HEALTHY IMMIGRANT PARADOX: CHILD MORTALITY AND CHILD MALTREATMENT IN FIRST-GENERATION IMMIGRANT FAMILIES AND NON-FIRST-GENERATION IMMIGRANT FAMILIES

By

LAURA VIRGINIA LUKE-BROWNING

Bachelor of Arts in Psychology
The University of Tulsa
Tulsa, Oklahoma
2014

Master of Education in Professional Counseling
Oklahoma City University
Oklahoma City, Oklahoma
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HEALTHY IMMIGRANT PARADOX: CHILD MORTALITY AND CHILD MALTREATMENT IN FIRST-GENTERATION IMMIGRANT AND NON-FRIST-GENERATION IMMIGRANT PARADOX

Dissertation Approved:

Julie Koch, Ph.D.

Dissertation Adviser

Kelly Rhoads, Ph.D.

Ryan Chung, Ph.D.

Ginger Welch, Ph.D.

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Name: LAURA VIRGINIA LUKE-BROWNING

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Abstract: Substantial progress has been made toward investigating the circumstances of child deaths, yet little is known about child deaths in U.S. immigrant families (Shanley, Risch, & Bonner, 2010; Millet, 2016). Statistics indicate that one in five children younger than the age of 18 is the child of an immigrant (Federal Interagency Form on Child and Family Statistics, 2002; Padilla, Radey, Hummer, & Kim, 2006). Despite socioeconomic disparities and acculturation challenges, the Healthy Immigrant Paradox (HIP) proposes that immigrants have better health outcomes and experience lower infant mortality rates compared to U.S. native-born families (Millet, 2016; Speciale, 2010; Taningco, 2007). The social responsibility to protect the lives of all children warrants a better understating of the circumstances of child death, specifically child maltreatment fatalities, occurring in first-generation immigrant families (FGIF) and in non-first-generation immigrant families (Non-FGIF).

The researcher investigated if Healthy Immigrant Paradox (HIP) accounted for family subgroup differences between child deaths due to medical and injury causes as well as child deaths due to probable child maltreatment. Researchers then assessed if family subgroups and family risk factors (parent history of substance abuse, parent history of delinquent/criminal history, residence overcrowding) predicted child deaths due to probable child maltreatment between the family groups. Overall, findings provided mixed support for HIP. As expected, findings indicated there were statistically significant differences between medical and injury causes of child deaths in FGIF and Non-FIGF. There were no statistically significant differences found in child deaths due to probable child abuse and child neglect in FGIF and Non-FGIF. Yet, regression analysis revealed FGIF experienced less child mortality from probable child maltreatment than Non-FGIF. Lastly, an inverse relationship was found between all risk factors and child deaths from probable child maltreatment. Recommendations for child fatality prevention programs and future research are discussed.

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CHAPTER I

INTRODUCTION

Estimates of child mortality suggest 7.7 million children and adolescents died from 1980 to 2013 (Kyu et al., 2016). The total child deaths included 6.28 million deaths of younger children (under the age of 5), 0.48 deaths of older children (ages 5-9), and 0.97 adolescent deaths (ages 10-19) (Kyu et al., 2016). Global patterns of child mortality indicate infancy and adolescence represent the highest number of child deaths compared to children in other age groups (Fraser, Sidebotham, Frederick, Covington & Mitchell, 2014; Patton & Azzopardi, 2018). The Millennium Development Goals (MDG), an international initiative by the United Nations, aimed to reduce two-thirds of the global child mortality rates (CMR) for children under the age five between1990 and 2015 (Masquelier et al.2018). By 2015, the under-five mortality rate reduced by 53% despite falling short of the two-third reduction Millennium Development Goal (Byass, 2016; Kyu et al., 2016; Liu et al., 2015; Masquelier et al., 2018).

Although fewer policy interventions have been implemented for older children, data from the United Nations Interagency Group for Child Mortality revealed CMR for older children (ages 5–14) reduced by 51% from 1990 to 2016 (Masquelier et al., 2018). Since 2000, however, the CMR for younger children (ages 0-4) has reduced faster (4.0% annual reduction) than for older children (ages 5-14) (2.7% annual reduction) (Masquelier et al., 2018). Overall, research findings indicate child mortality has substantially declined since the mid-to-late 1990's (Fraser et al., 2014; Posey & Neully, 2017). Today, the Sustainable Development Goals have followed the MDG with the new target goal of reducing the under-five mortality by 10 million between 2017 and 2030 (Golding et al., 2017). Thus far, public health care professionals continue to prioritize the need to better protect the lives of children and enforce child death as a global health concern (Posey & Neully, 2017; Thakrar, Forrest, Maltenfort & Forrest, 2018).

CHAPTER II

REVIEW OF THE LITERATURE

Causes of Child Death: Medical and Injuries

In view of the child mortality statistics, CDR teams and researchers have investigated the leading and contributing causes of child deaths. Causes of death are classified according to the International Classification of Diseases (ICD) and include deaths resulting from disease, unintentional injuries (e.g., traffic accidents, accidental falls, drownings, poisonings) and intentional injuries (e.g., homicide, suicide) (Curtin, Heron, Minino, & Warner, 2018; Fraser et al., 2014; Shanley et al., 2010). Researchers have devoted their efforts to studying the causes of child deaths accordingly.

For children under five, medical complications at the time of birth and diseases in early childhood pose a major life threat. Deaths of children under the age of one have commonly been associated with prenatal complications, intrapartum-related complications, congenital abnormalities, chromosomal abnormalities, and sudden unexpected deaths (Byass, 2016; Frasier, et al., 2014). In 2015, infants accounted for 2.7 million of a total 5.9 million under-five mortality, with the leading cause of death

leading to early childhood death include pneumonia, diarrheal, malaria, measles, pertussis, meningitis, and sepsis (Black et al., 2016; Byass, 2016). Among these, pneumonia and diarrheal represented a higher proportion of the global CMR (Bhutta et al. 2013; Liu et al., 2015; Walker et al., 2013). Walker and associates (2013) conducted a systematic review exploring child deaths due to pneumonia and diarrheal and estimated 700,000 cases of diarrheal and 1.3 million cases of pneumonia led to child deaths in 2011. Due to considerable global health interventions targeting CMR, 61% of the under-five mortality rate reduction from 2000 to 2015 resulted from neonatal birth complications, pneumonia, diarrheal, malaria, and measles (Liu et al., 2016). Moreover, as under-five fatalities from neonatal complications and disease decline, researchers have directed attention toward understanding the causes of death and mortality rates of older children and adolescents.

Research findings indicate a shift occurs in the cause of child death from early childhood to adolescence (World Health Organization, 2018). Injuries account for more than half of the deaths in adolescents worldwide and make up the leading cause of morbidity and mortality in U.S. children (Atak, Karaoglu, Korkmaz, & Usubutun, 2010; Birken & Parkin, 2006; Branche, Ozanne-Smith, Oyebite, & Hyder, 2008; Crombie, 1995; Rivara, 2012; Scholer, Hickson, & Ray, 1999; Patton et al., 2009; Patton & Azzopardi, 2018; Wang et al., 2011;). Nonintentional injuries (e.g., accidents) and intentional injuries (e.g., injuries due to suicide or abuse) are distinguished in the literature and account for different CMR. For example, Curtin, Heron, Minino, & Warner (2018) analyzed child death certificates from 50 states and the District of Columbia for the years 1999-2016 and found unintentional injuries as the leading cause of death for

children (ages 10-19). According to the researchers, 85% of all unintentional injury deaths in 2016 for older children (ages 10-19) were accounted by motor vehicle accidents, drownings, and drug poisonings (primarily opioid drug overdoses) (Curtin et al., 2018). Intentional injuries by suicide and homicide were the second and third leading causes of deaths in children (ages 10-19) (Curtin et al., 2018). Consistent with these findings, Kyu, and associates (2016) assessed the top 10 global causes of child death and found road injuries as the leading cause of adolescent death followed by self-harm fatalities. Synthesizing the research, non-intentional injuries (e.g., motor vehicle accidents) compared to intentional injuries (e.g., suicide, homicide) overall accounted more for adolescent deaths.

Variations on Causes of Mortalities across Populations

Cross-cultural studies have found discrepancies in the causes of child death among high and low-income countries. Due to reported socioeconomic challenges and health inequalities, a greater proportion of child deaths in low-income countries are attributed to disease (Liu, & Patton, 2019). Researchers using data from the Global Burden of Disease (2013) examined cause-specific mortality rates in 188 countries between 1990 and 2013 (Kyu et al., 2016). Findings indicated that half of the global diarrheal deaths among children and adolescents occurred in the following countries: India, Democratic Republic of the Congo, Pakistan, Nigeria, and Ethiopia (Kyu et al., 2016). Other studies have identified Brazil and Mexico to have higher CMR due to malaria and diarrheal (Fadel et al., 2019). In comparison, child deaths in the U.S. and in China are largely reported to be from injuries (Sidebotham et al., 2014, p. 384; Wang et al., 2012; World Health Organization, 2008). In China, for example, Wang et al., 2012

assessed child injury deaths between 2000 and 2008 and found motor vehicle accidents and drownings as the main cause of death for younger children (ages 1-4). Estimates suggest that approximately 95% of child deaths due to injuries occur in high-income countries (Wang et al., 2011; Branche et al., 2008). More specifically, non-intentional injuries from motor vehicle accidents are seen in CMR across children of all age groups in high-income countries (Sidebotham et al., 2012). Beyond differences found in cause-specific child mortalities across high and low-income countries, however, the population makeup of each country has brought a closer understanding of the lives being impacted by disease and/or injury-related deaths.

In the U.S., researchers have extended their efforts to assess race and ethnic minority group representation in child mortality samples (Alio et al., 2010; Anachebe, 2006; Sidebotham, et al., 2012). Health statistics on infant mortality and race have classified race accordingly: non-Hispanic White, non-Hispanic Black, American Indian or Alaskan Native, Asian or Pacific Islander and Hispanic subgroups of Mexican, Puerto Rican, Cuban, and Central and South American (Mathews, MacDorman, & Thomas, 2015). Ethnic minority is a term used to define Non-White race/ethnic groups (Flores, 2010). The National Vital Statistics data from 2010 to 2013 revealed rates of infant mortality varied by race and Hispanic origin of the mother (Mathews et al., 2015). Non-Hispanic Black mothers accounted for a higher infant mortality rate (11.1 per 1,000 live births) compared to non-Hispanic White mothers (5.06 per 1,000 live births), a figure that more than doubled from the last decade (Mathews et al., 2015). The infant mortality rate for Asian and Pacific Islander (4.07 per 1,000 live births), Central and South American (4.30 per live births) and Cuban mothers (3.02 per 1,000 live births) was lower than that

of non-Hispanic White mothers (5.06 per 1,000 live births) (Mathews et al., 2015). The cause-specific mortalities that resulted in the infant mortality differences among racial/ethnic groups were due to preterm complications, congenital anomalies, and sudden infant death (Mathews et al., 2015). Further, a systematic review of the child health literature from 1950 to 2007 indicated higher CMR across all four major U.S. racial/ethnic minority groups: African Americans, Latinos, American Indians, Alaska Natives (Flores, 2010). Compared to non-Hispanic White children, the four U.S. racial/ethnic groups experienced higher mortality rates due to non-intentional injuries (drownings), disease (acute lymphoblastic leukemia) and medical causes (after congenital heart defect surgery) (Flores, 2010). Collectively, research has indicated an overrepresentation of racial/ethnic minority groups in the child mortality numbers in the U.S.

The heath disparities of racial/ethnic minority children in the U.S. has directed attention to a subpopulation potentially facing resembling health disadvantages, children of immigrant families. Children of immigrant families consist of parents who are non-native born or who live outside of their country of birth (Landel, Thomas, & Van Hook, 2011). For U.S. children under the age 18, estimates suggest that 25% live with at least one non-native born parent and 13% have two non-native-born parents (Fortuny, Hernandez, & Chaudry, 2010; Millett, 2016). The literature on child deaths in immigrant families, however, appears limited to research on infant mortalities with mixed findings of higher perinatal deaths occurring among non-native and native-born parents (Bollini, Pampallona, Wanner, & Kupelnick, 2009; Smedby & Ericson, 1979). One study reporting higher infant mortalities among racial/ethnic minority groups indicated the

finding occurred “irrespective of whether [families were] recent immigrant groups or indigenous populations of colonized countries” (Sidebotham et al., 2014, p. 917; Bollini et al., 2009). Beyond infant mortality rates, it appears immigrant background is scarcely accounted for in the child mortality literature (Slopen et al., 2016). Despite this gap in the literature, Schyllander, Janson, Nyberg, Eriksson, and Ekman (2013) unexpectedly found an overrepresentation of children from immigrant backgrounds in their sample of child deaths due to non-intentional drownings. Schyllander and associates (2013) explored drownings in Sweden between the years of 1998 and 2007 and found children and adolescents from immigrant backgrounds, families from the Middle East and Iran, represented two-third of victims who died from unintentional drownings (Schyllander et al., 2013). According to the researchers, only 5.5% of all children living in Sweden are from families with Middle Eastern and Iranian backgrounds, however, twice as many were represented in their total sample of victims (Scyllaner et al, 2013). Schyllander and associates (2013) attributed the elevated risk of drowning for children of immigrant backgrounds due to the lack of swimming ability and lack of knowledge on safety prevention measures. Findings from this study highlight potential cultural factors that place children of immigrant families at risk for fatal non-intentional injuries. To date, research on children of immigrant families in the child mortality literature appears limited to the studies that account for immigrant families as a subpopulation in their sample. Considering the number of children of immigrant families living in the U.S. today, 25% of U.S. children live with at least one non-native born parent, more research is needed to help enhance the safety and well-being of children of immigrant families (Chaudry & Fortuny, 2010; Millett, 2016; Zong, Batalona, & Hallock, 2015).

Child Maltreatment Fatalities

As different patterns of death have been explored, child deaths resulting from child maltreatment have been accounted for in the child mortality literature (Douglas & Mohn, 2014). The National Child Abuse and Neglect Data System (NCANDS) defines child maltreatment fatalities as "death of a child caused by an injury resulting from abuse or neglect or where abuse or neglect was a contributing factor" (Child Welfare Information Gateway, 2018, p. 2). Child maltreatment fatalities can occur due to intentional injuries (e.g., suffocation, shaking) or severe neglect (e.g., extended malnourishment, drowning due to lack of necessary supervision) (Douglas & Mohn, 2014; National Child Abuse and Neglect System, 2000). In 2016, a national estimate of 1, 750 children died from abuse and neglect representing an average of close to five children dying every day from child maltreatment (Child Welfare Information Gateway, 2019). Researchers comparing fatal abuse and neglect report that most victims of child maltreatment die of neglect compared to forms of abuse (Douglas & Mohn, 2014). Inconsistencies have been reported in the number of CMF cases active in child welfare services at the time of death, with some studies suggesting 30-50% of CMF cases are known to child welfare agencies (Anderson, Ambrosino, Valentine, & Lauderdale, 1983; Beveridge 1994; Crume, DiGuiseppi, Byers, Sirotnak & Garrett, 2002; Douglas & Mohn, 2014; Damashek, Nelson, & Bonner, 2013; Peddle, Wang, Diaz, & Reid, 2002). Nevertheless, estimates of child maltreatment fatalities are said to be underreported due to abuse happening behind closed doors and indications of abuse being hard to recognize in younger children (Ewigman, Kivlahan, & Land, 1993; Herman-Giddens, Smith, Mittal, Carlson, & Butss 2013; Douglas & Mohn, 2014). Overall, child deaths due to

maltreatment are regarded as highly preventable and significant efforts have been made toward identifying children at risk.

Child Maltreatment Fatalities: Victim and Family Characteristics

Substantial research indicates that children under the age of four, compared to other age groups, are more often CMF victims (Damashek & Nelson, 2013; Gellert, Maxwell, Durfee, & Wagner; 1995; Klevens & Leeb 2010; Lyman et al., 2003; McCurdy & Daro,1994; Sidebotham, Bailey, Belderson & Brandon, 2011; U.S. Department of Health & Human Services, 2013). In 2011, 82% of CMF cases occurred among children ages 0-3, with 42% of CMF represented by children under the age of one. The Child Maltreatment Report (2016) also indicated boys had a higher mortality rate compared to girls. Estimates suggested boys had a mortality rate of 2.87 boys per 100,000 boys in the population and girls had a mortality rate of2.11 per 100,000 girls in the population (U.S. Department of Health & Human Services, 2018). Racial demographics have indicated CMF are more common in African American children and less common among children identified as White (Douglas & Mohn, 2014; Herman et al., 2003; U.S. Department of Health & Human Services, 2011; Levine, Freeman, & Compaan, 1994). Accordingly, some studies have found African Americans to be overrepresented in their samples for CMF compared to their representation in the general population (Douglas & Mohn, 2014; Levine et al., 1994; Welch & Bonner, 2013). At the same time, Palusci and Cogington (2014) investigated CMF in the U.S. and reported almost half of the CMF victims as White followed by African Americans and Hispanics as the second and third largest racial/ethnic groups. Extending further efforts to understand children at risk for CMF, researchers have examined family characteristics.

Child deaths due to maltreatment have been associated with certain family risk factors. Children living with unrelated family members, with step, foster, or adoptive parents, and with more people residing in their home may be at an increased risk of becoming CMF victims compared to children living with their biological parents (Damashek & Nelson, 2013; Douglas, 2014; Palusci & Covington, 2014; Shnitzer & Ewignman, 2005; Stiffman, Schnitzer, Adam, Kruse, & Ewigman, 2002). Higher rates of CMF have also been detected in families with alcohol use, drug use, and domestic violence (Laslett, Room, Dietze, & Ferris, 2012; Palusci, 2014; Putnam-Hornsein, 2011; Rangel, Burd, & Falcone, 2010). Parental mental illness has also been associated with CMF (Douglas & Mohn, 2014; Fein, 1879; Korbin, 1987; Margolin, 1990). A study conducted by Douglas & Mohn (2014) analyzed fatal and non-fatal child maltreatment in the U.S. and found fatally maltreated children also came from families who experienced more financial and housing instability compared to non-fatally maltreated children. Additionally, children in families facing a major life event such as moving, unemployment, or the birth of child may be a higher risk for CMF (Lucas et al., 2002). Overall, much work has been done to understand family characteristics that contribute to the tragic death of a child.

In line with discussed findings, researchers have suggested that ethnic minority groups may encompass more family risk factors associated with child maltreatment fatalities and thus explain the ethnic minority overrepresentation in child maltreatment fatalities (Alink, Euser, IJzendoorn, & Bakermans-Kranenburg, 2013). Nevertheless, other researchers have considered a different kind of sociodemographic variable to help explain the potential vulnerability for ethnic minority groups, namely the immigrant

status of ethnic minorities (Alink et al., 2013; Bakermans-Karanenburg, IJzendoorn, & Kroonenberg, 2004). As a result, a focus has been directed toward children of immigrant families and understanding the associated risk factors of child maltreatment within this subpopulation.

Non-Fatal Child Maltreatment in Immigrant Families

To date, research on children of immigrant families has largely focused on non-fatal child maltreatment. Research examining the living conditions of U.S. born and non-native born families revealed that children of immigrant parents were more likely to live in families facing financial stressors, more likely to live in crowded housing, and were disproportionately represented in the population of children living in poverty (Elelech, McCaskie, Lennon, & Lu, 2002; Capps, Fix, Ost, Reardon-Anderson, & Passell, 2004; Padilla, Radey, Hummer, & Kim, 2006). As documented in the literature, socioeconomic challenges and certain household configurations may place children at risk for child maltreatment (Euser, IJendoorn, Prinzie & Bakermans-Kranenburg, 2011). Financial instability, specifically related to unemployment of men and outside employment of wives, has also been correlated to domestic violence in immigrant families (Aldarondo, Kaufman-Kantor, & Jasinski, 2002; Detlaff & Earner, 2012). Children of immigrant families also face immigration and acculturation challenges (Dettlaff & Earner, 2012) Children of immigrant families may experience a loss of previously established support as a direct effect of migration (Dettlaff & Earner, 2012). Due to the stepwise pattern of migration, moreover, children of immigrant families may also experience extended periods of separation from members of their nuclear family (Dettlaff & Earner, 2012). Acculturative stress can thus form as a result of encountered language barriers, lack of

employment opportunities, loss of social support, and inadequate financial resources (Berry, 2005; Dettlaff & Earner, 2012). Given the comorbidity of risk factors and the compounding effects of acculturation, researchers have often hypothesized children of immigrant parents to be at high risk for child maltreatment.

The safety and wellbeing of children from immigrant families is a growing concern for the future health of many countries (Khullar & Chokshi, 2019). Understanding whether children of immigrant families are at greater risk for maltreatment compared to children with U.S. native-born parents, however, has been uncertain. In a recent study, researchers explored elevated child maltreatment rates in native Dutch and immigrant families from the Netherlands accounting for risk factors associated with immigration background, low parental education, single parenthood, and family size (Euser et al.,2011). The sample was differentiated by native Dutch, traditional immigrant families (labor migrants) and nontraditional immigrant families (refugees) (Euser et al., 2011). For traditional immigrant families, parental education level was strongly associated with child maltreatment compared to immigrant background (Euser et al., 2011). Nontraditional immigrant families remained at increased risk for child maltreatment even when controlling for parental low education (Euser et al., 2011). Collectively, findings suggested that traditional and nontraditional immigrant families were overrepresented among child maltreatment reports compared to native Dutch families (Euser et al., 2011). Furthermore, in a U.S.-based study, Dettlaff & Earner (2012) examined children of immigrant families involved in the child welfare system. Among the sample collected from the National Survey of Child and Adolescent Well-Being, 67% were children of Hispanic immigrants, followed by 14.8% non-Hispanic

White immigrants, 10.0% non-Hispanic Black immigrants, and 7.5% non-Hispanic Asian immigrants (Dettlaff & Earner, 2012). Contrary to the previous research findings indicating an overrepresentation of immigrant families in the child maltreatment reports, researchers here found that children of immigrant's families were underrepresented in the sample of families involved in the child welfare system (Dettlaff & Earner, 2012). Estimates suggested children of immigrant parents comprised only 8.6% of the sample compared to the 23.0% of the child population they represent in the U.S. (Dettlaff & Earner, 2012). Findings also revealed that risk factors associated with maltreatment, specifically parental legal history and substance abuse, were more likely present in families of U.S. born parents compared to immigrant families (Dettlaff & Earner, 2012). The researchers noted "the lack of significant differences in the prevalence of several risk factors often associated with immigrant families, including the use of excessive discipline, active domestic violence, low social support, and difficulty meeting basic needs" (Dettlaff & Earner, 2012, p. 301). Findings from these studies highlight long-standing controversial questions in the literature. For example, are children of immigrant families at lower or higher risk for child maltreatment? Are the apparent health advantages specific to Hispanic immigrant families?

Research on child maltreatment in immigrant families has largely focused on the Hispanic/Latino population. A systematic review on child maltreatment in immigrant families revealed that Latinos represented over half of the sample, with only two studies reporting on Asian immigrants and immigrants from West Indies/Cape Verde (Millet, 2016). The focus on Latino families has in part derived from the growing Latino population in the U.S., with estimates indicating that nearly one-fourth of all U.S.

children in 2010 identified as Latino (Cardoso, Dettlaff, Finno-Velasquez, Scott & Faulkner, 2014). Additionally, statistics on Latino victims of child maltreatment increased from 14.2% in 2000 to 22.1% in 2011 (Department of Health and Human Services, 2012; Johnson-Motoyama et al., 2015). To account for immigration background as a risk factor, researchers have differentiated between U.S. born Latino parents/U.S. born Lation children and immigrant Latino families/immigrant Latino children when assessing for risk of child maltreatment (Dettlaff, Earner, & Phillips, 2009). Significant differences have been found between the groups, with U.S. born Latino parents having more associated child maltreatment risk factors compared to immigrant Latino parents (Dettlaff & Johnson, 2011). In a study exploring child welfare involvement of U.S. born Hispanic children and immigrant Hispanic children, findings indicated that families of U.S. born Hispanic children posed more associated risk factors of child maltreatment related to substance abuse, domestic violence, and a history of arrest (Dettlaff & Johnson, 2011). Given findings from this study, families of immigrant Hispanic children may not be perceived to be at greater risk for child maltreatment compared to U.S. born Hispanic children. In a related study, using data from the National Survey of Child and Adolescent Wellbeing, researchers examined the citizenship and legal status for immigrant parents in relationship to child maltreatment and the family's involvement with child welfare services (Cardoso et al.2014). Children of unauthorized parents, parents without valid immigrant documentation, represented 5% of all children and 19% of Latino children involved in child welfare services (Cardoso et al., 2014). By contrast, 11% of Latino children had a legal resident parent (Cordoso et al., 2014). Although non-citizen immigrant parents exhibited greater finical hardships and low parental educational

attainment (known risk factors associated with child maltreatment) results indicated children of non-citizen immigrant parents did not have a higher rate of substantiated maltreatment than children with U.S. born parents (Cardoso et al., 2014). Considering these unexpected findings, researchers have hypothesized the presence of protective factors among immigrant families.

Healthy Immigrant Paradox

The Healthy Immigrant Paradox (HIP) has been proposed to explain the growing evidence suggesting immigrant Latino families may be at lower risk of negative child health outcomes, specifically infant mortality and child maltreatment (Ribble & Keddi, 2001; McGlade & Dahlstrom, 2004; Millett, 2016). HIP originated from findings that indicated non-U.S. born Mexican immigrants had lower infant mortality rates and lower birthweights compared to non-Hispanic Whites and half that of non-Hispanic Blacks (Becerra, Hogue, Atrash, & Perez, 1991; Collins & Shay, 1994; Ventura & Taffel, 1985; Scribner, 1996). HIP proposes that immigrants have better health related outcomes compared to native-born populations despite socioeconomic risks factors of lower educational attainment, lower wages, and higher poverty rates (Millett, 2016; Palloni & Morenoff, 2011). Key to the theory is that first generation immigrants, individuals who were born abroad, have better health outcomes than later generations of immigrants such as second-generation youth born in the U.S. to immigrant parents or third generation youth born in the U.S. to U.S. born parents (Guarini, Marks, Patton, & Coll, 2013). Different explanations have been suggested for the occurrence of HIP including the presences of protective cultural factors related to stronger social support and social cohesion (e.g., closer family and social relationships creating emotional and instrumental

support) (Halper & Nazroo, 2000; King & Locke, 1987; Nazroo, 2003; Palloni & Arias, 2004; Shor, Roelfs, & Zoua, 2017). On the other hand, the Healthy Migrant Effect suggests there is a health advantage through the selective nature of migration which asserts that individuals who migrate are physiologically healthier and more resilient (Kimbro, 2009; Palloni & Arias, 2004; Rogot & Eugene, 1993; Shor et al., 2017; Sorlie, Paul, Backlund, Johnson, Norman, Kimbro, 2009). Critics of this phenomena, on the other hand, identify the perceived advantage occurs from problems in ethnic identification on death certificate, missing reporting ages on death certificates, and mismatching of records (Palloni & Arias, 2004; Shor e al., 2017).

Purpose of this study

The purpose of this research was two-fold. The first objective was to review child deaths due to medical and injury causes in first-generation immigrant families and in non-first-generation immigrant families. The second objective was to review child deaths in which child maltreatment is thought to have contributed to the child fatality. Risk and protective factors were assessed among first-generation immigrant families (FGIF) and non-first-generation immigrant families (Non-FGIF) in order to identify families most vulnerable to CMF. The implications of this study may help determine if children of first-generation immigrant families, compared to children of non-first-generation immigrant families, are at a higher risk of deaths resulting from injury, disease, and/or child deaths contributing from child maltreatment. This study could ultimately assist in directing culturally appropriate interventions for first-generation immigrant families.

The research questions were as follows:

1. Is there a difference in the proportion of child deaths due to injury and medical causes between first-generation immigrant families and non-first-generation immigrant families?
2. Is there a difference in the proportion of child deaths due to probable child maltreatment causes between first-generation immigrant families and non-first-generation immigrant families?
3. Does family subgroup (first-generation immigrant and non-first-generation immigrant families) and mother's history of substance abuse predict child deaths due to probable child maltreatment?
4. Does family subgroup and father's history of substance abuse predict child deaths due to probable child maltreatment?
5. Does family subgroup and mother's delinquent/criminal history predict child deaths due to probable child maltreatment causes?
6. Does family subgroup and father's delinquent/criminal history predict child deaths due to probable child maltreatment causes?
7. Does family subgroup and housing overcrowding predict child deaths due to probable child maltreatment causes?
8. Does family subgroup and mother's history of intimate partner violence predict child deaths due to probable child maltreatment causes?
9. Does family subgroup and father's history of intimate partner violence predict child deaths due to probable child maltreatment causes?

The hypotheses were as follows:

1. In support of HIP, researchers hypothesized there would be a statistically significant
   difference in child deaths due to medical and injury causes between first-generation
   immigrant families and non-first-generation immigrant families.
2. In support of HIP, researchers hypothesized there would be a statistically significant
   difference in child deaths due to probable child maltreatment causes between first generation immigrant families and non-first-generation immigrant families.
3. In support of HIP, researchers hypothesized that family subgroup and mother's history of substance abuse will predict child deaths due to probable child maltreatment.
4. In support of HIP, researchers hypothesized that family subgroup and father's history of substance abuse will predict child deaths due to probable child maltreatment causes.
5. In support of HIP, researchers hypothesized that family subgroup and mother's delinquent/criminal history will predict child deaths due to probable child maltreatment causes.
6. In support of HIP, researchers hypothesized that family subgroup and father's delinquent/criminal history will predict child deaths due to probable child maltreatment causes.

7. In support of HIP, researchers hypothesized that family subgroup and residence overcrowding will predict child deaths due to probable child maltreatment causes.
8. In support of HIP, researchers hypothesized that family subgroup and mother's history of intimate partner violence will predict child deaths due to probable child maltreatment causes.
9. In support of HIP, researchers hypothesized that family subgroup and father's history of intimate partner violence will predict child deaths due to probable child maltreatment causes.

CHAPTER III

METHODOLOGY

Data

Data from this study were obtained from the National Fatality Review Case Reporting System (NFR-CRS). The NFR-CRS is a web-based reporting tool for state and local child death review programs and fetal infant mortality review programs in the U.S. (National Center for Fatality Review and Prevention, n.d.; Palusci and Covington, 2014). The NFR-CRS database is managed by National Center for Fatality Review and Prevention (NCFRP) based at the Michigan Public Health Institute (National Child Fatality Review and Prevention, n.d.; Palusci and Covington, 2014). The NFR-CRS is supported by the Maternal and Child Health Bureau, Health Resources and Services Administration, Department of Health and Human Services, and by the U.S. Centers for Disease Control and Prevention (National Child Fatality Review and Prevention, n.d.). The NFR-CRS was established in 2005 to collect detailed information on the circumstances surrounding child deaths and represents only those deaths reviewed

by child death and fetal infant mortality review programs (National Child Fatality Review and Prevention, n.d.). The database does not include all infant and child deaths in the U.S. and may not be compared to vital statistics or used to compute mortality rates (National Child Fatality Review and Prevention, n.d.). Data in the NFR-CRS is gathered from birth certificates, death certificates, law enforcement records, medical records, autopsy reports, child protective service reports, and Emergency Medical Services/ambulance run reports (National Child Fatality Review and Prevention, n.d.). To date, a total of forty-seven U.S. states have data in the reporting system.

Procedures

This study received Institutional Review Board approval from Oklahoma State University. Researchers completed the NFR-CRS Application for De-identified Data for Research. The application was reviewed by the NFR-CRS Data Dissemination Committee and granted approval (see Appendix C). A confidentiality agreement and a Contract for Access to and Use of Data was signed by all researchers agreeing to safeguard the data and adhere to NCFRP research guidelines (see Appendix C)

Study Population Defined

The NFR-CRS Data Dictionary (Version 5.1) defines first-generation immigrant parent as the following, "the child's parents were born in a country other than the United States and were citizens of another country at the time they moved to the United States" (p. 41). For the purpose of this study, data from NFR-CRS (Version 4.1) and NFR-CRS (Version 5.0) were utilized to help increase the sample of first-generation immigrant families. Included in this research study are child deaths from first-generation immigrant families and child deaths from non-first-generation immigrant families identified by

variable A31 (NFR-CRS Version 4.1) where a “yes” or “no” is indicated on question, “Was any parent a first-generation immigrant?” (p. 2) and where a “yes” or “no” is indicated on variable B8 (NFR-CRS Version 5.0) “Parent is first generation immigrant?” (p. 6). Child deaths where parent first-generation immigrant status was identified as “unknown” were excluded from this research study. To view how variable A31 is presented in the NFR-CRS (Version 5.0), see Figure 1.

Causes of child death due to medical and injury causes were identified by variable G6, NFR-CRS (Version 5.0). For the purpose of this study, injury causes of death were defined by item G6 and include all of the following classifications: motor vehicle and other transport, fire/burn/electrocution, drowning, unintentional asphyxia, assault/weapon/or person’s body part, fall or crush, poisoning/overdose/acute intoxication, undetermined injury, and unknown. Further, medical causes of child death were defined by item G6 and included all of the following classifications: asthma/respiratory, cancer, cardiovascular, congenital anomaly, diabetes, human immunodeficiency virus (HIV/AIDS), influenza, low birth weight, malnutrition/dehydration, neurological/seizure disorder, pneumonia, prematurity, sudden infant death syndrome (SIDS), other infection, other perinatal condition, other medical condition, undetermined medical cause, and unknown. Causes of child death indicated to be “unknown” or “undetermined if injury or medical causes” were excluded from this study. To view how variable G6 is presented in the NFR-CRS (Version 5.0), see Figure 2.

Child deaths where probable child maltreatment is suspected were identified by variable I1a, NFR-CRS (Version 5.0) where "yes/probable" is marked regarding "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child deaths?" (p. 20). The NFR-CRS Data Dictionary (Version 5.1) defines child deaths where probable child abuse, child neglect, poor or absent supervision, or exposure to hazards is suspected as the following, "parent, caregiver, supervisor caused or contributed to the death of the child" (p. 93). However, per NFR-CRS Data Dictionary (Version 5.1), child deaths from poor/absent supervision or exposure to hazards do not rise to the circumstances that meet the criteria of child abuse and neglect. Descriptive statistics are included to differentiate child abuse and child neglect from poor/absent supervision and exposure to hazards. Lastly, responses to variable I1a. as "unknown" were excluded from this study. To view how variable I1a is presented in the NFR-CRS (Version 5.0), see Figure 3.

The sample of first-generation immigrant families in this research study included immigrants of both documented and undocumented status. Undocumented immigrants are individuals who "arrived in the United States without a valid immigration documented or arrived with a valid document but stayed past the expiration date" (Cardoso, Dettlaff, Finno-Velasquez, Scott, & Faulkner, 2014, p. 189). Past research studies report important differences between immigrant families of documented and undocumented status such as a higher rate of poverty and a lower utilization rate of public benefits (e.g., Supplemental Nutrition Assistance Program SNAP) for immigrant individuals of undocumented status (Cardoso et al., 2014; Fortunny &Chaudry, 2011).

However, in this study, the researched did not differentiate between documented and undocumented first-generation immigrant families.

Research Sample

The NFR-CRS research sample includes child death review reports from infants (defined as children younger than 1 year) to adolescents (age 17). Data from 2005 to 2017 revealed 8,007 child deaths review reports from first-generation-immigrant families and 71,710 child deaths review reports from non-first-generation immigrant families. From the total sample of 79,717 child death review reports, researchers excluded cases where child death causes were indicated as "no answer," "unknown," and "undetermined if medical or external injury." After exclusionary criteria were applied, the NFR-CRS database revealed 70,637 child death review reports, of which 7,414 child deaths were from first-generation immigrant families and 63,223 child deaths were from non-first-generation immigrant families. To reduce test limitations due to large sample size, a total of 7,414 child death review reports from first-generation immigrant families and a random sample of 7,414 child death review reports from non-first-generation immigrant families were included in the main statistical analysis. Research analyses are provided from a total sample size of 14,828 child deaths review reports. For each individual research question and hypothesis, the actual sample size differs (see Results).

CHAPTER IV

RESULTS

To help understand HIP in relationship to parent and child health characteristics, descriptive statistics were explored among the family subgroups. Descriptive statistics were classified into six categories including: (1) parent and child demographics, (2) father and mother's health history, (3) child's health history, (4) child developmental history, (5) family social economics, and (6) family health care utilization. For parent and child demographics, see Tables 1-5. Additionally, information on first-generation immigrant parent country of origin is presented on Table 6. For father and mother's health history, see Tables 7 and 8 (e.g., mother medical conditions during pregnancy, parent history of disability/chronic illness). Information on child health history is presented in Tables 9-11 (e.g., child history of disability/chronic illness). Descriptive statistics on child's developmental history are provided on Tables 12-12c. (e.g., education level, history of child maltreatment, child mental health history). Information on family social economic status is presented in Tables 13-13c (e.g., income, parent education, type of residence). Lastly, information on family healthcare utilization is in Table 14 (e.g., health insurance type, prenatal care, social service history). Variable descriptions are listed below each table as defined in the NFR-CRS Data Dictionary.

Descriptive statistics were also explored on medical and injury causes of death to help understand the circumstances surrounding child deaths. Information on official manner of death and primary cause of death are in Table 16. Moreover, specific information pertaining to injury and medical causes of death are listed under the following NFR-CRS classifications: motor vehicle or other transport (see Table 16), drowning location (see Table 17), fire, burn, electrocution (see Table 18), unintentional asphyxia (see Table 19), type of weapon in assault (see Table 20), fall or crush (see Table 21), poisoning, overdose, or acute intoxication (see Table 22), medical condition (see Table 23), sudden death in the young (see Table 24), sleeping or the sleep environment (see Table 25), and child death during commission of another crime (see Table 26). Finally, descriptive statistics on child deaths where child maltreatment is suspected are listed in Tables 27 and 28.

To answer research questions 1 and 2, Chi-square analyses were used. To answer research questions 3 through 7, logistic regressions were run. Analyses were not run for research questions 8 and 9 because responses did not meet appropriate dichotomous scale of "yes" or "no" for a logistic regression analysis.

Hypothesis 1: ***In support of HIP, researchers hypothesized there would be a statistically significant difference in child deaths due to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families.***

The Chi Square of Independence was used to determine if there was a statistically significant difference in child deaths related to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families. All Chi Square test assumptions were met, including (1) categorical variables, (2) independent

observations, and (3) expected values of 5 in more than 80% of cells (McHugh, 2013). Results from the Chi-Square (χ^2) test revealed a statistically significant difference in child deaths due to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families χ^2 (27, N = 14,828) = 560.545, $p < .01$) (See Table 29). The effect size for this finding, Phi and Cramer's V, was strong,194. Effect size of > 0 is considered "no or very weak" and effect size > 0.25 is considered "very strong" (Akoglu, 2018, p. 92) (see Table 30). Findings supported the research hypothesis, as a statistically significant difference was found between first-generation immigrant families and non-first-generation immigrant families in child deaths due to medical and injury causes. See Tables 31 and 32 for descriptive statistics on medical and injury related causes of child death.

Hypothesis 2: ***In support of HIP, researchers hypothesized there would be a statistically significant difference in child deaths due to probable child maltreatment causes between first generation immigrant families and non-first-generation immigrant families***.

The Chi Square (χ^2) of independence was used to determine if there was a statistically significant difference in the proportion of child deaths due to probable child maltreatment causes between first-generation immigrant families and non-first-generation immigrant families. Note, child deaths where probable child maltreatment was suspected were identified by variable I5a, NFR-CRS version 5.0 where "yes/probable" is marked regarding "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child deaths?" Per NFR-CRS data dictionary, child deaths

caused or contributing from poor/absent supervision or exposure to hazards do not arise to the level of child abuse and neglect. Responses indicated as "not specified" or "unknown" on variable I5a were excluded for the main statistical analysis. The total sample includes 11,398 child deaths review reports. Results from the Chi-Square test revealed there was no statistically significant difference in child deaths from probable child maltreatment causes between first generation immigrant families and non-first-generation immigrant families χ^2 (1, N = 11,398) = 2.630, $p > .05$) (see Table 33). The effect size for this finding, Phi and Cramer's V, was weak, .015 (see Table 34). The research hypothesis was not supported, child deaths from probable child maltreatment did not statistically differ between first-generation immigrant families and non-first-generation immigrant families. See Table 35 for descriptive statistics on child deaths due to suspected child maltreatment.

Hypothesis 3: ***In support of HIP, researchers hypothesized that family subgroup and mother's history of substance abuse would predict child deaths due to probable child maltreatment causes.***

A logistic regression was performed to determine if family subgroups (first-generation immigrant families, non-first-generation immigrant families) and mother's history of substance abuse predicted child deaths due to probable child maltreatment. Researchers selected cases where "yes" or "no" was indicated on the predictor variable, mother history of substance abuse. Classifications of "not specified" and "unknown" on the predictor variable were excluded from the regression analysis. Additionally, researchers selected cases where "yes/probable" or "no" were indicated on the dependent variable, probable child maltreatment, identified by item 15a in NFR-CRS, "Did child

abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child's death?" Classifications of "not specified" and "unknown" on the dependent variable were excluded from main statistical analysis. The regression analysis included a total sample of 3,098 child death review reports. For descriptive statistics on mother history of substance abuse, see Table 36.

The logistic regression model was statistically significant, X^2 (2) = 265.466, p <.001 (see Tables 37 and 38). The model explained 11.9% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 74.8% of the cases (see Tables 39 and 40). First-generation immigrant families were .486 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. Mother's substance abuse history was also a statistically significant predictor in child deaths due to probable child maltreatment. However, mothers with history of substance abuse were indicated to be .198 times less likely than mothers without substance abuse history to have a child death due to probable child maltreatment. The research hypothesis was supported, the predictor variables (family subgroup and mother history of substance abuse) were found to contribute to the model.

Due to concerns that unequal sample sizes may have contributed to the statistically significant inverse relationship between mother's substance abuse history and child deaths from probable child maltreatment, a second logistic regression was performed. Random sampling was utilized to create an equal subset of cases based on predictor variable responses, "yes" or "no" to mother's history of substance abuse. The logistic regression included 1,144 child deaths review reports. For descriptive statistics on mother history of substance abuse, see Table 41.

The logistic regression model was statistically significant, X^2 (2) = 151.670, p <.001 (see Tables 42 and 43). The model explained 17.0% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 68.7% of the cases (see Tables 44 and 45). First-generation immigrant families were .431 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. Mother's substance abuse history was also a statistically significant predictor in child deaths due to probable child maltreatment. However, mothers with history of substance abuse were indicated to be .192 times less likely than mothers without substance abuse history to have a child death due to probable child maltreatment.

Hypothesis 4: ***In support of HIP, researchers hypothesized that family subgroup and father's history of substance abuse would predict child deaths due to probable child maltreatment causes.***

A logistic regression was performed to determine if family subgroup (first-generation immigrant families, non-first-generation immigrant families) and father's history of substance abuse predicted child deaths due to probable child maltreatment. Researchers selected cases where "yes" or "no" was indicated on the predictor variable, father's history of substance abuse. Classifications of "not specified" (50.2%) and "unknown" (36.5%) on the predictor variable were excluded from the regression analysis. Additionally, researchers selected cases where "yes/probable" or "no" were indicated on the dependent variable, probable child maltreatment, identified by item 15a in NFR-CRS, "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child's death?" Classifications of "not specified" and "unknown" on the

dependent variable were excluded from main statistical analysis. The regression analysis includes a total sample of 1,642 child death review reports. For descriptive statistics on father's history of substance abuse, see Table 46.

The logistic regression model was statistically significant, X^2 (2) = 165.732, p <.001 (see Tables 47 and 48). The model explained 13.4% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 72.1% of the cases (see Tables 49 and 50). First-generation immigrant families were .536 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. Father's substance abuse history was also a statistically significant predictor in child deaths due to probable child maltreatment. However, fathers with history of substance abuse were indicated to be .177 times less likely than fathers without substance abuse history to have a child death due to probable child maltreatment. The research hypothesis was supported, the predictor variables (family subgroup and father history of substance abuse) were found to contribute to the model.

Due to concerns that unequal sample sizes may have contributed to the statistically significant inverse relationship between father's substance abuse history and child deaths from probable child maltreatment, a second logistic regression was performed. Random sampling was utilized to create an equal subset of cases based on predictor variable responses, "yes" or "no" to father's history of substance abuse. The regression analysis was conducted with a total sample of 652 child deaths review reports. For descriptive statistics on father history of substance abuse, see Table 51.

The logistical regression model was statistically significant, X^2 (2) = 106.708, p <.05 (see Tables 52 and 53). The model explained 20.3% (Nagelkerke R2) of the

variance in child deaths due to probable child maltreatment and correctly classified 69.0% of the cases (see Tables 54 and 55). First-generation immigrant families were .600 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. Father's substance abuse history was also a statistically significant predictor in child deaths due to probable child maltreatment. However, fathers with history of substance abuse were indicated to be .164 times less likely than fathers without substance abuse history to have a child death due to probable child maltreatment.

Hypothesis 5: ***In support of HIP, researchers hypothesized that family subgroup and mother's delinquent/criminal history would predict child deaths due to probable child maltreatment causes.***

A logistic regression was performed to determine if mother's delinquent/criminal history and family subgroups (first-generation immigrant families, non-first-generation immigrant families) predicted child deaths due to probable child maltreatment. Researchers selected cases where "yes" or "no" was indicated on the predictor variable, mother delinquent/criminal history. Classifications of "not specified" and "unknown" on the predictor variable were excluded from the regression analysis. Additionally, researchers selected cases where "yes/probable" or "no" were indicated on the dependent variable, probable child maltreatment, identified by item 15a in NFR-CRS, "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child's death?" Classifications of "not specified" and "unknown" on the dependent variable were also excluded from the main statistical analysis. The regression analysis includes a total sample of 3,342 child death review reports. For descriptive statistics on mother delinquent or criminal history, see Table 56.

The logistic regression model was statistically significant, X^2 (2) = 95.774, p <.001 (see Table 57 and Table 58). The model explained 4.1% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 73.9% of the cases (see Table 59 and Table 60). First-generation immigrant families were .780 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. Mother's delinquent/criminal history was also a statistically significant predictor in child deaths due to probable child maltreatment. However, results indicated that mothers with delinquent/criminal history were .307 times less likely than mothers without delinquent/criminal history to have a child death due to probable child maltreatment. The research hypothesis was supported, the predictor variables (family subgroup and mother delinquent/criminal history) were found to contribute to the model.

Due to concerns that unequal sample sizes may have contributed to the statistically significant inverse relationship between mother's delinquent/criminal history and child deaths from probable child maltreatment, a second logistic regression was performed. Random sampling was utilized to create an equal subset of cases based on predictor variable responses, "yes" or "no" to mother's delinquent/criminal history. The regression analysis was conducted on a total sample of 665 child deaths review reports. For descriptive statistics on mother's delinquent/criminal history, see Table 61.

The logistical regression model was statistically significant, X^2 (2) = 40.776, p <.001 for predictor variable, mother delinquent/criminal history only (see Tables 62 and 63). The model explained 8.1% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 64.4% of the cases (see Tables 64

and 65). Mothers with delinquent/criminal history were indicated to be .346 times less likely than mothers without delinquent/criminal history to have a child death due to probable child maltreatment. Moreover, family subgroup (first-generation immigrant families and non-first-generation immigrant families) did not predict child deaths due to probable child maltreatment. Family subgroup findings did not support HIP in this second regression model.

Hypothesis 6: ***In support of HIP, researchers hypothesized that family subgroup and father's delinquent/criminal history would predict child deaths due to probable child maltreatment causes.***

A logistic regression was performed to determine if father delinquent/criminal history and family subgroups (first-generation immigrant families, non-first-generation immigrant families) predicted child deaths due to probable child maltreatment. Researchers selected cases where "yes" or "no" was indicated on the predictor variable, father delinquent/criminal history. Classifications of "not specified" and "unknown" on the predictor variable were excluded from the regression analysis. Additionally, researchers selected cases where "yes/probable" or "no" were indicated on the dependent variable, probable child maltreatment, identified by item 15a in NFR-CRS, "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child's death?". Classifications of "not specified" and "unknown" on the dependent variable were excluded from main statistical analysis. The regression analysis included a total sample of 2,313 child death review reports. For descriptive statistics on father's delinquent/criminal history, see Table 66.

The logistical regression model was statistically significant, X^2 (2) = 118.614, p <.01 (see Tables 67 and 68). The model explained 7.3% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 73.2% of the cases (see Tables 69 and 70). First-generation immigrant families were .752 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. Father's delinquent/criminal history was also a statistically significant predictor in child deaths due to probable child maltreatment. However, results indicated that fathers with delinquent/criminal history were .279 times less likely than fathers without delinquent/criminal history to have a child death due to probable child maltreatment.

Due to concerns that unequal sample sizes may have contributed to the statistically significant inverse relationship between father delinquent/criminal history and child deaths from probable child maltreatment, a second logistic regression was performed. Random sampling was utilized to create an equal subset of cases based on predictor variable responses, "yes" or "no" to father's delinquent/criminal history. The regression analysis included a total sample of 825 child deaths review reports. For descriptive statistics, see Table 71.

The logistic regression model was statistically significant, X^2 (2) = 60.286, p <.01 specifically for predictor variable, father delinquent/criminal history (see Tables 72 and 73). The model explained 9.7% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 64.4% of the cases (see Tables 74 and 75). Fathers with delinquent/criminal history were indicated to be .306 times less likely than fathers without delinquent/criminal history to have a child death due to

probable child maltreatment. However, family subgroup (first-generation immigrant families and non-first-generation immigrant families) did not predict child death due to probable child maltreatment. Family subgroup findings did not support HIP in this second regression model.

Hypothesis 7: ***In support of HIP, researchers hypothesized that family subgroup and residence overcrowding would predict child deaths due to probable child maltreatment causes.***

A logistic regression was performed to determine if residence overcrowding and family subgroups (first-generation immigrant families, non-first-generation immigrant families) predicted child deaths due to probable child maltreatment. Researchers selected cases where "yes" or "no" was indicated on the predictor variable, residence overcrowding. Classifications of "not specified" and "unknown" on the predictor variable were excluded from the regression analysis. Additionally, researchers selected cases where "yes/probable" or "no" were indicated on the dependent variable, probable child maltreatment, identified by item 15a in NFR-CRS, "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child's death?". Classifications of "not specified" and "unknown" on the dependent variable were excluded from main statistical analysis. The regression analysis included a total sample of 4,858 child death review reports. For descriptive statistics on residence overcrowding, see Table 76.

The logistical regression model was statistically significant, X^2 (2) = 188.242, p <.01 (see Tables 77 and 78). The model explained 5.7% (Nagelkerke R2) of the variance in child deaths due to probable child maltreatment and correctly classified 77.4% of the

cases (see Tables 79 and 80). First-generation immigrant families were .828 times less likely than non-first-generation immigrant families to have child death due to probable child maltreatment. However, families whose residences were overcrowded were also .210 times less likely than families whose residences were not overcrowded to have a child death due to probable child maltreatment.

Hypothesis 8: ***In support of HIP, researchers hypothesized that family subgroup and mother history of intimate partner violence would predict child deaths due to probable child maltreatment causes.***

A logistic regression was not conducted to determine if mother history of intimate partner violence predicted child death due to probable child maltreatment in the family subgroups. Responses to item assessing mother's history of intimate partner violence included "yes" and "not specified" responses which did not meet appropriate dichotomous scale of "yes" or "no" for a logistic regression analysis. See Table 81.

Hypothesis 9: ***In support of HIP, researchers hypothesized that family subgroup and father's history of intimate partner violence would predict child deaths due to probable child maltreatment causes.***

A logistic regression was not conducted to determine if father history of intimate partner violence predicted child death due to probable child maltreatment in the family subgroups. Responses to item assessing father's history of intimate partner violence included "yes" and "not specified" responses which does not meet appropriate dichotomous scale of "yes" or "no" for a logistic regression analysis. See Table 81.

CHAPTER V

DISCUSSION

The term first-generation immigrant family is referred to as FGIF and the term non-first-generation immigrant family is referred to as Non-FGIF throughout this section.

The overarching aim of this study was to investigate the Healthy Immigrant Paradox (HIP) among child deaths in FGIF and Non-FGIF. The researcher first did a detailed analysis to help understand parent and child health advantages potentially explained by HIP in the two types of family subgroups. The researchers then investigated if HIP accounted for family subgroup differences between child deaths due to medical and injury causes as well as child deaths due to probable child maltreatment. Furthermore, the researcher assessed if family risk factors predicted child deaths due to probable child maltreatment between the family groups. In particular, the researcher examined if (1) parent history of substance abuse, (2) parent history of intimate partner violence, (3) parent history of delinquent/criminal history, and (4) residence overcrowding were statistically significant predictors in child deaths due to

probable child maltreatment. The researcher used data obtained from the National Fatality Review-Case Reporting System (NFR-CRS). To date, this is the first study to draw information from the first-generation immigrant family subpopulation within the NRF-CRS. The hope is that findings from this study can assist in understanding potential health disparities between the two-family subgroups and assist in directing culturally appropriate interventions for first-generation immigrant families.

To help understand HIP in relationship to various parent and child health characteristics, the researcher examined descriptive analyses from a sample of 14,828 child deaths. In the information below, the researcher first discusses how the research sample characteristics coincide with the past findings on child mortality and the literature on HIP. The researcher then discusses specific research questions.

Sample Characteristics: Age

The children age characteristics of this study have considerable parallels to past research findings on child mortality. For example, children under the age of one formed the highest percentage of deaths within each family subgroup, 19% in Non-FGIF and 23% in FGIF. In the total research sample, children under the age of one accounted for 60.7% of all child deaths. Of note, neonatal deaths (less than one month old) made up 43.6% of the total child deaths under the age of one. Similarly, past research findings have indicated children under the age of one are at higher risk for child mortality (Fraser et al., 2014; Patton & Azzopardi, 2018). Also consistent with previous research findings, adolescents (13.2 %) accounted for the second highest age group of all child deaths in the research sample (Fraser et al.2014). Between the family subgroups, however, each family subgroup differed slightly on the age group accounting for the second highest child

mortality. In Non-FGIG, adolescents (ages 15 to 17 years) were the second highest age group with 8.3% deaths. In FGIG, younger children (ages 1 to 4 years) were the second highest age group with 6.4% deaths. The differences among the family subgroups, specifically regarding the second highest age group of child mortality, are a unique finding in this research study. Nevertheless, child age characteristics in this research sample are consistent with the child mortality literature revealing children under the age of one and adolescents to be the most vulnerable to child mortality.

Sample Characteristics: Race

Child race and ethnic characteristics in this research sample differed somewhat from past findings that showed a Black-White disparity in child mortality rates (Howell et al., 2010; Loggins & Andrade, 2014). Children in this research study were identified to be predominately White (64.8%), followed by African American (21.3%), and Asian (5.6%). A smaller number of children were Multi-racial (2.3%) and American Indian (1.0%). Still, 3.9% of children were missing racial classification. Fewer than half of the children (34.3%) were of Hispanic or Latino origin. Over half of the children were not of Hispanic or Latino origin (63.6%). Among the family subgroups, child deaths in FGIF accounted for the highest percentage of children of Hispanic or Latino origin (30.7%), with a small percentage of children of Hispanic or Latino origin in Non-FGIF (3.6%). 2.0% of children were classified as unknown and not specified on their Hispanic/Latino ethnicity. This study differs from past racial configurations on child mortality which have indicated a Black-White disparity. For instance, Howell and colleagues (2010) investigated U.S. trends in childhood mortality rates from 1985 to 2004 and found that while child mortality declined across all ages and racial groups, the Black-White

mortality ratio remained unchanged with more Black children dying at higher rates than White children each year. On the other hand, Palusci and Covington (2014) investigated child deaths from NFR-CRS and found a higher percentage of child deaths to be from children identified as White than Black and Hispanic children. Overall, racial configurations in this research sample do not indicate a Black-White disparity, nor a health disadvantage among children of Hispanic or Latino origin. The similar racial make-up between this study and Palusci and Covington's (2014) study may indicate there is a study population difference among those deaths reviewed by child death review teams.

Sample Characteristics: Sex

Child deaths in boys in this study appeared to be more prevalent compared to girls. Analysis revealed 58.4% of all child deaths were boys. A small percentage (0.3%) indicated unknown or not specified sex. This finding corroborates with previous research indicating more boys than girls are at risk of child mortality (U.S. Department of Health & Human Services, 2018).

Sample Characteristics: Country of Origin

The researcher used the Department of Homeland Security's Office of Immigration Statistics definition of country of origin. FGIF in this research sample were predominantly originally from North America (49.6%), Asia (15.8%), and Africa (9.7%). The next highest group of FGIF were from Central America (6.5%), the Caribbean (6.1%), and Europe (4.8%). A smaller percentage of FGIF were from South America (2.0%), Oceania (2.0%), mixed continents (1.8%), and Central/South America (0.5%). In the total research sample, there were 1.2% of FGIF where country of origin was

unknown. In a detail analysis across the geographic regions, a noticeably higher count of FGIF were from Mexico (3,224), India (180), Philippines (129), Somalia (120), Vietnam (98) Guatemala (180), El Salvador (121), Honduras (110), Puerto Rico (143), Haiti (77) and Germany (73). In all, FGIF from Mexico appeared to experience the highest child mortality. This finding dispels the "Hispanic Immigrant Paradox" initially coined because immigrant Hispanic/Latino families were found to be at lower risk of infant mortality than Non-Latinos in the U.S. (McGlade & Dahlstrom, 2004; Millett, 2016; Ribble & Keddi, 2001). Findings in this current study indicate children of Latino/Hispanic origin are the most vulnerable to child mortality with Mexico, Guatemala, El Salvador, Honduras, and Puerto Rico among the highest count of child deaths in this research sample. This is a noteworthy finding that points toward a trend found in early twentieth century United States where "children of Mexican ancestry suffered the highest levels of infant and child morality" (Dribe, Hacker, & Scalone, 2020). Dribe and colleagues (2020), who investigated U.S child mortality rates across immigrant groups from 1900 to 1910 using census data, found that "there was no 'Hispanic paradox' in child mortality in the early twentieth century" (p. 85). Overall, findings in this research study may underline FGIF of Mexican origin as an at-risk population for higher child mortality and further indicate a downward trend in the health of Latino/Hispanic children of FGIF living in the U.S. today.

Sample Characteristics: Missing Data

The researcher also examined the following categories to assess health advantages potentially explained by HIP: (1) father and mother's health history, (2) child's health history, (3) child developmental history, (4) family socio-economic status and (5) family

health care utilization. Descriptive analysis, however, revealed a large percentage of data identified as missing, unknown, or not specified on several parent and child variables. For example, information on parent race and ethnicity was classified as missing for all Non-FGIF and classified as missing for approximately 50% of FGIF. Additionally, among the parent health characteristics, (e.g., disability/chronic illness) over 70% of the data was reported as unknown or not specified. Further, descriptive analysis on child health and child development variables revealed a wide discrepancy between responses endorsed as "yes" and data identified as not specified and/or unknown. Analysis on family socio-economic status and family health care utilization also revealed a disproportionate amount of data identified as unknown or not specified across the family subgroups. Due to the various unknown and not specified responses on the parent and child variables, the researcher was unable to complete an adequate comparison of family subgroups. Subsequently, the researcher is not able to comment on implications on health advantages potentially explained by HIP between Non-FGIF and FGIF.

Sample Characteristics: Manner of Death and Primary Cause of Death

Analysis on the official manner of deaths showed that the majority of children in this research sample died of natural causes (63.8%). Other manners of death included accidents (22.3%), homicide (6.8%), and suicide (3.6%). Only a small percentage of cases identified the manner of death as unknown (0.2%), not specified (0.1%), or pending (0.5%). Regarding the primary cause of deaths, results revealed that children from both FGIF and Non-FGIF died predominantly from medical conditions (66.2%). Fewer children experienced injury-related causes of deaths (33.8%). In general, child deaths from medical conditions have progressively declined in the U.S. due to medical advances

in prevention, intervention, and treatment (e.g., early diagnosis, vaccinations, antibiotics) (Cunningham, et al., 2018; Thakrar et al., 2018). At the same time, researchers have documented a rise in injury-related deaths in children (Chang & Miller, 2018; Cunningham, et al., 2018). Although findings here contradict studies indicating injury-related causes of death are more prominent in the U.S. today, special consideration should be given to the age demographic of this sample. As noted in descriptive analysis on age, children under the age of one accounted for 60.7% of all child deaths. Within this context, findings in this study are consistent with past child mortality trends where infant deaths from medical conditions have exceeded deaths from other causes (Thakrar et. al., 2018). It is equally important to reiterate and understand that child deaths in this research sample are cases assessed by state child death review teams and only represent cases in the NFR-CRS. Given these considerations, descriptive analysis on manner and primary cause of death revealed that the vast majority of child deaths in this research study were from natural causes, with a greater percentage of child deaths resulting from medical conditions.

Sample Characteristics: Circumstances of Death

The researcher aimed to examine contextual factors surrounding child deaths to help understand each family's unique circumstance. Due to extensive data identified as not specified, however, the following variables describing circumstances of death could not be explored: causes of motor vehicle/other transport, poisoning/overdoes/acute intoxication, medical conditions, sudden death, cause of death during another crime, child abuse/neglect, and child deaths due to suspected child neglect. Still, analysis indicated some variables had less than 5% of data identified as unknown or not specified. These

variables met the recommended 5% cutoff score for missing data, meaning descriptive analysis was appropriate to analyze (Schafer, 1999; Schlomer et al., 2010). The following variables surrounding the circumstance of child deaths are discussed below: (1) drowning location, (2) fire, burn, electrocution, (3) unintentional asphyxia, (4) death due to assault, weapon, or person's body part, (5) death due to fall or crush. As this study hopes to broaden the understanding of the circumstances of child deaths in Non-FGIF and FGIF, descriptive analysis from this research sample will be discussed with relevant research on the mortality-specific causes.

Sample Characteristics: Deaths from Drowning Incidents

Descriptive analysis revealed 570 children died in drowning incidents. FGIF accounted for more deaths from drowning incidents (64.1%) compared to Non-FGIF (35.9%). In the total sample, the majority of children drowned in pools and/or hot tubs (45.6%). Children who drowned in open water (35.4%) represented the second highest percentage of drownings, followed by children who drowned in bathtubs (10.9%). Between the family subgroups, however, there were differences on where most child deaths occurred. In particular, FGIF had more children drown in open water (25.2%) than Non-FGIF (10.2%). Similarity, FGIF had more children drown in pools and/or hot tubs (29.7%) compared to Non-FGIF (16.9%). On the other hand, Non-FGIF had more children drown in bathtubs (7.1%) compared to FGIF (3.8%). In all, considering there were more child deaths from FGIF than from Non-FGIF, children of FGIF appeared to be more vulnerable to drowning incidents. Schyllander and colleagues (2013) discovered similar unexpected findings in their investigation of drowning cases in Sweden. Researchers reported children of immigrant backgrounds, specifically Middle Eastern and

Iranian descent, were overrepresented in mortalities from drownings. The authors attributed an elevated risk of drowning in children of immigrant backgrounds and recommended prevention measures around awareness of drowning risks, fencing around swimming sites, supervision of children, and swimming lessons for all children, especially children of immigrant backgrounds (Schyllander et al., 2013). In a related study on child unintentional injuries in Canada, researchers found that recent immigrants (between zero to five years of residency) had a higher rate of drowning incidents compared to immigrants who had longer residency in Canada (Saunders et al., 2018). Here too, researchers determined recent immigrants may need the highest level of intervention to prevent child deaths from drownings (Saunders et al., 2018). Overall, similar prevention efforts should be considered in the U.S. to help prevent tragic accidents of drowning in children. Attention should be directed to understanding the unique vulnerabilities of children from FGIF and children from Non-FGIF.

Sample Characteristics: Deaths form Burn-related Injuries

There were 244 children who died from burn-related injuries. There were more children from Non-FGIF who died from burn-related injuries (65.9) compared to FGIF (34.1%). Fires contributed to the highest child mortality in the total sample (87.6%). Child deaths from electrocution (4.8%) and scalding (2.8%) were the second and third leading causes of mortality. Between the family subgroups, children from Non-FGIF experienced more deaths from fire (57.4%) when compared to children from FGIF (30.1%). The same was true again as Non-FGIF represented more child deaths from electrocution (3.2%) than FGIF (1.6%). Non-FGIF had more child deaths from scalding (2.0%) compared to FGIF (0.8%). Overall, children from Non-FGIF suffered a higher

percentage of fatal burn-related injuries when compared to FGIF. This analysis corroborates with findings by Saunders and associates (2017). In a study in Canada, researchers found non-immigrant youth compared to immigrant youth at a higher risk of experiencing a range of fatal and non-fatal injuries, including those injuries from fire-related incidents (Saunders et al., 2017). Different family risk factors were found to be associated with injuries. For example, low socioeconomic status was closely tied to a higher rate of injuries in non-immigrant families while the inverse was true for immigrant families (Saunders et al., 2017). The researchers concluded that the "sociodemographic factors that traditionally predict injury may not apply to immigrant populations" and called for a better understanding of the existing "protective factors in immigrant families which may be helpful in improving injury prevention in the general population" (Saunders et al., 2017, p. 94).

Sample Characteristics: Deaths from Unintentional Asphyxiation

A total of 718 children died from unintentional asphyxiation. FGIF and Non-FGIF had similar percentages of child deaths resulting from suffocation, strangulation, and choking. Child deaths from suffocation were slightly higher in Non-FGIF (43.0%) than in FGIF (35.5%). Non-FGIF also had a marginally higher percentage of child deaths due to strangulation (4.8%) compared to FGIF (3.4%). On the other hand, FGIF represented more child deaths from choking incidents (5.0%) than Non-FGIF (3.2%). To the author's knowledge, asphyxiation in children has been studied broadly across populations and between-groups differences have not been examined. According to previous research, child mortalities from suffocation occur more frequently in children under the age of one and may often be due from food, plastic bags, and/or soft bedding/sleep environments

(Lambert, 2018; McBribe et al., 2015; Nixon et al., 1995). Although the context of child deaths from strangulation is not known in this current study, the research on child deaths from strangulation appears to be associated with accidental deaths (e.g., strangulation from a window cord, child's head stuck between a mattress, drawstrings from children's clothing) as well as homicidal deaths (e.g., fatal abuse in children) (Injury Prevention Committee, 2012; Nouma, 2016; Rauchschwalbe & Mann 1997). Moreover, the child mortality literature documents child deaths from choking to be from food and non-food products, with food and latex balloons involved in a significant portion of fatal choking cases in children (Tarrago, 2000; Injury Prevention Committee, 2012). Efforts to prevent child deaths from asphyxiation have included recommendations from the product design/manufacture of children's products (e.g., choking hazards in products, use of plastic bags), parent/caregiver education on choking prevention information, first aid/CPR training for parents/caregivers, as well as maintenance of pediatric resuscitation courses for pediatric health care providers (Injury Prevention Committee, 2012). Reflecting on the current study, Non-FGIF and FGIF in this research sample had overall similar child mortalities from asphyxiation-related causes. However, they differed to a larger degree in child deaths related to suffocation. It may be beneficial to investigate these child deaths more closely accounting for the family subgroups.

Sample Characteristics: Deaths from Intra-and-Interpersonal Injuries

Child deaths involving intra- and inter-personal injuries had the largest mortality count in this study, with 1,036 victims. There were more children from Non-FGIF who died from intra- and inter-personal injuries (57.2%) compared to children from FGIF (42.8%). The causes of mortality included firearms (48.3%), a person's body part

(16.3%), rope (7.0%), sharp instrument (4.8%), and a blunt instrument (1.9%). FGIF and Non-FGIF differed to the largest degree on child's deaths from firearms. Children from Non-FGIF accounted for a higher percentage of mortality from firearms (30.5%) compared to FGIF (17.7%). Non-FGIF appeared to be more vulnerable to child deaths involving firearms. Findings from a research study by Saunders et al. (2017) indicate a similar observation, specifically with non-fatal firearm injuries in non-immigrant and immigrant children in Canada. The researchers utilized a health care registry and a database of permanent residents in Canada to investigate HIP in relation to firearm injuries in immigrant youth and non-immigrant youth (Saunders et al., 2017). Findings indicated non-immigrant youth experienced a higher risk of unintentional firearm injuries compared to immigrant youth (Saunders et al., 2017). Contrary to the literature on HIP, however, researchers found that immigrant youth experienced a higher rate of assault-related firearm injuries compared to non-immigrant youth (Saunders et al, 2017). Within the immigrant study population, the researchers found a significantly higher rate of firearm assault injuries among refugee and immigrant youths from Africa and Central America (Sanders et al., 2017). Given these findings, Saunders et al. (2017) recommended prevention efforts consider unique interventions for each family subgroup. Recommendations included firearm legislation restricting gun ownership, registration and access, and safe firearm storage (Saunders et al., 2017). For assault related firearm injuries in immigrant youth, recommendations posed by researchers included neighborhood-level community engagement strategies, conflict resolution programs, and violence intervention programs specifically at emergency departments with brief motivational interviewing and cognitive skills training (Duncan et al., 2014; Whitehill et

al., 2013; Saunders et al., 2017). Similar to the discrepancy found by researchers in non-immigrant youth and immigrant youth, researchers in this study also provide evidence that Non-FGIF and FGIF differ to an extent. Overall, children from Non-FGIF experienced more fatal injuries from firearms compared to children from FGIF. To strengthen firearm injury prevention efforts specifically for Non-FGIF, it may be beneficial to understand the impact of U.S. legislation on firearms and the U.S. culture associated with gun ownership along with the firearm fatalities in children of Non-FGIF.

Sample Characteristics: Deaths from Fall and Crush-related Injuries

Child deaths from fall and crush-related injuries were also examined. The majority of child deaths resulted from falls (51.1%), with deaths from a crush-related injury (48.2%) representing less than half of the sample. The family subgroups were mostly similar in the total child deaths, although they did differ to a small percentage. For example, child deaths from falls in FGIF accounted for a slightly higher percentage of deaths (27.7%) compared to child deaths from falls in Non-FGIF (23.4%). Alternatively, child deaths from crush-related injuries from Non-FGIF accounted for a slightly higher percentage of deaths (27.0%) compared to FGIF (21.2%). The World Report on Child Injury Prevention reported fall fatalities in children in the U.S. occured at a higher rate in poor-quality housing in low-income urban areas (Peden et al., 2009). According to the World Report, fall fatalities in pre-school age children occured more commonly from windows while fall fatalities in older children occured from fire escapes, roofs, and balconies (Peden et al., 2009). Research on crush-related injuries in children has in part focused on pedestrian accidents resulting from the fatal impact of vehicle on a child's body (Partrick et al., 1998; Sens et al., 2020). Sens and colleagues (2020) reported that

for children under the age of four, crush-related injuries occured in a home driveway where children were victims of "backover" accidents likely due to children's tendency to play behind parked vehicles (p.732). In older children, crush-related injuries from pedestrian accidents occurred in roadways, crosswalks, or intersections where injuries may have been associated with children's impulsive behavior (e.g., running across traffic not using crosswalks) (Sens et al., 2020). In context of the current study, child deaths from both fall and crush-related incidents differ somewhat between Non-FGIF and FGIF. The difference in occurrence of falls and crush-related injuries between the family subgroups does not appear to be studied in the literature. Perhaps the analysis of falls and crush-related injuries in this sample can help contribute to understanding specific vulnerabilities of children in each family subgroup.

Descriptive analysis on the variables discussed above include only those variables that had less than 5% of the data identified as unknown or not specified and are not exhaustive of causes of mortality in the NFR-CRS. Of the injury-related fatalities discussed, FGIF and Non-FGIF had a similar count of child deaths due to unintentional asphyxiation and a similar count of child deaths from fall and crush incidents. To a varying extent, analysis revealed FGIF and Non-FGIF differed in child deaths due to drowning, child deaths due to fire, and in child deaths involving firearms. Overall, such differences may warrant more research to understand the contextual factors surrounding child deaths and potential sociocultural factors in child deaths.

Child Deaths due to Medical and Injury Causes

As expected, there were statistically significant differences between medical and injury causes of child deaths in FGIF and Non-FIGF. Although the analysis does not

determine the family subgroup more or less at risk of experiencing a child death, there are notable differences among the medical and injury-related causes of mortality between the family subgroups that are important to discuss.

Family Subgroup Differences due to Medical Causes of Death

In the total sample, there were more deaths from medical causes (66.2%) than from injuries (33/8%). More children from FGIF died from medical causes (35.0%) than did children from Non-FGIF (31.2%). Prematurity (24.3%) and congenital anomaly (13.9%) accounted for the highest medical causes of child mortality. This finding is consistent with the child morality literature. Prematurity and congenital anomalies are among the global leading causes of neonatal deaths (Camara et al., 2021; Patel et al., 2015). Per the NFR-CRS data dictionary, child deaths from prematurity are defined as infants born sooner than 37 completed weeks gestation. Congenital anomalies are birth defects, malformations, chromosomal, or other conditions noted prenatally, at delivery, or on autopsy (NFR-CRS data dictionary). In the research sample, Non-FGIF and FGIF had a very similar count of medical causes of deaths. FGIF had a marginally higher percentage of child deaths from prematurity (12.7%) and congenital anomalies (8.6%) compared to child deaths in Non-FGIF from prematurity (11.5%) and congenital anomalies (5.3%). Although the researcher is not able to identify a direct cause for preterm delivery and congenital anomalies, there are biological, behavioral, and environmental risk factors that increase the likelihood of premature births (Camera et al., 2020). According to research, risk factors associated with preterm delivery include maternal nutrition, multiple-pregnancy, high blood pressure, obesity, and tobacco use (Camara et al., 2020; Meena, Rhodes, & Wylie, 2015). Risk factors that increase the

likelihood of congenital anomalies include maternal chronic disease (e.g., diabetes), viral infections during early pregnancy, medication /illicit /prescribed drug use, alcohol consumption, tobacco use, exposure to radiation, chemical agents, nutritional deficiencies, and chromosomal mutations (Brent, 2004; Desrosiers et al., 2013; Kishimba et al., 2015; Salih et al., 2014; Taye, 2018). Considering the risk factors, it may be that FGIF experience more health complications that affect child survival. Overall, this researcher did not expect to find higher counts of child deaths from prematurity and congenital anomalies in FGIF.

Researchers have provided mixed findings on the mortality rate of preterm delivery and congenital anomalies in immigrant mothers. Bollini and associates (2009) conducted a systematic review of pregnancy outcomes in immigrant women and native-born women in European countries from 1966 to 2004 and found immigrant women experienced more adverse pregnancy outcomes compared to native-born women. Findings from the study indicated immigrant women experienced a higher rate of pre-term delivery, congenital anomalies, lower birth weight, and perinatal mortality (Bollini et al., 2009). Researchers suggested three risk factors potentially explained the higher risk of congenital anomalies in immigrant women including, (1) consanguinity, (2) inadequate prenatal care, (3) reluctance to terminate pregnancy when a diagnosis of congenital anomaly was made (Bollini et al., 2009). The researchers also alluded to the psychological and physical effects of racism and discrimination experiences in minority racial/ethnic women which have been associated with risk of hypertension in pregnancy, low infant birth weight, and preterm birth (Alhusen et al., 2017; Bollini et al., 2009; Mustillo et al., 2004). The researchers also measured the naturalization rate of each

European country (number of naturalizations among the total number of immigrants present at the beginning of the year) in relationship to pregnancy outcomes (Bollini et al., 2009). Their findings revealed that countries with a strong immigrant integration policy (measured by naturalization rate) had a reduced gap of adverse pregnancy outcomes between immigrant women and native-born women (Bollinie et al., 2009). Given prior findings, there appears to be a complex interplay between individual and societal experiences of immigrant families and immigration legislation/policies which may contribute to the health vulnerabilities of children from first-generation immigrant parents.

Family Subgroup Differences due to Injury Causes of Death

Non-FGIF had a higher percentage of deaths from injury-related causes (18.8%) compared to FGIF (15.0%). The leading causes of injury-related deaths were from motor vehicles (9.4%) and weapons (e.g., firearms, sharp instruments used as primary means of assault or injury) (8.9%). This finding corroborates with previous literature. Motor vehicle accidents are among the leading causes of child death in the U.S. and child deaths from firearms are highest in the U.S. compared to other high-income countries (Lindsey et al., 2017; Mokdad, et al., 2020; Solnick & Hemenway, 2019). Regarding child deaths involving weapons, it appears other researchers have studied child deaths from weapons in the context of child homicides, where weapons have included sharp instruments such as clubs, rocks, knives, and/or razors (Adhia et al., 2019). Thus, it may be that child deaths from motor vehicle accidents are unintentional injuries and child deaths from weapons are intentional injury injuries. However, such classifications are not clear in this study. In the family subgroups, Non-FGIF appeared to a have a higher count of deaths

from motor vehicles (5.5%) and weapons (5.1%) compared to child deaths from FGIF due to motor vehicle (3.9%) and weapons (3.8%). In the context of HIP, this finding was expected.

The finding that FGIF experienced a lower count of motor vehicle accidents compared to Non-FGIF is supported by the literature. In some research studies, individuals of immigrant background are disproportionally represented in pedestrian accidents compared to motor vehicle accidents (Chen, et al., 2012). The higher rate of pedestrian accidents in immigrants may have both socioeconomic and sociocultural considerations. For example, researchers have suggested individuals with immigrant backgrounds may be more likely to walk or cycle compared to native-born groups (Chen et al., 2012). Researchers have suggested that immigrants may perhaps exhibit more risky traffic behavior (e.g., jaywalking) (Chen, et al., 2012). The lower rate of mortality in FGIF from motor vehicle accidents may be partly explained by the research stating immigrants are more vulnerable to pedestrian accidents (Chen et al., 2012). Moreover, there are likely several contextual factors which may explain the higher child mortality in Non-FGIF from motor vehicle accidents. For example, recent research on child fatalities from motor vehicle accidents found U.S. rural counties and counties with limited access to trauma centers to have a higher child mortality rate from motor vehicle accidents (Mokdad et al., 2020). A multitude of factors have been associated with higher mortality from motor vehicle accidents in the U.S. specifically in rural counties, including severity of injuries, faster driving speeds, decreased lighting/visibility, decreased enforcement of speed limits, objects on the road side, higher alcohol use, less restraint use, and distance to trauma centers (Mokdad et al., 2020; Wolf et al., 2017). These contextual factors

around motor vehicle accidents may or may not exist in this sample of Non-FGIF. Past research has not included immigrant/native-born status as a demographic variable.

In this study, children from Non-FGIF experienced higher fatalities from weapons/firearms compared to children from FGIF. Per the NFR-CRS, cause of child death from weapons involves firearms and/or sharp instruments used as a primary means of assault or injury. Information on whether the weapon/firearm fatalities were unintentional (accidents) or intentional (child homicide or suicide) was not explored by this analysis. However, to help understand the context of child deaths from weapons/firearms, the researcher will discuss both unintentional and intentional injuries below. More specifically, due to the higher count of firearm fatalities in the researcher sample, the researcher will discuss previous findings on firearm fatalities in children. First, previous researchers have found nonimmigrant youth at an increased risk of unintentional firearm fatalities compared to immigrant youth (Saunders et al., 2019). Factors that have been attributed to increased risk of unintentional firearm fatalities include households with gun ownership, households where firearms are stored loaded, and households where firearms are stored unlocked (Miller et al., 2005; Saunders et al., 2019). Moreover, past researchers have also identified unintentional firearm fatalities in children to occur in circumstances where children are playing with a gun, children thinking the gun was unloaded, and firearm fatalities in hunting events (Soolnick & Hemenway, 2019). On the other hand, the higher count of child fatalities in Non-FGIF from weapon/firearms may also be due to intentional injuries by firearms. Research on intentional firearm fatalities has referred to incidents of child homicides and child suicides. Child homicides involving firearms occur more commonly in families that

experience intimate partner violence along with family situations of divorce, breakup, separation, or custody issues (Adhia et al., 2019; Liem, 2008; Bourget & Whitehurst, 2007). Regarding child suicides, researchers have highlighted that access to firearms, along with other intrapersonal risk factors (e.g., history of suicidal ideation/attempt, impulsivity, academic problems) as well as interpersonal risk factors (e.g., family history of suicidal behaviors, major conflict with significant other, bullying), can increase the risk of children committing suicide utilizing a firearm (Goldston et al., 2016; Hawton, 2012; Langhinrichsen-Rohling, 2009; Maslow et al., 2015; Price et al., 2016; Shain, 2016). In light of the circumstances around firearm fatalities in children, researchers have noted that "the presence of these risk factors does not mean [the risk factors] will be the direct causes of youth violence. [Rather] the duration of exposures to the risk factors and the prevalence and seriousness of co- occurring risk factors increase the risk of youth violence" (Price et al.,2016, p. 25). Although it is unclear why children of Non-FGIF may experience more fatalities from weapons/firearms compared to children of FGIF, the findings in this study overall underline there are cause-specific variabilities in child mortalities between FGIF and Non-FGIF.

Child Deaths from Probable Child Abuse and Neglect

In this study, Non-FGIF and FGIF did not differ in child deaths due to probable child abuse and child neglect. The NFR-CRS defines child abuse as "any injury inflicted on a child by a parent or caregiver where the injury may be a result of over-discipline or physical punishment (e.g., punching, beating, kicking, biting, burning, shaking, or otherwise harming a child)" (p. 93). The NFR-CRS defines child neglect has "a failure on the part of parent/caregiver/supervisor to provide basic necessities (e.g., shelter, safety,

supervision, nutritional needs) and includes physical, medical, supervisory, and emotional neglect" (p. 93). In this study, there were more child deaths due to probable child abuse (2.6%) than probable child neglect (2.1%). However, similar counts of child deaths due to probable child abuse and child neglect were found in FGIF and Non-FGIF. The family subgroup similarities from child deaths due to probable child maltreatment were not expected.

In this study, children of FGIF and children of Non-FGIF appear to be equally at risk of experiencing deaths due to suspected child abuse and neglect. The lack of significant difference between the family subgroups indicates some support for HIP. The literature on HIP in relationship to child maltreatment has reported similar findings with children of immigrant families experiencing lower or similar rates of child maltreatment compared to children of U.S. native-born families (Millett, 2016). Evidence of HIP in this study was indirectly supported as children of FGIF and Non-FGIF experienced similar counts of mortality from probable child maltreatment. This result is particularly striking given consistent findings indicating immigrant families have greater socioeconomic disadvantages (e.g., higher rates of poverty), higher likelihood of living in unsafe neighborhoods (e.g., gangs, open drugs use, low parental involvement), and are less likely to access social services (e.g., food stamps, housing support, social security disability) compared to U.S. native-born parents (Cardoso et al., 2014). Several parent characteristics have been attributed to explain findings that reveal children of immigrant families, despite the various socioeconomic challenges, are no more likely than children of U.S.-born parents to experience abuse and neglect (Cardoso et al., 2014). For example, researchers in some studies have found immigrant families compared to U.S. native-born

families exhibit less risk factors attributed to child maltreatment such as high family stress, parent substance use, parent history of arrest, domestic violence, and history of child protective services (Cardoso et al., 2014; Dettlaf et al., 2009; Dettlaff & Johnson, 2011; Johnson-Motoyama et al., 2012). Additionally, findings have revealed immigrant families commonly have older maternal age and two-parent households compared to U.S.-born families, which may be protective factors against children of FGIF experiencing maltreatment (Putman-Hornstein et al., 2013). Although risk factors associated with child maltreatment are not explored in this specific analysis, evidence of HIP is arguably present by the lack of significant differences between Non-FGIF and FGIF in child deaths due probable child abuse and neglect.

It's important to keep in mind that this study examines the worst outcome of child maltreatment – that is child mortality. The similar count of mortality between Non-FGIF and FGIF underlines areas of concerns for both family subgroups given that child deaths from maltreatment can be prevented. Contrary to the literature on HIP, past researchers in European countries have reported higher rates of child maltreatment in immigrant families and hypothesized post-migration living difficulties and acculturation stress as potential risk factors to child maltreatment (e.g., isolation, loss of previously established support systems, adapting to new culture, language difficulties, intergenerational family conflicts from acculturation differences) (Alink et al., 2013; Schick et al., 2016). Studies of immigrant refugees have also considered parents' mental health, specifically post-traumatic stress, to play a role in family-related stress and risk for child maltreatment in immigrant families (Alink et al., 2013). Moreover, cultural factors that influence certain parenting styles and/or child rearing practices such as those of authoritarian style (e.g.,

high controlling behaviors) found in Latino and Asian immigrant parents have also been noted to potentially contribute to adverse outcomes in children of immigrant families (Larsen et al., 2008; Vaughn et al., 2017). To help reduce child maltreatment in immigrant families in the U.S., it may be helpful to consider risk factors found in other immigrant groups. For example, Grey et al. studied the potential role of adverse childhood experiences (ACE) to help understand mortality risks in children (i.e., understand children's exposure to abuse, violence, family dysfunction) (Grey et al., 2019). Results from their study revealed that children who died from injury-related causes (avoidable/non-natural) had a higher prevalence of ACEs with multiple ACE exposures compared to children who died from medical causes (acute/chronic conditions) (Grey et al., 2019). Among children who died from injury-related causes, parent separation (e.g., divorce) was found to be the most prevalent ACE (Grey et al., 2019). Researchers from this study urged child death review teams to become ACE-informed to order to understand the common adversities children/families experience and to guide mortality prevention/intervention efforts accordingly (Grey et al., 2019). Other researchers have identified a need to include ACEs surrounding discrimination, parental deportation, and exposure to violence to help adequately understand and assess the unique experiences of children of immigrant families (Caballero et al., 2017). In all, to help formulate and implement effective child abuse and neglect prevention/intervention programs for both FGIF and Non-FGIF, it may be helpful to consider the interplay of each type of family's unique experience (e.g., post-migration living difficulties) along with parent-child mental health stressors (posttraumatic stress disorder, adverse childhood experiences) and parenting styles across cultures.

Child Deaths from Inadequate Supervision and Exposure to Hazards

In this study, one surprising result was child deaths attributed to poor or absent supervision and exposure to hazards. There were more child deaths attributed to poor or absent supervision (5.0%) and exposure to hazards (3.0%) compared to child abuse (2.6%) and child neglect (2.1%). The NFR-CRS defines poor or absent supervision to mean "parent/caregivers/supervisor's failure to supervise, provide alternative appropriate supervision, or engage in other behavior that causes or contributes to the child's death" (p. 93). Moreover, the NFR-CRS defines exposure to hazards as "behavior by a parent/caregiver/supervisor that exposes a child to hazard(s) that pose a threat of harm to the child" (p. 93). According to the NFR-CRS, child deaths from poor/absent supervision and exposure to hazards do not meet criteria for child neglect as determined by the child death review process. Past researchers have found inadequate supervision of children to lead to more child deaths compared to other forms of neglect, with child deaths from drownings, unintentional firearms injuries, electrocution, poisoning, and burns partly resulting from inadequate supervision (Damshek et al., 2014; Welch & Bonner, 2013). The higher count of child deaths from poor/absent supervision and exposure to hazards is a unique and unexpected finding of this current study.

Between the family subgroups, FGIF had a marginally higher count of mortality from poor or absent supervision (2.6%) and exposure to hazards (1.7%) than Non-FGIF from poor or absent supervision (2.3%) and exposure to hazards (1.3%). Some studies corroborate this finding, specifically relating to children of immigrant families experiencing higher rates of physical neglect (e.g., lack of food, medical neglect) and lack of supervision compared to the U.S. born families (Millett, 2016). Researchers have

suggested poverty/socioeconomic challenges in immigrant families may play a role in elevating the risk of child neglect or lack of supervision (Rhee et al., 2012). For example, one study found that foreign-born Latino families expressed greater concern for providing food, taking their child to the doctor, and concern for providing safe supervision for their children compared to U.S-born Latino families (Johnson-Motoyama, 2014). Researchers have also noted that immigrant families have the highest number of household members in the workforce (while still experiencing higher poverty levels than U.S. native-born families) which may contribute to the absence of adult household members and a lack of safe supervision of children (DeNavas-Walt & Proctor, 2014; Davidson, Morrissey, & Beck, 2019). Of note, findings have indicated children of second-generation immigrant families (children born in the U.S. with one U.S. native-born parent and one foreign-born parent) do not experience the high rate of neglect of children of FGIF, suggesting that socioeconomic difficulties in FGIF may be more acute and/or directly linked to child neglect concerns (Millett, 2016; Vaughn et al., 2017). Lastly, aside from socioeconomic hardships, researchers have also considered the possibility that immigrant families lack traditional support networks from extended family members which may limit options for appropriate childcare (Rhee et al., 2012). Sibling caretaking may be more prevalent in immigrant families compared to U.S. native-born families with associated risk (e.g., may compromise safety of younger siblings) and protective factors (promotes familism/strong orientation toward family) (Diaz & Nino, 2019). In all, there are both socioeconomic and sociocultural reasons why child deaths from immigrant families may result from poor or absent supervision as opposed to child abuse and/or child neglect. Although this current study only sought to understand child

deaths from child abuse and neglect, it appears that child deaths from poor or absent supervision as well as child deaths from exposure to hazards may be pertinent to study in relationship to FGIF and Non-FGIF.

Family Subgroups as Predictors of Deaths from Child Maltreatment

To test HIP, the researcher examined if family subgroup (FGIF and Non-FGIF) predicted the variance in child deaths from probable child abuse and neglect. As expected, family subgroups were a statistically significant predictor and analyses revealed FGIF experienced less child mortality from probable child maltreatment than Non-FGIF. This finding was as expected and true across all regression analyses.

There are important sociocultural considerations that may explain why FGIF in this study experienced lower child mortality from possible child maltreatment. The literature on HIP has referenced the strong cohesion and/or *familismo* in immigrant families as an explanation of the reduced adverse effects from risk factors otherwise associated with child maltreatment in non-immigrant families (Caballero et al., 2017). The concept of familismo or familism refers to family cohesion, which embraces a collective responsibility and dedication to family, a view that families can solve problems together and family members can rely on each other for support (Caballero et al., 2017; Revens et al, 2021; Sabogal et al., 1987). Familial behaviors have been characterized by the role of socialization in the family (e.g., high levels of visitation), family's distribution of resources, and family's reciprocity behavior, all of which researchers have suggested promotes resiliency against adversities (Hafford, 2010; Leong et al., 2013; Leidy et al., 2010; Rojas et al., 2021; Valenzuela, 1999). Immigrant families who identify with a positive ethnic identity, that is a strong sense of belongingness to their racial/ethnic

group, are similarly found to experience better parent and child psychological wellbeing (e.g., higher self-esteem, less psychological distress) (Revens et al., 2021; Rojas et al., 2021). Yet another protective factor that may explain the lower child mortality in immigrant families may be relevant to the important contribution bilingual children have in their families (Hafford, 2010). Bilingual children of immigrant families may be translators and interpreters who help advocate for their family's needs, mediate their family's social encounters, facilitate their family's access to resources/services, and assist their family's integration into the host culture society (Hafford, 2010; Orellana, 2001; Orellana, Dorner, & Pulido, 2003). Although parentification (e.g., children taking responsibilities reserved for adults) has been noted as a potential psychological concern for children (e.g., higher levels of anxiety, depression), there is a body of research that suggests several positive health outcomes of parentification such as children's increase in relational competence, increase in self-efficacy, efficient task management skills, and positive association with school achievement (Brochet et al., 2021; Jankowski, et al., 2013; Mayseless et al., 2004). Moreover, the well-being of children of immigrant families may also transpire from parent's motives in migrating as some parents migrate to a new country striving to provide a better life for their children and improve their family's circumstances (LeBrun et al., 2015; Pumariega & Rothe, 2010). Altogether, the sociocultural factors that promote parent and child well-being and resiliency in FGIF may contribute to less risk for child maltreatment.

Family Risk Factors as Predictors of Deaths from probable Child Maltreatment

Regression analyses on three risk factors determined that parent substance abuse, parent delinquent/criminal history, and residence overcrowding were statistically

significant predictors in the variance in child deaths from probable child maltreatment. However, there were unexpected findings with each risk factor/predictor variable. Results revealed an inverse relationship between all risk factors and child deaths from probable child maltreatment for FGIF and Non-FGIF. Parents with substance abuse history were less likely than parents without substance abuse history to have a child death from probable child maltreatment. Parents with delinquent/criminal history were less likely than parents without delinquent/criminal history to have a child death from probable child maltreatment. Lastly, families in residences that were overcrowded were less likely than residences that were not overcrowded to have a child death from probable child maltreatment. Findings on predictor variables for child deaths from probable child maltreatment do not corroborate with past findings in the literature.

There is a possible explanation that can shed light to understanding how the three risk factors, parent substance abuse, parent delinquent/criminal history, and residence overcrowding, were not predictive of the variance in child deaths from probable child maltreatment. Research on child protective services has found parent substance abuse and parent incarceration as reasons why children are placed in the care of relatives (Cuddeback, 2004; Dorval et al., 2020; Farmer, 2009; Lee et al., 2020). Kinship care provides children with a temporary placement among family relatives or close friends of family relatives when child protective services is involved due to concerns of child abuse and/or neglect (Lee et al., 2020; Xu & Bright, 2018). Thus, in the context of this current study, it may be possible that children with parent history of substance abuse and/or parent criminal history are placed in kinship care thereby preventing child deaths from probable maltreatment. According to research, children with parental substance abuse

have higher rates of kinship care, often in the care of grandparents, as opposed to placements with foster care families (Cuddeback, 2004; Dorval et al., 2020; Templeton, 2012). Similarly, research on children whose parents faced incarceration also showed children had higher placements with family compared to state care (Crockett & Gibby, 2021). A research study by Templeton (2012) found that grandparents who cared for their grandchildren due to parental substance abuse also cared for their grandchildren as it related to their parent's substance abuse treatment and/or time in prison. It may be important to note that the literature on child welfare practices has outlined several advantages and potential disadvantages regarding formal kinship care, informal kinship care, and foster care placements. For example, formal placements with kin or foster care families have ongoing supervision/assessments from child protective services, are provided financial support with monthly subsidies, and are given resources and trainings to help care for a child as developmentally appropriate (Xu & Bright, 2018). On the other hand, kinship care is reflected more as a trauma-informed approach as children can continue to have connections with their biological families, experience less disruption in their lives, and have more stability across time compared to children with foster care families (Blakley, 2020; Cuddeback, 2004; Lee et al., 2020; Webster, Barth, & Needell, 2000; Xu & Bright, 2018). At the same time, kinship care may often be an informal arrangement between parents and relatives and/or kin may not pursue or meet requirements for licensure under The Adoption and Safe Families Act which qualifies kin for monthly subsidies (Berrick & Boyd, 2016; Xu & Bright, 2018). That being said, kin report greater financial stress/strain as well as less support and resources for the care of their child's needs (Berrick, Needell, & Barth, 1999; Cuddeback, 2004; Templeton,

2012). Along with financial hardships that family relatives may face when they provide kinship care is challenges with the living environment. According to researchers, kinship homes compared to foster care homes face more overcrowded conditions (Cuddeback, 2004; Farmer, 2008). One study found that many kin caregivers in their sample took care of sibling groups and faced logistical challenges as children shared bedrooms and/or living spaces were used for sleeping (Farmer, 2008). Kin caregivers living in overcrowded conditions reported the lack of space contributed to higher family-related stress/tension (Farmer, 2008). Overall, it is speculated that kinship care may explain why predictor variables in this current study (parent substance abuse, parent delinquent/criminal history, and residence overcrowding) were not indicative of child deaths from probable child maltreatment.

Additionally, the fact that residence overcrowding was related to fewer child deaths from probable child maltreatment may also be representative of household living arrangements in immigrant families where extended relatives and non-relatives live in one household (Landale, Thomas, & Hook, 2011). Immigrant families may have a higher number of household members to help share resources that include support for childcare (Landale, Thomas, & Hook, 2011). Thus, immigrant family living arrangements may also explain why residence overcrowding is not indicative of more child deaths from probable child maltreatment.

Strengths and Limitations

Findings in this study contribute to the literature on child mortality and immigrant health in the U.S. The large sample size and span of time of data studied (2005 – 2017) has clinical relevance to recent child deaths. Another potential strength in this study is the

detailed analyses on the sample characteristics and the causes of child mortality. Such information may be helpful toward understanding additional child mortality patterns and determining appropriate child fatality intervention/prevention programs. Additionally, analysis on the country of origin of immigrant families advances information on the diverse immigrant culture in the U.S. The researcher also attempted to synthesize information across parent/child demographics and health characteristics to help inform the HIP framework. Lastly, findings in this study are interpreted with a breath of information which can help provide valuable insight to the research on child mortality and immigrant health to-date.

There are important limitations that must be noted in this study, specifically related to the use of data from the NFR-CRS. First, data obtained through the National Center for Child Death Review do not include all child deaths occurring in the U.S. (Covington, 2011). For this reason, incidence rates cannot be calculated or compared to vital statistics data (Covington, 2011). Moreover, although the online reporting tool offers a standardized process for documenting information, the data entered may be subjective for specific items and/or information entered may be inconsistent with the Data Dictionary provided by the National Center for Death Review (Covington, 2011). Variations in the quality of data may also exist as some information may be left unanswered (Covington, 2011). Additionally, data cannot be used to compare state to state information due the diverse percentage of deaths reviewed by each state and the state-to-state variations among the types of child deaths reviewed more than others (Covington, 2011). Lastly, the database does not specify the different reporting sources of

information and therefore all the data entered relies on child death review team's determination for selecting the best answer to a question (Covington, 2011).

There are also specific limitations pertaining to the design of this research study. The NFR-CRS version 4.1 (item A31) does not distinguish which parent is a first-generation immigrant parent or identify if both parents are first-generation immigrants, therefore findings should be interpreted with this limitation in mind. Further, this study also does not differentiate between immigrant populations such as refugees, asylum seekers, legal residents, and/or undocumented immigrants and the impact of immigration status is not accounted for in the research design and findings. Subsequently, researchers were not able to investigate the racial demographic make-up of Non-FGIF as all information was classified as missing. Subsequently, there was a large proportion of data classified as not specified and/or unknown which interfered with an understanding of family health characteristics and impeded the researcher's ability to draw implications on the health advantages between the family subgroups, potentially explained by HIP

Implications for Prevention and Intervention

The implication of HIP positions FGIF as a portrayal of health and resiliency (Millett, 2016). Overall, findings in this study provide mixed support for HIP. Results reveal variations on the causes of child death between FGIF and Non-FGIF and extend awareness to the health vulnerabilities of each family subgroup. Support for HIP is perhaps more evident with findings that indicate FGIF experienced fewer child deaths contributing from probable child abuse and neglect. The mixed support of HIP implies certain resiliency among FGIF and also urges the need to safeguard the welfare of children of FGIF. In all, findings in this study show evidence of child mortality patterns

which may be helpful in determining and prioritizing child health interventions for both Non-FGIF and FGIF in the U.S.

Findings suggest a need to promote child injury prevention, particularly toward reducing child fatalities from motor vehicles accidents and firearm-related injuries in Non-FGIF. Past findings suggest brief clinical interventions and injury prevention programs are effective in helping families adopt safety practices (DiGuiseppi, 2000; Kilani et al., 2021). Implementing clinical interventions and/or community-based injury prevention programs focused on improving child safety practices in motor vehicles and safe firearm practices may help reduce child mortality in Non-FGIF(e.g., not allowing children to sit in the front seat of cars, firearms stored in a locked location, separating ammunition from the firearm) (Shultz, 2020; Smionttie & Brenner, 2020). Recent research by Bhaumik and associates (2020) indicates clinical interventions that account for a family's perception, values, and/or norms on child safety practices as well as a family's perceived barriers to implementing safety practices may be more effective in helping families adopt injury prevention strategies. Overall, educating families on injury prevention practices and disseminating information from The National Action Plan for Child Injury Prevention by Centers for Disease Control and Prevention (CDC;2019) may help improve the safety of children and prevent injury-related fatalities in children of Non-FGIF.

For children of FGIF, medical causes of death (e.g., prematurity, congenital anomalies) outnumber medical causes of death in children of Non-FGIF in this study. The implication of such findings extends consideration to the healthcare barriers FGIF face. The various challenges immigrant families encounter in accessing healthcare

services may be in a large part due to the immigration policies that restrict public health benefits such as Medicaid (Kandula, Kersey, & Lurie, 2004; Fabi, 2019; Zallman et al., 2019). Historically, evidence suggested undocumented immigrant mothers are less likely to access prenatal care services compared to the U.S. general population and/or are more likely to access prenatal care services toward the end of their pregnancy (Cornelius, Chavez, & Castro, 1982; Fabi, 2019; Park et al., 2000). Additionally, some researchers report undocumented immigrant mothers experience more labor complications (Fabi, 2019; Johnson et al., 2005). The healthcare barriers for immigrant families may contribute to higher counts of medical causes of child deaths. As such, efforts to reduce child mortality in FGIF may involve greater advocacy for better immigrant policies to improve the health of immigrant families. Fabi (2019) called on the American Medical Association to advocate for the healthcare rights of immigrant families so that services such as prenatal care are granted regardless of immigrant status. Other researchers have called for The World Health Organization to declare immigration as a social determinant of health in order to mobilize public health resources for immigrant families (Castaneda et al., 2015). In the context of HIP, helping safeguard the welfare of children of FGIF may help strengthen the contributions FGIF have on the nation's health.

The similar count of child deaths from probable child abuse and neglect in both family subgroups reinforces the need for effective child abuse and neglect prevention/intervention programs. In the analysis of cases due to child maltreatment, this researcher found more child deaths were attributed to probable child abuse than to neglect. This finding is different from a related study where researchers analyzed data from the NFR-CRS and found more child deaths were from probable neglect (Palusci &

Covington, 2014). Given the higher prevalence of child abuse cases in this current study, there may be unique family risk factors to consider. Past researchers have broadly found child maltreatment fatalities to be associated with high parent stress, parent's alcohol abuse, parent's drug abuse, family's financial problems, and inadequate housing (U.S. Department of Health & Human Services, 2018). Ryu and Yang (2021) expanded further consideration of family risk factors associated with child maltreatment when they interviewed North Korean immigrant families who sought refuge in South Korea. In their sample, they found the parent-child relationships and child rearing practices were significantly affected by the parents' immigrant refugee experiences (Ryu & Yang, 2021). Among their findings, they identified parent-child relationships were impacted by a parent's trauma-related experience, unstable parent-child attachment due to long separation, family conflicts due to differences in adaptation levels, and confusion about the parent's role in the process of migration (Ryu & Yang, 2021). As a result of family risk factors, they found immigrant refugee families experienced decreased family attachment, inconsistent parenting attitude, aggression resulting in physical violence toward children, lethargy mood resulting in child neglect, parents' excessive interference/control over children, parent's strict discipline, and parent's punishment-oriented parenting style (Ryu & Yang, 2021). Ryu and Yang (2021) explained that the impact of families' "weakened personal and family function" on their parent-child attachment may have contributed to the increased the risk of child abuse (p. 8). Lastly, considering their research findings, Ryu and Yang (2021) recommended that parent psychological support as well as parenting education programs be considered equally important to the economic relief immigrant refugee families receive. Altogether,

preventing child deaths from child abuse and neglect in FGIF and Non-FGIF may involve a more in-depth assessment and understanding of each family's unique circumstances.

Findings in this study underline a need to better understand child deaths from poor or absent supervision and deaths related to children's exposure to hazards. For example, poor/absent supervision and exposure to hazards contributed to more fatalities than cases from probable child abuse and neglect. This observation validates findings from previous studies (Khatlani et al., 2017; Welch & Booner, 2013). Past researchers have defined supervision in terms of a parent's/caregiver's attentiveness, proximity, and continuity (Khatlani et al., 2017; Petrass et al., 2011). The interplay of environmental factors (e.g., swimming pool) and parents' supervision practices increases the risk of unintentional injuries and fatalities in children (Khatlanie et al., 2017). Researchers in one study found that parent's distraction with household activities, parent's engagement in talking/socializing with others, and miscommunication between parents all influenced poor supervision of children (Peden, Franklin, & Clemens, 2019). As such, examining the environmental hazards and the variables impacting a parent's ability to provide adequate supervision may be of critical importance to help reduce child deaths in FGIF and Non-FGIF. Understanding such circumstances will help formulate appropriate prevention strategies for families, perhaps focused on how parents/caregivers can provide better quality supervision of their children.

The importance of ongoing and systematic data collection related to child deaths, such as work by Child Death Review teams and the NFR-CRS, cannot be overemphasized in continued research efforts. Data systems such as NFR-CRS make it possible to monitor, analyze, and advance knowledge on the circumstances

causing/contributing to child deaths. In the future, researchers should attempt to replicate this study to help determine if findings on HIP and child mortality can be applied to other/recent cohorts of immigrant families in the U.S. Future researchers should examine causes of death among the different age-groups within FGIF and Non-FGIF as findings indicated family subgroups differed on the age group accounting for the second highest child fatalities (adolescents 15 to 17 years in Non-FGIF, younger children 1 to 4 years in FGIF). Attention to the circumstance of child deaths, specifically with drowning incidents, burn-related injuries, unintentional asphyxiation, inter-and-intrapersonal injuries (e.g., weapons, firearms, assault), and fall and/or crush related incidents also requires further attention to understand the discrepancies found between FGIF and Non-FGIF. Further research is also warranted to understand the characteristics of physical abuse occurring in children of both family subgroups. Additional analyses on child deaths from poor or absent supervision and children's exposure to hazards are also recommended given their high prevalence among both FGIF and Non-FGIF. For child deaths from poor or absent supervision, parent information along with caregiver and supervisor information should be examined to help identify the adults providing care at the time of child death. Such information may be helpful toward disseminating/outreaching child injury prevention program to extended kin and/or non-kin caregivers. Lastly, although acknowledging that immigrant families/communities are a hard-to-reach population, researchers should continue their efforts in understanding the health of children of immigrant families in the U.S. The HIP framework may be helpful in providing a systems theory approach toward understanding the health of immigrant families along with the social and structure barriers/challenges they face. Research on

immigrant and non-immigrant populations may be critical to informing, advocating, and promoting public health and policy change in order to foster the well-being of all children in the U.S., both children of Non-FGIF and children of FGIF.

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APPENDICES

Appendix A: Tables and Figures

Figure 1

Parent First Generation Immigrant

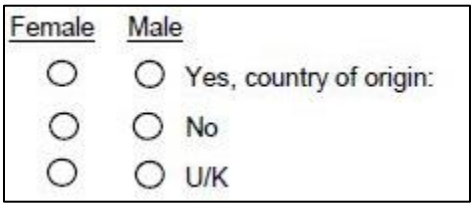

Figure 2

Injury and Medical Cause of Child Death

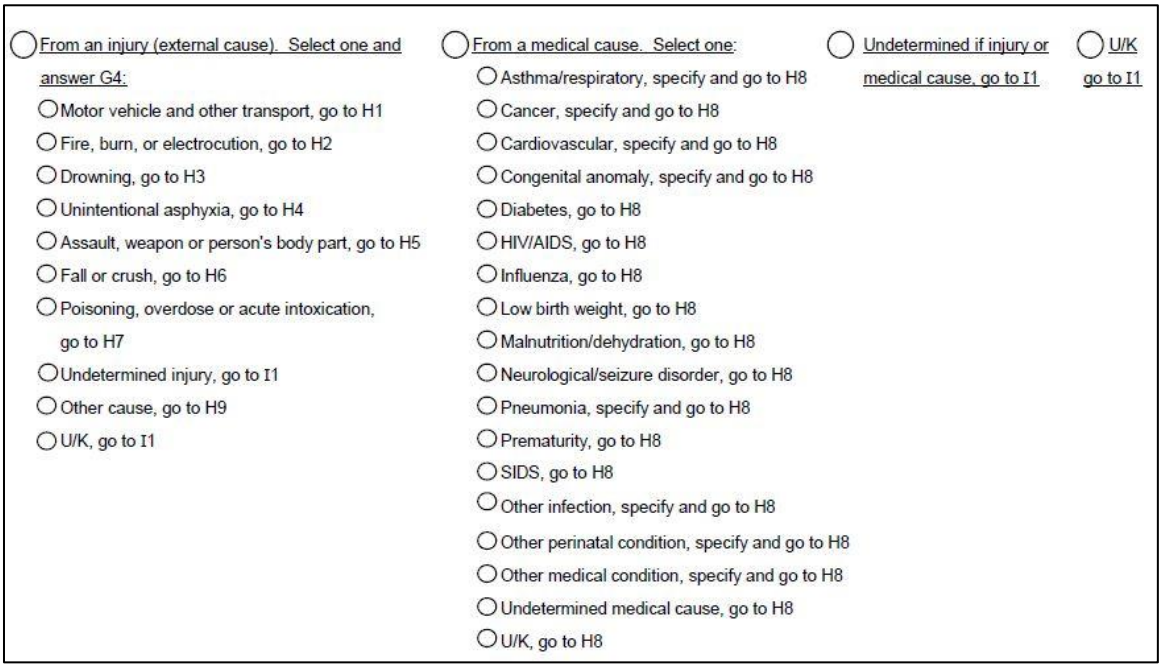

Figure 3

Child Abuse, Child Neglect, Poor or Absent Supervision or Exposure to Hazards

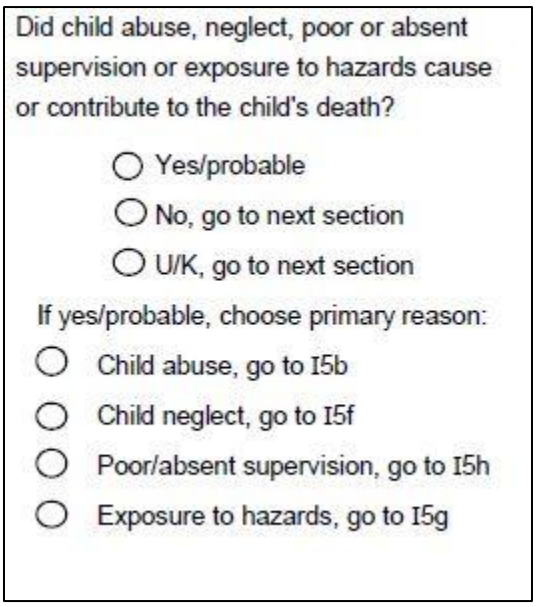

Table 1

Child Age Characteristics Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Age						
Years	3,194	21.5	2,606	17.6	5,800	39.1
Months	1,701	11.5	1,652	11.1	3,353	22.6
Days	2,336	15.8	1,936	13.1	4,272	28.8
Hours	134	0.9	839	5.7	973	6.6
Minutes	49	0.3	381	2.6	430	2.9
Total subgroup	7,414	50.0	7,414	50.0	14,828	100.0
Infants to children age 1						
Less than 1 month	2,913	19.6	3,545	23.9	6,458	43.6
2 or 3 months	588	4.0	471	3.2	1,059	7.1
4 or 5 months	341	2.3	309	2.1	650	4.4
6 or 7 months	177	1.2	196	1.3	373	2.5
8 through 11 months	193	1.3	267	1.8	460	3.1
Total deaths under age 1	4,212	28.4	4,788	32.3	9,000	60.7
Children to adolescents age 17						
Ages 1- 4	864	5.8	945	6.4	1,809	12.2
Ages 5 – 9	489	3.3	468	3.2	957	6.5
Ages 10-14	631	4.3	468	3.2	1,099	7.4
Ages 15-17	1,218	8.2	745	5.0	1,963	13.2
Total deaths age 1 to 17	3,202	21.6	2,626	17.7	5,828	39.3

Table 2

Child Race Characteristics Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Race						
White	4,827	32.6	4,778	32.2	9,605	64.8
African American	2,189	14.8	976	6.6	3,165	21.3
Native Hawaiian	38	0.3	1	0.0	39	0.3
Pacific Island	8	0.1	104	0.7	112	0.8
Asian	31	0.2	796	5.4	827	5.6
American Indian	131	0.9	24	0.2	155	1.0
Multi-racial	128	0.9	215	1.4	343	2.3
Missing	62	0.4	520	3.5	582	3.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Ethnicity: Hispanic or Latino Origin						
Yes	528	3.6	4,559	30.7	5,087	34.3
No	6,701	45.2	2,734	18.4	9,435	63.6
Unknown	147	1.0	65	0.4	212	1.4
Not Specified	38	0.3	56	0.4	94	0.6
Total	7,414	50.0	7,414	50.0	14,828	100.0

Table 3

Child's Sex Characteristics Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Sex						
Male	4,410	29.7	4,251	28.7	8,661	58.4
Female	2,985	20.1	3,137	21.1	6,122	41.3
Not specified	14	0.1	22	0.1	36	0.2
Unknown	5	0.0	4	0.0	9	0.1
Total	7,414	50.0	7,414	50.0	14,828	100.0

Table 4

Mother Race, Hispanic/Latino Origin, and English language

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Mother race						
White	0	0	369	2.5	369	2.5
African American	0	0	137	0.9	137	0.9
Pacific Island	0	0	9	0.1	9	0.1
Asian	0	0	54	0.4	54	0.4
American Indian	0	0	2	0.0	2	0.0
Multi-racial	0	0	3	0.0	3	0.0
Missing	7,414	0	6,840	46.1	14,254	96.1
Total	7,414	50.0	7,414	50.0	14,828	100.0
Mother ethnicity: Hispanic or Latino origin						
Yes	0	0	331	2.2	331	2.2
No	0	0	321	2.2	321	2.2
Unknown	0	0	61	0.4	61	0.4
Not Specified	7,414	50.0	6,701	45.2	14,115	95.2
Total	7,414	50.0	7,414	50.0	14,828	100.0
Mother speaks English [a]						
Yes	5,842	39.4	2,622	17.7	8,464	57.1
No	19	0.1	1,354	9.1	1,373	9.3
Unknown	188	1.3	2,257	15.2	2,445	16.5
Not specified	1,365	9.2	1,181	8.0	2,546	17.2
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Mother speaks English - indicated if mother speak and understand English. “Yes” is selected if mother was able to respond to questions surrounding the circumstances of the child's death.

Table 5

Father Race, Hispanic/Latino origin and English language

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Father race						
White	0	0	301	2.0	301	2.0
African American	0	0	64	0.4	64	0.4
Pacific Island	0	0	5	0.0	5	0.0
Asian	0	0	52	0.4	52	0.4
American Indian	0	0	1	0.0	1	0.0
Multi-racial	0	0	2	0.0	2	0.0
Missing	7,414	50.0	6,989	47.1	14,403	97.1
Total	7,414	50.0	7,414	50.0	14,828	100.0
Father ethnicity: Hispanic or Latino origin						
Yes	0	0	262	1.8	262	1.8
No	0	0	192	1.3	192	1.3
Unknown	0	0	84	0.6	84	0.6
Not specified	7,414	50.0	6,876	46.4	14,290	96.4
Total	7,414	50.0	7,414	50.0	14,828	100.0
Father speaks English [a]						
Yes	2,958	19.9	1,920	12.9	4,878	32.9
No	10	0.1	865	5.8	875	5.9
Unknown	141	1.0	2,018	13.6	2,159	14.6
Not specified	4,305	29.0	2,611	17.6	6,916	46.6
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Father speaks English - indicated if mother speak and understand English. “Yes” is selected if mother was able to respond to questions surrounding the circumstances of the child's death.

Table 6

Geographic Region of First-Generation Immigrant Parent

Region	*n*	*%*
Africa	638	9.7
Asia	1,041	15.8
Caribbean	399	6.1
Central America	431	6.5
Central/South America	36	0.5
Europe	316	4.8
North America	3,271	49.6
Oceania	133	2.0
South America	133	2.0
Mixed Continents [a]	119	1.8
Unknown [b]	76	1.2
Total	6,593	100.0

Note. Information on parent's country of origin is classified according to geographic regions. Regions are classified as per the Office of Immigration Statistics from the Department of Homeland Security.

[a] Mixed continent – parents from different geographic regions

[b.] Unknown – parent's country of origin is unknown.

Table 7

Mother's Health During Pregnancy Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
During pregnancy, did mother have any medical conditions or complications? [a]						
Yes	1001	6.8	2,243	15.1	3,244	21.9
No	15	0.1	573	3.9	588	4.0
Unknown	0	0	273	1.8	273	1.8
Not specified	6,398	43.1	4,325	29.2	10,723	72.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
Did the mother use any medications, drugs, other substance during pregnancy? [b]						
Yes	251	1.7	223	1.5	474	3.2
No	0	0	104	0.7	104	0.7
Unknown	0	0	138	0.9	138	0.9
Not specified	7,163	48.3	6,949	46.9	14,112	95.2
Total	7,414	50.0	7,414	50.0	14,828	100.0
Did the mother smoke at any time during the pregnancy? [c]						
Yes	878	5.9	181	1.2	1,059	7.1
No	22	0.1	1,873	12.6	1,895	12.8
Unknown	1	0.0	235	1.6	236	1.6
Not specified	6,513	13.9	5,125	34.6	11,638	78.5
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Information is completed for all infant deaths (children under one year of age)

[a.] During pregnancy, did mother have any medical conditions/complications – indicated if there were medical complications (pregnancy-related or non-pregnancy-related) experienced during this pregnancy.

[b.] Did the mother use any medications, drugs, or other substances during pregnancy – indicated if the mother took any over-the-counter medications, prescription drugs, illicit drugs, mood-altering substances, homeopathic remedies, or supplements that are not prenatal vitamins during her pregnancy when the deceased child.

[c.] Did the mother smoke at any time during pregnancy – indicated if there was maternal smoking, including e-cigarettes, during the pregnancy with the deceased infant.

Table 8

Mother and Father's Health Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Mother has a disability or chronic illness? [a]						
Yes	64	0.4	288	1.9	352	2.4
No	351	2.4	1,842	12.4	2,193	14.8
Unknown	3,821	25.8	3,346	22.6	7,167	48.3
Not specified	3,178	21.4	1,938	13.1	5,116	34.5
Total	7,414	50.0	7,414	50.0	14,828	100.0
Father has a disability or a chronic illness? [a]						
Yes	12	0.1	62	0.4	74	0.5
No	150	1.0	1,072	7.2	1,222	8.2
Unknown	2,212	14.9	3,158	21.3	5,370	36.2
Not specified	5,040	34.0	3,122	21.1	8,162	55.0
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Mother or father have a disability or chronic illness - Chronic implies an impairment or illness that has a substantial long-term effect on day-to-day functioning or health.

Table 9

Child's Health Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	Child Information Completed for All Ages					
	n	*%*	*n*	*%*	*n*	*%*
Was the child up-to-date with American Pediatrics Immunization Records? [a]						
Yes	1,279	8.6	1,073	7.2	2,352	15.9
No	135	0.9	56	0.4	191	1.3
Unknown	1,856	12.5	1,236	8.3	3,092	20.9
Not specified	3,722	25.1	2,772	18.7	6,494	43.8
Not applicable	422	2.8	2,277	15.4	2,699	18.2
Total	7,414	50.0	7,414	50.0	14,828	100.0
Did child have prior disability or chronic illness? [b]						
Yes	1,872	12.6	2,404	16.2	4,276	28.8
No	4,073	27.5	3,624	24.4	7,697	51.9
Unknown	1,234	8.3	871	5.9	2,105	14.2
Not specified	235	1.6	515	3.5	750	5.1
Total	7,414	50.0	7,414	50.0	14,828	100.0
	Information Completed for Children Over One Year Old					
Child acutely ill in the two weeks before the death? [c]						
Yes	1,972	13.3	1,801	12.1	3,773	25.4
No	4,166	28.1	3,781	25.5	7,947	53.6
Unknown	987	6.7	725	4.9	1,712	11.5
Not specified	289	1.9	1,107	7.5	1,396	9.4
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Was the child up to date with immunization – indicated if child is up to date with recommended immunization schedule based on child's age and the immunization series required.

[b.] Child had disability or chronic illness – chronic implies an impairment or illness that has a substantial long-term effect on the child's day-to-day function or health.

[c.] Child acutely ill in the two weeks before death – indicated if child was reported to have been sick in the two weeks before the death, including an exacerbation of a chronic illness. A reported illness refers to documentation from a school district, a school referral, a pediatrician, emergency room, hospital, first responder, police report or autopsy (e.g., upper respiratory infection, strep throat, diarrhea, pneumonia).

Table 10

Infant's Health Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Infant born drug-exposed? [a]						
Yes	107	0.7	39	0.3	146	1.0
No	0	0	204	1.4	204	1.4
Unknown	0	0	35	0.2	35	0.2
Not specified	7,307	49.3	7,136	48.1	14,443	97.4
Total	7,414	50.0	7,414	50.0	14,828	14,828
Infant have neonatal abstinence syndrome (NAS)? [b]						
Yes	0	0	1	0.0	1	0.0
No	0	0	181	1.2	181	1.2
Unknown	0	0	50	0.3	50	0.3
Not specified	7,414	50.0	7,182	48.4	14,596	98.4
Total	7,414	50.0	7,414	50.0	14,828	100.0
Did infant have an abnormal metabolic newborn screen? [c]						
Yes	0	0.0	63	0.4	63	0.4
No	3	0.0	682	4.6	685	4.6
Unknown	0	0.0	1,155	7.8	1,155	7.8
Not specified	7,411	50.0	5,514	37.2	12,925	87.2
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Information Completed for All Infants (children under one year).

[a.] Was the infant born drug exposed – identification of whether a fetus or infant was born drug exposed should be determined by maternal history; clinical presentation of the newborn; and laboratory testing of biological maternal matrices, neonatal matrices, and/or matrices from both the mother and neonate.

[b.] Did the infant have neonatal abstinence syndrome (NAS) – indicated if the infant exhibited a drug withdrawal syndrome, most commonly occurring in infants after in utero exposure to opioids, though other substances have been associated with the syndrome. The clinical symptoms usually appear within 48-72 hours after birth, accompanied a constellation of clinical signs, including central nervous system irritability (tremors), gastrointestinal dysfunction (feeding difficulties), and temperature instability.

[c.] Did infant have abnormal metabolic newborn screening results – indicated if the infant tested positive for any genetic metabolic error such as a fatty oxidation error like medium-chain acyl-CoA dehydrogenase (MCAD). This can typically be found in pediatric medical records, often in newborn screening results, and perhaps WIC records.

Table 10a

History of Infant Health Prior to Last 72 Hours of Death

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
History of infection? [a]						
Yes	1	0.0	143	1.0	144	1.0
Not specified	7,413	50.0	7,271	49.0	14,684	99.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
History of allergies? [b]						
Yes	0	0	4	0.0	4	0.0
Not specified	7,414	50.0	7,410	50.0	14,824	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
History of abnormal growth or weight gain/loss? [c]						
Yes	0	0.0	32	0.2	32	0.2
Not specified	7,414	50.0	7,382	49.8	14,796	99.8
Total	7,414	50.0	7,412	50.0	14,828	100.0
History of apnea? [d]						
Yes	0	0.0	63	0.4	63	0.4
Not specified	7,414	50.0	7,351	49.6	14,765	99.6
Total	7,414	50.0	7,414	50.0	14,828	100.0
History of cyanosis? [e]						
Yes	0	0.0	57	0.4	57	0.4
Not specified	7,414	50.0	7,357	4936	14,771	99.6
Total	7,414	50.0	7,414	50.0	14,828	100.0
History of seizures or convulsions? [f]						
Yes	0	0.0	44	0.3	44	0.3
Not specified	7,414	50.0	7,370	49.7	14,784	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
History of cardiac abnormalities? [g]						
Yes	0	0.0	157	1.1	157	1.1
Not specified	7,414	50.0	7,257	48.9	14,671	98.9
Total	7,414	50.0	7,414	50.0	14,828	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
History of other disorders? [h]						
Yes	0	0.0	146	1.0	146	1.0
Not specified	7,414	50.0	7,268	49.0	14,682	99.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
History of metabolic disorder- unknown [i]						
Yes	0	0.0	29	0.2	29	0.2
Not specified	7,414	50.0	7,385	49.8	14,799	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0
None						
Yes	0	0.0	37	0.2	37	0.2
Not specified	7,414	50.0	7,377	49.8	14,791	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Information provided is from all infants under one year old.

[a.] Infection – indicated if infant had an infection, such as a virus or bacteria like strep.

[b.] Allergies – indicated if infant had a food, environmental or medication allergy.

[c.] Abnormal growth or weight gain/loss - most infants lose weight after delivery, but abnormal weight loss or gain is noted in medical or Women, Infants, and Children (WIC) records and deviates from infant growth curves.

[d.] Apnea – indicated if infant stopped breathing for a short period of time. Can occur in the delivery room or any time afterwards.

[e.] Cyanosis – indicated if infant had a reported bluish color of the skin or mucous membranes due to low oxygen in the blood. Can occur in the delivery room or any time afterwards.

[f.] Seizure or convulsions – indicated if infant had an observed and documented seizure or convulsions. Could be a febrile seizure.

[g.] Cardiac abnormalities – indicated if infant had experienced reported abnormalities of the heart including a murmur which may not require any medical intervention, or more serious cardiac abnormalities that may require specialists' care.

[h.] Other disorders – indicated if infant had any other notable medical history that deviated from normal. This includes any hospitalizations or specialist visits after delivery discharge.

[i.] Metabolic disease - identified if the child had any known metabolic dysfunction.

Table 11

Infant Health in the Last 72 Hours Prior to Death

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
History of fever? [a.]						
Yes	0	0.0	66	0.4	66	0.4
Not specified	7,414	50.0	7,348	49.6	14,762	99.6
Total	7,414	50.0	7,414	50.0	14,828	100.0
Has excessive sweating? [b]						
Yes	0	0.0	8	0.1	8	0.1
Not specified	7,414	50.0	7,406	49.9	14,820	99.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Was lethargy or sleeping more than usual? [c]						
Yes	0	0.0	30	0.2	30	0.2
Not specified	7,414	50.0	7,384	49.8	14,798	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0
Fussiness or excessive crying? [d]						
Yes	0	0.0	65	0.4	65	0.4
Not specified	7,414	50.0	7,349	49.6	14,763	99.6
Total	7,414	50.0	7.414	50.0	14,828	100.0
Decrease in appetite? [e]						
Yes	0	0.0	27	0.2	27	0.2
Not specified	7,414	50.0	7,387	49.8	14,801	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0
Vomiting? [f]						
Yes	0	0.0	48	0.3	48	0.3
Not specified	7,414	50.0	7,366	49.7	14,780	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Choking? [g]						
Yes	0	0.0	5	0.0	5	0.0
Not specified	7,414	50.0	7,409	50.0	14,823	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Diarrhea? [h]						
Yes	0	0	31	0.2	31	0.2
Not specified	7,414	50.0	7,383	49.8	14,797	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0
Stool changes? [i]						
Yes	0	0	10	0.1	10	0.1
Not specified	7,414	50.0	7,404	49.9	14,818	99.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Difficult breathing? [j]						
Yes	1	0.0	391	2.6	392	2.6
Not specified	7,413	50.0	7,023	47.4	14,436	97.4
Total	7,414	50.0	7,414	50.0	14,828	100.0
Apnea? [k]						
Yes	0	0.0	42	0.3	42	0.3
Not specified	7,414	50.0	7,372	49.7	14,786	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Cyanosis? [l]						
Yes	0	0.0	43	0.3	43	0.3
Not specified	7,414	50.0	7,371	49.7	14,785	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Seizures or convulsions [m]						
Yes	0	0.0	42	0.3	42	0.3
Not specified	7,414	50.0	7,372	49.7	14,786	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Infant injured [n]						
Yes	0	0.0	45	0.3	45	0.3
No	3	0.0	1,482	10.0	1,485	10.0
Unknown	0	0.0	223	1.5	223	1.5
Not specified	7,411	50.0	5,664	38.2	13,075	88.2
Total	7,414	50.0	7,414	50.0	14,828	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Infant vaccinated [o]						
Yes	0	0.0	16	0.1	16	0.1
No	2	0.0	1,309	8.8	1,311	8.8
Unknown	1	0.0	417	2.8	418	2.8
Not specified	7,411	50.0	5,672	38.3	13,083	88.2
Total	7,414	50.0	7,414	50.0	14,828	100.0
Infant given any medications or remedies [p]						
Yes	0	0	344	2.3	344	2.3
No	2	0.0	758	5.1	760	5.1
Unknown	1	0.0	623	4.2	624	4.2
Not specified	7,411	50.0	5,689	38.4	13,100	88.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
No infection						
Yes	0	0.0	28	2.6	28	2.6
Not specified	7,414	50.0	7,386	47.4	14,800	97.4
Total	7,414	50.0	7,414	50.0	14,828	100.0
Other [q]						
Yes	0	0.0	240	1.6	240	1.6
Not specified	7,414	50.0	7,174	48.4	14,588	98.4
Total	7,414	50.0	7,414	50.0	14,828	100.0
Unknown						
Yes	0	0.0	35	0.2	35	0.2
Not specified	7,414	50.0	7,379	49.8	14,793	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Information provided is from all infants (under one year of age).

[a.] Fever – indicated if infant had a temperature over 100 degrees Fahrenheit.

[b.] Excessive sweating – indicated if infant had been notably sweating or their skin was damp.

[c.] Lethargy or sleeping more than usual – indicated if infant had been sleeping more than usual and was difficult to arouse.

[d.] Fussiness or excessive crying – indicated if infant had been more fussy than usual or had been crying more than usual.

[e.] Decrease in appetite – indicated if infant had not been eating as much as usual.

[f.] Vomiting – indicated if infant had been throwing up, not merely spitting up.

[g.] Choking – indicated if infant had choked.

[h.] Diarrhea – indicated if infant had runny stools.

[i.] Stool changes – indicated if infant had changes in their usual bowel movements. This can be constipation or excessively runny stools, as well as any noted changes in smell or color.
[j.] Difficulty breathing – indicated if infant had trouble breathing and may have exhibited 'grunting' or gasping noises.
[k.] Apnea – indicated if infant had stopped breathing for a short period of time.
[l.] Cyanosis – indicated if infant's skin turned blue due to low oxygen in the blood.
[m.] Seizures or convulsions – indicated if infant had a seizure or convulsion
[n.] Infant was injured – indicated if, in the 3 days before the infant died, it was noted in a medical record or the caregiver reported that the infant had been injured either unintentionally, such as a motor vehicle crash or fall, or intentionally, such as due to abuse/neglect.
[o.] Infant vaccinated – indicated if in the 3 days before the infant died, it was noted in a medical record or the caregiver reported that the infant had received immunizations.
[p.] Infant given any medications or remedies – indicated if in the 3 days before the infant died, it was noted in a medical record or the caregiver reported that the infant was given medications (over-the-counter or prescription) or was given a home remedy, using food or herbs. A home remedy is a food, herb or other treatment not considered a usual store-bought medication.
[q.] Other – indicated if infant had a medical complication not listed above.

Table 12

Children's Developmental History Among Family Subgroup

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Did child have a history of child maltreatment? [a]						
Yes	665	4.5	418	2.8	1,083	7.3
No	3,299	22.2	4,596	31.0	7,895	53.2
Unknown	1,302	8.8	832	5.6	2,134	14.4
Not specified	2,148	14.5	1,568	10.6	3,716	25.1
Total	7,414	50.0	7,414	50.0	14,828	100.0
Open Child Protective Case with child at time of death? [b]						
Yes	368	2.5	192	1.3	560	3.8
No	5,978	40.3	5,795	39.1	11,773	79.4
Unknown	914	6.2	629	4.2	1,543	10.4
Not specified	154	1.0	798	5.4	952	6.4
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child ever placed outside of home prior to death? [c]						
Yes	222	1.5	127	0.9	349	2.4
No	6,076	41.0	5,787	39.0	11,863	80.0
Unknown	940	6.3	677	4.6	1,617	10.9
Not specified	176	1.2	823	5.6	999	6.7
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Information Completed for Children of All Ages

[a.] Child had history of child maltreatment – indicated if child has a history of being a victim of child abuse or child neglect. History means a referral or substantiation from Child Protective Services or documentation from autopsy, law enforcement report or medical records.

[b.] Open Child Protective Case with child at time of death – indicated when a Child Protective Service (CPS) case was currently open with the child that occurred prior to the incident causing the child's death.

[c.] Child ever placed outside of the home prior to the death - selected if child ever had foster parents whether through the death of the biological parents; through voluntary or forced adoption; or through forced removal from a biological or adoptive home. Foster care includes licensed and relative/kinship foster homes.

Table 12a

Children's Developmental History Among Family Subgroup

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Child's highest education level?						
Pre-school	88	0.6	58	0.4	146	1.0
K-8	707	4.8	651	4.4	1,358	9.2
9-12	1,199	8.1	587	4.0	1,786	12.0
K-8 homeschool	16	0.1	20	0.1	36	0.2
9-12 homeschool	26	0.2	17	0.1	43	0.3
Drop out	24	0.2	17	0.1	41	0.3
High School graduate	8	0.1	13	0.1	21	0.1
College	2	0.0	5	0.0	7	0.0
Other	51	0.3	14	0.1	65	0.4
Unknown	165	1.1	240	1.6	405	2.7
Not specified	231	1.6	548	3.7	779	5.3
Not applicable	4,864	32.8	5,081	34.3	9,945	67.1
None	33	0.2	163	1.1	196	1.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
Did child have problems in school? [a]						
Yes	188	1.3	207	1.4	395	2.7
No	1,370	9.2	632	4.3	2,002	13.5
Unknown	1,233	8.3	777	5.2	2,010	13.6
Not specified	4,617	31.1	3,750	25.3	8,367	56.4
Not applicable	6	0.0	2,048	13.8	2,054	13.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child's employment status? [b]						
Employed	34	0.2	81	0.5	115	0.8
Not working	84	0.6	294	2.0	378	2.5
Unknown	141	1.0	318	2.1	459	3.1
Not specified	5,795	39.1	1,093	7.4	6,888	46.5
Not applicable	1,360	9.2	5,628	38.0	6,988	47.1
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Did child have problems in school- indicated if problems in school include those from a documented history from school, social services, juvenile court or law enforcement records. An answer of yes to this question is also indicated if no documented history exists, but the child perceived that he or she was experiencing problems. Problems in

school include academic, truancy, behavioral, and expulsion. Academic problems are defined by student's poor or declining academic performance. Truancy is defined as chronic failure to attend school. Behavioral is defined as a broad category and includes acting out in class, disobedience, being disruptive, bullying or being bullied. Expulsion is defined as removal of a student from a school for violating rules. Unknown is indicated when the team is unable to determine the types of problems the child was experiencing with school.

b. Child's employment status – indicated if child held a job of any type within the past four weeks. This includes formal jobs for pay or other compensation, informal jobs such as paper delivery, child and lawn care (if done outside one's family setting), volunteer activities for an organized group only (e.g. excluding 10 helping neighbors if not for production), working on the family farm or ranch if it is production related (e.g. milking a cow on a dairy farm). Employment also includes working in a family business regardless of pay if the work contributes to the profitability of the business. Sporadic jobs should be considered part time employment.

Table 12b

Children's Developmental History Among Family Subgroup

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Child had a history of intimate partner violence? [a]						
Yes (as a victim)	20	0.1	12	0.1	32	0.2
Yes (as a perpetrator)	5	0.0	6	0.0	11	0.1
Yes (as a victim and perpetrator)	2	0.0	1	0.0	3	0.0
No intimate partner violence	1,089	7.3	679	4.6	1,768	11.9
Child had delinquent or criminal history? [b]						
Yes	242	1.6	143	1.0	385	2.6
No	1,273	8.6	857	5.8	2,130	14.4
Unknown	535	3.6	306	2.1	841	5.7
Not specified	230	1.6	605	4.1	835	5.6
Not applicable	5,134	34.6	5,503	37.1	10,637	71.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child spent time in juvenile detention? [c]						
Yes	89	0.6	68	0.5	157	1.1
No	1,331	9.0	931	6.3	2,262	15.3
Unknown	597	4.0	318	2.1	915	6.2
Not specified	280	1.9	608	4.1	888	6.0
Not applicable	5,117	34.5	5,489	37.0	10,606	71.5
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child had history of substance abuse? [d]						
Yes	309	21.1	174	1.2	483	3.3
No	5,963	40.2	4,129	27.8	10,092	68.1
Unknown	836	5.6	467	3.1	1,303	8.8
Not specified	301	2.0	655	4.4	956	6.4
Not applicable	5	0.0	1,989	3.1	1,994	13.4
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Child had a documented history of intimate partner violence (IPV) – indicated when child had history of IPV as either victim or perpetrator. Documented refers to evidence from law enforcement, medical or human services. IPV is defined as actual or threatened physical or sexual violence or psychological and emotional abuse directed toward a spouse, ex-spouse, current or former boyfriend or girlfriend, or current or former dating partner. Intimate partners may be heterosexual or of the same sex. This may also include domestic disturbance complaints to which law enforcement responded.

[b.] Child had delinquent or criminal history – indicated if the child had a documented history of delinquent or criminal behaviors or actions. This includes any history with the juvenile justice system or the criminal justice system. Delinquent behavior may include school disciplinary actions, charges or convictions for misdemeanor offenses. Criminal behavior includes charges or convictions for felony charges.

[c.] Child spent time in juvenile detention – indicated if child had documented history of time in a juvenile detention center.

[d.] Child had history of substance use or abuse – indicated if the child was perceived by self or others to have a problem with, or to be addicted to, alcohol or other drugs, or if the child had ever used or misused any of the following substances in a way that was clinically contraindicated. Evidence of their use/misuse may only be clear from postmortem toxicology results.

Table 12c

Children's Developmental History Among Family Subgroup

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Child had received prior mental health services? [a]						
Yes	86	0.6	146	1.0	232	1.6
No	272	1.8	864	5.8	1,136	7.7
Unknown	298	2.0	778	5.2	1,076	7.3
Not specified	6,753	45.5	3,716	25.1	10,469	70.6
Not applicable	5	0.0	1,910	12.9	1,915	12.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child was receiving mental health services? [b]						
Yes	48	0.3	83	0.6	131	0.9
No	299	2.0	923	6.2	1,222	8.2
Unknown	305	2.1	767	5.2	1,072	7.2
Not specified	6,757	45.6	3,738	25.2	10,495	70.8
Not applicable	5	0.0	1,903	12.8	1,908	12.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child on medication for mental health illness?						
Yes	37	0.2	63	0.4	100	0.7
No	314	2.1	949	6.4	1,263	8.5
Unknown	299	2.0	746	5.0	1,045	7.0
Not specified	6,759	45.6	3,740	25.2	10,499	70.8
Not applicable	5	0.0	1,916	12.9	1,921	13.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
Issues prevented child from received mental health [c] services?						
Yes	15	0.1	42	0.3	57	0.4
No	289	1.9	836	5.6	1,125	7.6
Unknown	338	2.3	834	5.6	1,172	7.9
Not specified	6,767	45.6	3,768	25.4	10,535	71.0
Not applicable	5	0.0	1,934	13.0	1,939	13.1
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Child had received prior mental health services – indicated if the child had ever received mental health services of any kind, including individual or group treatment from a mental health professional or psychiatric medications. Mental health services include outpatient treatment, day treatment/partial hospitalization, and residential treatment. Outpatient treatment involves therapeutic office visits but no overnight stays. Day treatment/partial hospitalization is defined as outpatient programs that patients attend for 3 to 6 hours daily, every or most days of the week. Patients typically engage in group therapy, educational sessions, individual therapy, and pharmacotherapy. Residential mental health treatment is defied by longer-term care to individuals with chronic psychiatric disorders (e.g., schizophrenia or bipolar disorder) or who have complicated diagnoses in a group home setting.

[b.] Child was receiving mental health services – indicated if the child is currently receiving mental health services of any kind including individual or group treatment from a mental health professional, or psychiatric medications at the time of his/her death.

[c.] Issues prevented child from receiving mental health services – indicated if there any barriers that prevented the child from receiving needed services to address their mental health needs. Barriers could take many forms, including but not limited to lack of access to appropriate providers, limited financial or transportation resources, the child's willingness to participate in therapy, or the stigma associated with seeking mental health services.

Table 13

Family socioeconomics

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	%	*n*	%	*n*	%
Mother employment [a]						
Employed	844	5.7	1,082	7.3	1,926	13.0
Unemployed	836	5.6	696	4.7	1,532	10.3
On disability	15	0.1	19	0.1	34	0.2
Stay-at-home	33	0.2	801	5.4	834	5.6
Retired	1	0.0	0	0	1	0.0
Unknown	4,162	28.1	3,302	22.3	7,464	50.3
Not specified	1,523	10.3	1,514	10.2	3,037	20.5
Total	7,414	50.0	7,414	50.0	14,828	100.0
Mother income level [b]						
High	37	0.2	37	0.2	74	0.5
Medium	416	2.8	285	1.9	701	4.7
Low	1,297	8.7	1,594	10.7	2,891	19.5
Unknown	4,132	27.9	3,894	26.3	8,026	54.1
Not specified	1,532	10.3	1,604	10.8	3,136	21.1
Total	7,414	50.0	7,414	100.0	14,828	100.0
Mother education [c]						
Less than high school	667	4.5	1,496	10.1	2,163	14.6
High school	1,611	10.9	1,741	11.7	3,352	22.6
College	771	5.2	944	6.4	1,715	11.6
Post graduate	121	0.8	266	1.8	387	2.6
Unknown	2,780	18.7	1,997	13.5	4,777	32.2
Not specified	1,464	9.9	970	6.5	2,434	16.4
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Mother employment – parent's employment status at the time of incident or at the time of death if newborn never left hospital following birth.

[b.] Mother income – parent's income level is an estimate based on the local context and costs of living in the community. Economic indicators such as education, social service enrollment, and health insurance type can assist in determining a parent's income level.

[c.] Mother education – defined by highest level of education which parents completed. "High school" includes a high school equivalency diploma, such as a graduate equivalency diploma, or General Education Development (GED).

Table 13a

Family socioeconomics

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Father employment [a]						
Employed	701	4.7	1,722	11.6	2,423	16.3
Unemployed	133	0.9	222	1.5	355	2.4
Stay-at-home	4	0.0	13	0.1	17	0.1
On disability	14	0.1	14	0.1	28	0.2
Retired	5	0.0	3	0.0	8	0.1
Unknown	2,164	14.6	2,582	17.4	4,744	32.0
Not specified	4,395	29.6	2,858	19.3	7,253	48.9
Total	7,416	50.0	7,414	50.0	14,828	100.0
Father income level [b]						
High	34	0.2	52	0.4	86	0.6
Medium	320	2.2	306	2.1	626	4.2
Low	416	2.8	902	6.2	1,336	9.0
Unknown	2,229	15.0	3,183	21.5	5,412	36.5
Not specified	4,415	29.8	2,953	19.9	7,368	49.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Father education [c]						
Less than high school	208	1.4	1,085	7.3	1,293	8.7
High school	782	5.3	1,282	8.6	2,064	13.9
College	376	2.5	730	4.9	1,106	7.5
Post graduate	95	0.6	254	1.7	349	2.4
Unknown	1,571	10.6	1,643	11.1	3,214	21.7
Not specified	4,382	29.6	2,420	16.3	6,802	45.9
Total	7,414	50.0	7,414	50.0	7,414	100.0

[a.] Father employment – parent's employment status at the time of incident or at the time of death if newborn never left hospital following birth.

[b.] Father's income – parent's income level is an estimate based on the local context and costs of living in the community. Economic indicators such as education, social service enrollment, and health insurance type can assist in determining a parent's income level.

[c.] Father education – defined by highest level of education which parents completed. "High school" includes a high school equivalency diploma, such as a graduate equivalency diploma, or General Education Development (GED).

Table 13b

Family socioeconomics

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Type of residence? [a]						
Parental home	6,581	44.4	6,525	44.0	13,106	88.4
Licensed group home	22	0.1	8	0.1	30	0.2
Licensed foster home	54	0.4	19	0.1	73	0.5
Relative foster home	17	0.1	8	0.1	25	0.2
Relative home	142	1.0	107	0.7	249	1.7
Living on own	7	0.0	7	0.0	14	0.1
Shelter	3	0.0	3	0.0	6	0.0
Homeless	2	0.0	5	0.0	7	0.0
Jail or detention	0	0.0	2	0.0	2	0.0
Other	86	0.6	77	0.5	163	1.1
Unknown	209	1.4	134	0.9	343	2.3
Not specified	291	2.0	519	3.5	810	5.5
Total	7,414	50.0	7,414	50.0	14,828	100.0
Residence overcrowded? [b]						
Yes	174	1.2	261	1.8	435	2.9
No	3,032	20.4	2,650	17.9	5,682	38.3
Unknown	3,793	25.6	3,236	21.8	7,029	47.4
Not specified	415	2.8	1,267	8.5	1,682	11.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child ever homeless? [c]						
Yes	63	0.4	50	0.3	113	0.8
No	4,933	33.3	4,568	30.8	9,501	64.1
Unknown	2,009	13.5	1,671	11.3	3,680	24.8
Not specified	409	2.8	1,125	7.6	1,534	10.3
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Residence overcrowded is a subjective determination to be made by the NFR-CRS team based on the number of rooms and the number of persons living in the residence. The answer to this question may indicate a risk factor for specific causes of deaths, including fires, suffocation and violence-related deaths.

[b.] Homeless is defined as having no fixed address and living in a shelter, on the street, in a car or in makeshift quarters in an outdoor setting. A person who has no home of their own but is staying indefinitely with friends or family is not considered homeless here.

Table 13c

Family socioeconomics

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Number of children living with decedent? [a]						
0	1,007	13.6	990	13.3	1,997	26.9
1	1,108	14.9	1,193	16.1	2,301	31.0
2	741	10.0	861	11.6	1,602	21.6
3	340	4.6	446	6.0	786	10.6
4	151	2.0	219	2.9	370	5.0
5	88	1.2	108	1.5	196	2.6
6	30	0.4	44	0.6	74	1.0
7	15	0.2	28	0.4	43	0.6
8	5	0.1	9	0.1	14	0.2
9	5	0.1	10	0.1	15	0.2
10	3	0.0	8	0.1	11	0.1
11	7	0.1	2	0.0	9	0.1
12	2	0.0	1	0.0	9	0.1
13	2	0.0	1	0.0	3	0.0
14	1	0.0	1	0.0	2	0.0
16	0	0.0	1	0.0	1	0.0
32	1	0.0	0	0.0	1	0.0
12,480[b]	0	0.0	0	0.0	0	0.0
Total	3,506	47.2	3,923	52.8	7,435	100.0

[a.] Number of other children under 18 (siblings and non-siblings) living in child's household at time of incident.
[b.] Missing data

Table 14

Family Health Care Utilization

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	Child Information Completed for All Ages					
	n	*%*	*n*	*%*	*n*	*%*
Child's health insurance						
Private insurance only [a]	1,006	6.8	1,070	7.2	2,076	14.0
Medicaid only [b]	1,705	11.5	2,455	16.6	4,160	28.1
State plan only [c]	113	0.8	126	0.8	239	1.6
Indian Health Service only [d]	0	0.0	1	0.0	1	0.
Other insurance only	79	0.5	228	1.5	307	2.1
Multiple insurance coverage	48	0.3	26	0.2	74	0.5
Unknown	4,328	29.2	3,163	21.3	7,491	50.5
None, no insurance	135	0.9	345	2.3	480	3.2
Total	7,414	50.0	7,414	50.0	14,828	100.0
	Child Information Completed for All Infants Under One Year					
Were there access or compliance issues to prenatal care? [e]						
Yes	187	1.3	406	2.7	593	4.0
No	1,415	9.5	1,916	12.9	3,331	22.5
Unknown	2,430	16.4	1,752	11.8	4,182	28.2
Not specified	3,382	22.8	3,340	22.5	6,722	45.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
Prenatal care provided during pregnancy of deceased infant? [f]						
Yes	2,567	17.3	3,855	26.0	6,422	43.3
No	185	1.2	367	2.5	552	3.7
Unknown	1,282	8.6	452	3.0	1,734	11.7
Not specified	3,380	22.8	2,740	18.5	6,120	41.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
Mother receive social services in past 12 months? [g]						
Yes	1,528	10.3	1,717	11.6	3,245	21.9
No	236	1.6	857	5.8	1,093	7.4
Unknown	471	3.2	2,946	19.9	3,417	23.0
Not specified	5,179	34.9	1,894	12.8	7,073	47.7
Total	7,414	50.0	7,414	50.0	14,828	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Father receive social services in past 12 months?						
Yes	235	1.6	307	2.1	542	3.7
No	131	0.9	744	5.0	875	5.9
Unknown	333	2.2	3,038	20.5	3,371	22.7
Not specified	6,715	45.3	3,325	22.4	10,040	67.7
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Private health insurance – refers to health insurance plans marketed by the private health insurance industry, as opposed to government-run insurance programs (e.g., Aetna, Blue Cross Blue Shields).

[b.] Medicaid – Medicaid is a health care program that assists low-income families or individuals in paying for long-term medical and custodial care costs. Medicaid is a joint program, funded primarily by the federal government and run at the state level, where coverage may vary.

[c.] State plan – is defined as family's medical care being paid for by any type of state-sponsored plan, except Medicaid.

[d.] Indian Health Service – an agency within the Department of Health and Human Services and is responsible for providing federal health services to American Indians and Alaskan Natives.

[e.] Access or compliance issues to prenatal care – access related issues to prenatal care includes barriers to medical care. Compliance related issues with care is defined as not adhering to recommended ways of caring for a pregnant mother or child as prescribed by a physician. Examples under access or compliance issues to prenatal care include lack of money for care, limitations of health insurance coverage, multiple health insurance/not coordinated, lack of transportation, no phone, religious objections to care, language barriers, referral not made, specialist needed/not available, multiple providers/not coordinated, lack of child care, lack of family/social support, services not available, distrust of health care system, unwilling to obtain care, intimate partner would not allow care.

[f.] Prenatal care provider during pregnancy of deceased infant - prenatal care is defined as pregnancy-related medical care delivered by a doctor, nurse or other health professional with the goal of monitoring the pregnancy, providing education and increasing the likelihood of a positive maternal/fetal outcome.

[g.] Mother/father receive social service in the past 12 months - social services are defined as contact with the health and human service systems, as in receiving home visits from a health educator, receiving assistance through the Women, Infants and Children (WIC) or the Temporary Assistance for Needy Families program (TAFT).

Table 15

Official Manner of Death and Primary Cause of Death

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Official Manner of Death						
Natural	4,401	29.7	5,056	34.1	9,457	63.8
Accident	1,671	11.3	1,489	10.0	3,160	21.3
Suicide	299	2.0	241	1.6	540	3.6
Homicide	576	3.9	439	3.0	1,015	6.8
Undetermined	386	2.6	144	1.0	530	3.6
Unknown	13	0.1	21	0.1	34	0.2
Not specified	9	0.1	8	0.1	17	0.1
Pending [a]	59	0.4	16	0.1	75	0.5
Total	7,414	50.0	7,414	50.0	14,828	100.0
Primary Cause of Death						
From injury related death [a]	2,781	18.8	2,231	15.0	5,012	33.8
From a medical condition [b]	4,633	31.2	5,183	35.0	9,816	66.2
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Data on official manner of death is as stated on death certificate and/or as stated in medical examiner/coroner report. Primary cause of death is specific to four categories including: death from an injury (external cause), death from medical cause, death undetermined if injury or medical cause, and unknown.

[a.] Pending – official manner of death is not available on date of NFR-CRS review.

[b.] From injury related death – injury refers to any unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical or chemical energy that exceeds a threshold of tolerance in the body or from the absence of such essentials as heat or oxygen.

[c.] From a medical condition – if child death was due to a medical condition.

Table 16

Cause of Incident: Motor Vehicle and Other Transport

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Speeding over limit						
Yes	223	16.0	143	10.3	366	26.3
Not specified	586	42.1	439	31.6	1,025	73.7
Total	809	58.2	582	41.8	1,391	100.0
Unsafe speed for conditions						
Yes	135	9.7	81	5.8	216	15.5
Not specified	674	48.5	501	36.0	1,175	84.5
Total	809	58.2	582	41.8	1,391	100.0
Recklessness [a]						
Yes	201	14.5	142	10.2	343	24.7
Not specified	608	43.7	440	31.6	1,048	75.3
Total	809	58.2	582	41.8	1,391	100.0
Ran light						
Yes	71	5.1	66	4.7	137	9.8
Not specified	738	53.1	516	37.1	1,254	90.2
Total	809	58.2	582	41.8	1,391	100.0
Driver distraction [b]						
Yes	77	5.5	61	4.4	138	9.9
Not specified	732	52.6	521	37.5	1,253	90.1
Total	809	58.2	582	41.8	1,391	100.0
Driver inexperience [c]						
Yes	158	11.4	58	4.2	216	15.5
Not specified	651	46.8	524	37.7	1,175	84.5
Total	809	58.2	582	41.8	1,391	100.0
Mechanical failure						
Yes	2	0.1	13	0.9	15	1.1
Not specified	807	58.0	569	40.9	1,376	98.9
Total	809	58.2	582	41.8	1,391	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Poor tires						
Yes	8	0.6	10	0.7	18	1.3
Not specified	801	57.6	572	41.1	1,373	98.7
Total	809	58.2	582	41.8	1,391	100.0
Poor weather						
Yes	50	3.6	26	1.9	76	5.5
Not specified	759	54.6	556	40.0	1,315	94.5
Total	809	58.2	582	41.8	1,391	100.0
Poor visibility						
Yes	22	1.6	29	2.1	51	3.7
Not specified	787	56.6	553	39.8	1,340	96.3
Total	809	58.2	582	41.8	1,391	100.0
Drug or alcohol [d]						
Yes	122	8.8	105	7.5	227	16.3
Not specified	687	49.4	477	34.3	1,164	83.7
Total	809	58.2	582	41.8	1,391	100.0
Driver medical condition						
Yes	2	0.1	3	0.2	5	0.4
Not specified	807	58.0	579	41.6	1,386	99.6
Total	809	58.2	582	41.8	1,391	100.0
Back over [e]						
Yes	17	1.2	30	2.2	47	3.4
Not specified	792	56.9	552	39.7	1,344	96.6
Total	809	58.2	582	41.8	1,391	100.0
Roll over [f]						
Yes	14	1.0	40	2.9	54	3.9
Not specified	795	57.2	542	39.0	1,337	96.1
Total	809	58.2	582	41.8	1,391	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Poor sight line						
Yes	36	0.6	39	0.7	75	1.3
Not specified	773	57.6	543	41.1	1,316	98.7
Total	809	58.2	582	41.8	1,391	100.0
Changing lanes						
Yes	25	3.6	23	1.9	48	5.5
Not specified	784	54.6	559	40.0	1,343	94.5
Total	809	58.2	582	41.8	1,391	100.0
Road hazard						
Yes	12	0.9	3	0.2	15	1.1
Not specified	797	57.3	579	41.6	1,376	98.9
Total	809	58.2	582	41.8	1,391	100.0
Animal in road						
Yes	6	0.4	5	0.4	11	0.8
Not specified	803	57.7	577	41.5	1,380	99.2
Total	809	58.2	582	41.8	1,391	100.0
Cell phone						
Yes	7	0.5	12	0.9	19	1.4
Not specified	802	57.7	570	41.0	1,372	98.6
Total	809	58.2	582	41.8	1,391	100.0
Racing						
Yes	10	0.7	8	0.6	18	1.3
Not specified	799	57.4	574	41.3	1,373	98.7
Total	809	58.2	582	41.8	1,391	100.0
Other driver error						
Yes	64	4.6	45	3.2	109	7.8
Not specified	745	53.6	537	38.6	1,282	92.2
Total	809	58.2	582	41.8	1,391	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Other						
Yes	147	10.6	132	9.5	279	20.1
Not specified	662	47.6	450	32.4	1,112	79.9
Total	809	58.2	582	41.8	1,391	100.0
Unknown						
Yes	78	5.6	37	2.7	115	8.3
Not specified	731	52.6	545	36.2	1,276	91.7
Total	809	58.2	582	41.8	1,391	100.0

Note. Cause of incident listed above is information as determined by law enforcement officer on motor vehicle crash report.

[a.] Recklessness – level of intent of driver to operate vehicle in an unsafe manner not conducive to road, weather and other traffic conditions.

[b.] Driver distraction – when a driver engages in a secondary task that is not necessary to perform the primary driving task (e.g., talking to a passenger, eating, cell phone).

[c.] Driver inexperience – for example, crash occurring during winder conditions was the first time the child had driven on icy roads.

[d.] Drugs or alcohol use – this includes use by the driver of any vehicle, pedestrian, bicyclist or passenger that contributed to the incident.

[e.] Back/front over – when a child is run over by the front of back of a vehicle in a roadway or driveway.

[f]. Roll over or Flip over – when a child is in a vehicle accident where the vehicle turns over on its side or roof.

Table 17

Drowning Location

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Open water	59	10.2	146	25.2	205	35.4
Pool, hot tub, spa	92	15.9	172	29.7	264	45.6
Bath tub	41	7.1	22	3.8	63	10.9
Bucket	1	0.2	4	0.7	5	0.9
Well/cistern/septic	1	0.2	1	0.2	2	0.3
Toilet	0	0.0	2	0.3	2	0.3
Other	12	2.1	17	2.9	29	5.0
Unknown	1	0.2	2	0.3	3	0.5
Not specified	1	0.2	5	0.9	6	1.0
Total	208	35.9	371	64.1	579	100.0

Table 18

Type of Incident: Fire, Burn, Electrocution

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Fire	143	57.4	75	30.1	218	87.6
Scald [a]	5	2.0	2	0.8	7	2.8
Other burn	2	0.8	2	0.8	4	1.6
Electrocution	8	3.2	4	1.6	12	4.8
Other	2	0.8	1	0.4	3	1.2
Unknown	0	0.0	1	0.4	1	0.4
Not specified	4	1.6	0	0.0	4	1.6
Total	164	65.9	85	34.1	249	100.0

a. Scalding – physical injury inflicted by scalding with hot liquid, or burning with liquids, solids, cigarettes, etc.

Table 19

Type of Event in Child Deaths Due to Unintentional Asphyxia

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Suffocation [a]	312	43.0	258	35.5	570	78.5
Strangulation [b]	35	4.8	25	3.4	60	8.3
Choking [c]	23	3.2	36	5.0	59	8.1
Other	14	1.9	15	2.1	29	4.0
Unknown	2	0.3	1	0.	3	0.4
Not specified	0	0.0	5	0.7	5	0.7
Total	386	53.2	340	46.8	726	100.0

[a.] Suffocation – refers to death or serious injury by deprivation of oxygen; can involve a variety of mechanisms.
[b.] Strangulation – more narrowly defined as death by asphyxiation caused by some sort of compression of the neck.
[c.] Choking – refers to asphyxiation caused by an object becoming lodged in the airway.

Table 20

Child Death Due to Assault, Weapon, or Person's Body Part: Type of Weapon

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Firearm [a]	404	30.5	235	17.7	639	48.3
Sharp instrument [b]	26	2.0	37	2.8	63	4.8
Blunt instrument [c]	13	1.0	12	0.9	25	1.9
Person's body part [d]	116	8.8	100	7.6	216	16.3
Rope	50	3.8	43	3.2	93	7.0
Other	120	9.1	123	9.3	243	18.4
Unknown	21	1.6	13	1.0	34	2.6
Not specified	7	0.5	4	0.3	11	0.8
Total	757	57.2	567	42.8	1,324	100.0

[a.] Firearm – a weapon consisting of a metal tube that fires a projectile at high velocity using an explosive charge as a propellant. This definition includes handguns, rifles, and shotguns.
[b.] Sharp instrument - these include knives, razors, machetes, or pointed instruments (e.g., chisel, broken glass).

[c.] Blunt instrument - items that can cause harm, but are not sharp, such as clubs, bats, sticks, hammers, rocks, and/or household items.
[d.] Person's body part - any part of a person used as the primary instrument of the assault or injury (e.g., fists for punching, feet for kicking).

Table 21

Type of Incident: Fall or Crush

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Fall	32	23.4	38	27.7	70	51.1
Crush	37	27.0	29	21.2	66	48.2
Total	69	50.4	68	49.6	137	100.0

Table 22

Poisoning, Overdoes, or Acute Intoxication in Child Death

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Antidepressant						
Yes	14	8.8	3	1.9	17	10.6
Not specified	76	47.5	67	41.9	143	89.4
Total	90	56.3	70	43.8	160	100.0
Pain medication (opiate) [a]						
Yes	16	10.0	16	10.0	32	20.0
Not specified	74	46.3	54	33.8	128	80.0
Total	90	56.3	70	43.8	160	100.0
Pain medication (non-opiate)						
Yes	3	1.9	1	0.6	4	2.5
Not specified	87	54.4	69	43.1	156	97.5
Total	90	56.3	70	43.8	160	100.0
Medical prescription-Methadone						
Yes	23	14.4	5	3.1	28	17.5
Not specified	67	41.9	65	40.6	132	82.5
Total	90	56.3	70	43.8	160	100.0
Medical prescription-other						
Yes	18	11.3	13	8.1	31	19.4
Not specified	72	45.0	57	35.6	129	80.6
Total	90	56.3	70	43.8	160	100.0
Over-the-counter - pain medication [b]						
Yes	4	2.5	2	1.3	6	3.8
Not specified	86	53.8	68	42.5	154	96.3
Total	90	56.3	70	43.8	160	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Over-the-counter – cough medicine						
Yes	8	5.0	1	0.6	9	5.6
Not specified	82	51.3	69	43.1	151	94.4
Total	90	56.3	70	43.8	160	100.0
Over-the-counter – other						
Yes	7	4.4	10	6.3	17	10.6
Not specified	83	51.9	60	37.5	143	89.4
Total	90	56.3	70	43.8	160	100.0
Illicit drug – pain medication (opiate) [c]						
Yes	0	0.0	3	1.9	3	1.9
Not specified	90	56.3	67	41.9	157	98.1
Total	90	56.3	70	43.8	160	100.0
Illicit drug – pain medication (non-opiate)						
Not specified	90	56.3	70	43.8	160	100.0
Illicit drug – methadone						
Not specified	90	56.3	70	43.8	160	100.0
Illicit drug – cocaine						
Not specified	90	56.3	70	43.8	160	100.0
Illicit drug – heroin						
Not specified	90	56.3	70	43.8	160	100.0
Illicit drug – other						
Yes	14	8.8	18	11.3	32	20.0
Not specified	76	47.5	52	32.5	128	80.0
Total	90	56.3	70	43.8	160	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Other – alcohol						
Yes	10	6.3	9	5.6	19	11.9
Not specified	80	50.0	61	38.1	141	88.1
Total	90	56.3	70	43.8	160	100.0
Other – carbon monoxide						
Yes	7	4.4	6	3.8	13	8.1
Not specified	83	51.9	64	40.0	147	91.9
Total	90	56.3	70	43.8	160	100.0
Other-fume						
Yes	1	0.0	0	0.0	1	0.6
Not specified	89	55.6	70	43.8	159	99.4
Total	90	56.3	70	43.8	160	100.0
Other – Other [d]						
Yes	8	5.0	8	5.0	16	10.0
Not specified	82	51.3	62	38.8	144	90.0
Total	90	56.3	70	43.8	160	100.0

a. Opioids – substances, natural or synthetic, that bind to the brain's opioid receptors. These substances include prescription painkillers or illegal drugs (e.g., codeine, fentanyl, hydrocodone, hydrocodone/acetaminophen, hydromorphone, meperdine, methadone, morphine, oxycodone, oxycodone/acetaminophen, and oxycodone/naloxone).

b. Over-the-counter drug –a medication that can be obtained without a prescription from a health care professional and is sold directly to the consumer.

c. Illicit drug – illicit drug is the non-medical use of a variety of drugs prohibited by law. Illicit drugs are illegal to make, sell or use. Illicit drugs also include using prescribed medications illegally.

d. Other - includes the use of alcohol, carbon monoxide, other fumes, and other substances.

Table 23

Cause of Death: Medical Condition

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
How long did the child have medical condition?						
In utero	118	1.2	1,094	11.1	1,212	12.3
Since birth	2,859	29.1	2,648	27.0	5,507	56.1
Hours	119	1.2	60	0.6	179	1.8
Days	230	2.3	246	2.5	476	4.8
Weeks	49	0.5	99	1.0	148	1.5
Months	122	1.2	136	1.4	258	2.6
Years	199	2.0	134	1.4	333	3.4
Unknown	421	4.3	330	3.4	751	7.7
Not specified	516	5.3	436	4.4	952	9.7
Total	4,633	47.2	5,183	52.8	9,816	100.0
Was the death expected as a result of the medical condition?						
Yes	2,140	21.8	2,559	26.1	4,699	47.9
No	393	4.0	407	4.1	800	8.1
N/A not preventable death	57	0.6	677	6.9	734	7.5
Unknown	1,380	14.1	964	9.8	2,344	23.9
Not specified	663	6.8	576	5.9	1,239	12.6
Total	4,633	47.2	5,183	52.8	9,816	100.0
Was child receiving health care for medical condition?						
Yes	3,318	33.8	3,527	35.9	6,845	69.7
No	311	3.2	827	8.4	1,138	11.6
Unknown	329	3.4	261	2.7	590	6.0
Not specified	675	6.9	568	5.8	1,243	12.7
Total	4,633	47.2	5,183	52.8	9,816	100.0
Was child/family compliant with prescribed care plans? [a]						
Yes	2,745	28.0	2,696	27.5	5,441	55.4
No	101	1.0	71	0.7	172	1.8
N/A	102	1.0	1,149	11.7	1,251	12.7
Unknown	835	8.5	568	5.8	1,403	14.3
Not specified	850	8.7	699	7.1	1,549	15.8
Total	4,633	47.2	5,183	52.8	9,816	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Were there access or compliance issues related to the death?						
Yes	130	1.3	189	1.9	319	3.2
No	2,359	24.0	2,924	29.8	5,283	53.8
Unknown	1,365	13.9	1,275	13.0	2,640	26.9
Not specified	779	7.9	795	8.1	1,574	16.0
Total	4,633	47.2	5,183	52.8	9,816	100.0

[a.] Compliance with care is defined as recommended ways of caring for child as prescribed by a physician.

Table 24

Cause of Death: Sudden Death in the Young

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Is this a Sudden Death in the Young (SDY) case?						
Yes	0	0.0	602	4.1	602	4.1
No	0	0.0	1,082	7.3	1,082	7.3
Unknown	0	0.0	53	0.4	53	0.4
Not specified	7,414	50.0	5,677	38.3	13,091	88.3
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Per the NFR-CRS data dictionary, Sudden Death in the Young (SDY) is classified as death that does not meet the criteria for homicide, suicide, overdoes, external injury, or death due to terminal illness. If child death is meets “none of the above” criteria then child death is defined as a SDY.

Table 25

Cause of Death: Sleeping or the Sleep Environment

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Was the death related to the sleeping or the sleep environment?						
Yes	1,283	8.7	593	4.0	1,876	12.7
No	4,015	27.1	4,834	32.6	8,849	59.7
Unknown	1,210	8.2	179	1.2	1,389	9.4
Not specified	906	6.1	1,808	12.2	2,714	18.3
Total	7,414	50.0	7,414	50.0	14,828	100.0
Incident sleep place						
Crib	242	1.6	121	0.8	363	2.4
Bassinette [a]	90	0.6	31	0.2	121	0.8
Adult bed	490	3.3	293	2.0	783	5.3
Waterbed	3	0.0	1	0.0	4	0.0
Playpen, other structure [b]	33	0.2	9	0.1	42	0.3
Couch	143	1.0	32	0.2	175	1.2
Chair	9	0.1	4	0.0	13	0.1
Floor	23	0.2	16	0.1	39	0.3
Car seat	0	0.0	9	0.1	9	0.1
Stroller	0	0.0	4	0.0	4	0.0
Other	155	1.0	50	0.3	205	1.4
Futon	0	0.0	2	0.0	2	0.0
Unknown	86	0.6	22	0.1	108	0.7
Not specified	6,140	41.4	6,820	46.0	12,960	87.4
Total	7,414	50.0	7,414	50.0	14,828	100.0

Note. Information on sleep-related deaths is provided for children under the age of five.
[a.] Bassinet - a product designed to function as an infant sleep surface. It is smaller than a crib and often oblong or basket-like. If the child is in the bassinet portion of a portable crib, select bassinet.
[b.] Playpen, other structure (not port crib) - a small “pen” or enclosed structure with an open top, designed to keep babies and small children safe while playing.

Table 26

Child Death During Commission of Another Crime

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Did death occur during commission of another crime						
Yes	177	1.2	262	1.8	439	3.0
No	6,592	44.5	6,635	44.7	13,227	89.2
Unknown	158	1.1	106	0.7	264	1.8
Not specified	487	3.3	411	2.8	898	6.1
Total	7,414	50.0	7,414	50.0	14,828	100.0
Robbery/burglary [a]						
Yes	26	0.2	12	0.1	38	0.3
Not specified	7,388	49.8	7,402	49.9	14,790	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Interpersonal violence [b]						
Yes	22	0.7	46	0.3	68	0.5
Not specified	7,392	49.9	7,368	49.7	14,760	99.5
Total	7,414	50.0	7,414	50.0	14,828	100.0
Sexual assault [c]						
Yes	7	0.0	7	0.0	14	0.1
Not specified	7,407	0.0	7,407	50.0	14,814	99.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Other assault [d]						
Yes	14	0.1	31	0.2	45	0.3
Not specified	7,400	49.9	7,383	49.8	14,783	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Gang conflict [e]						
Yes	14	0.1	33	0.2	47	0.3
Not specified	7,400	49.9	7,381	49.8	14,781	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Drug trade [f]						
Yes	13	0.1	4	0.0	17	0.1
Not specified	7,401	49.9	7,410	50.0	14,811	99.9
Total	7,414	50.0	7,414	50.0	14,828	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Arson [g]						
Yes	23	0.2	6	0.0	29	0.2
Not specified	7,391	49.8	7,408	50.0	14,799	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0
Prostitution [h]						
Not specified	7,414	50.0	7,414	50.0	14,828	100.0
Witness intimidation [i]						
Yes	3	0.0	1	0.0	4	0.0
Not specified	7,411	50.0	7,413	50.0	14,824	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
Illegal border crossing [j]						
Yes	0	0.0	22	0.1	21	0.1
Not specified	7,414	50.0	7,393	49.9	14,807	99.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Auto theft						
Yes	1	0.0	11	0.1	12	0.1
Not specified	7,413	50.0	7,403	49.9	14,816	99.9
Total	7,414	50.0	7,414	7,414	14,828	100.0
Other crime						
Yes	56	0.4	111	0.7	167	1.1
Not specified	7,358	49.6	7,303	49.3	14,661	98.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Unknown						
Yes	3	0.0	4	0.0	7	0.0
Not specified	7,411	50.0	7,410	50.0	14,821	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0

a. Robbery/burglary – a robbery is the taking, or attempting to take, anything of value from another person or persons by force or threat of force or violence. A burglary is the unlawful entry into a building or other structure without the owner's consent with the intent to commit a felony or a theft.

b. Interpersonal violence – the intentional use of physical force or power, threatened or actual, against another person, or against a group, that either results in or has a high likelihood of resulting in injury, death, psychological harm, or deprivation.

c. Sexual assault - sexual contact without consent. Includes sex with a minor with or without consent. Ranges from the non-consensual touching of an intimate part of the body to forced, manipulated, or coerced penetration. It can involve verbal coercion and threats, physical restraint, intimidation, and/or violence.

d. Other assault - an unlawful fatal or nonfatal attack by one person upon another. To qualify as a serious crime, the assault should be an aggravated assault (one that involves bodily injury or threat with a deadly weapon).

e. Gang conflict - gang members are persons who are members of the same association or organization which has as one of its purposes the commission of crime. Gangs include both youth gangs and organized crime organizations.

f. Drug trade - the buying, selling or passing of drugs from one person to another in exchange for goods or money.

g. Arson - to unlawfully and intentionally damage, or attempt to damage any building, real estate, or personal property by fire or incendiary device.

h. Prostitution - performing sexual acts in exchange for money or its equivalent.

i. Witness intimidation - to intentionally say or do something that would cause a witness of a crime to be fearful of harm to them if they provide information to authorities about the crime or to kill a witness to prevent him/her from providing information.

j. Illegal border crossing - to arrive or in or cross the borders into the country in violation of immigration law.

Table 27

Child Abuse, Neglect, Poor Supervision and Exposure to Hazards

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Type of Act						
Child abuse [a]	186	1.3	206	1.4	392	2.6
Child neglect [b]	150	1.0	160	1.1	310	2.1
Poor or absent supervision [c]	344	2.3	392	2.6	736	5.0
Exposure to hazard [d]	196	1.3	245	1.7	441	3.0
Not specified	6,538	44.1	6,411	43.2	12,949	87.3
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Child abuse – child abuse is any injury inflicted on a child by a parent or caregiver. The parent or caretaker may not have intended to hurt the child, rather the injury may have resulted from over-discipline or physical punishment. Physical abuse can be the result of punching, beating, kicking, biting, burning, shaking, or otherwise harming a child.

[b.] Child neglect – a failure on the part of the parent/caregiver/supervisor to provide for the shelter, safety, supervision, and nutritional needs of the child that results in harm to the child. Child neglect includes physical, medical, supervisory, and emotional neglect.

[c.] Poor/absent supervision – parent/caregiver/supervisor's failure to supervise, provide alternative appropriate supervision, or engage in other behavior that causes or contributes to the child's death. This category is typically used when poor or absent supervision causes or contributes to injury death in a young child and the team does not feel that the lapse in supervision meets criteria to be classified as child neglect.
[d.] Exposure to hazards – refers to behavior by a parent/caregiver/supervisor that expose a child to hazard(s) that pose a threat of harm to the child, but the teams does not feel that the circumstances meet the criteria to be classified as child neglect. This includes hazards in sleep environment, fire/burn, poisoning, firearm, water/drowning, and motor vehicle hazards.

Table 28

Child Deaths Due to Suspected Child Neglect

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Child neglect: failure to provide necessities [a]						
Yes	21	0.1	28	0.2	49	0.3
Not specified	7,393	49.9	7,386	49.8	14,779	99.7
Total	7,414	50.0	7,414	50.0	14,828	100.0
Failure to provide necessities – Food [a]						
Yes	11	0.1	6	0.0	17	0.1
Not specified	7,403	49.9	7,408	50.0	14,811	99.9
Total	7,414	50.0	7,414	50.0	14,828	100.0
Failure to provide necessities – Shelter [a]						
Yes	0	0.0	4	0.0	4	0.0
Not specified	7,414	50.0	7,410	50.0	14,824	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
Failure to provide necessities – Other [a]						
Yes	11	0.1	19	0.1	30	0.2
Not specified	7,403	49.9	7,395	49.9	14,798	99.8
Total	7,414	50.0	7,414	50.0	14,828	100.0

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Failure to provide supervision [b]						
Yes	0	0.0	5	0.0	5	0.0
Not specified	7,414	50.0	7,409	50.0	14,823	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child neglect – Emotional neglect [c]						
Yes	3	0.0	1	0.0	4	0.0
Not specified	7,411	50.0	7,413	50.0	14,828	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child neglect - Abandonment [d]						
Yes	1	0.0	4	0.0	5	0.0
Not specified	7,413	50.0	7,410	50.0	14,823	100.0
Total	7,414	50.0	7,414	50.0	14,828	100.0
Child neglect – Failure to seek/follow treatment [e]						
Yes	35	0.2	37	0.2	72	0.5
Not specified	7,379	49.8	7,377	49.8	14,756	99.5
Total	7,414	100.0	7,414	50.0	14,828	100.0
Child neglect – Exposure to hazards [f]						
Sleep environment	98	0.7	99	0.7	197	1.3
Not specified	7,316	49.3	7,315	49.3	14,631	98.7
Total	7,414	50.0	7,414	50.0	14,828	100.0

[a.] Failure to provide necessities – parent/caregiver/supervisor's failure to provide adequate food, shelter, or other necessities that causes or contributes to the child's death.

[b.] Failure to provide supervision – parent/caregiver/supervisor failure to supervise, provide alternative appropriate supervision, or is unable or unwilling to supervise (e.g., the caregiver is under the influence of alcohol or drugs, is depressed, sleeps during the day, or has inadequate parenting knowledge or skills), resulting in the child's death.

[c.] Emotional neglect – parent/caregiver/supervisor's failure to provide adequate nurturing and affection to a child. This includes actions such as marked inattention to the child's needs for affection, refusal of or failure to provide needed psychological care, spouse abuse in the child's presence, and permission of drug or alcohol use by the child.

[d.] Abandonment – child abandonment occurs when a parent/caregiver/supervisor deserts a child without any regard for the child's physical health, safety or welfare and with the intention of abandoning the child.
[e.] Failure to seek/follow treatment – the failure of a parent/caregiver/supervisor to seek timely and appropriate medical care for a serious health problem which any reasonable layperson would have recognized as needing professional medical attention. In addition, parents/caregivers/supervisors are responsible to follow up on the medical professional's directives. Failure to provide or allow care prescribed/recommended by a competent health care professional for a physical injury, illness, medical condition, or impairment. Indicate whether the failure to seek/follow care was due to stated religious or cultural practices of the parent/caregiver/supervisor.
[f.] Exposure to hazards - behavior on the part of the parent/caregiver/supervisor that exposes a child to hazard(s) that causes or contributes to the child's death.

Table 29

Chi-Square Results

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	560.545	27	.000
Likelihood Ratio	582.610	27	.000
Linear-by-Linear Association	65.096	1	.000
N of Valid Cases	14,828		

Table 30

Chi Square Symmetric Measures

	Value	Asymptotic Significance (2-sided)
Phi	.194	.000
Cramer's V	.194	.000
Contingency Coefficient	.191	.000
N of Valid Cases	14,828	

Table 31

Medical Causes of Death Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Medical causes of death						
Asthma [a]	39	0.3	18	0.1	57	0.4
Cancer [b]	250	1.7	208	1.4	458	3.1
Cardiovascular [c]	224	1.5	272	1.8	496	3.3
Congenital Anomaly [d]	789	5.3	1,270	8.6	2,059	13.9
HIV/AIDs [e]	1	0.0	1	0.0	2	0.0
Influenza [f]	7	0.0	19	0.1	26	0.2
Low birth weight [g]	7	0.0	3	0.0	10	0.1
Malnutrition/dehydration [h]	14	0.1	7	0.0	21	0.1
Neurological/seizure disorder [i]	107	0.7	135	0.9	242	1.6
Pneumonia [j]	168	1.1	169	1.1	337	2.3
Prematurity [k]	1,711	11.5	1,889	12.7	3,600	24.3
Sudden Infant Death Syndrome [l]	368	2.5	189	1.3	557	3.8
Diabetes [m]	0	0.0	2	0.0	2	0.0
Other infection [n]	215	1.4	250	1.7	465	3.1
Other perinatal condition [o]	136	0.9	241	1.6	377	2.5
Other medical condition [p]	443	3.0	474	3.2	917	6.2
Undetermined medical cause [q]	108	0.7	27	0.2	135	0.9
Unknown medical [r]	46	0.3	9	0.1	55	0.4
Total	4,633	31.2	5,183	35.0	9,816	66.2

[a.] Asthma – A chronic lung disease that inflames and narrows the airways, and can cause recurring periods of wheezing, chest tightness, shortness of breath, and coughing

[b.] Cancer – not defined by NFR-CRS.

[c.] Cardiovascular – not defined by NFR-CRS.

[d.] Congenital anomaly: Birth defects, malformations, chromosomal conditions, and other conditions noted prenatally, at delivery, or on autopsy.

[e.] Human immunodeficiency virus (HIV/AIDS) – documented diagnosis of human immunodeficiency virus or acquired immunodeficiency syndrome.

[f.] Influenza -note defined by NFR-CRS.

[g.] Low Birth Weight, any newborn, regardless of gestational age, whose weight at birth is less than 2500 grams, or 5lb. 5 oz.

[h.] Malnutrition/dehydration – Not defined by NFR-CRS.

[i.] Neurological/seizure disorder – defined by any of the following conditions, at least two unprovoked seizures occurring more than 24 hours apart, one unprovoked seizure and a

probability of further seizures occurring over the next 10 years, and/or diagnosis of an epilepsy syndrome.
[j.] Pneumonia – not defined by NFR-CRS.
[k.] Prematurity - infant born at less than 37 completed weeks gestation.
[l.] Sudden Infant Death Syndrome – defined.
[m.] Diabetes - indicated if the child had ever been diagnosed with any type of diabetes
[n.] Other infection – Not defined by NFR-CRS.
[o.] Other perinatal condition – Not defined by NFR-CRS.
[p.] Other medical condition – can include hypoxia/asphyxia, hypoxic-ischemic encephalopathy (HIE), placental problems, necrotizing enterocolitis (NEC), respiratory distress syndrome (RDS), and/or pulmonary hypoplasia.
[q.] Undetermined medical cause – selected when it is not possible to classify the death as due to an injury or medical cause (e.g., sudden unexpected infant death).
[r.] Unknown medical – selected when team does not have information on primary cause of death.

Table 32

Injury Causes of Death Among Family Subgroups

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Injury causes of death						
Motor vehicle	809	5.5	582	3.9	1,391	9.4
Weapon [a]	757	5.1	567	3.8	1,324	8.9
Asphyxia [b]	386	2.6	340	2.3	726	4.9
Drowning [c]	208	1.4	371	2.5	579	3.9
Fire, burn, electrocution [d]	164	1.1	85	0.6	249	1.7
Poisoning, overdose acute intoxication [e]	90	0.6	70	0.5	160	1.1
Fall or crush [f]	69	0.5	68	0.5	137	0.9
Other injury [g]	120	0.8	117	0.8	237	1.6
Undetermined injury [h]	144	1.0	23	0.2	167	1.1
Unknown injury	34	0.2	8	0.1	42	0.3
Total	2,781	18.8	2,231	15.0	5,012	33.8

[a.] Weapon – selected for causes of death involving firearms and/or sharp instruments that were used as a primary means of the assault or injury.
[b.] Suffocation/asphyxia – broad term that refers to death or serious injury by deprivation of oxygen; can involve a variety of mechanisms.
[c.] Drowning – Not defined by NFR-CRS.
[d.] Fire, burn, electrocution – Not defined by NFR-CRS.
[e.] Poisoning, overdoes, acute intoxication – includes a substance (s) contributing in the death as documented on the death certificate or autopsy report (e.g., prescription drug,

over-the-counter drug, illicit drug). Incident may be result of accidental overdoes, medical treatment mishap, adverse effect but not overdoes, deliberate poisoning, acute intoxication.

[f.] Fall or crush – Not defined by NFR-CRS.

[g.] Other injury - Not defined by NFR-CRS.

[h.] Undetermined injury cause – selected when it is not possible to classify the death as due to an injury or medical cause (e.g., sudden unexpected infant death).

Undetermined injury cause – selected when it is not possible to classify the death as due to an injury or medical cause.

Table 33

Chi-Square Results

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.630	1	.105
Likelihood Ratio	2.632	1	.110
Linear-by-Linear Association	2.630	1	.105
N of Valid Cases	11,398		

Table 34

Chi Square Symmetric Measures

	Value	Asymptotic Significance (2-sided)
Phi	.015	.105
Cramer's V	.015	.105
Contingency Coefficient	.015	.105
N of Valid Cases	11,398	

Table 35

Child Abuse, Child Neglect, Poor/Absent Supervision or Exposure to Hazards

	Non-First-Generation Immigrant Family		First-Generation Immigrant Family		Total	
	n	*%*	*n*	*%*	*n*	*%*
Did child abuse, child neglect, poor or absent supervision or exposure to hazards cause or contribute to child death?						
Yes/probable [a]	876	5.9	1,007	6.8	1883	12.7
No[b]	4,621	31.2	4,894	33.0	9,515	64.2
Total	5,497	48.2	5,901	51.8	11,398	100.0
Type of act						
Child abuse [c]	186	1.3	206	1.4	392	2.6
Child neglect [d]	150	1.0	160	1.1	310	2.1
Poor or absent supervision [e]	344	2.3	392	2.6	736	5.0
Exposure to hazards [f]	196	1.3	245	1.7	441	3.0
Not specified	4,621	40.5	4,898	43.0	9,519	83.5
Total	5,497	48.2	5,901	51.8	11,398	100.0

a. Yes/probable – indicates behaviors on the part of a parent/caregiver/supervisor that expose the child to hazardous circumstances that cause of contribute to a child death.

b. No – if no behavior on the part of the parent/caregiver/supervisor caused or contributed to the child's death.

c. Child abuse - any injury inflicted on a child by a parent or caregiver. The parent or caretaker may not have intended to hurt the child, rather the injury may have resulted from over-discipline or physical punishment. Physical abuse can be the result of punching, beating, kicking, biting, burning, shaking, or otherwise harming a child.

d. Child neglect - a failure on the part of a parent/caregiver/supervisor to provide for the shelter, safety, supervision and nutritional needs of the child that results in harm to the child. Child neglect includes physical, medical, supervisory, and emotional neglect.

e. Poor/absent supervision - parent/caregiver/supervisor's failure to supervise, provide alternative appropriate supervision, or engage in other behavior that causes or contributes to the child's death. This category is typically used when poor or absent supervision causes or contributes to injury death in a young child and the team does not feel that the lapse in supervision meets criteria to be classified as child neglect.

f. Exposure to hazards - refers to behavior by a parent/caregiver/supervisor that expose a child to hazard(s) that pose a threat of harm to the child, but team does not think that the circumstances meet the criteria to be classified as child neglect. This

includes hazards in the sleep environment, fire/burn, poisoning, firearm, water/drowning, and motor vehicle hazards.

Table 36

Family and Child Maltreatment Characteristics in Regression Analysis

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	1,637	52.8
Non-First-Generation Immigrant Family	1,461	47.2
Total sample	3,098	100.0
Mother History of Substance Abuse		
Yes [a]	571	18.4
No	2,527	81.6
Total	3,098	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	845	27.3
No	2,253	81.6
Total	3,098	100.0
Type of act		
Child abuse	165	5.3
Child neglect	165	5.3
Poor or absent supervision	282	9.1
Exposure to hazards	232	7.5
Not specified	2,254	72.8
Total	3,098	100.0

[a.] Mother history of substance abuse – indicated if there is evidence of the mother having a substance use problem or addiction disorder to alcohol or other drugs. The answer "yes" is selected if mother has used illegal drugs (e.g., heroin or cocaine), abused prescription medications (e.g., pain relievers or Valium), or regularly used inhalants (e.g., sniffing or huffing gas). The answer "yes" is also selected if the mother has participated in rehabilitation program or treatment including self-help groups and 12-step program.

Table 37

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	265.466	2	.000
Block	265.466	2	.000
Model	265.466	2	.000

Table 38

Mother's History of Substance Abuse and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.721	.091	62.233	1	.000	.486	.406, .582
Mother history substance abuse (1)	-1.617	.104	239.854	1	.000	.198	.162, .243
Constant	1.741	.079	485.681	1	.000	5.701	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) notation is coded as "yes" to first-generation immigrant family and "yes" to mother history of substance abuse.

Table 39

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	3365.274	.082	.119

Table 40

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	118	727	14.0
	No	53	2,200	97.6
Overall Percentage				74.8

Table 41

Family and Child Maltreatment Characteristics for Regression Analysis

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	498	43.5
Non-First-Generation Immigrant Family	646	56.5
Total sample	1,144	100.0
Mother History of Substance Abuse		
Yes [a]	571	49.9
No	573	50.1
Total	1,144	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	423	37.0
No	722	63.0
Total	1,145	100.0
Type of act		
Child abuse	89	7.8
Child neglect	101	8.8
Poor or absent supervision	123	10.8
Exposure to hazards	109	9.5
Not specified	722	63.1
Total	1,144	100.0

Table 42

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	151.670	2	.000
Block	151.670	2	.000
Model	151/670	2	.000

Table 43

Binary Logistic Regression: Mother's History of Substance Abuse and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.843	.144	34.097	1	.000	.431	.324, .571
Mother hx substance abuse (1)	-1.649	.146	127.811	1	.000	.192	.144, .256
Constant	1.806	.143	160.496	1	.000	6.089	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) is coded as "yes" to first-generation immigrant family and "yes" to mother history of substance abuse.

Table 44

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	1355.723	.124	.170

Table 45

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	118	305	27.9
	No	53	668	92.6
Overall Percentage				68.7

Table 46

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	1,072	65.3
Non-First-Generation Immigrant Family	570	34.7
Total sample	1,642	100.0
Father History of Substance Abuse		
Yes [a]	322	19.6
No	1,320	80.4
Total	1,642	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	526	32.0
No	1,116	68.0
Total	1,642	100.0
Type of act		
Child abuse	105	6.4
Child neglect	95	5.8
Poor or absent supervision	187	11.4
Exposure to hazards	138	8.4
Not specified	1,117	68.0
Total	1,642	100.0

Table 47

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	165.732	2	.000
Block	165.732	2	.000
Model	165.732	2	.000

Table 48

Binary Logistic Regression: Fathers' History of Substance Abuse and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.624	.128	23.580	1	.000	.536	.417, .689
Father hx substance abuse (1)	-1.733	.141	151.289	1	.000	.177	.134, .233
Constant	1.557	.118	173.407	1	.000	4.746	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) notation is coded as "yes" to first-generation immigrant family and "yes" to father history of substance abuse.

Table 49

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	1893.750	.096	.134

Table 50

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	195	331	37.1
	No	127	989	88.6
Overall Percentage				72.1

Table 51

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	361	55.4
Non-First-Generation Immigrant Family	291	44.6
Total sample	652	100.0
Father History of Substance Abuse		
Yes [a]	322	49.4
No	330	50.6
Total	652	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	270	41.4
No	382	58.6
Total	652	100.0
Type of act		
Child abuse	59	9.0
Child neglect	53	8.1
Poor or absent supervision	89	13.7
Exposure to hazards	68	10.4
Not specified	383	58.7
Total	652	100.0

Table 52

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	106.708	2	.000
Block	106.708	2	.000
Model	106.708	2	.000

Table 53

Binary Logistic Regression: Father's History of Substance Abuse and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1 (1)	-.511	.185	7.604	1	.006	.600	.417, .862
Father hx substance abuse (1)	-1.808	.187	93.950	1	.000	.164	.114, .236
Constant	1.588	.191	69.331	1	.000	4.894	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) notation is coded as "yes" to first-generation immigrant family and "yes" to father history of substance abuse.

Table 54

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	777.821	.151	.203

Table 55

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	195	75	72.2
	No	127	255	66.8
Overall Percentage				69.0

Table 56

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	1,941	58.1
Non-First-Generation Immigrant Family	1,401	41.9
Total sample	3,342	100.0
Mother Has Delinquent or Criminal History		
Yes [a]	327	9.8
No	3,015	90.2
Total	3,342	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	844	26.5
No	2,458	73.5
Total	3,302	100.0
Type of act		
Child abuse	194	5.8
Child neglect	146	4.4
Poor or absent supervision	328	9.8
Exposure to hazards	216	6.5
Not specified	2,458	73.5
Total	3,342	100.0

[a.] Mother has delinquent or criminal history – selected with mother has a documented history of delinquent or criminal behavior or actions. Includes any history with the juvenile justice system or the criminal justice system. Delinquent behavior may include school disciplinary actions, charges or convictions for misdemeanor offenses. Criminal behavior includes charges or convictions for felony charges.

Table 57

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	95.774	2	.000
Block	95.774	2	.000
Model	95.774	2	.000

Table 58

Binary Logistic Regression: Mother Delinquent or Criminal History and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.248	.083	9.037	1	.003	.780	.663, .917
Mother delinquent history (1)	-1.182	.121	96.069	1	.000	.307	.242, .389
Constant	1.307	.068	374.533	1	.000	3.696	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) notation is coded as "yes" to first-generation immigrant family and "yes" to mother delinquent or criminal history.

Table 59

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	3765.732	.028	.041

Table 60

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	69	815	7.8
	No	56	2,402	97.7
Overall Percentage				73.9

Table 61

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	318	47.8
Non-First-Generation Immigrant Family	347	52.2
Total sample	665	100.0
Mother delinquent/criminal history		
Yes	327	49.2
No	338	50.8
Total sample	665	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	250	37.6
No	415	62.4
Total	665	100.0
Type of act		
Child abuse	54	8.1
Child neglect	44	6.6
Poor or absent supervision	84	12.6
Exposure to hazards	68	10.2
Not specified	415	62.4
Total sample	665	100.0

Table 62

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	40.776	2	.000
Block	40.776	2	.000
Model	40.776	2	.000

Table 63

Binary Logistic Regression: Mother Delinquent/Criminal History and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.303	.170	3.191	1	.074	.739	.530, 1.030
Mother hx substance abuse (1)	-1.061	.170	38.709	1	.000	.346	.248, .484
Constant	1.207	.161	56.278	1	.000	3.344	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) notation is coded as "yes" to first-generation immigrant family and "yes" to mother history of substance abuse.

Table 64

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	839.739	.059	.081

Table 65

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	69	181	27.6
	No	56	359	86.5
Overall Percentage				64.4

Table 66

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	1,544	66.8
Non-First-Generation Immigrant Family	769	33.2
Total sample	2,313	100.0
Father Has Delinquent or Criminal History		
Yes [a]	415	17.9
No	1,898	82.1
Total sample	2,313	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	623	26.9
No	1,690	73.1
Total sample	2,313	100.0
Type of act		
Child abuse	133	5.8
Child neglect	100	4.3
Poor or absent supervision	229	9.9
Exposure to hazards	161	7.0
Not specified	1,690	73.1
Total sample	2,313	100.0

[a.] Father has delinquent or criminal history – selected with father has a documented history of delinquent or criminal behavior or actions. Includes any history with the juvenile justice system or the criminal justice system. Delinquent behavior may include school disciplinary actions, charges or convictions for misdemeanor offenses. Criminal behavior includes charges or convictions for felony charges.

Table 67

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	118.614	2	.000
Block	118.614	2	.000
Model	118.614	2	.000

Table 68

Binary Logistic Regression: Father Delinquent/Criminal History and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.2.85	.107	7.154	1	.007	.752	.610, .927
Father delinquent/criminal history (1)	-1.275	.117	119.613	1	.000	.279	.222, .351
Constant	1.462	.097	229.019	1	.000	4.316	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families.

Table 69

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	2576.33	.050	.073

Table 70

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	99	524	15.9
	No	96	1,594	94.3
Overall Percentage				73.2

Table 71

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	482	58.4
Non-First-Generation Immigrant Family	343	41.6
Total sample	825	100.0
Father delinquent/criminal history		
Yes	415	50.3
No	410	49.7
Total sample	825	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	297	36.0
No	528	64.0
Total sample	825	100.0
Type of act		
Child abuse	71	8.6
Child neglect	44	5.3
Poor or absent supervision	109	13.2
Exposure to hazards	73	8.8
Not specified	528	64.0
Total sample	825	100.0

Table 72

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	60.286	2	.000
Block	60.286	2	.000
Model	60.286	2	.000

Table 73

Father Delinquent/Criminal History and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.161	.157	1.053	1	.305	.851	.626, 1.158
Father delinquent/criminal history (1)	-1.184	.158	56.349	1	.000	.306	.225, .417
Constant	1.313	.163	65.209	1	.000	3.717	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families. The (1) notation is coded as "yes" to first-generation immigrant family and "yes" to father delinquent/criminal history.

Table 74

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	1017.854	.070	.097

Table 75

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	99	198	33.3
	No	96	432	81.8
Overall Percentage				64.4

Table 76

Family and Child Maltreatment Characteristics

	n	*%*
Family Subgroup		
First-Generation Immigrant Family	2,412	49.7
Non-First-Generation Immigrant Family	2,466	50.3
Total sample	4,858	100.0
Residence Overcrowded		
Yes	334	6.9
No	4,524	93.1
Total	4,858	100.0
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
Yes/probable	1,139	23.4
No	3,719	76.6
Total	4,858	100.0
Type of act		
Child abuse	253	5.2
Child neglect	208	4.3
Poor or absent supervision	402	8.3
Exposure to hazards	275	5.7
Not specified	3,720	76.6
Total	4,858	100.0

Table 77

Binary Logistic Regression: Omnibus Test of Model Coefficients

	Chi-square	df	Sig.
Step	188.242	2	.000
Block	188.242	2	.000
Model	188.242	2	.000

Table 78

Binary Logistic Regression: Residence Overcrowding and Child Death Due to Probable Child Maltreatment

Predictors	**B**	SE	Wald	df	Sig.	Exp(B)	95% CI OR
FGIF or Non-FGIF (1)	-.189	.069	7.372	1	.007	.828	.723, .949
Residence Overcrowded (1)	-1.560	.116	179.592	1	.000	.210	.167, .264
Constant	1.419	.0511	767.401	1	.000	4.131	

Note. FGIF represents first-generation immigrant families and Non-FGIF represents non-first-generation immigrant families.

Table 79

Binary Logistic Regression: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	5103.168	.038	.057

Table 80

Binary Logistic Regression: Classification Table

		Predicted		
		Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?		
		Yes/Probable	No	Percentage Correct
Child abuse, child neglect, poor/absent supervision or exposure to hazards contribute to child death?	Yes/Probable	188	951	16.5
	No	146	3,573	96.1
Overall Percentage				77.4

Table 81

Binary Logistic Regression: Mother and Father History of Intimate Partner Violence

	n	*%*
Mother history of intimate partner violence		
Yes	541	3.6
Not specified	14,287	96.4
Total	14,828	100.0
Father history of intimate partner violence		
Yes	39	.3
Not specified	14,789	99.7
Total	14,828	100.0

Appendix B: An Extended Review of Literature

Counseling psychology has, in part, emphasized understanding how social identities intersect and constitute forms of privilege and oppression in individuals and group members of society (Shin et al., 2017). This study proposes to review child deaths in two U.S. subpopulations, Non-First Generation Immigrant Families (Non-FGIF) and First-Generation Immigrant Families (FGIF), and investigate those child deaths due to medical and/or injury causes as well as deaths contributing from child maltreatment. This study attempts to account for cultural protective factors in immigrant families in support of the Health Immigrant Paradox (HIP) which suggests immigrant families may be at lower risk of negative child health outcomes (Franzini, Ribble & Keddi, 2001; National Research Council, 2004; McGlade & Dahlstrom, 2004; Millett, 2016). Expanding HIP to child mortality would suggest immigrant families compared to U.S. native born families are at a lower risk for experiencing child deaths due to disease, injury, and deaths where child maltreatment is suspected. Immigrant families, due to socioeconomic difficulties and structural barriers to health, may warrant better advocacy and potential need for culturally appropriate health interventions. It is the hope that findings from this research study can enhance the child mortality literature by increasing considerations beyond fixed demographic criteria to explain child health advantages and/or disadvantages. In support of the social justice work in the counseling psychology field, the hope is also that research findings can shed light to structural or

policy change needed to better serve both children of U.S. Non-FGIF and children of FGIF.

Death Recording System

Most mortality data are classified according to the International Classification of Diseases and Injuries (ICD) (Posey & Neuilly, 2017). The cause of death is defined as the disease or injury responsible for the lethal event (Posey et al., 2017). Disease related deaths indicate a medical condition as the primary cause of death, as with perinatal conditions or chronic respiratory disease (Posey et al., 2017). Unintentional injuries and intentional injuries differ in the intent of harm. Unintentional injuries refer to events such as traffic accidents or accidental falls, whereas intentional injuries identify homicides or suicides (Mokdad, Marks, Stroup, & Gerberding, 2004; Posey et al., 2017). The cause of death is different from the manner of death (Posey et al., 2017). There are four manners of death that are used by medical examiners to code and legally differentiate from natural, homicidal, suicidal, and accidental deaths (Posey & Neuilly, 2017). Natural deaths are described to be when "body ceases function of its own accord" (Posey et al., 2017, p. 434). Homicide is the result of "one human taking another's life" and suicide is the deliberate act of taking one's own life (Posey et al., 2017, p. 434). Undetermined and unknown deaths are additional categories used for unique circumstances that do not fit into above criteria (Posey et al., 2017). Undetermined deaths indicate there is not enough evidence to determine the type of death whereas unknown deaths suggest the conditions surrounding the death are too complex to classify (Davis, 1997; Posey et al., 2017).

Child Maltreatment Fatalities

The International Classification Disease and Injuries (ICD) does not account for child deaths due to child abuse and neglect. Child death review boards and researchers have differentiated between intentional injures related to child maltreatment. The National Child Abuse and Neglect Data System defines child maltreatment fatalities as "death of a child caused by an injury resulting from abuse or neglect or where abuse or neglect was a contributing factor" (Child Welfare Information Gateway, 2019, p. 2). Child maltreatment fatalities can occur due to intentional injuries or serve neglect (Douglas & Mohn, 2014; National Child Abuse and Neglect Data System, 2000). Child deaths from intentional injuries may include "actively killing a child through beatings, a shaking injury, or suffocation" (Douglas & Mohn, 2014, p. 43; Douglas, 2014; National Child Abuse and Neglect Data System, 2000). On the other hand, child deaths due to nonintentional injuries can be the result of "not providing necessary medical treatment, leaving a newborn unattended, or not providing necessary supervision for children" (National Child Abuse and Neglect Data System, 2000; Douglas & Mohn, 2014, p. 43).

Child death review programs in the U.S.

Child death review programs were established in U.S. throughout the 1980's and 1990's in response to a Missouri study that identified child maltreatment related deaths (Ornstein, Bowes, Shouldice, & Yancha, 2013). Professionals from multiple disciplines are involved in child death review teams and include physicians, law enforcement representatives, child welfare agency workers, and/or other health care providers (Ornstein et al., 2013). The multidisciplinary team investigates family history, causes of death, system and services involved before the death, and develops recommendations to

prevent future child deaths (Ornsten et al., 2013). Child death review programs are referred to as the "gold standard in the management of child deaths" and serve as public health surveillance system aggregating information and enhancing case identification of child maltreatment deaths (Christian & Sege, 2010; Gijzen, Petter, L'Hoir, Boere-Boonekamp, & Need, 2017, p. 358; Ornstein et al. 2013; Palusci & Convington, 2014). Child death review boards play pivotal roles as child maltreatment related deaths are not coded within the International Classification of Diseases and Injuries (ICD) and/or by medical examiners who may list child deaths due to physical abuse/neglect as homicide or accidents (Damashek, Nelson, & Bonner, 2013). To date, child death review programs have helped inform prevention/intervention efforts and helped enforce legislative change (e.g., injury prevention campaigns, changes in child protection training, safe sleep practices, suicide prevention) (Ornstein et al., 2013)

Global disease-related deaths in children

Researchers investigating global mortality rates have discovered the leading causes of death can vary widely across countries (Fraser, Sidebotham, Frederick, Convington, & Mitchell, 2014). The Global Burden of Disease (2013) study investigated children and adolescent deaths between 1990 and 2013 and identified differences in cause-specific mortalities between age groups and between developed and developing countries (Kyu et al., 2016). Utilizing vital registration data, verbal autopsy studies, maternal and child death surveillance systems, and other child mortality sources (e.g., cancer registry, police records), findings revealed 7.7 million deaths occurred among children and adolescents in 2013 (Kyu et al., 2016). From the 7.7 million child deaths, 6.28 million deaths were attributed to children under the age of five (Kyu et al., 2016).

The leading cause of death in younger children was due to lower respiratory tract infections whereas the leading cause of death for other children was due to diarrheal disease (Kyu et al., 2016). Moreover, common causes of death for both developed and developing countries were attributed to be from preterm birth complications and congenital anomalies (Kyu et al., 2016). For developing countries, however, child deaths due to infectious disease, such as lower respiratory tract infections, neonatal sepsis, malaria, and diarrheal diseases, occurred at a more widespread rate (Kyu et al., 2016). Sub-Sharan African countries represented a higher child mortality rate due to respiratory tract infections, malaria, and diarrheal disease (Kyu et al., 2016). Further, neonatal encephalopathy was the leading cause of death in South Asian countries (Kyu et al., 2016). Lastly, preterm birth complications and congenital anomalies were identified to be the leading causes of deaths in countries in North America, Australia, Europe, East Asia, and most countries in Latin American and the Caribbean (Kyu et al., 2016). Other studies analyzing global child mortality rates have revealed similar variations in the cause-specific mortalities across countries. A study by Liu et al. in 2016 investigated global causes of death for children under the age of five. Utilizing vital registration data from the World Health Organization, accounting for 194 countries between the years 2000 and 2015, researchers reported there were 5.9 million under five deaths in 2015 (Liu et al., 2016). From the 5.9 million under five deaths, 2.7 million deaths occurred in the neonatal period (Liu et al., 2016). The leading under-five causes of death were pneumonia, preterm complications, and intrapartum-related events (Liu et al., 2016). Consistent with previous research findings, Sub-Saharan Africa and Southern Asia represented the highest number of under-five mortality deaths (Liu et al., 2016). However, Sub-Saharan

Africa and Southern Asia varied somewhat in the leading causes of under-five deaths, with Southern Asia having a higher proportion of neonatal deaths due to preterm birth complications (Liu et al., 2016). Overall, global studies reporting child mortality estimates have continuously identified varying causes of death across populations. Research efforts analyzing child mortality trends are helpful in highlighting where specific health interventions are needed (Kyu et al., 2016).

Global injury-related deaths in children

During the twentieth century, child death due to infectious disease declined substantially in developed/high income countries (Rivara, 2012). At the turn of the century however, injury-related deaths became more evident in developed/high income countries (Curtin, Heron, Minino, & Warner 2018; Kyu et al., 2018, Wang et al., 2014). According to the World Report on Child Injury Prevention (2008), 95% of child deaths from injuries occur in developing countries (Wang, He, Li, Miao, Zhu, & Liang, 2014). Supporting this finding, the Global Burden of Disease (2013) study indicated that non-intentional injuries, particularly road injures, were the leading cause of death among adolescents globally with an "increasing trend in most developing countries" (Kyu et al., 2016, p. 283). The increasing trend of injury-related deaths in children is apparent in the U.S. national vital statistics data (Curtin et al., 2018). Estimates suggest the U.S. total mortality rates for children and adolescents (ages 10-19) declined by 33% from 1999 to 2013 and increased by 12% from 2013 to 2016 (Curtin et al., 2018). According to researchers, unintentional injuries, suicide, and homicide accounted for the increase of total child deaths and injury-related deaths in children and adolescents (Curtin et al., 2018). The leading methods of unintentional injuries from 1999 to 2016 included motor

vehicle traffic, drownings, and drug poisonings (i.e., drug overdoses) (Curtin et al., 2018). In 2016 specifically, motor vehicle traffic, drownings, and drug poisonings accounted for 85% of all unintentional injury deaths (Curtin et al., 2018). Intentional injuries by suicide and homicide followed as the second and third leading causes of deaths from 1999 to 2016 with suicides in 2016 estimated at 2,553 and homicides estimated at 1,963 for children and adolescents (ages 10-19) (Curtin et al., 2018). In another nationwide study, Wang et al., (2014) investigated injury-related deaths among children (ages 1-4) in China from 2000 to 2008. The researchers obtained data from child mortality surveillance network and classified injuries according to China's five major causes of injury death for children (ages 1-4): drowning, traffic accident, unintentional suffocation, poisoning, and falls (Wang et al., 2014). Findings indicated that drownings followed traffic accidents were the most prevalent causes of injury-related deaths in children (ages 1-4) (Wang et al., 2014). Researchers suggest their findings parallel results from developing countries revealing drownings followed by traffic accidents as the first and second leading causes of injury-related death in children (Hong, Lee, Ha, & Park, 2010; Wang et al., 2014; World Health Organization, 2008). Consistent with reports from developed countries, however, researchers reported child deaths due to traffic accidents increased from third leading cause of death in 1991 to the second cause of death in children from 2000 to 2008 (Siliva, Ruben, Wronski, Stronack, & Woods, 1998; Wang et al., 2014). Comparative studies have also been helpful in highlighting the trend of injury-related deaths in different developed countries. In a related study, researchers explored child injury-related deaths across four UK countries including England, Wales, Scotland, and in Northern Ireland (Hardelid, Davey, Dattani, & Gilbert 2013). Data from national

statistics agencies was used to analyze injury-related deaths occurring from 1980 to 2010 for children and adolescents (28 days to 18 years) (Hardelid et al., 2013). Findings suggested transport accidents accounted for close to half of injury child deaths across three countries, with Northern Ireland experiencing more than half (52.4%) (Hardelid et al., 2013). Although researchers found child injury related deaths were declining during the study period, specifically represented by a decline in non-intentional injuries, researchers identified child deaths due to injury increased with age (Hardelid et al., 2013). In all four countries, older children (ages 10-18) compared to younger children (28 days -9 years) were more likely victims of injury-related deaths (Hardelid et al., 2013). Altogether, these research findings provide important evidence indicating child injury-related deaths, specifically non-intentional injuries associated with traffic accidents, from a large threat to children's lives in most developed countries.

Child mortality in racial/ethnic populations of U.S.

National studies have highlighted the child health disparities occurring within racial/ethnic populations. In the U.S., findings generated from the nation vital statistics system from 1995 to 2002 revealed infant mortality rates were higher among Non-Hispanic African-American infants compared to non-Hispanic Caucasian infants (Paul, Mackley, Locke, Stefano, & Kroelinger, 2009; Center for Disease Control and Prevention, 2005). A similar trend was found using national vital statics data from 2010 to 2013 which indicated Non-Hispanic Black mothers accounted for a higher infant mortality rate (11.1 per 1,000 live births) compared to non-Hispanic White mothers (5.06 per 1,000 live births) (Mathews, MacDorman, & Thoma, 2015). In another study, a systematic review of the child death literature 1950–2007 indicated higher child mortality

rates across all four major U.S. racial/ethnic minority groups: African Americans, Latinos, American Indians/Alaska Natives, and Asians/Pacific Islanders (Flores, 2010). The infant health disparity among racial minority groups continues to be examined by researchers today. In a recent study, Loggins and Andrade (2014) examined the infant mortality rate for Black and White racial groups using data from the Center for Disease Control and Prevention (Loggins et al., 2014). Analysis revealed that in 2009, the infant mortality rate for Black infants was 2.2 times greater than that of their White counterparts (Loggins et al., 2014). The infant health disparity is predicted to continue until 2020 despite data from 1995 to 2009 revealing a faster decline among Black infant mortality rates (15.3%) compared to White infant mortality rates (11.9%) (Loggins et al., 2014). Socioeconomic factors associated with household income, parental employment, and parental education are reported to account for the Black-White infant health disparities (Loggins et al., 2014). In another U.S. study, infant mortality rates were compared between Whites and American Indians/Alaska Natives (Johansson, Williams, El-Mohandes, 2013). Previous studies have indicated American Indians/Alaska Natives experience a disproportionate number of postneonatal deaths compared to the proportion of total infant mortality rate in the U.S. (Johansson et al., 2013). Data from the Center for Disease Control and Prevention was utilized to review infant mortality rates for both racial groups between two-time intervals, 1995-1999 and 2000-2004 (Johnansson et al., 2013). Across the time intervals, estimates indicated the infant mortality rate for American Indians/Alaska Natives was 1.5 times higher than that of White infants (Johnansson et al., 2013). Results overall revealed significantly higher infant mortality rates among American Indians/Alaska Natives compared to infant mortality rates among

Whites (Johnansson et al., 2013). Consistent with previous findings, the postneonatal mortality rate was significantly higher for American Indians/Alaska Natives (Johnansson et al., 2013). Further, although the White infant mortality rate between the time intervals improved for both neonatal and postneonatal deaths, no significant improvement was noted among American Indians/Alaska native infants (Johnansson et al., 2013). Sudden infant death syndrome was the leading cause of infant death for American Indians/Alaska Natives from 1995 to 1999 and the second leading cause of infant death for American Indians/Alaska Natives from 2000 to 2004 (Johnansson et al., 2013). Among both racial groups and across the two-time intervals, the leading causes of infant deaths included congenital malformations, deformations, and chromosomal abnormalities (Johansson et al., 2013). Researchers suggest socioeconomic factors and a lack of primary health care services may be contributing to the American Indian infant health disparities, especially when taking into account American Indians who are living in tribes operated under the Indian Self-Determination act which are designated health professions shortage areas (Johnansson et al., 2013).

Deaths of immigrant children

The overrepresentation of racial/ethnic minority groups in child mortality samples has directed researchers to look at a subpopulation of those racial/ethnic children, namely children of immigrant parents. First, it is important to recognize that the term immigrant encompasses naturalized citizens, legal non-citizen residents, undocumented individuals, refugees, and asylum seekers (Khullar & Chokshi, 2019). Further, children of immigrant families consist of parents who are non-native born or who live outside of their country of birth (Landale, Thomas, & Van Hook, 2011*)*. Estimates suggest that 25% of U.S.

children under the age 18 live with at least one non-native born parent and 13% have two non-native-born parents (Chaudry & Fortuny, 2010; Millett, 2016; Zong & Batalona, 2015). Children of immigrant families may face unique circumstances and challenges related to socioeconomic disadvantages, poorer housing and amenities, disrupted social support networks, and restricted access to health care and/or other services (Sidebotham et al., 2014). Emerging research highlighting the health inequalities of children of immigrant families has also captured disparities occurring in the child mortality rates between immigrant children/families and children in the native-born population.

Simeoni, Frova & Curtis (2019) investigated neonatal and infant mortality rates among Italian citizens and immigrant residents of Italy. Children of parents who did not have Italian citizenship were considered immigrant residents and children with at least one parent with Italian citizenship were classified as Italian citizens (Simeoni et al., 2019). Researchers collected data from the Italian Statistics Bureau and analyzed child mortality data from 2006 to 2015 (Simeoni et al., 2019). In 2015, researchers identified that 1,407 children died before the age of one and of these, 77% were Italian infants and 23% were immigrant infants (Simeoni et al., 2019). A disparity was evident when results revealed resident immigrants had a higher infant mortality ratio rate compared to Italians from 2006 to 2015 (Simeoni et al., 2019). Correspondingly, immigrant infants had a 1.5 greater chance of dying compared to Italians infants (Simeoni et al., 2019). Both neonatal mortality and infant mortality occurred at a higher rate for resident immigrants compared to Italian citizens (Simeoni et al., 2019). Perinatal and congenital pathologies represented 81% of all causes of death (Simeoni et al., 2019). From 2013 to 2014, immigrant infants compared to Italian citizen infants had a statistically significant difference of congenital

anomalies (Simeoni et al., 2019). Sudden infant death syndrome also occurred more frequently among immigrant infants (Simeoni et al., 2019). Overall, the infant mortality and neonatal infant mortality for Italian citizens decreased more from 2006 to 2015 compared to immigrant residents (Simeoni et al., 2019).

Although recent consideration has been directed toward child immigrant mortality rates, one previous study unexpectedly found a greater representation of immigrant children in their sample. Schyllander, Janson, Nyberg, Eriksson, and Ekman (2013) explored unintentional drownings in children and adolescents (ages 0-17) occurring in Sweden from 1998 to 2007. From a total of 106 records of child drownings obtained from the National Board of Forensic Medicine in Sweden, a total of 93 cases of unintentional drownings occurred during the study period (Schyllander et al., 2013). Analysis of victim characteristics indicated most drowning victims were more likely male (Schyllander et al., 2013). Interestingly, the researchers identified one-third of the study population was either born outside of Sweden or had parents who were born outside of Sweden (Schyllander et al., 2013). Of the children/families of immigrant backgrounds, families from various European countries or from Middle East and Iran backgrounds were largely represented in the sample (Schyllander et al., 2013). According to the researchers, only 5.5% of all children living in Sweden are from families with Middle Eastern and Iranian backgrounds, however, twice as many were represented in their total sample of victims (Scyllander et al, 2013). Schyllander and associates (2013) attributed the elevated risk of drowning for children of immigrant backgrounds due to the lack of swimming ability and lack of knowledge on safety prevention measures. Overall, findings from Simenoie et al.,

(2019) and Schyllander (2013) research reflect children of immigrant backgrounds face unique health disparities and challenges that can increase the risk for morality.

The studies explored above do not address child mortality rates of U.S. immigrant children. To the researcher's knowledge, no studies yet have been published findings on the child mortality rates of U.S. immigrant children. Current and emerging legislations changes under the current federal administration are undermining health care of U.S. immigrants (Khullar & Chokshi, 2019). Health care structural barriers and socioeconomic challenges can affect the wellbeing of immigrant children and immigrant families (e.g., ineligibility for federal health benefits, lower socioeconomic status, restricted access to public benefits such as Medicaid, Supplemental Nutrition Assistance Program, section 8 housing) (Hanson, Koball, Fortuny, & Chaudry, 2014; Khullar & Chokshi, 2019). Khullar and Chokshi (2019) point out that "given its strong association with health-care access and health outcomes, immigration status should be thought of as a social determinant of health" (p. 3).

Child Maltreatment Fatalities in the U.S.

Classifications of child death due to disease and injuries do not account for child maltreatment fatalities. In fact, most U.S. research attention on child deaths due maltreatment occurred in response to a 1993 Missouri study which identified an underreporting of maltreatment fatalities for children under the age of five (Ewigman, Kivlahan, & Land, 1993; Ornstein et al., 2013). In 2016, a U.S. national estimate of 1,750 children died from abuse and neglect representing an average of close to five children dying every day from child maltreatment (U.S. Department of Health & Human Services, 2018; Child Welfare Information Gateway, 2018). The National Child Abuse and Neglect

Data System defines child maltreatment fatalities as "death of a child caused by an injury resulting from abuse or neglect or where abuse or neglect was a contributing factor" (Child Welfare Information Gateway, 2018, p. 2). Today, substantial research has investigated fatal abuse and neglect in children and the factors that place children at risk of experiencing a child maltreatment fatality.

According to the Child Maltreatment Report (2016), of the total 1,750 children who died from abuse and neglect, 74.6% of children suffered from neglect and 44.2% of children suffered from physical abuse or a combination of physical abuse and another maltreatment type (U.S. Department of Health & Human Services, 2018). Other national and state studies have produced similar findings highlighting neglect to be the primary contributor to child maltreatment fatalities. Palusi and Covington (2014) reviewed information about child maltreatment deaths in the U.S. from 2005 to 2009. Utilizing data from the National Child Death Review Case Reporting System, 49, 947 child deaths from 23 states were analyzed to identify child maltreatment fatalities (Palusi et al., 2014). A total of 2,285 cases were identified as deaths where child maltreatment caused or contributed to the fatality (Palusi et al., 2014). Neglect was the common cause/contributor to child death, with more than half (51%) of the fatal neglect cases attributed to the caretaker's failure to protect from harm (Palusi et al., 2014). The makeup of other forms of neglect included a failure to provide necessities (11%), failure to seek or follow treatment recommendations (21%), and a small number of child deaths due to failure to provide food or shelter (Palusi et al., 2014). Among the physical abuse cases, abusive head trauma accounted for 30% of the total child maltreatment deaths and 60% of the physical abuse cases (Palusi et al., 2014). Other forms of physical abuse included

shaking (45%) with beating, kicking, and chronic battering accounting for the remaining physical abuse fatalities (Plusi et al., 2014). The findings in this study are consistent with previous research indicating neglect as the most common child maltreatment fatality. In another related study, Damashek, Nelson, & Bonner (2013) reviewed child maltreatment fatalities in Oklahoma from 1986 to 2006. A total of 685 cases of fatal child maltreatment were identified from child welfare records which were substantiated by Department of Human Services as deaths caused by child maltreatment (Damashek et al., 2013). Analysis revealed a slight majority (51%) of children died from neglect compared to abuse with a small percentage of cases due to both abuse and neglect (Damashek et al., 2013). Unintentional drownings (12%) accounted for the largest number of child neglect and head injuries (21%) represented the leading method of physical abuse (Damashek et al. 2013). Other common causes of fatal child maltreatment included smoke inhalation, asphyxia body trauma, intentional gunshot, medical neglect, and shaken baby syndrome (Damashek et al., 2013). Findings from this study also supported the literature indicating most child maltreatment fatalities are due to neglect compared to abuse (Damashek et al., 2013). The prevalence of fatal child neglect has driven efforts toward investigating fatal neglect exclusively. In another Oklahoma study, Welch and Bonner (2013) investigated child deaths attributed to three types of fatal neglect including supervisory/environmental neglect, deprivation of needs, and medical neglect. A total of 372 cases were examined from the Oklahoma Child Death Review Board from 1987 to 2008 (Welch & Bonner, 2013). Analysis revealed 61% of the fatal neglect cases were associated with supervisory/environmental neglect (Welch & Bonner, 2013). The main form of supervisory/environmental neglect was attributed to unintentional drownings (23.9%)

followed by other causes including smoke inhalation (13.4%), asphyxia (8.6%), and head traumas related to accidental falls (4.8%) (Welch & Bonner, 2013). Findings from this study support another Oklahoma study conducted by Damshek, Drass, and Bonner (2014) which revealed a majority of child deaths due to drownings and smoke inhalation resulted from inadequate caregiver supervision (Damshek et al., 2014).

Researchers exploring child maltreatment deaths have collected comprehensive information on the child/victim demographics. Information on child characteristics has allowed researchers to identify children who may be at higher risk for victimization based on age, sex, and race/ethnicity background of the child. For example, Palusi and Covington (2014) reviewed child maltreatment cases in the U.S. and identified the mean age for victims was 2.5 years with most victims being male (60%). Further, almost half of the victims were identified as White, with Blacks and Hispanics as the second largest groups (Palusi and Covington, 2014). Findings from Palusi and Covington (2014) study are similar to other published information indicating child maltreatment fatalities are more likely to occur in children less than four years old and boys compared to girls are more likely victims of fatal maltreatment (U.S. Department of Health and Human Services, 2011). Moreover, in the Oklahoma study of fatal child neglect cases, Damashek, Nelson, and Bonner (2013) reported the mean age in their sample was 2.8 years with the majority of children being under the age of five (84%) and more boys (56%) compared to girls (44%) as victims of fatal maltreatment. Although most victims identified as White (59%), researchers noted that African American and Latino children were substantially overrepresented in their sample of child maltreatment fatalities compared their representation in the state population of Oklahoma (Damashek et al.,

2014). Welch and Bonner (2013) also reported similar findings from previous studies identifying the mean age of fatally neglected children as 2.65 years (age ranges from 1 to 18 years). Their sample also consisted of more males (58%) compared to females (41%), with more victims identified as White Non-Hispanic (57%), followed by African American (21%), American India (12.6%), Hispanic (4.0%), and biracial (4.0%) (Welch & Bonner, 2003). Welch and Bonner (2013) identified a higher percentage of African American and American Indian children who were dying relative to the racial/ethnic population ratio.

The Child Maltreatment Report (2016) also corroborates findings regarding child characteristics for victims of fatal maltreatment (U.S. Department of Health & Human Services, 2018). Utilizing the National Child Abuse and Neglect Data System, the Child Maltreatment Report (2016) indicated boys compared to girls were victimized at higher rate, 2.87 per 100,00 boys compared to 2.11 per 100,00 girls (U.S. Department of Health & Human Services, 2018). Additionally, more White victims (87%) compared to African American (28%), and Hispanic (13.8%) were represented in their sample (U.S. Department of Health & Human Services, 2018). Based on the number of victims and population data, the rate of African American child fatalities was estimated to be nearly 3 times greater than the rate of White children and nearly 3 times greater than the rate of Hispanic children (U.S. Department of Health & Human Services, 2018). Overall, victim characteristics of child maltreatment fatalities appear to be consistent across studies indicating that children under the age of five, particularly males, and children of African American racial/ethnic background, may be at a higher risk of being fatally victimized by child maltreatment.

In addition to victim demographics, researchers have collected detailed information about the families who experience a child death related to abuse and neglect. This information is useful in understanding family risk factors that lead to child maltreatment fatalities. Four risk factors have been commonly researched in association with child maltreatment fatalities including caregiver's alcohol abuse, caregiver's drug abuse, family's financial problems and inadequate housing (U.S. Department of Health & Human Services, 2018). According to the Child Maltreatment Report (2016), data gathered from 27 states identified 5.7% of child fatalities included a caregiver with alcohol abuse and thirty-one states identified 15.1% of child fatalities include a caregiver's drug abuse (U.S. Department of Health & Human Services, 2018). Further, 30 states identified 9.9% of child fatalities included family's experiencing financial problem and 32 states identified 7.5% of child fatalities included families who lived in inadequate housing (U.S. Department of Health & Human Services, 2018). Other studies have also studied corresponding family risk factors in child maltreatment fatalities. Douglas and Mohn (2014) explored child and caregiver characteristics of both fatal and non-fatal child maltreatment cases using the National Child Abuse and Neglect Data set. The sample consisted of 682,694 families who experienced a child maltreatment fatality and who received support from child welfare services (Douglas et al., 2014). Children living in families with inadequate housing, in families facing financial problems, and children living with both parents were identified to be at an increased risk of experiencing a child maltreatment fatality (Douglas et al., 2014). Fatality was less common, on the other hand, in children identified as prior victims of maltreatment, children with disabled

caregivers, children living in single parent households, and in households with domestic violence (Douglas et al., 2014).

Miyamoto et al. (2017) also explored family risk factors involved in fatal and non-fatal child maltreatment using a matched-case-control method. Miyamoto et al. (2017) compared families who experienced a child hospitalization due to maltreatment or who experienced a child maltreatment fatality (case caregiver/children) to a group of families who were investigated by child protective services for child maltreatment, but who did not experience a child hospitalization or death of a child (control caregiver/children) (Miyamoto et al., 2017). A total of 234 case children were identified and matched with 468 control children using data from Child Welfare Services Case Management System in northern California (Miyamoto et al., 2017). Results indicated that families with three or more children under the age of five were at a higher rate of experiencing a serious child maltreatment (requiring child hospitalization or causing child death) (Miyamoto et al., 2017). In addition, younger maternal age was related to an increase risk of a serious child maltreatment (Miyamoto et al., 2017). Further, families who experienced a serous child maltreatment (case group) were found to use mental health services more often than caregivers in the control group (Miyamoto et al., 2017). Lastly, researchers identified intimate partner violence was associated with a lower risk of a family experiencing a serious child maltreatment event (Miyamoto et al., 2017). All of these family risk factors combined highlight the continuous efforts to understand what places a child at risk of experiencing fatal maltreatment.

It is important to note recent studies by Douglas and Mohn (2014) and Miyamoto et al. (2017) offer both supporting evidence as well as some inconsistencies with previous

research findings. For example, other studies have reported domestic violence in the household increases the likelihood of a child dying due to maltreatment (Graham, Stepura, Baumann, & Kern, 2010). Additionally, other researchers have found that 30–50% of children who die from fatal abuse or neglect have a prior history with child welfare services (Anderson et al., 1983, Beveridge, 1994; Damashek et al., 2013; Douglas et al., 2004; Wang & Daro, 1998). Despite some inconsistencies, Douglas and Mohn (2014) and Miyamot et al. (2017) highlight findings that have been reported in prior studies. Two of the previously discussed studies regarding child maltreatment fatalities in Oklahoma indicated that fatal neglect was more common in families with more children and/or more family members living in the household (Damashek et al., 2013; Welch & Bonner, 2013). Stiffman, Schnitzer, Adam, Kruse, and Ewigman (2002) also found that children residing in households with unrelated adults (e.g., step, foster or adoptive parents) were eight times more likely to die of maltreatment compared to children in households with two biological parents. Of note, one past study identified the majority of the families who experienced a child maltreatment fatality also indicated experiencing a significant life stressor (e.g., family divorce, moving into a new home) (Lucas, Wezner, Milner, McCanne, & Harris, 2002). Overall, research on child maltreatment fatalities has advanced an understanding of the children in families most at risk of fatal abuse and neglect.

Although socioeconomic variables, family/house composition, and family stress have been identified to be common risk factors associated with fatal child maltreatment, it is important to consider the interplay of several interacting factors that exist in each child's life (Alink, Euser, IJzendoorn, & Bakermans-Kranenburg, 2013; Cicchetti &

Valention, 2006). For this reason, some researchers have also urged an understanding of child maltreatment in relationship to the interplay of culture and community factors, considering Bronfenbrenner's theory of human development (Alink et al., 2006). In the following section, the researcher will explore cultural considerations in a subpopulation of racial/ethnic children in relationship to non-fatal child maltreatment, namely for children of immigrant parents.

Immigrant children/families and non-fatal maltreatment

The overrepresentation of racial/ethnic minorities in child mortality samples has broadened research efforts toward looking at how nationality may directly or indirectly impact a family's contact with child protective services. To the researcher's knowledge, research on immigrant families and child maltreatment has exclusively focused on non-fatal child maltreatment. Children of immigrant families face socioeconomic challenges parallel to children exposed to non-fatal maltreatment. For example, children of immigrant parents are disproportionality represented in poverty rates, more likely to live in crowded housing, and more likely to live in families experiencing financial hardships (Elmeelech, McCaski, Lennnon, & Lu, 2002; Padilla, Radey, Hmmer, & Kim, 2006). Immigrant families also face unique acculturation stressors related to learning a new language, difficulty navigating the new culture, experiencing stigma, loneliness, isolation, and the loss of previously established support systems (Berry, 2005; Dettlaff, 2012; Finno, de Haymes, & Mindell, 2006; Maiter, Stalker, & Alaggia, 2009). As a result of the migration and acculturation process itself, immigrant individuals may be vulnerable to experiencing symptoms of depression, anxiety, and posttraumatic stress disorder (Dettlaff, 2012; Finno, et al., 2006). The comorbidity of socioeconomic risk factors with

immigration stressors has directed research efforts toward understanding if children of immigrant families are at risk of non-fatal maltreatment.

The association of non-fatal child maltreatment in relationship to immigrant status was explored in recent study conducted by Alink, Euser, Ijzendoorn, and Bakermans-Kranenburg (2013). The researchers investigated if children of Dutch-immigrant families were at a higher risk of non-fatal maltreatment compared to children of native-born Dutch families (Alink et al., 2013). Traditional immigrants and non-traditional immigrants were further differentiated by considering non-traditional immigrants as the new wave of refugees entering the Netherlands and immigrants coming from Africa and Western Asia (Alink et al., 2013). Traditional immigrants were classified as individuals with a historical presence in the Netherlands typically coming from four countries including Turkey, Morocco, Suriname, and the Antillean Islands (Alink et al., 2013). Data was acquired through three sources including records from child protective services of substantiated child maltreatment, reports from professionals in community organizations on cases of suspected child maltreatment, and self-report measures from ethnic minority adolescents (adolescents answered questions about parent-child conflict and types of maltreatment) (Alink et al., 2013). Information was collected from three data sources to understand the prevalence of non-fatal child maltreatment between native Dutch native, traditional, and non-traditional immigrant families (Alink et al., 2013). Information on immigrant status, family composition, and parent education level were also collected to asses risk factors commonly associated with child maltreatment (Alink et al., 2013). Across the three different data sources, results revealed an overrepresentation of traditional and nontraditional immigrant families who indicated

non-fatal child maltreatment compared to native-born Dutch families (Alink et al., 2013). However, another unique finding revealed that when low parental education and stepfamilies (children living with step-parents) were considered, traditional immigrant families and native-born Dutch families were equally represented in the maltreatment group compared to the general population. Considering their findings, researchers noted that although immigrant or minority status was a risk factor of child maltreatment, it did not directly influence child maltreatment (Alink et al., 2013). Findings from this study also support previous results from a 2011 study indicating children from immigrant families in The Netherlands are at increased risk for non-fatal child maltreatment (Alink et al., 2013; Euser, Marinus, van Ijzendoorn, Prinzi, & Bakermans-Kranenburg, 2011).

A U.S. study also explored the incidence of non-fatal child maltreatment in children of immigrant parents. Dettlaff and Earner (2012) utilized data from the National Survey of Child and Adolescent Well-Being to identify the involvement of immigrant families and U.S. born families in the child welfare system. Information on several family and household characteristics was also collected to compare potential risk factors of child maltreatment between children of immigrant parents and children of U.S. born parents (e.g., parent alcohol abuse, drug abuse, mental health problems, domestic violence, history of arrest, family stress) (Dettlaff et al., 2012b). Analysis revealed that that children living with immigrant parents comprised 8.6% of all children who were involved in child welfare agencies. From these, more than two thirds (67.2%) of children of immigrant parents were Hispanic, followed by non-Hispanic White immigrants (14.8%), non-Hispanic Black immigrants (10.0%) and non-Hispanic Asian immigrants (7.5%) (Dettlaff et al., 2012). The researchers determined children of immigrant parents were

considerably underrepresented among children who were involved in the child welfare system (Dettlaff et al., 2012). Researchers also found that certain risk factors associated with maltreatment were more likely present in families with U.S. born parents (Dettlaff et al., 2012b). Specifically, U.S. born parents were three times more likely to be actively abusing alcohol or drugs compared to immigrant parents (Dettlaff et al., 2012b). Additionally, U.S. born parents were significantly more likely to have recent histories of arrest (Dettlaff et al., 2012b). Despite the lack of risk factors in immigrant families, researchers did find differences in maltreatment type indicating children of immigrant families were more than twice as likely to experience emotional abuse and significantly more likely to be involved in cases with allegations of sexual abuse (Dettlaff et al., 2012b). Contrary to expectations, researchers concluded that children of immigrant parents were no more likely to be subjects of substantiated non-fatal child maltreatment investigations than children of U.S. born parents (Dettlaff et al., 2012b).

The studies discussed above explore two different populations of immigrant families and provide different findings on the risk of non-fatal child maltreatment. In The Netherlands study conducted by Alink and associates (2013), findings asserted children of immigrants were at a higher risk of experiencing child maltreatment compared to the native-born population. Researchers in this study emphasized the need to consider immigrant status along with the interplay of different variables in relationship to child maltreatment (e.g., low parent education, children living with step-parents). Further, in the U.S. study conducted by Dettlaff and Earner (2012), findings indicated children of immigrant families were no more likely than children of U.S. born parents to be involved in substantiated non-fatal child maltreatment investigations. The lack of risk factors in

immigrant families contradicted previously reported risk factors thought to exist uniquely in immigrant families, such as low social support and parents' difficulty meeting basic needs (Dettlaff et al., 2012). Of note, given that the U.S. study on children of immigrant parents did not find an elevated risk of child maltreatment with the sample majority being Hispanic immigrants, perhaps Hispanic immigrant families warrant closer attention in order to determine if Hispanic immigrant families pose a unique lower risk of non-fatal child maltreatment.

Immigrant Hispanic/Latino Children and Non-Fatal Maltreatment

In 2010, estimates indicated that nearly one-fourth of all U.S. children identified as Latino (Cardoso, Dettlaff, Finno-Velasquez, Scott & Faulkner, 2014). Latino children represent the largest ethnic minority population in the U.S., with estimates also suggesting child maltreatment has increased for Latino children from 14.2% in 2000 to 22.1% in 2011 (U.S. Department of Health and Human Services, 2013). Studies published within the last decade depict evolving efforts to understand if Latino children are at an increased risk of non-fatal child maltreatment.

Dettlaff, Earner, and Phillips (2009) investigated the prevalence of non-fatal child maltreatment in both Latino children of immigrant parents and in Latino children of U.S. native-born parents. Data from 1999 to 2000 was collected from the National Survey of Child and Adolescent Well-Being (Dettlaff et al., 2009). Several family, household, and community characteristics were assessed to understand potential risk factors associated with alleged and substantiated child maltreatment within the two subpopulations of Latino families (Dettlaff et al., 2009). A total of 5.2% of Latino children with a foreign-born parent were identified to be involved in child welfare services (Dettlaff et al., 2009).

Findings indicated that 70.0% of immigrant families reported a household income less than $20,000 compared to 63.6% of native-born Latino families (Dettlaff et al., 2009). Differences in maltreatment were also found between the groups, with Latino children of immigrant parents nearly four times as likely to be victims of alleged sexual abuse compared to children of U.S. native-born Latino parents (Dettlaff et al., 2009). On the other hand, Latino children of U.S. native-born parents were significantly more likely to be victims of physical neglect (Dettlaff et al., 2009). However, there was no significant difference in the overall rate of substantiated maltreatment between the two Latino subpopulation (Dettlaff et al., 2009). Moreover, risk factors related to active drug use, recent history of arrest, and childhood history of maltreatment were all more prevalent in the homes of U.S. native-born Latino parents (Dettlaff et al., 2009). U.S. native-born Latino parents were also more likely to have an intellectual or cognitive impairment and poor parenting skills compared to Latino immigrant parents (Dettlaff et al., 2009). Lastly, Latino parents born in the U.S. were more likely than immigrant parents to perceive problems in their neighborhoods (Dettlaff et al., 2009). Immigrant parents were more likely to perceive they lived in safe neighborhood and in a community with helpful neighbors (Dettlaff et al., 2009). Overall, findings from Dettlaff and associates (2009) study suggest there are unique risk factor variations within the same racial/ethnic group of Latino families, with parent's nationality playing a role in associated differences.

Recent research has produced consistent findings with the Dettlaff, Earner, and Phillips (2009) study, particularly regarding the lack of risk factors in immigrant Latino families. Dettlaff and Johnson (2011) explored child maltreatment dynamics among immigrant and U.S. born Latino children. Data was collected from the National Survey of

Child and Adolescent Well-Being from 1999 to 2001(Dettlaff et al., 2011). Regarding risk factors, active alcohol abuse and active drug abuse were both significantly more likely to be present in families of U.S. born Latino children (Dettlaff et al., 2011). Additionally, domestic violence was five times more likely in families of U.S. born Latino children compared to Latino families of immigrant children (Dettlaff et al., 2011). In relationship to maltreatment type, immigrant Latino children were nearly three times as likely to be victims of physical abuse compared to U.S. born Latino children (Dettlaff et al., 2011). On the other hand, U.S. born Latino children were significantly more likely than immigrant Latino children to be victims of emotional abuse (Dettlaff et al., 2011). High family stress was the most prevalent risk factor for both groups (Dettlaff et al., 2011). Finally, researchers found no significant differences between immigrant children and U.S. born children in substantiated maltreatment (Dettlaff et al., 2011).

In another related study, Cardoso, Dettlaff, Finno-Velasquez, Scott, and Faulkner (2014) investigated child welfare involvement between Latino children of non-citizen parents and Latino children of U.S. citizen parents. Data from 2008 to 2009 was collected from the National Survey of Child and Adolescent Well-being (Cardoso et al., 2014). Results revealed that the majority (70%) of Latino children who were involved in child welfare serves lived with a U.S. citizen parent (Cardoso et al., 2014). Regarding child maltreatment risk factors, active alcohol use, drug use, and prior reports of abuse were significantly higher for U.S. citizen Latino parents (Cardoso et al., 2014). Although results revealed Latino non-citizen immigrant parents exhibited greater finical hardships and low parental educational attainment, Latino non-citizen immigrant parents did not

have a higher rate of substantiated maltreatment than Latino citizen parents (Cardoso et al., 2014).

The most recent study to date regarding Hispanic children and non-fatal child maltreatment was conducted by Johnson-Motoyama, Putnam-Hornstein, Dettlaff, Zhoa, Finno-Velasquez, and Neddell (2015). Researchers conducted a birth cohort study to determine if maternal foreign-born status was suggestive of a protective advantage against reported and substantiated infant maltreatment across different Hispanic-origin groups (Johnson-Motoyama et al., 2015). Researchers followed Latino infants through the age of one as they linked vital birth records to child protective service records for all California births occurring from 2000 to 2006 (Johnson-Motoyama et al., 2015). Latino infants were categorized based on self-reported maternal Hispanic origin in the birth records: Mexican, Puerto Rican, Cuban, Central/South American, other Hispanic (Johnson-Motoyama et al., 2015). Maternal nativity was also classified by either foreign-born or U.S.-born (Johnson-Motoyama et al., 2015). The sample overall consisted of infants of Mexican heritage (87.4%) followed by Central or South American (9.7%), other Hispanic (1.9%), Puerto Rican (0.8%), and Cuban (0.3%). (Motoyama et al., 2015). The majority of infants (63.4%) were born to foreign-born mothers (Motoyama et al., 2015). Results revealed group variations existed with a decreased risk of child maltreatment reporting and substantiation among Mexican and Central/South American families compared to other Latino subgroups (Motoyama et al., 2015). In regard to maternal nativity, findings revealed infants of U.S. born mothers were significantly more likely to be reported to child protective services than were infants of foreign-born mothers across all Hispanic-origin groups (Motoyama et al., 2015). Thus, researchers

concluded the existence of a potential health advantage in maternal foreign-born status in relationship to child maltreatment.

Healthy Immigrant Paradox

The Healthy Immigrant Paradox (HIP) or the Immigrant Epidemiologic Paradox was first coined by Kyrakos Markides in 1986 and has been proposed to explain the growing evidence suggesting immigrant Latino families may be at lower risk of negative child health outcomes (McGlade & Dahlstrom, 2004; Millett, 2016; Ribble, & Keddi, 2001; Speciale & Regidor, 2011). HIP originated from findings that indicated non-U.S. born Mexican immigrants had lower infant mortality rates and lower birthweights compared to non-Hispanic Whites and half that of non-Hispanic Blacks (Becerra, Hogue, Atrash, & Perez, 1991; Collins & Shay, 1994; Ventura & Taffel, 1985; Scribner, 1996; Williams, Binkin, & Clingman, 1986). HIP proposes that immigrants have better health related outcomes compared to native-born populations despite socioeconomic risks factors of lower educational attainment, lower wages, and higher poverty rates (Millett, 2016; Palloni & Morenoff, 2011). Key to the theory is that first generation immigrants, individuals who were born abroad, have better health outcomes than later generations of immigrants such as second-generation youth born in the U.S. to immigrant parents or third generation youth born in the U.S. to U.S. born parents (Guarini, Marks, Patton, & Coll, 2013). First generation immigrants compared to later generation of immigrants are reported to have healthier lifestyles that combat chronic diseases and produce longevity (e.g., healthier diet/nutrition) (Gordon-Larsen, Harris, Ward, & Popkin, 2003; Perez-Escamilla & Puntnik, 2007; Shor & Roelfs, 2017). HIP asserts that immigrant families may possess protective cultural factors related to social support and social cohesion that

help cope with socioeconomic difficulties and acculturation challenges (Shor & Roelfs, 2017). For example, immigrant families may embrace closer family relationships by living with extended family members and/or by living in immigrant and/or ethnic communities and that offer emotional and instrumental support (Halpern and Nazroo, 2000; Hovey, 1999; King and Locke, 1987; Nazroo, 2003; Palloni and Arias, 2004; Shor & Roelfs, 2017). To the researcher's knowledge, one study to date has explored HIP in relationship with child maltreatment and one study has explored HIP in relationship with mortality rates of immigrant children and adolescents.

Millett (2016) conducted a systematic review to determine if the HIP could explain non-fatal child maltreatment in U.S. immigrant populations. Extending HIP to non-fatal child maltreatment would suggest fewer incidences of non-fatal child maltreatment in immigrant families despite existing risk factors commonly associated with child maltreatment (e.g., lower socioeconomic status, lower parental education) (Millett, 2016). Further, HIP would also indicate the presence of positive cultural parenting practices reducing the risk of non-fatal child maltreatment (Millett, 2016). Millett (2016) identified 19 articles which met criteria that included peer-reviewed articles, U.S. based studies, and studies including a comparison group in their sample (e.g., immigrant populations compared to US-born natives). From the 19 articles that examined nation of origin and non-fatal child maltreatment, nine studies focused on Latinos, two studies included Asian and immigrants from the West Indies/Cape Verde, and the remaining studies did not indicate ethnicity or national origin of immigrant families (Millett, 2016).

This systematic review examined support for HIP in terms of different maltreatment types (Millett, 2016). For physical abuse, racial/ethnic immigrants were at equal or lower risk compared to their racial/ethnic U.S.-born counterparts (Millett, 2016). Latino immigrants, moreover, were identified to be a at a lower risk for physical abuse compared to U.S.-born Whites and U.S.-born Blacks (Millett, 2016). General support for HIP was also found for sexual abuse and emotional abuse, although some discrepancies existed between the data sources (community data versus national data) (Millett, 2016). Findings for neglect, however, were generally more mixed with community studies indicating Latino immigrants and first-generation immigrants to be at a higher risk for physical neglect and neglectful supervision (Hussey, Chang, & Kotch, 2006; Johnson-Motoyama, 2014; Kimber et al., 2015; Millett, 2016). More specifically, Latino immigrants were identified to be "at risk for not having enough food, not being able to take a child to a doctor when needed, and leaving a child in unsafe places compared to U.S.-born Whites" (Johnson-Motoyama, 2014; Millett, 2016, p. 1211). First generation immigrants were found to be at a "significantly higher risk for lack of supervision, lack of food, and medical neglect when compared to U.S. born population" (Hussey et al., 2006; Kimber et al., 2015; Millett, 2016, p. 1211). Millett (2006) noted that although findings on neglect could not be defined as child maltreatment (i.e., not cases in child protective services), such findings highlight potential socioeconomic difficulties and/or structural health barriers leading to more direct forms of neglect in immigrant populations. In light of this finding, Millet (2016) proposed that socioeconomic difficulties in immigrant populations may result in more direct effects of neglect (e.g., not being able to provide food, inadequate childcare arrangements) as opposed to indirect effects of poverty

associated with neglect (e.g., parental stress leading to decreased capacity to care for children). This distinction may be of unique importance as indirect effects of poverty are associated with other forms of maltreatment that are more prevalent in U.S.-born families (e.g., parental stress and child physical abuse) (Millett, 2016). Although findings are mixed regarding maltreatment type, Millett (2016) concluded overall support of the HIP. In sum, children of immigrant families may be at a lower risk for child maltreatment compared to children in U.S. native-born families (Millett, 2016).

Shor, Roelfs, and Vang (2017) conducted a meta-analysis and meta-regression on the mortality rates of Latin American and Caribbean immigrants. This study aimed to extend HIP to other immigrant ethnicities beyond Latinos and examine if mortality risk differed by age, gender, country/region of origin, and host country (Shor et al., 2017). Three groups of immigrants were distinguished in their sample, children and adolescents (ages 2-19), working-age immigrants (ages 20-64), and older immigrants who migrated after retirement age (older than 65) (Shor et al., 2017). A total of twenty-eight articles published from 1984 to 2015 were included in the analysis (Shor et al., 2017). Studies in the meta-analysis included research on all-cause mortality or cardiovascular mortality, research samples that included a comparison group of immigrants from Latin America or the Caribbean to a control group, and research that reported a measure of statistical significance (Shor et al., 2017). The immigrant populations in research studies represented nine 9 countries of origin in South America, Central America and the Caribbean and seven countries in North America, Western Europe, and Australia (Shor et al., 2017). The age range for the sample for all-cause mortalities was two to 95 years (Shor et al., 2017). Overall results did not support HIP for all-cause mortalities, however

significant findings in support of HIP were identified in studies that used native-born control groups (Shor et al., 2017). Yet, for immigrant children and adolescents (ages 2-19), the effects of HIP were considered reversed with results indicating immigrant children and adolescents were at greater risk of mortality compared to native-born children and adolescents (Shor et al., 2017). Shor and associates (2017) suggested greater mortality rates in immigrant children and adolescents may be due to children and adolescents not having the same health profile as adult immigrants (Shor et al., 2017). Immigrant children and adolescents may also face greater health vulnerabilities toward environmental factors compared to immigrant adults (e.g., health challenges adjusting to new climates, nutrition) (Shor et al., 2017). Moreover, immigrant children and adolescents compared to immigrant adults may be more likely to adopt the cultural norms of the host culture and be more susceptible to the negative effects of acculturation (e.g., unhealthy diet, substance abuse) (Shor et al., 2017). Lastly, another explanation for the greater mortality rates of immigrant children and adolescents may be attributed to the socioeconomic difficulties and structural healthcare barriers immigrant families face (Shor et al., 2017). Shor and associates (2017) also suggest that immigrant children may be less likely to return to their country of origin compared to older immigrant adults producing greater mortality rates in the immigrant children/adolescent population. Although overall findings in this study did not support HIP in mortality rates of immigrant populations, it's important to note the immigrant mortality advantage was present in studies that used a native-born control group (Shor et al., 2017). In particular, the age of immigrant populations was identified to be a key moderating factor increasing the risk of morality (Shor et al., 2017).

The studies explored above contribute important considerations for future research. Millett (2016)'s study is the first known to synthesize the empirical evidence of HIP in relationship to non-fatal child maltreatment. Millett (2016) recommends future researchers investigate child maltreatment across different racial and ethnic immigrant groups, expanding beyond Latinos. Given that a higher percentage of immigrants arrived in the U.S. in or after 2000, Millett (2016) also suggests future research include recent cohorts of immigrants (Grieco et al., 2010). Moreover, Shor and associates (2017) identified their research study as the first meta-analysis focused on immigrants from Latin America. Shor and associates (2017) recommend that future researchers pay specific attention to the migration health effects on immigrant children and adolescents.

Overall, the hope of this proposed study is to answer the research call toward investigating the health advantages and/or disadvantages of immigrant populations. Further, this research study hopes to lay pioneer work by applying HIP to specific child morality causes in children of U.S. Non-First Generation Immigrant Families and children of First-Generation Immigrant Families.

Appendix C: NFR-CRS Application

NATIONAL CENTER FOR FATALITY REVIEW & PREVENTION

National Fatality Review Case Reporting System (NFR-CRS)
Application for De-identified Data for Research

IMPORTANT: Please read "Data Dissemination Policies and Guidelines for Requesting Access to De-identified Data from the National Fatality Review Case Reporting System (NFR-CRS) for Research Purposes" prior to completing your application.

Please submit the completed application via e-mail to info@ncfrp.org.

A. Proposed Study

1. Project Title: Healthy Immigrant Paradox: Child Mortality and Child Maltreatment in First-Generation Immigrant Families and Non-First-Generation Immigrant Families.

2. Principal Investigator Name: Laura Browning

3. Date: February 24, 2020

4. Description of proposed research. In no more than 5 pages (excluding listing of variables), provide a detailed description of the study. This description should include:

- Clear statement of the research question(s) and/or specific study aim(s)

The Healthy Immigrant Paradox (HIP) has been proposed to explain the growing evidence suggesting first-generation immigrant families compared to non-first-generation immigrant families may be at lower risk for experiencing negative parent and child health related outcomes (e.g., infant mortality, substance abuse, child maltreatment)(Dettlaff & Earner, 2012; Ribble & Keddi, 2001; McGlade, Saha, & Dahlstrom, 2004; Millett, 2016). The purpose of this study is to test HIP among child deaths experienced by first-generation immigrant families and non-first-generation immigrant families. First, researchers seek to determine if a difference exists in the proportion of child deaths due to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families. Secondly, researchers aim to determine if a difference exists in the proportion of child deaths due probable child maltreatment causes between first-generation immigrant families and non-first-generation immigrant families. Additionally, researchers aim to assess family risk factors including 1) residence overcrowding, 2) parents' substance abuse history 3) parents' history of intimate partner violence, and 4) parents' delinquent/criminal history to predict child deaths due to probable child maltreatment causes in the two family subgroups.

The research questions are as follows:

1. Is there a difference in the proportion of child deaths due to injury and medical causes between first-generation immigrant families and non-first-generation immigrant families?

2. Is there a difference in the proportion of child deaths due to probable child maltreatment causes between first-generation immigrant families and non-first-generation immigrant families?

3. What family risk factors predict child deaths due to probable child maltreatment causes in first-generation immigrant families?

4. What family risk factors predict child deaths due to probable child maltreatment in non-first-generation immigrant families?

The hypotheses are as follows:

1. In support of HIP, researchers hypothesize there will be a statistically significant difference in child deaths due to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families.

2. In support of HIP, researchers hypothesize there will be a statistically significant difference in child deaths due to probable child maltreatment causes between first-generation immigrant families and non-first-generation immigrant families.

3. In support of HIP, researchers hypothesize that family risk factors related to, 1) residence overcrowding, 2) parent's substance abuse history 3), parent's history of intimate partner violence, and 4), parent's delinquent/criminal history will predict child deaths due to probable child maltreatment causes in non-first generation immigrant families.

4. In support of HIP, researchers hypothesize that family risk factors related to, 1) residence overcrowd, 2) parent's substance abuse history 3), parent's history of intimate partner violence, and 4), parent's delinquent/criminal history will not predict child deaths due to probable child maltreatment causes in first-generation immigrant families.

To attain adequate descriptive statistics of the research sample and to further understand the health advantages that HIP suggests, researchers aim to systematically collect a health and socioeconomic profile on the two-family subgroups. Information on 1) parent's physical health, 2) child's physical health, 3) child developmental history, 4) family socioeconomic status, and 5) family's health care utilization will be collected to inform the family health and socioeconomic profile. Moreover, specific contextual factors surrounding the cause of child death will also be explored to help understand the unique circumstances of child deaths.

Note: For hypotheses one and two, causes of death where it is indicated to be "undetermined if injury or medical causes" or "unknown" will be excluded from the main statistical analysis. Moreover, hypothesis three includes child deaths due to medical, injury, undetermined, and unknown causes where the death is also indicated to be due to probable child maltreatment. See method section for child maltreatment definition and classification of injury and medical causes of child death.

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- A brief summary of relevant literature that provides a rationale for and documents the significance the proposed research and culminates in a succinct statement of the purpose of the research.

  Substantial progress has been made toward investigating the circumstances of child deaths, yet little is known about child deaths in U.S. immigrant families (Shanley, Risch, & Bonner, 2010; Millet, 2016). Statistics indicate that one in five children younger than the age of 18 is the child of an immigrant (Federal Interagency Form on Child and Family Statistics, 2002; Padilla, Radey, Hummer, & Kim, 2006). Research examining the living conditions of U.S. born and immigrant families revealed that children of immigrant parents are more likely to live in families facing financial stressors, more likely to live in crowded housing, have less access to health care, and are disproportionately represented in the population of children living in poverty (Elmelech, McCaskie, Lennon, & Lu, 2002; Capps, Fix, Ost, Reardon-Anderson, & Passell, 2002; Padilla, Radey, Hummer, & Kim, 2006). Despite the healthcare and socioeconomic challenges, evidences suggests that first-generation immigrant families compared to later generation of immigrant families and U.S. native-born families are at lower risk for experiencing negative parent and child health related behavior and outcomes (e.g., less likely to engage in substance abuse, less likely to have a criminal history, increased longevity among immigrants) (Blue & Fenelon, 2011; Dettlaff & Earner, 2012; Hofferth & Moon, 2016; Salerno, Taylor, & Kilpatrick, 2019; Vaughn, Salas-Wright, Delisi, & Maynard, 2014). This unexpected phenomenon has been coined the Healthy Immigrant Paradox (HIP).

  HIP derived from findings indicating U.S. Mexican immigrant families had better health and lower infant mortality rates compared to U.S. native-born families (Becerra, Hogue, Atrash, & Perez, 1991; Collins & Shay, 1994; Ventura & Taffel, 1985; Scribner, 1996; Williams, Binkin, & Clingman, 1986). To date, research on HIP has explored the immigrant health advantage across a wide variety of parent and child well-being behaviors and outcomes including infant mortality/morbidity, intimate partner violence, substance abuse, antisocial behavior, child education achievement, and child maltreatment (Bacio, Mays, & Lau, 2013; Kao, 1999; Millet, 2016; Salerno, Taylor, & Kilpatrick, 2019; Wright & Benson, 2010). HIP suggests the healthy pattern of behaviors are unique to first-generation immigrant families who are less acculturated to the host culture and attributes protective cultural factors such as stronger social support and social

cohesion to explain for the better health outcomes (Guarini, Marks, Patton, & Coll, 2013; Halper & Nazroo, 2000; King & Locke, 1987; Nazroo, 2003; Palloni & Arias, 2004; Shor, Roelfs, & Zoua, 2017). The health advantages among first-generation immigrant families are indicated to be robust despite immigrant's socioeconomic challenges (e.g., lower education attainment, higher poverty rates) and barriers to health care access, thus referring to the healthy immigrant phenomena as a paradox (Millett, 2016; Speciale & Regidor, 2010; Urquia, O'Campo, & Heaman, 2012).

The purpose of this study is to test HIP among child deaths experienced by first-generation immigrant families and non-first-generation immigrant families. First, the researchers seek to determine if a difference exists in the proportion of child deaths due to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families. The second objective is to determine if a difference exists in the proportion of child deaths due to probable child maltreatment causes between the first-generation immigrant families and non-first-generation immigrant families. Subsequently, researchers aim to asses if family risk factors related to 1) residence overcrowding, 2) parents' substance abuse history 3) parents' history of intimate partner violence, and 4) parents' delinquent/criminal history predict child deaths due to probable child maltreatment causes between the two family subgroups. Moreover, to attain adequate descriptive statics of the research sample and further understand the health advantages HIP suggest, researchers aim to systematically collect a health and socioeconomic profile on the two-family subgroups. Information on 1) parent's physical health, 2) child's physical health, 3) child developmental history, 4) family socioeconomic status, and 5) family's health care utilization will be collected to inform the family health and socioeconomic profile. Lastly, specific contextual factors surrounding the cause of child death will also be explored to help understand the unique circumstances of child deaths.

To date, research on child deaths of immigrant families is limited, specifically research on child deaths of U.S. first-generation immigrant families. Implications for research would suggest that first-generation immigrant families and non-first-generation immigrant families possess unique family risk factors associated with child deaths. This research would allow for the potential development of culturally appropriate prevention/intervention activities that can increase effective child welfare services for immigrant families. Overall, understanding any health inequalities occurring in the two subgroups of U.S. families can help inform researchers and practitioners of the unique circumstances and needs of each type of family.

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- Detailed description of the study design and methods. Include:
    - A description of the study design;

      The first three research questions employ a between-groups design as this study aims to determine the difference between first-generation immigrant families and non-first-generation immigrant families in their proportion of child deaths due to medical and injury causes as well as probable child maltreatment causes. Further, this study also utilizes a correlational research design as it aims to examine if selected predictor variables (e.g., residence overcrowding) account for a change in the criterion variable (e.g., child deaths due to probable child maltreatment causes) within the two family groups (first-generation immigrant families and non-first generation immigrant families). Lastly, this study is also descriptive research that aims to systematically collect a health and socioeconomic profile of the two independent variables, (first-generation immigrant families and non-first-generation immigrant families) as well as specific contextual information on the circumstances surrounding the child deaths in order to attain adequate descriptive statistics of the research sample.

    - Definition of your study population (e.g., infants only, children ages 10-17 with motor vehicle crash as mechanism of injury) and years of data you are requesting (e.g., 2005-2010).

The participants for this study will be deceased children from 2005 to 2017, child ages ranging from infants to 17 years of age. Per recommendation of the National CFRP Data Team, data from NFR-CRS version 4.1 will be utilized to help increase sample size of child deaths from first-generation immigrant families. Children from first-generation immigrant families will be identified by variable A31 in the NFR-CRS version 4.1 database application where a "yes" is indicated to question, "Was any parent a first generation immigrant?" (p. 2). Non-first-generation immigrant families will be identified where a "no" is indicated to item A31 (NFR-CRS version 4.1). In addition, any child death where biological parent is marked Yes/No on variable B8, NFR-CRS version 5.0 "Parent first generation immigrant?" will also be included in research dataset. Child deaths where "unknown" is marked will be excluded from the research study.

List of the variables needed to carry out the study, using the NFR-CRS as a guide. Clearly identify and define your main independent (exposure, risk factor, confounding) and dependent (outcome) variables.

The independent variables for this research study include first-generation immigrant families and non-first-generation immigrant families. First-generation immigrant families will be identified by variable A31 from the NFR-CRS version 4.1 database where a "yes" is indicated to any parent being a first-generation immigrant parent. Non-first-generation immigrant families will also be identified by variable A3 from the NFR-CRS version 4.1 database where a "no" is indicated to any parent being a first-generation immigrant parent. In addition, any child death where biological parent is marked Yes/No on variable B8 from the NFR-CRS version 5.0, "Parent first generation immigrant?" will also be included in research dataset. The literature has defined first-generation immigrants as individuals who are non-native born and who live outside of their country of birth (Landale, Thomas, & Van Hook, 2011).

The dependent variables in this research study are the causes of child deaths. Causes of child death due to medical and injury causes will be identified by variable G6, NFR-CRS version 5.0. For the purpose of this study, injury causes of death are defined by item G6 and include all of the following classifications: motor vehicle and other transport, fire/burn/electrocution, drowning, unintentional asphyxia, assault/weapon/or person's body part, fall or crush, poisoning/overdose/acute intoxication, undetermined injury, unknown. Further, for the purpose of this study medical causes of child death are defined by item G6 and include all of the following classifications: asthma/respiratory, cancer, cardiovascular, congenital anomaly, diabetes, HIV/AIDS, influenza, low birth weight, malnutrition/dehydration, neurological/seizure disorder, pneumonia, prematurity, SIDS, other infection, other perinatal condition, other medical condition, undetermined medical cause, unknown. Additionally, child deaths where there is probable child maltreatment will be identified by variable I1a, NFR-CRS version 5.0 where "yes" or "probable" is marked regarding "Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child deaths?". For the purpose of this study, however, child deaths due child maltreatment will involve classification of child deaths due to child abuse and child neglect only. Child deaths where it is indicated that poor/absent supervision or exposure to hazards may have caused or contributed to the

child death will be excluded from the main statistical analysis as the NFR-CRS data dictionary indicates such child deaths do not arise to the suspected level of child abuse or neglect. The literature has defined child deaths where child maltreatment is suspected as, "death of a child caused by an injury resulting from abuse or neglect or where abuse or neglect was a contributing factor" (Child Welfare Information Gateway, 2019, p. 2). Causes of child death where it is indicated to be "undetermined if injury or medical causes" or "unknown" will also be excluded from the main statistical analysis.

Reference
Child Welfare Information Gateway. (2019). C*hild abuse and neglect fatalities 2017: Statistics and interventions.* Washington, DC: U.S. Department of Health and Human Services, Children's Bureau.
Landale, N. S., Thomas, K. J., & Van Hook, J. (2011). The living arrangements of children of immigrants. *The future of children/Center for the Future of Children, the David and Lucile Packard Foundation*, *21*(1), 43.

Four variables will be used to predict child deaths due to probable child maltreatment causes among the two family subgroups:

Child information (pg. 3)	
1. Residence overcrowding?	"yes/no" to Section A1. Variable 19.
Biological Parent Information (pg. 6).	
2. Parents' substance abuse history?	"yes/no" to either female or males. Section B. Variable 11.
3. Parents' history of intimate partner violence?	"yes/no" to either female or males. Section B. Variable 16.
4. Parents' delinquent/criminal history	"yes/no" to either female or males. Section B. Variable 17.

Research on HIP suggest that first-generation immigrant families have a health advantage compared to non-first-generation immigrant families across different parent-child wellbeing measures and despite socioeconomic and healthcare access barriers (Millett, 2016; Morenoff, 2011; Speciale & Regidor, 2010; Urquia, O'Campo, & Heaman, 2012). To understand the health advantages that HIP suggest and attain descriptive statistics of the research sample, the researchers will explore health and socioeconomic variables related to: mother's/parent's health, child's health, child developmental history, family socioeconomic status, and family's health care utilization.

Note: Cases where answers are indicated to be "not applicable" or "unknown" will be appropriately documented in the descriptive statistics. Researchers will also adequality report limitations regarding missing or incomplete information.

The following mother's/parent's health related variables will be requested from the NFR-CRS database to examine HIP among mothers from both family subgroups:

Child information completed for all infants under one year (pg. 4).	
1. During pregnancy, did mother have any medical conditions/complications?	"yes/no" to Section A3. Variable 43.
2. Did the mother use any medications, drugs other substance during pregnancy	"yes/no" to Section A3. Variable 45.
3. Did the mother smoke at any time during the pregnancy?	"yes/no" to Section A3. Variable 53.
Biological parent information (pg. 6).	
4. Parent's have a disability or chronic illness?	"yes/no" indicated by either females or males. Section B. Variable 14.

The following child's health related variables will be requested from the NFR-CRS database to
examine HIP among deceased children from both family sub-groups:

Child information completed for all ages (pg. 3).	
1. Child had disability or chronic illness?	"yes/no" to Section A1. Variable 13.
2. Was the child up to date with Academy of Pediatrics immunization schedule?	"yes/no" to Section A1. Variable 16.
Child information completed for children over one year old (pg. 3)	
3. Child acutely ill in the two weeks before death?	"yes/no" to Section A2. Variable 33.
Child information completed for all infants under one year (pg. 4).	
4. Was the infant born drug exposed?	"yes/no" to Section A3. Variable 46.
5. Did the infant have neonatal abstinence syndrome (NAS)?	"yes/no" to Section A3. Variable 47.
6. Did infant have abnormal metabolic newborn screening results?	"yes/no" to Section A3. Variable 57.
7. At any time prior to the infant's last 72 hours did the infant have a history of (e.g., infection, allergies etc.)	Check all that apply
8. In the 72 hours prior to death, did the infant have any of the following (e.g., fever, decrease in appetite, seizures etc.)	Check all that apply

The following variables related to child's developmental history will be requested from the NFR-CRS database to examine HIP among deceased children from both family-subgroups.

Child information completed for all ages (pg. 3).	
1. Child had a history of child maltreatment?	"yes/no" to Section A1. Variable 22.
2. Was there an open CPS case with child at time of death?	"yes/no" to Section A1. Variable 23.
3. Was child ever placed outside of the home prior to the death?	"yes/no" to Section A1. Variable 24.
Complete for children over one year old (pg. 3 & 4)	
4. Child's highest education level?	Check if apply. Section A2. Variable 25.
5. Child's work status?	Check if apply. Section A2. Variable 26.
6. Did child have problems in school?	"yes/no" to Section A2. Variable 27.
7. Child had a history of intimate partner violence?	"yes/no" to either victim or perpetrator. Section A2. Variable 28.
8. Childs mental health?	"yes/no" to any of mental health related sub-variables. Section A1. Variable 29.
9. Child had history of substance abuse?	"yes/no" to Section A2. Variable 30.
10. Child had delinquent or criminal history?	"yes/no" to Section A2. Variable 31.
11. Child spent time in juvenile detention?	"yes/no" to Section A2. Variable 32.

The following family socioeconomic related variables from the NFR-CRS database will be requested to examine HIP with the families' socioeconomic status:

Child information completed for all ages (pg. 3).	
1. Type of residence?	Check if apply
2. Residence overcrowded?	"yes/no" to Section A1. Variable 19.
3. Child ever homeless?	"yes/no" to Section A1. Variable 20.
4. Number of children living with child?	Indicated number. Section A1. Variable 19.
Biological parent information (pg. 6).	
5. Parent's employment status?	Check if apply to either female or males. Section B. Variable 4.
6. Parent's income?	Check if apply. Section B. Variable 4.
7. Parent's education?	Check if apply to females or males. Section B. Variable 6.

The following family health care utilization related variables from the NFR-CRS database will be requested to examine HIP among both family subgroups:

Child information completed for all ages (pg. 3).	
1. Child's health insurance	Check all that apply in Section A1. Variable 15.
Child information completed for all infants under one year (pg. 4& 5).	
2. Were there access or compliance issues to prenatal care?	"yes/no" to Section A3. Variable 42.
3. Prenatal care provided during pregnancy of deceased infant?	"yes/no" to Section A3. Variable 41.
Biological parent information (pg. 6)	
4. Parents receive social services in the past twelve months?	"yes/no" to either female or male. Section B. Variable 10.

Researchers aim to collect specific contextual information surrounding the cause of child deaths to attain adequate descriptive statics of the research sample.

Official manner and primary cause of death (pg. 10).	
1. Official manner of death from the death certificate	Check if apply. Section G. Variable 5.
2. Primary cause of death	Chose only 1 of the 4 categories, then a specific cause. Section G. Variable 6.
Detailed information by cause of death (pg. 11)	
Motor vehicle and other transport (pg. 11).	
3. Cause of incident	Check if apply. Section H1. Variable c.
Fire, Burn, or Electrocution (pg. 12)	
4. Type of incident	Check if apply. Section H2. Variable b.
Drowning (pg. 12)	
5. Drowning location	Check if apply. Section H3. Variable d.
Unintentional Asphyxia (pg. 13).	
6. Type of event	Check if apply. Section H4. Variable a.
Assault, weapon or person's body part (pg. 14).	
7. Type of weapon	Check if apply. Section H5. Variable a.
Fall or crush (pg. 14).	
8. Type	Check if apply. Section H6. Variable a.
Poisoning, overdoes or acute intoxication (pg. 15).	
9. Type of substance involved	Check if apply. Section H7. Variable a.
Medical Condition (pg. 15).	
10. How long did the child have the medical condition?	Check if apply. Section H8. Variable a.
11. Was death expected as a result of the medical condition?	"yes/no" to Section H8. Variable b.
12. Was child receiving health care for the medical condition?	"yes/no" to Section H8. Variable c.
13. Was child/family compliant with the prescribed care plans?	"yes/no" to Section H8. Variable e.
14. Were there access or compliance issues related to death?	"yes/no" to Section H8. Variable h.
Other circumstances of incident (pg. 16).	
15. Was the death:	Check if apply. Section I1. Variable a.
Was death related to sleeping or the sleep environment (if child under age five) (pg. 18).	
16. Incident sleep place	Check if apply. Section I2. Variable a.
Did death occur during commission of another crime? (pg. 19).	
17. Type of crime.	Check if apply. Section I4. Variable a.
Child abuse & neglect (pg. 19).	
18. Type of child abuse.	Check if apply. Section 15. Variable b.
19. Child neglect	Check if apply. Section I5. Variable f.

Researchers aim to collect the following child and parent demographic information.

Child information (pg. 3)	
Child age	Section A1. Variable 4.
Child race	Section A1. Variable 5.
Hispanic or Latino origin	Section A1. Variable 6.
Child sex	Section A1. Variable 7.
Biological parent information (pg. 6)	
Parents race	Section B. Variable 1.
Parents age in years at death:	Section B. Variable 3.
Parents speak and understand English	Section B. Variable 7.

- A detailed analysis plan. Include the software that will be used for analysis and statistical tests (if any) planned. It is extremely helpful to include proposed tables

The chi-square of independence will be used to determine if there is a statistically significant difference in child deaths due to medical and injury causes between first-generation immigrant families and non-first-generation immigrant families. The chi-square of independence will also be used to determine if there is a statistically significant difference in child deaths due to probable child maltreatment causes between first-generation immigrant families and non-first-generation immigrant families. Further, a logistical regression will be used to determine whether family risk factors related to 1) residence overcrowding, 2) parents' substance abuse history, 3) parents' history of intimate partner violence, and 4) parents' delinquent/criminal history predict child deaths where there is probable child maltreatment among the two family subgroups. The researcher will assess that all assumptions for a chi-square test and logistical regression are met. The researcher will also appropriately assess for Type 1 and Type 2 errors in rejecting or failing to reject the null hypothesis. The analysis for this study will be conducted using the Statistical Package for the Social Sciences (SPSS) software at Oklahoma State University.

Researchers will utilize the gatekeeper question (yes/no/unknown) for the main statistical analysis. Follow-up information will be analyzed through descriptive statistics based on the proportions (percentages) of each response. Researchers will exclude all qualitative information. Please see contingency table below for example.

Table 1.
Child had disability or chronic illness

	First-Generation Immigrant Families	Non-First Generation Immigrant Families
Physical/orthopedic	0.1212	0.1512
Mental health/substance abuse	0.0000	0.0812
Cognitive/intellectual	0.0000	0.0000
Sensory	0.0000	0.0000
Unknown	0.8812	0.7710

Note: Information on the specific type of child disability or chronic illness is excluded from this analysis.

Researchers will utilize descriptive analysis to assess incongruent parent information. Researchers will present all descriptive information including demographic information in table forms. Researchers will note limitations toward missing/incomplete/unknown information.

Table 1

Count for family subgroup and medical causes of child death

	Family subgroup		
	First-generation immigrant families	Non-first-generation immigrant families	Total
Medical causes of child deaths			
Injury causes of child deaths			

Note. Medical causes of deaths include all of the following classifications: asthma/respiratory, cancer, cardiovascular, congenital anomaly, diabetes, HIV/AIDs, influenza, low birth weight, malnutrition/dehydration, neurological/seizure disorder, pneumonia, prematurity, SIDS, other infection, other perinatal condition, other medical condition, undetermined medical cause. Injury causes include all of the following classifications: motor vehicle and other transport, fire/burn/electrocution, drowning, unintentional asphyxia, assault/weapon/or person's body part, fall or crush, poisoning/overdose/acute intoxication, undetermined injury, unknown

Table 2

Count for family subgroup and injury causes of child death

	Family subgroup		
	First-generation immigrant families	Non-first-generation immigrant families	Total
Probable child maltreatment causes of child deaths			

Note. Probable child maltreatment is classified as child abuse, child neglect, and poor/absent supervision, and exposure to hazards that caused or contributed to the child death.

Table 3

Results of Chi-square tests (to be completed for all three chi-squares on causes of child deaths)

	Value	df	Asymptotic Significance (2 sided).
Pearson Chi-Square			
Likelihood Ratio			
Linear-by-Linear Association			
N for Valid cases			

*p < .05.

Table 4

Logistical regression for predictors of child deaths due to probable child maltreatment by family subgroup

	First-generation immigrant family child deaths/probable child maltreatment					Non-first-generation immigrant family child deaths/probable child maltreatment				
Predictors	B	SE B	x^2	OR	95% CI	B	SE B	x^2	OR	95% CI
Residence overcrowding										
Parent's substance abuse history										
Parents' history of intimate partner violence										
Parent's delinquent/criminal history										

*p < .05.

Table 5
Family health and socioeconomic profile

Characteristics	Total (N=)	Family subgroup: First-generation immigrant (n =)	Family subgroup: Non-first-generation immigrant (n =)
Mother/parent health information			
Medical conditions/complications in pregnancy			
Medications, drugs other substance during pregnancy			
Smoke at any time during the pregnancy			
Parent's disability or chronic illness			
Child health information			
Child had disability or chronic illness			
Child up to date with immunization			
Child acutely ill two weeks before death			
Infant born drug exposed			
Infant have neonatal abstinence syndrome			
Infant have NICU stay more than one day			
Infant have abnormal metabolic newborn screen			
In last 72 hours did the infant have a history of:			
In the 72 hours prior to death, did the infant have			
Child developmental history			
Child history of child maltreatment			
Open CPS case with child at time of death			
Child placed outside of home prior to death			
Child's highest education			
Child's work status			
Child have problems in school			
Child history of intimate partner violence			
Child mental health			
Child had a history of substance abuse			
Child had delinquent or criminal history			
Child spent time in juvenile detention			
Family socioeconomic background			
Type of residence			
Residence overcrowded			
Child ever homeless			
Number of children living with child			
Parent's employment status			
Parent's income			
Parent's education			
Family healthcare access/utilization			
Were there access or compliance issues to prenatal care			
Prenatal care provided during pregnancy of deceased infant			
Case manager assigned to mother at discharge			
Mother attend a postpartum visit			
Parents receive social services in the past twelve months			

Table 7
Child deaths contextual characteristics

Characteristics	Family subgroup: First-generation immigrant	Family subgroup: Non-first-generation immigrant
Motor vehicle and other transport		
Cause of incident		
Fire, Burn, or Electrocution		
Type of incident		
Drowning		
Drowning location		
Unintentional Asphyxia		
Type of event		
Assault, weapon or person's body part		
Type of weapon		
Fall or crush		
Type		
Poisoning, overdoes or acute intoxication		
Type of substance involved		
Medical Condition		
How long did the child have the medical condition?		
Was death expected as a result of the medical condition?		
Was child receiving health care for the medical condition?		
Was child/family compliant with the prescribed care plans?		
Were there access or compliance issues related to death?		
Other circumstances of incident		
Was the death	.	
Was death related to sleeping or the sleep environment		
Incident sleep place		
Did death occur during commission of another crime?		
Type of crime.		
Child abuse or neglect		
Child abuse.		
Child neglect		
Type of child abuse		

- A description of how you will handle small numbers and missing/incomplete data; and

The researcher will assess the database for all missing variables and incomplete cases. For variables that have missing values in more than 60% of the observations, data will be dropped to maximize completeness of information (Palusci & Covington, 2014). For cases that have missing or incomplete data, the researcher will examine the missing value patterns. If missing or incomplete data represents a random pattern then a Multiple

Imputation will be utilized to generate missing data values. All limitations of data preparation and analysis will be reported in the study.

- A description of how the limitations of the NFR-CRS might affect your study and how these limitations will be addressed/mitigated.

There are important limitations that must be noted with the use of this data. First and foremost, data obtained through the National Center for Child Death Review does not include all child deaths occurring in the U.S. (Covington, 2011). For this reason, incidence rates cannot be calculated or compared to vital statistics data (Covington, 2011). Moreover, although the online reporting tool offers a standardized process for documenting information, the data entered may be subjective for specific items and/or information entered may be inconsistent with the Data Dictionary provided by the National Center for Death Review (Covington, 2011). Variations in the quality of data may also exist as some information may be left unanswered (Covington, 2011). Additionally, data cannot be used to compare state to state information due the diverse percentage of deaths reviewed by each state and the state-to-state variations among the types of child deaths reviewed more than others (Covington, 2011). Lastly, the database does not specify the different reporting sources of information and therefore all the data entered relies on child death review team's determination for selecting the best answer to a question (Covington, 2011).

There are specific limitations pertaining to design of this research study. NFR-CRS version 4.1 (item A31) does not distinguish which parent is a first-generation immigrant parent or identify if both parents are first-generation immigrants, therefore limitations regarding the research sample will be explained in the research findings.

Reference

Cardoso, J. B., Dettlaff, A. J., Finno-Velasquez, M., Scott, J., & Faulkner, M. (2014). Nativity and immigration status among Latino families involved in the child welfare system: Characteristics, risk, and maltreatment. *Children and Youth Services Review*, *44*, 189-200.

Covington, T. M. (2011). The US National Child Death review case reporting system. *Injury prevention*, *17*(Suppl I), i34-i37.

Fortuny, K., & Chaudry, A. (2011). A comprehensive review of immigrant access to health and human services. *Washington, DC: Urban Institute*.

5. A timeline for completion of your study:
   Primary investigator will complete this research study before May 8th 2020.

6. Anticipated presentations, publications, or other dissemination of results, be specific: Upon approval from the Data Dissemination Committee at the National Center for Fatality Review and Prevention, findings from this research study will be utilized in a dissertation. Also upon approval of the Data Dissemination Committee, findings will be submitted to a peer-reviewed journal for a publication or to a national professional conference for presentation.

B. Investigator/researchers

1. Identify the Principal Investigator (PI) who will carry out the duties described in the Guidelines. Provide name, title, institution, department, address, contact telephone and e-mail address. Provide curriculum vitae as an attachment.

   Name: Laura Browning, M.Ed.
   Title: Doctoral Candidate
   Institution: Oklahoma State University
   Department: School of Community Health Sciences and Counseling & Counseling Psychology.
   Street address: 434 Willard Hall
   City: Stillwater
   State: Oklahoma
   Zip: 74078
   Phone: 405-496-8668
   Email address: laura.luke@okstate.edu

2. Identify each additional researcher/collaborator/co-investigator that will have access to the data. Include name, title, institution, department, address, contact telephone and e-mail address. Provide a curriculum vitae for each.
   Name: Julie Koch, Ph.D.
   Title: School Head
   Institution: Oklahoma State University
   Department: School of Community Health Sciences and Counseling & Counseling Psychology
   Street address: 434 Willard Hall
   City: Stillwater
   State: Oklahoma
   Zip: 74078
   Phone: 405-744-6040
   Email address: Julie.koch@okstate.edu

   Name: Ginger Welch, Ph.D.
   Title: Clinical Associate Professor
   Institution: Oklahoma State University
   Department: Human Development & Family Science
   Street address: 233 Human Sciences
   City: Stillwater
   State: Oklahoma
   Zip: 74078
   Phone: 405-744-8358
   Email address: gwelc@okstate.edu

   Name: Kelley Rhoads, Ph.D.
   Title: Assistant Professor
   Institution: Oklahoma State University
   Department: School of Community Health Sciences and Counseling & Counseling

Psychology
Street address: 434 Willard Hall
City: Stillwater
State: Oklahoma
Zip: 74078
Phone: 405-744-3931
Email address: Kelly.rhoads@okstate.edu

Name: Ryan Chung, Ph.D.
Title: Director of Assessment and Testing
Institution: Oklahoma State University
Department: Assessment and Testing
Street address: 123 University of Assessment and Testing Building
City: Stillwater
State: Oklahoma
Zip: 74078
Phone: 405-744-6685
Email address: ryan.chung@okstate.edu

3. Describe the specific responsibilities that the PI and each of the other investigator(s) will have in conducting and completing the proposed research. The PI and all other investigators will each need to complete a confidentiality agreement (Attachment 3).

PI role: The primary investigator will be responsible for conducting and completing the proposed research study. Upon approval of the Data Dissemination Committee from the Nation Center for Fatality Review and Prevention, researcher will also prepare research findings for dissertation defense presentation and a journal submission.

Investigator 2: Dr. Julie Koch will provide facilitative support to the primary researcher as needed through the analysis, interpretation of data, and writing. Dr. Koch will also help monitor data integrity by reviewing research analysis and ensuring data findings are reported accurately and appropriately.

Investigator 3: Dr. Ginger Welch will provide facilitative support to the primary researcher as needed through the analysis, interpretation of data, and writing.

Investigator 4: Dr. Kelley Rhoads will provide facilitate support to the primary researcher as needed through the research analysis, interpretation of data, and writing.

Investigator 5: Dr. Ryan Chung will provide facilitative support to the primary research as needed through the research analysis, interpretation of data, and writing.

C. *Data Security*

All users of the NFR-CRS data must have electronic security measures in place to prevent access to the data from unauthorized individuals.

1. Describe where the data will reside and how the data will be shared among researchers. Describe the physical transmission.

   The data will be stored in a password protected home desktop computer with virus and firewall protection. Only the primary investigator will have code access to the password protected desktop. The raw data will not be transported to a different location. Only summative data organized in tables/figures will be transferred from investigator to investigator in a password protected/encrypted external hard drive.

2. Security details: In the table below, provide a comprehensive list of all devices on which the data will be installed and indicate the electronic security measures that will be applied to each device. For those devices that have access to the Internet, all four of the electronic security measures must be in place for this data request to be approved. For non-Internet devices, firewall protection is not required.

ID	Device type Indicate workstation, laptop, server, portable media, or other device	Internet Does the device have access to the Internet?(Y/N)	Electronic security measures			
			Password login? (Y/N) The device requires a login ID and password at startup and after a period of inactivity.	Restricted directory access? (Y/N) The directories containing the data are restricted to authorized users who have logged in to the device.	Virus protection? (Y/N?) Anti-virus software is installed on the device.	Firewall protection? (Y/N) Firewall technology is in place for devices that are connected to the Internet.
1	Hard drive	No	Yes	Yes	No	No
2	Desktop	Yes	Yes	Yes	Yes	Yes

3. Physical security: In addition to electronic security, the devices on which the data have been copied must be physically secured to prevent theft of the device. Describe below the physical security measure in place for each device.

The primary investigator will manage the database in accordance to the ethical standards of the American Psychological Association which enforce an obligation to protect confidential information stored in any medium. The primary investigator will take precautions to ensure confidential records are stored and secured in an area with limited access. The data will be stored in a password protected desktop computer, only the primary investigator will have key and code access to the desktop computer.

If co-investigators at different institutions from the PI will also have physical control of the data, complete the table for each such co-investigator's institution and describe how data will be securely transferred between institutions.

ID	Location of Device Indicate building name and office number	Description of physical security Examples are offices are locked when unoccupied; storage in secure cabinets when the device is not in use; and monitored access to the building where the data are stored.
1	Primary investigator home desktop.	Desktop is password protected. Desktop is virus and firewall protected.
2	Primary investigator home.	Hard drive with summative data is password protected.

Receiving Institution

1. Identify the Receiving Institution.

Oklahoma State University

2. Describe your Institution in detail. What kind of work does it do? Include the type of organization, its profit/non-profit status, and primary sources of revenue.

Oklahoma State University is an institution of higher education that employs the co-investigators. Oklahoma State University is registered with the U.S. Office for Human Research Protections.

3. Provide evidence in an attachment that your institution is registered with the U.S. Office for Human Research Protections.

See Appendix D.

4. Describe your plans to obtain Institutional Review Board (IRB) approval for this study using the NFR-CRS data.

Institutional Review Board approval has been obtained.

5. Provide the IRB assurance number.

ED-19-114

6. Describe your Institution's experience in overseeing the use of sensitive research data by its staff. Please give specific examples.

Oklahoma State University adheres to the 1979 report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, titled: Ethical Principles and Guidelines for the Protection of Human Subjects of Research ("The Belmont Report"). The ethical principles of beneficence, justice, and respect for persons, as espoused via the Belmont Report, guide the University's Institutional Review Boards (IRBs) and researchers in meeting their obligations and responsibilities. Therefore, Oklahoma State University affirms that all of the University's human subjects research activities will be guided by the ethical principles in The Belmont Report.

Oklahoma State University, guided by ethical principles pertaining to research involving human subjects and bound by federal regulations, has an ethical obligation to safeguard the rights and welfare of people who volunteer to participate in research conducted under the auspices of the University.

Oklahoma State University is committed to protect human subjects and confirm the University's commitment to its Institutional Review Boards (IRBs), which provide initial review and continuing oversight of research involving human subjects. Oklahoma State University ensures that each IRB has meeting space and sufficient staff and technology to support an IRB's review and recordkeeping duties.

7. Describe any known breaches of sensitive research data by your organization and the steps taken to remedy the breach.

Oklahoma State University has experienced no breaches of sensitive research data in the last 12 months.

Variable list

Child information

A1.4 Age
A1.5 Race
A1.6 Hispanic or Latino origin
A1.7 Sex
A1.13 Child had disability or chronic illness
A1.15 Child's health insurance
A1.16 Was the child up to date with Academy of Pediatrics Immunization Schedule
A1.17 Type of residence
A1.19 Residence Overcrowded
A1.20 Child ever homeless
A1.21 Number of other children living with child
A1.22 Child had history of child maltreatment.
A1.23 Was there an open child protective case with child at time of death
A2.25 Child's highest education level
A2.26 Child's work status
A2.27 Did child have problems in school
A2.28 Child had history of intimate partner violence
A2.29 Childs mental health
A2.30 Child had history of substance abuse
A2.31 Child had delinquent or criminal history
A2.32 Child spent time in juvenile detention
A2.33 Child acutely ill in the two weeks before death
A3.41 Prenatal care provided during pregnancy of deceased infant
A3.42 Were there access or compliance issues related to prenatal care
A3.43 During pregnancy, did mother have any medical conditions/complications
A3.44 Did the mother experience any medical complications in previous pregnancies? (A41 version 4.1)
A3.45 Did the mother use any medications, drugs or other substances during pregnancy (A41)
A3.46 Was the infant born drug exposed (A41)
A3.47 Did the infant have neonatal abstinence syndrome (fetal alcohol effects A41)
A3.53 Did the mother smoke at any time during pregnancy
A3.57 Did infant have abnormal metabolic newborn screening results
A3.58 At any time prior to the infant's last 72 hours, did the infant have a history of
A3.59 In the 72 hours prior to death, did the infant have any of the following

Biological parent information

B1. Parent's race
B3. Parent's age in years at death
B4. Parent's employment status
B5. Parent's income
B6. Parent's education
B7. Parents speak and understand English
B8 Parents first generation immigrant

B10. Parents receive social services in the past twelve months?
B11. Parents have substance abuse history
B14. Parents have disability or chronic illness
B16. Parents have history of intimate partner violence
B17. Parents have delinquent/criminal history

Official manner or primary cause of death
G5: Official manner of death from the death certificate.
G6: Primary cause of death

Detailed information by cause of death
H1.c Causes of incident (motor vehicle and/other transport)
H2.b Type of incident (fire, burn, or electrocution)
H3.d Drowning location
H4.a Type of event (unintentional asphyxia)
H5.a Type of weapon (assault, weapon or person's body part)
H6.aType (fall or crush)
H7.a Type of substance involved (poisoning, overdoes, or acute intoxication)
H8.a How long did the child have the medical condition (medical condition)
H8.b Was death expected as a result of the medical condition
H8.c Was child receiving health care for the medical condition
H8.e Was child/family compliant with the prescribed care plans
H8.h Were there access or compliance issues related to the death
I1.a Was this death (Other circumstances of incident, was this death)
I2.a Incident sleep place (Was the death related to sleeping or the sleep environment)
I4a. Type of crime (Did death occur during commission of another crime)
I5.a Did child abuse, neglect, poor or absent supervision or exposure to hazards cause or contribute to the child's death?
I5.f Child neglect

Attachment 3

Confidentiality Agreement to be Signed by All Researchers with Access to NFR-CRS Data

By signing this Agreement, I agree to the following:

1. I will safeguard the confidentiality of all confidential information contained in the NFR-CRS data to which I have been given access. I will not carelessly handle confidential information. I will not in any way divulge copy, release, sell, loan, review, or alter any confidential information except as within the scope of my duties.
2. I will only access confidential information for which I have a need to know and I will use that information only as needed to perform my duties.
3. I will not attempt nor permit others to attempt to use the data to learn the identity of any decedent. If I inadvertently discover the identity of a decedent, I will make no use of this knowledge, will not permit others to use the knowledge, will not inform anyone else of this knowledge, and will inform NCFRP of the discovery so it can prevent future discoveries.
4. I will transmit and store all electronic and hard copy data in a secure and confidential manner and location at all times.
5. Upon completion of the performance of my duties, the identifiable data will be destroyed and no opportunities will be available to access that data on the network or computer systems.
6. I will promptly report activities by any individual or entity that I suspect may compromise the availability, integrity, security, or privacy of confidential information.
7. I understand that the ownership of any confidential information referred to in this Agreement is defined by State statutes.
8. I understand that violating applicable laws and regulations may lead to other legal penalties imposed by the judicial system.

Signature: _____ **Date:** 10-2-19

Print Name: Laura Browning

Attachment 3

Confidentiality Agreement to be Signed by All Researchers with Access to NFR-CRS Data

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8. I understand that violating applicable laws and regulations may lead to other legal penalties imposed by the judicial system.

Signature: _____ **Date:** 9/19/2019

Print Name: Julie Koch

Attachment 3

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8. I understand that violating applicable laws and regulations may lead to other legal penalties imposed by the judicial system.

Signature: Kelley Rhoads **Date:** 9.19.19

Print Name: Kelley Rhoads

Attachment 3

Confidentiality Agreement to be Signed by All Researchers with Access to NFR-CRS Data

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7. I understand that the ownership of any confidential information referred to in this Agreement is defined by State statutes.
8. I understand that violating applicable laws and regulations may lead to other legal penalties imposed by the judicial system.

Signature: _____ **Date:** 9-26-19

Print Name: Ginger Welch

Attachment 3

Confidentiality Agreement to be Signed by All Researchers with Access to NFR-CRS Data

By signing this Agreement, I agree to the following:

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8. I understand that violating applicable laws and regulations may lead to other legal penalties imposed by the judicial system.

Signature: chih ming chung **Date:** 9/9/2019

Print Name: chih ming chung

Appendix D: Oklahoma State University IRB Approval

Oklahoma State University Institutional Review Board

Date:	09/17/2019
Application Number:	ED-19-114
Proposal Title:	Healthy Immigrant Paradox: Child Mortality and Child Maltreatment in U.S. Native-Born and First-Generation Immigrant Families
Principal Investigator:	Laura Browning
Co-Investigator(s):	
Faculty Adviser:	Julie Koch
Project Coordinator:	
Research Assistant(s):	
Processed as:	Not Human Subjects Research

Status Recommended by Reviewer(s): Closed

Based on the information provided in this application, the OSU-Stillwater IRB has determined that your project does not qualify as human subject research as defined in 45 CFR 46.102 (d) and (f) and is not subject to oversight by the OSU IRB. Should you have any questions or concerns, please do not hesitate to contact the IRB office at 405-744-3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IRB

VITA

Laura Virginia Luke-Browning

Candidate for the Degree of

Doctor of Philosophy

Dissertation: HEALTHY IMMIGRANT PARADOX: CHILD MORTALITY AND CHILD MALTREATMENT IN FIRST-GENERATION IMMIGRANT FAMILIES AND NON-FIRST-GENERATION IMMIGRANT FAMILIES

Major Field: Counseling Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Counseling Psychology at Oklahoma State University, Stillwater, Oklahoma in July 2021.

Completed the requirements for Master in Education, Applied Behavioral Sciences; Professional Counseling at Oklahoma City University, Oklahoma City, Oklahoma 2017

Completed the requirements for the Bachelor of Arts, Psychology at The University of Tulsa, Tulsa Oklahoma 2014

Experience:

Psychology Intern: The University of Oklahoma Health Science Center and Veteran's Affairs Consortium Psychology Internship. July 2020 – July 2021

Psychology Practicum Student: Child Study Center at the University of Oklahoma Health Science Center. August 2016 to June 2021.

Psychology Practicum Student: Veteran's Affairs, South Oklahoma City Outpatient Clinic. August 2019 – May 2020