorough investigation is conducted, including a complete autopsy, examination of the death scene, and review of the clinical history” (CDC, 2012).
- Safe sleeping campaigns, universal coding and more thorough investigations of infant deaths have decreased SIDS rates by more than 50 percent since 1990 (CDC, 2012).
- The decline in SIDS incidence has not been proportional by race; Black babies are two times as likely to die of SIDS as White babies (CDC, 2011).

Accidental Suffocation and Strangulation (n=81) 3-Year Rate: 0.42 infant deaths per 1,000 live births

- Includes: deaths that occur when an airway restriction limits the flow of oxygen.
- Suffocation can be caused by smothering (physical obstruction of the mouth and nose), choking (obstruction within the airway), mechanical means (an external pressure that restricts chest movement and respiration) and environmental circumstances (in which there is a lack of oxygen for breathing) (U.S. Department of Health and Human Services, 2006).
- Strangulation may result when an infant's airway is restricted because of entanglement with such items as necklaces, headbands, ribbons, diaper bag straps, pacifier tethers or cords (e.g. drapery, Internet, cable, phone, electronics) (KidsHealth, 2012).
- The accidental suffocation or strangulation of an infant because of bedding, pillows, an adult body or inappropriate sleep locations (e.g. couch, water bed) are classified as occurring in bed.
- Of all accidental infant suffocation and strangulation deaths from 2008 to 2010 (n=81), 62 percent occurred in bed/because of the infant's sleep environment.
- The 3-Year rate of accidental suffocation and strangulation *in bed* was 0.26 deaths per 1,000 live births.

External Causes of Mortality (Injury) 3-Year Rate: 0.72 deaths per 1,000 live births

Injury, the fourth-leading cause of infant mortality from 2008-2010, can be categorized as those injuries, which are intentional, unintentional, and undetermined in intention.

Unintentional Injury (n=11) 3-Year Rate: 0.58 infant deaths per 1,000 live births

- Includes: accidental suffocation and strangulation (in bed and other situations); accidental drowning and submersion; accidents caused by exposure to smoke, fire and flames; falls and motor vehicle, other and unspecified transport accidents.
- 7 percent of all infant deaths are because of unintentional injuries.
- 80 percent of all injury-related infant deaths are unintentional.

Intentional Injury (n=20) 3-Year Rate: 0.10 infant deaths per 1,000 live births

- Includes: neglect, abandonment and other maltreatment syndromes and assault (homicide).
- Just over 1 percent of all infant deaths are because of intentional injuries.
- 15 percent of injury-related infant deaths are intentional.

Undetermined Intention of Injury (n=7) 3-Year Rate: unstable

- Includes: cases where available information is insufficient to enable a medical or legal authority to make a distinction between accident, self-harm and assault (ICD-10 codes).
- The injury intent is undetermined in 5 percent of injury-related infant deaths.

Child Death Review of Infant Death

Between 2008 and 2010, about one out of every five infant deaths was eligible to be reviewed by a panel. Eligible cases were those with a manner of death categorization in Louisiana Department of Health and Hospitals - Vital Records as accidental, undetermined, pending investigation or, for infants, natural with a reported cause of death as Sudden Infant Death Syndrome (SIDS). Of all eligible cases of infant deaths (n=407), 84 percent were reviewed by a panel.

<p><i>Infant Death in Louisiana 2008-2010</i> 1,636 Total Cases 407 Eligible for Review 342 Reviewed</p>
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Within the Child Death review database for 2008-2010, it is unknown if the classification of cases was reflective of pre- or post- review status. Of the 342 infant death cases reviewed:

- 157 cases because of natural causes were reviewed, 155 of which were classified as SIDS
- 80 cases because of injury, 76 of which were classified as accidental asphyxiation
- 105 cases were classified as undetermined or unknown

Sudden Infant Death Syndrome Cases

Because of the requirements for categorization of an infant death as SIDS, Louisiana Department of Health and Hospitals - Vital Records reports unconfirmed, suspected cases. From 2008-2010, Louisiana Department of Health and Hospitals - Vital Records reported 236 infant deaths as coroner-classified suspected SIDS cases, giving a 3-year mortality rate because of SIDS as 1.2 infant deaths per 1,000 live births. Reported infant mortality rates from Louisiana Department of Health and Hospitals - Vital Records because of SIDS decreased by 44 percent from 2008-2010 ($p < 0.05$).

Misclassification on the Vital Records certificate is possible when no other immediately available explanation of cause of infant death exists and given the process to confirm a suspected case. To resolve any uncertainty in coding, recent studies recommend: increased examination of circumstances surrounding the death (Kim, Shapiro-Mendoza, Chu, Camperlengo, & Anderson, 2011); a more detailed coding system (Randall, Wade, Sens, Kinney, Folkerth, Odendaal & Dempers, 2009); and a combination of approaches, including universally accepted case definitions and multi-disciplinary team reviews of infant death cases (Walsh, Kryscio, Holsinger & Krous, 2009).

Through examination of the autopsy report, death scene investigation report and clinical history associated with the case, a panel can confirm an infant death as SIDS. Prior to December of 2009, suspected cases were reviewed by a small team of panel members and a contracted pediatrician from a local university. After December 2009, DHH Maternal and Child Health medical director reviewed all suspected SIDS cases. Child Death Review data from 2008-2010 through both infant death review processes confirmed 155 SIDS cases. Given these review changes, data lacks documentation of circumstances, modifiable risk factors and preventive strategies. When such information was available, the number of events was too small to have meaningful findings.

Of confirmed SIDS cases with detailed information from 2008-2010:

- Infant place of sleep (130 cases were missing information)
 - 13 were found in an adult bed, 8 of which were water beds
 - 12 reviewed cases reported the infant was sleeping on the same surface as a person or animal
- Investigative reports
 - 37 autopsies were reported in Child Death Review data (118 cases lacked information)
 - 28 scene investigations were performed (127 cases lacked information)

Accidental Suffocation and Strangulation Cases

- Of the 76 accidental asphyxiation infant deaths reviewed by a panel, the location of incident was missing in 69 cases.
- 7 reviewed cases were related to sleeping or the sleep environment, meaning accidental suffocation or strangulation in bed.
- Because of this lack of data, no meaningful conclusions could be drawn in regard to accidental asphyxiation (overall) nor occurrence in bed or another location.

Infant Death Prevention Strategies from Child Death Reviews

Panel recommendations could not be compiled for accidental suffocation and strangulation in bed because of systematic review changes and lack of available information. However, for the 76 reviewed infant deaths because of accidental asphyxiation (in bed and other settings), preventive measures were suggested by panels. All preventive measures recommended, planned or implemented were based on panel review of post-neonatal deaths because of accidental asphyxiation. Educational recommendations were made including a media campaign, a community safety program and parent education. A new policy was enacted, and three initiatives were implemented focusing on a community safety program, provider education and parent education.

Table 5. Additional Risk Factors Linked to Increased Incidence of SIDS

Risk Factor	
Maternal Health and Birth Outcomes	Late or no prenatal care
	Short time period between pregnancies (<2 years)
	Being born to a teen mother
	Mothers who smoke or use illegal drugs
	Exposure to cigarette smoke in utero, perinatal and in infancy
	Multiple births (twins, triplets, etc.)
	Premature birth
Sleep Environment	Little/no breastfeeding of infant
	Stomach sleeping
	Soft bedding
	Co-sleeping
Socio-economic	Lack of pacifier use at sleep time
	Living in poverty

U.S. National Library of Medicine, 2011

The DHH Maternal and Child Health Program has been actively working on the Partners for Health Babies initiative, currently planning a Safe Sleep campaign to inform new parents of practices to decrease risk factors of SIDS and accidental suffocation and strangulation in bed. In addition to the information and education new parents receive before leaving the hospital, the media campaign will reinforce the Safe Sleep message through public service announcements, postcards, interactive websites and social media statewide.

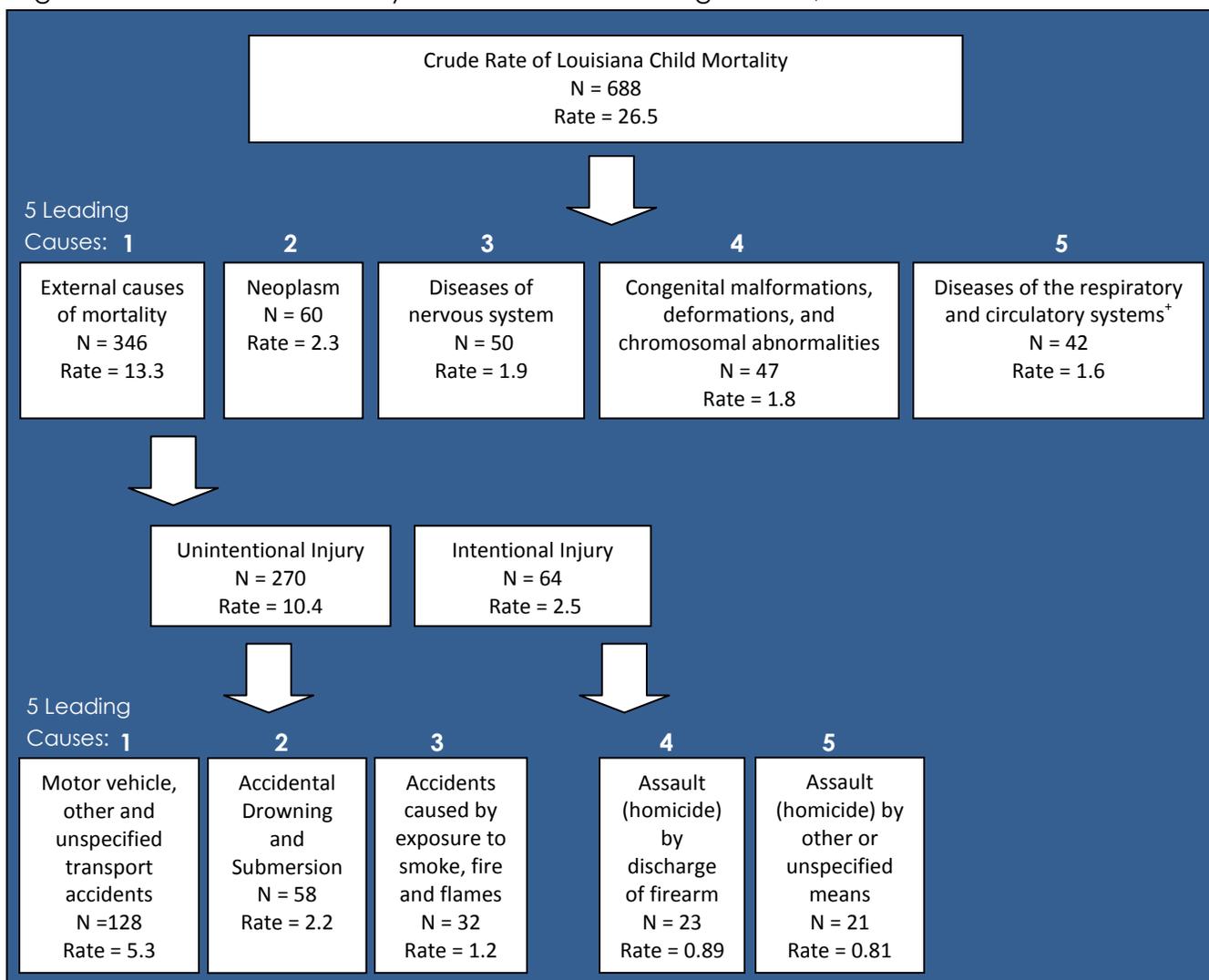
Safe Sleep Campaign Message:

- Always lay the infant down to sleep on his/her back.
- Infants should sleep alone. Bed sharing should be avoided.
- Use a separate crib for the infant in the same room as the parent; don't put the baby in the same bed as parents.
- Ensure the sleep space of the infant is free of pillows, blankets, stuffed animals, bumper pads or other soft materials. Ensure the fitted sheet on a mattress and the mattress itself are tight against the headboard and foot board, preventing the baby from becoming trapped in the sheet or between the mattress and wall/crib.

Child Death in Louisiana

For this report, child mortality includes Louisiana children 1 to 14 years of age who died in 2008, 2009 or 2010. Of the U.S. Census population estimate of 2,592,910 children aged 1 to 14 in Louisiana, there were 688 child deaths. The overall child mortality rate for 2008-2010 was 26.5 child deaths per 100,000, children, and the rate decreased by 23 percent over the three years ($p>0.05$).

Figure 9. Crude Child Mortality Rates and Five Leading Causes, Louisiana 2008-2010

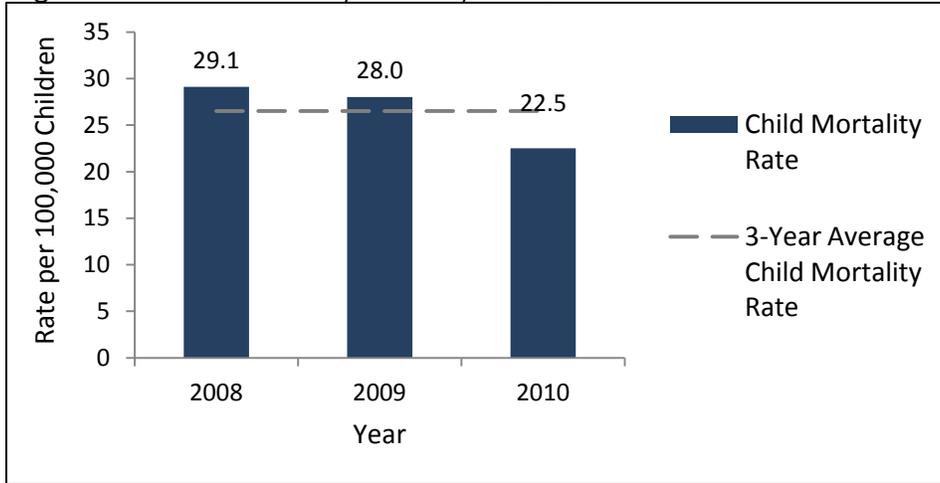


Source: Louisiana Department of Health and Hospitals - Vital Records

Rates Expressed in Deaths per 1,000 Children

+ Same N and rates for each cause

Figure 10. Child Mortality Rate by Year, Louisiana 2008-2010

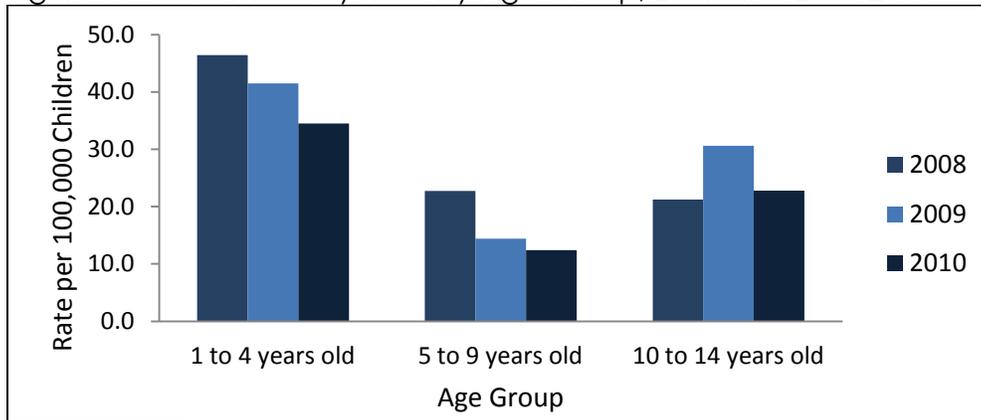


Louisiana Department of Health and Hospitals - Vital Records

Demographic Profile of Child Deaths and Burden of Death

Of child deaths from 2008-2010, 45 percent occurred among 1-to 4-year-olds, 22 percent occurred among 5-to 9-year-olds, and 33 percent occurred among 10-to 14-year-olds. The child mortality rate of the 5-to 9-year-old age group significantly decreased by 46 percent from 2008 and 2010 ($p < 0.05$). The child mortality rate changes for the 1-to 4- and 10-to 14-year-old-age groups had no statistically significant change ($p > 0.05$).

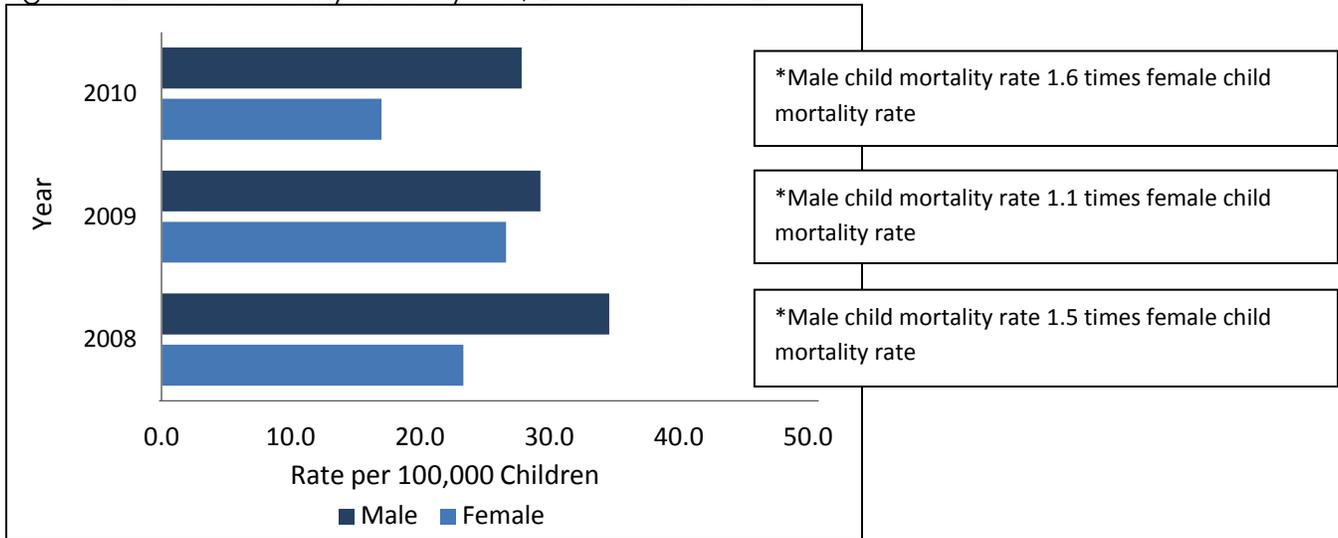
Figure 11. Child Mortality Rate by Age Group, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records

Of the 1-to 14-year-old population in Louisiana from 2008-2010, 51 percent were male and 49 percent were female. During this same three year time period, male children made up 59 percent of child deaths ($n=405$) and female children made up 41 percent of child deaths ($n=283$). For the three year time period, the male child mortality rate was 1.4 times that of the female child mortality rate ($p < 0.05$), indicating a greater burden of death among male children.

Figure 12. Child Mortality Rate by Sex, Louisiana 2008-2010

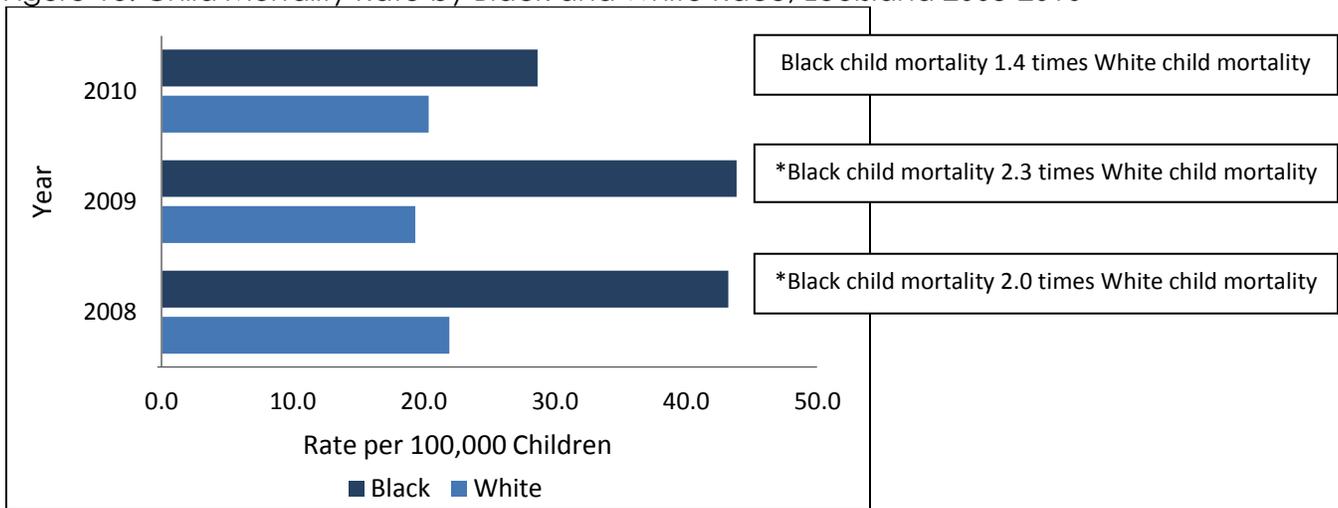


*(p<0.05)

Louisiana Department of Health and Hospitals - Vital Records

From 2008-2010, the 1-to 14-year-old population of Louisiana was comprised of 57 percent White children, 38 percent Black children and 5 percent children of other races. During this same time period, 44 percent of child deaths were White children, 55 percent Black children, and 1 percent children of other races. There was a significant difference in child mortality rates between White and Black children- the Black child mortality three year rate was 1.9 times the White child three year mortality rate (p<0.05). Analysis of child deaths of other races could not be conducted because of small numbers.

Figure 13. Child Mortality Rate by Black and White Race, Louisiana 2008-2010

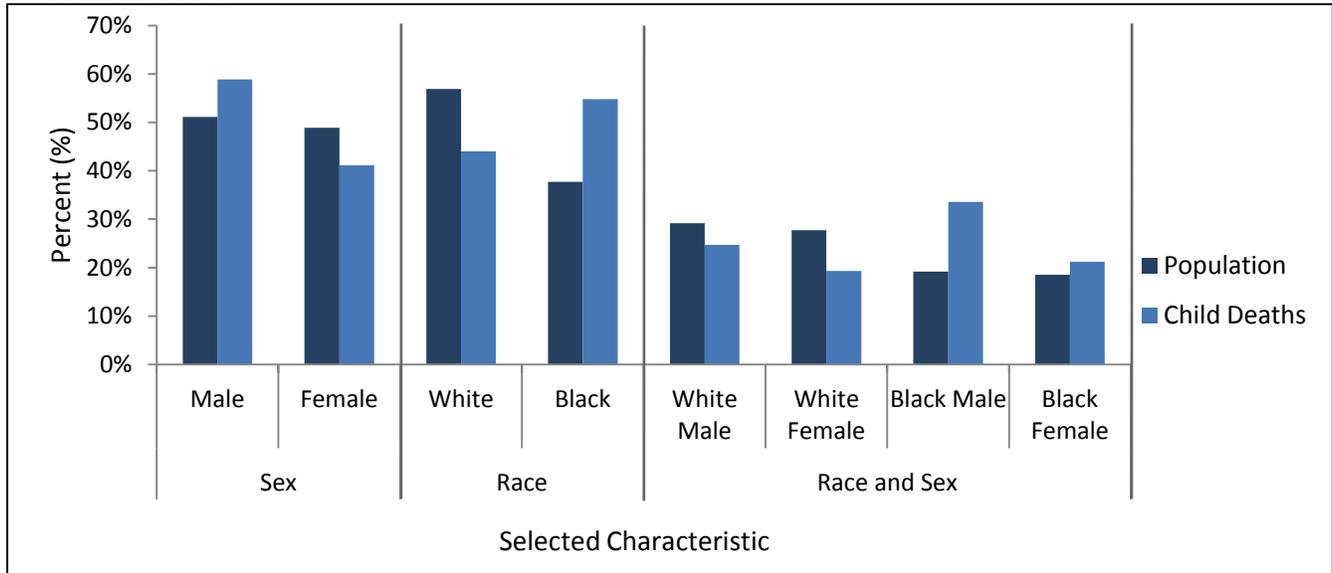


*(p<0.05)

Louisiana Department of Health and Hospitals - Vital Records

Black male children were 2.1 times more likely to die as White male children; Black female children were 1.6 times more likely to die as White female children. The Black male child mortality rate was 1.5 times the Black female child mortality rate. Compared to the population of children in Louisiana, Black children, especially Black male children, had a higher burden of death. White female children had the lowest burden of death relative to the population demographic size.

Figure 14. Percent of Child Population and Child Deaths by Selected Characteristics, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records; United States 2010 Census

In examining the infant mortality rates of children by race and sex (Black males v. White males; Black females v. White females; Black males v. Black females; White males v. White females), all comparisons were significantly different over the three-year period ($p < 0.05$), except White males versus White females ($p > 0.05$). The mortality rates of each selected subgroup decreased from 2008-2010 (Table 6).

Table 6. Child Mortality by Race and Sex, Louisiana 2008-2010

Child Mortality Rates	3-Year Rate (per 100,000 children)
Total	22.5
White Female	18.5
Black Female	30.4
White Male	22.5
Black Male	46.4

Louisiana Department of Health and Hospitals - Vital Records

Hispanic Origin

Fewer than 5 percent of the 1-to 14-year-old population of Louisiana was of Hispanic origin during 2008-2010 (4.4 percent in 2008, 4.7 percent in 2009 and 4.9 percent in 2010). Over this three year time period, a total of 23 children of Hispanic origin died, a child mortality rate of 19 deaths per 100,000 children of Hispanic origin. Single-year rates were unstable; similarly, too few panel cases were of children of Hispanic origin to report any group-level findings. Continued monitoring of the Hispanic population is necessary to identify emerging trends.

Regional Breakdown

None of the child mortality rates by region changed significantly ($p>0.05$) from 2008-2010. Unstable rates for at least one single year of interest for Houma, Lake Charles and Monroe areas (Regions 3, 5 and 8) did not allow for the computation of the change in child mortality rates from 2008-2010. Long-term analysis and monitoring is necessary to better understand regional trends in child mortality.

Table 7. Child Mortality Rate by Region, Louisiana 2008-2010

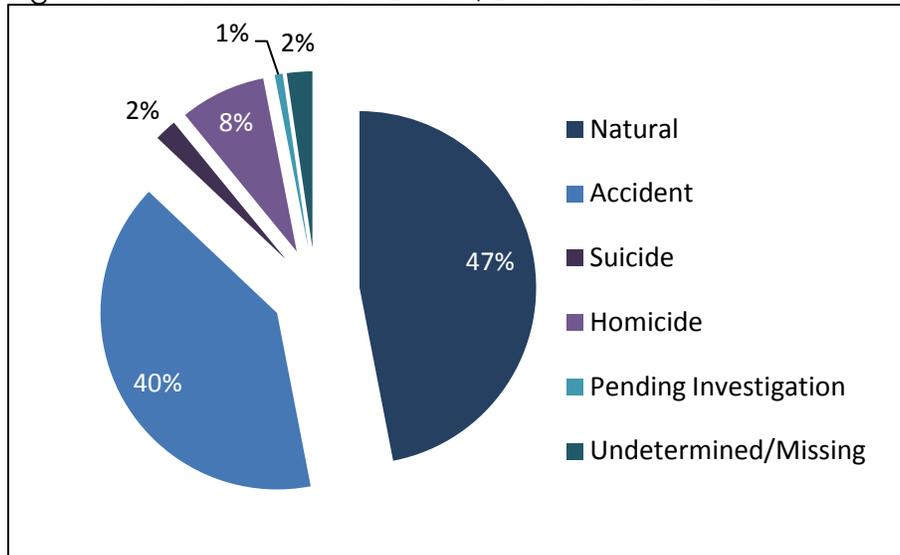
Region		1 to 14 Population (N)	Child Deaths (N)	Child Mortality Rate (per 100,000 Children)
	Louisiana	865,576	688	26.5
1	New Orleans	143,179	116	26.3
2	Baton Rouge	123,869	88	23.8
3	Houma	81,570	44	18.2
4	Lafayette	119,843	79	22.0
5	Lake Charles	57,410	46	26.9
6	Alexandria	58,015	77	43.3
7	Shreveport	104,012	101	32.6
8	Monroe	68,197	51	25.3
9	Hammond/Slidell	109,481	86	26.7

Louisiana Department of Health and Hospitals - Vital Records

Manner of Child Death

Nearly 50 percent of child deaths from 2008-2010 were from/because of natural causes (associated with a health condition), and 40 percent were from/because of accidents. All cases identified as undetermined, pending investigation, accidental and those missing classification were eligible for review by a panel.

Figure 15. Manner Child of Death, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records

Leading Causes of Child Death

Because of small numbers, leading causes of child mortality could only be analyzed and reported as three year rates. From 2008-2010, external causes, or deaths because of injury and causes not associated with a medical condition, were the leading source of child mortality, with a rate of 13.3 deaths per 100,000 children. For the three-year period, neoplasm was the second leading cause of child mortality (2.3 deaths per 100,000 children) followed by diseases of nervous system (1.9 deaths per 100,000 children), congenital malformations, deformations and chromosomal abnormalities (1.8 deaths per 100,000) and tied for fifth were diseases of the circulatory system and diseases of the respiratory system (1.6 deaths per 100,000 children).

Table 8. Leading Causes of Child Death, Louisiana 2008-2010

Rank	Cause of Death
1	External causes of mortality (injury) (13.3 per 100,000)
2	Neoplasm (2.3 per 100,000)
3	Diseases of nervous system (1.9 per 100,000)
4	Congenital malformations, deformations, and chromosomal abnormalities (1.8 per 100,000)
5	Disease of the circulatory system (1.6 per 100,000) Disease of the respiratory system (1.6 per 100,000)

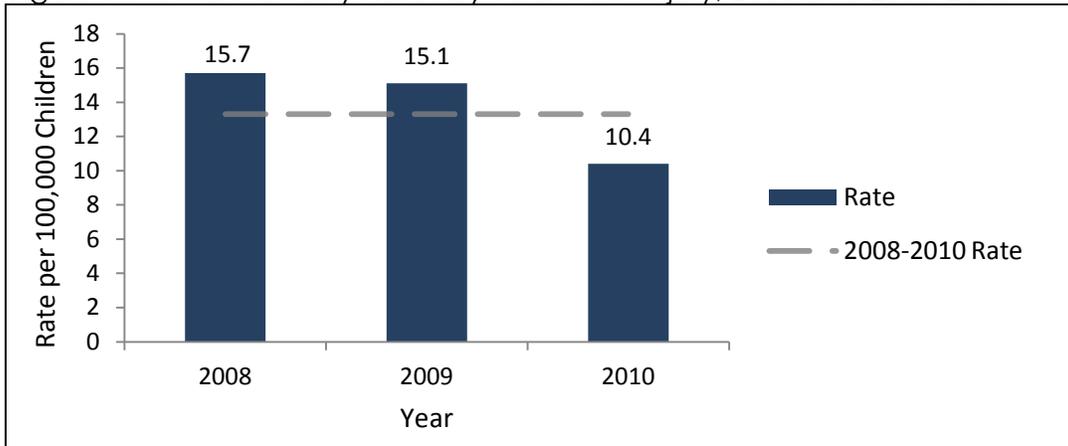
Louisiana Department of Health and Hospitals - Vital Records
Rates expressed as deaths per 100,000 children

External Causes of Child Mortality (Injury) (N=346)

3-Year Rate: 13.3 deaths per 100,000 children

- Includes: all deaths because of accidents and causes not associated with a medical condition.
- Injury accounted for 50 percent (n=346) of all child deaths from 2008-2010.
- The child mortality rate from injury decreased by 34 percent between 2008 and 2010 (p<0.05).

Figure 16. Child Mortality Rates by Year From Injury, Louisiana 2008-2010



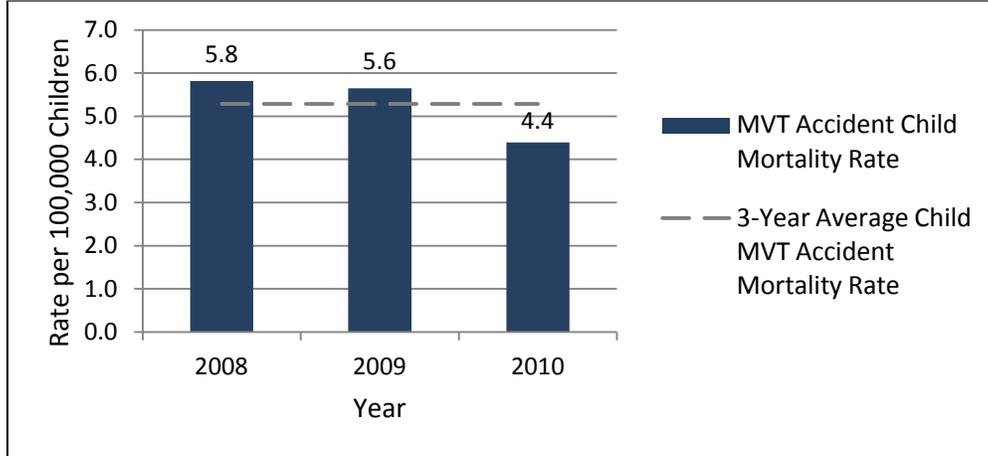
Louisiana Department of Health and Hospitals - Vital Records

Motor Vehicle Transport (MVT) Accidents (N=128)

3-Year Rate: 5.3 deaths per 100,000 children

- Motor vehicle, other and unspecified transport (MVT) accidents accounted for 20 percent of all child deaths from 2008-2010 (n=137).
- MVT accidents were the leading external cause of child mortality (injury) (40 percent), as well as the leading cause of unintentional injury (51 percent).
- Child mortality rates from MVT accidents decrease by 25 percent during the three year time period; however, the change was not significant.
- Accidents in which the child was an occupant in a car, truck, van or bus made up 13 percent of MVT accident-related child deaths.
- Accidents in which the child was a pedestrian made up 27 percent of MVT accident-related deaths.
- Of the 57 percent MVT accidents categorized as 'other transport,' nine were occupants of all-terrain or other motor vehicles for off-road use, classified as ATVs for this report.

Figure 17. Child Mortality Rate by Year From MVT Accidents, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records

Accidental Drowning and Submersion (N=58) 3-Year Rate: 2.2 deaths per 100,000 children

- From 2008-2010, 58 children died as a result of accidental drowning or submersion, accounting for 8 percent of all child deaths.
- Accidental drowning and submersion was the second-leading external cause of child death (17 percent) and second-highest leading unintentional injury cause of child death (21 percent).

Smoke, Fire and Flames (N=32) 3-Year Rate: 1.2 deaths per 100,000 children

- From 2008-2010, 32 children died because of fires, burns and/or electrocution, accounting for 5 percent of all child deaths.
- Accidents caused by exposure to smoke, fire and flames were the third highest external cause of death (9 percent) and third-highest cause of unintentional injury (12 percent) of Louisiana children from 2008-2010.

Determination of Injury

External causes of death (injury) can be classified as intentional (purposeful) or unintentional (accidental) action. The top three leading causes of injury were unintentional (Table 9).

Table 9. Leading Injury Deaths, Louisiana 2008-2010

Rank	External Cause of Death (Injury)	N	Rate (per 100,000)	Intent of Injury
1	Motor Vehicle, Other and Unknown Transport Accidents	128	5.3	Unintentional
2	Accidental Drowning and Submersion	58	2.2	Unintentional
3	Accidents caused by exposure to smoke, fire and flames	32	1.2	Unintentional
4	Assault (homicide) by discharge of firearm	23	0.9	Intentional
5	Assault (homicide) by other and unspecified means	21	0.8	Intentional

Louisiana Department of Health and Hospitals - Vital Records

Unintentional Injury (N=270)

3-Year Rate: 10.4 deaths per 100,000 children

- Includes accidents such as motor vehicle, other and unspecified transport accidents; accidental drowning and submersion; exposure to smoke, fire and flames and accidental firearm discharge.
- Unintentional injuries accounted for 39 percent of all child deaths (n=270).

Intentional Injury (N=64)

3-Year Rate: 2.5 deaths per 100,000 children

- Child Deaths because of homicide, suicide, neglect, abandonment and maltreatment are categorized as intentional.
- Intentional injuries accounted for 10 percent of all child deaths (n= 64).

Undetermined Injury (N=7)

3-Year Rate: unstable

- In regard to intent of injury, 3 percent of child deaths because of injury were undetermined (n=12).

Child Death Review of Child Deaths

From 2008-2010, 43 percent of all child deaths were eligible for review by a panel. Eligible cases were identified through Louisiana Department of Health and Hospitals - Vital Records as having a manner of death classification of accidental, undetermined or pending investigation. Of those child deaths eligible for review, about one in five were examined (n=52).

<p><i>Child Death in Louisiana 2008-2010</i> 688 Total Cases 365 Eligible for Review 52 Reviewed</p>

Of child death cases reviewed by a panel:

- 47 of the 52 reviewed cases of child deaths were deemed external cause of mortality (injury)
- 25 cases were related to motor vehicle, other and unknown transport accidents
- 12 cases were related to accidental drowning and submersion
- 5 cases were related to accidents caused by exposure to smoke, fire and flames
- 10 cases were either missing categorization or had event frequencies too small to be reported.

Motor Vehicle, Other and Unspecified Transport Accidents

- A panel reviewed 18 percent of MVT accident-related child deaths (n=25).
- Of the MVT accident related child deaths, nine involved ATVs, seven of which were reviewed.
- Of reviewed car, van and SUV accidents, lap belts, shoulder belts, child seats and booster seats were safety precautions that were used appropriately in six cases (not mutually exclusive).
- In five cases (not mutually exclusive), safety precautions were determined to be not needed.
- The remainder of cases did not appropriately use safety precautions or lacked information.
- Fourteen of the 25 deaths were *probably* preventable, assuming action was taken by the community, family or individuals directly involved in the incident.
- Only one may not have been preventable.

Table 10. CDRP Review of MVT Accident Cases, Louisiana 2008-2010

Category	(n)	Details
Vehicle Child Occupied		
ATV	7	
Car, Van, SUV	7	
Pedestrian	6	
Other, unknown and unspecified transport vehicles	5	
Accident Type		
Collision between 2 or more vehicles	8	
Child pedestrian injured by a vehicle	6	
Child in/on a vehicle that struck a person or object	5	
Safety Precautions		
Helmet needed but not present	6	5 involved ATVs
Driver at Fault		
Another driver	7	
Child's driver	6	
Child	5	all involved ATVs

Louisiana Child Death Review

Table 11. Incident Cause and Location of Reviewed MVT Cases, Louisiana 2008-2010

Category	Reviewed Cases Included		Reviewed Cases Did Not Include
Cause of Incident	Speed related (over the speed limit, unsafe for conditions) Recklessness Rollover Driver distraction Drug/alcohol use Driver inexperience Poor visibility Backover		Road hazards Car racing Inclement weather Poor tires Medical event
Location of Incident	Highway City street Residential street Off-road	Rural road Driveway Intersection	Parking area Shoulder Sidewalk

Louisiana Child Death Review

Accidental Drowning and Submersion

- One out of every five accidental drowning and submersion deaths was reviewed
- Nine cases were *probably* preventable.
- In 11 of the reviewed cases, the child was not forcibly submerged- the remaining case was missing information.
- A rescue attempt was made in all reviewed cases at no harm or injury to the rescuer. Rescuers included relatives, fire, police, EMS, bystanders and other children.
- In eight of the reviewed cases, the child was found in a privately owned pool, hot tub or spa.
- Five cases reviewed had a fence or gate present, five cases lacked a barrier or layer of protection, and in two cases, this information was missing.

Accidents Caused by Exposure to Smoke, Fire and Flames

- Five of the 32 cases were reviewed (16 percent) by a panel.
- All five cases reviewed were:
 - Deemed to be preventable;
 - Because of fire, not electrocution or another burn;
 - Occurred in single unit dwellings.
- In four of the five cases, the cause of child death was smoke inhalation.
- In all reviewed cases fire protection equipment was missing or not functioning:
 - Water sprinkler systems were not present in any case;
 - Four of the five reviewed cases had smoke detectors that were missing batteries;
 - Four of the five cases were missing proper, working fire extinguishers.
- None of the cases reviewed involved arson.
- In four of the five cases, the source of ignition was a cooking stove.
- Furniture acted as a barrier to safely exiting in four of the five reviewed cases.

Prevention Strategies from Child Death Reviews

As part of case reviews, Louisiana panels made 93 recommendations, planned 23 initiatives and implemented 41 programs and prevention strategies to avoid child deaths because of MVT accidents, accidental drowning and submersion, accidental asphyxiation (including accidental suffocation and strangulation), fires, weapons and prolonged exposure to weather or extreme temperatures. Programs encompassed educational campaigns, agency or institutional changes, law recommendations or revisions and environmental modifications. Educational campaigns worked to target parents, providers and community members through media campaigns, school programs, community safety projects (involving a community or neighborhood in creating and enacting an initiative), public forums (event for the broader community to address the target issue) and other relevant events to target a broad audience.

Motor Vehicle and Transport (MVT) Accidents

Panel reviews made 45 recommendations, planned 13 initiatives and implemented 24 programs or actions to prevent future child death from MVT accidents (Table 12). The main focus of prevention was in education, where 39 different education target recommendations were suggested, nine educational programs were planned, and 22 education initiatives were implemented.

Table 12. MVT Accident Prevention Strategies from Child Death Review panels, Louisiana 2008-2010

	Actions Resulting from Review	Recommendation	Planning	Implementation
Education	Media Campaign	12	1	3
	School Program	5	1	3
	Community Safety Project	7	3	3
	Parent Education	6	3	6
	Enforcement of Law/Ordinance	5		2
	Provider Education	1		4
	Public Forum	2		
	Other Education	1	1	1
Agency	New Policies	1	1	
	Expanded Services		2	2
Law	New Law/Ordinance	2		
	Amended Law/Ordinance	3		
Environment	Modify a Public Space		1	
	All Actions	45	13	24

Louisiana Child Death Review

Specific Examples of CDRP Prevention Recommendations:

- Cable barriers in target areas are in the process of being constructed.
- Training for ice cream truck drivers about blind-spots.
- Create a media campaign reminding the community to not move an injured person suspected to have head trauma.
- Student driver education on safe driving.
- Media campaign that reminds parent to walk around vehicle before driving.
- Louisiana State University Agriculture Center clinics collaboration with livestock show for ATV classes.
- Planning bike/pedestrian programs for middle school-aged children. Already implementing program for elementary-aged students, with helmet giveaways.
- Provide education in schools in rural areas about the importance of having appropriate clothing and supervision for drivers to see the individual crossing the road in rural areas.
- Recommended media campaign educating the population on the dangers of drug abuse while driving.
- Calcasieu Parish Sheriff Department and State Police are conducting DWI check points.
- Calcasieu substance abuse coalition is in the process of implementing strategies.
- A cell phone law is being discussed and will be brought before Legislature.

[**2012 update**, as of July 1, 2008 according to the Louisiana Highway Safety Commission, Public Safety Services, the following state legislation has been enacted regarding cell phone usage while driving:

- R.S. 32:300.5 prohibits texting for those with “learners” or “intermediate” license
- R.S. 32:300.5 no person shall operate any motor vehicle upon any public road or highway of this state while using a wireless telecommunications device to write, send, or read a text-based communication]

ATV Operation Recommendations:

The State of Louisiana does not have an age requirement for ATV usage; however, manufacturer guidelines support operation over six years of age (Table 13).

Table 13. Age and Size Recommendation for ATV Operation Supported by Manufacturers

Age of Operator	ATV Engine Size
Under 6 years of age	No operation recommended
Age 6 to 11	Under 70cc
Age 12-15	70-90cc
16 years and older	Over 90cc

Murphy & Harsham, 2005

Accidental Drowning and Submersion

Panel reviews made 32 recommendations for education, expanded services, new and amended laws/ordinances and modifications (Table 14). Eight initiatives were in the planning stages focusing on education, new and expanded services and the modification of a consumer product.

Specific Examples of Panel Prevention Recommendations:

- Parent education about water safety; Wearing of safety vests.
- Bilingual signs are needed (Spanish and English).
- Community education for pool owners and others near pools.
- Business education and safety practices promotion.
- Recommended ordinance for pool fencing.
- Education and access to child safety devices
- Distribute information in schools using social networks and active.
- Increase water safety knowledge, discuss pool safety with apartment managers and place door hangers with water safety rules on each apartment.

Table 14. Accidental Drowning and Submersion Prevention Strategies from CDRP Teams, Louisiana 2008-2010

	Actions Resulting from Review	Recommendation	Planning
Education	Media Campaign	4	1
	School Program	2	2
	Community Safety Project	5	1
	Provider Education	3	1
	Parent Education	6	
	Public Forum	1	
	Other Education	1	
Agency	New Policies	3	
	New Services		1
	Expanded Services		1
Law	New Law/Ordinance	3	
	<i>Enforcement of Law/Ordinance</i>	1	
	Amended Law/Ordinance	1	
	Modify a Consumer Product	1	1
	Modify a Private Space	1	
	All Actions	32	8

Child Death Review

Fire Safety

Panel reviews made eight education-focused recommendations pertaining to fire safety, targeting school programs and parent education through media campaigns. A media campaign is being planned, a private space has been modified; and four education programs are currently being implemented targeting school programs, community safety programs, provider education and parent education.

Exposure Prevention

A parent education program about prolonged child exposure to weather or extreme temperatures has been implemented.

Gun Safety

School resource officers were added in Allen Parish. Allen Parish Sheriff's Office distributed gun locks and provided hunter safety. LSU/AG Center offered gun safety in schools in Allen, Cameron and Beauregard parishes.

Child Abuse Prevention

Panel reviews recommended using Child Abuse Prevention Month (April) as an opportunity to promote safe parenting through a media campaign.

Healthy People 2020

Launched three decades ago by the U.S. Department of Health and Human Services, Healthy People sets 10-year goals to improve health in the United States. For 2020, Healthy People will monitor approximately 1,200 objectives in 42 topic areas (U.S. Department of Health and Human Services, 2012).

Healthy People 2020 Goals, excluding developmental goals, were created by examining the national baseline and targeting a 10 percent decrease in the rate of a given area. Louisiana's progress has been noted where the rate has met the Healthy People 2020 Goal (★), when Louisiana's rates have decreased by 10 percent, using the Healthy People 2020 target method (—), and when the goal has not been met nor reached the 10 percent decrease using the Healthy People 2020 target method (X). Of the 14 Healthy People 2020 goals highlighted, two have been met and one was too unstable to be determined with certainty if the goal had been met (*). Louisiana has reached the targeted 10 percent decrease in an additional eight goals.

Injury and Violence Prevention

X IVP-4: (Developmental) Increase the number of States and the District of Columbia where 90 percent of deaths among children aged 17 years and under that are from injury are reviewed by a child fatality review team.

- Louisiana State Legislation (RS 40:2019) requires that all child deaths for children, 14 years and younger, are reviewed by the Louisiana Child Death Review Panel.
- From 2008-2010, in Louisiana, 58 percent of infant deaths because of injury and 14 percent of child (age 1 to 14) deaths because of injury were reviewed by a child fatality review team.

★ IVP-5: (Developmental) Increase the number of States and the District of Columbia where 90 percent of sudden and unexpected deaths to infants are reviewed by a child fatality review team.

- From 2008-2010, in Louisiana, 94 percent of sudden and unexpected deaths to infants were reviewed by a child fatality review team.

— IVP-24.2 Reduce unintentional suffocation deaths of infants 0 to 12 months.

Healthy People 2020 Goal: 20.3 deaths per 100,000 population

National Baseline: 22.5 deaths per 100,000 infants 0 to 12 months were caused by unintentional suffocation in 2007.

- From 2008-2010, in Louisiana, the three year infant mortality rate for accidental suffocation and strangulation (in bed and other locations) was 42.2 deaths per 100,000 population.
- There was a 12 percent decrease from 2008 to 2010:
 - 47.6 deaths per 100,000 live births (2008); 2009: 37.0 deaths per 100,000 live births (2009); 2010: 41.8 deaths per 100,000 live births (2010)
- A 51 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

*** IVP-37: Reduce child maltreatment deaths.**

Healthy People 2020 Goal: 2.2 deaths per 100,000 children.

National Baseline: 2.4 child maltreatment deaths per 100,000 children under age 18 years occurred in 2008.

- Child maltreatment death rates in Louisiana for single years and the three year rate from 2008-2010 are unstable (n<20). Although Child Death Report Panels were initially created across the country to review child deaths from possible maltreatment or negligence, not enough information was available for stable rates and data analysis (Christian & Sege, 2010).

- From 2008-2010, in Louisiana, the child maltreatment deaths rate was 0.6 per 100,000 children less than 14 years old (unstable). Additional years of data are necessary to ensure that this target has been met via a stable rate.
- Child maltreatment death rates are further complicated by the possibility of under reporting. One study found that only half of child deaths from maltreatment in Colorado over an eight year time period were coded consistently with maltreatment (Crume, DiGuseppi, Byers, Sirotnak, & Garrett, 2002). This is of concern when examining trends and rate changes, as the impact may be sizable differences, but more, the availability of services may be affected.

Maternal, Infant and Child Health, Morbidity and Mortality

— MICH–1.3 Reduce the rate of all infant deaths (within 1 year of life).

Healthy People 2020 Goal: 6.0 infant deaths per 1,000 live births.

National Baseline: 6.7 infant deaths per 1,000 live births occurred within the first year of life in 2006.

Healthy People 2020 goal is 6.0 infant deaths per 1,000 live births.

- From 2008-2010, in Louisiana, the three year infant mortality rate was 8.5 deaths per 1,000 live births.
- There was a 16 percent decrease from 2008 to 2010:
 - 9.1 deaths per 1,000 live births (2008); 8.8 deaths per 1,000 live births (2009); 7.6 deaths per 1,000 live births (2010)
- A 21 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

— MICH–1.4 Reduce the rate of neonatal deaths (within the first 28 days of life).

Healthy People 2020 Goal: 4.1 neonatal deaths per 1,000 live births.

National Baseline: 4.5 neonatal deaths per 1,000 live births occurred within the first 28 days of life in 2006.

- From 2008-2010, in Louisiana, the three year neonatal death rate was 4.7 deaths per 1,000 live births.
- There was a 14 percent decrease from 2008 to 2010:
 - 4.9 deaths per 1,000 live births (2008); 5.0 deaths per 1,000 live births (2009); 4.2 deaths per 1,000 live births (2010)
- A 3 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

— MICH–1.5 Reduce the rate of post-neonatal deaths (between 28 days and 1 year).

Healthy People 2020 Goal: 2.0 post-neonatal deaths per 1,000 live births.

National Baseline: 2.2 post-neonatal deaths per 1,000 live births occurred between 28 days and 1 year of life in 2006.

- From 2008-2010, in Louisiana, the three year post-neonatal mortality rate was 3.8 deaths per 1,000 live births.
- There was a 19 percent decrease from 2008 to 2010:
 - 4.2 deaths per 1,000 live births (2008); 3.8 deaths per 1,000 live births (2009); 3.4 deaths per 1,000 live births (2010)
- A 40 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

X MICH–1.6 Reduce the rate of infant deaths related to birth defects (all birth defects).

Healthy People 2020 Goal: 1.3 infant deaths per 1,000 live births.

National Baseline: 1.4 Infant deaths per 1,000 live births were attributed to birth defects (all birth defects) in 2006.

- From 2008-2010, in Louisiana, the three year rate for infant deaths related to birth defects (congenital malformations, deformations and chromosomal abnormalities) was 1.4 infant deaths per 1,000 live births.

- There was no change from 2008 to 2010:
 - 1.4 deaths per 1,000 live births (2008); 1.4 deaths per 1,000 live births (2009); 1.4 deaths per 1,000 live births (2010)
- Although Louisiana’s rate of infant deaths related to birth defects (all defects) has not met the Healthy People 2020 goal, it is equal to the national baseline rate.
- A 6 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

★ **MICH–1.7 Reduce the rate of infant deaths related to birth defects (congenital heart defects).**

Healthy People 2020 Goal: 0.34 infant deaths per 1,000 live births.

National Baseline: 0.38 infant deaths per 1,000 live births were attributed to congenital heart and vascular defects in 2006.

- From 2008-2010, in Louisiana, the 3-year mortality rate related to birth defects (congenital heart defects) was 0.29 infant deaths per 1,000 live births.
- Single-year rates for 2008 and 2009 in the state of Louisiana were unstable; however, the three year rate for 2008-2010 is stable.

— **MICH–1.8 Reduce the rate of infant deaths from Sudden Infant Death Syndrome (SIDS).**

Healthy People 2020 Goal: 0.50 infant deaths per 1,000 live births.

National Baseline: 0.55 infant deaths per 1,000 live births were attributed to sudden infant death syndrome in 2006.

- From 2008-2010, in Louisiana, the three year infant mortality rate from SIDS was 1.23 infant deaths per 1,000 live births (unconfirmed).
- There was a 44 percent decrease from 2008 to 2010:
 - 1.58 deaths per 1,000 live births (2008); 1.20 deaths per 1,000 live births (2009); 0.88 deaths per 1,000 live births (2010)
- A 43 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

— **MICH–1.9 Reduce the rate of infant deaths from sudden unexpected infant deaths (includes SIDS, Unknown Cause, Accidental Suffocation, and Strangulation in Bed).**

Healthy People 2020 Goal: 0.84 infant deaths per 1,000 live births.

National Baseline: 0.93 infant deaths per 1,000 live births were attributed to sudden unexpected/unexplained causes in 2006.

- From 2008-2010, in Louisiana, the three year infant death rate from sudden unexpected infant deaths was 1.74 infant deaths per 1,000 live births (using unconfirmed SIDS cases).
- There was a 28 percent decrease from 2008 to 2010:
 - 2.01 deaths per 1,000 live births (2008); 1.73 deaths per 1,000 live births (2009); 1.46 deaths per 1,000 live births (2010)
- A 42 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

— **MICH–3.1 Reduce the rate of child deaths of children aged 1 to 4 years.**

Healthy People 2020 Goal: 25.7 deaths per 100,000 population.

National Baseline: 28.6 deaths among children aged 1 to 4 years per 100,000 population occurred in 2007.

- From 2008-2010, in Louisiana, the 1-to 4-year-old child three year mortality rate was 40.8 deaths per 100,000 population.
- There was a 26 percent decrease from 2008-2010:
 - 46.4 deaths per 100,000 population (2008); 41.5 deaths per 100,000 population (2009); 34.5 deaths per 100,000 population (2010)

- A 25 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

— MICH–3.2 Reduce the rate of child deaths of children aged 5 to 9 years.

Healthy People 2020 Goal: 12.3 deaths per 100,000 population.

National Baseline: 13.7 deaths among children aged 5 to 9 years per 100,000 population occurred in 2007.

- From 2008-2010, in Louisiana, the 5-to 9-year-old child three year mortality rate was 16.5 deaths per 100,000 population.
- There was a 45 percent decrease from 2008 to 2010:
 - 22.7 deaths per 100,000 population (2008); 14.4 deaths per 100,000 population (2009); 12.4 deaths per 100,000 population (2010)
- A 1 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

X MICH–4.1 Reduce the rate of adolescent and young adult deaths of adolescents aged 10 to 14 years.

Healthy People 2020 Goal: 15.2 deaths per 100,000 population.

National Baseline: 16.9 deaths among adolescents aged 10 to 14 years per 100,000 population occurred in 2007.

- From 2008-2010, in Louisiana, the 10 to 14 year old adolescent 3-year mortality rate was 24.9 deaths per 100,000 population.
- There was not a significant change from 2008 to 2010 :
 - 21.2 deaths per 100,000 population (2008); 30.6 deaths per 100,000 population (2009); 22.8 deaths per 100,000 population (2010)
- A 51 percent decrease is needed from the 2010 rate to reach the Healthy People 2020 goal.

Profile of Infant and Child Mortality, National Comparison

This section utilizes the National Vital Statistics Records (NVSR) and the CDC WONDER database for available data. Rates from these sources, given differences in the timing of statistical data submission, cannot be compared to other rates within this report. For infant, neonatal and child mortality comparisons, Hispanic origin could not be examined because of too few events.

Infant Mortality

Table 15. Infant Mortality Rates (deaths per 1,000 live births), 2008-2009

		2008	2009
Overall Infant Mortality	United States	6.6	6.4
	Louisiana	9.1	8.7
White Infant Mortality	United States	5.6	5.3
	Louisiana	6.7	6.5
Black Infant Mortality	United States	12.7	12.6
	Louisiana	12.9	12.5

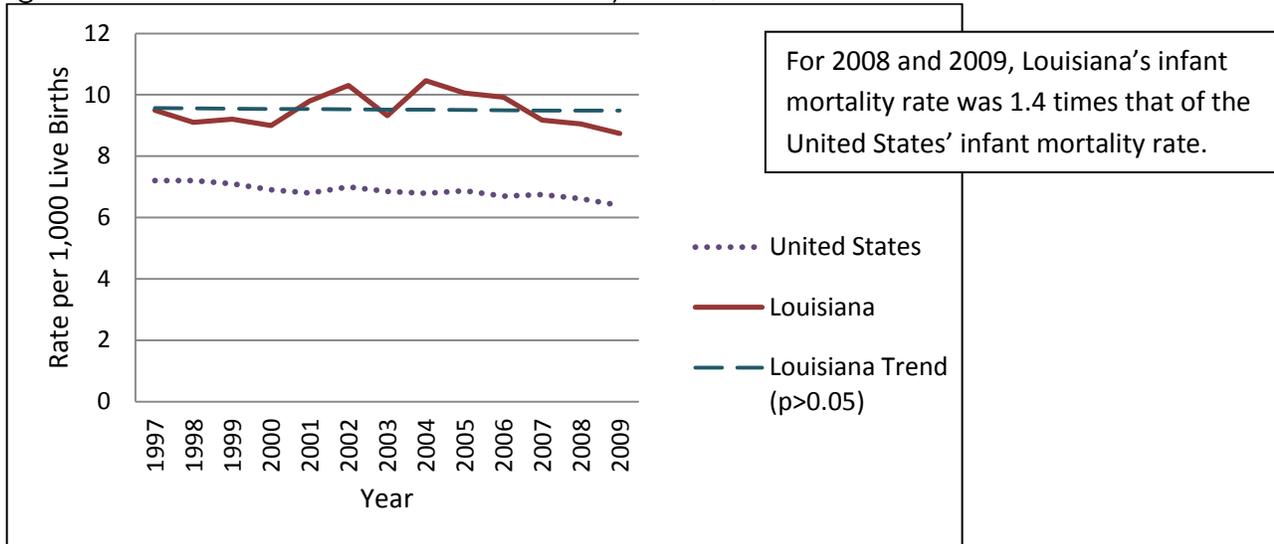
National Vital Statists Reports

Table 15 demonstrates that:

- Louisiana’s infant mortality rate was 1.4 times that of the United States in 2008 and 2009 (p<0.05).
- The White infant mortality rate in Louisiana was 1.2 times that of the United States White infant mortality rates in 2008 and 2009 (p<0.05).
- Black infant mortality rates in Louisiana during 2008 and 2009 were approximately equal to those rates for the United States.

Between 2008 and 2009, the Louisiana infant mortality rate by sex was 1.4 times the national rate and not significantly different between male and female (CDC WONDER). From 1997-2009, each single year the infant mortality rate in Louisiana was significantly greater than rate in the United States, ranging from 1.3 to 1.5 times ($p < 0.05$). However, Louisiana's infant mortality rate did not significantly change from 1997-2009, as demonstrated in Figure 18 ($p > 0.05$).

Figure 18. National and State Infant Mortality Rates, 1997-2009

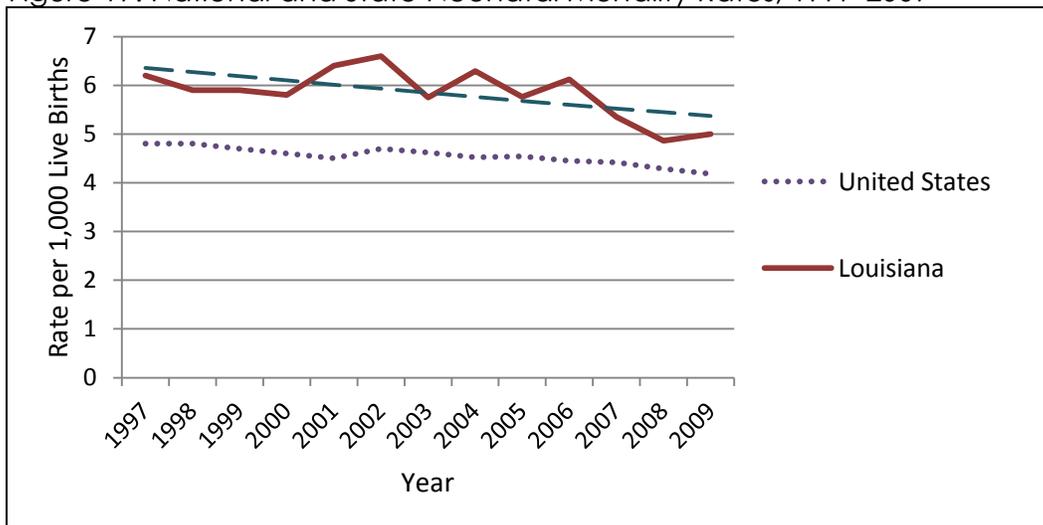


National Vital Statistics Reports

Neonatal Mortality

Overall from 1997-2009, the neonatal mortality rate in Louisiana for all infants and by race did not differ significantly from the United States. However, for *single-years* (except for 2008), Louisiana's neonatal mortality rates have been between 1.2 and 1.4 times higher than the United States ($p < 0.05$). The Louisiana neonatal mortality rate decreased significantly by 1.4 percent annually from 1997 to 2009, demonstrated by Figure 19 ($p < 0.05$).

Figure 19. National and State Neonatal Mortality Rates, 1997-2009



National Vital Statistics Reports

Child Mortality

Using CDC WONDER to obtain comparable state data, United States and Louisiana mortality rates were determined for children aged 1-to 14-years-old and by specific characteristics including race, sex and age group. Louisiana's overall child mortality rates for 2008 and 2009 were 1.6 times that of the national overall child mortality rates. Consistently, by overall and specific characteristics, Louisiana's child mortality rates were significantly above those of the national child mortality rates for 2008 and 2009, as shown in table 16 ($p < 0.05$).

Table 16. Rate Ratios by Specific Characteristics, Louisiana Compared to National, 2008-2009

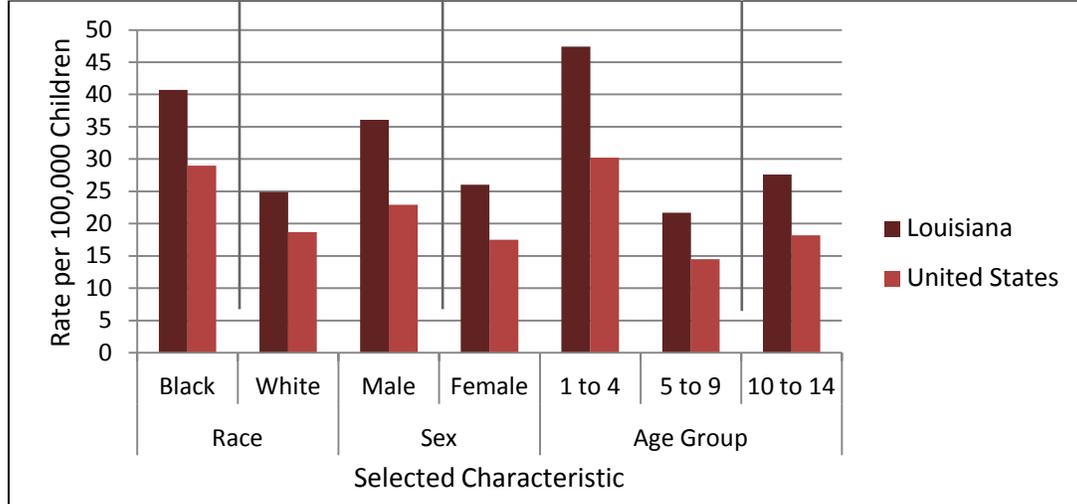
		2008	2009
Overall Child Mortality Rate Ratio		1.6*	1.6*
Race	Black	1.6*	1.7*
	White	1.3*	1.2*
Sex	Male	1.7*	1.5*
	Female	1.5*	1.7*
Age Group	1 to 4	1.6*	1.6*
	5 to 9	2.0*	1.2*
	10 to 14	1.4*	2.0*

*($p < 0.05$)

CDC WONDER

Child mortality rates by age groups for the state of Louisiana were significantly higher than the national rates in both 2008 and 2009 (CDC WONDER). In 2008, the 5-to 9-year-old child mortality rate was two times that of the United States, and in 2009 it was 1.2 times. Conversely, the Louisiana 10-to 14-year-old-child mortality rate was 1.4 times the national rate in 2008 and 2 times in 2009. These discrepancies demonstrate the necessity of examining trends over time, given the variability by single year. From 1999 to 2009, as demonstrated by Figure 20, Louisiana's child mortality rates by race, sex and age group were consistently and significantly greater than national child mortality rates during the 11-year time period ($p < 0.05$).

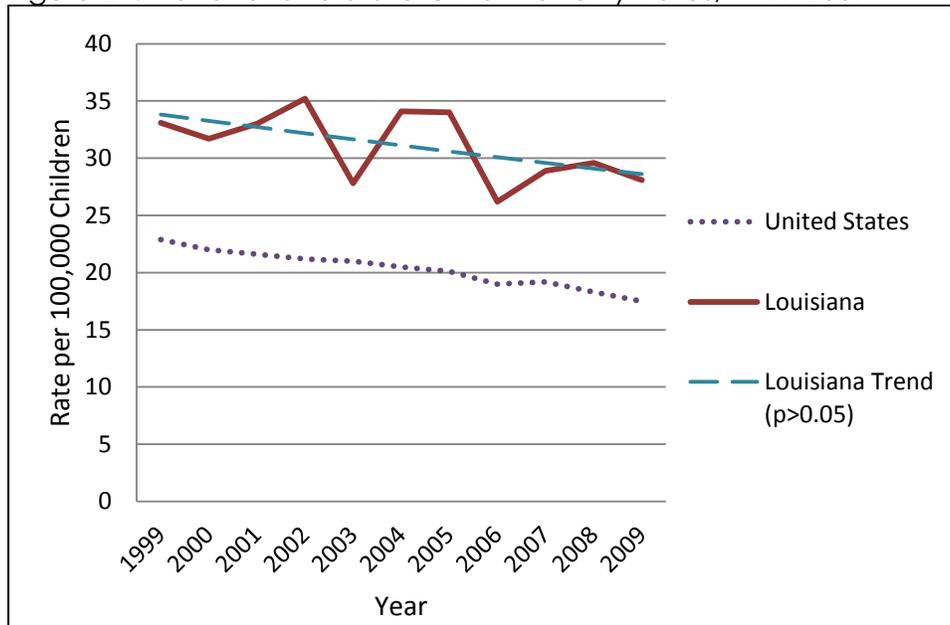
Figure 20. 11-Year Child Mortality Rate Comparison by Specific Characteristics, 1999-2009



*(p<0.05)
CDC WONDER

Although Louisiana’s overall child mortality rate had a non-significant decreased by 15 percent from 1999 to 2009 ($p>0.05$), the national child mortality rate decreased by 24 percent ($p<0.05$) over the same time period. The Louisiana child mortality rate significantly differed from the United States child mortality rate for each single year from 1999-2009, ranging from 1.3 times to 1.7 times ($p<0.05$). However, the annual percent change of Louisiana’s child mortality rate was not significant from 1999-2009 ($p>0.05$).

Figure 21. National and State Child Mortality Rates, 1999-2009



CDC WONDER

Limitations and Consideration for Future Practices

Small Number of Events

A comprehensive, quality child mortality report requires calculating rates and examining trends from robust, multi-year data. Although this report encompasses three years of data, the number of population events needed to report stable rates was not met for certain subgroups and for some cause-specific reporting. The small number of deaths among other races and those of Hispanic origin resulted in an inability to create stable rates or examine trends. In addition, results by geographic region were less stable than statewide rates. Additional years of data are necessary to analyze some subgroup and cause-specific data.

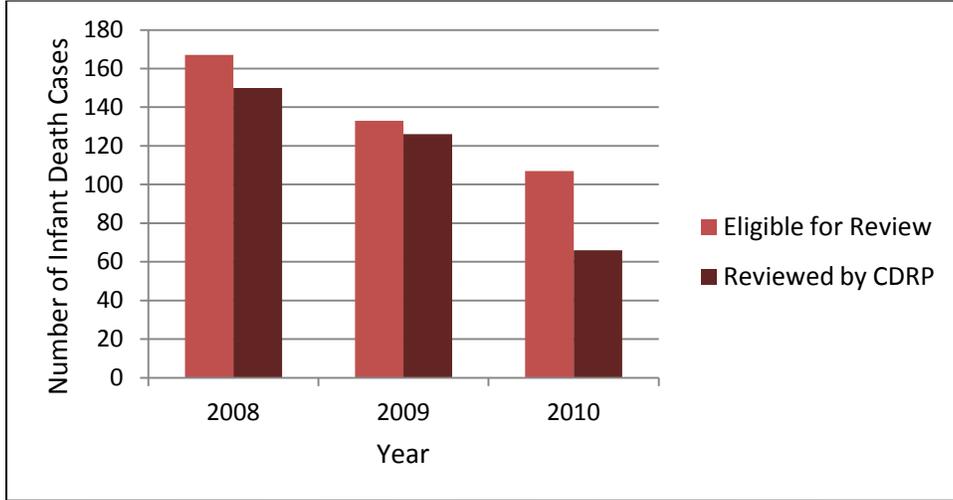
Data Systems

Population (US Census) data: Census data used for population counts included estimates for 2008 and 2009 and counts for 2010. Because of displacement and relocation of Louisianans following hurricanes Katrina and Rita, adjusted 2008 and 2009 mid-year population estimates from the 2000 U.S. Census were used, along with the newly released U.S. Census 2010 population counts, which may vary from the 2008-2009 estimates. Recovery from hurricanes Katrina and Rita has taken years and has impacted the results of this report in some immeasurable way. An NVSR report found a decrease in infant births in Louisiana following Hurricane Katrina, which could subsequently result in higher overall infant mortality rates (Hamilton, B.E. Sutton, P.D., Mathews, T.J., Martin, J.A. & Ventura, S.J., 2009).

Louisiana Department of Health and Hospitals - Vital Records: As of December 6, 2010, Louisiana Department of Health and Hospitals - Vital Records changed data systems for birth records, including converting from the 1989 to the 2003 revision of the US standard birth certificate. This change should have no effect on the findings presented in this report. No changes were made to the death reporting system from 2008-2010; all deaths were recorded using the 1989 revision of the U.S. standard death certificate.

Child Death Review (CDR) Data and Methods: It is important to maintain and achieve high levels of cases reviewed in order to adequately assess modifiable risk factors, gaps in services and identify target populations for broad-scale infant health initiatives. The number of infant mortality cases eligible for review decreased by 36 percent from 2008-2010. Disproportionately, the number of CDRP reviewed infant death cases decreased by 56 percent over this same three year time period (Figure 22).

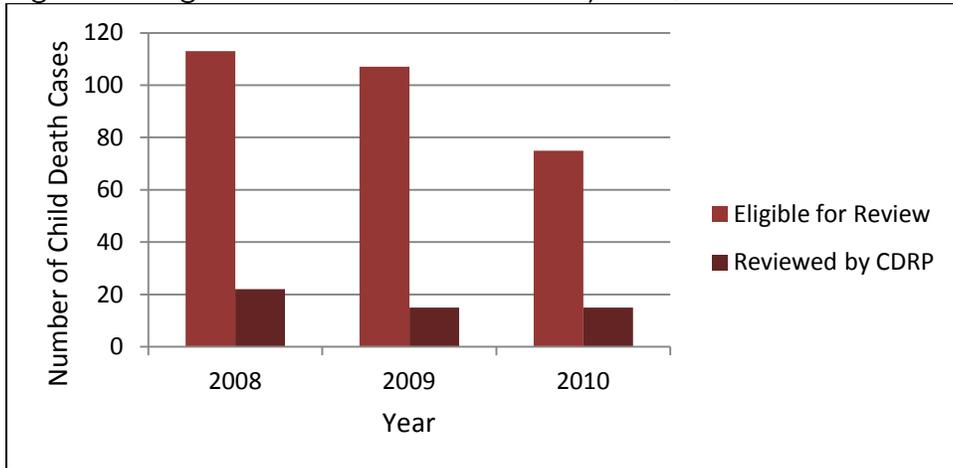
Figure 22. Percentage of Eligible Infant Death Cases Reviewed by Year, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records
Louisiana Child Death Review

The percent of cases reviewed decreased by 32 percent, comparable to the 34 percent decrease in eligible cases for review from 2008-2010.

Figure 23. Eligible and Reviewed Cases by Year, Louisiana 2008-2010



Louisiana Department of Health and Hospitals - Vital Records
Louisiana Child Death Review

Louisiana Department of Health and Hospitals - Vital Records death certificates reports suspected SIDS cases, but a true rate cannot be calculated if all of these cases are not reviewed and classified as confirmed or not. This complicates the ability to appropriately interpret SIDS trends over time. As part of the review process, it is imperative for appropriate data systems to include location of incident, co-sleeping activity, infant birth weight and exposure to cigarette smoke so these factors can be interpreted in the context of the deaths that have occurred. These elements are key to providing a better understanding of SUID/SIDS in Louisiana as well as identifying populations and modifiable risk factors to be targeted by prevention strategies.

As previously discussed, for this report, SIDS case reviews were conducted by methods different from the Child Death Review process. Because of these differences, many SIDS files within the Child Death Review database lacked information on prevention, location of incident and risk factors associated. In 2011, SIDS case reviews were incorporated under state Child Death Review methods.

Because of differences in categorization between Louisiana Department of Health and Hospitals - Vital Records and Child Death Reviews, a more universal coding system, such as including ICD-10 cause of death codes and/or recording the vital records death certificate information in the CDR database, is advisable for future years. This is of particular import when examining SUID/SIDS cases as well as to gain depth of knowledge for specific types of injury deaths.

Classification of Reviewed CDR Cases and Interpretation of Findings

In order to review cases, regional Child Death Review Panels (CDRP) requires access to relevant case documentation including police reports, child protective services records, hospital records and autopsy reports. A panel needs to be able to comprehensively review a case to determine if a death was preventable, without which the ability of the panel to make meaningful recommendations and programs to avoid future preventable events is extremely limited.

Because of missing information in the Child Death Review database, coupled with staff turnover, more detailed understanding and analysis of infant death reviews was not possible. Specifically, the classification of infant death cases prior to or following review as SIDS, accidental asphyxiation or undetermined was unknown. Given that the Louisiana child mortality rate was significantly greater than the national child mortality rate in 2008 and 2009 and fewer than 20 percent of all eligible child death cases were reviewed by a panel during this same time period, it is of great importance to support continued and comprehensive reviews of child deaths to better understand the surrounding circumstances and create preventive strategies.

Linkages between births, deaths, maternal outcomes and Child Death Review data are also needed. A disconnect exists between Louisiana Department of Health and Hospitals - Vital Records and Child Death Review Panel data, perhaps most relevant in the review and confirmation of SUID/SIDS cases. By linking data sources, risk factors and outcomes may be better identified and incorporated into a lifecourse approach.

Child Death Review data also lacked sufficient numbers of events to draw meaningful conclusions for this three-year period. In addition to a relatively small number of cases eligible for review, the majority of reviewed cases were missing pertinent information, especially among infant deaths. This may be remedied with the 2011 process change for reviewing SIDS cases, and other systems and program staffing changes that have occurred since 2010.

APPENDICES

Definitions and Acronyms

- **Burden of Death** – contrasting the percentage of deaths of a group to the percentage of that group in the general population
- **BFH** – Bureau of Family Health
- **CDR** – Child Death Review
- **CDRP** – Child Death Review Panel, a multi-disciplinary, multi-agency team that review infant and child deaths to understand the circumstances surrounding a case and create strategies to prevent future deaths
- **Child Mortality Rate** – the number of deaths in comparison to the U.S. Census mid-year population estimate for 1 to 14 year olds during a specified time frame. This rate represents the numbers of child deaths per 100,000 children.
- **DCFS** – Department of Children and Family Services
- **DHH** – Department of Health and Hospitals
- **ICD 10 Codes** – International statistical classification of diseases and related health problems (10th revision), a universal system of coding cause of death
- **Infant Mortality Rate** – the number of deaths in comparison to the birth records for a given year or multiple years. This rate is calculated as per 1,000 infants and includes neonatal and post-neonatal age groups.
- **Injury** – External causes of mortality
- **MCH** – Maternal and Child Health
- **MVT** – motor vehicle, other and unspecified transit accident
- **Neonatal** – An infant less than 28 days old
- **Neonatal Mortality Rate** - (Rate per 1,000 live births) the number of deaths in comparison to the birth records for a given year or multiple years. This rate is calculated as per 1,000 live births
- **NVSR** – National Vital Statistics Records
- **NVSS** – National Vital Statistics System
- **OPH** – Office of Public Health
- **Perinatal** – occurring in, concerned with, or being in the period around the time of birth
- **Post-Neonatal** – An infant between 28 days old and 1 year of age
- **Preventable Death** (from the Colorado Child Fatality Review Program) – a *preventable* death is “...one in which, with retrospective analysis, is determined that a reasonable intervention (e.g., medical education, social, legal or psycho-social) might have prevented the death...” *Reasonable* is defined as taking into consideration the conditions, circumstances and/or resources available.
- **SIDS** – Sudden Infant Death Syndrome
- **SUID** – Sudden Unexpected Infant Death

CAUSES OF DEATH (ICD-10 CODES)

ICD 10 Code(s)	Cause of Death	Details
Q00-Q99	Congenital malformations, deformations and chromosomal abnormalities	Ancephaly and similar malformations, congenital hydrocephalus, spina bifida, other congenital malformations of nervous system, congenital malformations of heart, other congenital malformations of circulatory system, congenital malformations of respiratory system, congenital malformations of digestive system, congenital malformations of genitourinary system, congenital malformations and deformations of musculoskeletal system, limbs and integument, Down syndrome, Edward syndrome, Patau syndrome, other congenital malformations and deformations, other chromosomal abnormalities not elsewhere classified
G00-G99	Diseases of nervous system	
I00-I99	Diseases of the circulatory system	
J00-J99	Diseases of the respiratory system	
V01-Y84	External causes of mortality (injury)	Deaths from accidents and causes not related to a medical condition Motor vehicle accidents, other and unspecified transport accidents, cuts, falls, accidental discharge of firearms, accidental drowning and submersion, accidental suffocation and strangulation in bed, other accidental suffocation and strangulation
	Natural causes of death	Deaths from a serious health condition Congenital anomalies, genetic disorders (i.e. cystic fibrosis), cancers, heart and cerebral problems, serious infections and respiratory disorders
C00-D49	Neoplasm	Tumor, or abnormal growth of body tissue; can be malignant (cancerous) or benign (noncancerous)
R95	Sudden Infant Death Syndrome	(SIDS)
R95, R99, W75	Sudden Unexpected Infant Death	(SUID) Ill-defined and unknown causes of mortality, SIDS, accidental suffocation

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