

Gone Too Soon: Rationale for the United States High Infant Mortality Rate and Implementation Measures Needed to Address this Issue

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### Abstract

The United States has one of the highest infant mortality rates, ranking 26th place amongst other Organization for Economic Co-operation and Development (OECD) nations. Whereas countries, such as Finland, have shown tremendous success in decreasing the occurrence of infant death throughout the twenty-first century, the United States' infant mortality rate has remained nearly stagnant, since the turn of the century. As a result of infant mortality having roots in education, socioeconomic status, societal policies, and other facets, its multidimensional nature can make it difficult to address in an effective manner. However, through an analysis of Finland's success in combating infant death, it becomes evident that the United States is focusing upon the superficial causes of infant mortality, rather than addressing the major, underlying contributors, namely maternal healthcare, infant and child healthcare, and parental leave.

## Gone Too Soon: Rationale for the United States High Infant Mortality Rate and Implementation Measures Needed to Address this Issue

Each year, more than 130 million babies are born into the world (UNICEF, 2005). These infants, although fragile, hold the future of each nation within their tiny hands, as they grow up to contour the course regarding governmental policies, scientific practices, and the overall progression of humankind. Until then, however, parents, with purple moons stamped underneath their eyes, will cater to their seemingly endless cries, as tomorrow slowly bleeds into today. Although the 2:00 a.m. serenade of wailing, night after night, will hastily grow stale, 2.8 million parents (UNICEF, 2017) each year are greeted by an even darker surprise—silence. Although, the parents may perhaps be briefly overcome by the pleasure of a full night of rest, dread will quickly ensue and overcome such feelings, when gingerly tip-toeing into the nurse's station, only to discover that death has overcome their little one, less than one year old; a lifetime of possibilities is rapidly replaced with a lifetime of 'what ifs'. While this haunting reality seems fit only for undeveloped nations, this is the heartbreaking truth thousands of parents within the United States encounter each year. The only thing more devastating than a life gone too soon, though, is that thousands of these deaths are preventable, if only the appropriate societal approach was adapted by the United States.

### ***Infant Mortality***

Infant mortality can be broadly defined as “the death of a child younger than one year” (McKenzie & Pinger, 2015) and is an important facet of public health, due to its associations with maternal health, quality and access to health care, socioeconomic conditions, and public health practices. Moreover, infant mortality serves as a critical health indicator—it is sensitive to, and therefore can reveal, both short and long term changes in social/economic conditions and

health care, as well as carries great economic significance when considering potential years of life lost (Kim & Saada, 2013). Therefore, due to the implications that infant mortality has for the lifelong health of the entire population of a nation, it is troubling that the United States has a higher infant mortality rate than most other developed countries (MacDorman, Mathews, Mohangoo, & Zeitlin, 2014); the United States ranked 26<sup>th</sup> in infant mortality amongst 29 Organization for Economic Co-operation and Development (OECD) countries, with an infant mortality rate of 6.1 infant deaths per 1,000 live births, compared to Finland, who ranked 1<sup>st</sup> in infant mortality, with an infant mortality rate of 2.3 infant deaths per 1,000 live births (MacDorman et al., 2014). The high and stagnant infant mortality rate, in the United States, suggests disparities regarding public policies towards pregnancy, delivery, and the post-pregnancy time period, especially in regards to maternal/prenatal care and parental leave. However, since infant health indicates the health of the entire nation, it is essential for the United States to lower the infant mortality rate, in order to ensure the future of productive and healthy individuals.

### ***Infant Mortality in the United States***

The United States has made substantial improvements regarding infant mortality since the early 1900s, during which some cities experienced 30% of infants dying prior to their first birthday (Centers for Disease Control and Prevention, 1999). By focusing upon improving the environment and living conditions, this decrease in the infant mortality rate can be attributed to advancements regarding sanitation, clinical care, access to health care, and nutrition (McKenzie & Pinger, 2015). Furthermore, “rising standards of living, including improvements in economic and education levels of families, helped to promote health; declining fertility rates also contributed to reductions in infant mortality through longer spacing of children, smaller family size, and better nutritional status of mothers and infants” (Centers for Disease Control and

Prevention, 1999). Nutritional status was of particular importance in helping to decrease the infant mortality rates in the United States during this time period, with the introduction of milk pasteurization being one of the most notable achievements, because it decreased the incidence of milk-borne disease and, thus, gastrointestinal disturbances and illnesses—a key source of infant death throughout this time period.

Furthermore, President William Howard Taft passed a bill creating the Child's Bureau in 1912, which was "charged with investigating and reporting "upon all matters pertaining to the welfare of children and child life among all classes of our people"" (U.S. Department of Health, Education, and Welfare). Although the Child's Bureau was created to investigate a plethora of concerns regarding the wellbeing of children, including birth rates, orphanages, juvenile courts, desertion, child labor, and diseases, one of its principle interests revolved around infant mortality. Prior to this bureau, it was unknown how many infants were born and died each year. Moreover, there was also little knowledge regarding the causes behind infant death. However, it was estimated "that about 2,500,000 children were born each year and that about 300,000 babies died before they were a year old—a rate of about 124 per 1,000 live births" (U.S. Department of Health, Education, and Welfare). In order to determine the cause of death amongst infants, the history of infants from birth to their first year of life were investigated in nine representative cities. The researchers discovered that "the greatest proportion of infant deaths resulted from remedial conditions existing before birth" (U.S. Department of Health, Education, and Welfare). However, there were several underlying and complex factors that contributed to infant death, including income, breast-feeding choices, and maternal care, as well as issues revolving around sanitation. It was found that households which had a higher income and stay-at-home mothers, whom breastfeed, were more likely to have infants who survived their first year of life.

Nevertheless, the most effective remedies for infant mortality did not focus upon the infants themselves, but rather, maternal care because “most of the early deaths of babies were known to be due to premature birth, congenital debility, or injury at birth, all of which were closely related to maternal care” (U.S. Department of Health, Education, and Welfare). Therefore, this was the first time it was recognized that decreasing infant mortality required ample protection of the health of the mother, prenatal care, and a suitable environment for the infant at home, after birth. As a result, the focus shifted towards improving maternal healthcare and sanitation; these efforts were about to decrease the infant mortality rate by 24% (76 infant deaths per 1,000 live births) between 1915 and 1921 (U.S. Department of Health, Education, and Welfare). Even so, although this infant mortality rate was a great improvement, it was still higher than the infant mortality rate of most other developed nations. As a desperate attempt to reach the standards of infant health that other developed countries were achieving, the Children’s Bureau produced a pamphlet, *Infant Care*, in 1914. This pamphlet provided information and advice for parents regarding proper care, hygiene, and living conditions for mothers and their newborns. Moreover, the Maternity and Infancy Act was passed in 1921, which was designed to address areas revolving around “instruction covering the field of hygiene for mothers and children, conference centers affording mothers a convenient opportunity to secure examination of well children and expert advice as to their best development, adequate confinement care, [and] hospital facilities made available and accessible for mothers and children” (U.S. Department of Health, Education, and Welfare). The Children’s Bureau continued to make improvements towards maternal and infant welfare until 1946, when the goals of the bureau were adapted to encompass a broader range of children welfare issues, rather than focusing predominately on infant mortality. Nevertheless, it brought about significant improvements in combating infant mortality by

changing the “approach to infant mortality from one that addressed infant health problems to one that included infant and mother and prenatal-care programs to educate, monitor, and care for pregnant women” (U.S. Department of Health, Education, and Welfare).

Since the work of the Children’s Bureau provided a solid foundation for the causes of infant mortality, health advancements contributed to the decrease in infant deaths throughout the 1930s and 1940s. Thus, the development of sulfonamide, in 1937, and penicillin in the 1940s, as well as advancements in fluid/electrolyte therapy and blood transfusions, contributed to a 52% decline in infant mortality between 1930 and 1949 (Centers for Disease Control and Prevention, 1999). However, the 1950s through 1960s produced a period where there was little progress in decreasing the infant mortality rate, which can be attributed to focusing upon keeping infants alive after their birth, rather than addressing prenatal and maternal causes of infant death. As a result, infants with low birth weights, due to premature delivery, accounted for a tremendous proportion of infant deaths during this time period. Therefore, “inadequate programs during the 1950s-1960s to reduce deaths among high-risk neonates led to renewed efforts to improve access to prenatal care, especially for the poor, and to a concentrated effort to establish neonatal intensive-care units and to promote research in maternal and infant health, including research into technologies to improve the survival of [low birth weight] and preterm babies” (Centers for Disease Control and Prevention, 1999). The implementation of Medicaid, in the late 1960s, also helped to decrease the occurrence of infant mortality at a more substantial rate, but technological advancements in neonatal medicine were largely responsible for improvements in the infant mortality rate in the 1970s.

The improvements continued onward into the 1990s, during which better treatment options regarding respiratory distress syndrome became available, especially the development of

artificial surfactant. In addition, the “Back to Sleep” campaign promoted the concept of placing an infant on his/her back while sleeping, as an effort to reduce the occurrence of Sudden Infant Death Syndrome. However, progress in decreasing the infant mortality rate in the United States decreased upon entering the twenty-first century, resulting in “a lack of improvement in infant mortality rates due to an increase in preterm births” between 2000 and 2005 (McKenzie & Pinger, 2015). As a result, the recent decline in infant mortality, between 2005 and 2010, occurred as a result of decreasing early deliveries for reasons that were not directly related to the health of the mother and/or infant.

Despite the tremendous progress in decreasing the infant mortality rate during the twentieth century, the United States has faced serious challenges in combating infant death within the twentieth century, resulting in one of the highest infant mortality rates amongst other developed nations. This is problematic because the health of infants is a direct reflection of the health of all individuals within a nation—unhealthy infants indicates a country comprised of unhealthy citizens, in general. Therefore, infant health is an important facet of public health due to its associations with maternal health, quality and access to health care, socioeconomic conditions, and a plethora of other public health practices. Due to its multidimensional nature, infant mortality provides a lens into the effectiveness of health practices and governmental programs and policies, as well as having ties to environmental conditions, socioeconomic contributors, and the wellbeing of subgroups within the population.

The multidimensional nature of infant mortality has provided a barrier in decreasing the infant mortality rate in the twenty-first century, due to not being able to pinpoint the exact causes of infant death. However, the success of other developed nations in continuing to combat infant death suggests that it is not the multidimensional nature of infant mortality that makes it difficult



to overcome, but rather, the United States' perspective regarding the necessary measures that need to be taken to help infants survive their first year of life. Through an analysis of Finland's success in decreasing infant mortality, it becomes evident that the United States is preoccupied with the smaller causes of infant death, such as Sudden Infant Death Syndrome, rather than addressing the underlying, major contributors of infant mortality—maternal healthcare, infant and child healthcare, and parental leave.

### ***Infant Mortality in Finland***

Infants have the best chance of happily gazing at a solitary candle—the flame a flickering reflection in their gleeful and curious eyes—and shoveling sweet mouthfuls of cake into their delicate mouths in Finland, than any other country worldwide; more parents are able to capture snapshots of their healthy one-year old, with frosting smeared across his/her bubbly face, in Finland, due to the country's tremendous and continuous efforts to defeat infant mortality. For years, Finland has ranked first in having the lowest infant mortality rate amongst OECD nations, with an infant mortality rate of 2.3 infant deaths per 1,000 live births in 2011 (MacDorman et al., 2014), which has since lowered to 1.9 infant deaths per 1,000 live births in 2016 (The Statistics Portal, 2016). Although Finland's maternity package ("baby box") is notable for contributing to the decrease in infant mortality, Finland's low infant mortality rate can be attributed to a plethora of services, programs, and support, including "maternity and child health clinic services, family policy, medical advancements, improved nutrition and hygiene, and increased wealth" (Finland Health, 2017).

Similar to the United States, Finland has made reforms in the past to address environmental, sanitation, and nutritional issues that were contributing to infant mortality during periods where infectious diseases were a principle cause of death. However, Finland also

recognized the importance of family policy—a system which encompasses financial support, services, and family leave—as a vital component to combating infant death. In 1904, the first child advice centers were opened to provide guidance on child care and, in 1927, the Finnish Child Welfare Act was passed (Ministry of Social Affairs and Health, 2013), with the objective “to protect children’s rights to a safe growth environment, to balanced and well-rounded development, and to special protection” (Ministry of Social Affairs and Health, 2007).

Notably, the maternity package was introduced in Finland in 1938, a time during which one in ten children were dying within the first year of life (Finland Health, 2017). This maternity grant was first only offered to disadvantaged mothers, but was extended to all mothers in 1949. In order to be eligible for the maternity grant, the pregnancy needs to last for at least 154 days and the expecting mother needs to have evidence of a prenatal health examination prior to the end of the fourth month of pregnancy (Ministry of Social Affairs and Health, 2013). Although the contents of the maternity package have changed over the years, it currently includes a box (which doubles as a crib), several onesies and leggings, a snowsuit (doubles as a sleeping bag), insulated mittens and boots, a sleeping bag/blanket, overalls, several hats, socks, bedding, linens, towels, personal care items, bibs, a book, and a stuffed animal. In addition, mothers may choose to receive 140 euros instead of the maternity package, but this choice is not as popular amongst Finland mothers. In addition, this package is also offered to adoptive parents, so long as the adoption is approved by the Finnish Adoption Board. Although this program ensures that a majority of families have the necessary materials needed to initially care for an infant, the program is also successful in decreasing the infant mortality rate because it ensures a prenatal visit during the first trimester of pregnancy, which is a significant proponent for a safe and healthy pregnancy and delivery; women who receive early and continuous prenatal care are more

likely to have better pregnancy outcomes because of the early detection and, thus, care and treatment for any foreseen complications. Furthermore, the maternity grant encourages pregnant women to utilize maternity welfare and public health services. Therefore, while the box itself has decreased the number of infant deaths, due to Sudden Infant Death Syndrome, the maternity grant has also been successful in decreasing infant mortality, because it offers an incentive to utilize services that will improve the health of the woman and infant. Moreover, the added component of having the pregnancy last 154 days helps to reduce infant deaths due to premature deliveries, which can result in complications due to short gestation periods and low birth weights. In fact, preterm births appear to be the driving cause of infant mortality in nearly all developed nations (Jacob, 2016), with low birth weight, congenital birth defects, injuries, and Sudden Infant Death Syndrome (SIDS) also being prime contributors (Centers for Disease Control and Prevention). Although the major causes of infant mortality are nearly identical, some developed countries bear the burden more heavily than others. For instance, in 2010, 9.8% of the births in the United States were preterm, which were 40% higher than in England and Wales and 69%-75% higher than in Finland, Ireland, and Sweden. Additionally, the United States had the highest percentage of preterm births amongst 19 of the OECD countries (MacDorman et al., 2014).

Finland's infant mortality rate continued to decrease as new governmental policies were enacted, such as the 1944 Act of Municipal Prenatal and Child Care Clinics, which "charged local authorities with the responsibility to provide maternity and child health clinic services as part of primary health care" (Finland Health, 2017). These services include health examinations and counseling at predetermined, regular intervals because regular monitoring helps to prevent illnesses, as well as provides the ability to determine, and address, risk factors early. Throughout

the remainder of the twentieth century, Finland expanded maternity, infant, and childhood services in order to improve the welfare and wellbeing of these population groups. Furthermore, these maternity and child care clinic services are available to all Finnish citizens, regardless of socioeconomic status. Therefore, each mother and infant are ensured access to the appropriate care, services, and counseling during the course of the pregnancy, as well as beyond the postnatal period. The popularity of these services—“almost all pregnant women (99.6%) used maternity clinic services in 2014” (Finland Health, 2017)—showcases that a society that is focused upon improving the health of women, especially throughout the prenatal and postnatal periods, is fundamental in combating infant mortality, rather than focusing solely upon the complications of infant death.

### ***Assessing Discrepancies in Infant Mortality***

#### ***Prenatal Care***

There is a dizzying amount of explanations regarding infant mortality, due to its multidimensional nature, since infant death is a reflection of social and governmental policies, socioeconomic factors, and health behaviors/determinants. In regards to causes of infant death, preterm births appear to be the driving force of infant mortality in nearly all developed nations (Jacob, 2016), with low birth weight, congenital birth defects, injuries, and Sudden Infant Death Syndrome (SIDS) also being prime contributors (Centers for Disease Control and Prevention, 2016). Moreover, although factors such as a premature delivery without medical necessity, health status of the mother, and maternal behaviors (e.g. smoking) influence the incidents of these infantile complications, it is largely unknown as to why these causes of infant death occur, yet alone, why differences in the infant mortality rate is persistent between developed nations. Although the major causes of infant mortality are nearly identical, some developed countries

bear the burden more heavily than others. Several developed nations experienced substantial decreases in infant mortality when initially addressing issues such as sanitation and nutrition, as well as when undergoing medical advancements in maternal and infant care. However, while some countries, such as Finland and Japan, continue to experience a declining infant mortality rate, the United States has reached a stagnant period in the battle against infant death. This showcases that social policies are a principle contributor in explaining cross-country variations in infant mortality, especially policies regarding family planning, maternal and infant healthcare, paternal leave, and services/programs offered to families to provide aid during the infant's first year of life.

Finland's low infant mortality rate is highly associated with the maternity grant, commonly referred to as the "baby box", which doubles as a crib and contains essential baby supplies, such as clothing and hygiene items. It is often thought that placing a child to sleep in a box is successful in decreasing the incidence of infant death, because its usage is correlated with a decrease in the occurrence of Sudden Infant Death Syndrome, the "sudden unanticipated death of an infant in whom, after examination there is no recognized cause of death" (McKenzie & Pinger, 2015). Most cases of Sudden Infant Death Syndrome occur while the child is sleeping in a crib and is thought to be associated with placing the baby to sleep on his/her stomach, or with too many cozy items in the crib, such as blankets and stuffed animals. The "baby box" has been successful in decreasing the incidents of Sudden Infant Death Syndrome, by replacing the "comfort" of a crib, and emphasizing the necessity for nothing to accompany an infant in bed. Nevertheless, the physical items provided by the maternity grant cannot explain Finland's low infant mortality rate. This is emphasized by the implementation of the baby box in the United States in some states, such as Ohio and Alabama, which has done little in decreasing infant

mortality. This is because the “baby box” is being utilized in the United States to “deliver a postpartum safe sleep message” (Pao, 2017), by having parents watch educational videos regarding Sudden Infant Death Syndrome and the importance of placing an infant to sleep on his/her back. It is therefore a continuation of the national “Back to Sleep” campaign, which was launched in 1992 and has resulted in the incidents of Sudden Infant Death Syndrome to decrease by more than 50% (McKenzie & Pinger, 2015). However, “there is currently no way of predicting which infants will die because of SIDS [Sudden Infant Death Syndrome]” (McKenzie & Pinger, 2015). Furthermore, this emphasizes a single aspect of infant death, which is controlled and determined by a dizzying amount of factors. Although overcoming infant death requires the implementation of numerous programs and methods, simply distributing a maternity grant, after every birth, would do little to decrease the infant mortality rate in the United States. This is because the conditions and eligibility requirements for receiving the maternity grant in Finland is responsible for combating infant death, rather than the items included within the maternity grant. That is, by requiring the expecting mother to have a prenatal health examination prior to the end of fourth month of pregnancy, as well as having a pregnancy that lasts at least 154 days (Ministry of Social Affairs and Health, 2013), Finland is taking a proactive approach to decreasing infant death, through addressing complications such as low birth weight, preterm births, and maternal/fetal complications. Conversely, the baby boxes distributed in the United States are being utilized as a method to combat Sudden Infant Death Syndrome, which is associated with more factors than having an infant sleep in an empty crib on his/her back. Therefore, the United States’ high infant mortality rate is partly associated with this country’s approach to decrease the incidence of certain syndromes/diseases, rather than addressing the root causes of infant death, such as emphasizing the importance of prenatal health care.

Prenatal health care—that is, “medical care provided to a pregnant women from the time of conception until the birth process occurs” (McKenzie & Pinger, 2015)—is crucial to the health of the mother and infant. Moreover, women who receive early—within the first three months of pregnancy— and continuous prenatal care are more likely to experience better birth outcomes than women who receive prenatal care late in their pregnancy, or not at all. During prenatal visits, “tests are performed on both the mother and fetus to assess any potential risks, to treat any maternal or fetal complications, and to monitor the growth and development of the fetus” (McKenzie & Pinger, 2015). In addition, women will also receive guidance regarding pregnancy weight gain, nutrition, and physical exercise, as well as counseling against the use of alcohol, tobacco, and illicit drugs (McKenzie & Pinger, 2015). Furthermore, as the pregnancy progresses, women can be educated about the early signs of pregnancy-related problems/complications, as well as receive care regarding how to minimize risk factors. In this way, high-quality and continuous prenatal care enables physicians to monitor the health of the mother and infant, thereby allowing for any complications to be detected and treated early, in order to reduce severe outcomes.

However, in 2010, only 73.1% of women in the United States sought prenatal care during their first trimester of pregnancy (McKenzie & Pinger, 2015), compared to the 99.6% of women in Finland, in 2014 (Finland Health, 2017). These differences can be attributed to the manner in which the United States and Finland approach family health. For instance, in Finland, there are municipal health care centers which operate prenatal and child health clinics. Moreover, these “primary health care series are provided locally...are voluntary...and free of charge for residents” (Ministry of Social Affairs and Health, 2013). Nevertheless, despite being voluntary clinics, these clinics work in close cooperation with maternity hospitals and outpatient maternity

clinics, resulting in more than 99 percent of mothers in Finland giving birth at a hospital (Ministry of Social Affairs and Health, 2013). Therefore, due to the abundance of these clinics, as well as the free services that they provide, nearly all families in Finland have access to high-quality primary care, particularly prenatal care. Moreover, these clinics emphasize the importance of wellbeing for the entire family, including not only monitoring the health of the mother and the baby, but also the father. As a result, both parents usually attend these clinics for scheduled, regular prenatal visits, during which health professionals also discuss family circumstances and parental preparedness with the parents. For those families expecting their first child, these clinics provide parental training, as well.

Conversely, maternity and infant care costs in the United States are uniquely high, compared to other developed countries, even though women in other countries have similar access to advanced, high-quality care. The costs of maternity and infant care in the United States is not only a problem for women/families who are at a lower socioeconomic status and are unable to afford insurance/qualify for Medicaid, but also amongst women/families with insurance and in a stable, healthy financial situation. In 2011, 62 percent of women in the United States had private insurance, not obtained through an employer, which lacked maternity coverage; moreover, even amongst women who had maternity coverage, they lacked access to prenatal services, as a result of higher copayments and deductibles (Rosenthal, 2013). From 2004 to 2010, “the prices that insurers paid for childbirth—one of the most universal medical encounters—rose 49 percent for vaginal births and 41 percent for Caesarean sections in the United States, with average out-of-pocket costs rising fourfold... The average price charged for pregnancy and newborn care was about \$30,000 for a vaginal delivery and \$50,000 for a C-section, with commercial insurers paying out an average of \$18,329 and \$27,866” (Rosenthal,



2013). The rising costs in maternal and prenatal care are partly due to separating, rather than lumping, costs of treatment. For instance, there is no one cost for delivery, but rather, the costs are broken down into subcomponents for the hospital room, medication, healthcare team, and so on. This is different from other developed countries, in which the majority of hospitals and physicians receive a flat fee for the care that he/she provides, regardless of the specifics regarding care, such as administration of an epidural, or a water birth.

The high costs of maternal and prenatal care in the United States forces many women—uninsured and insured alike—to be selective with the kind of care and treatment that is provided throughout the course of pregnancy. Unfortunately, the health of mothers and infants can suffer serious consequences when cutting corners in providing high caliber care. This is especially problematic, because many pregnancy complications and birth defects can be prevented if given the necessary information regarding pregnancy early, or become less detrimental if detected and treated in the beginning stages of pregnancy. Moreover, receiving early and continuous prenatal care can decrease the likelihood of premature births, which contributes to short gestation and low birth weights—the leading causes of neonatal death in the United States (McKenzie & Pinger, 2015).

### Parental Leave

However, the risk of infants being overtaken by death does not dissipate by receiving the necessary prenatal and natal medical care alone. Although medical treatment is important to ensure the health of the future, infants will not be able to live to see the day in which they contribute to society, if society is not supporting an environment in which they are given the necessary materials and care to thrive. Therefore, social policies, particularly structured maternal/paternal leave programs, are imperative determinants in regards to birth outcomes and infant mortality. Furthermore, while there are many reasons why governments and employers

implement paid parental leave, including helping “workers maintain a health work-life balance, to retain workers (particularly women), to boost fertility rates in the context of aging national populations, [and] to promote gender equality” (Patton, Costich, & Lidströmer, 2017), the positive impact that paid parental leave has on maternal and child health is a significant mechanism for reducing infant mortality.

A family leave system is implemented in Finland, in order to give parents the equal opportunity to stay at home with their children, under a variety of circumstances, such as pregnancy, birth, and child care (Ministry of Social Affairs and Health, 2013). Moreover, parents are given a maternal and paternal allowance, which is determined on the basis of income. However, even if no income is present, parents will still be given a minimum allowance for the opportunity to stay at home with their children, in the event of pregnancy/birth or other unique child care circumstances. For expectant mothers in Finland, maternity leave can start “no earlier than 50 and no later than 30 working days before they are due to give birth” (Ministry of Social Affairs and Health, 2013). Furthermore, the paid maternity leave can last a minimum duration of 105 working days and can be extended for women working in hazardous occupations, such as chemicals or pathogens, which could compromise the health of the mother, and, thus, her infant. In addition, fathers are also given a paternal leave and paternal allowance. Beginning in 2013, fathers were able to “take up to 18 working days of paternity leave while the mother is on maternity leave once the child is born” (Ministry of Social Affairs and Health, 2013). Moreover, fathers are given an additional 36 days to stay at home with their child, after the mother is no longer on maternity leave and has returned to work. However, in addition to maternal and paternal leave, parents in Finland are also given a parental leave and allowance. That is, after the maternity and paternity leave period has expired, the mother or father may take an additional 158

working days, with an extension of 60 working days for each child, in the case of multiple births, to stay at home with the child (Ministry of Social Affairs and Health, 2013). Moreover, the 158 working days may be split by the parents, as well. In this way, Finland fosters an environment in which children are able to safely grow, by providing the psychological and financial means necessary to raise to a child. By emphasizing the importance of a family structure, both parents are able to play supportive and structural roles in the most crucial part of a child's life—the first year.

Conversely, women in the United States are guaranteed, at most, 12 weeks of unpaid maternity leave through the 1993 Family and Medical Leave Act (Kim & Saada, 2013), making it “the only industrialized democracy in the world that does not provide job-protected paid parental leave to working women and men” (Patton, Costich, & Lidströmer, 2017). However, this twelve weeks of maternity leave is not offered to all women across the United States, but rather, only to certain employees who are employed at a company that has more than 50 workers. Additionally, this benefit only applies to those who have been a fulltime employee of the company for at least a year, which only accounts for approximately 60 percent of the workforce in the United States (Patton, Costich, & Lidströmer, 2017).

Moreover, due to a lack of compensation and job security, a majority of women do not utilize the full duration of their maternity leave, which can influence the health of both the mother and her newborn, by compromising the period of breastfeeding and adherence to wellbeing appointments/immunization schedules. This not only influences the health of the infant, but sets the tone for the child's and mother's health for the rest of their lives, thereby having long-term implications in the health of future populations. For instance, children are more likely to suffer from asthma and bronchitis, if they had mothers who did not take a maternal

leave of absence (Khanam, Nghiem, & Connelly, 2016). This is partially because women who receive paid maternity leave tend to breastfeed twice as long as women who receive an unpaid and premature maternity leave (Wallace & Christensen, 2015). As a result, the components of breastmilk help infants to fight infections and diseases, resulting in children having a lower risk for asthma, obesity, and Sudden Infant Death Syndrome (Center for Disease Control and Prevention). Furthermore, women who breastfeed are less likely to develop breast cancer, ovarian cancer, type two diabetes, and heart disease (Center for Disease Control and Prevention). Therefore, parental leave and the behaviors/environment that it fosters has implications not only infant mortality, but the overall health of children and their parents. A recent study amongst OECD, as well as non-OECD, countries “found that an increase of 10 weeks of paid maternal leave predicted 10% significantly lower [infant mortality rates]” (Kim & Saada, 2013).

### ***Policy Implications for the United States***

The infant mortality rate in the United States is staggeringly high, while the multidimensional nature of infant deaths tend to hinder policy efforts, due to a poor understanding of how these dimensions interact with each other, to create ideal conditions for the death of an infant. Nevertheless, the United States is not struggling to overcome infant mortality, due to a lack of understanding the determinants of infant death, but rather, by focusing upon the consequences of those determinants, rather than the underlying mechanisms. This nation has implemented programs to conquer Sudden Infant Death Syndrome and premature births, but has failed to recognize that the contributors to such outcomes orbit around determinants, such as maternal healthcare and parental leave policies. However, by ignoring these key factors, thousands of unnecessary and avoidable infant deaths occur each year, bringing great devastation to not only their loved ones, but also to the nation, since infant health has lifelong implications for the health of the entire population.

Infant death in the United States is strongly associated with a lack of importance regarding maternal health, since even women who have insurance find it difficult to afford all of the services that are necessary throughout pregnancy and delivery. Finland is able to provide its citizens with universal healthcare—free prenatal care and additional services that women require throughout pregnancy and delivery and therefore are covered, free of charge. Furthermore, the abundance of maternity clinics makes such services accessible to nearly all women in Finland, thereby ensuring that nearly every infant is provided a fair and healthy start in the world.

Universal healthcare is not obtainable in the United States, at this moment in time, but there are still efforts that can be taken to decrease the infant mortality associated with not receiving prenatal care. This could involve the national implementation of a maternity grant (“baby box”), which is currently implemented in a few states, as a means to raise awareness and decrease the incidence of Sudden Infant Death Syndrome. However, offering the maternity grant to women under the same guidelines that Finland implements (receiving a prenatal visit within the first trimester of pregnancy and having the pregnancy last at least 154 days), acts as an incentive to decrease the incidence of unnecessary, premature delivery, as well as ensuring at least one prenatal visit during the most vital aspect of pregnancy—the first trimester. Nevertheless, significantly reducing the infant mortality rate in the United States would require women receiving regular, high quality care throughout the entire duration of her pregnancy. Therefore, substantial decreases would need to involve changes regarding insurance plans and coverage for maternal healthcare, as well as the operation of more clinics that could provide either free, or reduced cost, high-caliber services to women who do not have the means to afford insurance, or whose insurance does not cover all of the necessary costs of pregnancy and delivery. Since maternal and child healthcare in the United States is one of the major issues surrounding infant

mortality, policies addressing the lack of access to essential care are necessary to reduce infant mortality.

Although a longer parental leave of absence is associated with great decreases in reductions in infant mortality, the United States could lower the infant mortality rate simply by implementing a national policy for a maximum of 12 paid weeks. However, the assumption is that a majority of women would still not take the maximum available leave, “if 75 percent of the 3.9 million annual U.S. births were associated with 6 weeks paid leave at an average of \$800 per week, the total annual cost would be about \$14 million” (Patton, Costich, & Lidströmer, 2017). Nevertheless, this implementation alone could reduce the infant mortality rate from 6 infant deaths per 1,000 live births to 4 infant deaths per 1,000 live births (in relation to the OECD mean), which would result in 7,800 infants being spared from a premature death. As a result, “the cost per life, approximately \$1.78 million, is far lower than the \$9.2 million value of a statistical life used by the U.S. Department of Transportation to assess the cost-effectiveness of other lifesaving interventions” (Patton, Costich, & Lidströmer, 2017). Moreover, by implementing a national policy that would ensure job security and paid parental leave, the costs of such a policy would be worthwhile, because increasing worker retention would reduce the cost of recruiting and training new employees. Furthermore, by providing parents with adequate time off to adjust to the lifestyle accompanied with a newborn— without adding the stress of finances—parents can return to the workforce with a physiologically sound mindset, thereby being able to operate at maximum productivity, reducing the costs associated with absenteeism, due to sick days. In this way, parental leave not only benefits the health of the infant and the parents, but also, the health of the company.

The unfortunate reality of the high and stagnant infant mortality rate in the United States reflects the nation's poor opinion regarding the importance of women's health. While approximately six infant deaths per every 1,000 live births does not appear to be a large number, many of these deaths are completely avoidable, if only women, and families, were given the proper education, care, and support throughout the pregnancy and postnatal period. Since infant health predetermines the health of the entire population, if the United States continues to turn its shoulder towards the contributors of infant death, the entire nation will reap the undesirable consequences.

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